

IPMS: All Buildings - a tool to compare building areas and property values

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Key words: property measurement, building area, international standards, valuation

SUMMARY

This year, the worldwide International Property Measurement Standard (IPMS), which is harmonized across all real estate classes, was published as IPMS: All Buildings.

This standard not only defines a uniform approach, but also acts as a kind of "translator" between the very different regional and local area standards worldwide. Of course, this again leads to more transparency on the real estate market through more reliable international benchmarking, especially for cross-border investments. Because transparency also means comparability and vice versa. What sense does it make if you know that a property costs 5.000 euros a square meter or a square foot wherever it is in the world, but the definition of rentable space is not the same? Especially in times of growing AVMs, this is an important issue, because even in one country, the definition of residential or commercial space is not consistent. This is the situation in the U.S. and in Germany, for example.

In addition to a brief illustration of the differences in the worldwide definitions of floor space and the impact on real estate values, the paper will give an overview of the new standard as a tool for more comparability and thereby more transparency in the real estate market.

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1. THE JOURNEY SO FAR

Why is it so important to measure the area of properties?

- Measurement is a fundamental basis for valuation.
- It underpins decisions made by all property users.
- It provides a tool for comparison.

If the question is whether the square meter of residential or office space in North America is the same as the square meter in UK or Germany, the answer is clear: no, there are large differences. This is even true for different regions in one country. While, for example, the International Financial Reporting Standards used in 120 countries already provide a common global language for business, no uniform standard exists regarding building area. In addition to a large number of national standards, there are also numerous international standards, but these do not have a global significance. Beside standards of internationally active organisations, there are professional standards, e.g. for the facility management, but they all differ.



Figure 1: Examples for national and international standards

This means property is measured in many different ways around the world, which results in the following effects:

- Depending on the standard used, the floor area measurement can vary dramatically...
- Difficult to compare like-with-like
- Lack of transparency
- Difficult to compare cross-border transactions
- Huge impact on Financial Reporting
- Can lead to inaccuracies poor measurement
- Different measurement standards; multiple outcomes

Research suggests that, depending on the method used, the size of the same property can deviate by as much as 24%. Some standards measure office and residential space according to a building's exterior dimensions, while other standards measure it according to interior space, excluding walls and columns. In addition, there is a wide variation in which common areas are included on a proportional basis in rented or owned areas. Sometimes even parts of swimming pools and parking spaces are added. This leads, for example, to large differences between the square meters of residential space in Germany and Spain, and for office space in Germany, there are even significant variations between the cities of Frankfurt and Munich. Without knowing these differences, it is impossible to compare property prices or rents.

For the reasons described above, a global standard is necessary to get

- Consistency of reporting
- Transparency of data
- Comparability across different markets
- Reduced distortion when analysing property measurements
- Global Standard is needed to reduce the impact on the global property market of fluctuations

A global standard is also finally needed to reduce the impact of fluctuations in the global real estate market.

Of course, such a standard cannot replace a valuation, which should primarily reflect the usability of space.

2. IPMS STANDARDS – THE EVOLUTION

For the above-mentioned reasons, the CLGE association had already created a European Measurement Code for the Floor Area of Buildings (euREAL) between 2008 and 2012. On this basis, the global standard IPMS was developed on the initiative of the three associations BOMA (Building Owners and Managers Association, North America), CLGE (The COUNCIL OF EUROPEAN GEODETIC SURVEYORS) and RICS (Royal Institution of Chartered Surveyors, UK). The IPMS Coalition was founded in May 2013 and has now grown to around 90 associations from all around the world and several professions. The inaugural meeting of the IPMS Standard Setting Committee (SSC) was held in September 2013. The following standards have since been published and are freely available on the Internet:

| | | |
|------|------|---|
| Nov. | 2014 | publication IPMS: Office Buildings |
| Sep. | 2016 | publication IPMS: Residential Buildings |
| Jan. | 2018 | publication IPMS: Industrial Buildings |
| Oct. | 2019 | publication IPMS: Retail Buildings |

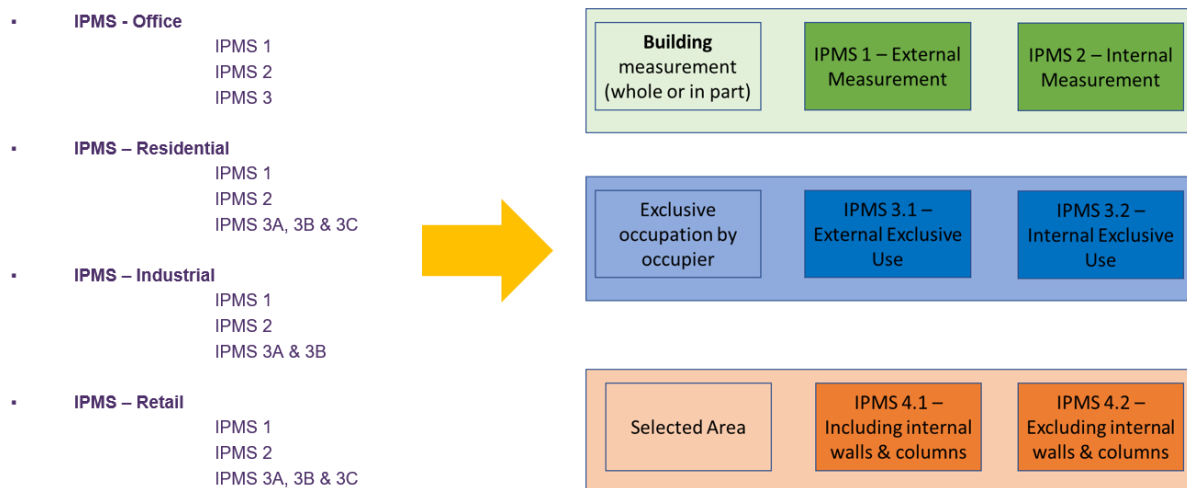


Figure 2: Structure of previous standards and the evolution towards the harmonized standard IPMS: All Buildings

After developing the four standards for specific building classes, the initial idea was to design a standard for mixed uses. However, after the years, harmonization of the previous standards had also become necessary. Therefore, a new standard for all building types was developed instead, IPMS: All Buildings, which was published in January 2023.

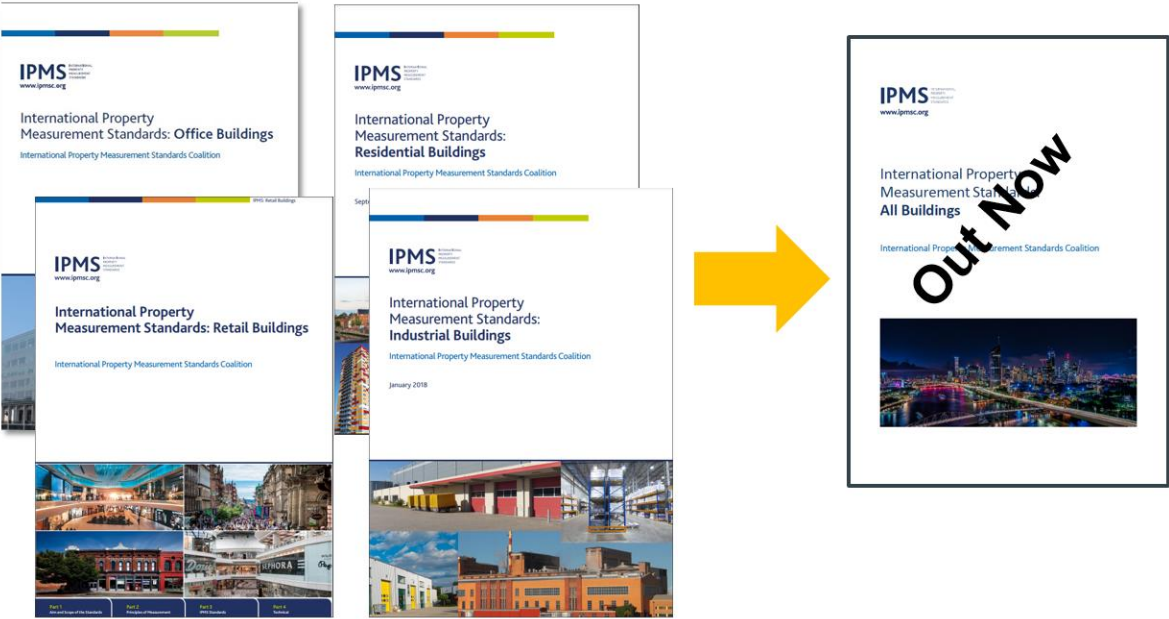


Figure 3: Timeline IPMS-Standards

3. IPMS: ALL BUILDINGS

The new Standard supersedes all previously published IPMSC Standards and applies to all asset classes including mixed use and specialist buildings. The revision included text editing as well as revision and simplification of the illustrations. In addition, the two new standards IPMS 4.1 and 4.2 were integrated, which refer to measuring floor areas of selected parts within a building on the basis of a different measurement rule than the standards 2, 3A and 3B.

IPMS are designed to satisfy the needs of the market by focussing on the purposes to which IPMS can be applied. IPMS however does not dictate the purpose or its use. IPMS can be used for any purpose where the measurement and reporting of a measured area is required or essential to provide accurate accounting of space within a building such as valuation, planning, benchmarking, cost allocation, property management or conversion between Measurement Standards.

IPMS have the flexibility to measure only part of a building or to holistically measure all the areas in the building and allocate these areas into separate components. This flexibility provides a common language that can interface with preexisting local measurement standards.

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IPMS adopt unique nomenclature to avoid confusion with existing terms that are unfortunately used inconsistently in markets across the world. The IPMS structure and interface with other measurement standards is demonstrated by the flow chart shown on the next page.

IPMS have been composed to enable the selection of the appropriate basis of measurement so that there may not be a need to apply the whole IPMS but only to have regard to the specific standard to suit the market needs. IPMS are divided into three fundamentally different groupings:

1. IPMS 1 and IPMS 2 are external and internal measurements respectively for the whole or part of a Building.
2. IPMS 3.1 and IPMS 3.2 are external and internal measurements respectively required for exclusive occupation.
3. IPMS 4.1 and IPMS 4.2 are internal measurements required for selected areas respectively including Internal Walls and Columns and excluding External Walls and Columns.

For ease of reference the various standards are named using the IPMS prefix to make the nomenclature IPMS 1, IPMS 2, IPMS 3.1, IPMS 3.2, IPMS 4.1 and IPMS 4.2 more user friendly.

The Component Areas facilitate the analysis of a Building and can also be used to convert between IPMS and other measurement standards.

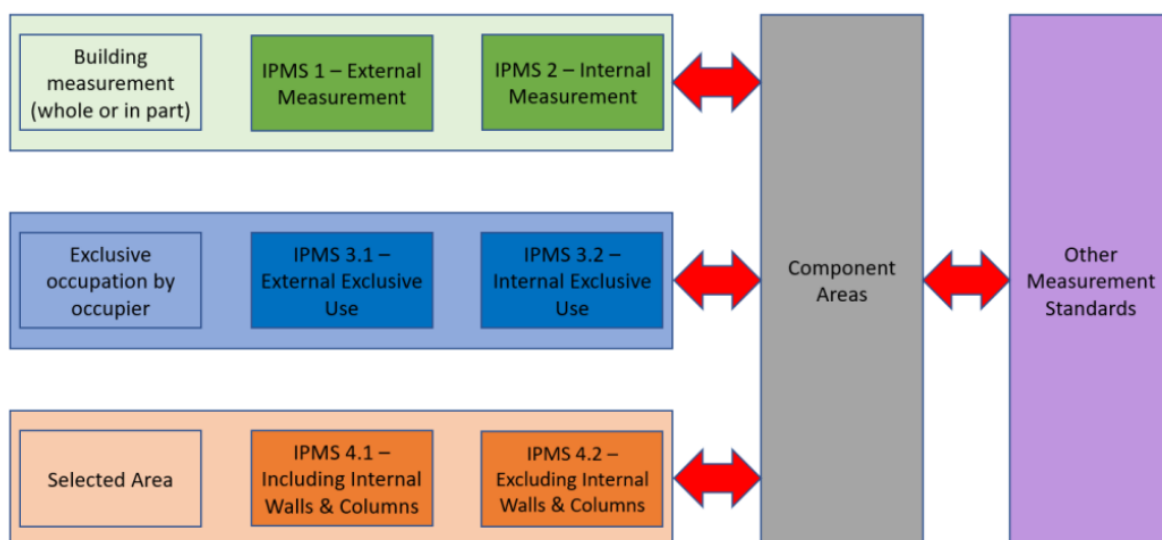


Figure 4: IPMS structure

To use the IPMS **Identify the purpose** of the measurement; then Select the **Appropriate IPMS** for that purpose; and then **Apply the measurement practice** for the selected IPMS.

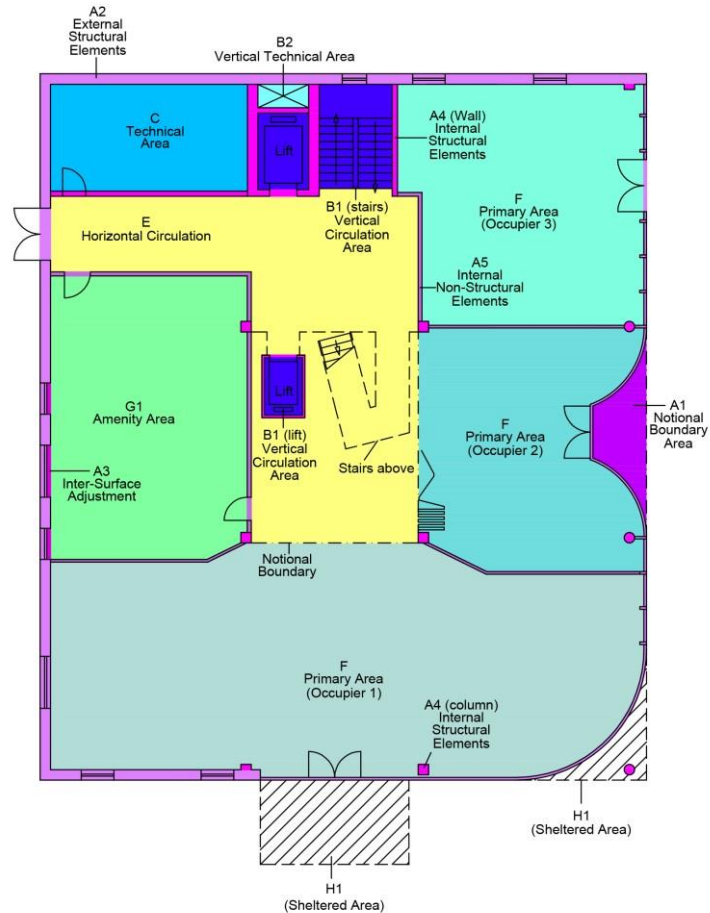
Component areas

All building areas can be divided into components. The use of component areas is optional.

Component areas should be applied when areas need to be separately allocated for purposes such as benchmarking, comparison and analysis and may be applied for conversion between IPMS applications or other measurement standards.

Component areas are horizontal areas within a Building which are designated according to their structure and function.

The sum of all the component areas will equal IPMS 1 for the building or level of a building being measured.



IPMS Defined Component Areas for a Building (Figure 5):

| | | |
|--|-----------------------|--|
| Component Area A (Columns, Walls and Notional Boundaries) | Sub-Component Area A1 | Notional Boundary The area between the Notional Boundary and the External Wall . |
| | Sub-Component Area A2 | External Structural Elements The External Wall area between the outside face and the IDF . |
| | Sub-Component Area A3 | Inter-Surface Adjustment The Wall area between the IDF and the Finished Surface . |
| | Sub-Component Area A4 | Internal Structural Elements Internal Walls , internal Columns and internal structures. |
| | Sub-Component Area A5 | Internal Non-Structural Elements Balustrades , if located within the measured floor area, full-height Internal Walls and similar non-structural elements other than those included in Component Area A1, A2 and A3. For Demising Walls this sub-component may be further subdivided. |
| Component Area B Vertical Penetration Areas | Sub-Component Area B1 | Vertical Circulation Areas Staircase openings, stairs, lift / elevator shafts and escalators. |
| | Sub-Component Area B2 | Vertical Technical Areas Service shafts and ducts equal to or greater than 0.1 m ² . |
| Component Area C Technical Areas | Component Area C | Technical Areas Mechanical and electrical plant rooms, lift / elevator motor rooms and maintenance rooms. |
| Component Area D Sanitary Areas | Component Area D | Sanitary Areas (Standard Facilities) Toilet facilities, cleaners'/janitors' cupboards, bath/shower rooms and changing rooms. |
| Component Area E Circulation Areas | Component Area E | Horizontal Circulation Areas (Standard Facilities) Circulation areas whether or not enclosed. |

| | | |
|---|------------------------------|---|
| Component Area F Primary Areas | Component Area F | Primary Areas |
| | | Areas used for primary purposes such as industrial, office, residential or retail. Primary areas that include sanitary areas and horizontal circulation areas, which form part of the occupant's fitout, may be sub-componentised, where not included in Component Areas D and E. |
| Component Area G Secondary Areas | Sub-Component Area G1 | Amenity Areas |
| | | Areas for the benefit of the primary purpose such as exclusive food court seating areas, exercise or child-minding facilities. |
| | Sub-Component Area G2 | Ancillary Areas |
| | | Areas for the benefit of the primary purpose such as exclusive delivery areas, refuge areas and car parking that form part of the Building . |
| Component Area H Other Areas | Sub-Component Area H1 | Other Areas (General) |
| | | All other areas included in IPMS 1 but not otherwise included in Component Areas A–G and Sub-Component Areas H2 and H3 which may include External Floor Area(s) and Sheltered Area(s) . |
| | Sub-Component Area H2 | Other Area (Construction) |
| | | Areas, such as the area between the Balustrade and the outside edge of the floor construction. |
| | Sub-Component Area H3 | Other Areas (Standard Facilities) |
| | | Landlord-provided Standard Facilities such as food court seating areas, exercise or child-minding facilities or other Standard Facilities such as delivery areas, refuge areas and car parking. |

IPMS adopts the following fundamental **measurement and calculation practices**:

1. Measurements and calculations should be in the unit of measurement commonly adopted in the relevant jurisdiction
2. All measurements, with the exception of height, are to be taken horizontally
3. IPMS measurement should be supported by computer-generated drawings if available but, where other drawings are used as a basis for measurement, annotated dimensions on drawings should be used in preference to a reliance on scaling alone
4. Where possible, measurements should be independently verified on site
5. Measurement and computing processes must be sufficiently accurate to satisfy the requirements and the purpose to which the measurement is to be used
6. Buildings or selected areas are to be measured individually on a level-by-level basis
7. When faced with situations not explicitly addressed by IPMS, the principles are to be extrapolated using a logical and consistent approach, based on these fundamental principles and supported by an explanation

There are two measurement concepts within IPMS: All Buildings

Internal Dominant Face (IDF) for IPMS 2, 3A and 3B:

The inside surface area comprising more than 50 per cent of the lowest 2.75 m measured vertically from the structural floor surface, or to the ceiling if lower, for each Wall Section. If such does not occur or if the Wall Section is not vertical, the Finished Surface is deemed to be the IDF.

Finished Surface for IPMS 4A and 4B:

The Wallsurface directly above the horizontal wall-floor junction, ignoring any part-height walls, cladding, fittings, skirting boards, cable-trunking, pipework and heating or cooling units.

Each measurement standard is broken down into 4 stages:

- Stage 1 – Guidance to determine the Boundary of the measurement required
e.g. whether to include Sheltered Areas, or External Floor Areas
- Stage 2 – Other considerations to take into account when calculating the area
e.g. measurement of void/mezzanine extents
- Stage 3 – Measurement and calculation of the Boundary
- Stage 4 – Areas included in a measurement that must be reported separately.
e.g. Limited Use Areas or External Floor Areas

IPMS 1

The Floor Area measured to the external extent of the external walls and to any notional boundaries, external floor areas or sheltered areas.

The boundary of IPMS 1 for each level is determined by the considering the following in sequential order:

- Notional boundaries

A non-physical line that forms part or all of a Boundary and is typically agreed as part of the measurement instruction or defined by a legal document.

- External floor area

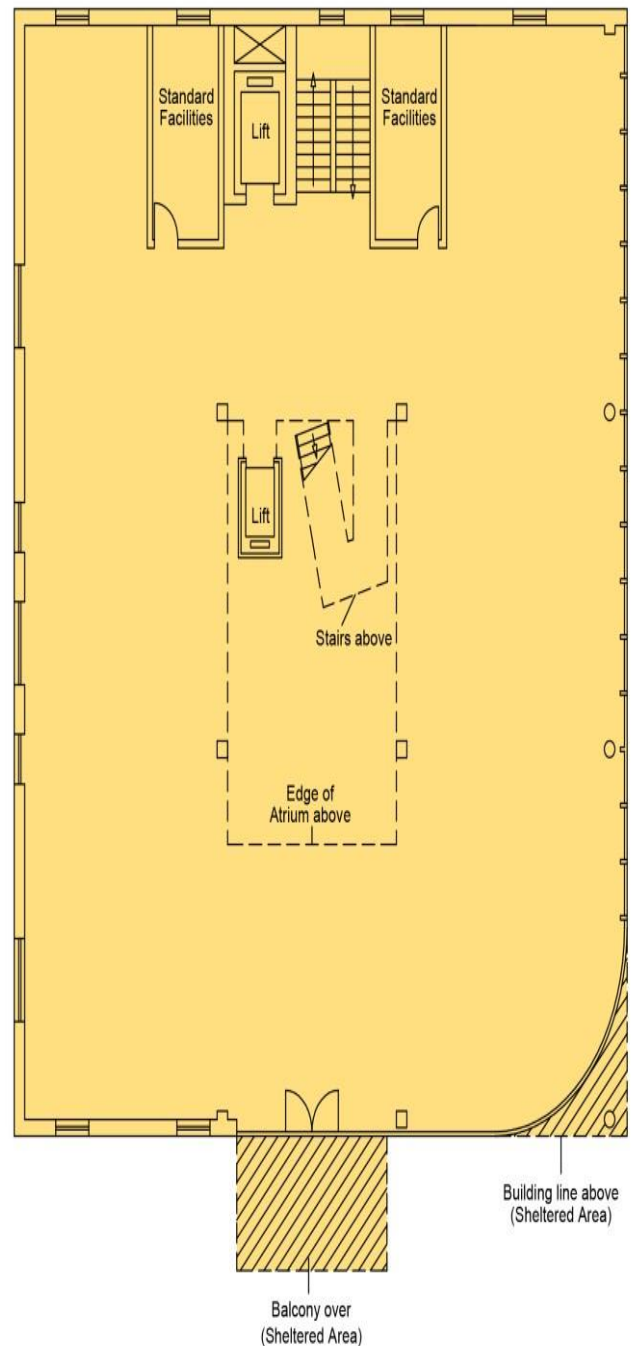
An external horizontal structure at any floor level of a Building with a Balustrade to the open sides, including generally accessible balconies, colonnades (with Balustrade), rooftop terraces, external galleries and loggias but excluding structures such as patios and terraces when not integral to the structural construction of the Building.

- Sheltered area

Any part of the Covered Area that is not fully enclosed where the permanent structural extension above provides effective shelter.

- External wall

The enclosing element of a Building, excluding appendages and ornamental features, which separates the interior area from the exterior.)



Any reporting of IPMS 1 must state whether it is for the entire building or only for one or more levels of the building.

IPMS 2

The Floor Area measured to the **internal extent** of the internal dominant face (IDF) and to any notional boundaries and external floor areas.

The boundary of IPMS 2 for each level is determined by the considering the following in sequential order:

Notional boundaries

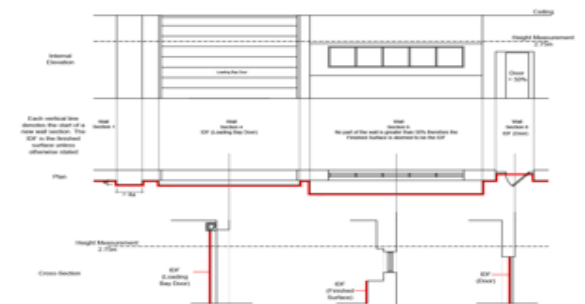
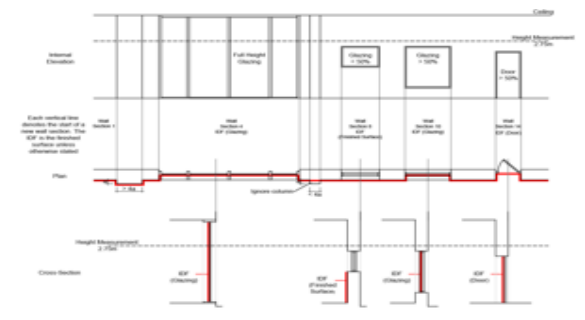
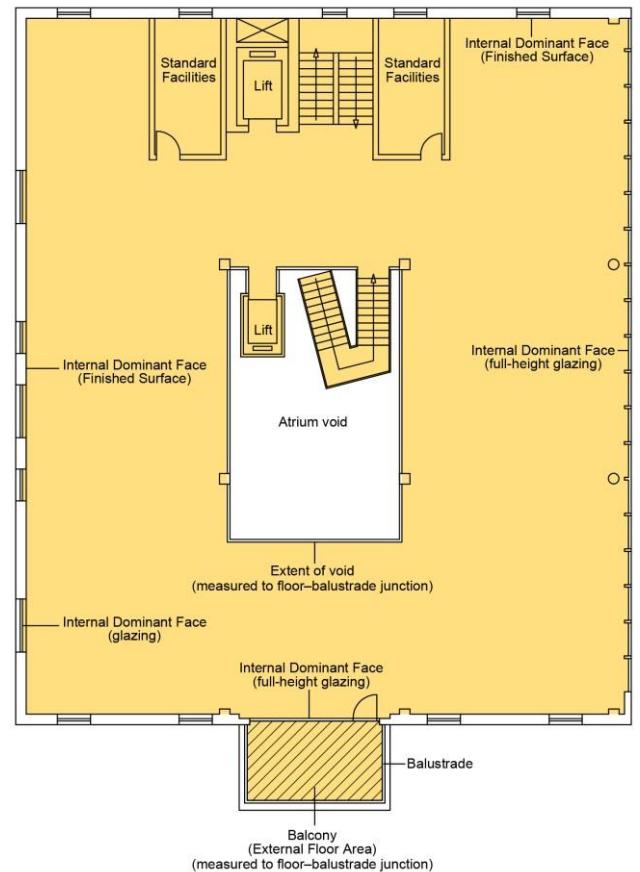
External floor area

Internal dominant face

Any reporting of IPMS 2 must state whether it is for the entire Building or only for one or more levels of the building.

Internal Dominant Face

The inside surface area comprising more than 50 per cent of the **lowest 2.75 m** measured vertically from the structural floor surface, or to the ceiling if lower, for each wall section. If such does not occur or if the wall section is not vertical, the finished surface is deemed to be the IDF.



IPMS 3.1

The Floor Area available on an **exclusive basis** to an occupier **measured externally** to any notional boundaries, external walls, demising walls and including any external floor areas, sheltered areas and secondary areas.

The boundary of IPMS 3.1 for each level is determined by the considering the following in sequential order:

Notional boundary

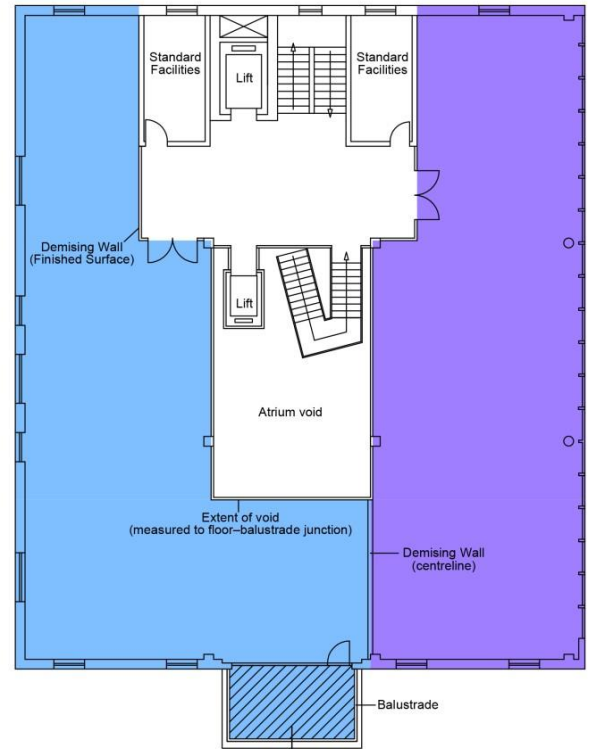
External floor area

Sheltered area

External wall

Demising wall

Secondary areas



IPMS 3.2

The Floor Area available on an **exclusive basis** to an occupier **measured internally** to any notional Boundaries, the internal dominant face, demising walls and including any external floor areas, sheltered areas and secondary areas.

The boundary of IPMS 3.2 for each level is determined by the considering the following in sequential order:

Notional boundary

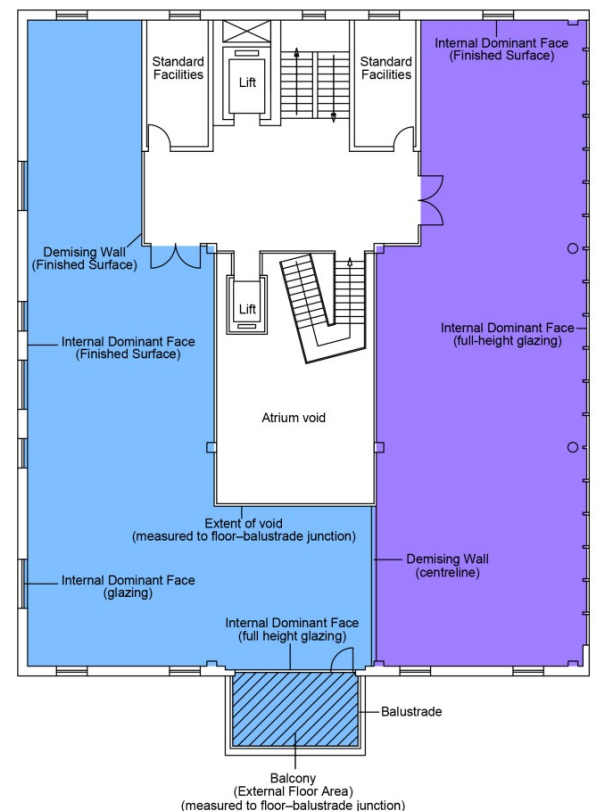
External floor area

Demising walls

Internal dominant face

Sheltered area

Secondary areas



IPMS 4

IPMS 4.1 and **IPMS 4.2** are used for measuring Floor Areas of **selected parts** within a Building. Such measurements are directly linked to specific defined criteria. It may include all or some of the selected parts of the building.

IPMS 4.1 and IPMS 4.2 are measured to the finished surface.

Examples of a potential selected part(s) of a building are shown below:

- the extent of air-conditioned against non-air-conditioned space
- how much space has a security restriction
- the size of a hotel suite
- the area of departments within an organisation's space
- the area required given a desired density of occupancy
- the size of a maternity wing in a hospital
- the ratio between the front of house and back of house in a hotel
- the horizontal and vertical circulation areas within a building
- the ratio of different uses within a building
- room areas within a residence
- defining and verifying a client space requirement

IPMS 4.1

The selected floor area in a building measured to **finished surfaces** and to any notional boundaries, external floor area and sheltered area **including all floor area occupied by walls and columns.**

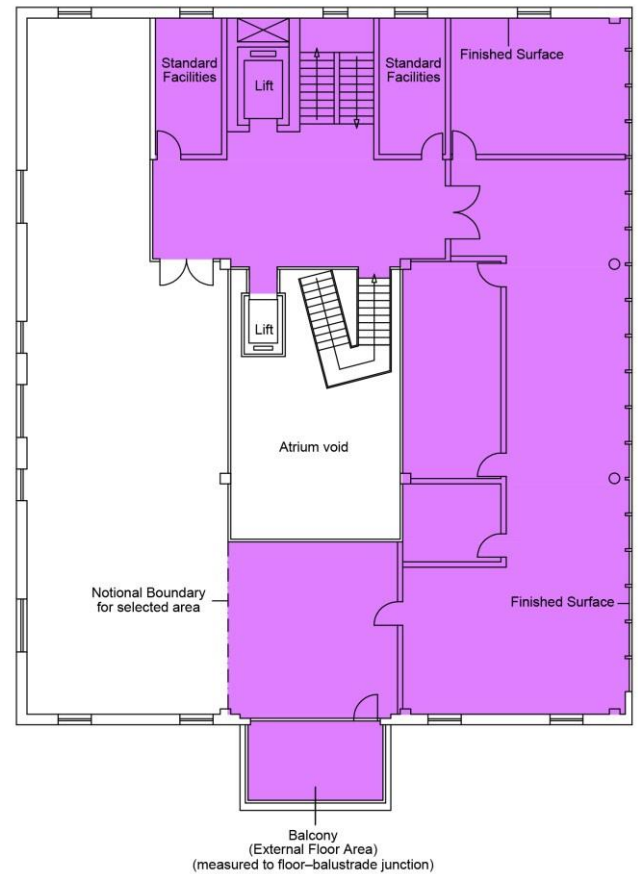
The selected boundary of IPMS 4.1 for each level is determined by the considering the following in sequential order:

Notional boundary

External floor area

Sheltered area

Finished surface



IPMS 4.2

The selected floor area in a building measured to **finished surfaces** and to any notional boundaries, external floor area and sheltered area but **excluding (subtracting) all floor area occupied by walls and columns.**

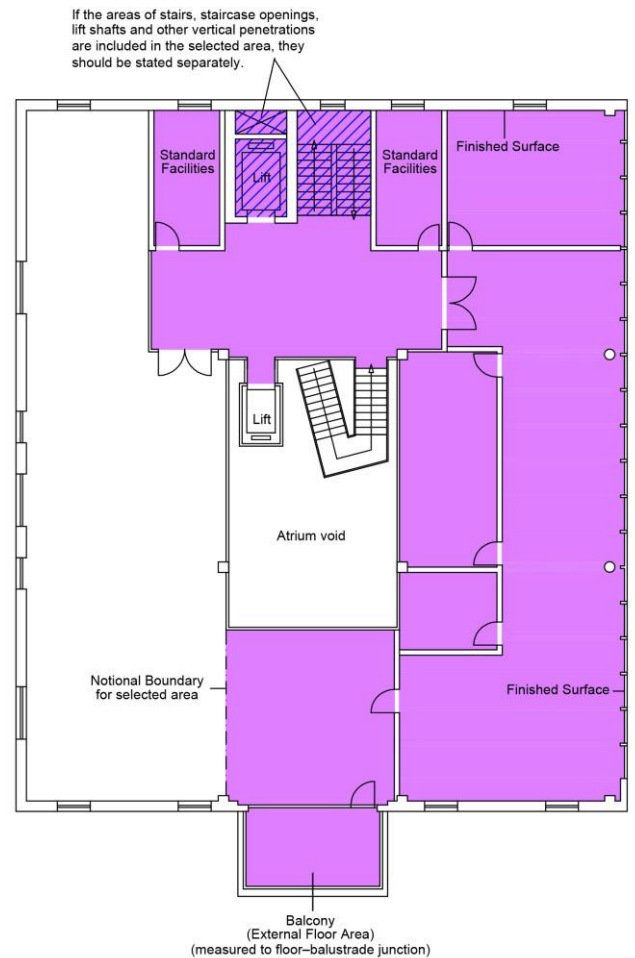
The selected boundary of IPMS 4.2 for each level is determined by the considering the following in sequential order:

Notional boundary

External floor area

Sheltered area

Finished surface



4. DISCUSSION AND CONCLUSION

It will not be possible that regional or local area standards will be standardized worldwide. Sometimes there are legal requirements that must be strictly adhered to.

However, it is important that the calculation rules are comprehensible in order to achieve transparency and comparability.

IPMS: All Buildings offers a platform to simplify and compare local standards.

If valuation parameters, e.g. rents or purchase prices, refer to this standard or are "converted" to it, the valuation results are finally comparable, which can simplify cross-border investments in the future.

REFERENCES

IPMS: All Buildings, www.ipmsc.org

BIOGRAPHICAL NOTES

Wolfgang GLUNZ received his diploma (Dipl.-Ing.) in Geodesy at the University of Bonn in 1990. He passed the highest level state certification as “Graduate Civil Servant for Surveying and Real Estates” in North Rhine-Westphalia in 1994. He is working as a publicly appointed surveyor and a publicly appointed and sworn in valuer in Ratingen, Germany. He is member of the german surveyor-organisations BDVI and DVW, delegate of BDVI at TEGoVA and member of the IPMS SSC.

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