Perspectives Paper

Automated Valuation Models and Residential Valuations

Automated Valuation Models and Residential Valuations

The IVSC issues Perspectives Papers from time to time, which focus on pertinent valuation topics and emerging issues. Perspectives Papers serve a number of purposes: they initiate and foster debate on valuation topics as they relate to the International Valuation Standards (IVS); they provide contextual information on a topic from the perspective of the standard setter; and they support the valuation community in their application of IVS through guidance and case studies.

Perspectives Papers are complementary to the IVS and do not replace or supersede the standards. Valuers have a responsibility to read and follow the standards when carrying out valuations.

By: The IVSC's Tangible Assets Board & IVSC AVM, Data and Modelling Working Group

The IVSC has issued this Perspectives Paper as the first in a series designed to initiate discussion and debate on the topic of automated valuation models and residential valuation. Future perspective papers in this series will consider non-residential AVMs. Share your thoughts and perspectives with us through LinkedIn

Residential AVM: For the purposes of this Perspective's Paper, a residential AVM is a fully automated valuation carried out on a homogenous single or multifamily residential building.

Automated Valuation Model (AVM): A system that provides an indication of value of a specified Asset at a specified date, using calculation techniques in an automated manner.

Model: The quantitative method, system, or approach that applies statistical, economic, financial, or mathematical theories, techniques, and assumptions to derive value.

Background

In October 2020 the IVSC issued its Agenda Consultation 2020 which highlighted Automatic Valuation Models ("AVMs") as a key topic to be considered by the IVSC over the next few years. The Agenda Consultation stated that the *"IVSC Technical Boards had originally begun to look at this topic due to market feedback on technological disruption caused by the increasing use of Automated Valuation Models (AVMs) in many markets, particularly by banks and valuers for the valuation of residential properties for secured lending purposes.*

The IVSC's Technical Boards felt that many of these AVMs were used by stakeholders who may take the valuations at face value without fully understanding the purpose, workings, or limitations of the model that they are using. Moreover, certain valuers could mistakenly believe that calculations (such as those derived from AVMs) are compliant with IVS."
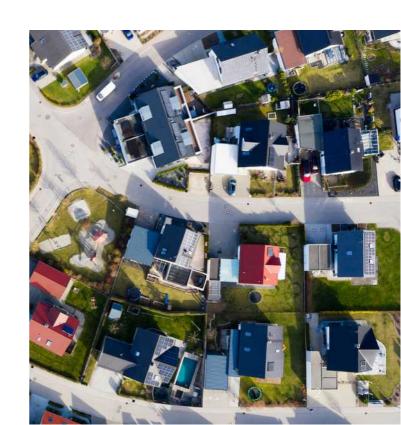
Further to the publication of *IVS (effective 31 January 2022)* the IVSC Technical Boards set up an AVM Data and Modelling Working Group to review the General and Asset Standards and see if further standards were required in relation to these areas. These Working Groups recognised that AVMs are not only increasingly used in tangible asset valuations as a tool to aid banks and other entities in making secured lending decisions for commercial mortgages, but are also commonly used for financial instrument valuations.

The Working Groups also discussed the current definition of value within IVS:

"The word "value" refers to the opinion resulting from a valuation process that is compliant with IVS. It is an estimate of either the most probable monetary consideration for an interest in an asset or the economic benefits of holding an interest in an asset on a stated basis of value."].

The definition challenged the Working Group as it implied that an Automated Valuation Model with no human input could provide "an opinion". The working group noted that the use of AVMs was already commonplace in the valuation of financial instruments. Different forms of AVMs were often exclusively applied to financial instruments, but in these instances, the valuer's judgements were included towards the beginning of the process.

The fundamental questions around human judgement in AVMs and the algorithms used and the discrepancy in the use of AVMs across assets have led market participants to request clarity as to when the use of AVMs could state compliance with IVS. As stated in the *RICS' AVM Roadmap* for its members and stakeholders published June 2021; *"there is a clear need for a better understanding of the opportunities and risks associated with AVMs".*

In January 2021, the *IVS Additional Technical Revisions 2021 Exposure Draft* went into consultation. The Exposure Draft contained a proposed new definition for an Automated Valuation Model and a Model. An AVM was defined as:
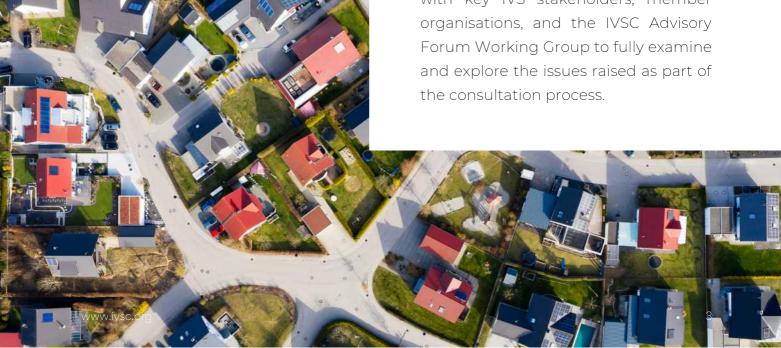
"a system that provides an indication of value of a specified Asset at a specified date, using calculation techniques in an automated manner. An AVM may not meet the requirements of a Model as defined in this glossary."

The Exposure Draft also contained proposed revisions to the existing definitions of "valuation" and "value" contained within IVS. Additionally, the Exposure Draft contained a new section on Data Management to work in conjunction with the existing section on Models, which was added to *IVS 105 - Valuation Approaches and Methods* in IVS (Effective 31 January 2020).

In September 2021 the IVSC published *IVS: Basis of Conclusions*, outlining changes introduced to IVS that became effective as of 31 January 2022. Within the *Basis of Conclusions*, the IVSC noted that:

"there was also a wide diversity of views related not only to the appropriate depth and level of proposed additional technical revisions, but also in relation to the inclusion of glossary definitions for "Automated Valuation Model", "Model", "Social Asset", "Social Value", "Valuation Assignment" and "Valuation Engagement", as well as the inclusion of the new sections on "Data Management" and "Governance"."

In addition, the Boards further noted that *"much of the diversity of views were across specialities (Business Valuation, Financial Instruments and Tangible Assets)"* and, as such, engaged in further market outreach with key IVS stakeholders, member organisations, and the IVSC Advisory Forum Working Group to fully examine and explore the issues raised as part of the consultation process.

As a consequence of this outreach, IVSC took the decision to delay including the terms "Automated Valuation Model" and "Model" in IVS, as well as the new section on "Data Management" until further investigations could be made to ensure these proposed revisions to the General Standard could work across all specialisms.

The Boards are currently carrying out a review of the IVS General Standards to include additional sections on Data and Inputs, and Models. These inclusions will be published in the next edition of IVS, effective from July 2024. The IVSC has decided to publish this Perspective Paper in the interim, as a means of responding to market participants' requests.

The IVSC's current position is that the use of Automated Valuation Models for residential secured lending purposes, in isolation, cannot produce an IVS compliant valuation unless all the other requirements contained within IVS are met.

Can a Residential AVM ever produce an IVS Compliant Valuation?

In determining whether a Residential AVM can be compliant with IVS, it is first necessary to note that valuation is a process.

This process includes several requirements in relation to scope of work, investigations and compliance, reporting, bases of value and valuation approaches and methods, all of which have to be met to produce an IVS compliant valuation.

Residential valuations may or may not include the use of a valuation model. When they do, this model may be automated to some extent, thus producing what might be referred to as "valuations performed with the use of an Automated Valuation Model", or "Valuer AVM-assisted valuations". A valuer AVM-assisted valuation is a type of automated valuation offered by some valuation service providers and other participants, where a valuer "checks" the result produced by the AVM. It should be noted that valuer-assisted AVMs are not IVS compliant valuations as in this instance the valuer is carrying out a review of the results of an AVM and not an IVS compliant valuation. Producing an IVS compliant valuation implies that the valuer may use the AVM as a tool in the process but must follow all the requirements of IVS. However, the reverse, where the valuer merely validates the findings of an AVM, does not constitute an IVS compliant valuation.

Valuations that use fully or partly automated models, but include professional judgement throughout the process, may be IVS compliant providing the valuer follows all the requirements contained within IVS. Therefore, a Residential AVM may be used as a tool within the valuation process, for which the valuer is wholly responsible and still produces an IVS compliant valuation. However, as outlined below, a Residential AVM, without valuer input and an understanding of the model, cannot produce an IVS compliant valuation.

The current edition of IVS (effective 31st of January 2022) defines valuation as:

"the act or process of determining an opinion or conclusion of value of an asset on a stated basis of value at a specified date in compliance with IVS."

Furthermore, IVS defines value as:

"the opinion resulting from a valuation process that is compliant with IVS. It is an estimate of either the most probable monetary consideration for an interest in an asset or the economic benefits of holding an interest in an asset on a stated basis of value."

Both these definitions refer to "an opinion" or "conclusion of value" that is compliant with IVS.

The current state of development of AVMs does not unequivocally support the position that a residential AVM can ever provide an "opinion" or "conclusion of value" without the input of a valuer's professional judgement.

From an IVS compliance perspective, once the valuer begins to use their professional judgement to exclude or include certain inputs within an AVM then the model is no longer fully automated. As a consequence, the following requirements contained within the IVS General Standards including the prescriptions contained in *IVS 105 - Valuation Approaches and Methods* must be applied for a valuation to be IVS compliant:

90. Valuation Model

90.1. A valuation model refers collectively to the quantitative methods, systems, techniques and qualitative judgements used to estimate and document value.

90.2. When using or creating a valuation model, the valuer must:

- *(a) Keep appropriate records to support the selection or creation of the model,*
- *(b) Understand and ensure the output of the valuation model, the significant assumptions and limiting conditions are consistent with the basis and scope of the valuation, and*
- *(c) Consider the key risks associated with the assumptions made in the valuation model.*

90.3. Regardless of the nature of the valuation model, to be IVS compliant, the valuer must ensure that the valuation complies with all other requirements contained within IVS.

In reality, valuation models can vary in range and complexity, from a simple spreadsheet used to help the valuer analyse comparable assets or to calculate average values; to sophisticated machine learning models utilising artificial intelligence with no valuer input. In the case of the latter, the model researches and "thinks" for itself, its opacity insulating it from the valuer's judgement.

Within this range, there are vast differences. For example, it could include models where the valuer is the author, or at least fully understands all the assumptions, calculations, and criteria, or it could include a valuation model built by someone else where the valuer is simply the user and has little understanding of the assumptions, calculations and criteria used. When relying on a model designed by a third party, a valuer retains the same level of responsibility as when they rely on any other expert for analysis outside their area of expertise. The valuer cannot blindly rely on that model without a supported basis to do so as the valuer must perform analysis to evaluate the data inputs, the assumptions underlying the data inputs and their appropriateness for the valuation purpose.

Although all the requirements listed in section 90 above are important, perhaps the most important requirement stems from paragraph 90.3, which states that:

"Regardless of the nature of the valuation model, to be IVS compliant the valuer must ensure that the valuation complies with all other requirements contained within IVS."

Therefore, to understand whether a valuation that uses a Residential AVM can be compliant with the requirements contained within IVS, it is necessary to review the IVS General Standards, so any barriers to compliance can be understood. In addition, the valuer needs to understand and have tested the Residential AVM in order to be IVS compliant.

This requirement is also highlighted in the IVS Framework, which states the following in relation to Compliance with the Standards::

10. Compliance with Standards
10.1. When a statement is made that a valuation will be, or has been, undertaken in accordance with the IVS, it is implicit that the valuation has been prepared in compliance with all relevant standards issued by the IVSC.
10.2. In order for a valuation to be compliant with IVS the valuer must comply with all the requirements contained within IVS.

Furthermore, in relation to competence, the IVS Framework states that:

"valuations must be prepared by 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 and having the appropriate technical skills, experience and knowledge of the subject of the valuation, the market(s) in which it trades and the purpose of the valuation."

Even though the valuer could state that they meet these requirements and are only using a Residential AVM as part of their valuation approach, the valuation would still not produce an IVS compliant valuation. A Residential AVM is not able to provide an IVS compliant valuation. Indeed, even though a Residential AVM can provide a conclusion of value, it cannot provide an "opinion of value" and therefore the use of a Residential AVM for secured lending or other purposes, whether or not it meets mortgage-lending conditions, would not be IVS compliant, as it cannot meet this fundamental requirement.

What are the IVS Scope of Work requirements that a Residential AVM alone might not achieve in isolation?

IVS 101 - Scope of Work contains the *"fundamental terms of a valuation, such as the asset(s) being valued, the purpose of the valuation and the responsibilities of parties involved in the valuation."* IVS 101 Section 20.3 provides a list of the elements a valuer must communicate within their scope of work. The majority of these do not cause concern when using a Residential AVM. However, the following requirements may prove problematic:

(a) Identity of the valuer: The valuer may be an individual, group of individuals or a firm. If the valuer has any material connection or involvement with the subject asset or the other parties to the valuation assignment, or if there are any other factors that could limit the valuer's ability to provide an unbiased and objective valuation, such factors must be disclosed at the outset. If such disclosure does not take place, the valuation assignment is not in compliance with IVS. If the valuer needs to seek material assistance from others in relation to any aspect of the assignment, the nature of such assistance and the extent of reliance must be made clear.

Although all the requirements listed in section 90 above are important, perhaps the most important requirement stems from paragraph 20.3, which states that:

(g) Basis/bases of value used: As required by IVS 104 Bases of Value, the valuation basis must be appropriate for the purpose of the valuation. 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 valuation assignment must be identified (see IVS Framework, paras 60.1-60.4) If relevant information is not available because the conditions of the assignment restrict the investigation, these restrictions and any necessary assumptions or special assumptions (see IVS 104 Bases of Value, paras 200.1-200.5) 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 any relevant information that is to be relied upon and the extent of any verification to be undertaken during the valuation process must be identified.

(k) Significant assumptions and/or special assumptions: All significant assumptions and special assumptions that are to be made in the conduct and reporting of the valuation assignment must be identified.

(n) That the valuation will be prepared in compliance with IVS and that the valuer will assess the appropriateness of all significant inputs: The nature of any departures must be explained, for example, identifying that the valuation was performed in accordance with IVS and local tax regulations. See IVS Framework paras 60.1-60.4 relating to departures.

Except for (g), which is addressed later in this paper, when we are reviewing the requirement contained within *IVS 104 - Bases of Value*, many of these requirements are further emphasised within the previously mentioned section on valuation models within *IVS 105 - Valuation Approaches and Methods*, and apply to the use of all valuation models, whether fully automated or semi-automated.

In reviewing these requirements, unless the valuer has had full control of the inputs into the valuation model, it is unlikely that the valuer will be able to meet the requirements of (i), (j) (k) and (n) listed above. Many Residential AVMs are designed with little input from the valuer, and it is unlikely that the valuer can assess the appropriateness of all

significant inputs, as many of the inputs will be automated and will have had minimal, if any verification, and will be subject to a number of limitations and constraints. As a result, the valuer will not be able to comment on the appropriateness of the data sources, inputs and relevant assumptions. Indeed, if a valuer is not involved in the Residential AVM process, requirement '(a)' cannot be met.

What are the IVS requirements for Investigations and Reporting?

IVS 102 - Investigations and Compliance states:

"Investigations made during the course of a valuation assignment must be appropriate for the purpose of the valuation assignment and the basis(es) of value. References to a valuation or valuation assignment in this standard include a valuation review."

Section 20.23 further states::

"Sufficient evidence must be assembled by means such as inspection, inquiry, computation and analysis to ensure that the valuation is properly supported. When determining the extent of evidence necessary, professional judgement is required to ensure the information to be obtained is adequate for the purpose of the valuation."

In the case of Residential AVMs, it is impossible that the subject property (let alone the comparable properties) have been subject to a physical inspection to determine their comparability without the assistance of a valuer. However, if the use of a Residential AVM included physical inspection and other relevant proxy data sources for the assessment of condition and the other requirements contained in IVS including a valuer's professional judgement, then this could in theory produce an IVS compliant valuation, provided the other requirements of IVS are also met. However, it should be noted that in these circumstances the Residential AVM is no longer fully automated.

Furthermore, the real world sometimes presents the valuer with interesting challenges. The asset being valued could have characteristics that would make it worth less than the market norm. Alternatively, it could have elements of development potential that should be considered under the valuation premise of 'highest and best use'. In either case, it is unlikely that these characteristics would be adequately reflected by a Residential AVM. However, if the valuer was embedded from the outset into the process, then it may be possible for the conclusions from a valuer's inspection to be incorporated into a semi-automated residential valuation model. This would lead to more refined valuation outcomes.

IVS 102 section 20.3 states that though limits may be agreed on the extent of a valuer's investigation, the valuer is required:

"to perform sufficient analysis to evaluate all inputs and assumptions and their appropriateness for the valuation purpose. If limitations on investigations are so substantial that the valuer cannot sufficiently evaluate the inputs and assumptions, the valuation engagement must not state that it has been performed in compliance with IVS."

In a Residential AVM, the valuer is not able to "evaluate all inputs and assumptions" as many of the model parameters are pre-programmed. Therefore, it is very likely that the "limits on investigations" within a Residential AVM "are so substantial that the valuer cannot sufficiently evaluate the inputs and assumptions" and therefore "the valuation engagement must not state that it has been performed in compliance with IVS."

IVS 103 - Reporting further highlights this issue as section 10.2 states:

"the valuation report must include "disclosure of any assumptions, special assumptions (IVS 104 - Bases of Value, para 200.4), significant uncertainty or limiting conditions that directly affect the valuation."

Once again, it is unlikely that a Residential AVM in isolation would meet these reporting requirements. While a Residential AVM may be able to generate a standardised report which meets certain disclosure requirements, its ability to truly provide detail on considerations of the reasonableness and impact of certain assumptions in all valuations is highly questionable.

Can a Residential AVM be intelligent enough to interpret the meaning of a particular Basis of Value?

IVS 104 - Bases of Value defines bases of value (sometimes called 'standards of value') as;:

"the fundamental premises on which the reported values will be based."

Most secured lending is derived from Market Value, which is defined as:

"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."

It should be noted that the definition of Market Value must reflect the highest and best use, which 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."

However, not only are all valuations the "act or process of determining an opinion or conclusion of value", all bases of value are reported as the valuer's opinion of value. A Residential AVM is not capable of providing a Market Value opinion since, by construction, only a human can have an opinion. Because of the fluid nature of markets, it is also highly questionable as to whether Residential AVMs are currently sophisticated enough to incorporate highest and best concept use to a satisfactory level of reliability. Other premises of value which can be used in conjunction with a basis of value might also include current use/existing use and orderly liquidation concepts. It is also highly questionable as to whether Residential AVMs can reliably and effectively incorporate these nuances.

In addition, IVS 104 states that:

"the nature and source of the valuation inputs must be consistent with the basis of value."

This requirement is further elaborated in IVS 105 section 20.5 which states:

"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."

Both these requirements can cause issues when using Residential AVMs for calculating Market Value since some markets are quite opaque, with limited accurate comparable evidence. Even in developed markets, it may be difficult to ensure that the data used in the Residential AVM is relevant to the subject asset. A simple example of this is area measurement, as there is no consistent basis of area measurement used within markets, let alone between markets. Many of the assumptions within a Residential AVM such as market rent and refurbishment costs are measurement based. Without human, professional judgement, these inaccuracies, of which measurement is only one, will compound and invalidate the relevance of any finding generated by a Residential AVM.

Can a Residential AVM incorporate different Valuation Approaches and Methods with any level of reliability?

IVS 105 - Valuation Approaches and Methods states that the three principal valuation approaches are the 'Market Approach', the 'Income Approach', and the 'Cost Approach' but almost all Residential AVMs use the Market Approach exclusively. In selecting the valuation approach(es) and methods for an asset there are several factors which should be considered, one of which is "the availability of reliable information needed to apply the method(s)." Further to discussions amongst the TAB it was noted that in many markets around the world such as parts of Africa, South America and India would be unable to use a Residential AVM as the data available within these markets, both in terms of quality or quantity, is either unavailable or insufficient to produce accurate results. This issue is further highlighted in IVS 105 section 10.4, which states that:

"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."

Therefore, in these markets it would be reasonable to argue that a Residential AVM could be used to support the results of a valuation when another valuation approach is used but could not be used as the primary or sole valuation approach in these circumstances.

However, one of the main challenges for AVMs in IVS 105 is section 10.7, which states:

"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 valuation purpose."

Even though the data used in a Residential AVM may come from "observable market information", it may not be possible for the valuer to evaluate "all the inputs and assumptions" as many of these assumptions may have been made by the modeller, without direct (or limited) valuer input. Furthermore, IVS 105 section 20.4 states that;

"the heterogeneous nature of many assets means that it is often not possible to find market evidence of transactions involving identical or similar assets",

This makes the use of residential AVMs inappropriate in these circumstances. This is amplified by the idiosyncrasy of assets characteristics and the low frequency of trading in the market.

IVS 105 section 30.6 seeks to outline the key steps within the comparable transaction method including the requirement to:

(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 para 30.12(d))

Both of these require the professional judgement of a valuer, and at this point in time this could not be carried out sufficiently by a Residential AVM without some degree of valuer intervention. Moreover, IVS 105 section 30.7 provides the requirements for the valuer's choice of comparables, which are largely based on the valuer's competence, experience, and professional judgement. These qualitative and judgemental factors would be difficult to include in a Residential AVM without the participation of the valuer in both the model design and data selection phases. This issue is further highlighted in IVS 105 section 30.8 which states:

"the valuer should analyse and make adjustments for any material differences between the comparable transactions and the subject asset."

Once again, it would not be possible for a Residential AVM to be IVS compliant without the input and professional judgement of a valuer to make these adjustments.

Can Residential AVMs comply with *IVS 400 - Real Property Interests?*

In addition to the mandatory requirements contained within the IVS General Standards and illustrated above, a valuation derived using a Residential AVM also needs to comply with the requirements contained within *IVS 400 - Real Property Interests*:

20.6. To comply with 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, para 20.3.(j) and IVS 102 Investigations and Compliance, 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 and building floor areas,
(d) responsibility for confirming the specification and condition of any building,
(e) the extent of investigation into the nature, specification and adequacy of services,
(f) the existence of any information on ground conditions and soil conditions,

(g) responsibility for the identification of actual or potential environmental factors,
(h) legal permissions or restrictions on the use of the property and any buildings, as well as any expected or potential changes to legal permissions and restrictions.

These requirements, though part of the standard due diligence for a valuer, would generally not be carried out within the context of a Residential AVM, as the majority of these requirements would require the intervention of a valuer. Once again, a Residential AVM would not be compliant with IVS on this basis.

IVS 400 section 30.2 states:

"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 104 Bases of Value, para 30.3). This assessment is particularly important to real property interests which can be changed from one use to another or that have development potential."

However as previously discussed, it is highly unlikely that in their current state of development, Residential AVMs can reliably incorporate the highest and best use concept, making them non-compliant with IVS on this basis.

IVS 400 also provides further details on the use of the Market Approach for real property assets and states within the Market Approach in section 50.2 that:

"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."

Section 50.4 further states that:

"in accordance with IVS 105 Valuation Approaches and Methods, para 30.8. 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 or the age and specification of the buildings,
(d) the permitted use or zoning at each property,
(e) the circumstances under which the price was determined, and the basis of value required,
(f) the effective date of the price evidence and the valuation date, and
(g) market conditions at the time of the relevant transactions and how they differ from conditions at the valuation date."

These sections once again highlight the importance of using the same unit of comparison for the subject asset and comparable assets, and the need for the inclusion of the valuer's professional judgement. This judgement is required both in the creation of the Residential AVM, and for reviewing its output to ensure that it is fit for purpose.

Global views around the increasing use of Residential AVMs

Several IVSC member Valuation Professional Organisations (VPOs) have noted the increased use of Residential AVMs for secured lending. In April 2022, the Appraisal Foundation's Automated Valuation Model Task Force issued their report on the *'Current Generation of AVMs used in Housing.'* The report noted that:

"Throughout the mortgage pipeline, big data and algorithmic machine learning are increasingly being deployed to improve decisions and reduce costs. Consumers use AVMs to understand the value of their most important asset. Mortgage lenders, institutional investors and rating agencies use AVMs to understand, manage and price risk."

The report divided their findings into the following three main components:

1) AVM Development: Data and Models
2) AVM Reporting: Metrics and Confidence Scores
3) AVM Use and Testing: Stakeholder Needs and Risk Factors.

The report made a number of recommendations including:

- *Consistency in measurement and reporting of AVMs must be developed.*
- *AVM testing, measurement and auditing must be independent and standardised.*
- *A list of minimally required reporting elements needs to be developed and adopted for all certified models.*
- *Quality data are the crucial and consequential inputs for creating the highest quality AVMs.*
- *Standards should be consistent, as much as possible between appraisals and AVMs, as well as all other valuation products and services.*

The RICS also issued an insight paper on '*Automated valuation models (AVMs): implications for the profession and their clients*' in April 2022. Within the paper, RICS "recognises AVMs' widespread use in influencing and informing valuation and transaction-related activity" and identifies key themes including:

- *Automation and the use of digital data impact the whole valuation process, for almost all asset types and across the majority of world markets.*
- *Both existing and any proposed new standards need to align regarding the impact of data, technology and increased automation.*
- *The concept of due diligence for both valuers and users of valuations must evolve and reflect the new landscape of digital data and automation.*
- *With the increased reliance on automation and digital data sources, the extent, levels and provision of liability and assurance on valuations must evolve and reflect the risks and how those risks are allocated across stakeholders.*
- *There needs to be clarity about the scope and boundaries of our standards and regulatory reach, and the need to work with other standard and regulatory bodies for a whole-system approach.*

The IVSC have acknowledged the findings of these reports, and the IVSC Standards Review Board and its Technical Boards are currently considering the inclusion of additional standards in relation to automation and modelling within the next edition of *IVS (effective 31st July 2024).*

Conclusion

In conclusion, a fully automated Residential AVM with no valuer interaction is not IVS compliant for the following reasons:

- There is no valuer involvement in either the creation of the model or the output;
- It does not include the valuer's judgement noting that a valuation is defined in IVS as "the act or process of determining an opinion or conclusion of value of an asset on a stated basis of value at a specific date in compliance with IVS; and
- A residential AVM is unable to provide an opinion on value.

However, these limitations do not mean that a Residential AVM could not be used by a valuer, and with another valuation approach or method to provide an IVS compliant valuation. As such, IVSC would consider an AVM in isolation a tool that may (or may not) assist a valuation professional in a valuation exercise.

As stated in the IVSC's Agenda Consultation, there are several Hybrid valuation models which are quasi or semi-automated residential valuation models. These models may include some valuer input into both the model design and sources of data and may use the valuer's professional judgement. In these instances, a semi-automated residential valuation model could be IVS compliant, providing the valuer follows "all other requirements contained within IVS", which could include physical inspection of the subject asset and comparable assets.

The Boards have noted the increasing use of automation and models within the valuation process and included standards for a valuation model within *IVS 105 Valuation Approaches and Methods* Section 90 that states;

"valuation model refers collectively to the quantitative methods, systems, techniques and qualitative judgements used to estimate and document value."

In light of this, the Boards will continue to carry out a review of the General Standards and plan for the next edition of IVS to include additional standards on 'Data Availability & Reliability', 'Modelling Appropriateness & Limitations', and 'Quality Control and Review' to provide more guidance in these areas, particularly as they relate to Residential AVMs.

The IVSC will continue to monitor the topics in this article and would welcome your insight and feedback to understand what ongoing issues (if any) you or your stakeholders continue to have with the use of Residential AVMs for secured lending within in your jurisdiction.

Please forward any further feedback to the IVSC Tangible Asset Board via the following email: contact@ivsc.org

IVSC Tangible Asset Board

- Ben Elder (Chair) - Royal Institution of Chartered Surveyors
- Sandip Deb - Institution of Valuers India
- Brendan Gallagher - Ernst & Young Canada
- Dirk Hennig - PwC Germany
- James Gavin - Kroll
- Kim Hilderbrandt - Government of the State of Victoria
- Rengganis Kartomo - Indonesian Society of Appraisers
- Molefi Kubuzie - South African Council for the Property Valuers Profession
- C K Lau - Hong Kong Institute of Surveyors
- Eduardo Rottman - Brazilian Appraisal Institute
- Ludmila Simonova - Ukrainian Society of Appraisers
- Alexander Aronsohn - IVSC

IVSC TAB AVM, Data and Modelling Working Group

- Ben Elder - Royal Institution of Chartered Surveyors
- Dirk Hennig - PwC Germany
- Kim S Hildebrandt - Government of the State of Victoria
- Leandro Escobar - Spanish Association of Valuation Companies
- Molefi Kubuzie - South African Council for the Property Valuers Profession
- Nigel Sellars - Royal Institution of Chartered Surveyors
- Sandip Kumar Deb - Institution of Valuers India
- Thomas Dimopoulos - Association of Property Valuers in Cyprus
- Alexander Aronsohn - IVSC