INTERNATIONAL VALUATION STANDARDS

EXPOSURE DRAFT FOR CONSULTATION

IVSC

INTERNATIONAL VALUATION
STANDARDS COUNCIL

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Exposure Draft for Consultation

Consultation period 28 April 2023 to 28 July 2023

IVSC

IVS Consultation Timeline

IVS are developed in an open and transparent way through public consultation. The consultation period on the proposed changes opens on 28 April 2023 for 12 weeks until 28 July 2023.

Comments can be submitted in the following ways:

By personal letter or email to:

- aaronsohn@ivsc.org
- online via the IVSC website (link to be provided – for JOSH)
- Link to PDF on website – for JOSH

The IVSC will also be providing a series of webinars in May 2023 on the proposed changes to IVS, which will be available via the IVSC website and publicised via eNews.

Subject to responses received the next edition of IVS will be published in January 2024 with an effective date of July 2024.

Summary Consultation Questions

In order to answer the consultation questions below it is necessary to read the General Standards first followed by any applicable Asset Standards.

Respondent details (compulsory)

1. What is your name?
2. What is your job title?
3. What is your firm/organisation?
4. If you are responding on behalf of an organisation, what is their membership status?
   - *Corporate*
   - *Valuation Professional Organisation (VPO)*
   - *Associate VPO*
   - *Institutional*
   - *Academic*
5. What is your primary location? *(country or world region)*
   - *Africa*
   - *Americas (Canada and USA)*
   - *Asia*
   - *Europe*
   - *Latin America*
   - *Middle East*
6. What is your role in respect of valuations? *(please provide details)*
   - *Academic*
   - *Advisor*
   - *Analyst (please specify, eg, data analyst)*
   - *Asset Manager*
   - *Banker*
   - *Consultant*
   - *Data Provider*

- *Fund Manager*
- *Government Employee*
- *Investor*
- *Other (please provide details)*
- *Rating Agency*
- *Regulator*
- *Researcher*
- *Service Provider*
- *Specialist*
- *Valuer*

7. What is your main area of interest? *(tick as many boxes as appropriate)*

   - *Business Valuation*
   - *Financial Assets Valuation*
   - *Tangible Assets Valuation*
   - *Other (please describe)*

8. Are you responding to these questions as an individual or on behalf of a firm or organisation?

   - *Individual*
   - *Firm/Organisation*

9. Have you responded to previous IVS consultations?

   - *Yes*
   - *No*

Consultation Questions

General Standards

1. The IVSC Technical Standards Boards (the Boards) have enhanced the structure of the General Standards to mirror the valuation process to improve users' ability to understand and apply International Valuation Standards (IVS). Do you believe that this has been accomplished? If not, why not, and what specific changes would you make?

2. In the edition of IVS (effective 31 January 2022), the IVS Framework was included as a preamble and there was a lack of clarity as to whether it was mandatory or not. In the General Standards as proposed in the Exposure Draft, the IVS Framework, now chapter IVS 100 *Framework*, forms a mandatory part of IVS. Do you agree that this should be mandatory? If not, why not, and what specific changes would you make?

3. IVS 100 *Framework* now includes section 100.30 Quality Control. Do you agree that the new requirements for quality control are clear, complete and provide adequate clarity to ensure compliance with IVS? If not, why not, and what specific changes would you make?

4. IVS 104 *Data and Inputs* has been added to the General Standards. Do you agree that the requirements for data and inputs are clear, complete and provide adequate clarity to ensure compliance with IVS? If not, why not, and what specific changes would you make?

5. The General Standards now include specific requirements for consideration of ESG factors within IVS 101 *Scope of Work*, IVS 103 *Valuation Approaches* and IVS 106 *Documentation and Reporting*. In addition, an ESG Appendix has been included in IVS 104 *Data and Inputs*. Do you agree that the requirements and framework for ESG considerations are clear, complete and provide adequate clarity to ensure compliance with IVS? If not, why not, and what specific changes would you make?

6. IVS 105 *Valuation Models* has been added to the IVS General Standards. Do you agree that the requirements for valuation models are clear, complete and provide adequate clarity to ensure compliance with IVS? If not, why not, and what specific changes would you make?

7. IVS 106 *Documentation and Reporting* now includes section 106.20 Documentation. Do you agree that the requirements for documentation and reporting are clear, complete and provide adequate clarity to ensure compliance with IVS? If not, why not, and what specific changes would you make?

8. The IVS Glossary is intended to include only defined terms used within IVS. The Glossary now includes additional definitions and others have been revised or deleted. Do you think these changes are appropriate? If not, why not, and what specific changes would you make?

9. Stakeholders requested that the Board provide additional standards regarding valuation reviews. The Board has developed standards related to two types of valuation review (Valuation Process Review and Value Conclusion Review). Do you think these additions are appropriate? If not, why not, and what specific changes would you make?

10. Do you have any other comments or observations?

Asset Standards

Business Valuation

11. The current Exposure Draft includes only minimal changes to IVS 200 *Businesses and Business Interests* through to IVS 230 *Inventory.* Most changes pertain to cross-referencing.

    The Boards found that IVS 200 to IVS 230 inclusive:

    - effectively represent current international best practice, and
    - are congruent with the proposed changes in other sections of IVS.

    Furthermore, since the adoption and implementation of these standards are at critical junctures in several key jurisdictions, the Boards have chosen to not make any substantial changes to these chapters.

    Do you agree that IVS 200 to IVS 230 should remain substantially unchanged to maintain consistency with IVS General Standards as outlined in the Exposure Draft? If you disagree, please explain your reasoning and provide specific suggestions for changes that you believe would enhance these standards?

Financial Instruments

12. IVS 500 *Financial Instruments* has been restructured to follow the enhanced structure of the General Standards which are now mandatory. The restructured IVS 500 mirrors the valuation process in order to not only improve users' ability to understand and apply IVS but also to ensure that users' can apply IVS 500 in conjunction with IVS General Standards. Do you believe that this has been accomplished? If not, why not, and what specific changes would you make?

13. The revised proposals on IVS 500 *Financial Instruments* include requirements on governance of the valuation process which need to be applied in conjunction with the requirements in IVS General Standards. Do you agree that the requirements for governance are clear, complete and provide adequate clarity to ensure compliance with IVS? If not, why not, and what specific changes would you make?

14. The revised proposals on IVS 500 *Financial Instruments* include requirements on data and inputs which need to be applied in conjunction with the requirements in the General Standards. Do you agree that the requirements for data and inputs are clear, complete and provide adequate clarity to ensure compliance with IVS? If not, why not, and what specific changes would you make?

15. In line with the Boards' publication plan the revised proposals to IVS 500 now include requirements on methods and models which must be applied in conjunction with the General Standards. Do you agree that the requirements

for methods and models are clear, complete and provide adequate clarity to ensure compliance with IVS? If not, why not, and what specific changes would you make?

16. In line with the Boards' publication plan the revised proposals to IVS 500 now include requirements on quality control which must be applied in conjunction with the General Standards. Do you agree that the requirements for quality control are clear, complete and provide adequate clarity to ensure compliance with IVS? If not, why not, and what specific changes would you make?

17. Do you have any other comments or observations in relation to IVS 500 *Financial Instruments*? Is IVS 500 sufficiently detailed and if not, why not and what specific changes would you make?

18. Are there any elements within IVS 500 that should be included within IVS General Standards? If so, please advise which elements?

Tangible Assets

IVS 300 *Plant, Equipment and Infrastructure*

19. IVS 300 *Plant, Equipment and Infrastructure* now includes infrastructure. Is this sufficiently covered and if not, why not and what specific changes would you make?

20. Additional content has been added to IVS 300 in relation to the income approach. Is this sufficiently covered and if not why not and what specific changes would you make?

21. Additional content has been added to IVS 300 in relation to the market approach. Is this sufficiently covered? If not why not and what specific changes would you make?

22. Do you have any other comments or observations in relation to IVS 300? Is IVS 300 sufficiently detailed? If not, why not and what specific changes would you make?

23. Are there any elements within IVS 300 that should be contained within IVS General Standards? If so, please advise which elements?

IVS 400 *Real Property Interests*

24. IVS 400 *Real Property Interests* has been restructured to align with IVS General Standards and as part of this process additional sections have been added to provide additional context on data and inputs and valuation models. Does IVS 400 provide sufficient content and clarity on these topics relative to the content added in the General Standards? If not, why not, and what specific changes would you make?

25. Do the General Standards provide sufficient additional content in relation to the consideration of ESG or should IVS 400 *Real Property Interests* provide additional content? If so, what additional changes would you make?

26. Do you have any other comments or observations in relation to IVS 400? Is IVS 400 sufficiently detailed and if not, why not and what specific changes would you make?

27. Are there any elements within IVS 400 that should be included within IVS General Standards? If so, please advise which elements

IVS 410 *Development Property*

28. IVS 410 *Development Property* has been restructured to align with IVS General Standards and as part of this process additional sections have been added to provide additional context on data and inputs and valuation models. Does IVS 410 provide sufficient content and clarity on these topics relative to the content added in the General Standards? If not, why not, and what specific changes would you make?

29. Do the General Standards provide sufficient additional content in relation to the consideration of ESG or should IVS 410 provide additional content? If so, what additional changes would you make?

30. Do you have any other comments or observations in relation to IVS 410? Is IVS 410 sufficiently detailed and if not, why not and what specific changes would you make?

31. Are there any elements of IVS 410 which should be included within IVS General Standards? If so, please advise which elements?

Contents

Foreword

The International Valuation Standards Council (IVSC) is an independent, not-for-profit organisation committed to advancing quality in valuations. Our primary objective is to build confidence and public trust in valuation by producing transparent and consistent standards and securing their universal adoption and implementation for the valuation of assets across the world. International Valuation Standards (IVS) are a fundamental part of the financial system

Valuations are widely used and relied upon in financial and other markets, including for inclusion in financial statements, for regulatory compliance or to support lending and transactional activity.

The purpose of IVS is to promote and maintain a high level of public trust in valuation practice by establishing appropriate global requirements for valuations that equally apply to all parties involved in the process and those who oversee this process.

The IVS are principle-based and apply to everyone in the valuation process for all assets and liabilities no matter where they exist around the globe.

The IVSC standards applies to a range of valuations, including:

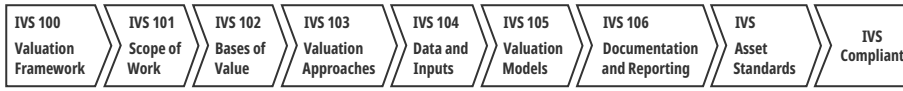
(a) valuations performed by valuers for their own employers (employed),

(b) valuations performed by valuers for clients other than their employers (engaged).

The IVS equally apply to all those all those who wish to assert compliance with IVSC standards.

Structure of the International Valuation Standards (IVS)

The International Valuation Standards comprise General Standards that are applicable across all valuations, and Asset Standards that relate to specific valuation disciplines. Appendices, which are part of the International Valuation Standards, provide additional information for certain concepts articulated in the International Valuation Standards.



General Standards

General Standards apply to all valuations. The General Standards are as follows.

- IVS 100 *Valuation Framework*
- IVS 101 *Scope of Work*
- IVS 102 *Bases of Value*
  Appendix: Bases of Value
  Appendix: Premise of Value
- IVS 103 *Valuation Approaches*
  Appendix: Valuation Method
- IVS 104 *Data and Inputs*
  Appendix: ESG
- IVS 105 *Valuation Models*
- IVS 106 *Documentation and Reporting*

Asset Standards

Asset Standards provide requirements in addition to the General Standards for specific types of assets and liabilities as follows:

- IVS 200 *Businesses and Business Interests*
- IVS 210 *Intangible Assets*
- IVS 220 *Non-Financial Liabilities*
- IVS 230 *Inventory*
- IVS 300 *Plant, Equipment and Infrastructure*
- IVS 400 *Real Property Interests*
- IVS 410 *Development Property*
- IVS 500 *Financial Instruments*

Glossary

This glossary defines certain terms used in IVS (all glossary definitions are italicised within IVS chapters).

10. Defined Terms

10.1. Asset or Assets

The right to an economic benefit.

10.2. Basis (bases) of Value

The fundamental premises on which the reported values are or will be based (examples are included in IVS 103 *Valuation Approaches*, para 10.1) (in some jurisdictions also known as standard of value).

10.3. Client

The person, persons, or entity who appoints the valuer for a given valuation. "Clients" may be internal (ie, valuations performed for an employer) or external (ie, when a valuer is engaged by a third-party client).

10.4. Cost(s) (noun)

The consideration or expenditure required to acquire or create an asset.

10.5. Discount Rate(s)

A rate of return used to convert a monetary sum, payable or receivable in the future, into a present value.

10.6. Equitable Value

This is the estimated price for the transfer of an asset or liability between identified knowledgeable and willing parties that reflects the respective interests of those parties.

10.7. Equity instrument

The residual interest in the assets of the entity after deducting all its liabilities.

10.8. Financial Asset or Assets

Any asset that is:

(a) cash

(b) an equity instrument of another entity, or

(c) a contractual right:

- to receive cash or other asset from another entity; or
- to exchange assets or liabilities with a third party under conditions that are potentially favourable to the entity; or

(d) a contract that will or may be settled in the entity's own equity instruments.

10.9. Financial Instrument

A contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity.

10.10. Financial Liability or Liabilities

Any liability that is:

(a) a contractual obligation

- to deliver cash or other asset to another entity, or
- to exchange assets or liabilities with another entity under conditions that are potentially unfavourable to the entity; or

(b) a contract that will or may be settled in the entity's own equity instruments.

10.11. Intangible Asset

An identifiable non-monetary asset with no physical substance.

10.12. Intended Use

The reason(s) for which a value is developed as described in the scope of work. This is also known as intended purpose.

10.13. Intended User

Any party identified, by the client and valuer in the scope of work as a user of the valuation.

10.14. Investment Value

The value of an asset to the owner or a prospective owner given individual investment or operational objectives (may also be known as "worth").

10.15. Jurisdiction

The legal and regulatory environment in which a valuation is performed.

10.16. Liability

The present obligation to transfer an economic benefit. A liability has the following two essential characteristics:

a. It is a present obligation,

b. The obligation requires an entity to transfer or otherwise provide economic benefits to others.

10.17. Liquidation Value

The gross amount that would be realised when an asset or group of assets are sold from a liquidation sale, with the seller being compelled to sell as of a specific date. Liquidation value can be determined under two different premises of value (see IVS 102 *Bases of Value*, section 70):

(a) an orderly transaction with a typical marketing period; or

(b) a forced transaction with a shortened marketing period.

10.18. Market Value

The estimated amount for which an asset or liability should exchange on the valuation date between a willing buyer and a willing seller in an arm's length transaction, after proper marketing and where the parties had each acted knowledgeably, prudently and without compulsion.

10.19. Must

An action or procedure that valuers have unconditional responsibility to perform should the requirement apply.

10.20. Price (noun)

The monetary or other consideration asked, offered, or paid for an asset, which may be different from the value.

10.21. Professional Judgement

The use of knowledge and experience to select and apply valuation processes, valuation models, and inputs and to interpret the results to provide a value.

10.22. Service Organisation

An entity (or segment of an entity) that provides information, reports or opinions including but not limited to providing market data, credit ratings or other services to support the valuation.

10.23. Should

Actions or procedures that are presumptively mandatory. The valuer must comply with requirements of this type unless the valuer demonstrates that alternative actions which were followed under the circumstances were sufficient to achieve the objectives of the standards.

10.24. Significant

Any aspect of a valuation which in the professional judgement of the valuer greatly impacts the resultant value.

10.25. Specialist

An individual or group of individuals possessing special skill or knowledge required to perform or assist in the valuation or the review and challenge process. A specialist can be internally employed or externally engaged.

10.26. Synergistic Value

The result of a combination of two or more assets or interests where the combined value is more than the sum of the separate values. If the synergies are only available to one specific buyer, then synergistic value will differ from market value, as the synergistic value will reflect particular attributes of an asset that are only of value to a specific purchaser. The added value above the aggregate of the respective interests is often referred to as marriage value.

10.27. Tangible Asset

A physical measurable asset such as property, plant, and equipment.

10.28. Valuation

The act or process to determine a value as of a valuation date that is prepared in full compliance with IVS.

10.29. Valuation Approach

A way of estimating value that employs one or more specific valuation methods (see IVS 103 *Valuation Approaches*).

10.30. Value Conclusion Review

An analysis by a peer applying IVS to assess the reasonableness of a value conclusion.

10.31. Valuation Date

The point in time to which the valuation applies.

10.32. Valuation Method

Within valuation approaches, a specific technique to develop a value (see IVS 103 *Valuation Approaches Appendix*).

10.33. Valuation Model

A quantitative implementation of a method in whole or in part that converts input data into outputs used in the development of a value (see IVS 105 *Valuation Models*).

10.33. Valuation Process Review

An analysis by a peer applying professional judgement to assess the compliance of a valuation with IVS.

10.34. Valuation Review

A valuation review is either a valuation process review or a value conclusion review.

10.35. Valuation Risk

The risk that the resultant value is not appropriate for its intended use.

10.36. Value (noun)

The valuer's conclusion as the result of a valuation process as of a valuation date that is fully compliant with the requirements of the IVS.

10.37. Valuer

An individual, group of individuals or individual within an entity, regardless of whether employed (internal) or engaged (contracted/ external), possessing the necessary qualifications, ability and experience to execute a valuation in an objective, unbiased, ethical and competent manner. In some jurisdictions, licensing is required before one can act as a valuer.

10.38. Weight

The amount of reliance placed on a particular indication of value in reaching a conclusion of value.

10.39. Worth

The value of an asset to the owner or a prospective owner given individual investment or operational objectives (may also be known as "investment value").

General Standards

IVS 100 Valuation Framework

Contents	Paragraphs

General Standards apply to all *assets* and *liabilities* and are the starting point for any *valuation*. Asset Standards provide requirements and guidance in addition to the General Standards for specific types of *assets* and *liabilities*.

Compliance with IVS includes adherence to the IVS General Standards and any applicable Asset Standards.

In performing their *valuations*, the *valuer* must comply with the Valuer Principles and the Valuation Principles[1].

10. Valuer Principles

10.1. Ethics

Valuers must follow the ethical principles integrity, objectivity, impartiality, confidentiality, competence, and professionalism to provide a non-biased *valuation* and to promote and preserve the public trust.

10.2. Competency

At the time the *valuation* is submitted, *valuers* must have the technical skills and knowledge required to appropriately complete a *valuation*.

10.3. Compliance

Valuers must disclose or report that IVS were used for the *valuation* and that they complied with those standards in performing the *valuation*.

[1] IVSC *Code of Ethical Principles for Professional Valuers* provides an example of an appropriate framework for due care.

10.4. Scepticism

Valuers must apply scepticism at every stage of the *valuation* by applying an appropriate level of scepticism. The level of scepticism should be based on the potential for bias within the information and data.

10.5. Documentation

Valuers must keep a copy any report issued of the *value* and a record of the valuation work performed *must* be kept for an appropriate period after completion of the *valuation*.

20. Valuation Principles

20.1. Scope of Work

Valuations must be performed on a basis consistent with the scope of work.

20.2. Intended User(s)

Valuations must disclose or report a clear and accurate description of the *intended user(s)* of the *valuation*.

20.3. Identification of Subject of Valuation

Valuations must clearly identify what *asset(s)* and *liability(ies)* are being valued.

20.4. Intended Use

Valuations must disclose or report a clear and accurate description of the *intended use* of the *valuation*.

20.5. Basis of Value

Valuations must follow the *basis (or bases) of value* (see IVS 102 *Bases of Value*, para 10.1) appropriate for the *valuation* and all applicable requirements.

20.6. Valuation Date

Valuations must disclose or report the *valuation date* that is the basis of their analyses, opinions, or conclusions. *Valuers* must also state the date that they disclose or report their *value*.

20.7. Assumptions and Conditions

Valuations must disclose *significant* assumptions and conditions specific to the *valuation* that may affect the resulting *value*.

20.8. Valuation Approach and Method

Valuations must use the *valuation approach* and *valuation method* consistent with the *intended use* to develop a *value*.

20.9. Data and Inputs

Valuations must use appropriate data and inputs to develop a *value*.

20.10. Valuation Models

Valuations must use appropriate models to develop a *value*.

20.11. Communication of Valuation

Valuations must report the analyses, opinions, and conclusions of the *valuation* to the *client* and *intended user(s)*.

30. Quality Control

30.1. Quality controls check that valuation processes are performed consistently, objectively, transparently and in compliance with IVS and allow for the assessment of the *valuation* and the resultant *value*.

30.2. Quality controls around the valuation process *must* be in place.

30.3. Quality controls apply throughout the valuation process and may include but are not limited to review of scope of work, data reviews, model validations, recalculation, back testing and fact checking.

30.4. Quality controls *should* be designed to identify whether *valuations* are neutral and free from bias.

30.5. All quality controls must be consistently followed and apply to all people and systems involved in the valuation process.

30.6. The extent of the quality controls *should* depend on the *intended use*, *intended user* and complexity of the *valuation*.

30.7. *Valuers* may perform monitoring procedures with respect to their own compliance and their quality control policies and procedures, but only if *valuers* are able to address and assess the *valuation risk*.

30.8. A *valuer must* apply quality controls to reduce the *valuation risk* to an acceptable level. A *valuer* unable to reduce the *valuation risk* to an acceptable level *must* decline the engagement.

30.9. Quality controls *should* include a degree of review and challenge. Review and challenge *should* assess the judgements made including their reasonableness and freedom from bias during the *valuation* and in determining the *value*.

30.10. Quality controls *must* be documented. The documentation *must* contain sufficient detail to allow a peer, applying *professional judgement*, to understand the quality control process.

30.11. There *must* be periodic assessment of the quality control process to ensure that the integrity and completeness of the control environment is appropriate as of the *valuation date*. The periodic assessment *must* be documented.

40. Use of a Specialist

40.1. If a *valuer* does not possess all of the necessary technical skills, experience, and knowledge to perform all aspects of a *valuation*, it is acceptable for the *valuer* to seek assistance from *specialists*, providing this is disclosed in the scope of work (see IVS 101 *Scope of Work*) and the applicable reporting (see IVS 106 *Documentation and Reporting*).

40.2. Prior to using a *specialist*, the *valuer must* assess and document the knowledge skill and ability of the *specialist*. Relevant factors may include the following:

(a) experience in the type of work performed,

(b) professional certification, licence, or professional accreditation of the *specialist* in the particular field,

(c) reputation and standing of the *specialist* in the particular field.

40.3. The *valuer must* have the technical skills, experience, and knowledge to:

(a) obtain an understanding of the *specialist's* process and findings; and

(b) evaluate the work of the *specialist*.

40.4. The *valuer must* ensure that the information received from the *specialist* is sufficient for the *valuer* to meet the requirements of IVS. This applies both to *specialists* that are internally employed or externally engaged by the *valuer*.

40.5. In certain circumstances, the quality control process may require the use of a *specialist*. In such cases, quality controls must be in place and IVS 100 *Valuation Framework*, paras 40.2 to 40.4, must be applied.

50. Use of a Service Organisation

50.1. If a *valuer* does not possess all of the necessary data, inputs or *valuation models* to perform all aspects of the *valuation*, it is acceptable for the *valuer* to engage *service organisations*.

50.2. Prior to using a *service organisation*, the *valuer must* assess and document their capabilities, for example, the completeness and accuracy of inputs received.

60. Compliance

60.1. IVS consist of mandatory requirements that *must* be followed in order to state that a *valuation* was performed in compliance with IVS. Certain aspects of IVS do not direct or mandate any particular course of action but provide fundamental principles and concepts that must be considered in undertaking a *valuation*. In order to be IVS compliant, the *valuation* must meet the requirements of the General Standards as well as the applicable Asset Standards.

60.2. When a statement is made that a *valuation* will be, or has been, undertaken in accordance with IVS, it is implicit that the *valuation must* be prepared in compliance with all relevant standards issued by the IVSC.

60.3. In applying IVS the following compliance hierarchy *must* be followed:

1. IVS General Standards (IVS 100 *Valuation Framework* to IVS 106 *Documentation and Reporting*, including appendices),
2. IVS Asset Standards (IVS 200 *Businesses and Business Interests* to IVS 500 *Financial Instruments*, including appendices),
3. Legal, statutory, and regulatory or other authoritative requirements appropriate to the purpose and *jurisdiction* of the *valuation*. If in conflict with IVS the requirements should be prioritised explained, documented and reported.

Any other deviations would render the *valuation* not compliant with IVS.

60.4. For *assets* and/or *liabilities* that may fall within multiple Asset Standards (IVS 200 *Businesses and Business Interests* to IVS 500 *Financial Instruments*), the *valuer should* follow the General Standards and explain, justify and document, which of the Asset Standard(s) were used.

60.5. In certain instances, a *valuer* may be asked to conduct a *valuation review* for compliance with IVS. In such instances, the *valuer should* comply with IVS and the applicable review framework as defined in the scope of work.

70. Effective Date

70.1. This version of International Valuation Standards is published on 31 January 2024, with an effective date of 31 July 2024 for *valuations* performed on or after this date. The IVSC permits early adoption from the date of publication.

70.2. When undertaking *valuations* or *valuation reviews* with a retrospective or historical *valuation date*, the *valuer* should explain and document the editions of IVS that (i) they have relied upon, and (ii) are applicable at the *date of valuation*. The form and location of documentation will vary based on scope of work.

IVS 101 Scope of Work

10. Introduction

10.1. A scope of work (sometimes referred to as terms or letter of engagement) describes the fundamental terms of a *valuation* or *valuation review*. These include but are not limited to the *asset(s)* and *liability(ies)* being valued, the *intended use* of the *valuation* and the responsibilities of parties involved in the *valuation*.

10.2. A scope of work for a *valuation review* describes the fundamental terms such as the components of the *valuation* or conclusion of *value* being reviewed.

10.3. A scope of work is required for all *valuations* and *valuation reviews* whether the *values* are for internal or external use.

10.4. The *client* and the *valuer must* agree on the scope of work and that the *valuation* or *valuation review* scope is appropriate for the *intended use*. In determining the scope of work, the *client* and the *valuer* may need to consider the requirements of the *intended users*.

20. Valuation Requirements

20.1. The scope of work *must* define the following:

(a) *Asset(s)* and/or *Liabilities* being valued: the subject *asset* and *liability* in the *valuation must* be clearly identified and the *client* is responsible for the accuracy and completeness of that information.

(b) *Client(s)*: the person, persons, or entity who appoints the *valuer* for a given *valuation*. *Clients* may be internal (ie, *valuations* performed for an employer) or external (ie, when a *valuer* is engaged by a third-party *client*).

(c) *Intended use* (if any): the reason for which a *valuation* is developed.

(d) *Intended user* (if any): any party, as identified, by the *client* in the scope of work as a user of the *valuation*.

(e) *Valuer*: the *valuer* may be an individual, group of individuals, or individual within an entity, regardless of whether employed (internal) or engaged (contracted/external), possessing the necessary qualifications, ability and experience to execute a *valuation* in an objective, unbiased, ethical and competent manner. The *valuer must* disclose any potential conflict of interest or bias.

(f) Valuation currency: the currency for the *valuation* and the final valuation report or conclusion *must* be established.

(g) *Valuation date*: the *valuation date must* be stated. If the *valuation date* is different from the date on which the *valuation* is reported, then that date should also be stated.

(h) *Basis/bases of value* used: as required by IVS 102 *Bases of Value*, the valuation basis *must* be appropriate for the *intended use*. The source of the definition of any *basis of value* used *must* be cited or the basis explained.

(i) *The nature and extent of the valuer's work and any limitations thereon*: any limitations or restrictions on the inspection, enquiry and/or analysis in the *value must* be identified. If relevant information is not available because the conditions of the *valuation* restrict the investigation, these restrictions and any necessary assumptions or special assumptions (see IVS 102 *Bases of Value*, paras 50.1–50.5) made as a result of the restriction must be identified.

(j) *The nature and sources of information upon which the valuer relies*: the nature and source of information upon which the *valuer* relies and any verification or controls to ensure the accuracy of that information.

(k) Special assumptions: any agreed special assumptions that are known prior to the *valuation should* be recorded in the scope of work.

(l) *Environmental, Social and Governance Factors*: any requirements in relation to the consideration of environmental, social and governance factors.

(m) *The type of report or other documentation being prepared*: a clear description of how the valuation results will be reported or a sample of the deliverable that will be supplied to the *client*. This *should* include a description of the type and extent of supporting documentation that will be supplied.

(n) *Restrictions on use, distribution, and publication of the report*: where it is necessary or desirable to restrict the use of the *valuation* or those relying on it, the *intended users* and restrictions *must* be clearly communicated.

(o) IVS compliance: a statement that the *valuation* will be prepared in compliance with IVS must be disclosed in the scope of work and that the *valuer* will assess the appropriateness of all significant inputs. If, during the course of a *valuation*, it becomes clear to the *valuer* that the scope of work will not result in an IVS compliant valuation, this must be communicated to the *client* in writing.

20.2. The scope of work *must* be established and agreed between the *client* and the *valuer* in writing prior to the completion of the *valuation* report. Any changes to the scope of work prior to the completion of the *valuation must* be communicated and agreed upon in writing.

20.3. If, during the course of a valuation engagement, it becomes clear that the scope of work will not result in an IVS compliant value, the *valuation* will not comply with IVS.

30. Valuation Review Requirements

30.1. The scope of work must state whether the review is a *valuation process review* or a *value conclusion review*.

- A *valuation process review* addresses compliance with IVS applicable at the *valuation date*.
- A *value conclusion review* addresses the reasonableness of a value conclusion applicable at the *valuation date*.

30.2. The scope of work for a *valuation review* must include the following, at a minimum:

(a) agreed scope of the *valuation review*,

(b) *assets* and/or *liabilities* being reviewed,

(c) the identity of the valuation reviewer,

(d) the identity of the *client*,

(e) *intended use*,

(f) the identity of *intended users*,

(g) significant or special assumptions and/or limiting conditions pertaining to the *valuation* to be reviewed,

(h) the identity of any *specialist* or service provider, if used, as part of the *valuation review*,

(i) procedures to be undertaken, and the documentation to be reviewed.

IVS 102 Bases of Value

This section requires a *valuer* to select the appropriate *basis (or bases) of value* for the agreed-upon scope of work and follow all applicable requirements associated with that *basis of value*, whether those requirements are included as part of this section (for IVS-defined *bases of value*) or not (for non-IVS-defined *bases of value*).

10. Introduction

10.1. *Bases of value* (sometimes called standards of *value*) describe the fundamental context or requirements on which the reported *values* will be based. It is critical that the *basis (or bases) of value* be appropriate to the terms and *intended use* of the *valuation*, as a *basis of value*

may influence or dictate a *valuer's* selection of methods, inputs and assumptions, and the ultimate conclusion of *value*.

10.2. There are different *bases of value* used in *valuations*. A *valuer* may be required to use *bases of value* that are defined by statute, regulation, private contract or another framework.

10.3. A premise of *value* or assumed use describes the circumstances of how an *asset* or *liability* is used. Different *bases of value* may require a particular premise of *value* or allow the consideration of multiple premises of *value*. The most common premises of *value* used in IVS are (see IVS 102 *Bases of Value* Appendices A10–A40 for further description):

(a) highest and best use,

(b) current use/existing use,

(c) orderly liquidation, and

(d) forced sale.

10.4. The *valuation date* will influence what information and data a *valuer* considers in a *valuation*. *Valuers should* be aware that most *bases of value* prohibit the consideration of information or market sentiment that would not be known or knowable with reasonable due diligence on the measurement/*valuation date* by participants.

10.5. Most *bases of value* reflect assumptions that may include one or more of the following characteristics, such as:

(a) hypothetical buyer or seller,

(b) known or specific parties,

(c) members of an identified/described group of potential parties,

(d) whether the parties are subject to particular conditions or motivations at the assumed date (eg, duress), and/or

(e) an assumed knowledge level,

20. Bases of Value

20.1. IVS-defined *bases of value* are listed at paragraph 20.2. Other non-IVS defined *bases of value* may be prescribed by individual jurisdictional law, local regulators, applicable standards, or recognised and adopted by international agreement.

20.2. IVS-defined *bases of value* are (see IVS 102 *Bases of Value* Appendix A10–A60);

1. *Market value* A10,
2. Market rent A20,
3. *Equitable value* A30,
4. *Investment value/worth* A40,
5. *Synergistic value* A50, and
6. *Liquidation value* A60.

20.3. Other *bases of value* may be required for financial reporting, tax reporting, or in other legal or regulatory contexts. Depending on the promulgator of the *basis of value*, the same words may be defined differently or require different valuation approaches. Therefore, care should be taken to identify, articulate and apply the appropriate *basis of value* for a given *valuation*. (A non-exhaustive illustrative list of other *bases of value* is included at IVS 102 *Bases of Value*, Appendix A110–A120).

20.4. In accordance with IVS 101 *Scope of Work*, the *basis of value* must be appropriate for the *intended use* and the source of the definition of any *basis of value* used must be cited or the basis explained.

20.5. *Valuers* are expected to understand the regulation, case law and other interpretive guidance related to all *bases of value* used.

20.7. The *bases of value* illustrated in IVS 102 *Bases of Value* Appendix A110–A120 are defined by organisations other than the IVSC and the onus is on the *valuer* to ensure they are using the relevant definition.

30. Entity-Specific Factors

30.1. For most *bases of value*, the factors that are specific to a particular buyer or seller and not available to participants generally are excluded from the inputs used in a market-based *valuation*. Examples of entity-specific factors that may not be available to participants include;

(a) additional *value* or reduction in *value* derived from the creation of a portfolio of similar *assets*,

(b) unique synergies between the *asset* and other *assets* owned by the entity,

(c) legal rights or restrictions applicable only to the entity,

(d) tax benefits or tax burdens unique to the entity, and

(e) an ability to exploit an *asset* that is unique to that entity.

30.2. Whether such factors are specific to the entity or would be available to others in the market generally, is determined on a case-by-case basis. For example, an *asset* may not normally be transacted as a stand-alone item but as part of a group of *assets*. Any synergies with related *assets* would transfer to participants along with the transfer of the group and therefore are not entity specific.

30.3. If the objective of the *basis of value* used in a *valuation* is to determine the *value* to a specific owner (such as *investment value/worth* discussed in IVS 102 *Bases of Value* Appendix A40.1 and A40.2), entity-specific factors are reflected in the *valuation* of the *asset* and/or *liability*. Situations in which the *value* to a specific owner may be required include but are not limited to the following examples:

(a) supporting investment decisions, and

(b) reviewing the performance of an *asset*.

40. Synergies

40.1. Synergies refer to the benefits associated with combining *assets* and/or *liabilities*. When synergies are present, the *value* of a group of *assets* and *liabilities* is greater than the sum of the *values* of the individual *assets* and *liabilities* on a stand-alone basis. Synergies typically relate to a reduction in *costs*, and/or an increase in revenue, and/or a reduction in risk.

40.2. Whether synergies *should* be considered in a *valuation* depends on the *basis of value*. For most *bases of value*, only those synergies available to other participants generally will be considered (see discussion of Entity-Specific Factors in paras 30.1–30.3 of this chapter).

40.3. An assessment of whether synergies are available to other participants may be based on the amount of the synergies rather than a specific way to achieve that synergy.

50. Assumptions and Special Assumptions

50.1. In addition to stating the *basis of value*, it is often necessary to make an assumption or multiple assumptions to clarify either the state of the *asset* and *liability* in the hypothetical exchange or the circumstances under which the *asset* and *liability* is assumed to be exchanged. Such assumptions can have a *significant* impact on *value*.

50.2. These types of assumptions generally fall into one of two categories:

(a) assumed facts that are consistent with, or could be consistent with, those existing at the *valuation date*, and

(b) assumed facts that differ from those existing at the *valuation date*.

50.3. Assumptions related to facts that are consistent with, or could be consistent with, those existing at the *valuation date* may be the result of a limitation on the extent of the investigations or enquiries undertaken by the *valuer*. Examples of such assumptions include, without limitation:

(a) an assumption that a business is transferred as a complete operational entity,

(b) an assumption that *assets* and /or *liabilities* employed in a business are transferred without the business, either individually or as a group,

(c) an assumption that an individually valued *asset* and/or *liability* is transferred together with other complementary *assets* and/or *liabilities*, and

(d) an assumption that a holding of shares is transferred either as a block or individually.

50.4. Where assumed facts differ from those existing at the *valuation date*, it is referred to as a "special assumption". Special assumptions are often used to illustrate the effect of possible changes on the *value* of an asset and/or *liability*. They are designated as "special" so as to highlight to a valuation user that the valuation conclusion is contingent upon a change in the current circumstances or that it reflects a view that would not be taken by participants generally on the *valuation date*. Examples of such assumptions include, but are not limited to:

(a) an assumption that a property is freehold with vacant possession,

(b) an assumption that a proposed building had actually been completed on the *valuation date*,

(c) an assumption that a specific contract was in existence on the *valuation date* which had not actually been completed, and

(d) an assumption that a *financial instrument* is valued using a yield curve that is different from that which would be used by a participant.

50.5. All assumptions and special assumptions *must* be reasonable under the circumstances, be supported by evidence, and be relevant having regard to the *intended use* for which the *valuation* is required.

60. Transaction Costs

60.1. Most *bases of value* represent the estimated price of an *asset* without adjustment for the seller's *costs* of sale or the buyer's costs of purchase and any taxes payable by either party as a direct result of the transaction.

70. Allocation of Value

70.1 Allocation of *value* is the separate apportionment of *value* of an *asset(s)* and or *liability(ies)* on an individual or component basis.

70.2 When apportioning *value*, the allocation method *must* be consistent with the overall valuation premise/basis and the *valuer must*:

(a) follow any applicable legal or regulatory requirements,

(b) set out a clear and accurate description of the *intended use* of the allocation,

(c) consider the facts and circumstances, such as the relevant characteristic(s) of the items(s) being apportioned,

(d) adopt appropriate methodology(ies) in the circumstances.

IVS 102 Basis of Value: Appendix

The *bases of value* appear in the Appendix. The Appendix must be followed when using the stated *bases of value* as applicable.

A10. IVS-Defined Basis of Value – Market Value

A10.1. *Market value* is the estimated amount for which an *asset* or *liability should* exchange on the *valuation date* between a willing buyer and a willing seller in an arm's length transaction, after proper marketing and where the parties had each acted knowledgeably, prudently and without compulsion.

A10.2. The definition of *market value must* be applied in accordance with the following conceptual framework:

(a) "The estimated amount" refers to a *price* expressed in terms of money payable for the *asset* in an arm's length market transaction. *Market value* is the most probable *price* reasonably obtainable in the market on the *valuation date* in keeping with the *market value* definition. It is the best *price* reasonably obtainable by the seller and the most advantageous *price* reasonably obtainable by the buyer. This estimate specifically excludes an estimated *price* inflated or deflated by special terms or circumstances such as atypical financing, sale and leaseback arrangements, special considerations or concessions granted by anyone associated with the sale, or any element of *value* available only to a specific owner or purchaser.

(b) "An *asset* or *liability should* exchange" refers to the fact that the *value* of an *asset* or *liability* is an estimated amount rather than a predetermined amount or actual sale price. It is the *price* in a transaction that meets all the elements of the *market value* definition at the *valuation date*.

(c) "On the *valuation date*" requires that the *value* is time-specific as of a given date. Because markets and market conditions may change, the estimated *value* may be incorrect or inappropriate at another time. The valuation amount will reflect the market state and circumstances as at the *valuation date*, not those at any other date.

(d) "Between a willing buyer" refers to one who is motivated, but not compelled to buy. This buyer is neither over-eager nor determined to buy at any *price*. This buyer is also one who purchases in accordance with the realities of the current market and with current market expectations, rather than in relation to an imaginary or hypothetical market that cannot be demonstrated or anticipated to exist. The assumed buyer would not pay a higher *price* than the market requires. The present owner is included among those who constitute "the market".

(e) "And a willing seller" is neither an over-eager nor a forced seller prepared to sell at any *price*, nor one prepared to hold out for a price not considered reasonable in the current market. The willing seller is motivated to sell the *asset* at market terms for the best *price* attainable in the open market after proper marketing, whatever that *price* may be. The factual circumstances of the actual owner are not a part of this consideration because the willing seller is a hypothetical owner.

(f) "In an arm's length transaction" is one between parties who do not have a particular or special relationship, eg, parent and subsidiary companies or landlord and tenant, that may make the price level uncharacteristic of the market or inflated. The *market value* transaction is presumed to be between unrelated parties, each acting independently.

(g) "After proper marketing" means that the *asset* has been exposed to the market in the most appropriate manner to affect its disposal at the best *price* reasonably obtainable in accordance with the *market value* definition. The method of sale is deemed to be that most appropriate to obtain the best *price* in the market to which the seller has access. The length of exposure time is not a fixed period but will vary according to the type of *asset* and market conditions. The only criterion is that there *must* have been sufficient time to allow the *asset* to be brought to the attention of an adequate number of market participants. The exposure period occurs prior to the *valuation date*.

(h) "Where the parties had each acted knowledgeably, prudently" presumes that both the willing buyer and the willing seller are reasonably informed about the nature and characteristics of the *asset*, its actual and potential uses, and the state of the market as of the *valuation date*. Each is further presumed to use that knowledge prudently to seek the *price* that is most favourable for their respective positions in the transaction. Prudence is assessed by referring to the state of the market at the *valuation date*, not with the benefit of hindsight at some later date. For example, it is not necessarily imprudent for a seller to sell *assets* in a market with falling prices at a *price* that is lower than previous market levels. In such cases, as is true for other exchanges in markets with changing *prices*, the prudent buyer or seller will act in accordance with the best market information available at the time.

(i) "And without compulsion" establishes that each party is motivated to undertake the transaction, but neither is forced or unduly coerced to complete it.

A10.3. The concept of *market value* presumes a *price* negotiated in an open and competitive market where the participants are acting freely. The market for an *asset* could be an international market or a local market. The market could consist of numerous buyers and sellers or could be one characterised by a limited number of market participants. The market in which the *asset* is presumed exposed for sale is the one in which the *asset* notionally being exchanged is normally exchanged.

A10.4. The *market value* of an *asset* will reflect its highest and best use (see IVS 102 *Bases of Value*, Appendix A10.1–A10.5). The highest and best use is the use of an *asset* that maximises its potential and that is possible, legally permissible, and financially feasible. The highest and best use may be for continuation of an *asset's* existing use or for some alternative use. This is determined by the use that a market *participant* would have in mind for the *asset* when formulating the *price* that it would be willing to bid.

A10.5. The nature and source of the valuation inputs *must* be consistent with the *basis of value*, which in turn *must* have regard to the valuation *intended use*. For example, various approaches and methods may be used to arrive at an opinion of *value* providing they use market-derived data. The market approach will, by definition, use market-derived inputs. To indicate *market value*, the income approach *should* be applied, using inputs and assumptions that would be adopted by participants. To indicate *market value* using the cost approach, the cost of an *asset* of equal utility and the appropriate adjustments for physical, functional and economic obsolescence should be determined by analysis of market-based costs and depreciation.

A10.6. The data available and the circumstances relating to the market for the *asset* being valued *must* determine which *valuation method* or *methods* are most relevant and appropriate. If based on appropriately analysed market-derived data, each approach or method used *should* provide an indication of *market value*.

A10.7. *Market value* does not reflect attributes of an *asset* that are of *value* to a specific owner or purchaser that are not available to other buyers in the market. Such advantages may relate to the physical, geographic, economic, or legal characteristics of an *asset*. *Market value* requires the disregard of any such element of *value* because, at any given date, it is only assumed that there is a willing buyer, not a particular willing buyer.

A20. IVS-Defined Basis of Value – Market Rent

A20.1. Market rent is the estimated amount for which an interest in real property *should* be leased on the *valuation date* between a willing lessor and a willing lessee on appropriate lease terms in an arm's length transaction, after proper marketing and where the parties had each acted knowledgeably, prudently and without compulsion.

A20.2. Market rent may be used as a *basis of value* when valuing a lease or an interest created by a lease. In such cases, it is necessary to consider the contract rent and, where it is different, the market rent.

A20.3. The conceptual framework supporting the definition of *market value* shown above can be applied to assist in the interpretation of market rent. In particular, the estimated amount excludes a rent inflated or deflated by special terms, considerations or concessions. The "appropriate lease terms" are terms that would typically be agreed in the market for the type of property on the *valuation date* between market participants. An indication of market rent *should* only be provided in conjunction with an indication of the principal lease terms that have been assumed.

A20.4. Contract rent is the rent payable under the terms of an actual lease. It may be fixed for the duration of the lease, or variable. The frequency and basis of calculating variations in the rent will be set out in the lease and *must* be identified and understood in order to establish the total benefits accruing to the lessor and the *liability* of the lessee.

A20.5. In some circumstances the market rent may have to be assessed based on terms of an existing lease (eg, for rental determination purposes where the lease terms are existing and therefore not to be assumed as part of a notional lease).

A20.6. In calculating market rent, the *valuer must* consider the following:

(a) in regard to a market rent subject to a lease, the terms and conditions of that lease are the appropriate lease terms unless those terms and conditions are illegal or contrary to overarching legislation, and

(b) in regard to a market rent that is not subject to a lease, the assumed terms and conditions are the terms of a notional lease that would typically be agreed in a market for the type of property on the *valuation date* between market participants.

A30. IVS-Defined Basis of Value – Equitable Value

A30.1. *Equitable value* is the estimated price for the transfer of an *asset* or *liability* between identified knowledgeable and willing parties that reflects the respective interests of those parties.

A30.2. *Equitable value* requires the assessment of the *price* that is fair between two specifics, identified parties considering the respective advantages or disadvantages that each will gain from the transaction. In contrast, *market value* requires any advantages or disadvantages that would not be available to, or incurred by, market participants generally to be disregarded.

A30.3. *Equitable value* is a broader concept than *market value*. Although in many cases the *price* that is fair between two parties will equate to that obtainable in the market, there will be cases where the assessment of *equitable value* will involve taking into account matters that have to be disregarded in the assessment of *market value*, such as certain elements of *synergistic value* arising because of the combination of the interests.

A30.4. Examples of the use of *equitable value* include:

(a) determination of a *price* that is equitable for a shareholding in a non-quoted business, where the holdings of two specific parties may mean that the *price* that is equitable between them is different from the *price* that might be obtainable in the market, and

(b) determination of a *price* that would be equitable between a lessor and a lessee for either the permanent transfer of the leased *asset* or the cancellation of the lease *liability*.

A40. IVS-Defined Basis of Value – Investment Value/Worth

A40.1. *Investment value* is the *value* of an *asset* to a particular owner or prospective owner for individual investment or operational objectives.

A40.2. *Investment value* is an entity-specific *basis of value*. Although the *value* of an *asset* to the owner may be the same as the amount that could be realised from its sale to another party, this *basis of value* reflects the benefits received by an entity from holding the *asset* and, therefore, does not involve a presumed exchange. *Investment value* reflects the circumstances and financial objectives of the entity for which the *valuation* is being produced. It is often used for measuring investment performance.

A50. IVS-Defined Basis of Value – Synergistic Value

A50.1. *Synergistic value* is the result of a combination of two or more *assets* or interests where the combined *value* is more than the sum of the separate *values*. If the synergies are only available to one specific buyer, then *synergistic value* will differ from *market value*, as the *synergistic value* will reflect particular attributes of an *asset* that are only of *value* to a specific purchaser. The added value above the aggregate of the respective interests is referred to as "marriage value" in some *jurisdictions*.

A60. IVS-Defined Basis of Value – Liquidation Value

A60.1. *Liquidation value* is the gross amount that would be realised when an *asset* or group of *assets* are sold from a liquidation sale, with the seller being compelled to sell as of a specific date. *Liquidation value* can be determined under two different premises of value:

(a) an orderly transaction with a typical marketing period (see IVS 102 *Basis of Value* Appendix A30), or

(b) a forced transaction with a shortened marketing period (see IVS 102 *Basis of Value* Appendix A40).

A60.2. A *valuer must* disclose which premise of value is assumed.

IVS 102 Other Bases of Value: Appendix

A70. Other Basis of Value – Fair Value (International Financial Reporting Standards)

A70.1. IFRS 13 defines fair value as the *price* that would be received to sell an *asset* or paid to transfer a *liability* in an orderly transaction between market participants at the measurement date.

A70.2. For financial reporting purposes, over 130 countries require or permit the use of International Accounting Standards published by the International Accounting Standards Board. In addition, the Financial Accounting Standards Board in the United States uses the same definition of fair value in Topic 820.

A80. Other Basis of Value – Fair Value (Legal/Statutory) in different jurisdictions

A80.1. Many national, state and local agencies use fair value as a *basis of value* in a legal context. The definitions can vary significantly and may be the result of legislative action or those established by courts in prior cases.

IVS 102 Premise of Value: Appendix

The premises of value appear in the Appendix. The Appendix must be followed when using the stated premises of value as applicable.

A90. IVS Defined Premise of Value – Highest and Best Use

A90.1. Highest and best use is the use, from a participant perspective, that would produce the highest *value* for an asset.

A90.2. The concept of highest and best use is most frequently applied to non-financial *assets* as many *financial assets* do not have alternative uses. There may be circumstances where the highest and best use of *financial assets* needs to be considered.

A90.3. The highest and best use *must* be physically possible (where applicable), financially feasible, legally permissible and result in the highest *value*. If different from the current use, the *costs* and timing to convert an *asset* to its highest and best use would impact the *value*.

A90.4. The highest and best use for an *asset* may be its current or existing use when it is being used optimally.

A90.5. The highest and best use of an *asset* valued on a stand-alone basis may be different from its highest and best use as part of a group of *assets*, when its contribution to the overall *value* of the group *must* be considered.

A90.6. The determination of the highest and best use involves consideration of the following:

(a) To establish whether a use is physically possible, regard will be had to what would be considered reasonable by participants.

(b) To reflect the requirement to be legally permissible, any legal restrictions on the use of the *asset*, eg, town planning/zoning designations, need to be taken into account as well as the likelihood that these restrictions will change.

(c) The requirement that the use be financially feasible takes into account whether an alternative use that is physically possible and legally permissible will generate sufficient return to a typical participant, after taking into account the *costs* of conversion to that use, over and above the return on the existing use.

A100. IVS Defined Premise of Value – Current Use/Existing Use

A100.1. Current use/existing use is the current way an *asset*, *liability*, or group of *assets* and/or *liabilities* is used. The current use may be, but is not necessarily, also the highest and best use.

A110. IVS Defined Premise of Value – Orderly Liquidation

A110.1. An orderly liquidation describes the *value* of a group of *assets* that could be realised in a liquidation sale, given a reasonable period of time to find a purchaser (or purchasers), with the seller being compelled to sell on an as-is, where-is basis.

A110.2. The reasonable period of time to find a purchaser (or purchasers) may vary by asset type and market conditions.

A120. IVS Defined Premise of Value – Forced Sale

A120.1. The term "forced sale" is often used in circumstances where a seller is under compulsion to sell and that, as a consequence, a proper marketing period is not possible, and buyers may not be able to undertake adequate due diligence. The *price* that could be obtained in these circumstances will depend upon the nature of the pressure on the seller and the reasons why proper marketing cannot be undertaken. It may also reflect the consequences for the seller of failing to sell within the period available. Unless the nature of, and the reason for, the constraints on the seller are known, the *price* obtainable in a forced sale cannot be realistically estimated. The *price* that a seller will accept in a forced sale will reflect its particular circumstances, rather than those of the hypothetical willing seller in the *market value* definition. A "forced sale" is a description of the situation under which the exchange takes place, not a distinct *basis of value*.

A120.2. If an indication of the *price* obtainable under forced sale circumstances is required, it will be necessary to clearly identify the reasons for the constraint on the seller, including the consequences of failing to sell in the specified period by setting out appropriate assumptions. If these circumstances do not exist at the *valuation date*, these *must* be clearly identified as special assumptions.

A120.3. A forced sale typically reflects the most probable *price* that a specified property is likely to bring under all of the following conditions:

(a) consummation of a sale within a short time period,

(b) the *asset* is subjected to market conditions prevailing as of the *valuation date* or assumed timescale within which the transaction is to be completed,

(c) both the buyer and the seller are acting prudently and knowledgeably,

(d) the seller is under compulsion to sell,

(e) the buyer would derive no material benefit(s) from the transaction, not available to other market participants (previously said typically motivated)

(f) both parties are acting in what they consider their best interests, and

(g) a normal marketing effort is not possible due to the brief exposure time,

A120.4. Sales in an inactive or falling market are not automatically "forced sales" simply because a seller might hope for a better *price* if conditions improved. Unless the seller is compelled to sell by a deadline that prevents proper marketing, the seller will be a willing seller within the definition of *market value* (see IVS 102 *Bases of Value,* paras 30.1–30.7).

A120.5. While confirmed "forced sale" transactions would generally be excluded from consideration in a *valuation* where the *basis of value* is *market value*, it can be difficult to verify that an arm's length transaction in a market was a forced sale.

IVS 103 Valuation Approaches

Contents **Paragraphs**

10. Introduction

10.1. Consideration *must* be given to the relevant and appropriate *valuation approaches*. One or more *valuation approaches* may be used in order to arrive at the *value* in accordance with the *basis of value*. The three approaches described and defined below are the main approaches used in *valuation*.

The principal *valuation approaches* are:

(a) market approach,

(b) income approach, and

(c) cost approach.

10.2. The selection of the approach should seek to maximise the use of observable inputs, as appropriate.

10.3 Each of these *valuation approaches* includes different, detailed methods of application (see IVS 103 *Valuation Approaches*, Appendix A10–A30).

10.4. The goal in selecting *valuation approaches* and *methods* for an *asset* and/or *liability* is to find the most appropriate method under the particular circumstances. No one method is suitable in every possible situation. The selection process *should* consider, at a minimum:

(a) the appropriate *basis(es) of value* and premise(s) of value, determined by the terms and *intended use* of the *valuation*,

(b) the respective strengths and weaknesses of the possible *valuation approaches* and *methods*,

(c) the appropriateness of each method in view of the nature of the *asset*, and the approaches or methods used by participants in the relevant market, and

(d) the availability of reliable information needed to apply the method(s).

10.5. *Valuers* are not required to use more than one method for the *valuation* of an *asset* and/or *liability*, particularly when the *valuer* has a high degree of confidence in the accuracy and reliability of a single method, given the facts and circumstances of the *valuation*. However, *valuers should* consider the use of multiple approaches and methods and more than one *valuation approach* or *method should* be considered and may be used to arrive at an indication of *value*, particularly when there are insufficient factual or observable inputs for a single method to produce a reliable conclusion. Where more than one approach and method are used, or even multiple methods within a single approach, the conclusion of *value* based on those multiple approaches and/or methods *should* be reasonable and the process of analysing and reconciling the differing *values* into a single conclusion, without averaging, *should* be described by the *valuer* in the report.

10.6. While this standard includes discussion of certain methods within the market, income and cost approaches, it does not provide a comprehensive list of all possible methods that may be appropriate. It is the *valuer's* responsibility to choose the appropriate method(s) for each *valuation*. Compliance with IVS may require the *valuer* to use a method not defined or mentioned in IVS.

10.7. When different approaches and/or methods result in widely divergent indications of *value*, a *valuer should* perform procedures to understand why the *value* indications differ, as it is generally not appropriate to simply *weight* two or more divergent indications of *value*. In such cases, *valuers should* reconsider the guidance in IVS 103 *Valuation Approaches,* para 10.3 to determine whether one of the approaches/methods provides a better or more reliable indication of *value*.

10.8. *Valuers should* maximise the use of relevant observable market information in all three approaches. Regardless of the source of the inputs and assumptions used in a *valuation*, a *valuer must* perform appropriate analysis to evaluate those inputs and assumptions and their appropriateness for the *intended use*.

10.9. Although no one approach or method is applicable in all circumstances, price information from an active market is generally considered to be the strongest evidence of *value*. Some *bases of value* may prohibit a *valuer* from making subjective adjustments to price information from an active market. Price information from an inactive market may still be good evidence of *value*, but subjective adjustments may be needed.

10.10 In certain circumstances, the *valuer* and the *client* may agree on the *valuation approaches*, *methods*, and procedures the *valuer* will use or the extent of procedures the *valuer* will perform. Depending on the limitations placed on the *valuer* and procedures performed, such circumstances may result in a *valuation* that is not IVS compliant.

10.11. A *valuation* may be limited or restricted where the *valuer* is not able to employ the *valuation approaches*, *methods* and procedures that a reasonable and informed third party would perform, and it is reasonable to expect that the effect of the limitation or restriction on the estimate of *value* could be *material*.

20. Market Approach

20.1. The market approach provides an indication of *value* by comparing the *asset* with identical or comparable (that is similar) *assets* for which price information is available.

20.2. A market approach *should* always take into account trading volume, range of observed prices, and proximity to *valuation date*. The market approach *should* be applied and afforded significant *weight* under the following circumstances:

(a) the subject *asset* has recently been sold in a transaction appropriate for consideration under the *basis of value*,

(b) the subject *asset* or substantially similar *assets* are actively publicly traded, and/or

(c) there are frequent and/or recent observable transactions in substantially similar *assets*.

20.3. Although the above circumstances would indicate that the market approach *should* be applied and afforded *significant weight*, when the above criteria are not met, the following are additional circumstances where any other approaches can be applied and weighted to corroborate the value indication from market approach:

(a) Transactions involving the subject *asset* or substantially similar *assets* are not recent enough considering the levels of volatility and activity in the market,

(b) The *asset* or substantially similar *assets* are publicly traded, but not actively,

(c) Information on market transactions is available, but the comparable *assets* have *significant* differences to the subject *asset*, potentially requiring subjective adjustments,

(d) Information on recent transactions is not reliable (ie, hearsay, missing information, synergistic purchaser, not arm's-length, distressed sale, etc).

20.4. The heterogeneous nature of many *assets* means that it is often not possible to find market evidence of transactions involving identical or similar *assets*. Even in circumstances where the market approach is not used, the use of market-based inputs *should* be maximised in the application of other approaches (eg, market-based valuation metrics such as effective yields and rates of return).

20.5. When comparable market information does not relate to the exact or substantially the same *asset*, the *valuer must* perform a comparative analysis of qualitative and quantitative similarities and differences between the comparable *assets* and the subject *asset*. It will often be necessary to make adjustments based on this comparative analysis.

Those adjustments *must* be reasonable, and *valuers must* document the reasons for the adjustments and how they were quantified.

20.6. The market approach often uses market multiples derived from a set of comparables, each with different multiples. The selection of the appropriate multiple within the range requires judgement, considering qualitative and quantitative factors.

30. Income Approach

30.1. The income approach provides an indication of *value* by converting future cash flow to a single current value. Under the income approach, the *value* of an *asset* is determined by reference to the *value* of income, cash flow or cost savings generated by the *asset*.

30.2. The income approach *should* be applied and afforded *significant weight* under the following circumstances:

(a) the income-producing ability of the *asset* is the critical element affecting *value* from a participant perspective, and/or

(b) reasonable projections of the amount and timing of future income are available for the *subject asset*, but there are few, if any, relevant market comparables.

30.3. Although the above circumstances would indicate that the income approach *should* be applied and afforded *significant weight*, when using the income approach under the following circumstances, a *valuer should* consider whether any other approaches can be applied and weighted to corroborate the value indication from the income approach:

(a) the income-producing ability of the subject *asset* is only one of several factors affecting *value* from a participant perspective,

(b) there is *significant* uncertainty regarding the amount and timing of future income-related to the subject *asset*,

(c) there is a lack of access to information related to the subject *asset* (for example, a minority owner may have access to historical financial statements but not forecasts/budgets), and/or

(d) the subject *asset* has not yet begun generating income but is projected to do so.

30.4. A fundamental basis for the income approach is that investors expect to receive a return on their investments and that such a return *should* reflect the perceived level of risk in the investment.

30.5. Generally, investors can only expect to be compensated for systematic risk (also known as “market risk” or “undiversifiable risk”).

40. Cost Approach

40.1. The cost approach provides an indication of *value* using the economic principle that a buyer will pay no more for an *asset* than the *cost* to obtain an *asset* of equal utility, whether by purchase or by construction, unless undue time, inconvenience, risk or other factors are involved. The approach provides an indication of *value* by calculating the current replacement or reproduction cost of an *asset* and making deductions for physical deterioration and all other relevant forms of obsolescence.

40.2. The cost approach *should* be applied and afforded *significant weight* under the following circumstances:

(a) participants would be able to recreate an *asset* with substantially the same utility as the subject *asset*, without regulatory or legal restrictions, and the *asset* could be recreated quickly enough that a participant would not be willing to pay a *significant* premium for the ability to use the subject *asset* immediately,

(b) the *asset* is not directly income-generating, and the unique nature of the *asset* makes using an income approach or market approach unfeasible, and/or

(c) the *basis of value* being used is fundamentally based on replacement cost, such as replacement value.

(d) the *asset* was recently issued and sold to market participants, such that there is a high degree of reliability in the assumptions used in the cost approach.

(e) the *asset* was recently created, such that there is a high degree of reliability in the assumptions used in the cost approach.

40.3. Although the above circumstances would indicate that the cost approach should be applied and afforded *significant weight*, when using the cost approach under the following circumstances, a *valuer* should consider whether any other approaches can be applied and weighted to corroborate the value indication from the cost approach:

(a) participants might consider recreating an *asset* of similar utility, but there are potential legal or regulatory hurdles or *significant* time involved in recreating the *asset*,

(b) when the cost approach is being used as a reasonableness check to other approaches (for example, using the cost approach to confirm whether a business valued as a going concern might be more valuable on a liquidation basis), and/or

40.4. The *value* of a partially completed *asset* will generally reflect the *costs* incurred to date in the creation of the *asset* (and whether those *costs* contributed to *value*) and the expectations of participants regarding the *value* of the property when complete, but consider the *costs* and time required to complete the *asset* and appropriate adjustments for profit and risk.

IVS 103 Valuation Methods: Appendix

The methods provided in this appendix may not apply to all asset classes or use cases. However, the appendix should be followed when using the stated *valuation methods* as applicable.

A10. Market Approach Methods

Comparable Transactions Method

A10.1. The comparable transactions method, also known as the guideline transactions method, utilises information on transactions involving *assets* that are the same or similar to the subject *asset* to arrive at an indication of *value*.

A10.2. When the comparable transactions considered involve the subject *asset*, this method is sometimes referred to as the prior transactions' method.

A10.3. If few recent transactions have occurred, the *valuer* may consider the *prices* of identical or similar *assets* that are listed or offered for sale, provided the relevance of this information is clearly established, critically analysed and documented. This is sometimes referred to as the comparable listings method and *should* not be used as the sole indication of *value* but can be appropriate for consideration together with other methods. When considering listings or offers to buy or sell, the *weight* afforded to the listings/offer *price should* consider the level of commitment inherent in the *price* and how long the listing/offer has been on the market. For example, an offer that represents a binding commitment to purchase or sell an *asset* at a given *price* may be given more *weight* than a quoted *price* without such a binding commitment.

A10.4. The comparable transaction method can use a variety of different comparable evidence, also known as units of comparison, which form the basis of the comparison. For example, a few of the many common units of comparison used for real property interests include price per square foot (or per square metre), rent per square foot (or per square metre) and capitalisation rates. A few of the many common units of comparison used in business valuation include EBITDA (Earnings Before Interest, Tax, Depreciation and Amortisation) multiples, earnings multiples, revenue multiples and book value multiples. A few of the many common units of comparison used in the *valuation* of *financial instruments* include metrics such as yields and interest rate spreads. The units of comparison used by participants can differ between asset classes and across industries and geographies.

A10.5. A subset of the comparable transaction's method is matrix pricing, which is principally used to value some types of *financial instruments*, such as debt securities, without relying exclusively on quoted prices for the specific securities, but rather relying on the securities' relationship to other benchmark quoted securities and their attributes (ie, yield).

A10.6. The key steps in the comparable transactions' method are:

(a) identify the units of comparison that are used by participants in the relevant market,

(b) identify the relevant comparable transactions and calculate the key valuation metrics for those transactions,

(c) perform a consistent comparative analysis of qualitative and quantitative similarities and differences between the comparable *assets* and the subject *asset*,

(d) make necessary adjustments, if any, to the valuation metrics to reflect differences between the subject *asset* and the comparable *assets* (see IVS 103 *Valuation Approaches*, Appendix A10.12(d)),

(e) apply the adjusted valuation metrics to the subject *asset*, and

(f) if multiple valuation metrics were used, reconcile the indications of *value*.

A10.7. A *valuer should* choose comparable transactions within the following context:

(a) evidence of several transactions is generally preferable to a single transaction or event,

(b) evidence from transactions of very similar *assets* (ideally identical) provides a better indication of *value* than *assets* where the transaction prices require *significant* adjustments,

(c) transactions that happen closer to the *valuation date* are more representative of the market at that date than older/dated transactions, particularly in volatile markets,

(d) for most *bases of value*, the transactions *should* be "arm's length" between unrelated parties,

(e) sufficient information on the transaction *should* be available to allow the *valuer* to develop a reasonable understanding of the comparable *asset* and assess the valuation metrics/comparable evidence,

(f) information on the comparable transactions *should* be from a reliable and trusted source, and

(g) actual transactions provide better valuation evidence than intended transactions.

A10.8. A *valuer should* analyse and make adjustments for any *significant* differences between the comparable transactions and the subject *asset*. Examples of common differences that could warrant adjustments may include, but are not limited to:

(a) material characteristics (age, size, specifications, etc),

(b) relevant restrictions on either the subject *asset* or the comparable *assets*,

(c) geographical location (location of the *asset* and/or location of where the *asset* is likely to be transacted/used) and the related economic and regulatory environments,

(d) profitability or profit-making capability of the *assets*,

(e) historical and expected growth,

(f) yields/coupon rates,

(g) types of collateral,

(h) unusual terms in the comparable transactions,

(i) differences related to marketability and control characteristics of the comparable and the subject *asset*,

(j) differences in the ESG considerations, and

(k) ownership characteristics (eg, legal form of ownership, amount percentage held).

Guideline publicly-traded comparable method

A10.9. The guideline publicly-traded method utilises information on publicly-traded comparables that are the same or similar to the subject *asset* to arrive at an indication of *value*.

A10.10. This method is similar to the comparable transactions method. However, there are several differences due to the comparables being publicly traded, as follows:

(a) the valuation metrics/comparable evidence are available as of the *valuation date*,

(b) detailed information on the comparables is readily available in public filings, and

(c) the information contained in public filings is prepared under well-understood accounting standards.

A10.11. The method *should* be used only when the subject *asset* is sufficiently similar to the publicly-traded comparables to allow for meaningful comparison.

A10.12. The key steps in the guideline publicly-traded comparable method are to:

(a) identify the valuation metrics/comparable evidence that are used by participants in the relevant market,

(b) identify the relevant guideline publicly-traded comparables and calculate the key valuation metrics for those transactions,

(c) perform a consistent comparative analysis of qualitative and quantitative similarities and differences between the publicly-traded comparables and the subject *asset*,

(d) make necessary adjustments, if any, to the valuation metrics to reflect differences between the subject *asset* and the publicly-traded comparables,

(e) apply the adjusted valuation metrics to the subject *asset*, and

(f) if multiple valuation metrics were used, *weight* the indications of *value*.

A10.13. A valuer should choose publicly-traded comparables within the following context:

(a) consideration of multiple publicly-traded comparables is preferred to the use of a single comparable,

(b) evidence from similar publicly-traded comparables (for example, with similar market segment, geographic area, size in revenue and/or *assets*, growth rates, profit margins, leverage, liquidity and diversification) provides a better indication of *value* than comparables that require *significant* adjustments, and

(c) securities that are actively traded provide more meaningful evidence than thinly-traded securities.

A10.14. A *valuer should* analyse and make adjustments for any material differences between the guideline publicly-traded comparables and the subject *asset*. Examples of common differences that could warrant adjustments may include, but are not limited to:

(a) material characteristics (age, size, specifications, etc),

(b) relevant discounts and premiums (see IVS 103 *Valuation Approaches*, para 30.17),

(c) relevant restrictions on either the subject *asset* or the comparable *assets*,

(d) geographical location of the underlying company and the related economic and regulatory environments,

(e) profitability or profit-making capability of the *assets*,

(f) historical and expected growth,

(g) differences related to marketability and control characteristics of the comparable and the subject *asset*,

(h) differences in ESG considerations, and

(i) type of ownership.

Other Market Approach Considerations

A10.15. The following paragraphs address a non-exhaustive list of certain special considerations that may form part of a market approach valuation.

A10.16. Anecdotal or "rule-of-thumb" valuation benchmarks are sometimes considered to be a market approach. However, value indications derived from the use of such rules *should* not be given substantial *weight* unless it can be shown that buyers and sellers place *significant* reliance on them.

A10.17. In the market approach, the fundamental basis for making adjustments is to adjust for differences between the subject *asset* and the guideline transactions or publicly-traded securities. Some of the most common adjustments made in the market approach are known as discounts and premiums.

(a) Discounts for Lack of Marketability (DLOM) *should* be applied when the comparables are deemed to have superior marketability to the subject *asset*. A DLOM reflects the concept that when comparing otherwise identical *assets*, a readily marketable *asset* would have a higher *value* than an *asset* with a long marketing period or restrictions on the ability to sell the *asset*. For example, publicly-traded securities can be bought and sold nearly instantaneously while shares in a private company may require a *significant* amount of time to identify potential buyers and complete a transaction. Many *bases of value* allow the

consideration of restrictions on marketability that are inherent in the subject *asset* but prohibit consideration of marketability restrictions that are specific to a particular owner. DLOMs may be quantified using any reasonable method, but are typically calculated using option pricing models, studies that compare the *value* of publicly-traded shares and restricted shares in the same company, or studies that compare the *value* of shares in a company before and after an initial public offering.

(b) Control Premiums (sometimes referred to as *Market Participant Acquisition Premiums* or *MPAPs*) and Discounts for Lack of Control (DLOC) are applied to reflect differences between the comparables and the subject *asset* with regard to the ability to make decisions and the changes that can be made as a result of exercising control. All else being equal, participants would generally prefer to have control over a subject *asset* than not. However, participants' willingness to pay a Control Premium or DLOC will generally be a factor of whether the ability to exercise control enhances the economic benefits available to the owner of the subject *asset*. Control Premiums and DLOCs may be quantified using any reasonable method but are typically calculated based on either an analysis of the specific cash flow enhancements or reductions in risk associated with control or by comparing observed prices paid for controlling interests in publicly-traded securities to the publicly-traded price before such a transaction is announced. Examples of circumstances where Control Premiums and DLOC *should* be considered include where:

1. Shares of public companies generally do not have the ability to make decisions related to the operations of the company (they lack control). As such, when applying the guideline public comparable method to value a subject *asset* that reflects a controlling interest, a control premium may be appropriate, or
2. The guideline transactions in the guideline transaction method often reflect transactions of controlling interests. When using that method to value a subject *asset* that reflects a minority interest, a DLOC may be appropriate.

(c) Blockage discounts are sometimes applied when the subject *asset* represents a large block of shares in a publicly-traded security such that an owner would not be able to quickly sell the block in the public market without negatively influencing the publicly-traded price. Blockage discounts may be quantified using any reasonable method but typically a model is used that considers the length of time over which a participant could sell the subject shares without negatively impacting the publicly-traded price (ie, selling a relatively small portion of the security's typical daily trading volume each day). Under certain *bases of value*, particularly fair value for financial reporting purposes, blockage discounts are prohibited.

A20 Income Approach Methods

A20.1. Although there are many ways to implement the income approach, methods under the income approach are effectively based on discounting future amounts of cash flow to present value. They are variations of the Discounted Cash Flow (DCF) method, and the concepts below apply in part or in full to all income approach methods.

Discounted Cash Flow (DCF) Method

A20.2. Under the DCF method the forecasted cash flow is discounted back to the *valuation date*, resulting in a present value of the *asset*.

A20.3. In some circumstances for long-lived or indefinite-lived *assets*, DCF may include a terminal value which represents the *value* of the *asset* at the end of the explicit projection period. In other circumstances, the *value* of an *asset* may be calculated solely using a terminal value with no explicit projection period. This is sometimes referred to as an income capitalisation method.

A20.4. The key steps in the DCF method are:

(a) choose the most appropriate type of cash flow for the nature of the subject *asset* and the *valuation* (ie, pre-tax or post-tax, total cash flows or cash flows to equity, real or nominal, etc),

(b) determine the most appropriate explicit period, if any, over which the cash flow will be forecast,

(c) prepare cash flow forecasts for that period,

(d) determine whether a terminal value is appropriate for the subject *asset* at the end of the explicit forecast period (if any) and then determine the appropriate terminal value for the nature of the *asset*,

(e) determine the appropriate *discount rate*, and

(f) apply the *discount rate* to the forecasted future cash flow, including the terminal value, if any.

Type of Cash Flow

A20.5. When selecting the appropriate type of cash flow for the nature of *asset* or *valuation*, *valuers must* consider the factors below. In addition, the *discount rate* and other inputs *must* be consistent with the type of cash flow chosen.

(a) Cash flow to whole *asset* or partial interest: Typically, cash flow to the whole *asset* is used. However, occasionally other levels of income may be used as well, such as cash flow to equity (after payment of interest and principal on debt) or dividends (only the cash flow distributed to equity owners). Cash flow to the whole *asset* is most commonly used because an *asset should* theoretically have a single *value* that is independent of how it is financed or whether income is paid as dividends or reinvested.

(b) The cash flow can be pre-tax or post-tax: The tax rate applied *should* be consistent with the *basis of value* and in many instances would be a participant tax rate rather than an owner-specific one.

(c) Nominal versus real: Real cash flow does not consider inflation whereas nominal cash flows include expectations regarding inflation. If expected cash flow incorporates an expected inflation rate, the *discount rate* has to include an adjustment for inflation as well.

(d) Currency: The choice of currency used may have an impact on assumptions related to inflation and risk. This is particularly true in emerging markets or in currencies with high inflation rates. The currency in which the forecast is prepared, and related risks are separate and distinct from risks associated with the country(ies) in which the *asset* resides or operates.

(e) The type of cash flow contained in the forecast: For example, a cash flow forecast may represent expected cash flows, ie, probability-*weighted* scenarios), most likely cash flows, contractual cash flows, etc

A20.6. The type of cash flow chosen *should* be in accordance with participant's viewpoints. For example, cash flows and *discount rates* for real property are customarily developed on a pre-tax basis while cash flows and *discount rates* for businesses are normally developed on a post-tax basis. Adjusting between pre-tax and post-tax rates can be complex and prone to error and *should* be approached with caution.

A20.7. When a *valuation* is being developed in a currency ("the valuation currency") that differs from the currency used in the cash flow projections ("the functional currency"), a *valuer should* use one of the following two currency translation methods:

(a) Discount the cash flows in the functional currency using a *discount rate* appropriate for that functional currency. Convert the present value of the cash flows to the valuation currency at the spot rate on the *valuation date*.

(b) Use a currency exchange forward curve to translate the functional currency projections into valuation currency projections and discount the projections using a *discount rate* appropriate for the valuation currency. When a reliable currency exchange forward curve is not available (for example, due to lack of liquidity in the relevant currency exchange markets), it may not be possible to use this method and only the method described in para A20.7(a) can be applied.

Explicit Forecast Period

A20.8. The selection criteria will depend upon the *intended use* of the *valuation*, the nature of the *asset*, the information available and the required *bases of value*. For an *asset* with a short life, it is more likely to be both possible and relevant to project cash flow over its entire life.

A20.9. *Valuers should* consider the following factors when selecting the explicit forecast period:

(a) the life of the *asset*,

(b) a reasonable period for which reliable data is available on which to base the projections,

(c) the minimum explicit forecast period which *should* be sufficient for an *asset* to achieve a stabilised level of growth and profits, after which a terminal value can be used,

(d) in the *valuation* of cyclical *assets*, the explicit forecast period *should* generally include an entire cycle, when possible, and

(e) for finite-lived *assets* such as most *financial instruments*, the cash flows will typically be forecast over the full life of the *asset*.

A20.10. In some instances, particularly when the *asset* is operating at a stabilised level of growth and profits at the *valuation date*, it may not be necessary to consider an explicit forecast period and a terminal value may form the only *basis for value* (sometimes referred to as an income capitalisation method).

A20.11. The intended holding period for one investor *should* not be the only consideration in selecting an explicit forecast period and *should* not impact the *value* of an *asset*. However, the period over which an *asset* is intended to be held may be considered in determining the explicit forecast period if the objective of the *valuation* is to determine its *investment value*.

Cash Flow Forecasts

A20.12. Cash flow for the explicit forecast period is constructed using prospective financial information (PFI) (projected income/inflows and expenditure/outflows).

A20.13. As required by IVS 103 *Valuation Approaches*, Appendix A20.12, regardless of the source of the PFI (eg, management forecast), a *valuer must* perform analysis to evaluate the PFI, the assumptions underlying the PFI and their appropriateness for the *intended use* of the *valuation*. The suitability of the PFI and the underlying assumptions will depend upon the *intended use* and the required *bases of value*. For example, cash flow used to determine *market value should* reflect PFI that would be anticipated by participants; in contrast, *investment value* can be measured using cash flow that is based on the reasonable forecasts from the perspective of a particular investor.

A20.14. The cash flow is divided into suitable periodic intervals (eg, weekly, monthly, quarterly or annually) with the choice of interval depending upon the nature of the *asset*, the pattern of the cash flow, the data available, and the length of the forecast period.

A20.15. The projected cash flow *should* capture the amount and timing of all future cash inflows and outflows associated with the subject *asset* from the perspective appropriate to the *basis of value*.

A20.16. Typically, the projected cash flow will reflect one of the following:

(a) contractual or promised cash flow,

(b) the single most likely set of cash flow,

(c) the probability-*weighted* expected cash flow, or

(d) multiple scenarios of possible future cash flow.

A20.17. Different types of cash flow often reflect different levels of risk and may require different *discount rates*. For example, probability-*weighted* expected cash flows incorporate expectations regarding all possible outcomes and are not dependent on any particular conditions or events (note that when a probability-*weighted* expected cash flow is used, it is not always necessary for *valuers* to take into account distributions of all possible cash flows using complex valuation models and techniques. Rather, *valuers* may develop a limited number of discrete scenarios and probabilities that capture the array of possible cash flows). A single most likely set of cash flows may be conditional on certain future events and therefore could reflect different risks and warrant a different *discount rate*.

A20.18. While *valuers* often receive PFI that reflects accounting income and expenses, it is generally preferable to use cash flow that would be anticipated by participants as the basis for *valuation*s. For example, accounting non-cash expenses, such as depreciation and amortisation, *should* be added back, and expected cash outflows relating to capital expenditures or to changes in working capital *should* be deducted in calculating cash flow.

A20.19. *Valuers must* ensure that seasonality and cyclicality in the subject has been appropriately considered in the cash flow forecasts.

Terminal Value

A20.20. Where the *asset* is expected to continue beyond the explicit forecast period, *valuers must* estimate the *value* of the *asset* at the end of that period. The terminal value is then discounted back to the *valuation date*, normally using the same *discount rate* as applied to the forecast cash flow.

A20.21. The terminal value *should* consider:

(a) whether the *asset* is deteriorating/finite-lived in nature or indefinite-lived, as this will influence the method used to calculate a terminal value,

(b) whether there is future growth potential for the *asset* beyond the explicit forecast period,

(c) whether there is a pre-determined fixed capital amount, capital expenditure or return condition expected to be received at the end of the explicit forecast period,

(d) the expected risk level of the *asset* at the time the terminal value is calculated,

(e) for cyclical *assets*, the terminal value *should* consider the cyclical nature of the *asset* and *should* not be performed in a way that assumes "peak" or "trough" levels of cash flows in perpetuity, and

(f) the tax attributes inherent in the *asset* at the end of the explicit forecast period (if any) and whether those tax attributes would be expected to continue into perpetuity.

(g) Risks and opportunities associated with environmental, social, and governance characteristics of the subject *asset*.

A20.22. *Valuers* may apply any reasonable method for calculating a terminal value. While there are many different approaches to calculating a terminal value, the three most commonly used methods for calculating a terminal value are:

(a) Gordon growth model/constant growth model (appropriate only for indefinite-lived *assets*),

(b) market approach/exit value (appropriate for both deteriorating/ finite-lived *assets* and indefinite-lived *assets*), and

(c) salvage value/disposal cost (appropriate only for deteriorating/ finitelived *assets*).

Gordon Growth Model/Constant Growth Model

A20.23. The constant growth model assumes that the *asset* grows (or declines) at a constant rate into perpetuity.

Market Approach/Exit Value

A20.24. The market approach/exit value method can be performed in a number of ways, but the ultimate goal is to calculate the *value* of the *asset* at the end of the explicit cash flow forecast.

A20.25. Common ways to calculate the terminal value under this method include application of a market-evidence based capitalisation factor or a market multiple.

A20.26. When a market approach/exit value is used, *valuers should* comply with the requirements in the market approach and market approach methods section of this chapter (see IVS 103 *Valuation Approaches*, sections 20 and 30). However, *valuers should* also consider the expected market conditions at the end of the explicit forecast period and make adjustments accordingly.

Salvage Value/Disposal Cost

A20.27. The terminal value of some *assets* may have little or no relationship to the preceding cash flow. Examples of such *assets* include wasting assets such as a mine or an oil well.

A20.28. In such cases, the terminal value is typically calculated as the salvage value of the *asset*, less *costs* to dispose of the *asset*. In circumstances where the *costs* exceed the salvage value, the terminal value is negative and referred to as a disposal cost or an *asset* retirement obligation.

Discount Rate

A20.29. The rate at which the forecast cash flow is discounted *should* reflect not only the time value of money, but also the risks associated with the type of cash flow and the future operations of the *asset*.

A20.30. The *discount rate must* be consistent with the type of cash flow.

A20.31. *Valuers* may use any reasonable method for developing an appropriate *discount rate*. While there are many methods for developing a *discount rate* or determining the reasonableness of a *discount rate*, a non-exhaustive list of common methods includes:

(a) a capital asset pricing model (CAPM),

(b) a weighted-average-cost-of-capital (WACC),

(c) observed or inferred rates/yields,

(d) a build-up method.

A20.32. *Valuers should* consider corroborative analyses when assessing the appropriateness of a *discount rate*. A non-exhaustive list of common analyses *should* include:

(a) an internal-rate-of-return (IRR),

(b) a weighted-average-return-on-assets (WARA),

(c) *value* indications from other approaches, such as market approach, or comparing implied multiples from the income approach with guideline company market multiples or transaction multiples.

A20.33. In developing a *discount rate*, a *valuer should* consider:

(a) the type of *asset* being valued. For example, *discount rates* used in valuing debt would be different to those used when valuing real property or a business,

(b) the rates implicit in comparable transactions in the market,

(c) the geographic location of the *asset* and/or the location of the markets in which it would trade,

(d) the life/term and/or maturity of the *asset* and the consistency of inputs. For example, the maturity of the risk-free rate applied will depend on the circumstances, but a common approach is to match the maturity of the riskfree rate to the time horizon of the cash flows being considered,

(e) the *bases of value* being applied,

(f) the currency denomination of the projected cash flows.

A20.34. In developing a *discount rate*, the *valuer must*:

(a) document the method used for developing the *discount rate* and support its use,

(b) provide evidence for the derivation of the *discount rate*, including the identification of the significant inputs and support for their derivation or source.

A20.35. *Valuers must* consider the *intended use* for which the forecast was prepared and whether the forecast assumptions are consistent with the *basis of value* being applied. If the forecast assumptions are not consistent with the *basis of value*, it could be necessary to adjust the forecast or *discount rate* (see IVS 103 *Valuation Approaches*, Appendix A20.38).

A20.36. *Valuers must* consider the risk of achieving the forecast cash flow of the *asset* when developing the *discount rate*. Specifically, the *valuer must* evaluate whether the risk underlying the forecast cash flow assumptions are captured in the *discount rate*.

A20.37. While there are many ways to assess the risk of achieving the forecast cash flow, a non-exhaustive list of common procedures includes:

(a) Identify the key components of the forecast cash flow and compare the forecast cash flow key components to:

- historical operating and financial performance of the *asset*,
- historical and expected performance of comparable *assets*,
- historical and expected performance for the industry, and
- expected near-term and long-term growth rates of the country or region in which the *asset* primarily operates,

(b) Confirm whether the forecast cash flow represents expected cash flows (ie, probability-*weighted* scenarios), as opposed to most likely cash flows (ie, most probable scenario) of the *asset*, or some other type of cash flow,

(c) If utilising expected cash flows, consider the relative dispersion of potential outcomes used to derive the expected cash flows (eg, higher dispersion may indicate a need for an adjustment to the *discount rate*),

(d) Compare prior forecasts of the *asset* to actual results to assess the accuracy and reliability of managements' estimates,

(e) Consider qualitative factors, and

(f) Consider the value indications such as those resulting from the market approach,

(g) Consider the risks associated with environmental, social, and governance characteristics of the subject *asset*.

A20.38. If the *valuer* determines that certain risks included in the forecast cash flow for the *asset* have not been captured in the *discount rate*, the *valuer must*, 1) adjust the forecast, or 2) adjust the *discount rate* to account for those risks not already captured.

(a) When adjusting the cash flow forecast, the *valuer should* provide the rationale for why the adjustments were necessary, undertake quantitative procedures to support the adjustments, and document the nature and amount of the adjustments,

(b) When adjusting the *discount rate*, the *valuer should* document why it was not appropriate or possible to adjust the cash flow forecast, provide the rationale for why such risks are not otherwise captured in the *discount rate*, undertake quantitative and qualitative procedures to support the adjustments, and document the nature and amount of the adjustment. The use of quantitative procedures does not necessarily entail quantitative derivation of the adjustment to the *discount rate*. A *valuer* need not conduct an exhaustive quantitative process but *should* take into account all the information that is reasonably available.

A20.39. In developing a *discount rate*, it may be appropriate to consider the impact the *asset*'s unit of account has on unsystematic risks and the derivation of the overall *discount rate*. For example, the *valuer should* consider whether market participants would assess the *discount rate* for the *asset* on a stand-alone basis, or whether market participants would assess the *asset* in the context of a broader portfolio and therefore consider the potential diversification of unsystematic risks.

A20.40. A *valuer should* consider the impact of intercompany arrangements and transfer pricing on the *discount rate*. For example, it is not uncommon for intercompany arrangements to specify fixed or guaranteed returns for some businesses or entities within a larger enterprise, which would lower the risk of the entity forecasted cash flows and reduce the appropriate *discount rate*. However other businesses or entities within the enterprise are deemed to be residual earners in which both excess return and risk are allocated, thereby increasing the risk of the entity forecasted cash flows and the appropriate *discount rate*.

A30 Cost Approach Methods

A30.1. Broadly, there are three cost approach methods:

(a) replacement cost method: a method that indicates *value* by calculating the *cost* of a similar *asset* offering equivalent utility,

(b) reproduction cost method: a method under the *cost* that indicates *value* by calculating the *cost* to recreating a replica of an *asset*, and

(c) summation method: a method that calculates the *value* of an *asset* by the addition of the separate *values* of its component parts.

Replacement Cost Method

A30.2. Generally, replacement cost is the *cost* that is relevant to determining the *price* that a participant would pay as it is based on replicating the utility of the *asset*, not the exact physical properties of the *asset*.

A30.3. Usually, replacement cost is adjusted for physical deterioration and all relevant forms of obsolescence. After such adjustments, this can be referred to as depreciated replacement cost.

A30.4. The key steps in the replacement cost method are:

(a) calculate all of the *costs* that would be incurred by a typical participant seeking to create or obtain an *asset* providing equivalent utility,

(b) determine whether there is any deprecation related to physical, functional and external obsolescence associated with the subject *asset*, and

(c) deduct total deprecation from the total *costs* to arrive at a *value* for the subject *asset*.

A30.5. The replacement cost is generally that of a modern equivalent *asset*, which is one that provides similar function and equivalent utility to the *asset* being valued, but which is of a current design and constructed or made using current cost-effective materials and techniques.

Reproduction Cost Method

A30.6. Reproduction cost is appropriate in circumstances such as the following:

(a) the *cost* of a modern equivalent *asset* is greater than the *cost* of recreating a replica of the subject *asset*, or

(b) the utility offered by the subject *asset* could only be provided by a replica rather than a modern equivalent.

A30.7. The key steps in the reproduction cost method are:

(a) calculate all of the *costs* that would be incurred by a typical participant seeking to create an exact replica of the subject *asset*,

(b) determine whether there is any deprecation related to physical, functional and external obsolescence associated with the subject *asset*, and

(c) deduct total deprecation from the total *costs* to arrive at a *value* for the subject *asset*.

Summation Method

A30.8. The summation method, also referred to as the underlying asset method, is typically used for investment companies or other types of *assets* or entities for which *value* is primarily a factor of the *values* of their holdings.

A30.9. The key steps in the summation method are:

(a) value each of the component *assets* that are part of the subject *asset* using the appropriate *valuation approaches* and *methods*, and

(b) add the *value* of the component *assets* together to reach the *value* of the subject *asset*.

Cost Considerations

A30.10. The cost approach *should* capture all of the *costs* that would be incurred by a typical participant.

A30.11. The cost elements may differ depending on the type of the *asset* and *should* include the direct and indirect costs that would be required to replace/recreate the *asset* as of the *valuation date*. Some common items to consider include:

(a) direct costs:

- materials, and
- labour.

(b) indirect costs:

- transport costs,
- installation costs,
- professional fees (design, permit, architectural, legal, etc),
- other fees (commissions, etc),
- overheads,

- taxes,
- finance costs (eg, interest on debt financing), and
- profit margin/entrepreneurial profit to the creator of the *asset* (eg, return to investors).

A30.12. An *asset* acquired from a third party would presumably reflect their *costs* associated with creating the *asset* as well as some form of profit margin to provide a return on their investment. As such, under *bases of value* that assume a hypothetical transaction, it may be appropriate to include an assumed profit margin on certain *costs* which can be expressed as a target profit, either a lump sum or a percentage return on *cost* or *value*. However, financing costs, if included, may already reflect participants' required return on capital deployed, so *valuers should* be cautious when including both financing costs and profit margins.

A30.13. When *costs* are derived from actual, quoted or estimated prices by third party suppliers or contractors, these *costs* will already include a third parties' desired level of profit.

A30.14. The actual *costs* incurred in creating the subject *asset* (or a comparable reference *asset*) may be available and provide a relevant indicator of the *cost* of the *asset*. However, adjustments may need to be made to reflect the following:

(a) cost fluctuations between the date on which this *cost* was incurred and the *valuation date*, and

(b) any atypical or exceptional *costs*, or savings, that are reflected in the cost data but that would not arise in creating an equivalent.

Depreciation/Obsolescence

A30.15. In the context of the cost approach, "depreciation" refers to adjustments made to the estimated *cost* of creating an *asset* of equal utility to reflect the impact on *value* of any obsolescence affecting the subject *asset*. This meaning is different from the use of the word in financial reporting or tax law where it generally refers to a method for systematically expensing capital expenditure over time.

A30.16. Depreciation adjustments are normally considered for the following types of obsolescence, which may be further divided into subcategories when making adjustments:

(a) Physical obsolescence: Any loss of utility due to the physical deterioration of the *asset* or its components resulting from its age and usage.

(b) Functional obsolescence: Any loss of utility resulting from inefficiencies in the subject *asset* compared to its replacement such as its design, specification or technology being outdated.

(c) External or economic obsolescence: Any loss of utility caused by economic or locational factors external to the *asset*. This type of obsolescence can be temporary or permanent.

A30.17. Depreciation/obsolescence *should* consider the physical and economic lives of the *asset*:

(a) The physical life is how long the *asset* could be used before it would be worn out or beyond economic repair, assuming routine maintenance but disregarding any potential for refurbishment or reconstruction.

(b) The economic life is how long it is anticipated that the *asset* could generate financial returns or provide a non-financial benefit in its current use. It will be influenced by the degree of functional or economic obsolescence to which the *asset* is exposed.

A30.18. Except for some types of economic or external obsolescence, most types of obsolescence are measured by making comparisons between the subject *asset* and the hypothetical asset on which the estimated replacement or reproduction cost is based. However, when market evidence of the effect of obsolescence on *value* is available, that evidence *should* be considered.

A30.19. Physical obsolescence can be measured in two different ways:

(a) curable physical obsolescence, ie, the *cost* to fix/cure the obsolescence, or

(b) incurable physical obsolescence which considers the *asset*'s age, expected total and remaining life where the adjustment for physical obsolescence is equivalent to the proportion of the expected total life consumed. Total expected life may be expressed in any reasonable way, including expected life in years, mileage, units produced, etc.

A30.20. There are two forms of functional obsolescence:

(a) excess capital cost, which can be caused by changes in design, materials of construction, technology or manufacturing techniques resulting in the availability of modern equivalent *assets* with lower capital costs than the subject *asset*, and

(b) excess operating cost, which can be caused by improvements in design or excess capacity resulting in the availability of modern equivalent *assets* with lower operating costs than the subject *asset*.

A30.21. Economic obsolescence may arise when external factors affect an individual *asset,* or all the *assets* employed in a business and *should* be deducted after physical deterioration and functional obsolescence. For real estate, examples of economic obsolescence include:

(a) adverse changes to demand for the products or services produced by the *asset*,

(b) oversupply in the market for the *asset*,

(c) a disruption or loss of a supply of labour or raw material, or

(d) the *asset* being used by a business that cannot afford to pay a market rent for the *assets* and still generate a market rate of return.

(e) Adverse changes in the environmental, social, and governance characteristics of the subject *asset*.

A30.22. Cash or cash equivalents do not suffer obsolescence and are not adjusted. Marketable assets are not adjusted below their *market value* determined using the market approach.

IVS 104 Data and Inputs

10. Introduction

10.1. Data and inputs are used in developing *values* for all types of *assets* and *liabilities*. Data and inputs include observable market data such as published prices and yields as well as assumptions, and adjustments. Data and inputs *should* be based on factual information (such as measurements or statistics), but often include reasoning and analysis in order to arrive at a numerical input to be used in the *valuation*. In all cases the *valuer must* apply professional scepticism in the selection and use of data and inputs.

10.2. The identification and selection of suitable data and inputs is an important part of the *valuation*. Data and inputs may be observable or unobservable and requiring assessment, judgement and/or adjustments. Inputs *should* be clarified to the extent that such data and inputs would be considered *significant* by a peer applying *professional judgement.*

10.3. The *valuer* may use either a *specialist* or a *service organisation* to obtain either data or inputs, however the *valuer* remains ultimately responsible for using the data and inputs appropriate for the *valuation.*

20. Use of Specialist or Service Organisation

20.1. If a *valuer* does not possess all of the necessary data or inputs to perform all aspects of the *valuation*, it is acceptable for the *valuer* to engage a *specialist* or *service organisation*.

20.2. Prior to using a *specialist* or *service organisation*, the *valuer must* ensure their capabilities meet the requirements of the *intended use* and *must* document their capabilities.

20.3. In certain circumstances, the quality control process of the *valuation* may require the involvement of a *specialist* or *service organisation*.

30. Characteristics of Suitable Data and Inputs

30.1. In selecting data and inputs, a process *must* be used that maximises as many of the following characteristics as possible. At times, it will not be possible to incorporate all these characteristics. The characteristics of suitable data and inputs are shown below, and suitable is defined as "fitness for use" in terms of *client* and *intended user* needs in the context of the *intended use*, basis of *valuation* and the *asset* or *liability* being valued.

- Accurate: data and inputs are free from error and bias and reflect the characteristics that they are designed to measure,
- Appropriate: data and inputs are relevant for the *asset* or *liability* being valued,
- Complete: set of data and inputs are sufficient to address attributes of the *assets* or *liabilities*,
- Observable: data and inputs are obtainable and visible to multiple users or market participants,
- Timely: data and inputs reflect the market conditions as of the valuation date,
- Transparent: the source of the data and inputs can be traced from their origin.

40. Data and Input Selection

40.1. In selecting data and inputs, the characteristics described above *must* be considered. The data and inputs selected *must* be consistent with the *valuation models* being used to value the asset. When valuing *assets* that are similar, data and inputs *must* be selected in a consistent manner.

40.2. If selected data and inputs do not meet all of the characteristics of suitable data and inputs, the data and inputs may still be used as long as the selection is clearly justified and documented. Any limitations *must* be explained, justified, and documented.

40.3. Sufficient evidence *must* be assembled to ensure that the data and inputs used are consistent with what a peer or market participant would consider appropriate. *Professional judgement* may be required to ensure the data and inputs used are appropriate for the *intended use* of the *valuation*.

40.4. If required data and inputs are unavailable, inadequate or cannot be sufficiently justified, the *valuation* would not comply with IVS.

50. Input Documentation

50.1. The selection and source and use of the data and inputs *must* be explained, justified, and documented. Documentation *must* be sufficient to enable a peer applying *professional judgement* to understand why specific data and inputs were selected and were considered reasonable.

50.2. The form and location of documentation may vary based on the scope of work.

IVS 104 Data and Inputs related to Environmental, Social and Governance factors: Appendix

The *valuer* must be aware of relevant legislation and frameworks in relation to the environmental, social and governance factors within their *valuation(s)*.

A10. Environmental, Social and Governance (ESG)

A10.1. Environmental, Social, and Governance (ESG) factors collectively describe the transparency and robustness of governance processes and the impact on a company/and or *assets*, which may impact its financial performance, operations and the external environment.

A10.2. ESG factors may impact *valuations* both from a qualitative and quantitative perspective.

A10.3. *Valuers* must consider significant ESG factors. ESG factors may pose risks or opportunities that must be considered, where applicable.

A10.4. Examples of environmental factors may include but are not limited to the following:

- Air and water pollution
- Biodiversity
- Climate change (current and future risks)
- Clean water and sanitation
- Carbon and other gas emissions
- Deforestation
- Natural disaster
- Resource efficiency (ie, energy, water and raw materials)
- Waste management

A10.5. Examples of social factors may include but are not limited to the following:

- Community relations
- Conflict
- Customer satisfaction
- Data protection and privacy
- Development of human capital (health & education);
- Employee engagement
- Gender equality and racial equality
- Good health and well being
- Human rights
- Working conditions
- Working environment

A10.6. Examples of governance factors may include but are not limited to the following:

- Audit committee structure
- Board diversity and structure
- Bribery and corruption
- Corporate governance
- Donations
- ESG reporting standards and regulatory costs
- Executive remuneration
- Institutional strength
- Management succession planning
- Partnerships
- Political lobbying
- Rule of law
- Transparency
- Whistle-blower schemes

A10.7. All known or readily available ESG information which would impact affect how a market participant would assess the *value* of an *asset(s)* and what they would pay for an *asset* should be included in each *valuation*.

A10.8. ESG factors and the ESG regulatory environment should be considered in *valuations* to the extent that they are measurable and would be considered reasonable by a peer applying *professional judgement.*

IVS 105 Valuation Models

Contents	Paragraphs
Introduction	10
Use of a Service Organisation	20
Characteristics of Suitable Valuation Models	30
Model Selection	40
Valuation Model Use	50
Valuation Model Documentation	60

10. Introduction

10.1. *Valuation models* applies statistical, economic, financial, or mathematical theories, techniques, and assumptions to develop *value* (see IVS 103 *Valuation Approaches*).

10.2. *Valuation models* can be developed internally or sourced externally. *Valuation models must* be suitable for the *intended use* of the *value* and consistent with suitable inputs. *Valuation models* used *must* be tested to ensure accuracy of the output is appropriate for the *intended use*.

10.3. The *valuer* may use either a *specialist* or a *service organisation* to obtain *valuation models* and the *valuer must* assess and understand the *valuation models*.

20. Use of a Specialist or Service Organisation

20.1 If a *valuer* does not possess all of the necessary *valuation models* to perform all aspects of the *valuation*, it is acceptable for the *valuer* to engage a *specialist* or *service organisation*.

20.2. Prior to using a *specialist* or *service organisation*, the *valuer must* assess and document their capabilities.

20.3. In certain circumstances, the quality control process may require the use of a *specialist* or *service organisation*. In such cases, IVS 105 *Valuation Models,* para 20.2 must still be applied.

30. Characteristics of Suitable Valuation Models

30.1 In selecting *valuation models* a process *should* be used that maximises as many of the following characteristics as possible. At times, it will not be possible to incorporate all these characteristics. The characteristics of suitable *valuation models* are shown below, and suitable is defined as “fitness for use” in terms of user needs in the context of the basis of *valuation* and the *asset* being valued.

- Accuracy: the *valuation model* is free from error and functions in a manner consistent with the objectives of the *valuation*,
- Appropriateness: the *valuation model* is suitable for the *asset* and/or *liability* being valued, given market conditions at the *valuation date*,
- Completeness: the *valuation model* addresses all the features of the *asset* and/or *liability* to determine *value*,
- Timeliness: the *valuation model* reflects the market conditions as of the *valuation date*,
- Transparency: all persons preparing and relying on the *valuation model* must understand how the *valuation model* works and its inherent limitations.

40. Model Selection

40.1. *Valuation models*, whether internally developed and/or externally sourced, *must* maximise the characteristics of suitable *valuation models*. In cases in which an *intended use* requires the use of a specific *valuation model*, such *valuation model* would be considered suitable.

40.2. If a chosen model does not meet all these characteristics above, the model may still be compliant so long as the selection is clearly justified and documented.

40.3. *Valuation models* that do not cover all the features of the *asset* and/or *liability* being valued or have other limitations require more judgement. Any such limitations *must* be explained, justified, and documented.

40.4. In all circumstances, the *valuer must* ensure that the model meets the needs of the *intended use* to ensure the model selection is suitable.

50. Valuation Model Use

50.1 The *valuation model* use must incorporate processes, including:

- Design and development – selecting appropriate *valuation approaches* and techniques,
- Implementation – testing and assessing the model including analysing outputs and identifying limitations together with any potential adjustments,
- Validation – reviewing the appropriateness, accuracy, and output of a model,
- Documentation – documenting the entire model development process which must be consistent with the *valuation's* intended use and any limitations or adjustments.

50.2. Regardless of the nature of the *valuation model*, the *valuer must* understand the way the *valuation model* is used, and the *valuer* must calibrate the *valuation model* to ensure the *valuation model* is suitable for use.

50.3. The *valuer must* also assess any limitations on the *valuation model* for *intended use* and the *valuer* must monitor any limitations to meet that use.

50.4. The *valuer should* document the policies and procedures undertaken around the entire *valuation model* use.

50.5. Suitable *valuation models* used over time *should* be maintained, monitored, assessed and adjusted to ensure that they remain appropriate, accurate and complete.

60. Valuation Model Documentation

60.1. A suitable *valuation model must* have documentation that includes the following information:

(a) support for the selection or creation of the *valuation model*,

(b) description of the inputs and outputs,

(c) *significant* assumptions,

(d) limitations, and

(e) quality control procedures and results.

60.2. The form and location of documentation will vary based on the scope of work and *valuation approach*.

60.3. Documentation *must* be sufficient to describe why the *valuation model(s)* were selected and be considered reasonable by a peer applying *professional judgement.*

IVS 106 Documentation and Reporting

Contents	Paragraphs
Introduction	10
Documentation	20
Valuation Reports	30
Valuation Review Reports	40

Valuation reports and documentation are a critical and defining feature of IVS, which collectively assist in creating consistency, professionalism, transparency, comparability and trust in *valuation* to serve the public interest.

10. Introduction

10.1. An IVS-compliant *valuation* must have sufficient documentation and reporting, to describe and provide transparency to the *intended user* on the valuation methodologies, inputs, *valuation models*, *professional judgement* and resultant value(s).

10.2. The results of a *valuation* or *valuation review must* be documented and reported in writing and may include paper, electronic files, or other forms of recorded media.

10.3. Documentation and reporting requirements apply regardless of whether the *valuer* is employed by the client or externally engaged by the *client*.

10.4. Documentation must be maintained throughout the *valuation* and *must* describe the *valuation* and the basis of conclusions made. The level of documentation must at a minimum meet the requirements contained in IVS 106 *Documentation and Reporting*, section 20.

10.5. Reporting must be provided to the client in writing (see para 10.2). The level of reporting must at a minimum meet the requirements contained in section 30.

20. Documentation

20.1. Documentation is the written record of the *valuation* or *valuation review* and may include communications with the *client*, working papers, or both, used to support the conclusions reached and compliance with IVS.

20.2. Documentation records *must* be maintained to describe the *valuation* or *valuation review* and *must* be sufficient to describe the conclusion reached by the *valuer.* Documentation *must* be adequate to allow a peer applying *professional judgement* to understand the scope of the *valuation*, the work performed, and the conclusions reached.

20.3. In some cases, all documentation is included in the *valuation* report or *valuation review* report. In other cases, depending on the agreed scope of work, additional documentation *must* be maintained. Documentation *should* include but is not limited to communications with the *client*, alternate methods explored, additional data and inputs considered, risks and biases addressed, degree of judgement used, and quality control and governance procedures followed.

20.4. In all cases, documentation *must* be sufficient to describe each stage of the *valuation* or *valuation review* process and how the *valuer* managed *valuation risk*.

30. Valuation Reports

30.1. Valuation reports *must* describe the valuation conclusion with sufficient detail to provide a clear and well-organised description of the basis for the conclusion of *value*.

30.2. Valuation reports may include information through reference to other documents (scope of work documents, internal policies and procedures, etc).

30.3. Valuation reports *must* include all information necessary to provide the *client* and *intended user(s)* with a clear description of the scope of work, the work performed, judgements made, and the basis for conclusions reached.

30.4. The format of the valuation reports may range from comprehensive narrative reports to abbreviated summary reports.

30.5. Standing engagements, that are associated with *valuations* that are reported on a frequent basis, may provide intermittent reporting if it is agreed upon in the scope of work.

30.6. Valuation reports *must* convey the following, at a minimum:

(a) agreed scope of the work,
(b) *assets* and/or *liabilities* being valued,
(c) the identity of the *valuer,*
*(*d) *client,*
(e) *intended use*,
(f) *intended users*,
(g) valuation currency(ies) used
(h) *valuation date(s)*,
(i) *basis (bases) of value* adopted,
(j) approach or approaches adopted,
(k) method or *valuation models* applied,
(l) significant data and inputs used,

(m) environmental, social and governance inputs used and considered,

(n) *significant* or special assumptions and/or limiting conditions,

(o) findings of a *specialist* or *service organisation*,

(p) *value* and rationale for *valuation*,

(r) IVS compliance statement,

(s) date of the report (which may differ from the *valuation date*).

30.7. In all instances the valuation report must be sufficient to describe the conclusion reached and be considered reasonable by a peer applying *professional judgement.*

30.8. If the *valuer* concludes that a limitation or restriction will impact compliance with IVS, the *valuer must* not state that the report is compliant with IVS.

40. Valuation Review Reports

40.1. A *valuation review* is not a *valuation*. A *valuation review must* state whether the review is a *valuation process review* or a *valuation conclusion review* or both.

- A *valuation process review* addresses compliance with IVS,
- A *value conclusion review* addresses the reasonableness of a value conclusion.

40.2. If a *value* is provided as part of the *value conclusion review,* then this is a *valuation* and as such must follow all the valuation requirements within IVS.

40.3. A *valuation review must* convey the following, at a minimum:

(a) agreed scope of the *valuation review*,

(b) *assets* and/or *liabilities* reviewed,

(c) the identity of the valuation reviewer,

(d) the identity of the *client*,

(e) *intended use*,

(f) the identity of the *intended users*,

(g) *significant* or special assumptions and/or limiting conditions pertaining to the *valuation* reviewed,

(h) the use of a *specialist* or service provider, if used, as part of the *valuation review*,

(i) procedures undertaken and the documentation reviewed,

(j) the valuation reviewer's conclusions about the work under review, including supporting reasons, and

(k) details of the valuation report that is the subject of the review,

(l) date of the *valuation review* report,

(m) For a *valuation process review*, the version of IVS that is being reviewed.

40.6. In all instances the *valuation review* report must be sufficient to describe the conclusion reached and be considered reasonable by a peer applying *professional judgement*.

Asset Standards

IVS 200 Businesses and Business Interests

10. Overview

10.1. The principles contained in the General Standards apply to *valuations* of businesses and business interests. This standard contains additional requirements that apply to *valuations* of businesses and business interests.

20. Introduction

20.1. The definition of what constitutes a business may differ depending on the *intended use* of a *valuation*, but generally involves an organisation or integrated collection of *assets* and/or *liabilities* engaged in commercial, industrial, service or investment activity. Generally, a business would include more than one *asset* (or a single *asset* and/or *liability* in which the *value* is dependent on employing additional *assets* and/or *liabilities*) working together to generate economic activity that differs from the outputs that would be generated by the individual *assets* and/or liabilities on their own.

20.2. Individual *intangible assets*, or a group of *intangible assets* might not constitute a business but would nonetheless be within the scope of this standard if such *assets* generate economic activity that differs from the outputs that would be generated by the individual assets on their own. If the *assets* do not meet these criteria, a *valuer* should defer to IVS 210 *Intangible Assets* and IVS 220 *Non-Financial Liabilities*.

20.3. The commercial, industrial, service or investment activity of the business may result in greater economic activity (ie, *value*), than those *assets* and/or *liabilities* would generate separately. The excess value is often referred to as going concern value or goodwill. This excess value may constitute a separate *asset* under certain *bases of value* in certain situations. The absence of excess value does not automatically mean that the *asset* or group of *assets* does not constitute a business. In addition, economically, substantially all of the *value* of *assets* and/or liabilities within a business may reside in a single *asset*.

20.4. Businesses can take many legal forms, such as corporations, partnerships, joint ventures and sole proprietorships. However, businesses could take other forms such as a division, branch, line of business, segment, cash generating unit, and asset group that can consist of parts of one or more legal entities.

20.5. Interests in a business (eg, securities) can also take many forms. To determine the *value* of a business interest, a *valuer* should first determine the *value* of the underlying business by applying these standards. In such instances, business interests should be within the scope of this standard but depending on the nature of the interest certain other standards may be applicable.

20.6. *Valuers must* establish whether the *valuation* is of the entire entity, shares or a shareholding in the entity (whether a controlling or non-controlling interest), or a specific business activity of the entity. The type of *value* being provided *must* be appropriate to the *intended use* of the *valuation* and communicated as part of the scope of the engagement (see IVS 101 *Scope of Work*). It is especially critical to clearly define the business or business interest being valued as, even when a *valuation* is performed on an entire entity, there may be different levels at which that *value* could be expressed. For example:

(a) enterprise value: often described as the total *value* of the equity in a business plus the *value* of its debt or debt-related liabilities, minus any cash or cash equivalents available to meet those liabilities.

(b) total invested capital value: the total amount of money currently invested in a business, regardless of the source, often reflected as the *value* of total *assets* less current liabilities and cash.

(c) operating value: the total *value* of the operations of the business, excluding the *value* of any non-operating *assets* and liabilities.

(d) equity value: the *value* of a business to all of its equity shareholders.

20.7. *Valuation*s of businesses are required for different *intended uses* including acquisitions, mergers and sales of businesses, taxation, litigation, insolvency proceedings and financial reporting. Business valuations may also be needed as an input or step in other *valuations* such as the *valuation* of stock options, particular class(es) of stock, or debt.

30. Bases of Value

30.1. In accordance with IVS 102 *Bases of Value*, a *valuer must* select the appropriate *basis(es) of value* when valuing a business or business interest.

30.2. Often, business valuations are performed using *bases of value* defined by entities/organisations other than the IVSC, some examples of which are mentioned in IVS 102 *Bases of Value*). It is the *valuer's* responsibility to understand and follow the regulation, case law and/or other interpretive guidance related to those *bases of value* as of the *valuation date*.

40. Valuation Approaches and Methods

40.1. The three principal *valuation approaches* described in IVS 103 *Valuation Approaches* may be applied to the *valuation* of businesses and business interests.

40.2. When selecting an approach and method, in addition to the requirements of this standard, a *valuer must* follow the requirements of IVS 103 *Valuation Approaches*, including para 10.4.

50. Market Approach

50.1. The market approach is frequently applied in the *valuation* of businesses and business interests as these *assets* and/or *liabilities* often meet the criteria in IVS 103 *Valuation Approaches* para 20.2 or 20.3. When valuing businesses and business interests under the Market Approach, *valuers should* follow the requirements of IVS 103 *Valuation Approaches*, sections 20 and Appendix A10.

50.2. The three most common sources of data used to value businesses and business interests using the market approach are:

(a) public stock markets in which ownership interests of similar businesses are traded,

(b) the acquisition market in which entire businesses or controlling interests in businesses are bought and sold, and

(c) prior transactions in shares or offers for the ownership of the subject business.

50.3. There *must* be a reasonable basis for comparison with, and reliance upon, similar businesses in the market approach. These similar businesses *should* be in the same industry as the subject business or in an industry that responds to the same economic variables. Factors that *should* be considered in assessing whether a reasonable basis for comparison exists include:

(a) similarity to the subject business in terms of qualitative and quantitative business characteristics,

(b) amount and verifiability of data on the similar business, and

(c) whether the *price* of the similar business represents an arm's length and orderly transaction.

50.4. When applying a market multiple, adjustments such as those specified in IVS 103 *Valuation Approaches,* Appendix A10.14 may be appropriate to both the subject company and the comparable companies.

50.5. *Valuers should* follow the requirements of IVS 103 *Valuation Approaches*, Appendix A10.13–A10.14 when selecting and adjusting comparable transactions.

50.6. *Valuers should* follow the requirements of IVS 103 *Valuation Approaches*, Appendix A10.12–A10.13 when selecting and adjusting comparable public company information.

60. Income Approach

60.1. The income approach is frequently applied in the *valuation* of businesses and business interests as these *assets* and/or liabilities often meet the criteria in IVS 103 *Valuation Approaches*, paras 30.2 or 30.3.

60.2. When the income approach is applied, *valuers should* follow the requirements of IVS 103 *Valuation Approaches*, section 40 and Appendix A20.

60.3. Income and cash flow related to a business or business interest can be measured in a variety of ways and may be on a pre-tax or post-tax basis. The capitalisation or *discount rate* applied *must* be consistent with the type of income or cash flow used.

60.4. The type of income or cash flow used *should* be consistent with the type of interest being valued. For example:

(a) enterprise value is typically derived using cash flows before debt servicing costs and an appropriate *discount rate* applicable to enterprise-level cash flows, such as a *weighted*-average cost of capital, and

(b) equity value may be derived using cash flows to equity, that is, after debt servicing costs and an appropriate *discount rate* applicable to equity-level cash flows, such as a *cost* of equity.

60.5. The income approach requires the estimation of a capitalisation rate when capitalising income or cash flow and a *discount rate* when discounting cash flow. In estimating the appropriate rate, factors such as the level of interest rates, rates of return expected by participants for similar investments and the risk inherent in the anticipated benefit stream are considered (see IVS 103 *Valuation Approaches*, Appendix A20.29–A20.40).

60.6. In methods that employ discounting, expected growth may be explicitly considered in the forecasted income or cash flow. In capitalisation methods, expected growth is usually reflected in the capitalisation rate. If a forecasted cash flow is expressed in nominal terms, a *discount rate* that takes into account the expectation of future price changes due to inflation or deflation *should* be used. If a forecasted cash flow is expressed in real terms, a *discount rate* that takes no account of expected price changes due to inflation or deflation *should* be used.

60.7. Under the income approach, the historical financial statements of a business entity are often used as a basis to estimate the future income or cash flow of the business. Determining the historical trends over time through ratio analysis may help provide the necessary information to assess the risks inherent in the business operations.

60.8. Adjustments may be appropriate to reflect differences between the actual historic cash flows and those that would be experienced by a buyer of the business interest on the *valuation date*. Examples include:

(a) adjusting revenues and expenses to levels that are reasonably representative of expected continuing operations,

(b) presenting financial data of the subject business and comparison businesses on a consistent basis,

(c) adjusting non-arm's length transactions (such as contracts with customers or suppliers) to market rates,

(d) adjusting the *cost* of labour or of items leased or otherwise contracted from related parties to reflect market prices or rates,

(e) reflecting the impact of non-recurring events from historic revenue and expense items. Examples of non-recurring events include losses caused by strikes, new plant start-up and weather phenomena. However, the forecast cash flows *should* reflect any non-recurring revenues or expenses that can be reasonably anticipated and past occurrences may be indicative of similar events in the future, and

(f) adjusting the inventory accounting to compare with similar businesses, whose accounts may be kept on a different basis from the subject business, or to more accurately reflect economic reality.

60.9. When using an income approach it may also be necessary to make adjustments to the *valuation* to reflect matters that are not captured in either the cash flow forecasts or the *discount rate* adopted. Examples include adjustments for the marketability of the interest being valued or whether the interest being valued is a controlling or non-controlling interest in the business. However, *valuers should* ensure that adjustments to the *valuation* do not reflect factors that were already included in the cash flows or *discount rate*. For example, whether the interest being valued is a controlling or noncontrolling interest is often already reflected in the forecasted cash flows.

60.10. While many businesses may be valued using a single cash flow scenario, *valuers* may also apply multi-scenario or simulation models, particularly when there is *significant* uncertainty as to the amount and/or timing of future cash flows.

70. Cost Approach

70.1. The cost approach cannot usually be applied in the *valuation* of businesses and business interests as these *assets* and/or *liabilities* seldom meet the criteria in IVS 103 *Valuation Approaches*, paras 40.2 or 40.3. However, the cost approach is sometimes applied in the *valuation* of businesses, particularly when:

(a) the business is an early stage or start-up business where profits and/or cash flow cannot be reliably determined and comparisons with other businesses under the market approach is impractical or unreliable,

(b) the business is an investment or holding business, in which case the summation method is as described in IVS 103 *Valuation Approaches*, Appendix A30.8–A30.9, and/or

(c) the business does not represent a going concern and/or the *value* of its *assets* and/or *liabilities* in a liquidation may exceed the *value* of a business value as a going concern.

70.2. In the circumstances where a business or business interest is valued using a cost approach, *valuers should* follow the requirements of IVS 103 *Valuation Approaches and Methods*, Appendix A30.

80. Special Considerations for Businesses and Business Interests

80.1. The following sections address a non-exhaustive list of topics relevant to the *valuation* of businesses and business interests:

(a) Ownership Rights (section 90),

(b) Business Information (section 100),

(c) Economic and Industry Considerations (section 110),

(d) Operating and Non-Operating Assets (section 120),

(e) Capital Structure Considerations (section 130).

90. Ownership Rights

90.1. The rights, privileges or conditions that attach to the ownership interest, whether held in proprietorship, corporate or partnership form, require consideration in the *valuation*. Ownership rights are usually defined within a *jurisdiction* by legal documents such as articles of association, clauses in the memorandum of the business, articles of incorporation, bylaws, partnership agreements and shareholder agreements (collectively "corporate documents"). In some situations, it may also be necessary to distinguish between legal and beneficial ownership.

90.2. Corporate documents may contain restrictions on the transfer of the interest or other provisions relevant to *value*. For example, corporate documents may stipulate that the interest *should* be valued as a pro rata fraction of the entire issued share capital regardless of whether it is a controlling or non-controlling interest. In each case, the rights of the interest being valued and the rights attaching to any other class of interest need to be considered at the outset.

90.3. Care *should* be taken to distinguish between rights and obligations inherent to the interest and those that may be applicable only to a particular shareholder (ie, those contained in an agreement between current shareholders which may not apply to a potential buyer of the ownership interest). Depending on the *basis(es) of value* used, the *valuer* may be required to consider only the rights and obligations inherent to the subject interest or both those rights and considerations inherent to the subject interest and those that apply to a particular owner.

90.4. All the rights and preferences associated with a subject business or business interest *should* be considered in a *valuation*, including:

(a) if there are multiple classes of stock, the *valuation should* consider the rights of each different class, including, but not limited to:

1. liquidation preferences,
2. voting rights,

3. redemption, conversion and participation provisions, and
4. put and/or call rights.

(b) When a controlling interest in a business may have a higher *value* than a non-controlling interest. Control premiums or discounts for lack of control may be appropriate depending on the *valuation method(s)* applied (see IVS 103 *Valuation Approaches*, Appendix A10.17.(b)). In respect of actual premiums paid in completed transactions, the *valuer should* consider whether the synergies and other factors that caused the acquirer to pay those premiums are applicable to the subject *asset* to a comparable degree.

100. Business Information

100.1. The *valuation* of a business entity or interest frequently requires reliance upon information received from management, representatives of the management or other experts. As required by IVS 103 *Valuation Approaches*, para 10.8, a *valuer must* assess the reasonableness of information received from management, representatives of management or other experts and evaluate whether it is appropriate to rely on that information for the *valuation*. For example, prospective financial information provided by management may reflect owner-specific synergies that may not be appropriate when using a *basis of value* that requires a participant perspective.

100.2. Although the *value* on a given date reflects the anticipated benefits of future ownership, the history of a business is useful in that it may give guidance as to the expectations for the future. *Valuers should* therefore consider the business' historical financial statements as part of a valuation. To the extent the future performance of the business is expected to deviate *significantly* from historical experience, a *valuer must* understand why historical performance is not representative of the future expectations of the business.

110. Economic and Industry Considerations

110.1. Awareness of relevant economic developments and specific industry trends is essential for all *valuation*s. Matters such as political outlook, government policy, exchange rates, inflation, interest rates and market activity may affect *assets* and/or *liabilities* in different locations and/or sectors of the economy quite differently. These factors can be particularly important in the *valuation* of businesses and business interests, as businesses may have complex structures involving multiple locations and types of operations. For example, a business may be impacted by economic and industry factors specific related to:

(a) the registered location of the business headquarters and legal form of the business,

(b) the nature of the business operations and where each aspect of the business is conducted (ie, manufacturing may be done in a different location to where research and development is conducted),

(c) where the business sells its goods and/or services,

(d) the currency(ies) the business uses,

(e) where the suppliers of the business are located, and

(f) what tax and legal *jurisdictions* the business is subject to.

120. Operating and Non-Operating Assets

120.1. The *valuation* of an ownership interest in a business is only relevant in the context of the financial position of the business at a point in time. It is important to understand the nature of *assets* and liabilities of the business and to determine which items are required for use in the income-producing operations of the business and which ones are redundant or "excess" to the business at the *valuation date*.

120.2. Most *valuation methods* do not capture the *value* of *assets* and/or *liabilities* that are not required for the operation of the business. For example, a business valued using a multiple of EBITDA would only capture the *value* the *assets* utilised in generating that level of EBITDA. If the business had non-operating *assets* or *liabilities*, such as an idle manufacturing plant, the *value* of that non-operating plant would not be captured in the *value*. Depending on the level of *value* appropriate for the valuation engagement (see para 20.3), the *value* of nonoperating *assets* and/or *liabilities* may need to be separately determined and added to the operating value of the business.

120.3. Businesses may have unrecorded *assets* and/or *liabilities* that are not reflected on the balance sheet. Such *assets* and/or *liabilities* could include *intangible assets*, machinery and equipment that is fully depreciated and legal liabilities/lawsuits.

120.4. When separately considering non-operating *assets* and *liabilities*, a *valuer should* ensure that the income and expenses associated with non-operating *assets* and/or *liabilities* are excluded from the cash flow measurements and projections used in the *valuation*. For example, if a business has a *significant liability* associated with an underfunded pension and that *liability* is valued separately, the cash flows used in the *valuation* of the business *should* exclude any "catch-up" payments related to that *liability*.

120.5. If the *valuation* considers information from publicly-traded businesses, the publicly-traded stock prices implicitly include the *value* of non-operating *assets* and/or *liabilities*, if any. As such, *valuers must* consider adjusting information from publiclytraded businesses to exclude the *value*, income and expenses associated with non-operating *assets* and/or *liabilities*.

130. Capital Structure Considerations

130.1. Businesses are often financed through a combination of debt and equity. However, in many cases, *valuers* are asked to value only equity, a particular class of equity, or some other form of ownership interest. While equity or a particular class of equity can occasionally be valued directly, more often the enterprise value of the business is determined and then that *value* is allocated between the various classes of debt and equity.

130.2. While there are many ownership interests in an *asset* which a *valuer* could be asked to value, a non-exhaustive list of such interests includes:

(a) bonds,

(b) convertible debt,

(c) partnership interest,

(d) minority interest,

(e) common equity,

(f) preferred equity,

(g) options,

(h) warrants.

130.3. When a *valuer* is asked to value only equity, or determine how the business value as a whole is distributed among the various debt and equity classes, a *valuer must* determine and consider the different rights and preferences associated with each class of debt and equity. Rights and preferences can broadly be categorised as economic rights or control rights.

A non-exhaustive list of such rights and preferences includes:

(a) dividend or preferred dividend rights,

(b) liquidation preferences,

(c) voting rights,

(d) redemption rights,

(e) conversion rights,

(f) participation rights,

(g) anti-dilution rights

(h) registration rights, and

(i) put and/or call rights.

130.4. For simple capital structures that include only common stock and simple debt structures (such as bonds, loans and overdrafts), it may be possible to estimate the *value* of all of the common stock within the enterprise by directly estimating the *value* of debt, subtracting that *value* from the enterprise value, then allocating the residual equity value pro rata to all of the common stock. This method is not appropriate for all companies with simple capital structures, for example it may not be appropriate for distressed or highly leveraged companies.

130.5. For complex capital structures, being those that include a form of equity other than just common stock, *valuers* may use any reasonable method to determine the *value* of equity or a particular class of equity. In such cases, typically the enterprise value of the business is determined and then that *value* is allocated between the various classes of debt and equity. Three methods that *valuers* could utilise in such instances are discussed in this section, including:

(a) current value method (CVM);

(b) option pricing method (OPM); and

(c) probability-*weighted* expected return method (PWERM).

130.6. While the CVM is not forward looking, both the OPM and PWERM estimate *values* assuming various future outcomes. The PWERM relies on discrete assumptions for future events and the OPM estimates the future distribution of outcomes using a lognormal distribution around the current value.

130.7. A *valuer should* consider any potential differences between a "pre-money" and "post-money" *valuation*, particularly for early stage companies with complex capital structures. For example, an infusion of cash (ie, "post-money *valuation*") for such companies may impact the overall risk profile of the enterprise as well as the relative value allocation between share classes.

130.8. A *valuer should* consider recent transactions in the subject equity or a particular class of equity, and ensure the assumptions used in the subject *valuation* are updated as necessary to reflect changes in the investment structure and changes in market conditions.

Current Value Method (CVM)

130.9. The current value method (CVM) allocates the enterprise value to the various debt and equity securities assuming an immediate sale of the enterprise. Under the CVM, the obligations to debt holders, or debt equivalent securities, is first deducted from the enterprise value to calculate residual equity value (*valuers should* consider if the enterprise value includes or excludes cash, and the resulting use of gross or net debt for allocation purposes). Next, *value* is allocated to the various series of preferred stock based on the series' liquidation preferences or conversion values, whichever would be greater. Finally, any residual value is allocated to any common equity, options, and warrants.

130.10. A limitation of the CVM is that it is not forward looking and fails to consider the option-like payoffs of many share classes.

130.11. The CVM *should* only be used when 1) a liquidity event of the enterprise is imminent, 2) when an enterprise is at such an early stage of its development that no *significant* common equity value above the liquidation preference on any preferred equity has been created, 3) no material progress has been made on the company's business plan, or 4) no reasonable basis exists for estimating the amount and timing of any such *value* above the liquidation preference that might be created in the future.

130.12. *Valuers should* not assume that the *value* of debt, or debt-like securities, and its book value are equal without rationale for the determination.

Option Pricing Method (OPM)

130.13. The OPM values the different share classes by treating each share class as an option on the cash flows from the enterprise. The OPM is often applied to capital structures in which the payout to different share classes changes at different levels of total equity value, for instance, where there are convertible preferred shares, management incentive units, options, or other classes of shares that have certain liquidation preferences. The OPM may be performed on the enterprise value, thereby including any debt in the OPM, or on an equity basis after separate consideration of the debt.

130.14. The OPM considers the various terms of the stockholder agreements that would affect the distributions to each class of equity upon a liquidity event, including the level of seniority among the securities, dividend policy, conversion ratios, and cash allocations.

130.15. The starting point for the OPM is the *value* of total equity for the *asset*. The OPM is then applied to allocate the total equity value among equity securities.

130.16. The OPM (or a related hybrid method) is suited to circumstances where specific future liquidity events are difficult to forecast or the company is in an early stage of development.

130.17. The OPM most frequently relies on the Black–Scholes option pricing model to determine the *value* associated with distributions above certain value thresholds.

130.18. When applying the OPM, a non-exhaustive list of the steps *valuers should* perform includes:

(a) determine the total equity value of the *asset*,

(b) identify the liquidation preferences, preferred dividend accruals, conversion prices, and other features attached to the relevant securities that influences the cash distribution,

(c) determine the different total equity value points (breakpoints) in which the liquidation preferences and conversion prices become effective,

(d) determine the inputs to the Black-Scholes model:

1) determine a reasonable time horizon for the OPM,

2) select a risk-free rate corresponding to the time horizon,

3) determine the appropriate volatility factor for the equity of the *asset*, and,

4) determine the expected dividend yield.

(e) calculate a *value* for the various call options and determine the *value* allocated to each interval between the breakpoints,

(f) determine the relative allocation to each class of shares in each interval between the calculated breakpoints,

(g) allocate the *value* between the breakpoints (calculated as the call options) among the share classes based on the allocation determined in step (f) and the *value* determined in step (e),

(h) consider additional adjustments to the share classes as necessary, consistent with the *basis of value*. For example, it may be appropriate to apply discounts or premiums.

130.19. When determining the appropriate volatility assumption *valuers should* consider:

1) the development stage of the *asset* and the relative impact to the volatility when compared to that observed by the comparable companies, and,

2) the relative financial leverage of the *asset*.

130.20. In addition to the method discussed above, the OPM can be used to back solve for the *value* of total equity value when there is a known price for an individual security. The inputs to a back solve analysis are the same as above. *Valuers* will then solve for the *price* of the known security by changing the *value* of total equity. The back solve method will also provide a *value* for all other equity securities.

Probability-Weighted Expected Return Method (PWERM)

130.21. Under a PWERM, the *value* of the various equity securities are estimated based upon an analysis of future *values* for the *asset*, assuming various future outcomes. Share value is based upon the probability-*weighted* present value of expected future investment returns, considering each of the possible future outcomes available to the *asset*, as well as the rights and preferences of the share classes.

130.22. Typically, the PWERM is used when the company is close to exit and does not plan to raise additional capital.

130.23. When applying the PWERM, a non-exhaustive list of the steps *valuers should* perform includes:

(a) determine the possible future outcomes available to the *asset*,

(b) estimate the future value of the *asset* under each outcome,

(c) allocate the estimated future value of the *asset* to each class of debt and equity under each possible outcome,

(d) discount the expected value allocated to each class of debt and equity to present value using a risk-adjusted *discount rate*,

(e) *weight* each possible outcome by its respective probability to estimate the expected future probability-*weighted* cash flows to each class of debt and equity,

(f) consider additional adjustments to the share classes as necessary, consistent with the *basis of value*. For example, it may be appropriate to apply discounts or premiums.

130.24. *Valuers should* reconcile the probability-*weighted* present values of the future exit values to the overall *asset* value to make sure that the overall *valuation* of the enterprise is reasonable.

130.25. *Valuers* can combine elements of the OPM with the PWERM to create a hybrid methodology by using the OPM to estimate the allocation of *value* within one or more of the probability-*weighted* scenarios.

IVS 210 Intangible Assets

10. Overview

10.1. The principles contained in the General Standards apply to *valuations* of *intangible assets* and *valuations* with an *intangible assets* component. This standard contains additional requirements that apply to *valuations* of *intangible assets*.

20. Introduction

20.1. An *intangible asset* is a non-monetary *asset* that manifests itself by its economic properties. It does not have physical substance but grants rights and/or economic benefits to its owner.

20.2. Specific *intangible assets* are defined and described by characteristics such as their ownership, function, market position and image. These characteristics differentiate *intangible assets* from one another.

20.3. There are many types of *intangible assets*, but they are often considered to fall into one or more of the following categories, or into goodwill:

(a) marketing-related: Marketing-related *intangible assets* are used primarily in the marketing or promotion of products or services. Examples include trademarks, trade names, unique trade design and internet domain names.

(b) customer-related: Customer-related *intangible assets* include customer lists, backlog, customer contracts, and contractual and non-contractual customer relationships.

(c) artistic-related: Artistic-related *intangible assets* arise from the right to benefits from artistic works such as plays, books, films and music, and from non-contractual copyright protection.

(d) contract-related: Contract-related *intangible assets* represent the *value* of rights that arise from contractual agreements. Examples include licensing and royalty agreements, service or supply contracts, lease agreements, permits, broadcast rights, servicing contracts, employment contracts and non-competition agreements and natural resource rights.

(e) technology-based: Technology-related *intangible assets* arise from contractual or non-contractual rights to use patented technology, unpatented technology, databases, formulae, designs, software, processes or recipes.

20.4. Although similar *intangible assets* within the same class will share some characteristics with one another, they will also have differentiating characteristics that will vary according to the type of *intangible asset*. In addition, certain *intangible assets*, such as brands, may represent a combination of several categories listed in para 20.3.

20.5. When valuing an *intangible asset*, *valuers must* understand specifically what needs to be valued and the *intended use* of the *valuation*. For example, customer data (names, addresses, etc) typically have very different values from customer contracts (those contracts in place on the *valuation date*) and from customer relationships (the *value* of the ongoing customer relationship including existing and future contracts). What *intangible assets* need to be valued and the definition of those *intangible assets* may differ depending on the *intended use* of the *valuation.* Differences in how *intangible assets* are defined can lead to *significant* differences in *value*.

20.6. Generally, goodwill is any future economic benefit arising from a business, an interest in a business or from the use of a group of *assets* which has not been separately recognised in another *asset*. The *value* of goodwill is typically measured as the residual amount remaining after the *values* of all identifiable tangible, intangible and monetary *assets*, adjusted for actual or potential *liabilities*, have been deducted from the *value* of a business. It is often represented as the excess of the price paid in a real or hypothetical acquisition of a company over the *value* of the company's other identified *assets* and *liabilities*. For some *intended uses*, goodwill may need to be further divided into transferable goodwill (that which can be transferred to third parties) and nontransferable or "personal" goodwill.

20.7. Since the amount of goodwill is dependent on which other tangible and *intangible assets* are recognised, its *value* can be different when calculated for different *intended uses*. For example, in a business combination accounted for under IFRS or US GAAP, an *intangible asset* is only recognised to the extent that it:

(a) is separable, ie, capable of being separated or divided from the entity and sold, transferred, licensed, rented or exchanged, either individually or together with a related contract, identifiable *asset* or *liability*, regardless of whether the entity intends to do so, or

(b) arises from contractual or other legal rights, regardless of whether those rights are transferable or separable from the entity or from other rights and obligations.

20.8. While the aspects of goodwill can vary depending on the *intended use* of the *valuation*, goodwill frequently includes elements such as:

(a) company-specific synergies arising from a combination of two or more businesses (eg, reductions in operating costs, economies of scale or product mix dynamics),

(b) opportunities to expand the business into new and different markets,

(c) the benefit of an assembled workforce (but generally not any intellectual property developed by members of that workforce),

(d) the benefit to be derived from future *assets*, such as new customers and future technologies, and

(e) assemblage and going concern value.

20.9. *Valuers* may perform direct *valuations* of *intangible assets* where the *value* of the *intangible assets* is the *intended use* of the analysis or one part of the analysis. However, when valuing businesses, business interests, real property, and machinery and equipment, *valuers should* consider whether there are *intangible assets* associated with those *assets* and whether those directly or indirectly impact the *asset* being valued. For example, when *valuing* a hotel based on an income approach, the contribution to *value* of the hotel's brand may already be reflected in the profit generated by the hotel.

20.10. *Intangible asset valuations* are performed for a variety of *intended uses*. It is the *valuer's* responsibility to understand the *intended use* of a *valuation.* It is also the *valuer's* responsibility to understand whether *intangible assets should* be valued separately or grouped with other *assets*. A non-exhaustive list of examples of circumstances that commonly include an *intangible asset valuation* component is provided below:

(a) for financial reporting purposes, *valuations* of *intangible assets* are often required in connection with accounting for business combinations, *asset* acquisitions and sales, and impairment analysis.

(b) for tax reporting purposes, *intangible asset valuations* are frequently needed for transfer pricing analyses, estate and gift tax planning and reporting, and ad valorem taxation analyses.

(c) *intangible assets* may be the subject of litigation, requiring *valuations* in circumstances such as shareholder disputes, damage calculations and marital dissolutions (divorce).

(d) other statutory or legal events may require the *valuation* of *intangible assets* such as compulsory purchases/eminent domain proceedings.

(e) *valuers* are often asked to value *intangible assets* as part of general consulting, collateral lending and transactional support engagements.

30. Bases of Value

30.1. In accordance with IVS 102 *Bases of Value*, a *valuer must* select the appropriate *basis(es) of value* when valuing *intangible assets*.

30.2. Often, *intangible asset valuations* are performed using *bases of value* defined by entities/organisations other than the IVSC (some examples of which are mentioned in IVS 102 *Bases of Value*). The *valuer must* understand and follow the regulation, case law, and other interpretive guidance related to those *bases of value* as of the *valuation date*.

40. Valuation Approaches and Methods

40.1. The three *valuation approaches* described in IVS 103 *Valuation Approaches* can all be applied to the *valuation* of *intangible assets*.

40.2. When selecting an approach and method, in addition to the requirements of this standard, a *valuer must* follow the requirements of IVS 103 *Valuation Approaches*, including para 10.4.

50. Market Approach

50.1. Under the market approach, the *value* of an *intangible asset* is determined by reference to market activity (for example, transactions involving identical or similar *assets*).

50.2. Transactions involving *intangible assets* frequently also include other *assets*, such as a business combination that includes *intangible assets*.

50.3. *Valuers must* comply with paras 20.2 and 20.3 of IVS 103 *Valuation Approaches* when determining whether to apply the market approach to the *valuation* of *intangible assets*. In addition, *valuers should* only apply the market approach to value *intangible assets* if both of the following criteria are met:

(a) information is available on arm's-length transactions involving identical or similar *intangible assets* on or near the *valuation date*, and

(b) sufficient information is available to allow the *valuer* to adjust for all *significant* differences between the subject *intangible asset* and those involved in the transactions.

50.4. The heterogeneous nature of *intangible assets* and the fact that *intangible assets* seldom transact separately from other *assets* means that it is rarely possible to find market evidence of transactions involving identical *assets*. If there is market evidence at all, it is usually in respect of *assets* that are similar, but not identical.

50.5. Where evidence of either *prices* or valuation multiples is available, *valuers should* make adjustments to these to reflect differences between the subject *asset* and those involved in the transactions. These adjustments reflect the differentiating characteristics of the subject *intangible asset* and the *assets* involved in the transactions. Such adjustments may only be determinable at a qualitative, rather than quantitative, level. However, the need for *significant* qualitative adjustments may indicate that another approach would be more appropriate for the *valuation*.

50.6. Consistent with the above, examples of *intangible assets* for which the market approach is sometimes used include:

(a) broadcast spectrum,

(b) internet domain names, and

(c) taxi licenses ("medallions").

50.7. The guideline transactions method is generally the only market approach method that can be applied to *intangible assets*.

50.8. In rare circumstances, a security sufficiently similar to a subject *intangible asset* may be publicly traded, allowing the use of the guideline public company method. One example of such securities is contingent value rights (CVRs) that are tied to the performance of a particular product or technology.

60. Income Approach

60.1. Under the income approach, the *value* of an *intangible asset* is determined by reference to the present value of income, cash flows or cost savings attributable to the *intangible asset* over its economic life.

60.2. *Valuers must* comply with paras 30.2 and 30.3 of IVS 103 *Valuation Approaches* when determining whether to apply the income approach to the *valuation* of *intangible assets*.

60.3. Income related to *intangible assets* is frequently included in the price paid for goods or a service. It may be challenging to separate the income related to the *intangible asset* from income related to other tangible and *intangible assets*. Many of the income approach methods are designed to separate the economic benefits associated with a subject *intangible asset*.

60.4. The income approach is the most common method applied to the *valuation* of *intangible assets* and is frequently used to value *intangible assets* including the following:

(a) technology,

(b) customer-related intangibles (eg, backlog, contracts, relationships),

(c) tradenames/trademarks/brands,

(d) operating licenses (eg, franchise agreements, gaming licenses, broadcast spectrum), and

(e) non-competition agreements.

Income Approach Methods

60.5. There are many income approach methods. The following methods are discussed in this standard in more detail:

(a) excess earnings method,

(b) relief-from-royalty method,

(c) premium profit method or with-and-without method,

(d) greenfield method, and

(e) distributor method.

Excess Earnings Method

60.6. The excess earnings method estimates the *value* of an *intangible asset* as the present value of the cash flows attributable to the subject *intangible asset* after excluding the proportion of the cash flows that are attributable to other *assets* required to generate the cash flows ("contributory *assets*"). It is often used for *valuation*s where there is

a requirement for the acquirer to allocate the overall price paid for a business between *tangible assets*, identifiable *intangible assets* and goodwill.

60.7. Contributory *assets* are *assets* that are used in conjunction with the subject *intangible asset* in the realisation of prospective cash flows associated with the subject *intangible asset*. *Assets* that do not contribute to the prospective cash flows associated with the subject *intangible asset* are not contributory *assets*.

60.8. The excess earnings method can be applied using several periods of forecasted cash flows ("multi-period excess earnings method" or "MPEEM"), a single period of forecasted cash flows ("single-period excess earnings method") or by capitalising a single period of forecasted cash flows ("capitalised excess earnings method" or the "formula method").

60.9. The capitalised excess earnings method or formula method is generally only appropriate if the *intangible asset* is operating in a steady state with stable growth/decay rates, constant profit margins and consistent contributory *asset* levels/charges.

60.10. As most *intangible assets* have economic lives exceeding one period, frequently follow non-linear growth/decay patterns and may require different levels of contributory *assets* over time, the MPEEM is the most commonly used excess earnings method as it offers the most flexibility and allows *valuers* to explicitly forecast changes in such inputs.

60.11. Whether applied in a single-period, multi-period or capitalised manner, the key steps in applying an excess earnings method are to:

(a) forecast the amount and timing of future revenues driven by the subject *intangible asset* and related contributory *assets*,

(b) forecast the amount and timing of expenses that are required to generate the revenue from the subject *intangible asset* and related contributory *assets*,

(c) adjust the expenses to exclude those related to creation of new *intangible assets* that are not required to generate the forecasted revenue and expenses. Profit margins in the excess earnings method may be higher than profit margins for the overall business because the excess earnings method excludes investment in certain new *intangible assets*. For example:

1. research and development expenditures related to development of new technology would not be required when valuing only existing technology, and
2. marketing expenses related to obtaining new customers would not be required when valuing existing customer-related *intangible assets*.

(d) identify the contributory *assets* that are needed to achieve the forecasted revenue and expenses. Contributory *assets* often include working capital, fixed *assets*, assembled workforce and identified *intangible assets* other than the subject *intangible asset*,

(e) determine the appropriate rate of return on each contributory *asset*

based on an assessment of the risk associated with that *asset*. For example, lowrisk *assets* like working capital will typically have a relatively lower required return. Contributory *intangible assets* and highly specialised machinery and equipment often require relatively higher rates of return,

(f) in each forecast period, deduct the required returns on contributory *assets* from the forecast profit to arrive at the excess earnings attributable to only the subject *intangible asset*,

(g) determine the appropriate *discount rate* for the subject *intangible asset* and present value or capitalise the excess earnings, and

(h) if appropriate for the *intended use of the valuation* (see paras 110.1-110.4), calculate and add the tax amortisation benefit (TAB) for the subject *intangible asset*.

60.12. Contributory asset charges (CACs) *should* be made for all the current and future tangible, intangible and *financial assets* that contribute to the generation of the cash flow, and if an *asset* for which a CAC is required is involved in more than one line of business, its CAC *should* be allocated to the different lines of business involved.

60.13. The determination of whether a CAC for elements of goodwill is appropriate *should* be based on an assessment of the relevant facts and circumstances of the situation, and the *valuer* should not mechanically apply CACs or alternative adjustments for elements of goodwill if the circumstances do not warrant such a charge. Assembled workforce, as it is quantifiable, is typically the only element of goodwill for which a CAC *should* be taken. Accordingly, *valuers must* ensure they have a strong basis for applying CACs for any elements of goodwill other than assembled workforce.

60.14. CACs are generally computed on an after-tax basis as a fair return on the *value* of the contributory *asset*, and in some cases a return of the contributory *asset* is also deducted. The appropriate return on a contributory *asset* is the investment return a typical participant would require on the *asset*. The return of a contributory *asset* is a recovery of the initial investment in the *asset*. There *should* be no difference in *value* regardless of whether CACs are computed on a pre-tax or after-tax basis.

60.15. If the contributory *asset* is not wasting in nature, like working capital, only a fair return on the *asset* is required.

60.16. For contributory *intangible assets* that were valued under a relief-from-royalty method, the CAC *should* be equal to the royalty (generally adjusted to an aftertax royalty rate).

60.17. The excess earnings method *should* be applied only to a single *intangible asset* for a given stream of revenue and income. The excess earnings method is generally applied to the primary or most important *intangible asset*. For example, in valuing the *intangible assets* of a company utilising both technology and a tradename in delivering a product or service (ie, the revenue associated with the technology and the tradename is the same), the excess earnings method *should* only be used to value one of the *intangible assets* and an alternative method *should* be used for the other *asset*. However, if the company had multiple product

lines, each using a different technology and each generating distinct revenue and profit, the excess earnings method may be applied in the *valuation* of the multiple different technologies.

Relief-from-Royalty Method

60.18. Under the relief-from-royalty method, the *value* of an *intangible asset* is determined by reference to the *value* of the hypothetical royalty payments that would be saved through owning the *asset*, as compared with licensing the *intangible asset* from a third party. Conceptually, the method may also be viewed as a discounted cash flow method applied to the cash flow that the owner of the *intangible asset* could receive through licensing the *intangible asset* to third parties.

60.19. The key steps in applying a relief-from-royalty method are to:

(a) develop projections associated with the *intangible asset* being valued for the life of the subject *intangible asset*. The most common metric projected is revenue, as most royalties are paid as a percentage of revenue. However, other metrics such as a per-unit royalty may be appropriate in certain *valuation*s.

(b) develop a royalty rate for the subject *intangible asset*. Two methods can be used to derive a hypothetical royalty rate. The first is based on market royalty rates for comparable or similar transactions. A prerequisite for this method is the existence of comparable *intangible assets* that are licensed at arm's length on a regular basis. The second method is based on a split of profits that would hypothetically be paid in an arm's length transaction by a willing licensee to a willing licensor for the rights to use the subject *intangible asset*.

(c) apply the selected royalty rate to the projections to calculate the royalty payments avoided by owning the *intangible asset*,

(d) estimate any additional expenses for which a licensee of the subject *asset* would be responsible. This can include upfront payments required by some licensors. A royalty rate *should* be analysed to determine whether it assumes expenses (such as maintenance, marketing and advertising) are the responsibility of the licensor or the licensee. A royalty rate that is "gross" would consider all responsibilities and expenses associated with ownership of a licensed *asset* to reside with the licensor, while a royalty that is "net" would consider some or all responsibilities and expenses associated with the licensed *asset* to reside with the licensee. Depending on whether the royalty is "gross" or "net", the *valuation should* exclude or include, respectively, a deduction for expenses such as maintenance, marketing or advertising expenses related to the hypothetically licensed asset.

(e) if the hypothetical *costs* and royalty payments are tax deductible, it may be appropriate to apply the appropriate tax rate to determine the aftertax savings associated with ownership of the *intangible asset*. However, for certain *intended uses* (such as transfer pricing), the effects of taxes are generally not considered in the *valuation* and this step *should* be skipped,

(f) determine the appropriate *discount rate* for the subject *intangible asset* and present value or capitalise the savings associated with ownership of the *intangible asset*, and

(g) if appropriate for the *intended use* of the *valuation* (see paras 110.1–110.4), calculate and add the TAB for the subject *intangible asset*.

60.20. Whether a royalty rate is based on market transactions or a profit split method (or both), its selection *should* consider the characteristics of the subject *intangible asset* and the environment in which it is utilised. The consideration of those characteristics form the basis for selection of a royalty rate within a range of observed transactions and/or the range of profit available to the subject *intangible asset* in a profit split. Factors that *should* be considered include the following:

(a) competitive environment: The size of the market for the *intangible asset*, the availability of realistic alternatives, the number of competitors, barriers to entry and presence (or absence) of switching *costs*.

(b) importance of the subject intangible to the owner: Whether the subject *asset* is a key factor of differentiation from competitors, the importance it plays in the owner's marketing strategy, its relative importance compared with other tangible and *intangible assets*, and the amount the owner spends on creation, upkeep and improvement of the subject *asset*.

(c) life cycle of the subject intangible: The expected economic life of the subject *asset* and any risks of the subject intangible becoming obsolete.

60.21. When selecting a royalty rate, a *valuer should* also consider the following:

(a) when entering a licence arrangement, the royalty rate participants would be willing to pay depends on their profit levels and the relative contribution of the licensed *intangible asset* to that profit. For example, a manufacturer of consumer products would not license a tradename at a royalty rate that leads to the manufacturer realising a lower profit selling branded products compared with selling generic products.

(b) when considering observed royalty transactions, a *valuer should* understand the specific rights transferred to the licensee and any limitations. For example, royalty agreements may include *significant* restrictions on the use of a licensed *intangible asset* such as a restriction to a particular geographic area or for a product. In addition, the *valuer should* understand how the payments under the licensing agreement are structured, including whether there are upfront payments, milestone payments, puts/calls to acquire the licensed property outright, etc.

With-and-Without Method

60.22. The with-and-without method indicates the *value* of an *intangible asset* by comparing two scenarios: one in which the business uses the subject *intangible asset* and one in which the business does not use the subject *intangible asset* (but all other factors are kept constant).

60.23. The comparison of the two scenarios can be done in two ways:

(a) calculating the *value* of the business under each scenario with the difference in the business values being the *value* of the subject *intangible asset*, and

(b) calculating, for each future period, the difference between the profits in the two scenarios. The present value of those amounts is then used to reach the *value* of the subject *intangible asset*.

60.24. In theory, either method *should* reach a similar *value* for the *intangible asset* provided the *valuer* considers not only the impact on the entity's profit, but additional factors such as differences between the two scenarios in working capital needs and capital expenditures.

60.25. The with-and-without method is frequently used in the *valuation* of noncompetition agreements but may be appropriate in the *valuation* of other *intangible assets* in certain circumstances.

60.26. The key steps in applying the with-and-without method are to:

(a) prepare projections of revenue, expenses, capital expenditures and working capital needs for the business assuming the use of all of the assets of the business including the subject *intangible asset*. These are the cash flows in the "with" scenario,

(b) use an appropriate *discount rate* to present value the future cash flows in the "with" scenario, and/or calculate the *value* of the business in the "with" scenario,

(c) prepare projections of revenue, expenses, capital expenditures and working capital needs for the business assuming the use of all of the *assets* of the business except the subject *intangible asset*. These are the cash flows in the "without" scenario,

(d) use an appropriate *discount rate* for the business, present value the future cash flows in the "with" scenario and/or calculate the *value* of the business in the "with" scenario,

(e) deduct the present value of cash flows or the *value* of the business in the "without" scenario from the present value of cash flows or *value* of the business in the "with" scenario, and

(f) if appropriate for the *intended use* of the *valuation* (see paras 110.1–110.4), calculate and add the Tax Amortisation Benefit (TAB) for the subject *intangible asset*.

60.27. As an additional step, the difference between the two scenarios may need to be probability-*weighted*. For example, when valuing a non-competition agreement, the individual or business subject to the agreement may choose not to compete, even if the agreement were not in place.

60.28. The differences in *value* between the two scenarios *should* be reflected solely in the cash flow projections rather than by using different *discount rates* in the two scenarios.

Greenfield Method

60.29. Under the greenfield method, the *value* of the subject intangible is determined using cash flow projections that assume the only *asset* of the business at the *valuation date* is the subject *intangible asset*. All other tangible and *intangible assets must* be bought, built or rented.

60.30. The greenfield method is conceptually similar to the excess earnings method. However, instead of subtracting contributory *asset* charges from the cash flow to reflect the contribution of contributory *assets*, the greenfield method assumes that the owner of the subject *asset* would have to build, buy or rent the contributory *assets*. When building or buying the contributory *assets*, the *cost* of a replacement *asset* of equivalent utility is used rather than a reproduction cost.

60.31. The greenfield method is often used to estimate the *value* of "enabling" *intangible assets* such as franchise agreements and broadcast spectrum.

60.32. The key steps in applying the greenfield method are to:

(a) prepare projections of revenue, expenses, capital expenditures and working capital needs for the business assuming the subject *intangible asset* is the only *asset* owned by the subject business at the *valuation date*, including the time period needed to "ramp up" to stabilised levels,

(b) estimate the timing and amount of expenditures related to the acquisition, creation or rental of all other *assets* needed to operate the subject business,

(c) using an appropriate *discount rate* for the business, present value the future cash flows to determine the *value* of the subject business with only the subject intangible in place, and

(d) if appropriate for the *intended use* of the *valuation* (see paras 110.1–110.4 of this chapter), calculate and add the TAB for the subject *intangible asset*.

Distributor Method

60.33. The distributor method, sometimes referred to as the disaggregated method, is a variation of the multi-period excess earnings method sometimes used to value customer-related *intangible assets*. The underlying theory of the distributor method is that businesses that are comprised of various functions are expected to generate profits associated with each function. As distributors generally only perform functions related to distribution of products to customers rather than development of intellectual property or manufacturing, information on profit margins earned by distributors is used to estimate the excess earnings attributable to customer-related *intangible assets*.

60.34. The distributor method is appropriate to value customer-related *intangible assets* when another *intangible asset* (for example, technology or a brand) is deemed to be the primary or most *significant intangible asset* and is valued under a multi-period excess earnings method.

60.35. The key steps in applying the distributor method are to:

(a) prepare projections of revenue associated with existing customer relationships. This *should* reflect expected growth in revenue from existing customers as well as the effects of customer attrition,

(b) identify comparable distributors that have customer relationships similar to the subject business and calculate the profit margins achieved by those distributors,

(c) apply the distributor profit margin to the projected revenue,

(d) identify the contributory *assets* related to performing a distribution function that are needed to achieve the forecast revenue and expenses. Generally distributor contributory *assets* include working capital, fixed *assets* and workforce. However, distributors seldom require other *assets* such as trademarks or technology. The level of required contributory *assets should* also be consistent with participants performing only a distribution function,

(e) determine the appropriate rate of return on each contributory *asset* based on an assessment of the risk associated with that *asset*,

(f) in each forecast period, deduct the required returns on contributory *assets* from the forecast distributor profit to arrive at the excess earnings attributable to only the subject *intangible asset*,

(g) determine the appropriate *discount rate* for the subject *intangible asset* and present value the excess earnings, and

(h) if appropriate for the *intended use* of the *valuation* (see paras 110.1–110.4), calculate and add the TAB for the subject *intangible asset*.

70. Cost Approach

70.1. Under the cost approach, the *value* of an *intangible asset* is determined based on the replacement cost of a similar *asset* or an *asset* providing similar service potential or utility.

70.2. *Valuers must* comply with paras 40.2 and 40.3 of IVS 103 *Valuation Approaches* when determining whether to apply the cost approach to the *valuation* of *intangible assets*.

70.3. The cost approach is commonly used for *intangible assets* such as the following:

(a) acquired third-party software,

(b) internally-developed and internally-used, non-marketable software, and

(c) assembled workforce.

70.4. The cost approach should be used when no other approach can be applied satisfactorily. However, a *valuer should* attempt to identify an alternative method before applying the cost approach in situations where the subject *asset* does not meet the criteria in paras 40.2 and 40.3 of IVS 103 *Valuation Approaches*.

70.5. Two main methods fall under the cost approach: replacement cost and reproduction cost. However, many *intangible assets* do not have physical

form that can be reproduced and *assets* such as software, which can be reproduced, generally derive *value* from their function/utility rather than their exact lines of code. As such, the replacement cost is most commonly applied to the *valuation* of *intangible assets*.

70.6. The replacement cost method assumes that a participant would pay no more for the *asset* than the *cost* that would be incurred to replace the *asset* with a substitute of comparable utility or functionality.

70.7. *Valuers should* consider the following when applying the replacement cost method:

(a) the direct and indirect costs of replacing the utility of the *asset*, including labour, materials and overhead,

(b) whether the subject *intangible asset* is subject to obsolescence. While *intangible assets* do not become functionally or physically obsolete, they can be subject to economic obsolescence,

(c) whether it is appropriate to include a profit mark-up on the included *costs*. An *asset* acquired from a third party would presumably reflect their *costs* associated with creating the *asset* as well as some form of profit to provide a return on investment. As such, under *bases of value* (see IVS 102 *Bases of Value*) that assume a hypothetical transaction, it may be appropriate to include an assumed profit mark-up on *costs*. As noted in IVS 103 *Valuation Approaches*, *costs* developed based on estimates from third parties would be presumed to already reflect a profit mark-up, and

(d) opportunity costs may also be included, which reflect *costs* associated with not having the subject *intangible asset* in place for some period of time during its creation.

80. Special Considerations for Intangible Assets

80.1. The following sections address a non-exhaustive list of topics relevant to the *valuation* of *intangible assets*.

(a) *Discount rates*/Rates of Return for *Intangible Assets* (section 90).

(b) *Intangible Asset* Economic Lives (section 100).

(c) Tax Amortisation Benefit (section 110).

90. Discount Rates/Rates of Return for Intangible Assets

90.1. Selecting *discount rates* for *intangible assets* can be challenging as observable market evidence of *discount rates* for *intangible assets* is rare. The selection of a *discount rate* for an *intangible asset* generally requires *significant* professional judgment.

90.2. In selecting a *discount rate* for an *intangible asset*, *valuers should* perform an assessment of the risks associated with the subject *intangible asset* and consider observable *discount rate* benchmarks.

90.3. When assessing the risks associated with an *intangible asset*, a *valuer should* consider factors including the following:

(a) *intangible assets* often have higher risk than *tangible assets*,

(b) if an *intangible asset* is highly specialised to its current use, it may have higher risk than *assets* with multiple potential uses,

(c) single *intangible assets* may have more risk than groups of *assets* (or businesses),

(d) *intangible assets* used in risky (sometimes referred to as non-routine) functions may have higher risk than *intangible assets* used in more low-risk or routine activities. For example, *intangible assets* used in research and development activities may be higher risk than those used in delivering existing products or services,

(e) the life of the *asset*. Similar to other investments, *intangible assets* with longer lives are often considered to have higher risk, all else being equal,

(f) *intangible assets* with more readily estimable cash flow streams, such as backlog, may have lower risk than similar *intangible assets* with less estimable cash flows, such as customer relationships.

90.4. *Discount rate* benchmarks are rates that are observable based on market evidence or observed transactions. The following are some of the benchmark rates that a *valuer should* consider:

(a) risk-free rates with similar maturities to the life of the subject *intangible asset*,

(b) *cost* of debt or borrowing rates with maturities similar to the life of the subject *intangible asset*,

(c) *cost* of equity or equity rates or return for participants for the subject *intangible asset*,

(d) weighted-average-cost-of-capital (WACC) of participants for the subject *intangible asset* or of the company owning/using the subject *intangible asset*,

(e) in contexts involving a recent business acquisition including the subject *intangible asset*, the internal-rate-of-return) for the transaction *should* be considered, and

(f) in contexts involving a *valuation* of all *assets* of a business, the *valuer should* perform a weighted-average-return-on-assets (WARA) analysis to confirm reasonableness of selected *discount rates*.

100. Intangible Asset Economic Lives

100.1. An important consideration in the *valuation* of an *intangible asset*, particularly under the income approach, is the economic life of the *asset*. This may be a finite period limited by legal, technological, functional or economic factors; other *assets* may have an indefinite life. The economic life of an *intangible asset* is a different concept than the remaining useful life for accounting or tax purposes.

100.2. Legal, technological, functional and economic factors *must* be considered individually and together in making an assessment of the economic life. For example, a pharmaceutical technology protected by a patent may have a remaining legal life of five years before expiry of the patent, but a competitor drug with improved efficacy may be expected to reach the market in three years. This might cause the economic life of the patent

to be assessed as only three years. In contrast, the expected economic life of the technology could extend beyond the life of the patent if the knowhow associated with the technology would have *value* in production of a generic drug beyond the expiration of the patent.

100.3. In estimating the economic life of an *intangible asset*, a *valuer should* also consider the pattern of use or replacement. Certain *intangible assets* may be abruptly replaced when a new, better or cheaper alternative becomes available, while others may be replaced slowly over time, such as when a software developer releases a new version of software every year but only replaces a portion of the existing code with each new release.

100.4. For customer-related intangibles, attrition is a key factor in estimating an economic life as well as the cash flows used to value the customer-related intangibles. Attrition applied in the *valuation* of *intangible assets* is a quantification of expectations regarding future losses of customers. While it is a forward-looking estimate, attrition is often based on historical observations of attrition.

100.5. There are a number of ways to measure and apply historical attrition:

(a) a constant rate of loss (as a percentage of prior year balance) over the life of the customer relationships may be assumed if customer loss does not appear to be dependent on age of the customer relationship,

(b) a variable rate of loss may be used over the life of the customer relationships if customer loss is dependent on age of the customer relationship. In such circumstances, generally younger/new customers are lost at a higher rate than older, more established customer relationships,

(c) attrition may be measured based on either revenue or number of customers/customer count as appropriate, based on the characteristics of the customer group,

(d) customers may need to be segregated into different groups. For example, a company that sells products to distributors and retailers may experience different attrition rates for each group. Customers may also be segregated based on other factors such as geography, size of customer and type of product or service purchased, and

(e) the period used to measure attrition may vary depending on circumstances. For example, for a business with monthly subscribers, one month without revenue from a particular customer would indicate a loss of that customer. In contrast, for larger industrial products, a customer might not be considered "lost" unless there have been no sales to that customer for a year or more.

100.6. The application of any attrition factor *should* be consistent with the way attrition is measured. Correct application of an attrition factor in the first projection year (and therefore all subsequent years) *must* be consistent with form of measurement.

(a) If attrition is measured based on the number of customers at the beginning-of-period versus end-of-period (typically a year), the attrition factor *should* be applied using a "mid-period" convention for the first projection year (as it is usually assumed that customers were

lost throughout the year). For example, if attrition is measured by looking at the number of customers at the beginning of the year (100) versus the number remaining at the end of the year (90), on average the company had 95 customers during that year, assuming they were lost evenly throughout the year. Although the attrition rate could be described as 10%, only half of that *should* be applied in the first year.

(b) If attrition is measured by analysing year-on-year revenue or customer count, the resulting attrition factor *should* generally be applied without a mid-period adjustment. For example, if attrition is measured by looking at the number of customers that generated revenue in Year 1 (100) versus the number of those same customers that had revenue in Year 2 (90), the application would be different even though the attrition rate could again be described as 10%.

100.7. Revenue-based attrition may include growth in revenue from existing customers unless adjustments are made. It is generally best practice to make adjustments to separate growth and attrition in measurement and application.

100.8. It is a best practice for *valuers* to input historical revenue into the model being used and check how closely it predicts actual revenue from existing customers in subsequent years. If attrition has been measured and applied appropriately, the model should be reasonably accurate. For example, if estimates of future attrition were developed based on historical attrition observed from 20X0 through 20X5, a *valuer should* input the 20X0 customer revenue into the model and check whether it accurately predicts the revenue achieved from existing customers in 20X1, 20X2, etc

110. Tax Amortisation Benefit (TAB)

110.1. In many tax *jurisdictions*, *intangible assets* can be amortised for tax purposes, reducing a taxpayer's tax burden and effectively increasing cash flows. Depending on the *intended use* of a *valuation* and the *valuation method* used, it may be appropriate to include the *value* of the TAB in the *value* of the intangible.

110.2. If the market or cost approach is used to value an *intangible asset*, the price paid to create or purchase the *asset* would already reflect the ability to amortise the *asset*. However, in the income approach, a TAB needs to be explicitly calculated and included, if appropriate.

110.3. For some *valuation* purposes, such as financial reporting, the appropriate *basis of value* assumes a hypothetical sale of the subject *intangible asset*. Generally, for those purposes, a TAB *should* be included when the income approach is used because a typical participant would be able to amortise an *intangible asset* acquired in such a hypothetical transaction. For other *valuation intended uses*, the assumed transaction might be of a business or group of *assets*. For those *bases of value*, it may be appropriate to include a TAB only if the transaction would result in a step-up in basis for the *intangible assets*.

110.4. There is some diversity in practice related to the appropriate *discount rate* to be used in calculating a TAB. *Valuers* may use either of the following:

(a) a *discount rate* appropriate for a business utilising the subject

asset, such as a WACC. Proponents of this view believe that, since amortisation can be used to offset the taxes on any income produced by the business, a *discount rate* appropriate for the business as a whole *should* be used, or

(b) a *discount rate* appropriate for the subject *asset* (ie, the one used in the *valuation* of the *asset*). Proponents of this view believe that the *valuation should* not assume the owner of the subject *asset* has operations and income separate from the subject *asset* and that the *discount rate* used in the TAB calculation *should* be the same as that used in the *valuation* of the subject *asset*.

IVS 220 Non-Financial Liabilities

10. Overview

10.1. The principles contained in the General Standards apply to *valuations* of non-financial *liabilities* and *valuations* with a non-financial *liability* component. This standard contains additional requirements that apply to *valuations* of non-financial liabilities.

10.2. With regard to the determination of *discount rates* and risk margins, in circumstances in which IVS 103 *Valuation Approaches* (see Appendix A20.29–A20.40) conflicts with IVS 220 *Non-Financial Liabilities, valuers must* apply the principles in sections 90 and 100 of this chapter in *valuations* of non-financial *liabilities*.

20. Introduction

20.1. For purposes of IVS 220 *Non-Financial Liabilities*, non-financial *liabilities* are defined as those *liabilities* requiring a non-cash performance obligation to provide goods or services.

20.2. A non-exhaustive list of *liabilities* that may in part or in full require a non-cash fulfilment and be subject to IVS 220 *Non-Financial Liabilities* includes: deferred revenue or contract liabilities, warranties, environmental liabilities, *asset* retirement obligations, certain contingent consideration obligations, loyalty programmes, power purchase agreements, certain litigation reserves and contingencies, and certain indemnifications and guarantees.

20.3. Although certain contingent consideration liabilities may require a non-cash performance obligation, such liabilities are not included in the scope of IVS 220 *Non-Financial Liabilities.*

20.4. The party assuming a non-financial liability typically requires a profit margin on the fulfilment effort to compensate for the effort incurred and risk borne for the delivery of goods or services.

20.5. For financial liabilities, cash fulfilment is typically the only performance obligation and no additional compensation is needed for the fulfilment effort. Given that cash fulfilment is the only performance obligation for financial liabilities, asset-liability symmetry most often enables *valuers* to assess the subject *liability* using an asset framework.

20.6. Asset-liability symmetry typically does not exist for non-financial liabilities due to the performance obligation to provide goods and services to satisfy the *liability* and additional compensation for such effort. As such, non-financial *liabilities* will most often be valued using a liability framework.

20.7. In instances in which a corresponding *asset* is recognised by the counterparty, the *valuer must* assess if the *values* would reflect asset-liability symmetry under circumstances consistent with the *basis of value*. Certain *bases of value* issued by entities/organisations other than the IVSC require specific consideration and reconciliation to a corresponding *asset* under certain circumstances. The *valuer must* understand and follow the regulation, case law, and other interpretive guidance related to those *bases of value* as of the *valuation date* (see IVS 200 *Businesses and Business Interests*, para 30.2). Instances in which the *valuer should* reconcile to a corresponding asset value will be rare, reasons include:

(a) non-financial liabilities often do not have a recorded corresponding *asset* recognised by the counterparty (eg, environmental liability), or can only be transferred in conjunction with another *asset* (eg, an automobile and related warranty are only transferred together).

(b) the corresponding *asset* of a non-financial liability may be held by numerous parties for which it is impractical to identify and reconcile the *asset values*.

(c) the market for the non-*financial asset* and *liability* is often highly illiquid, thus resulting in asymmetric information, high bid ask spreads, and assetliability asymmetry.

20.8. Participants that most often transact in the subject non-financial liability may not be the comparable companies and competitors of the entity holding the subject non-financial liability. Examples include insurance companies, third party warranty issuers, and more. The *valuer should* consider if a market, or participants, exist outside the immediate industry in which the entity holding the subject non-financial liability operates.

20.9. Non-financial liability *valuations* are performed for a variety of *intended uses*. It is the *valuer's* responsibility to understand the *intended use* of a *valuation.* It is the *valuer's* responsibility to understand whether the non-financial liabilities *should* be valued, separately

or grouped with other *assets*. A non-exhaustive list of examples of circumstances that commonly include a non-financial liability *valuation* component is provided below:

(a) for financial reporting purposes, *valuations* of non-financial liabilities are often required in connection with accounting for business combinations, *asset* acquisitions and sales, and impairment analysis.

(b) for tax reporting purposes, non-financial liability *valuations* are often needed for transfer pricing analyses, estate and gift tax planning and reporting, and ad valorem taxation analyses.

(c) non-financial liabilities may be the subject of litigation, requiring valuation analysis in certain circumstances.

(d) *valuation* of non-financial *liabilities* as part of general consulting, collateral lending and transactional support engagements.

30. Bases of Value

30.1. In accordance with IVS 102 *Bases of Value*, a *valuer must* select the appropriate *basis(es) of value* when valuing non-financial *liabilities*.

30.2. Often, non-financial *liability valuations* are performed using *bases of value* defined by entities/organisations other than the IVSC (some examples of which are mentioned in IVS 102 *Bases of Value*). The *valuer must* understand and follow the regulation, case law, and other interpretive guidance related to those *bases of value* as of the *valuation date* (see IVS 200 *Businesses and Business Interests*, para 30.2).

40. Valuation Approaches and Methods

40.1. Elements of the three *valuation approaches* described in IVS 103 *Valuation Approaches* (market, income and cost approach) can all be applied to the *valuation* of non-financial liabilities. The methods described in Sections 50–70 may exhibit elements of more than one approach. If it is necessary for the *valuer* to classify a method under one of the three approaches, the *valuer should* use judgement in making the determination and not necessarily rely on the classification below.

40.2. When selecting an approach and method, in addition to the requirements of this standard, a *valuer must* follow the requirements of IVS 103 *Valuation Approaches*, including para 10.4.

50. Market Approach

50.1. Under the market approach, the *value* of a non-financial liability is determined by reference to market activity (for example, transactions involving identical or similar non-financial *liabilities*).

50.2. Transactions involving non-financial *liabilities* frequently also include other *assets*, such as a business combinations that include tangible and *intangible assets*.

50.3. Transactions involving standalone non-financial *liabilities* are infrequent as compared with transactions for businesses and *assets*.

50.4. While standalone transactions of non-financial *liabilities* are infrequent, *valuers should* consider relevant market-based indications of *value*.

Although such market-based indications may not provide sufficient information with which to apply the market approach, the use of market-based inputs *should* be maximised in the application of other approaches.

50.5. A non-exhaustive list of such market indications of *value* includes:

(a) pricing from third parties to provide identical or similar products as the subject non-financial *liability* (eg, deferred revenue),

(b) pricing for warranty policies issued by third parties for identical or similar obligations,

(c) the prescribed monetary conversion amount as published by participants for certain loyalty reward obligations,

(d) the traded price for contingent value rights (CVRs) with similarities to the subject non-financial *liability* (eg, contingent consideration),

(e) observed rates of return for investment funds that invest in non-financial *liabilities* (eg, litigation finance).

50.6. *Valuers must* comply with paras 20.2 and 20.3 of IVS 103 *Valuation Approaches* when determining whether to apply the market approach to the *valuation* of non-financial *liabilities*.

50.7. The diverse nature of many non-financial *liabilities* and the fact that nonfinancial *liabilities* seldom transact separately from other *assets* means that it is rarely possible to find market evidence of transactions involving similar non-financial *liabilities*.

50.8. Where evidence of market prices is available, *valuers should* consider adjustments to these to reflect differences between the subject non-financial *liability* and those involved in the transactions. These adjustments are necessary to reflect the differentiating characteristics of the subject non-financial *liability* and those involved in the transactions. Such adjustments may only be determinable at a qualitative, rather than quantitative, level. However, the need for *significant* qualitative adjustments could indicate that another approach would be more appropriate for the *valuation*.

50.9. In certain instances a *valuer* may rely on market prices or evidence for an *asset* corresponding to the subject non-financial *liability*. In such instances, the *valuer should* consider an entity's ability to transfer the subject non-financial *liability*, whether the *asset* and related price of the *asset* reflect those same restrictions, and whether adjustments to reflect the restrictions *should* be included. The *valuer should* take care to determine if the transfer restrictions are characteristics of the subject non-financial *liability* (for example, an illiquid market) or restrictions that are characteristics of the entity (for example, financial distress).

50.10. The comparable transaction method, also known as the guideline transactions method, is generally the only market approach method that can be applied to value non-financial *liabilities*.

50.11. In rare circumstances, a security sufficiently similar to a subject non-financial *liability* could be publicly traded, allowing the use of the guideline public company method. One example of such securities is

contingent value rights that are tied to the performance of a particular product or technology.

Market Approach Methods

50.12. A method to value non-financial *liabilities* under the Market Approach is often referred to as the Top-Down Method.

Top-Down Method

50.13. Under the Top-Down Method, valuing non-financial *liabilities* is based on the premise that reliable market-based indications of pricing are available for the performance obligation.

50.14. A participant fulfilling the obligation to deliver the product or services associated with the non-financial *liability* could theoretically price the *liability* by deducting *costs* already incurred toward the fulfilment obligation, plus a markup on those *costs*, from the market price of services.

50.15. When market information is used to determine the *value* of the subject non-financial *liability*, discounting is typically not necessary because the effects of discounting are incorporated into observed market prices.

50.16. The key steps in applying a Top-Down Method are to:

(a) Determine the market price of the non-cash fulfilment.

(b) Determine the *costs* already incurred and *asset*s utilised by the transferor. The nature of such *costs* will differ depending on the subject non-financial *liability*. For example, for deferred revenue the *costs* will primarily consist of sales and marketing costs that have already been incurred in generating the non-financial *liability*.

(c) Determine a reasonable profit margin on the *costs* already incurred.

(d) Subtract *costs* incurred and profit from the market price.

60. Income Approach

60.1. Under the income approach, the *value* of a non-financial *liability* is often determined by reference to the present value of the *costs* to fulfil the obligation plus a profit margin that would be required to assume the *liability*.

60.2. *Valuers must* comply with paras 30.2 and 30.3 of IVS 103 *Valuation Approaches* when determining whether to apply the income approach to the *valuation* of non-financial *liabilities*.

Income Approach Methods

60.3. The primary method to value non-financial *liabilities* under the Income Approach is often referred to as the Bottom-Up Method.

Bottom-Up Method

60.4. Under the Bottom-Up Method, the non-financial *liability* is measured as the *costs* required to fulfil the performance obligation, plus a reasonable mark-up on those *costs*, discounted to present value. These costs may or may not include certain overhead items.

60.5. The key steps in applying a Bottom-Up Method are to:

(a) determine the *costs* required to fulfil the performance obligation. Such *costs* will include the direct costs to fulfil the performance obligation, but may also include indirect costs such as charges for the use of contributory *asset*s. Fulfilment costs represent those *costs* that are related to fulfilling the performance obligation that generates the non-financial *liability*. *Costs* incurred as part of the selling activities before the acquisition date *should* be excluded from the fulfilment effort.

1. contributory asset charges *should* be included in the fulfilment costs when such *assets* would be required to fulfil the obligation and the related cost is not otherwise captured in the income statement.
2. in limited instances, in addition to direct and indirect *costs*, it may be appropriate to include opportunity costs. For example, in the licensing of symbolic intellectual property, the direct and indirect costs of fulfilment may be nominal. However, if the obligation reduces the ability to monetise the underlying *asset* (in an exclusive licensing arrangement for example), then the *valuer should* consider how participant*s* would account for the potential opportunity costs associated with the nonfinancial liability.

(b) determine a reasonable mark-up on the fulfilment effort. In most cases it may be appropriate to include an assumed profit margin on certain *costs* which can be expressed as a target profit, either a lump sum or a percentage return on *cost* or *value*. An initial starting point may be to utilise the operating profit of the entity holding the subject non-financial *liability*. However, this methodology assumes the profit margin would be proportional to the *costs* incurred. In many circumstances there is rationale to assume profit margins which are not proportional to *costs*. In such cases the risks assumed, *value* added, or intangibles contributed to the fulfilment effort are not the same as those contributed pre-measurement date. When *costs* are derived from actual, quoted or estimated prices by third party suppliers or contractors, these *costs* will already include a third party's desired level of profit.

(c) determine timing of fulfilment and discount to present value. The *discount rate should* account for the time value of money and non-performance risk. Typically it is preferable to reflect the impact of uncertainty such as changes in anticipated fulfilment costs and fulfilment margin through the cash flows, rather than in the *discount rate*.

(d) when fulfilment *costs* are derived through a percent of revenue, *valuers should* consider whether the fulfilment *costs* already implicitly include the impact of discounting. For example, prepayment for services may result in a discount as one would expect to pay less for the same service as compared with paying throughout the contract term. As a result, the derived costs may also contain an implicit discount and further discounting may not be necessary.

70. Cost Approach

70.1. The cost approach has limited application for non-financial *liabilities* as participants typically expect a return on the fulfilment effort.

70.2. *Valuers must* comply with paras 40.2 and 40.3 of IVS 103 *Valuation Approaches* when determining whether to apply the cost approach to the *valuation* of non-financial *liabilities*.

80. Special Considerations for Non-Financial *Liabilities*

80.1. The following sections address a non-exhaustive list of topics relevant to the *valuation* of non-financial liabilities.

(a) *Discount Rates* for Non-Financial *Liabilities* (section 90),

(b) Estimating Cash Flows and Risk Margins (section 100),

(c) Restrictions on Transfer (section 110),

(d) Taxes (section 120).

90. Discount Rates for Non-Financial *Liabilities*

90.1. A fundamental basis for the income approach is that investors expect to receive a return on their investments and that such a return should reflect the perceived level of risk in the investment.

90.2. The *discount rate should* account for the time value of money and non-performance risk. Non-performance risk is typically a function of counterparty risk (ie, credit risk of the entity obligated to fulfil the liability) (see para 60.5c of this chapter).

90.3. Certain *bases of value* issued by entities/organisations other than the IVSC may require the *discount rate* to specifically account for *liability*-specific risks. The *valuer must* understand and follow the regulation, case law, and other interpretive guidance related to those *bases of value* as of the *valuation date* (see IVS 200 *Businesses and Business Interests*, para 30.2).

90.4. *Valuers should* consider the term of the subject non-financial *liability* when determining the appropriate inputs for the time value of money and non-performance risk.

90.5. In certain circumstances, the *valuer* may explicitly adjust the cash flows for non-performance risk.

90.6. What a participant would have to pay to borrow the funds necessary to satisfy the obligation may provide insights to help quantify the non-performance risk.

90.7. Given the long-term nature of certain non-financial *liabilities*, the *valuer must* consider if inflation has been incorporated into the estimated cash flows, and *must* ensure that the *discount rate* and cash flow estimates are prepared on a consistent basis.

100. Estimating Cash Flows and Risk Margins

100.1. The principles contained in IVS 103 *Valuation Approaches* may not apply to *valuations* of non-financial *liabilities* and *valuations* with a non-financial

liability component (see IVS 103 *Valuation Approaches*, Appendix A20.12–A20.19). *Valuers must* apply the principles in sections 90 and 100 of this chapter in *valuations* of non-financial *liabilities*.

100.2. Non-financial *liability* cash flow forecasts often involve the explicit modelling of multiple scenarios of possible future cash flow to derive a probability-*weighted* expected cash flow forecast. This method is often referred to as the Scenario Based Method (SBM). The SBM also includes certain simulation techniques such as the Monte Carlo simulation. The SBM is commonly used when future payments are not contractually defined but rather vary depending upon future events. When the non-financial *liability* cash flows are a function of systematic risk factors, the *valuer should* consider the appropriateness of the SBM, and may need to utilise other methods such as option pricing models (OPMs).

100.3. Considerations in estimating cash flows include developing and incorporating explicit assumptions, to the extent possible. A non-exhaustive list of such assumptions may include:

(a) the *costs* that a third party would incur in performing the tasks necessary to fulfil the obligation,

(b) other amounts that a third party would include in determining the *price* of the transfer, including, for example, inflation, overhead, equipment charges, profit margin, and advances in technology,

(c) the extent to which the amount of a third party's *costs* or the timing of its costs would vary under different future scenarios and the relative probabilities of those scenarios, and

(d) the *price* that a third party would demand and could expect to receive for bearing the uncertainties and unforeseeable circumstances inherent in the obligation.

100.4. While expected cash flows (ie, the probability-*weighted* average of possible future cash flows) incorporate the variable expected outcomes of the *asset's* cash flows, they do not account for the compensation that participants demand for bearing the uncertainty of the cash flows. For non-financial *liabilities*, forecast risk may include uncertainty such as changes in anticipated fulfilment costs and fulfilment margin. The compensation for bearing such risk *should* be incorporated into the expected payoff through a cash flow risk margin or the *discount rate*.

100.5. Given the inverse relationship between the *discount rate* and *value*, the *discount rate should* be decreased to reflect the impact of forecast risk (ie, the compensation for bearing risk due to uncertainty about the amount and timing of cash flows).

100.6. While possible to account for forecast risk by reducing the *discount rate*, given its limited practical application, the *valuer must* explain the rationale for reducing the *discount rate* rather than incorporating a risk margin, or specifically note the regulation, case law, or other interpretive guidance that requires the accounting for forecast risk of non-financial *liabilities* through the *discount rate* rather than a risk margin (see IVS 200 *Businesses and Business Interests*, para 30.2).

100.7. In developing a risk margin, a *valuer must*:

(a) document the method used for developing the risk margin, including support for its use, and,

(b) provide evidence for the derivation of the risk margin, including the identification of the *significant* inputs and support for their derivation or source.

100.8. In developing a cash flow risk margin, a *valuer must* consider:

(a) the life/term and/or maturity of the *asset* and the consistency of inputs,

(b) the geographic location of the *asset* and/or the location of the markets in which it would trade,

(c) the currency denomination of the projected cash flows, and

(d) the type of cash flow contained in the forecast, for example, a cash flow forecast may represent expected cash flows (ie, probability-*weighted* scenarios), most likely cash flows, contractual cash flows, etc

100.9. In developing a cash flow risk margin, a *valuer should* consider:

(a) the less certainty there is in the anticipated fulfilment costs and fulfilment margin, the higher the risk margin *should* be,

(b) given the finite term of most non-financial *liabilities*, as opposed to indefinite for many business and asset *valuations*, to the extent that emerging experience reduces uncertainty, risk margins *should* decrease, and vice versa,

(c) the expected distribution of outcomes, and the potential for certain non-financial *liabilities* to have high 'tail risk' or severity. Non-financial *liabilities* with wide distributions and high severity *should* have higher risk margins,

(d) the respective rights and preferences of the non-financial *liability*, and/or related *asset*, in the event of a liquidation and its relative position within the liquidation waterfall.

100.10. The cash flow risk margin *should* be the compensation that would be required for a party to be indifferent between fulfilling a *liability* that has a range of possible outcomes, and one that will generate fixed cash outflows.

100.11. A *valuer* need not conduct an exhaustive quantitative process, but *should* take into account all the information that is reasonably available.

110. Restrictions on Transfer

110.1. Non-financial *liabilities* often have restrictions on the ability to transfer. Such restrictions can be either contractual in nature, or a function of an illiquid market for the subject non-financial *liability*.

110.2. When relying on market evidence, a *valuer should* consider an entity's ability to transfer such non-financial *liabilities* and whether adjustments to reflect the restrictions *should* be included. The *valuer* may need

to determine if the transfer restrictions are characteristics of the non-financial *liability* or restrictions that are characteristics of an entity, as certain *basis of value* may specify one or the other be considered (see IVS 220 *Non-Financial Liabilities*, para 50.9).

110.3. When relying on an income approach in which the non-financial liability value is estimated through a fulfilment approach, the *valuer should* determine if an investor would require an additional risk margin to account for the limitations on transfer.

120. Taxes

120.1. *Valuers should* use pre-tax cash flows and a pre-tax *discount rate* for the *valuation* of non-financial *liabilities*.

120.2. In certain circumstances, it may be appropriate to perform the analysis with after tax cash flows and *discount rates*. In such instances, the *valuer must* explain the rationale for use of after tax inputs, or specifically note the regulation, case law, or other interpretive guidance that requires the use of after tax inputs (see IVS 200 *Businesses and Business Interests*, para 30.2).

120.3. If after tax inputs are used, it may be appropriate to include the tax benefit created by the projected cash outflow associated with the non-financial *liability*.

IVS 230 Inventory

10. Overview

10.1. The principles contained in the General Standards apply to *valuations* of inventory and *valuations* with an inventory component. This standard contains additional requirements for *valuations* of inventory.

20. Introduction

20.1. Inventory broadly includes goods which will be used in future production processes (ie, raw materials, parts, supplies), goods used in the production process (ie, work-in-process), and goods awaiting sale (ie, finished goods).

20.2. This standard focuses on *valuation* of inventory of physical goods that are not real property, as the numerous and varied aspects of real property inventory were not considered or contemplated in the preparation of this standard. The *valuation* of real property is covered in IVS 400 *Real Property Interests* and IVS 410 *Development Property*.

20.3. While the book value of inventory only includes historical costs, the profits earned in the production process, which reflect returns on the *assets* utilised in manufacturing (including working capital, property, plant, and equipment, and *intangible assets*), are not capitalised into book value. As a result, the *market value* of inventory typically differs from, and is usually higher than, the book value of inventory.

20.4. As inventory is seldom transacted at an interim stage (eg, work-in-process) or may not be frequently sold to a third party to conduct the selling effort (eg, finished goods sold via distributor networks), the *valuation* techniques and considerations for inventory frequently vary from those of other.

20.5. Inventory valuations are performed for a variety of *intended uses*. It is the *valuer's* responsibility to understand the *intended use* of a *valuation.* It is also the *valuer's* responsibility to understand whether the inventory *should* be valued separately or grouped with other *assets*.

A non-exhaustive list of examples of circumstances that commonly include an inventory valuation component is provided below:

(a) for financial reporting purposes, *valuations* of inventory are often required in connection with accounting for business combinations, asset acquisitions and sales, and impairment analysis.

(b) for tax reporting purposes, inventory valuations are frequently needed for transfer pricing analyses, estate and gift tax planning and reporting, and ad valorem taxation analyses.

(c) inventory valuation may be the subject of litigation, requiring valuation analysis in certain circumstances.

(d) *valuers* are sometimes asked to value inventory as part of general consulting, collateral lending, transactional support engagements and insolvency.

30. Bases of Value

30.1. In accordance with IVS 102 *Bases of Value*, a *valuer must* select the appropriate *basis(es) of value* when valuing inventory.

30.2. Often, inventory valuations are performed using *bases of value* defined by entities/organisations other than the IVSC (some examples of which are mentioned in IVS 102 *Bases of Value*) and the *valuer must* understand and follow the regulation, case law, and other interpretive guidance related to those *bases of value* as of the *valuation date*.

40. Valuation Approaches and Methods

40.1. The three *valuation approaches* described in IVS 103 *Valuation Approaches* can all be applied to the *valuation* of inventory. The methods described below simultaneously exhibit elements of the cost approach, market approach, and income approach. If necessary for the *valuer* to classify a method under one of the three approaches, the *valuer should* use judgement in making the determination and not necessarily rely on the classification below.

40.2. When selecting an approach and method, in addition to the requirements of this standard, a *valuer must* follow the requirements of IVS 103 *Valuation Approaches*, including para 10.4.

50. Market Approach

50.1. The market approach, ie, reference to market activity involving identical or similar goods, has only narrow direct application for the *valuation* of inventory. Such applications typically include, 1) inventory

of commoditised products, or 2) inventory in which a market exists for the inventory at an interim stage in the production process. For non-commodity traded products or products that a market exists at an interim production stage, such selling prices *must* be adjusted downward to account for the disposal effort and related profit.

50.2. While the market approach is not directly applicable in most instances, *valuers should* consider market-based indications to determine the selling price as an input for other methods.

50.3. Other observable markets may provide insights on the returns attributable to the manufacturing and disposition of *assets* that can also be leveraged for inputs into other methods. Such returns are typically considered to exclude returns attributable to intellectual property. For example:

(a) distributor profit margins represent a meaningful market proxy for returns on the disposition process, if an appropriate base of comparable companies is identified.

(b) contract manufacturers, to the extent available, may provide a proxy for margins earned through the manufacturing process.

50.4. *Valuers must* comply with paras 20.2 and 20.3 of IVS 103 *Valuation Approaches* when determining whether to apply the market approach to the *valuation* of inventory. In addition, *valuers should* only apply the market approach to value inventory if both of the following criteria are met:

(a) information is available on arms-length transactions involving identical or similar inventory on or near the *valuation date*, and

(b) sufficient information is available to allow the *valuer* to adjust for all *significant* differences between the subject inventory and those involved in the transactions.

50.5. Where evidence of market prices is available, *valuers should* make adjustments to reflect differences between the subject inventory and those involved in the transactions. These adjustments are necessary to reflect the differentiating characteristics of the subject inventory and those involved in the transactions. Such adjustments may only be determinable at a qualitative, rather than quantitative, level. However, the need for *significant* qualitative adjustments may indicate that another approach would be more appropriate for the *valuation* (see IVS 103 *Valuation Approaches*, paras 10.1–10.11).

60. Income Approach

60.1. The *valuation* of inventory using the income approach requires the allocation of profit (value) contributed pre-*valuation date* versus the profit (value) contributed post-*valuation date*.

60.2. *Valuers must* comply with paras 30.2 and 30.3 of IVS 103 *Valuation Approaches* when determining whether to apply the income approach to the *valuation* of inventory.

Top-Down Method

60.3. The top-down method is a residual method that begins with the estimated selling price and deducts remaining *costs* and estimated profit.

60.4. The top-down method attempts to bifurcate the efforts, and related value, that were completed before the measurement date versus those efforts that are to be completed after the measurement date.

60.5. The key steps in applying the top-down method are to:

(a) estimate the selling price. The *valuer should* rely on direct observations of selling prices when the information is available. However, such data is often not available and the selling price is often estimated by applying an appropriate gross profit margin to the net book value of finished goods at the product level or aggregate level. Typically, the projected gross profit margin in the period the inventory will be sold is used.

(b) estimate the *costs* to complete (for work-in-process only). Completion costs *should* include all of the expenditures directly or indirectly remaining to be incurred post-*valuation date* in bringing the work in progress inventory to its finished condition. *Costs* to complete *should* be adjusted to remove expenses benefitting future periods.

(c) subtract the *costs* of disposal. *Costs* of disposal represent *costs* that would be incurred post-*valuation date* in order to deliver the finished goods to the end customer. *Costs* of disposal *should* be adjusted to remove expenses benefitting future periods. Disposal costs generally include selling and marketing expenses while procurement and manufacturing expenses have typically already been incurred for finished goods inventory. In order to properly determine *costs* of disposal, each expense in the inventory cycle (including indirect overhead) *should* be categorised as having been incurred and, therefore, contributed to the *value* of the finished goods inventory or remaining to be incurred during the disposal process.

(d) subtract the profit allowance on the completion effort (for work-in-process only) and the disposal process. An initial starting point may be to utilise the operating profit of the company. However, this methodology assumes the profit margin would be proportional to the *costs* incurred. In most circumstances, there is rationale to assume profit margins which are not proportional to *costs* (see section 90).

(e) consider any necessary holding costs. Holding costs may need to be estimated in order to account for the opportunity cost associated with the time required to sell the inventory. Additionally, the *valuer should* consider the risk born during the holding period when determining the required rate of return. Risks may be a function of the length of inventory life cycle and the contractual arrangements with end customers (eg, manufacturer bears the risk of fluctuation in *costs* of completion and disposal). Holding costs may be immaterial if the inventory turnover is high and/or the borrowing rate is low.

60.6. When determining the *cost* to complete, *costs* of disposal and profit allowance, the *valuer should* identify and exclude any expenses that are intended to provide future economic benefit and are not necessary

to generate the current period revenue. Examples of future-benefit expenses may include research and development (R&D) related to new product development; marketing for a new product; recruiting to increase the size of the workforce; expansion into a new territory; depreciation of an R&D facility dedicated to future research; or restructuring costs.

60.7. Internally developed *intangible assets should* either be modelled as 1) a *cost* as if they were hypothetically licensed, and therefore included in either the *cost* of production or disposal, or 2) considered as part of a functional apportionment when determining the appropriate profit allowance.

60.8. When utilising the top-down method, *valuers should* consider whether sufficient data are available to appropriately apply the key steps. If sufficient data are not available, it may be appropriate to apply other methods or techniques.

60.9. The *valuer* may use the bottom-up method (see para 60.10) to corroborate the *value* derived from the top-down method (see paras 60.3–60.9).

Bottom-Up Method

60.10. The key steps in applying the bottom-up method are to:

(a) determine the book value of the subject inventory. The book value may need to be adjusted for multiple considerations (see para 70.4 and section 110).

(b) add any *cost* of buying and holding already incurred.

(c) add any *cost* toward completion already incurred. Such *costs* typically include procurement and manufacturing expenses

(d) add profit on total *costs* already incurred. An initial starting point may be to utilise the operating profit of the company. However, this methodology assumes the profit margin would be proportional to the *costs* incurred. In most circumstances there is rationale to assume profit margins which are not proportional to *costs* (see section 90).

60.11. When determining the *costs* already incurred, *valuers should* consider internally developed *intangible assets* that have contributed toward the completion effort.

70. Cost Approach

70.1. The primary method to value inventory is the replacement *cost* method. Raw materials inventory is typically valued using the current replacement cost method.

70.2. *Valuers must* comply with paras 40.2 and 40.3 of IVS 103 *Valuation Approaches* when determining whether to apply the *cost* approach to the *valuation* of inventory.

Current Replacement Cost Method (CRCM)

70.3. The current replacement cost method (CRCM) may provide a good indication of *market value* if inventory is readily replaceable in a wholesale or retail business (eg, raw materials inventory).

70.4. The *market value* of raw materials and other inventory may be similar to the net book value as of the *valuation date* but certain adjustments *should* be considered.

(a) the book value may need to be adjusted to FIFO basis.

(b) if raw material *prices* fluctuate and/or the inventory turnover is slow, the book value may need to be adjusted for changes in market prices.

(c) the book value of raw materials may also be decreased to account for obsolete and defective goods.

(d) the book value may also need to be decreased for shrinkage, which is the difference between inventory listed in the accounting records and the actual inventory due to theft, damage, miscounting, incorrect units of measure, evaporation, etc.

(e) the book value may need to be increased for any *costs* incurred in connection with raw material preparation (eg, purchasing, storage and handling).

80. Special Considerations for Inventory

80.1. The following sections address a non-exhaustive list of topics relevant to the *valuation* of inventory.

(a) identification of value-added processes and returns on *intangible assets* (section 90),

(b) relationship to other acquired assets (section 100),

(c) obsolete inventory reserves (section 110),

(d) unit of account (section 120).

90. Identification of Value-Added Processes and Returns on Intangible Assets

90.1. The *valuation* of inventory involves an allocation of profit between the profit earned pre-measurement date and the profit earned post-measurement date. In practice, profit earned may not be proportional to expenses. In most cases the risks assumed, value added, or intangibles contributed to the inventory pre-measurement date are not the same as those contributed postmeasurement date.

90.2. *Valuers* typically *should* not simply allocate profit in proportion to disposition and manufacturing costs. This assumption can misallocate profit, as it presupposes that a company's production process earns profit on a pro-rata basis based on *costs* incurred. For manufacturers, this method is inappropriate if the *costs* of materials represent an initial outflow without *significant* efforts. Such an assumption also fails to recognise the contribution of internallygenerated *intangible assets* with minimal associated costs.

90.3. *Valuers should* distinguish between value-added costs and those that are not value-added. The materials portion of Cost-of-Goods-Sold (COGS) may not be a value-added cost because it does not contribute any of the profit to the inventory.

90.4. For a company that owns internally-developed *intangible assets* that contribute to an increase in the level of profitability, the return on and of those *intangible assets* would be included in the total profit margin of the business. However, whether *intangible assets* are owned or licensed, the *market value* of the inventory *should* be the same.

90.5. The *valuer should* determine the extent to which the technology, trademarks, and customer relationships support the manufacturing and distribution processes and whether the returns are applicable to the entire base of revenue. If the *intangible asset* has been utilised to create the inventory (eg, a manufacturing process intangible), then the *value* of the inventory would be increased. Conversely, if the *intangible asset* is expected to be utilised in the future, at the time of disposal, the *value* of the inventory would be decreased.

90.6. For marketing intangibles, the determination of whether the intangible is an attribute of the inventory may be difficult. To assist with the determination, the *valuer* may consider how the inventory would be marketed by a market participant to its customers – pull vs push model. A push model requires *significant* disposal efforts for inventory and is less reliant on marketing intangibles, while a pull model depends on strong brand development and recognition to pull customers to the product.

90.7. A non-exhaustive list of other considerations for evaluating when *intangible assets* are contributed may include the amount of marketing spend, whether products are sold through a distributor, level of attrition for customer relationships, and any legal rights associated with the *intangible assets*.

90.8. In some cases, the *intangible asset* may consist of several elements that contribute to various aspects of the value creation, such as a pharmaceutical product *intangible asset* that is comprised of technology and tradename. This requires an assessment of how the overall profit related to each element of the *intangible asset should* be apportioned to manufacturing the inventory versus in the disposal effort.

90.9. Similarly, although a single *intangible asset* may only contribute to either the manufacturing or disposal effort, it is possible for a portion of the intangible to be contributed pre-measurement date and a portion contributed postmeasurement date. For example, when assessing the contribution of symbolic Intellectual Property (IP) for finished goods, although the product bears the respective branding associated with the symbolic IP, the related right to sell the branded product may not be conveyed with the transfer of inventory. As such, it may be appropriate to consider such rights in the *costs* of disposal.

100. Relationship to Other Acquired Assets

100.1. The *valuer should* maintain consistency, as appropriate, between assumptions used in the inventory *valuation* relative to *valuation* of other *assets* or *liabilities*.

110. Obsolete Inventory Reserves

110.1. The *valuer should* account for obsolete inventory reserve balances. The inventory reserve balances *should* be applied to the inventory in which

the reserve applies, rather than netted against the entire inventory balance.

110.2. Typically, the obsolete inventory adjusted for the inventory reserve would not be valued as it has been adjusted to net realisable value. However, the *valuer* may need to consider further write-downs if *market value* is lower than net realisable value.

120. Unit of Account

120.1. For purposes of inventory *valuation*, it is often appropriate to assume inventory is one homogenous set of *assets*. However, it is possible for the profit margins, risk, and *intangible asset* contributions to vary by product or product group.

120.2. If the profit margins, risk, and *intangible asset* contributions vary by product or product group, and the relative mix of inventory being valued does not match the assumed sales mix used to develop the assumptions for the *valuation*, the *valuer should* assess the different groups of inventory separately.

IVS 300 Plant, Equipment, and Infrastructure

10. Overview

10.1. The principles contained in the General Standards apply to *valuations* of plant, equipment and infrastructure (PEI). This chapter includes only modifications, additional principles or specific examples of how the General Standards apply for *valuations* to which this standard applies.

20. Introduction

20.1. Items of PEI (which may sometimes be categorised as a type of personal property) are *tangible assets* that are usually held by an entity for use in the manufacturing/production or supply of goods or services, for rental by others or for administrative *purposes* and that are expected to be used over a period of time. PEI may also include infrastructure *assets*, which are typically part of a specialised system or network. Where applicable, *valuation* relating to infrastructure should also have consideration to IVS 400 *Real Property Interests* and IVS 410 *Development Property*.

20.2. For lease of machinery and equipment, the right to use an item of machinery and equipment (such as a right arising from a lease) would also follow the guidance of this chapter. It *must* also be noted that the "right to use" an *asset* might have a different life span than the service life (that takes into consideration both preventive and predictive maintenance) of the underlying machinery and equipment itself and, in such circumstances the difference *must* be stated.

20.3. Consistent with the highest and best use premise, a group of *assets* may have greater value individually than when considered as part of group of *assets*, or vice versa. PEI for which the highest and best use is "in use" as part of a group of *assets must* be valued using consistent assumptions.

20.4. *Intangible assets* fall outside the classification of PEI *assets*. However, an *intangible asset* may have an impact on the *value* of PEI *assets*. Operating software, technical data, production records and patents are examples of *intangible assets* that can have an impact on the *value* of PEI *assets*, depending on whether or not they are included in the *valuation*. In such cases, the *valuation* will involve consideration of the inclusion of *intangible assets* and their impact on the *valuation* of the PEI *assets*. When there is an *intangible asset* component, the *valuer should* also follow IVS 210 *Intangible Assets*.

20.5. A *valuation* of PEI will normally require consideration of a range of factors relating to the *asset* itself, its environment and physical, functional and economic potential. Therefore, all PEI *valuers should* inspect the *subject assets* to ascertain their condition and also to determine if the information provided to them is usable and related to the *subject assets* being valued. Examples of factors that may need to be considered under each of these headings include the following:

(a) *Asset*-related factors:

1. the *asset's* technical specification,
2. the remaining useful, economic, or effective life, considering both preventive and predictive maintenance,
3. the *asset's* condition, including maintenance history,
4. any functional, physical, and technological obsolescence,
5. if the *asset* is not valued in its current location, the *costs* of decommissioning and removal, and any *costs* associated with the *asset's* existing in-place location, such as installation and re-commissioning of *assets* to its optimum status,
6. for an *asset* that is used in a leasing context, the lease renewal options and other end-of-lease possibilities (often referred to as terminal value),
7. any potential loss of a complementary *asset*, eg, the operational life of an *asset* may be curtailed by the length of lease on the building in which it is located,
8. additional *costs* associated with additional equipment, transport, installation and commissioning, etc, and
9. in cases where the historical costs are not available for the *asset* that may reside within a plant during a construction, the *valuer* may take references from the Engineering, Procurement, Construction (EPC) contract.

(b) Environment or external-related factors:

1. the location in relation to the source of raw material and market for the product. The suitability of a location may also have a limited life, eg, where raw materials are finite or where demand is transitory,

2. the impact of any legislation or external related factors that either restricts utilisation, imposes additional operating or decommissioning costs or reduces demand for a product,
3. radioactive substances that may be in certain machinery and equipment have a severe impact if not used or disposed of appropriately. This will have a major impact on expense consideration and the environment,
4. toxic wastes which may be chemical in the form of a solid, liquid or gaseous state need to be professionally stored or disposed of. This is critical for all industrial manufacturing,
5. licences to operate certain *assets* in certain *jurisdictions* may be restricted, or may have a limited life, and
6. factors associated with environmental, social, and governance (ESG) characteristics that impacts the desirability of an asset (see IVS 104 *Data and Inputs*, Appendix).

(c) Economic-related factors:

1. the actual or potential profitability of the *asset*, which might be based on comparison of operating costs with earnings or potential earnings of the business within which the *asset* belongs (see IVS 200 *Business and Business Interests*),
2. the demand for the product manufactured by the *asset* with regard to both macro- and micro-economic factors could impact on demand, and
3. the potential for the *asset* to be put to a more valuable use than the current use (ie, highest and best use).

20.6. *Valuations* of PEI *should* reflect the impact of all forms of obsolescence on *value*.

30. Valuation Framework

30.1. In accordance with IVS 100 *Valuation Framework*, the *valuer must* comply with the valuer principles and valuation principles (see IVS 100 *Valuation Framework*, sections 10–20).

40. Scope of Work

40.1. To comply with the requirement to identify the *asset* to be valued in IVS 101 *Scope of Work*, para 20.3.(a) to the extent it impacts on *value*, consideration *must* be given to the degree to which the *asset* is attached to, or integrated with, other *assets*. For example:

(a) *assets* may be permanently attached to the land and could not be removed without substantial demolition of either the *asset* or any surrounding structure or building,

(b) an individual *asset* may be part of an integrated production line where its functionality is dependent upon other *assets*,

(c) an *asset* may be considered to be classified as a component of the real property (eg, a Heating, Ventilation and Air Conditioning System (HVAC)),

In such cases, it will be necessary to define clearly what is to be included or excluded from the *valuation*. Any special assumptions relating to the availability of any complementary *assets must* also be stated (see also para 40.2 of this chapter).

40.2. PEI connected with the supply or provision of services to a building are often integrated within the building and once installed, are often difficult to separate from it. These items will normally form part of the real property interest and therefore the requirements contained within IVS 400 *Real Property Interests* and IVS 410 *Development Property* must also be considered, where appropriate. Examples include *assets* with the primary function of supplying electricity, gas, heating, cooling or ventilation to a building and equipment such as elevators. If the purpose of the *valuation* requires these items to be valued separately, the scope of work *must* include a statement to the effect that the *value* of these items would normally be included in the real property interest and may not be separately realisable.

40.3. Because of the diverse nature and transportability of many items of PEI, additional assumptions will normally be required to describe the situation and circumstances in which the *assets* are valued. In order to comply with IVS 101 *Scope of Work*, para 20.3.(k) these *must* be considered and included in the scope of work. Examples of assumptions that *should* be appropriate in different circumstances include:

(a) that the *assets* are valued as a whole, in place and as part of an operating business,

(b) that the *assets* are valued as a whole, in place but on the assumption that the business is not yet in production,

(c) that the *assets* are valued as a whole, in place but on the assumption that the business is closed,

(d) that the *assets* are valued as a whole, in place but on the assumption that it is a forced sale (see IVS 102 *Bases of Value,* Appendix A100),

(e) that the *assets* are valued as individual items for removal from their current location.

40.4. In some circumstances, it may be appropriate to report on more than one set of assumptions, eg, in order to illustrate the effect of business closure or cessation of operations on the *value* of *assets*.

40.5. In addition to the requirements contained within IVS 101 *Scope of Work*, paras 20.1–20.4 and paras 30.1–30.2, investigations made during the course of a valuation engagement must be appropriate for the *intended use* of the valuation engagement and the *basis(es) of value*.

40.6. Sufficient investigations and evidence *must* be assembled by means such as inspection, inquiry, research, computation and analysis to ensure that the *valuation* is properly supported. When determining the extent of investigations and evidence necessary, *professional judgement* is required to ensure it is adequate for the purpose of the *valuation*.

40.7. When a valuation engagement involves reliance on information supplied by a party other than the *valuer*, consideration *should* be given as to whether the information is credible or that the information may

otherwise be relied upon without adversely affecting the credibility of the *valuation*. *Significant* inputs provided to the *valuer* (eg, by management/ owners) *should* be considered, investigated and/or corroborated. In cases where credibility or reliability of information supplied cannot be supported, consideration *should* be given as to whether or how such information is used (see IVS 101 *Scope of Work*, para 20.1(j)).

40.8. In considering the credibility and reliability of information provided, *valuers should* consider matters such as:

(a) the *intended use* of the *valuation*,

(b) the significance of the information to the valuation conclusion,

(c) the expertise of the source in relation to the subject matter, and

(d) whether the source is independent of either the subject *asset* and/ or the *intended user* of the *valuation* (see IVS 101 *Scope of Work*, para 20.1 (a)).

40.9. The *intended use* of the *valuation*, the *basis of value*, the extent and limits on the investigations and any sources of information that may be relied upon are part of the valuation engagement's scope of work that *must* be communicated to all parties to the valuation engagement (see IVS 101 *Scope of Work*).

40.10. If, during the course of a valuation assignment, it becomes clear that the investigations or limitations included in the scope of work will not result in a credible *valuation*, or information to be provided by third parties is either unavailable or inadequate, or limitations on investigations such as inspection are so substantial that it will not result in a valuation outcome that is adequate for the purpose of the *valuation*, the *valuation must* explicitly state that the *valuation* is not in compliance with IVS (see IVS 100 *Valuation Framework,* section 60 and IVS 101 *Scope of Work,* para 20.3).

50. Bases of Value

50.1. In accordance with IVS 102 *Basis/es of Value*, a *valuer must* select the appropriate *basis(es) of value* when valuing PEI.

50.2. Using the appropriate *basis(es) of value* and associated premise of *value* (see IVS 102 *Basis/es of Value,* Appendix A10–A40) is particularly crucial in the *valuation* of PEI because differences in *value* can be pronounced, depending on whether an *asset* is valued under an "in use" premise, orderly liquidation or forced liquidation (see IVS 102 *Basis/es of Value*, Appendix A30–A40). The *value* of most PEI is particularly sensitive to different premises of value.

Liquidation value

50.3. In determining any premise of *liquidation value*, it *should* be made clear as to whether the premise is required to be on an in-place (in-situ) or removed (ex-situ) basis. The characteristics associated with the *asset* or group of *assets* location, and underlying land tenure or lease term, will often impact on the in-place or removed consideration.

50.4. Regardless of whether the *asset* or group of *assets* is being considered on an in-place (in-situ) or removed (ex-situ) basis, the premise *should* try to

maximise the gross amount that would be realised having consideration to the premise of *value* under consideration. This may be achieved by selling the *assets* on a piecemeal basis, or alternatively may be achieved by selling the *assets* as a group, depending upon the market.

50.5. It *should* be noted that for plant and equipment, selling an *asset* on a removed (ex-situ) or piecemeal basis may be quite common. For infrastructure, selling an *asset* on a removed (ex-situ) or piecemeal basis may or may not be possible and will vary depending upon the characteristics of the *asset*.

50.6. The proposition of a removed (ex-situ) basis raises the possibility that there will be certain *asset* components (or originally incurred indirect costs) that are not recoverable once the *asset* is removed (either physically or economically). Such items might include (but not be limited to) foundations, electrical and process piping, transportation costs, installation and commissioning costs, fixed buildings, safety and protection equipment, etc.

50.7. When being considered on a removed basis, the buyer is typically responsible for all costs associated with de-installing and removing the *assets*. As such, the gross amount *should* not make any deductions for these *costs* as these are already taken into account by the buyer.

50.8. The premise may be considered on an as-is, where-is basis. Alternatively, the premise may require *costs* to be incurred to turn the *asset* or group of *assets* into a saleable condition to maximise the gross amount that would be realised (assuming time permits such). In the latter situation where there are *costs* to be incurred, the nature and quantum of these *costs should* be made clear, along with the rationale as to why incurring these *costs* would maximise the gross amount that would be realised. Such *costs* might include transport costs to an alternative market, overhaul, maintenance and/or servicing costs, holding or similar other *costs*.

50.9. In the event that a scope of work specifically requires the determination of a net amount (as opposed to gross amount) that would be realised from a liquidation sale, the nature and quantum of the *costs* that will likely be incurred by the seller to get from the gross to the net amount *should* be made clear.

60. Valuation Approaches

60.1. The three principal *valuation approaches* described in IVS 103 *Valuation Approaches* may all be applied to the *valuation* of PEI *assets* and/or depending on the nature of the *assets*, the information available, and the facts and circumstances surrounding the *valuation*.

70. Market Approach

70.1. For classes of plant and equipment that are homogenous, eg, cranes, construction equipment, motor vehicles (light and heavy) and earthmoving equipment, the market approach is commonly used, given there is sufficient sales data for similar *assets*. However, many types of plant and equipment are specialised and in these instances, care *must* be exercised in offering a *valuation* using a market approach when available market data is either poor or non-existent. In such circumstances it may

be appropriate to adopt either an income approach or cost approach to the *valuation (*see IVS 103 *Valuation Approaches*, para 20.3).

70.2. When using the market approach, types of evidence will include (see section 100, para 100.2*)*:

(a) actual sales of identical *assets*

(b) actual sales of similar *assets*

(c) asking prices for identical *assets*

(d) asking prices for similar *assets*

70.3. Depending upon the *asset(s)* being valued, market evidence may be considered in a variety of ways including:

(a) piecemeal (ie, individual *asset* basis),

(b) production line (ie, a group of *asset*s together forming an operating unit),

(c) whole of plant/facility (ie, a production facility producing X units per day),

(d) portfolio (ie, a group of *assets* operating across a region).

70.4. Highest and best use considerations *should* always be a primary consideration for the *valuer* when considering the above types of evidence. Specifically, a portfolio of *assets* may have greater *value* if considered individually as opposed to as part of a portfolio, and vice-versa. Where this is the case, the *valuer must* explicitly state that this is the case and provide reasoning as to the difference in forming their conclusion.

70.5. Actual sales *must* take preference over asking prices and evidence available just prior to the valuation date *should* be preferred to that further from the *valuation date*.

70.6. The reliability of the evidence *should* be weighted according to its source. Depending upon the *asset* class considered as part of the *valuation*, evidence may be considered at a local, national or international level.

70.7. The market approach for actual sales of identical *assets* includes all forms of depreciation and obsolescence relating to an *asset* and no adjustment will be required (although such evidence is rare).

70.8. When considering actual sales or asking prices of similar *assets* (and asking prices for identical *assets*), various adjustments may need to be considered to bring the evidence in line with the subject *asset*, and may include but not limited to adjustments for:

(a) technical factors (size, capacity, rating, units of production, specification, etc),

(b) deterioration and obsolescence factors (condition, intensity of use, age, maintenance, overhaul status, operating costs),

(c) market-related factors (location, currency, quantities, asking price versus actual sales, environmental/licensing/compliance status, etc),

(d) time or *basis of value* factors (date of sale versus valuation date, market sale versus liquidation sale, installed as-is/where-is versus removed, etc),

70.9. In making adjustments to bring the evidence in line with the subject *asset*, the *valuer* may use various methods including:

(a) direct adjustment (ie, a currency or amount adjustment),

(b) indirect adjustment (ie, to adjust the evidence by a percentage).

70.10. Evidence in an active and transparent market *should* always be preferred to an inactive and opaque market. Similarly, evidence will be more comparable when fewer adjustments are required to bring it in line with the subject *asset*. In all instances, *professional judgement must* be used to ensure that the evidence being considered is appropriate having consideration to the nature of the *valuation* being performed.

80. Income Approach

80.1. The income approach to the *valuation* of PEI can be used where specific cash flows can be identified for the *asset* or a group of complementary *assets*, eg, where a group of *assets* forming a process plant is operating to produce a marketable product/service or generating income from a lease. When PEI is valued on an income approach, elements of *value* that may be attributable to *intangible assets*-and other contributory *assets should* be excluded (see IVS 210 *Intangible Assets*) In certain cases, *intangible assets* may be included, where appropriate based on the scope of work and the *intended use* of the *valuation* (see IVS 101 *Scope of Work* and IVS 210 *Intangible Assets*).

80.2. The income approach can also be utilised, in conjunction with other approaches, in assessing the existence and quantum of economic obsolescence and/or goodwill for an *asset* or group of complementary *assets*. Care *should* be taken when using the income approach because it may be challenging to apportion aggregated cash flows relating to a group of complementary *assets* down into individual *assets* (where necessary).

80.3. When an income approach is used to value PEI, the *valuation must* consider the cash flows expected to be generated over the remaining economic life of the *asset(s)* as well as the *value* of the *asset* at the end of its life, often referred to as terminal value (see IVS 103 *Valuation Approaches,* Appendix A20.2–A20.22).

80.4. In accordance with IVS 105 *Valuation Models*, the income approach for an *asset* or group of complementary *assets* may be used where the main driver of *value* is largely driven by its income producing ability and afforded *weight* under the following circumstances such as:

(a) the *asset* or group of complimentary *assets* have a high barrier to entry for market participants,

(b) there is *significant* time involved to create an *asset* or group of complementary *assets* of equal utility, whether by purchase or construction,

(c) there are potential legal or regulatory hurdles to create an *asset* or group of complimentary *assets* of equal utility,

(d) a purchaser would be willing to pay a *significant* premium for the ability to use the *asset* or group of complimentary *assets* immediately, due to favourable market economics and/or more immediate cash-flow certainty,

(e) there is undue inconvenience, risk or other factors involved in obtaining an *asset* or group of complimentary *assets* of equal utility, whether by purchase or construction.

80.5. In addition, the income approach *should* also be afforded *significant weight* for an *asset* or group of complimentary *assets* under the following circumstances:

(a) the use of the market approach is either not practicable or inconclusive to *value* the *asset* or group of complimentary *assets,*

(b) the *valuation* only needs to consider the *asset* or group of complimentary *assets* as a whole, and not the *value* of individual component assets,

(c) the income-producing ability of the *asset* or group of complimentary *assets* is set by market rates, or via contracts that are frequently marked-to-market,

(d) the cash flow generated for an *asset* or group of complimentary *assets* is discrete and clearly distinguishable from other parts of the business,

(e) the *value* of other contributory *assets* that are inherently included within the income generated are either immaterial relative to the *value* of the *asset* or group of complimentary *assets* or can be readily valued in isolation from the *asset* or group of complimentary *assets* using other valuation methodologies.

90. Cost Approach

90.1. The cost approach is commonly adopted for PEI, particularly in the case of individual *assets* that are specialised or special-use facilities. The first step is to estimate the *cost* to a market participant of replacing the subject *asset* by reference to the lower of either reproduction or replacement cost. The replacement cost is the *cost* of obtaining an alternative *asset* of equivalent utility; this can either be a modern equivalent providing the same functionality or the *cost* of reproducing an exact replica of the subject *asset*. After concluding on a replacement cost, the *value should* be adjusted to reflect the impact on *value* of physical, functional, technological, and economic obsolescence on *value*. In any event, adjustments made to any particular replacement cost *should* be designed to produce the same *cost* as the modern equivalent *asset* from an output and utility point of view.

90.2. An entity's actual *costs* incurred in the acquisition or construction of an *asset* may be appropriate for use as the replacement cost of an *asset* under certain circumstances. However, prior to using such historical cost information, the *valuer should* consider the following:

(a) timing of the historical expenditures: an entity's actual *costs* may not be relevant or may need to be adjusted for inflation/indexation to an equivalent as of the *valuation date*, if they were not incurred recently due to changes in market prices, inflation/deflation or other factors.

(b) the *basis of value*: care *must* be taken when adopting a particular market participant's own costings or profit margins, as they may not represent what typical market participants might have paid. The *valuer must* also consider the possibility that the entity's *costs* incurred may not be historical in nature due to prior purchase accounting or the purchase of used PEI *assets*. In any case, historical *costs must* be trended using appropriate indices.

(c) specific *costs* included: a *valuer must* consider all *significant costs* that have been included and whether those *costs* contribute to the *value* of the *asset* and for some *bases of value*, some amount of profit margin on *costs* incurred may be appropriate.

(d) non-market components: any *costs*, discounts or rebates that would not be incurred by, or available to, typical market participants *should* be excluded.

90.3. Having established the replacement cost, deductions *must* be made to reflect the physical, functional, technological, and economic obsolescence as applicable (see IVS 103 *Valuation Approaches*, Appendix A30.15–A30.22).

Cost-to-Capacity Method

90.4. Under the cost-to-capacity method, the replacement cost of an *asset* with an actual or required capacity can be determined by reference to the *cost* of a similar *asset* with a different capacity.

90.5. The cost-to-capacity method is generally used in one of two ways:

(a) to estimate the replacement cost for an *asset* or *assets* with one capacity where the replacement costs of an *asset* or *assets* with a different capacity are known (such as when the capacity of two subject *assets* could be replaced by a single *asset* with a known *cost*), or

(b) to estimate the replacement cost for a modern equivalent *asset* with capacity that matches foreseeable demand where the subject *asset* has excess capacity (as a means of measuring the penalty for the lack of utility to be applied as part of an economic obsolescence adjustment).

90.6. This method could be used as a primary method for determining replacement cost on a top-down basis, or could be used as a check method to the replacement cost determined on a bottom-up basis. However, the existence of an exact comparison plant of the same designed capacity that resides within the same geographical area would always take preference over a cost-to-capacity method.

90.7. It is noted that the relationship between *cost* and capacity is often not linear, so some form of exponential adjustment may also be required. However, the *valuer* should exercise caution in performing this adjustment when large differences in capacity are being used as evidence relative to the subject *asset* as this may not lead to credible outcomes.

Trending Method

90.8. Trending is a method of estimating an asset's reproduction cost by applying an index (trend factor) to the *asset's* historical cost which reflects the price inflation/deflation of the *asset* over time.

90.9. Historical cost comprises the expenditure that was involved in acquiring the *asset* when it was first placed into service by its first owner. This is to be distinguished from original cost, which is the actual *cost* of a property when acquired by its present owner, who may not be the first owner and who may have purchased the asset at a price greater or less than the historical cost.

90.10. Indexes may be obtained from statistical offices or similar government agencies, institutions or research organisations. Selection of the most appropriate index is crucial when using the trending method.

90.11. Whilst the application of a trending method (often termed an indirect method which involves the application of indexing) can be an appropriate way to determine replacement cost when using the cost approach, care should be taken in relation to the following:

(a) trending *should* not be applied to anything other than historical cost (the cost of an *asset* when it was first placed into service by its first owner),

(b) historical costs represent a range of direct and indirect *costs* (ie, equipment, labour, delivery, electrical, foundations, buildings, IT, etc) that might not correlate to a certain index,

(c) trending long-dated historical costs can create erroneous and anomalous outcomes because of the various factors that impact indices over time,

(d) using an index/trend that is derived in different jurisdictions to the subject asset can create erroneous and anomalous outcomes because of the various factors that impact indices in differing jurisdictions,

(e) trending historical costs using a local index/trend for assets that were sourced in a foreign jurisdiction where there have been exchange rate movements over time.

90.12. In all instances, *professional judgement* is required to ensure the trending method to determine replacement cost as part of a cost approach is appropriate having consideration to the nature of the *valuation* being performed. If it is likely to lead to erroneous or anomalous valuation outcomes, the application of alternate approaches to determine replacement cost *must* be utilised (ie, a direct approach to estimating replacement cost).

100. Data and Inputs

100.1. In accordance with IVS 104 *Data and Inputs*, the *valuer must* maximise the characteristics of suitable data and inputs.

100.2. In addition to the requirements contained within IVS 104 *Data and Inputs* there is the following hierarchy of comparable evidence, which *should* be followed for PEI valuations:

- direct comparable evidence,
- indirect comparable evidence,
- general market data,
- other sources.

100.3. When applying the hierarchy of comparable evidence, the *valuer must* ensure that the characteristics of suitable data and inputs contained within IVS 104 *Data and Inputs* are fully applied.

100.4. The inputs selected *must* be consistent with the models being used to value the *asset (*see IVS 103 *Valuation Approaches,* para 40.1).

100.5. The selection, source and use of the inputs *must* be explained, justified, and documented.

110. Valuation Models

110.1. In accordance with IVS 105 *Valuation Models*, the *valuer must* maximise as many of the characteristics of suitable *valuation models*, as possible.

110.2. *Valuation models must* be suitable for the *intended use* of the *valuation* and consistent with suitable inputs.

110.3. *Valuation models* used *must* be explained, justified, tested and this *must* be documented.

120. Documentation and Reporting

120.1. In addition to the requirements contained within IVS 106 *Documentation and Reporting*, paras 30.1–30.9 a valuation report must be issued for a *valuation* and must include appropriate references to all matters addressed in the agreed scope of work (see IVS 101 *Scope of Work*). The report must also include comment on the effect on the reported *value* of any associated *tangible* or *intangible assets* excluded from the actual or assumed transaction scenario.

120.2. Moreover, in addition to the requirements contained within IVS 106 Documentation and Reporting, paras 40.1–40.3 a valuation review report must be issued for a *valuation review* and the valuation review report must state whether the review is a *valuation process review* or a *value conclusion review*.

130. Special Considerations for Plant, Equipment and Infrastructure

130.1. The following section addresses a non-exhaustive list of topics relevant to the *valuation* of PEI.

Allocation of value

130.2. Further to IVS 102 *Basis/es of Value,* section 70 and this chapter section 70.4, where a group of *assets* have been valued as part of a portfolio, but allocated on an individual basis, the *valuer must* explicitly state that this is the case and provide rationale as to their allocation methodology.

IVS 400 Real Property Interests

10. Overview

10.1. The principles contained in the General Standards apply to *valuation*s of real property interests. This standard only includes modifications, additional requirements or specific examples of how the General Standards apply for *valuations* to which this standard applies. *Valuation*s of infrastructure must also follow IVS 300 *Plant, Equipment and Infrastructure,* and valuations of development property *must* also follow IVS 410 *Development Property*.

20. Introduction

20.1. Property interests are normally defined by state or the law of individual *jurisdictions* and are often regulated by national or local legislation. In some instances, legitimate individual, communal/community and/or collective rights over land and buildings are held in an informal, traditional, undocumented and unregistered manner. Before undertaking a *valuation* of a real property interest, a *valuer must* understand the relevant legal framework that affects the interest being valued.

20.2. A real property interest is a right of ownership, control, use or occupation of land and buildings. A real property interest includes informal tenure rights for communal/community and or collective or tribal land and

urban/rural informal settlements or transition economies, which can take the form of possession, occupation and rights to use.

There are three main types of interest:

(a) the superior interest in any defined area of land. The owner of this interest has an absolute right of possession and control of the land and any buildings upon it in perpetuity, subject only to any subordinate interests and any statutory or other legally enforceable constraints,

(b) a subordinate interest that normally gives the holder rights of exclusive possession and control of a defined area of land and/or buildings for a defined period, eg, under the terms of a lease contract, and/or

(c) a right to use land or buildings but without a right of exclusive possession or control, eg, a right to pass over land or to use it only for a specified activity.

20.3. *Intangible assets* normally fall outside the classification of real property *assets* and/or *liabilities*. However, an *intangible asset may* be associated with, and have a material impact on, the cash flows associated with real property *assets*. It is therefore essential to be clear in the scope of work precisely what the *intended use* of the *valuation* is to include or exclude. When there is an *intangible asset* component, the *valuer should* also follow IVS 210 *Intangible Assets*.

20.4. Although different words and terms are used to describe these types of real property interest in different *jurisdictions*, the concepts of an unlimited absolute right of ownership, an exclusive interest for a limited period or a non-exclusive right for a specified *intended use* are common to most. The immovability of land and buildings means that it is the right that a party holds that is transferred in an exchange, not the physical land and buildings. The *value*, therefore, attaches to the legal interest rather than to the physical land and buildings.

20.5. *Valuations* of real property interests are often required for different *intended uses* including secured lending, sales and purchases, taxation, litigation, compensation, insolvency proceedings and financial reporting

30. Valuation Framework

30.1. In accordance with IVS 100 *Valuation Framework*, the *valuer* must comply with the valuer principles and valuation principles (see IVS 100 *Valuation Framework,* paras 10 and 20).

40. Scope of Work

40.1. To comply with the requirement to identify the *asset* and/or *liability* to be valued in IVS 101 *Scope of Work*, para 20.3 (a) the following matters *must* be included:

(a) a description of the real property interest to be valued, and

(b) identification of any superior interest, subordinate interests or right to use that affect the interest to be valued.

40.2. In accordance with requirements contained within IVS 101 *Scope of Work,* paras 20.1 to 20.4, and paras 30.1 to 30.2, Investigations made during the course of a valuation engagement t must be appropriate for the *intended use* of the valuation engagement and the *basis(es) of value*. In the case of a *valuation review* the scope of work *must* state whether the review is a *valuation process review* or a *value conclusion review*.

40.3. Sufficient investigations and evidence must be assembled by means such as inspection, inquiry, research, computation and analysis to ensure that the *valuation* is properly supported. When determining the extent of investigations and evidence necessary, *professional judgement* is required to ensure it is adequate for the purpose of the v*aluation*.

40.4. When a *valuation* assignment involves reliance on information supplied by a party other than the *valuer*, consideration *should* be given as to whether the information is credible or that the information may otherwise be relied upon without adversely affecting the credibility of the *valuation* opinion. *Significant* inputs provided to the *valuer* (eg, by management/ owners) *should* be considered, investigated and/or corroborated. In cases where credibility or reliability of information supplied cannot be supported, consideration *should* be given as to whether or how such information is used (see IVS 101 *Scope of Work*, para 20.1(j)).

40.5. In considering the credibility and reliability of information provided, *valuers should* consider matters such as:

(a) the *intended use* of the *valuation*,

(b) the significance of the information to the valuation conclusion,

(c) the expertise of the source in relation to the subject matter, and

(d) whether the source is independent of either the *subject asset* and/or the recipient of the *valuation* (see IVS 101 *Scope of Work*, paras 20.1 (a)).

40.7. The *intended use* of the *valuation*, the *basis of value*, the extent and limits on the investigations and any sources of information that *may* be relied upon are part of the valuation engagement's scope of work that *must* be communicated to all parties to the valuation engagement (see IVS 101 *Scope of Work*).

40.8. If, during the course of an engagement, it becomes clear that the investigations or limitations included in the scope of work will not result in a credible *valuation*, or information to be provided by third parties is either unavailable or inadequate, or limitations on investigations such as inspection are so substantial that it will not result in a valuation outcome that is adequate for the purpose of the *valuation*, the *valuation must* explicitly state that the *valuation* is not in compliance with IVS (see IVS 100 *Valuation Framework,* section 60 and IVS 101 *Scope of Work,* para 20.3).

40.9. In addition to the requirements to state the extent of the investigation and the nature and source of the information to be relied upon in IVS 101 *Scope of Work*, the following matters *should* be considered:

(a) the evidence, if available, required to verify the real property interest and any relevant related interests,

(b) the extent of any inspection,

(c) responsibility for information on the site area, site characteristics (eg, ground condition), building characteristics or building floor areas,

(d) responsibility for information on the area, characteristics (eg, soil conditions) and productivity generating attributes of land (eg, fertility of the soil, plantation area),

(e) responsibility for confirming the specification and condition of any building,

(f) responsibility for confirming the specification and condition of the plantation, vegetation, forest or crop,

(g) responsibility for confirming the quantity and quality of reserves and any extraction and remedial measures post extraction,

(h) the extent of investigation into the nature, specification and adequacy of services and facilities,

(i) responsibility for the identification of actual or potential environmental factors,

(j) legal permissions or restrictions on the use of the property and any buildings, as well as any anticipated or potential changes to legal permissions and restrictions.

40.10. Typical examples of special assumptions that needs to be agreed and confirmed in order to comply with IVS 101 *Scope of Work*, para 20.3.(k) (see IVS 102 *Bases of Value,* para 50.4) include but are not limited to:

(a) that a defined physical change had occurred, eg, a proposed building is valued as if complete at the *valuation date*,

(b) that there had been a change in the status of the property, eg, a vacant building had been leased or a leased building had become vacant at the *valuation date*,

(c) that the interest is being valued without taking into account other existing interests, and

(d) that the property is free from contamination or other environmental risks, and

(e) that the economic activity will continue into perpetuity, and

(f) that planning permission will be granted for the proposed change of use.

50. Bases of Value

50.1. In accordance with IVS 104 *Bases of Value*, a *valuer must* select the appropriate *basis(es) of value* for the *intended use* when valuing real property interests.

50.2. Under most *bases of value*, a *valuer must* consider the highest and best use of the real property, which may differ from its current use (see IVS 102 *Bases of Value*, Appendix A10–A40). This assessment is particularly important to real property interests which can be changed from one use to another or that have development potential.

50.3. In addition to the requirements contained within IVS 102 *Bases of Value,* section 70, on allocation of value if the sum-of-the-value of the individual allocated components differs from the value of the *assets* and/or *liabilities* on an aggregate basis, then the *valuer should* expressly state the primary reason(s) for the difference.

60. Valuation Approaches and Methods

60.1. The three *valuation approaches* described in the IVS 103 *Valuation Approaches* can all be applicable for the *valuation* of a real property interest.

60.2. When selecting an approach and method, in addition to the requirements of this standard, a *valuer must* follow the requirements of IVS 105 *Valuation Approaches*, including paras 10.3 and 10.4.

70. Market Approach

70.1. Property interests are generally heterogeneous (ie, with different characteristics). Even if the land and buildings have identical physical characteristics to others being exchanged in the market, the location will be different. Notwithstanding these dissimilarities, the market approach is commonly applied for the *valuation* of real property interests.

70.2. In order to compare the subject of the *valuation* with the *price* of other real property interests, *valuers should* adopt generally accepted and appropriate units of comparison that are considered by participants, dependent upon the type of *asset* and/or *liability* being valued. Units of comparison that are commonly used might include:

(a) *price* per square metre (or per square foot) of a building or per hectare (or per acre) for land,

(b) *price* per room, and

(c) *price* per unit or output (eg, megawatt, crop yields).

70.3. A unit of comparison is only useful when it is consistently selected and applied to the subject property and the comparable properties in each analysis. To the extent possible, any unit of comparison used *should* be one commonly used by participants in the appropriate market.

70.4. The reliance that can be applied to any comparable price data in the *valuation* is determined by comparing various characteristics of the property and transaction from which the data was derived with the property being valued. Differences between the following *should* be considered in accordance with IVS 103 *Valuation Approaches*, Appendix A10.1–10.8. Specific differences that *should* be considered in valuing real property interests include, but are not limited to:

(a) the type of interest providing the *price* evidence and the type of interest being valued,

(b) the respective locations,

(c) the respective quality of the land,

(d) the age and specification of the improvements,

(e) the permitted use or zoning at each property,

(f) the circumstances under which the *price* was determined and the *basis of value* required,

(g) the effective date of the *price* evidence and the *valuation date*, and

(h) market conditions at the time of the relevant transactions and how they differ from conditions at the *valuation date*.

80. Income Approach

80.1. Various methods are used to indicate *value* under the general heading of the income approach, all of which share the common characteristic that the *value* is based upon an actual or estimated income that either is, or could be, generated by an owner of the interest. In the case of an investment property, that income could be in the form of rent (see IVS 104 *Data and Inputs* and IVS 105 *Valuation Models*); in an owner-occupied building, it could be an assumed rent (or rent saved) based on what it would cost the owner to lease equivalent space.

80.2. For some real property interests, the income-generating ability of the property is closely tied to a particular use or business/trading activity (for example cinemas, old age homes, clinics, hotels etc). Where a building is suitable for only a particular type of trading activity, the income is often related to the actual or potential cash flows that would accrue to the owner of that building from the trading activity. The use of a property's trading potential to indicate its *value* is often referred to as the "profits method" (see para 80.3)

80.3. When the potential income used in the income approach represents cash flow from a business/trading activity (rather than cash flow related to rent, maintenance and other real property-specific *costs*) and includes *intangible assets* then this is no longer solely a real property interest *valuation* and the *valuer should* also comply as appropriate with the requirements of IVS 200 *Businesses and Business Interests* and, where applicable, IVS 210 *Intangible Assets*.

80.4. For real property interests, various forms of discounted cash flow models *may* be used. These vary in detail but share the basic characteristic that the cash flow for a defined future period is adjusted to a present value using a *discount rate*. The sum of the present day values for the individual periods represents an estimate of the capital value. The *discount rate* in a discounted cash flow model will be based on the time cost of money and the risks and rewards of the income stream in question.

80.5. Further information on the derivation of *discount rates* is included in IVS 103 *Valuation Approaches*, Appendix A20.29–A20.31. The development of a yield or *discount rate should* be influenced by the objective of the *valuation*. For example:

(a) if the objective of the *valuation* is to establish the *market value*, the *discount rate may* be derived from observation of the returns implicit in the *price* paid for real property interests traded in the market between participants or from hypothetical participants' required rates or return. When a *discount rate* is based on an analysis of market transactions, *valuers should* also follow the guidance contained in IVS 103 *Valuation Approaches*, Appendix A10.7 and A10.8, and

(b) if the objective of the *valuation* is to establish the *value* to a particular owner or potential owner based on their own investment criteria, the rate used *may* reflect their required rate of return or their weighted-average-cost-of-capital.

80.6. An appropriate *discount rate may* also be built up from a typical risk-free" return adjusted for the additional risks and opportunities specific to the particular real property interest.

90. Cost Approach

90.1. In applying the cost approach, *valuers must* follow the guidance contained in IVS 103 *Valuation Approaches*, Appendix A20.1–20.14.

90.2. This approach is generally applied to the *valuation* of real property interests through the depreciated replacement cost method (see IVS 103 *Valuation Approaches*, Appendix A30).

90.3. It may be used as the primary approach when there is either no evidence of transaction *prices* for similar property or no identifiable actual or notional income stream that would accrue to the owner of the relevant interest.

90.4. In some cases, even when evidence of market transaction *prices* or an identifiable income stream is available, the cost approach may be used as a secondary or corroborating approach.

90.5. The first step requires a replacement cost to be calculated. This is normally the cost of replacing the property with a modern equivalent at the relevant *valuation date*. An exception is where an equivalent property would need to be a replica of the subject property in order to provide a participant with the same utility, in which case the replacement cost would be that of reproducing or replicating the subject building rather than replacing it with a modern equivalent. The replacement cost *must* reflect all costs, as appropriate, such as the *value* of the land, infrastructure, design fees, finance costs and developer profit that would be incurred by a participant in creating an equivalent *asset*.

90.6. The *cost* of the modern equivalent *must* then, as appropriate, be subject to adjustment for physical, functional, technological and economic obsolescence (see IVS 103 *Valuation Approaches*, Appendix A30.15–A30.22). The objective of an adjustment for obsolescence is to estimate how much less valuable the subject property might, or would be, to a potential buyer than the modern equivalent. Obsolescence considers the physical condition, functionality and economic utility of the subject property compared to the modern equivalent.

100. Data and Inputs

100.1. In accordance with IVS 104 *Data and Inputs*, the valuer must maximise the characteristics of suitable data and inputs.

100.2. In addition to the requirements contained within IVS 104 *Data and Inputs* there is the following hierarchy of comparable evidence, which *should* be followed for real property interest *valuations*:

- direct comparable evidence
- indirect comparable evidence
- general market data
- other sources

100.3. When applying the hierarchy of comparable evidence the *valuer must* ensure that the characteristics of suitable data and inputs contained within IVS 104 *Data and Inputs* are fully applied.

100.4. The inputs selected *must* be consistent with the models being used to value the *asset* and/or *liability* (see IVS 103 *Valuation Approaches,* para 40.1).

100.5. The selection, source and use of the inputs *must* be explained, justified, and documented.

110. Valuation Models

110.1. In accordance with IVS 105 *Valuation Models*, the *valuer must* maximise as many of the characteristics of suitable valuation models, as possible.

110.2. *Valuation models must* be suitable for the *intended use* of the *valuation* and consistent with suitable inputs.

110.3. *Valuation models* used *must* be explained, justified, tested and the use *must* be documented.

120. Documentation and Reporting

120.1. In addition to the requirements contained within IVS 106 *Documentation and Reporting* para 30.1 to 30.9 a valuation report must be issued for a *valuation* and must include appropriate references to all matters addressed in the agreed scope of work (see IVS 101 *Scope of Work*). The report must also include comment on the effect on the reported value of any associated *tangible* or *intangible assets* excluded from the actual or assumed transaction scenario.

120.2. Moreover, in addition to the requirements contained within IVS 106 *Documentation and Reporting,* paras 40.1 to 40.3 a valuation review report *must* be issued for a *valuation review* and the valuation review report must state whether the review is a *valuation process review* or a *value conclusion review*.

130. Special Considerations for Real Property Interests

130.1. The following sections address a non-exhaustive list of topics relevant to the *valuation* of real property interests.

(a) Hierarchy of Interests (section 140),

(b) Rent (section 150).

140. Hierarchy of Interests

140.1. The different types of real property interests are not mutually exclusive. For example, a superior interest *may* be subject to one or more subordinate interests. The owner of the absolute interest *may* grant a lease interest in respect of part or all of his interest. Lease interests granted directly by the owner of the absolute interest are “head lease” interests. Unless prohibited by the terms of the lease contract, the holder of a head lease interest can grant a lease of part or all of that interest to a third party, which is known as a sublease interest. A sub-lease interest will always be shorter than, or coterminous with, the head lease out of which it is created.

140.2. These property interests will have their own characteristics, as illustrated in the following examples:

(a) although an absolute interest provides outright ownership in perpetuity, it may be subject to the effect of subordinate interests. These subordinate interests could include leases, restrictions imposed by a previous owner or restrictions imposed by statute.

(b) a lease interest will be for a defined period, at the end of which the property reverts to the holder of the superior interest out of which it was created. The lease contract will normally impose obligations on the lessee, eg, the payment of rent and other expenses. It may also impose conditions or restrictions, such as in the way the property may be used or on any transfer of the interest to a third party.

(c) a right of use may be held in perpetuity or may be for a defined period. The right may be dependent on the holder making payments or complying with certain other conditions.

140.3. When valuing a real property interest it is therefore necessary to identify the nature of the rights accruing to the holder of that interest and reflect any constraints or encumbrances imposed by the existence of other interests in the same property. The sum of the individual *values* of various different interests in the same property will frequently differ from the *value* of the unencumbered superior interest.

150. Rent

150.1. Market rent is addressed as a *basis of value* in IVS 104 *Bases of Value*.

150.2. When valuing either a superior interest that is subject to a lease or an interest created by a lease, *valuers must* consider the contract rent and, in cases where it is different, the market rent.

150.3. The contract rent is the rent payable under the terms of an actual lease. It may be fixed for the duration of the lease or variable. The frequency and basis of calculating variations in the rent will be set out in the lease and *must* be identified and understood in order to establish the total benefits accruing to the lessor and the liability of the lessee.

IVS 410 Development Property

10. Overview

10.1. The principles contained in the General Standards apply to *valuations* of development property. This standard only includes modifications, additional requirements or specific examples of how the General Standards apply for *valuations* to which this standard applies. *Valuations* of development property *must* also follow IVS 400 *Real Property Interests* and IVS 300 *Plant, Equipment and Infrastructure,* where applicable.

20. Introduction

20.1. In the context of this standard, development properties are defined as interests where development is required to achieve the highest and best use, or where improvements are either being contemplated or are in progress at the *valuation date* and include:

(a) the construction of buildings,

(b) previously undeveloped land which is being provided with infrastructure (see IVS 300 *Plant, Equipment and Infrastructure*),

(c) the redevelopment of previously developed land,

(d) the improvement or alteration of existing buildings or structures,

(e) land allocated for development in a statutory plan or by the permission of the relevant authorities, and

(f) land allocated for a higher *value* uses or higher density in a statutory plan. or by the permission of the relevant authorities,

20.2. *Valuations* of development property may be required for different *intended uses*. It is the *valuer's* responsibility to understand the *intended use*. A non-exhaustive list of examples of circumstances that *should* require a development valuation is provided below:

(a) when establishing whether proposed projects are financially feasible,

(b) as part of general consulting and transactional support engagements for acquisition and loan security,

(c) for tax reporting purposes, development valuations are frequently needed for ad valorem taxation analyses,

(d) for litigation requiring valuation analysis in circumstances such as shareholder disputes and damage calculations,

(e) for financial reporting purposes, *valuation* of a development property is often required in connection with accounting for business combinations, *asset* acquisitions and sales, and impairment analysis, and

(f) for other statutory or legal events that may require the *valuation* of development property such as compulsory purchases.

20.3. When valuing development property, *valuers must* follow the applicable standard for that type of *asset* (for example, IVS 400 *Real Property Interests* and IVS 300 *Plant, Equipment and Infrastructure*).

20.4. The residual value or land value of a development property can be very sensitive to changes in assumptions or projections concerning the income or revenue to be derived from the completed project or any of the development costs that will be incurred. This remains the case regardless of the method or methods used or however diligently the various inputs are researched in relation to the *valuation date* (see IVS 104 *Data and Inputs*).

20.5. This sensitivity also applies to the impact of *significant* changes in either the *costs* of the project or the *value* on completion. If the *valuation* is required for an *intended use* where *significant* changes in *value* over the duration of a construction project may be of concern to the user (eg, where the *valuation* is for loan security or to establish a project's viability), the *valuer must* highlight the potentially disproportionate effect of possible changes in either the construction costs or end *value* on the profitability of the project and the *value* of the partially completed property. A sensitivity analysis may be useful for this *intended use* provided it is accompanied by a suitable explanation.

30. Valuation Framework

30.1. In accordance with IVS 100 *Valuation Framework*, the *valuer* must comply with the valuer principles and valuation principles.

40. Scope of Work

40.1. In addition to the requirements contained within IVS 101 *Scope of Work*, para 20.1–20.4 and paras 30.1–30.2, investigations made during the course of a valuation engagement must be appropriate for the *intended use* of the *valuation* and the *basis(es) of value*. In the case of a *valuation review* the scope of work must state whether the review is a *valuation process review* or a *value conclusion review*.

40.2. Sufficient investigations and evidence must be assembled by means such as inspection, inquiry, research, computation and analysis to ensure that the valuation is properly supported. When determining the extent of investigations and evidence necessary, *professional judgement* is required to ensure it is adequate for the purpose of the valuation.

40.3. When a *valuation* involves reliance on information supplied by a party other than the *valuer*, consideration *should* be given as to whether the information is credible or that the information may otherwise be relied upon without adversely affecting the credibility of the *valuation*. *Significant* inputs provided to the *valuer* (eg, by management/owners) *should* be considered, investigated and/or corroborated (see IVS 101 *Scope of Work*, para 20.1(j)).

40.4. In considering the credibility and reliability of information provided, *valuers should* consider matters such as:

(a) the *intended use* of the *valuation*,

(b) the significance of the information to the valuation conclusion,

(c) the expertise of the source in relation to the subject matter, and

(d) whether the source is independent of either the *subject asset* and/or *subject liability* and/or the recipient of the *valuation* (see IVS 101 *Scope of Work*, paras 20.1 (a)).

40.5. The *intended use* of the *valuation*, the *basis of value*, the extent and limits on the investigations and any sources of information that may be relied upon are part of the *valuation's* scope of work that *must* be communicated to all parties to the *valuation* (see IVS 101 *Scope of Work*).

40.6. If, during the course of an assignment, it becomes clear that the investigations included in the scope of work will not result in a credible *valuation*, or information to be provided by third parties is either unavailable or inadequate, or limitations on investigations are so substantial that the *valuer* cannot sufficiently evaluate the inputs and assumptions, the *valuation* will not comply with IVS (see IVS 101 *Scope of Work*, para 20.1).

50. Bases of Value

50.1. In accordance with IVS 102 *Bases of Value*, a *valuer must* select the appropriate *basis(es) of value* for the *intended use* when valuing development property.

50.2. However, in considering the *value* of a development property, regard *should* be given to the probability that any contracts in place, eg, for construction or for the sale or leasing of the completed project may,

become void or voidable in the event of one of the parties being the subject of formal insolvency proceedings. Further regard *should* be given to any contractual obligations that may have a material impact on *market value*. Therefore, it may be appropriate to highlight the risk to a lender caused by a prospective buyer of the property not having the benefit of existing building contracts and/or pre-leases, and presales and any associated warrantees and guarantees in the event of a default by the borrower.

50.3. The *valuation* of development property often includes a *significant* number of assumptions and special assumptions regarding the condition or status of the project when complete. For example, special assumptions may be made that the development has been completed or that the property is fully leased. As required by IVS 101 *Scope of Work*, *significant* assumptions and special assumptions used in a *valuation must* be communicated to all parties to the *valuation* and *must* be agreed and confirmed in the scope of work. Particular care may also be required where reliance may be placed by third parties on the *valuation* outcome.

50.4. Frequently it will be either impracticable or impossible to verify every feature of a development property which could have an impact on potential future development, such as where ground conditions have yet to be investigated. When this is the case, it may be appropriate to make assumptions (eg, that there are no abnormal ground conditions that would result in significantly increased *costs*). If this was an assumption that a participant would not make, it would need to be presented as a special assumption.

50.5. In situations where there has been a change in the market since a project was originally conceived, a project under construction may no longer represent the highest and best use of the land. In such cases, the *costs* to complete the project originally proposed may be irrelevant as a buyer in the market would either demolish any partially completed structures or adapt them for an alternative project. The *value* of the development property under construction would need to reflect the current *value* of the alternative project and the *costs* and risks associated with completing that project.

50.6. For some development properties, the property is closely tied to a particular use or business/trading activity or a special assumption is made that the completed property will trade at specified and sustainable levels. In such cases, the *valuer must*, as appropriate, also comply with the requirements of IVS 200 *Businesses and Business Interests* and, where applicable, IVS 210 *Intangible Assets*.

50.7. Special assumptions used for valuation of a development property must follow IVS 102 *Bases of Value,* Section 50.5.

60. Valuation Approaches and Methods

60.1. There are three main approaches and one main method in relation to the *valuation* of the development property. These are:

(a) the Market Approach (see section 70),

(b) the Income Approach (see section 80), and

(c) the Cost Approach (see section 90), and

(d) the Residual Method: a hybrid of either the market approach, the income approach and/or the cost approach, which is commonly known as the residual method (see sections 100–140).

60.2. When selecting an approach and method, in addition to the requirements of this standard, a *valuer must* follow the requirements of IVS (see IVS 103 *Valuation Approaches*, including para 10.4).

60.3. The *valuation approach* to be used will depend on the required *basis of value* as well as specific facts and circumstances, eg, the level of recent transactions, the stage of development of the project and movements in property markets since the project started, and *should* always be that which is most appropriate to those circumstances. Therefore, the exercise of judgement in the selection of the most suitable approach is critical.

70. Market Approach

70.1. Some types of development property can be sufficiently homogenous and frequently exchanged in a market for there to be sufficient data from recent sales to use as a direct comparison where a *valuation* is required (see para 100.9–100.16).

70.2. In most markets, the market approach may have limitations for larger or more complex development property, or smaller properties where the proposed improvements are heterogeneous. This is because the number and extent of the variables between different properties make direct comparisons of all variables inapplicable, although correctly adjusted market evidence (see IVS 103 *Valuation Approaches*, section 20.5) may be used as the basis for a number of variables within the *valuation*.

70.3. For development property where work on the improvements has commenced but is incomplete, the application of the market approach is even more problematic. Such properties are rarely transferred between participants in their partially-completed state, except as either part of a transfer of the owning entity or where the seller is either insolvent or facing insolvency and therefore unable to complete the project. Even in the unlikely event of there being evidence of a transfer of another partially-completed development property close to the *valuation date*, the degree to which work has been completed would almost certainly differ, even if the properties were otherwise similar.

70.4. The market approach may also be appropriate for establishing the *value* of a completed property as one of the inputs required under the residual method, which is explained more fully in the section on the residual method (section 90).

80. Income Approach

80.1. Establishing the residual value of a development property may involve the use of a cash flow model in some markets (see paras 100.9–100.16 of this chapter).

80.2. The income approach may also be appropriate for establishing the *value* of a completed property as one of the inputs required under the residual

method, which is explained more fully in the section on the residual method (see section 90 of this chapter).

90. Cost Approach

90.1. Establishing the development costs is a key component of the residual method (see para 90.5 and paras 100.17–100.24 of this chapter).

90.2. The cost approach may also exclusively be used as a means of indicating the *value* of development property such as a proposed development of a building or other structure and infrastructure for which there is no active market on completion.

90.3. The cost approach is based on the economic principle that a buyer will pay no more for an *asset* than the amount to create an *asset* of equal utility. To apply this principle to development property, the *valuer must* consider the *cost* that a prospective buyer would incur in acquiring a similar *asset* with the potential to earn a similar profit from development as could be obtained from development of the subject property. However, unless there are unusual circumstances affecting the subject development property, the process of analysing a proposed development and determining the anticipated *costs* for a hypothetical alternative would effectively replicate either the market approach or the residual method as described above, which can be applied directly to the subject property.

90.4. Another difficulty in applying the cost approach to development property is in determining the profit level, which is its utility to a prospective buyer. Although a developer may have a target profit at the commencement of a project, the actual profit is normally determined by the *value* of the property at completion. Moreover, as the property approaches completion, some of the risks associated with development are likely to reduce, which may impact on the required return of a buyer. Unless a fixed price has been agreed, profit is not determined by the *costs* incurred in acquiring the land and undertaking the improvements.

100. Residual Method

100.1. The residual method is normally a combination of market approach, income approach and cost approach.

100.2. The market approach may be appropriate for estimating the gross development value of a property as one of the inputs required under the residual method.

100.3. The residual method is so called because it indicates the residual amount after deducting all known or anticipated *costs* required to complete the development from the anticipated *value* of the project when completed after consideration of the risks associated with completion of the project. This is known as the residual value.

100.4. The residual *value* can be highly sensitive to relatively small changes in the forecast cash flows and the practitioner *should* provide separate sensitivity analyses for each *significant* factor.

100.5. Caution is required in the use of this method because of the sensitivity of the result to changes in many of the inputs, which may not be precisely known on the *valuation date*, and therefore have to be estimated with the use of assumptions.

100.6. The models used to apply the residual method vary considerably in complexity and sophistication, with the more complex models allowing for greater granularity of inputs, multiple development phases and sophisticated analytical tools. The most suitable model will depend on the size, duration and complexity of the proposed development.

100.7. In applying the residual method, a *valuer should* consider and evaluate the reasonableness and reliability of the following:

(a) the source of information on any proposed building or structure, eg, any plans and specification that are to be relied on in the *valuation*, and

(b) any source of information on the construction and other *costs* that will be incurred in completing the project and which will be used in the *valuation*.

(c) any source of information on the estimation of yield/discount rate that will be used in the valuation.

100.8. The following basic elements *should* be considered in the application of the residual method.

(a) completed property *value*,

(b) construction costs,

(c) consultants fees,

(d) statutory fees,

(e) marketing costs,

(f) timetable,

(g) finance costs,

(h) development profit (on both land and building),

(i) *discount rate*.

Value of Completed Property

100.9. The first step requires an estimate of the *value* of the relevant interest in the real property following notional completion of the development project, which *should* be developed in accordance with IVS 103 *Valuation Methods and Approaches*.

100.10. Regardless of the methods adopted under either the market or income approach, the *valuer must* adopt one of the two basic underlying assumptions:

(a) the estimated *value* on completion is based on *values* that are current on the *valuation date* on the special assumption the project had already been completed in accordance with the defined plans and specification, or

(b) the estimated *value* on completion is based on the special assumption that the project will be completed in accordance with the defined plans as of the *valuation date* and specification on the anticipated date of completion.

100.11. Market practice and availability of relevant data and inputs *should* determine which of these assumptions is more appropriate. However, it is important that there is clarity as to whether current or projected *values* are being used.

100.12. If estimated gross development *value* is used, it *should* be made clear that these are based on special assumptions that a participant would make based on information available on the *valuation date*.

100.13. It is also important that care is taken to ensure that consistent assumptions are used throughout the residual value calculation, ie, if current *value*s are used then the *costs should* also be current and *discount rates* derived from analysis of current prices.

100.14. If there is a pre-sale or pre-lease agreement in place that is conditional on the project, or a relevant part, being completed, this will be reflected in the *valuation* of the completed property. Care *should* be taken to establish whether the *price* in a pre-sale agreement or the rent and other terms in a pre-lease agreement reflect those that would be agreed between participants on the *valuation date*.

100.15. If the terms are not reflective of the market, adjustments may need to be made to the *valuation*.

100.16. It would also be appropriate to establish if these agreements would be assignable to a purchaser of the relevant interest in the development property prior to the completion of the project.

Construction Costs

100.17. The *costs* of all work required at the *valuation date* to complete the project to the defined specification need to be identified. Where no work has started, this will include any preparatory work required prior to the main building contract, such as the *costs* of obtaining statutory permissions, demolition or off-site enabling work.

100.18. Where work has commenced, or is about to commence, there will normally be a contract or contracts in place that can provide the independent confirmation of *cost*. However, if there are no contracts in place, or if the actual contract costs are not typical of those that would be agreed in the market on the *valuation date*, then it may be necessary to estimate these *costs* reflecting the reasonable expectation of participants on the *valuation date* of the probable *costs*.

100.19. The benefit of any work carried out prior to the *valuation date* will be reflected in the *value*, but will not determine that *value*. Similarly, previous payments under the actual building contract for work completed prior to the *valuation date* are not relevant to current *value*.

100.20. In contrast, if payments under a building contract are geared to the work completed, the sums remaining to be paid for work not yet undertaken at the *valuation date* may be the best evidence of the construction *costs* required to complete the work.

100.21. However, contractual costs may include special requirements of a specific end user and therefore may not reflect the general requirements of participants.

100.22. Moreover, if there is a material risk that the contract may not be fulfilled, (eg, due to a dispute or insolvency of one of the parties), it may be more appropriate to reflect the *cost* of engaging a new contractor to complete the outstanding work.

100.23. When valuing a partly completed development property, it is not appropriate to rely solely on projected costs and income contained in any project plan or feasibility study produced at the commencement of the project.

100.24. Once the project has commenced, this is not a reliable tool for measuring *value* as the inputs will be historic. Likewise, an approach based on estimating the percentage of the project that has been completed prior to the *valuation date* is unlikely to be relevant in determining the current *market value*.

Consultants' Fees

100.25. These include legal and professional costs that would be reasonably incurred by a participant at various stages through the completion of the project.

Statutory fees

100.26. These are the fees associated with getting necessary permissions and approvals, which include but are not limited to building approvals, environmental clearance and fire safety.

Marketing Costs

100.27. If there is no identified buyer or lessee for the completed project, it will normally be appropriate to allow for the *costs* associated with appropriate marketing, and for any leasing commissions and consultants' fees incurred for marketing not included under para 90.23.

Timetable

100.28. The duration of the project from the *valuation date* to the expected date of completion of the project needs to be considered, together with the phasing of all cash outflows for construction costs, consultants' fees, etc

100.29. If there is no sale agreement in place for the relevant interest in the development property following practical completion, an estimate *should* be made of the marketing period that might typically be required following completion of construction until a sale is achieved.

100.30. If the property is to be held for investment after completion and if there are no pre-leasing agreements, the time required to reach stabilised occupancy needs to be considered (ie, the period required to reach a realistic long-term occupancy level). For a project where there will be individual letting units, the stabilised occupancy levels may be less than 100 percent if market experience indicates that a number of units may be expected to always be vacant, and allowance *should* be considered for *costs* incurred by the owner during this period such as additional marketing costs, incentives, maintenance and/or unrecoverable service charges.

Finance Costs

100.31. These represent the *cost* of finance for the project from the *valuation date* through to the completion of the project, including any period required after physical completion to either sell the interest or achieve stabilised occupancy. As a lender may perceive the risks during construction to differ substantially from the risks following completion of construction, the finance cost during each period may also need to be considered separately. Even if an entity is intending to self-fund the project, an allowance *should* be made for interest at a rate which would be obtainable by a participant for borrowing to fund the completion of the project on the *valuation date*.

Development Profit

100.32. Allowance *should* be made for development profit, or the return that would be required by a buyer of the development property in the market place for taking on the risks associated with completion of the project on the *valuation date*. This will include the risks involved in achieving the anticipated income or capital value following physical completion of the project. Development profit should be considered for both land as well as building(s).

100.33. This target profit can be expressed as a lump sum, a percentage return on the *costs* incurred on purchase of land as well as construction of the building/structure or a percentage of the anticipated *value* of the project on completion or a rate of return. Market practice for the type of property in question will normally indicate the most appropriate option. The amount of profit that would be required will reflect the level of risk that would be perceived by a prospective buyer on the *valuation date* and will vary according to factors such as:

(a) the stage which the project has reached on the *valuation date*. A project which is nearing completion will normally be viewed as being less risky than one at an early stage, with the exception of situations where a party to the development is insolvent,

(b) whether a buyer or lessee has been secured for the completed project, and

(c) the size and anticipated remaining duration of the project. The longer the project, the greater the risk caused by exposure to fluctuations in future *costs* and receipts and changing economic conditions generally.

100.34. The following are examples of factors that *should* typically need to be considered in an assessment of the relative risks associated with the completion of a development project:

(a) unforeseen complications that increase construction costs,

(b) potential for contract delays caused by adverse weather or other matters outside of developer's control,

(c) delays in obtaining statutory approvals,

(d) supplier failures,

(e) entitlement risk and changes in entitlements over the development period,

(f) changes in environmental, social and governance requirements in relation to the proposed development,

(g) regulatory changes,

(h) delays in finding a buyer or lessee,

(i) delays in obtaining funding for the project,

(j) discovery of irregularities in documentation such as deed or land titling during or post project commencement.

100.35. Whilst all of the above factors will impact the perceived risk of a project and the profit that a buyer or the development property would require, care *must* be taken to avoid double counting, either where contingencies are already reflected in the residual valuation model or risks in the *discount rate* used to bring future cash flows to present *value*.

100.36. The risk of the estimated *value* of the completed development project changing due to changed market conditions over the duration of the project will normally be reflected in the *discount rate* or capitalisation rate used to value the completed project.

100.37. The profit anticipated by the owner of an interest in development property at the commencement of a development project will vary according to the *valuation* of its interest in the project once construction has commenced. The *valuation should* reflect those risks remaining at the *valuation date* and the discount or return that a buyer of the partially completed project would require for bringing it to a successful completion.

Discount Rate

100.38. In order to arrive at an indication of the *value* of the development property on the *valuation date*, the residual method requires the application of a *discount rate* to all future cash flows in order to arrive at a net present value. This *discount rate* may be derived using a variety of methods (see IVS 103 *Valuation Approaches and Methods*, Appendix A20.29–A20.40).

100.39. If the cash flows are based on *values* and *costs* that are current on the *valuation date*, the risk of these changing between the *valuation date* and the anticipated completion date *should* be considered and reflected in the *discount rate* used to determine the present value. If the cash flows are based on prospective *values* and *costs*, the risk of those projections proving to be inaccurate *should* be considered and reflected in the *discount rate*.

110. Existing Asset

110.1. In the *valuation* of development property, it is necessary to establish the suitability of the real property in question for the proposed development. Some matters may be within the *valuer's* knowledge and experience, but some may require information or reports from other specialists. Matters that typically need to be considered for specific investigation when undertaking a *valuation* of a development property before a project commences include:

(a) whether or not there is a market for the proposed development,

(b) is the proposed development the highest and best use of the property in the current market,

(c) whether there are other non-financial obligations that need to be considered (political, environmental or social criteria),

(d) legal permissions or zoning, including any conditions or constraints on permitted development,

(e) limitations, encumbrances or conditions imposed on the relevant interest by private contract,

(f) rights of access to public roads or other public areas,

(g) geotechnical conditions, including potential for contamination or other environmental risks,

(h) the availability of, and requirements to, provide or improve necessary services, eg, water, drainage, sewerage and power,

(i) the need for any off-site infrastructure improvements and the rights required to undertake this work,

(j) any archaeological constraints or the need for archaeological investigations,

(k) sustainability and any *client* requirements in relation to green buildings,

(l) economic conditions and trends and their potential impact on *costs* and receipts during the development period,

(m) current and projected supply and demand for the proposed future uses,

(n) the availability and *cost* of funding,

(o) the expected time required to deal with preparatory matters prior to starting work, for the completion of the work and, if appropriate, to rent or sell the completed property, and

(p) any other risks associated with the proposed development.

110.2. Where a project is in progress, additional enquires or investigations will typically be needed into the contracts in place for the design of the project, for its construction and for supervision of the construction.

120. Data and Inputs

120.1. In accordance with IVS 104 *Data and Inputs*, the *valuer* must maximise the characteristics of suitable data and inputs.

120.2. In addition to the requirements contained within IVS 104 *Data and Inputs* there is the following hierarchy of comparable evidence, which should be followed for development property valuations:

- direct comparable evidence,
- indirect comparable evidence,
- general market data,
- other sources.

120.3. When applying the hierarchy of comparable evidence the *valuer must* ensure that the characteristics of suitable data and inputs contained within IVS 104 *Data and Inputs* are fully applied.

120.4. The inputs selected *must* be consistent with the *valuation models* being used to value the *asset* and/or *liability (*see IVS 103 *Valuation Approaches,* para 40.1).

120.5. The selection, source and use of the inputs *must* be explained, justified, and documented.

130. Valuation Models

130.1. In accordance with IVS 105 *Valuation Models*, the *valuer must* maximise as many of the characteristics of suitable valuation models, as possible.

130.2. Valuation models *must* be suitable for the *intended use* of the *valuation* and consistent with suitable inputs.

130.3. Valuation models used *must* be explained, justified, tested and the use *must* be documented.

140. Documentation and Reporting

140.1. In addition to the minimum requirements in IVS 106 *Documentation and Reporting,* paras 30.1–30.9, a valuation report on development property *must* include appropriate references to all matters addressed in the agreed scope of work (see IVS 101 *Scope of Work*) The report *must* also include comment on the effect on the reported value of any associated *tangible* or *intangible assets* excluded from the actual or assumed transaction scenario.

140.2. Moreover, in addition to the requirements contained within IVS 106 *Documentation and Reporting* paras 40.1–40.3 a valuation review report must be issued for a *valuation review* and the valuation review report must state whether the review is a *valuation process review* or a *value conclusion review*

150. Special Considerations for Secured Lending for a Development Property

150.1. The appropriate *basis of value* for secured lending is normally *market value*. However, in considering the *value* of a development property, regard *should* be given to the probability that any contracts in place, eg, for construction or for the sale or leasing of the completed project may, become void or voidable in the event of one of the parties being the subject of formal insolvency proceedings. Further regard *should* be given to any contractual obligations that may have a material impact on *market value*. Therefore, it may be appropriate to highlight the risk to a lender caused by a prospective buyer of the property not having the benefit of existing building contracts and/or pre-leases, and presales and any associated warrantees and guarantees in the event of a default by the borrower.

150.2. To demonstrate an appreciation of the risks involved in valuing development property for secured lending or other *intended uses*, the *valuer* may apply a minimum of two appropriate and recognised methods

to valuing development property for each valuation project, as this is an area where there is often "insufficient factual or observable inputs for a single method to produce a reliable conclusion" (see IVS 103 *Valuation Approaches and Methods*, para 10.5).

150.3. The *valuer must* be able to justify the selection of the *valuation approach(es)* reported and *should* provide an "as is" (existing stage of development) and an "as proposed" (completed development) *value* for the development property and record the process undertaken and a rationale for the reported *value* (see IVS 103 *Documentation and Reporting*, paras 30.1–30.9).

IVS 500 Financial Instruments

Contents	Paragraphs

Governance

10. Objective

10.1. The principles contained in the General Standards apply to *valuations* of *financial instruments*. This standard contains additional requirements or specific examples of how the General Standards apply to *valuations*

of *financial instruments* in the areas of Data and Inputs, Methods and Models, and Quality Control.

20. Scope

20.1. This Asset Standard *must* be applied in all *valuations* of *financial instruments* used for, but not limited to, financial, tax or regulatory reporting.

30. Valuations of financial instruments

30.1. There are a number of approaches to valuing *financial instruments*. In certain cases, *values* for *financial instruments* are observable and readily available based on documented trading in the exact security. In other cases, *values* are developed using industry-standard models based on inputs and adjustments with varying degrees of observability. For more complex or less liquid products, *values* may require bespoke models or be developed using internally-developed inputs or assumptions. In determining *values*, *professional judgements* may be required in the areas of data and inputs, models, and controls.

30.2. In assessing the appropriateness of the *valuation approach* to be used in developing a *valuation* and implementing associated quality controls, the *valuer must* understand the contractual, structural, and performance features of the *financial instrument* to be valued, as well as its liquidity and other information, such as legal or regulatory factors, potentially impacting the *value*.

30.3. *Valuation risk* exists in the *valuation* of *financial instruments*. As such, throughout the *valuation*, procedures and controls *must* be put in place that enable *valuation risk* to be assessed and managed to help ensure that the value is appropriate for its *intended use*. Any *valuation risk* identified during the design and implementation of the *valuation must* have quality controls and *should* have an appropriate level of review and challenge (see IVS 100 *Valuation Framework*, section 30).

30.4. In applying this standard, the valuer must have regard to significance. Significance determines the nature and extent of effort that an entity needs to expend in applying this chapter. For instruments with high *valuation risk*, the level of quality control and documentation required will be significantly greater than that required for *valuations* with low *valuation risk*.

40. Functions within a *valuation* for *financial instruments*

40.1. The *valuer* is an individual, group of individuals or individual within an entity, regardless of whether employed (internal) or engaged (contracted/external), possessing the necessary qualifications, ability and experience to execute a *valuation* in an objective, unbiased, ethical and competent manner. In some jurisdictions, licensing is required before one can act as a valuer. The *valuer must* design, implement and execute processes applicable to each part of the *valuation*, including quality controls. The *valuer must* ensure that there is sufficient documentation of the valuation process and related controls of the execution of the *valuation* and of the calculation of *values* to allow for meaningful review and challenge by a peer of the *valuation* and the *value.*

40.2. A *valuer* may consider delegating aspects a *valuation* to additional parties either within an organisation or outside it, such as *specialists* or *service organisations*. To perform a *valuation* in these circumstances, the *valuer must* inform these parties of the nature of the procedures to be performed. In addition, the *valuer must* determine that these parties have performed their specific procedures in a manner that is consistent with the *valuation* being prepared in full compliance with the IVS and the conclusion of value.

40.3. As part of a *valuation*, quality controls *must* be in place. Quality controls *should* include a degree of review and challenge. Review and challenge *should* assess the process implemented and judgements made during the *valuation* and in determining the value. The review and challenge function *must* be independent from the *valuation* function (see IVS 100 *Valuation Framework,* para 30.9).

40.4. For the *valuation* of *financial instruments* in larger organisations or for more complex *financial instruments,* the review and challenge processes may be performed by a technical function or challenger, such as a product control group or a model validation team, and an operational function or assessor, such as internal audit.

40.5. The functions involved in the review and challenge of a *valuation*, including any delegation to other *specialist* or *service organisations*, *must* be clearly described, documented and understood by the parties involved.

40.6. The responsibility for the performance of individual functions within the *valuation* may vary depending on organisational structure but the assignment of responsibilities *must* be documented and reviewed periodically to ensure that the accountability for the execution of all components is clearly assigned.

50. Data and Inputs

Overview

50.1. This data and inputs section supplements IVS 104 *Data and Inputs*, adding greater detail as it relates to *financial instrument*s.

50.2. A broad range of data and inputs are used in developing *values* for *financial instruments*. Data and inputs may include observable market data such as published prices and yields but may also require the use of proxies and assumptions and may require adjustments. Data and inputs *should* be based on factual information (such as measurements or statistics), but often include *professional judgement* and analysis in order to arrive at a numerical input to be used in the *valuation*.

50.3. The characteristics of the selected data *must* be fully understood by the *valuer*. A disciplined selection of appropriate data to ensure objectivity and minimise bias, coupled with implementing appropriate processes and controls over data, mitigates risk. In all cases, the *valuer must* apply professional scepticism in the selection and use of data and inputs. A *specialist* or a *service organisation* may be used to obtain either data or inputs. The *valuer*, however, remains ultimately responsible for using data and inputs appropriate for the *valuation*.

50.4. In larger organisations or for more complex *financial instruments*, a valuation governance framework *should* be considered to assist the *valuer* and to assist in the assessment as to whether parties involved in *valuation* effectively performed their roles.

60. Core principles for data and input

60.1. For a valuation to produce *values* consistent with the *intended use*, a valuation must use data and inputs that are suitable for the *valuation approach* for the *financial instrument.*

60.2. The use of data and inputs inherently presents *valuation risk*. *Valuation risk* may arise due to, 1) the use of incorrect data or inputs; or, 2) the misapplication of data or inputs. The identification and selection of suitable data and inputs and applying them appropriately is an important part of the *valuation* to produce *values* consistent with the *intended use*.

70. Characteristics of Suitable Data and Inputs

70.1. In selecting data and inputs that are suitable for *financial instrument*s, a process *must* be used that maximises as many of the following characteristics as possible. The characteristics of suitable data and inputs are shown below, and suitable is defined as "fitness for use" in terms of *client* and *intended user* needs in the context of the *intended use*, *basis of value* and the *asset* and/or *liability* being valued. Suitable data and inputs, as of a *valuation date*, *must* maximise the following characteristics (see IVS 104 *Data and Inputs*):

(a) accuracy: data and inputs are free from error and bias and reflect the characteristics that they are designed to measure,

(b) appropriateness: data and inputs are relevant for the *asset* and/or *liability* being valued,

(c) completeness: set of data and inputs are sufficient to address attributes of the *assets* and/or *liabilities*,

(d) observability: data and inputs are obtainable and visible to multiple users or market participants,

(e) timeliness: data and inputs reflect the market conditions as of the *valuation date*,

(f) transparency: the source of the data and inputs can be traced from their origin.

70.2. A documented process *must* be implemented over the selection and use of data and inputs to help ensure that the *valuation* produces a *value* consistent with the *intended use* and in a transparent manner. In addition, documentation must identify any *valuation risk* resulting from decisions in the development and use of data and describe associated quality controls to mitigate such *valuation risk* (see IVS 104 *Data and Inputs,* section 50).

80. Characteristics of Data and Inputs for Financial Instruments

80.1. There are many types of data and inputs used in the *valuation* of a *financial instrument*. The characterisation of these data types is meant to facilitate these standards, not to require specific labels. The following three types of data are considered in this chapter.

(a) static data is observed once and is unchanged for the life of the valued instrument. Static data, while generally set upon the origination of an instrument, may be modified, or amended and includes characteristics of the instrument, security, or contract such as notional amount or coupon rate.

(b) dynamic data is observed on a regular basis (eg, daily or monthly) and can be considered extrinsic to the instrument. Dynamic data include but are not limited to the *prices*, rates, and other market-based data as of the *valuation date*. They may be from broker feeds, trade reporting, official sector, exchanges, and other aggregators.

(c) performance data is observed in a regular cadence and can be considered as intrinsic to the instrument. Performance data include the cash flow, profit/loss, or behavioral features of the instrument. They are collected over time, change from *valuation date* to *valuation date*, and are needed to determine the *valuation.*

80.2. If a *valuation* is recurring, the process should be implemented to be consistent across *valuation dates*. Since certain data and inputs will be collected and used over time, data and inputs must be reassessed as of any *valuation date* to determine if they continue to be suitable.

80.3. When data and inputs are not transparent, the *valuer should* consider using indicative, judgmental or internal data and inputs.

(a) indicative data is market data that is intended to be for a specified security but is an estimate and not an actual transaction, as such it carries greater potential for valuation uncertainty. It *should* be contemporaneous with the *valuation date*. This data may have the characteristics of market data, but it is not captured specifically from actual market transactions, instead being sourced from pricing data vendors, brokers and proxies.

(b) judgmental data is data that has been manipulated into a form required by the valuation process. The development of judgmental data involves using available market data and modifying it using assumptions, interpolation, extrapolations and other techniques required to generate data that is appropriate for the *valuation* being performed. Given the qualitative considerations required in the development of judgmental data, the *valuer must* be document the basis for judgment data used and how it was developed.

(c) internal data is that which is derived from the entity's own observed transactions, *valuations*, spread matrices, and other calculated or transacted markets where data is collected but remains private or proprietary.

80.4. Regardless of transparency, when data and inputs are used in a *valuation*, they create *valuation risk.* The types of *valuation risks* for data and inputs that are transparent generally are operational while for other data and inputs *valuation risks* are generally related to assumptions made by the *valuer*. In selecting and using data and inputs, any *significant valuation risk should* be mitigated.

80.5. Individuals with the appropriate experience shall be responsible for identifying and ensuring that these data elements are incorporated in the design of the *valuation*.

80.6. In order to categorise and manage data and inputs used in *valuations*, a taxonomy (a data dictionary) *should* be implemented. That taxonomy will contribute to a standardised application of process and inform participant expectations of the *valuers* and other parties included in the *valuation*.

90. Selecting Data and Inputs

90.1. It is the *valuer* who is responsible for the data used to prepare the *valuation* and the result of the *valuation*. *Valuers must* be aware of market conventions to be able to determine the appropriateness of data and inputs as of a *valuation date*. Conventions such as quoted prices, spread or yield, ticks or basis points, cash flow standard assumptions, etc, *must* be understood and documented to maximise data quality (see IVS 104 *Data and Inputs,* section 40).

90.2. *Valuation* data *must*, where possible, reflect the market where the instrument is traded, but its reliability will vary with the nature of the market as of the *valuation date.* For example, whether data is from a two-way market, a wholesale broker-dealer market, or arises from new originations.

90.3. The liquidity of a market price (ie, bid/offer width) *must* be assessed to determine if the data being used represents normal or unusual market conditions such as stressed conditions, liquidity constraints and otherwise unusual market activity.

90.4. In circumstances where proxy data is used, the *valuer must*;

(a) assess that there are enough features with the original instrument to be sufficiently similar to the proxy,

(b) for *valuations* over time, that the degree of similarity remains valid over time through a periodic or triggered review to confirm or reject the similarity or correlation.

90.5. The *valuer must* the identify and assess the source of data and inputs to determine any limitations, assumptions or bias. This includes data and inputs that are internally sourced and acquired externally from *service organisations* and *specialists*. The *valuer should* perform procedures including but not limited to reading policies of *service organisations* and *specialists*, testing availability of comparable historical data, performing due diligence over the data extraction or collection processes, and reviewing information rights of instrument owners. In addition, any relationship the entity and the source of the data or any the bias of the

parties involved in the transaction being identified and assessed for its impact on the valuation.

90.6. The *valuer must* consider data that is proximate to the *valuation date*. In the absence of timely data, the *valuer* may consider data that can be reasonably be believed to approximate the data that would have been timely. For example, the *valuer's professional judgement* determines which is the best proxy of the *valuation date price* during a market's closing time: either the stale price of the previous session closing time or any available price before closing on the current trading session.

90.7. To the extent the *valuer* is unable to obtain data or inputs of a sufficient quality, and suitable proxy or other data can also not be identified, the *valuer must* pursue other methodologies to perform the *valuation* or consider its ability to perform the *valuation* appropriate for the *intended use*.

90.8. In selecting data for the *valuation* of portfolios of similar *financial instruments*, the *valuer must* determine the similarity to the instruments being valued. Among the features to be considered include but are not limited to: type of instrument, sector or nature of the underlying *asset* and/or *liability*, currency, issuing amount, term, market conditions, such as the *jurisdiction* or market size, credit risk, contingent payments or other optionality, and any other relevant terms and conditions or restrictions relevant to the instrument.

100. Using Data and Inputs

100.1. The *valuer must* determine that data and inputs are appropriate as of the *valuation date*. As such, the *valuer*, *must* perform quality control procedures over the data and inputs used for *valuation*. Such procedures *must* address any *valuation risks* associated with the data and controls. A set of procedures may include but not be limited to quantitative testing by comparing to known authoritative sources, qualitative generalised testing of source or vendor, internal consistency identifying gaps or outliers, and factor attribution which correlates changes in data with changes in valuation results.

(a) while a full range of data *must* be considered, data cleansing or calibration may be required to remove outliers for a more precise range of inputs and comparable items;

1. the *valuer must* consider the significance of data or inputs relative to the valuation process as a whole when determining the efforts to obtain data or inputs,
2. any proxy data that is used *should* be selected after evaluating a range of potential proxies to ensure that the selected data represent the most reliable proxy possible.

(b) the *valuer must* ensure that quality controls exist as of the *valuation date* to maintain confidence in the methodology of data collection and to assure its integrity. This includes data and inputs that are internally sourced and acquired externally from *service organisations* and *specialists*.

(c) the *valuer must* use data and inputs that are as recent to the *valuation date*. As such, the *valuer must* design and implement quality controls to assess the timeliness of data and eliminate stale data.

1. in the absence of timely data, the *valuer* may consider data that can be reasonably believed to approximate the data that would have been timely. For example, the *valuer's* judgement determines which is the best proxy of the *valuation date price* during closing time: either the stale price of the previous session closing time or any available price before closing on the current trading session.
2. the degree to which data that is not as of the *valuation date* is used *must* be assessed in *valuation risk* as well as in the quality controls implemented over such data. For example, historical data may be appropriate as data and inputs for a specified security at a time which is not contemporaneous with the *valuation date* but *must* be assessed in the *valuation risk* to be addressed by the *valuer*.
3. the *valuer must* continuously reassess the staleness of data; the staleness of data and its position on the continuum of data may vary based on changing market conditions. Therefore there is no consistent time at which data becomes stale given it will depend on the data being utilized and the market conditions at the time of the data's derivation and as of the *valuation date*. For proxies, the degree of similarity remains valid should be assessed.

100.2. Since data and inputs can be used by various parties across a valuation process, individuals with the appropriate experience *must* be responsible for identifying and ensuring that these data elements are reflected accurately in the *valuation*. Once captured, data *should* not be altered or amended. If a *valuer* wishes to use a data set that is altered, the original data set *must* remain available for comparison. An error correction process must be used but be rigorously applied and governed.

100.3. While the *valuer must* perform quality controls to address risks in the *valuation*, additional review and challenge *should* be performed for *significant* or complex *valuations*. Review and challenge *should* review and assess:

(a) the assumptions made by the *valuer* regarding data and the judgemental components in it, if any, and assess the *valuer's* data sources as well as disregarded sources. The challenger may suggest these measures to add valuation adjustments and mitigate data risk.

(b) the data sources access operational restrictions. For example, the availability of historical data and real-time data, or data access conditional to certain circumstances.

(c) data alternatives to contrast that of the *valuer*. The alternative(s) may be more or less accurate, appropriate, timely, observable/transparent or complete than the data selection of the *valuer*.

100.4. For the *valuation* of *financial instruments* in larger organisations or for more complex *financial instruments*, the review and challenge processes should be performed by a technical function or challenger, such as a product control group or a model validation team, and an operational function or assessor, such as internal audit. Assessment function

reviews the procedures and documentation produced of the *valuer* and challenger to determine whether they complied with policies and procedures. Such reviews *should* be documented.

110. Documentation for Data and Inputs

110.1. Tthe *valuer must* document the overall quality of the data and inputs used in the *valuation*. Such documentation *must* include the sources of the data, the steps the *valuer* took to obtain the data, and why the *valuer* decided to use such data. In addition, the documentation *should* include quality controls over the data.

110.2. The documentation *must* be sufficient to allow a peer to understand why data and inputs were selected.

110.3. The procedures of the review and challenge function *should* be documented to allow a peer to assess the degree of work performed and the basis for conclusions drawn. or recurring *valuations*, the *valuer must* explain and document why changes occurred and were appropriate.

120. Methods and Models

Overview

120.1. This section herein supplements IVS 105 *Valuation Models*, adding greater detail as it relates to *financial instruments*.

120.2. The objective of this chapter is to set out the standards pertaining to the appropriate development and use of models in a *valuation*.

120.3. A model is a quantitative implementation of a method in whole or in part that converts input data into outputs used in the development of a *value*. A model *may* rely on other models to derive its inputs or adjust its outputs.

120.4. A model *may* be developed internally or sourced externally.

130. Core principles for *Valuation Models*

130.1. For a *valuation* to produce *values* consistent with the *intended use*, a *valuation must* use *valuation models* that are suitable for the *valuation approach* for the *financial instrument.*

130.2. The use of *valuation models* inherently presents *valuation risk*. *Valuation risk* may arise due to, 1) fundamentally incorrect models; or, 2) the misapplication of models. *Valuation models* may have fundamental errors and may produce inaccurate *values* when viewed against their design objective and *intended use*. A fundamentally sound *valuation model* producing accurate *values* consistent with the design objective may exhibit *valuation risk* if it is misapplied or misused.

140. Characteristics of a suitable valuation model

140.1. For a *valuation model* to be appropriate, it *must* be suitable for the *intended use* of the *value* and consistent with suitable inputs as of the *valuation date*. At times, it will not be possible to incorporate all these characteristics. The characteristics of a suitable *valuation model* are shown below, and suitable is defined as “fitness for use” in terms of *client*

and *intended user* needs in the context of the *intended use*, *basis of value* and the *asset* or *liability* being valued. A suitable *valuation model*, as of a *valuation date*, *must* maximise the following characteristics (see IVS 105 *Valuation Models,* section 30):

(a) accuracy: the *valuation model* is free from error and functions in a manner consistent with the objectives of the *valuation*,

(b) appropriateness: the *valuation model* is suitable for the *asset* and/or *liability* being valued given market conditions at the *valuation date,*

(c) completeness: the *valuation model* addresses all the features of the *asset* and/or *liability* to determine value,

(d) timeliness: the *valuation model* reflects the market conditions as of the *valuation date*,

(e) transparency; all persons preparing and relying on the *valuation model must* understand how the *valuation model* works and its inherent limitations.

140.2. Relevant *valuation approaches* and *methods must* be considered in conjunction with an understanding of which would be most appropriate for the *intended use* of the *valuation*. If there are instances where the use of multiple approaches and methods could be appropriate, particularly when there are insufficient factual or observable inputs for a single method to produce a reliable value, the basis for selection *should* be documented**.**

140.3. A documented process *must* be implemented over the selection and use of data and inputs to help ensure that the *valuation* produces a *value* consistent with the *intended use* and in a transparent manner. In addition, since it will not be possible to incorporate all these characteristics in all *valuations*, a documented process helps ensures the identification and mitigation that any *valuation risk* resulting from decisions in the development and use of models and associated quality controls.

150. Model Selection

150.1. The process of selecting a *valuation model* that is suitable for the *intended use* and is consistent with suitable inputs as of the *valuation date* involves *professional judgeme*nt. The potential for error in *valuation models* necessitates the importance of sound and comprehensive processes around *valuation model* development (see IVS 105 *Valuation Models,* section 40);

(a) The selecting of a suitable *valuation model should* include the following processes:

1. design and development: determining the appropriate *valuation approaches* and techniques,
2. implementation: testing and assessing model outputs and limitations,
3. validation: reviewing the appropriateness, accuracy, and transparency of a model,
4. documentation: documenting the policies and procedures undertaken around the entire model development process and consistent with the *valuation*'s *intended use* and any limitations or adjustments.

(b) A process *should* be in place when relying on *valuation models* developed by a third party to assess such models to a similar level as an internally developed model. When a *valuer* cannot perform these processes, compensating processes *must* be performed to (i) assess their appropriateness and accuracy; (ii) understand their limitations; and (iii) assess whether the model is for the *intended use.* These processes *must* be documented.

150.2. Selection of a suitable model *must* consider:

(a) the *intended use* of the *valuation,*

(b) the *basis of value* underlying the *valuation,*

(c) the specific attributes and characteristics of the *financial instrument* being valued.

150.3. Appropriate *valuation approaches* and *methods must*:

(a) be conceptually sound and theoretically supportable, which often is supported by published research and market practice,

(b) have sufficient, relevant and reliable data available to determine input(s) and determine value.

150.4. A *valuation model* may not capture all the qualitative and quantitative variables that impact value. Maximising the quality of the information and assumptions will reduce estimation uncertainty but cannot reduce exposure to information that is difficult to capture in a *valuation model*. Even the best constructed *valuation model* will be susceptible to such uncertainties. Assumptions and limitations *must* be transparent to all parties involved in the *valuation*. As the amount of relevant information omitted from the *valuation* increases, the potential for *valuation risk* increases.

160. Testing the valuation model

160.1. All *valuation models must* be tested prior to use. Testing a *valuation model* is integral in determining whether the various components and its overall function are performing as intended, and *must* include:

(a) appropriateness for its *intended use*,

(b) the suitability of the data incorporated into the model,

(c) mathematical accuracy,

(d) operational accuracy (ie, data links, etc),

(e) robustness (ie, the model outputs are consistent over a range of data or inputs).

160.2. The nature of testing and analysis will depend on the type of *valuation model* and underlying *financial instrument* being valued. A variety of tests is likely required to develop a suitable *valuation model*.

160.3. If *valuation model* testing reveals the *valuation model* is not suitable for its intended use, the *valuation model must* be remediated or rejected.

160.4. It is important to understand a *valuation model*'s capabilities and limitations given its simplifications and assumptions. Limitations come

in part from weaknesses in the *valuation model* due to its various shortcomings, approximations, and uncertainties. Limitations are also a consequence of assumptions underlying a *valuation model* that may restrict the scope to a limited set of specific circumstances and situations.

160.5. Testing *must* be conducted to assess the potential limitations of a *valuation model* and to evaluate its behaviour over a range of inputs. Testing *must* also assess the impact of assumptions and identify situations where a *valuation model* is not suitable for its *intended use* or becomes unreliable. Testing *must* be applied under a variety of market conditions, including scenarios that are outside the range of ordinary expectations. Extreme scenarios *must* be evaluated to identify any boundaries of valuation model effectiveness.

160.6. A suitable *valuation model must* have documented evidence supporting *significant* modelling choices, including the valuation methodology, key assumptions, data, and specific mathematical calculations. As part of this process, *significant* inputs to the *valuation model should* be subjected to analysis by both evaluating the quality and extent of the model and conducting additional analysis and testing as necessary. The following are core validation processes around evaluating conceptual soundness:

- assessing whether the *valuation model* is consistent with its *intended use* and *basis of value*.
- comparison of valuation methodologies adopted to alternative theories and approaches
- key assumptions and other inputs *must* be assessed, with analysis of their impact on model outputs and limitations.
- the relevance and reliability of data used by the *valuation model must* be evaluated.

160.7. Sensitivity analysis *must* be conducted to assess the impact of changes in inputs on model outputs to determine if they fall within a reasonable range. Unexpected large changes in outputs in response to small changes in inputs may indicate an unstable model. Varying multiple inputs simultaneously may evaluate unexpected interactions, particularly if the interactions are complex and not intuitively clear. Sensitivity testing may help establish boundaries of model performance by identifying acceptable ranges of inputs as well as conditions under which a *valuation model* may become unstable or inaccurate.

160.8. If testing indicates that a *valuation model* may be inaccurate or unstable, there *must* be policies in place that call for the model to be either modified, have limitations placed on its use, replaced, or abandoned.

160.9. Qualitative information and *professional judgement* used in a *valuation model must* be evaluated, including the logic, *professional judgement*, and types of information used, to establish the conceptual soundness of the model and set appropriate conditions for its use. The validation process *must* ensure that qualitative and *professional judgement* assessments are conducted in an appropriate and systematic manner, are supported, and are documented.

170. Validation

170.1. An independent validation *should* be performed to assess the appropriateness of selected *valuation model* in line with design objectives and *intended use*, to determine if it is performing as designed, and whether model limitations have been identified and the impact of limitations on value are understood.

170.2. A validation process *must* be performed by one or more individuals with sufficient knowledge, skills, and expertise relative to the *financial instrument* being valued. In addition, they *must* have the authority to effectively challenge the model and elevate their findings to whomever is ultimately accountable for the *valuation*.

170.3. The validation process *must* be objective and free from bias.

170.4. The extent and rigor of validation procedures *should* be commensurate with significance and the *intended use* of the model. The specific tests performed, and their frequency are matters that depend on the circumstances and *must* be defined and appropriately set as part of the overall valuation framework.

170.5. For models that are intended to be used on an ongoing basis, the validation process *must* continue periodically while the model remains in use. Over time, if a *valuation model* is determined to be no longer suitable or if facts and circumstances change, the *valuation model must* either be redeveloped, replaced, or abandoned.

170.6. Validation procedures and the results of the validation must be documented and transparent to the *valuer* and users of the model in a timely manner.

170.7. If *significant* deficiencies are identified from the validation process, use of the model *must* be restricted, limited, or rejected until those issues are resolved.

180. Validating third-party models

180.1. Prior to use, third party *valuation models must* be analysed to ensure they are appropriate, accurate and transparent.

180.2. Third-party *valuation models should* be evaluated to the same standards as internal models to determine whether the *valuation* outputs will be appropriate for the *intended use*.

180.3. There *must* be a process in place for understanding the inputs and outputs required and used within a third-party *valuation model*.

180.4. Limitations related to third-party models *must* be understood to determine whether the *model* is appropriate for the *intended use*.

180.5. Validation procedures and the results of the validation of third-party *valuation models* must be documented and transparent to the valuer and users of the model in a timely manner.

190. Documentation for Models

190.1. Documentation *should* be sufficient to provide a record of the *valuation* and include sufficient information to describe the valuation conclusion reached, such that a peer applying *professional judgement* is able to understand and review the *valuation* (see IVS 105 *Valuation Models,* section 60).

190.2. There *should* be documentation of *significant* inputs to the *valuation methods* and *models* including defining the purpose, model design and development, implementation, validation, and *intended use*.

190.3. The *valuer must* document all relevant *valuation* information based upon the intended use, including accounting, legal and regulatory requirements, recognising that there is *professional judgement* as to the evidence that *should* be included.

190.4. There *must* be sufficient and relevant documentation providing evidence that the *valuation* was completed in accordance with this chapter.

190.5. A suitable *valuation model must* have documentation that includes the following information:

(a) clear statement of purpose and *intended use,*

(b) *intended users* of the *valuation model* and results,

(c) description of the *financial instrument* being valued,

(d) the *basis of value*,

(e) description of the design of the *valuation model*,

(f) limiting assumptions and conditions inherent in the *valuation model,*

(g) valuation methodology selection process including theoretical approach and supporting research and alternatives assessed,

(h) data and input selection process,

(i) nature and rational for judgmental assumptions,

(j) *valuation model* testing procedures and results,

(k) validation procedures and results,

(l) valuation model limitations and mitigation of limitations, if they exist,

(m) conclusion and any qualifications if applicable.

200. Appropriate use of a valuation model

200.1. A suitable *valuation model* may be exposed to *valuation* error if used incorrectly or inappropriately. There *must* be a process in place to ensure the proper usage of *valuation models* and that they are used for their intended purpose. Proper usage of a *valuation model should* include a complete understanding of scope of use, model limitations, uncertainties, and inaccuracies and consistent with the *valuation's intended use* and any limitations or adjustments (see IVS 105 *Valuation Models,* section 50).

200.2. Suitable *valuation models* that are relied upon and used over time *must* be maintained to ensure that they remain appropriate, accurate, transparent, and complete. Maintaining a suitable model requires

a monitoring process that involves periodic reviews, undertaken by qualified and objective reviewers, to an extent that is appropriate for the level of *valuation risk* associated with the continued use of the model. There *should* also be procedures for responding to any deficiencies that are discovered during the monitoring process.

200.3. *Valuation risk* may arise when a *valuation model* is used incorrectly or inappropriately. A fundamentally sound model producing accurate outputs consistent with the design objective of the model *may* exhibit high *valuation risk* if it is misapplied or misused.

200.4. *Valuation risk* is a concern if a model is used outside of the environment for which it was designed. *Valuation models must* be used for their *intended use*. A complete understanding and monitoring of a *valuation model's* limitations is necessary to avoid using a model in ways that are not consistent with its *intended use*. There *must* be controls in place to ensure that limits on model use are complied with, such as monitoring model performance, adjusting or revising models in a timely manner, and supplementing model results with appropriate, approved and timely *valuation* adjustments.

200.5. Users of a *valuation model should* provide feedback as to whether a *valuation model* is functioning effectively and to assess its performance over time as conditions and model applications change. Model users may provide valuable insight into the effectiveness and relevance of model results when compared to real world applications. Model users may question the methods or assumptions underlying *valuation models*, particularly if users do not agree with the outcome. Although model users may provide challenge and insight into *valuation models*, it is important to also fully understand the biases and other factors that may influence the objectiveness of their feedback.

Calibration Analysis

200.6. Calibration analysis is a comparison of outputs from a *valuation model* with actual observed and or expected outcomes. Actual outcomes could include *prices* observed in secondary market trading or *prices* observed in originations. Expected outcomes may consist of established expected reasonable ranges of *values* as compared to implied valuation metrics or *values* from alternative *valuation models*. Expected outcomes may also consist of *professional judgement* to confirm whether the resultant *values* make sense.

200.7. A variety of quantitative and qualitative testing and analytical techniques *should* be used in the assessment of the calibration analysis. Tests *should* be based on a *valuation model's* methodology, its complexity, data availability, and the *valuation risk* relating to the *valuation*. Tests *should* be designed for each situation, as not all tests will be effective or feasible in every circumstance.

200.8. Back testing is one form of calibration analysis, which involves the comparison of a transaction price compared with the corresponding value derived from a model as close as possible to the *transaction date*.

200.9. If calibration analysis produces evidence of poor model performance, action *must* be taken to address the nature of the issue and understand the causes and remediation of the variance.

210. *Valuation Model* Maintenance

210.1. For *valuation models* that are relied upon on an ongoing basis or in the case of multi-use models, regular monitoring must be performed to evaluate whether they continue to be suitable for their *intended use*.

210.2. Ongoing monitoring *must* be performed periodically, with a frequency appropriate to the nature of the model, the availability of new data or modeling approaches, changes in the market environment and the magnitude of the *valuation risk* involved.

210.3. A process *must* be in place to monitor the maintenance of a suitable *valuation model's* core characteristics, including:

(a) ongoing review of appropriateness,

(b) ongoing review of accuracy,

(c) ongoing review of transparency.

210.4. An ongoing monitoring process *must* have procedures for responding to any deficiencies that are discovered during the monitoring process.

210.5. The ongoing monitoring process *must* be undertaken by an individual, team or entity who has/have the appropriate expertise, effective authority, and is objective.

210.6. An ongoing monitoring process *must* evaluate whether a model continues to perform as originally designed. This part of the monitoring would include many of the tests employed as part of the initial model development process:

(a) operational accuracy: there *must* be process verification checks that all model components are functioning as designed and continues to be operationally accurate. Tests *must* also be conducted to assess ongoing model robustness and stability.

(b) input verification: there *must* be a process to verify that all model inputs remain complete, reasonable, and accurate and continue to represent the highest quality available.

(c) model control: *valuation models must* be subject to change control procedures to ensure that the model logic is correct. Change control procedures *should* address approval requirements, documenting changes and subsequent validation. Model overrides (impacting model inputs or outputs) *should* be monitored and assessed by the challenger to determine whether they are valid and have been appropriately documented. Model overrides need to be tracked and analysed to assess their impact on model performance. Some model overrides may indicate that a model is not performing as intended or has limitations.

210.7. An ongoing monitoring process evaluates the impact of change relative to the original model development parameters and environment.

Valuation models must be evaluated to determine whether changes in the *financial instrument* itself, *intended use* of the *valuation*, or market conditions necessitate adjustment, redevelopment, or replacement of the *valuation model*.

210.8. An ongoing monitoring process *should* also consider new information as it becomes available, particularly if it was not available during the original model develop process. New empirical evidence or theoretical research may suggest the need to modify or even replace original methods. How the *valuation* inputs, approach, methodology and model may have changed due to the incorporation of new information, specifically: relevant to the *financial instrument*; as well as a function of macro-economic, structural and market changes (ie, changes in modelling techniques, market conventions, etc).

210.9. Any *valuation model* limitations and sensitivities identified in the development process *must* be regularly assessed as part of the ongoing monitoring. If *valuation models* are known to only work for certain ranges of input *values*, market conditions, or other factors, they *must* be monitored to identify situations where these constraints are approached or exceeded.

210.10. As part of the ongoing monitoring process, depending on the availability of benchmarking information, it may be appropriate to compare a given *valuation model*'s outputs relative to estimates from alternative internal or external models. Discrepancies between the outputs from a v*aluation model* to benchmarks should trigger investigation into the sources and degree of the differences, and examination of whether they are within an expected or appropriate reasonable range given the nature of the comparison. The results of a benchmark analysis may suggest revisions to a valuation model; however, differences do not necessarily indicate that a model is in error. A benchmark itself is an alternative prediction, and the differences may be due to differences in the data or method used. Rather, if a *valuation model* and benchmark match well, that is evidence in favor of the model.

220. Quality Control

Overview

220.1. This quality control section herein supplements IVS 100 *Valuation Framework*, section 30, adding greater detail as it relates to *financial instruments*.

220.2. Quality controls are procedures that check valuation processes are performed consistently in compliance with IVS and allow for the assessment of the *valuation* and the resulting *value*. Quality *controls must* be implemented to address the *valuation risk* across the entire valuation process. The nature and extent of the quality control process *must* depend on the nature and complexity of the *valuation*.

220.3. The *valuation risk* associated with the potential of a significant valuation error *must* be mitigated through the implementation of quality controls.

220.4. Quality controls may be automated and/or manual and may include but are not limited to data reviews, model validations, independent recalculation, back testing and fact checking.

220.5. There *must* be periodic assessment of the quality control process to ensure that the integrity and completeness of the control environment is appropriate as of the *valuation date*. The periodic assessment *must* be documented and *should* itself be subject to review as part of the review and challenge.

220.6. Quality controls *should* include a degree of independent review and challenge. Review and challenge *should* assess the *professional judgements* made during the *valuation* and in determining the *value*.

230. Core principles for quality controls

230.1. Quality controls *must* be appropriately designed and executed in a manner that is commensurate with the level of *valuation risk* and affirms the completeness and integrity of the *valuation* process.

230.2. Quality controls *must* be appropriately documented to provide transparency to parties involved in the *valuation* and to enable assessment. The documentation *should* contain sufficient detail to be considered reasonable by a peer applying *professional judgement*.

230.3. Quality controls *must* be periodically assessed to ensure that integrity and completeness of the control environment is appropriate as of the *valuation date*. The review process *must* be documented and *should* be assessed as part of the review and challenge.

230.4. Accountable parties *must* be assigned for each stage of the valuation process. The *valuer* may delegate the performance of the process (eg, engage a *service organisation* or a *specialist*) but cannot discharge their accountability for the *valuation* and the *value*.

240. Characteristics of suitable quality controls

240.1. In selecting quality controls over the *valuation* of a *financial instrument*, a process *must* be used that maximises as many of the following characteristics as possible. At times, it will not be possible to incorporate all these characteristics. The characteristics of suitable quality controls are shown below, and suitable is defined as "fitness for use" in terms of *client* and *intended user* needs in the context of the *intended use*, *basis of value* and the *asset* or *liability* being valued. Suitable quality controls, as of a *valuation date*, must maximise the following characteristics:

(a) accuracy: *valuations* produce *values* that are free from error and bias and reflect the characteristics that they are designed to measure,

(b) appropriateness: *valuations* produce *values* that are "fit for use",

(c) consistency: *valuations* produce *values* that *must* be consistently followed and apply to all people and systems involved in the *valuation,*

(d) completeness: *valuations* produce *values* that are sufficient to address attributes of the *assets* or *liabilities* within the specified population,

(e) timeliness: *valuations* produce *values* that reflect the market conditions as of the *valuation date* and the controls *must* be executed in a time

frame that enables effective remediation of issues without impacting on the timeliness of the reported *valuation*,

(f) transparency: the purpose, results, and actions to be taken following the performance of a process or control *should* be documented in sufficient detail to be understood and considered reasonable by a peer applying *professional judgement.*

250. Automated and Manual Valuations and Controls

250.1. Depending on the nature of the *financial instrument* being valued, the frequency of the *valuation* and the complexity of the *valuation*, the *valuer* may implement a range of processes from highly automated using systematic mappings and data feeds through to one that is highly manual. For example, a *valuation* of a portfolio of listed equity may be automated and require operational controls around inventory, sourcing of *prices* and auditability of any adjustments. A complex structured product may require consideration of the model, data, operational process, and subjective judgements (eg, determination and documentation of unobservable inputs). Whether automated or manual, however, controls *must* be implemented using the same principles.

260. Quality Control Design and Implementation

260.1. Quality controls *must* be designed and implemented to help ensure that *valuations* are performed in compliance with IVS. Quality controls *must* be designed and implemented to provide a clear, consistent, and detailed approach to the *valuation* process for the determination of fair value for the relevant *financial instruments*.

260.2. To achieve this, quality controls *must* confirm as of the *valuation date* that the *valuation* was performed to help ensure:

(a) completeness of the population of instruments to be valued,

(b) accuracy of the *financial instruments* to be valued with sufficient descriptive details to perform the *valuation*,

(c) appropriate processes have been executed over:

- data and inputs,
- the selection of models to determine *value*,
- manual or other interventions over the established process,
- any subjective adjustments or inputs,
- communication and documentation of the valuation process and the resultant *value*.

260.3. For *valuations* that include the delegation to other *specialists* or *service organisations*, the *valuer* must understand and assess the roles and responsibilities, the work performed and the results reached.

260.4. Quality controls *should* be reassessed over time since *financial instruments* and the environment in which they can change.

260.5. For the *valuation* of *financial instruments* in larger organisations or for more complex *financial instruments*, the *valuer should* develop a *valuation* control framework. The *valuation* control framework *should* address:

- clear definition of the roles and responsibilities of each party in the *valuation,*
- identification of responsible parties, including quality control and review and challenge, and confirmation that responsible parties have correct and sufficient capabilities and resources to fulfil their responsibilities,
- governance, escalation, and remediation procedures,
- the definition of the *basis of value*,
- the types and extent of *valuation risk* associated with the *valuation*,
- for each instrument type either directly identify or define attributes for each of the following:
  - data and inputs
  - models
- escalation and assessment,
- requirements for documentation of across the *valuation,*
- timeline and frequency for *valuations*.

260.6. The responsibility for the performance of individual processes within the *valuation* may vary depending on organisational structure but the assignment of responsibilities *must* be documented and reviewed periodically to ensure that the accountability for the execution of all components is clearly assigned.

260.7. For the *valuation* of *financial instruments* in larger organisations or for more complex *financial instruments*, *valuations should* be subject to review and challenge to ensure that each *valuation* is validated by a function independent of the risk taker and the overall process assessed. Review and challenge *should* be designed and implemented to provide an oversight of the integrity of each stage of the *valuation*. The review and challenge processes may be performed by a technical function or challenger, such as a product control group or a model validation team, and an operational function or assessor, such as internal audit.

260.8. A *valuation must* be submitted for quality control and may have review and challenge. Such reviews are a critical component of the *valuation* process which allows for the value conclusion to be evaluated in a manner maximising an independent and bias-free fair value conclusion.

260.9. In instances where the *valuation* is not approved, the *valuation should*, (i) evaluate the information obtained from the review process, (ii) modify the *valuation* as deemed appropriate, and, (iii) submit the *valuation* for re-review. A critical component of the *valuation* process starts a progression which allows for the initial valuation conclusion to be evaluated in a manner maximising an independent and bias-free fair value conclusion.

270. Documentation

270.1. Documentation *must* be sufficient to describe and provide transparency to the *intended user* on the quality controls, including any *professional judgements* made. The documentation *must* contain sufficient detail to be considered reasonable by a peer applying *professional judgement*. Such documentation *must* describe how any *valuation risk* are addressed.

270.2. Quality control processes *must* be documented to allow for consistent execution as well as enable assessment and reproducibility. Quality control processes *should* include, to the extent required, review and challenge. Such documentation *must* include a description of any *specialist* or *service organisation*.

270.3. To the extent there are issues identified during the quality control process, including review and challenge, the issue(s) identified along with the bias for decisions made and the resulting actions *should* be documented.

270.4. Documentation *must* be reviewed and updated at regular intervals to help ensure that they continue to meet their objectives. In addition, a review *must* be conducted in the event of *significant* changes to the *financial instruments* or their environment.

International Valuation Standards

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