**Questionnaire for the development of ISO 19152:2012 LADM Valuation Module**


The ISO 19152:2012 Land Administration Domain Model (LADM) presents a conceptual schema for the specification of property units and their legal and geometric characteristics recorded at cadastre and land register, and relates these datasets with other property related datasets (e.g. addresses, utility networks, building (units), valuation, taxation, land use, land cover) recorded at external registrations.

A recently initiated collaborative research aims at developing a LADM based international information model for one of these external registrations, namely in terms of a Valuation Module for the ISO 19152:2012 LADM. The purpose of this research is to define the semantics of valuation information maintained by public authorities especially for recurrent taxes on immovable property[1], and to extend the scope of LADM from a fiscal perspective to provide an information model that could be used to construct information systems for immovable property valuation. The preliminary results of this research were documented at the 11th 3D Geoinfo Conference[2].

This questionnaire is prepared as a part of methodology applied for the above-mentioned research which is also supported by FIG Presidency and Chair of FIG Commission 9 Valuation and the Management of Real Estate. The purpose of the questionnaire is to create a world-wide inventory that reveals commonalities and differences among valuation systems used for recurrently levied immovable property taxes. The result of the questionnaire is expected to provide an understanding of the situation of valuation systems, and will be used as source data for the elaboration of the LADM Valuation Extension Module.


Please reply the following questions, and contact us if you have any comments and suggestions:

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[1] Recurrent taxes on immovable property covers taxes levied regularly in respect of the use or ownership of immovable property. These taxes are levied on land and buildings, in the form of a percentage of an assessed property value based on a national rental income, sales price, or capitalised yield; or in terms of other characteristics of real property (e.g., size or location) from which a presumed rent or capital value can be derived. They can be levied on proprietors, tenants, or both; they can also be paid by one level of government to another level of government in respect of property under the jurisdiction of the latter (The OECD classification and interpretative guide 2015, http://www.oecd.org/tax/tax-policy/oecd-classification-taxes-interpretative-guide.pdf)

[2] For more information, see: http://www.isprs-ann-photogramm-remote-sens-spatial-inf-sci.net/IV-2-W1/145/2016/

## Section A. General questions for property valuation systems in The Netherlands

| Questions | Responses |
|---|---|
| 1. Please indicate the organizations responsible for valuation of properties for property taxation purposes through name in national language and English translation. | Gemeenten<br>Municipalities |
| 2. What are the types of objects of valuation for property taxation (e.g. unimproved parcel, building)? Name and date of the ordinance to be listed. | Real Estate (Land and improvements/buildings together as one taxable property) |
| 3. Please mention value type (e.g. market value, tax value, capital value) used by the responsible organization for property taxation? | Market Value (but for non-marketable properties: adjusted replacement value) |
| 4. Please mention the public registry datasets (e.g. cadastre, land registry, building registry) which are used in valuation procedures, and their mutual functions? | Cadastre (for ownership data and size of land plot)<br>Base register for buildings and addresses (for addressing properties and basic objectcharacteristics)<br>Base register for inhabitants (for user of residential properties and addresses to send out tax bill and assessed value)<br>Base register for companies (for user of non-residential properties and addresses to send out tax bill and assessed value)<br>Large scale base map (for location data of property and presenting results in a digital map to tax payer |
| 5. Which methods are applied for collecting market data needed for valuation? | Sales data is available from the Cadastre (all transactions are registered with sale price, also used for transfer tax);<br><br>Asking prices (for selling residential and non-residential properties and rents of non-residental properties) are derived from real estate ads on the internet.<br><br>Rent prices for non-residential properties are collected for valuation by questionnaires to owner or renter of the property. |
| 6. Is there any special valuation database for storing datasets *used in* (e.g. property characteristics) or *produced with* (e.g. sales statistics) valuation procedures? If yes, please give the name of database, indicate responsible authority, and describe its content. | Municipalities collect objectcharacteristics for valuation purposes, like type of property, annexes of the property, quality of the property, maintenance conditions. This registration is only available for the municipality.<br>The results of the valuation, the assessed value is registered in the base-register for assessed value. This registration is |

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| | | available for an number of government agencies (Basisregistratie WOZ) and is (for residential properties) partly available for the public (WOZ-waardeloket.nl. |
| 7. | Is there a web-based dissemination of valuation information? If yes, please indicate which data (e.g. sales statistics) is open to the public. | Yes. In "WOZ-waardeloket" the assessed value of residential properties can be seen in combination with data from the base-register of buildings (building year and floor area) and shown in a map or arial photo. |
| 8. | How frequently are general revaluations made? | Yearly |
| 9. | Is there a system of indexation affecting property value between regular revaluations? | No. There is an annual revaluation so there is no indexation needed. |
| 10. | Do taxpayers have a right to appeal against the appraised values? If yes, please indicate how disputes are resolved. | Yes.<br><br>First taxpayer can make a formal objection to the municipality.<br><br>Then there is the possibility of appeal at the tax court.<br><br>After that even appeal to the High Court is possible.<br><br>But municipalities try to avoid objections by inviting taxpayer to "call" when they think the value is incorrect. An informal objections is much faster and much cheaper than a formal objectioen. |

Please continue with Section B, if mass appraisal procedures are applied in your country for immovable property taxation. If single property appraisal methods are used -even if as complementary part of mass appraisal, please answer questions given in Section C.

**Section B - Questions for mass appraisal procedures in The Netherlands**

| Questions | Responses |
|---|---|
| 1. Do you have a (computer aided) mass appraisal system in your country? If yes, please indicate also responsible authorities. | Yes<br><br>These systems are used by municipalities.<br><br>Municipalities but these systems "on the market". In the Netherland five companies have developed and sell these systems especially made for the Dutch legislation. |
| 2. Is there any other use of the mass appraisal system than property taxation? | The formal assessed value are also used for instance for:<br><br>-setting the maximum rent price for social housing;<br><br>- avoiding real-estate fraud by avoiding too high mortgages;<br><br>- distribute financial means from central government to municipalities;<br><br>- setting prices for leasehold contracts. |
| 3. Which CAD/GIS/CAMA (Computer-aided design / Geographic information system / Computer Assisted Mass Appraisal) software packages are used in mass appraisal? | The CAMA systems are developed for the Dutch legislation. GIS systems are used for viewing properties (using different types of photo's) and analyzing object characteristics<br><br>GIS systems are not directly using for calculating values (for instance distance to services like schools. |
| 4. Which geographical or spatial datasets are used in mass appraisal? Please describe the source of these datasets. | The large scale base map of the Netherlands in combination with arial photo's, Streetview pictures (Cyclomedia). which are available for the whole country |
| 5. Which geographic or spatial analysis methods (e.g. visibility analysis, proximity analysis) are applied in mass appraisal? | Only visual inspection of the property and checks on consistency of data (e.g. varying building years within a street).<br><br>Further a check on the completeness of data (are all properties valued) |
| 6. Is three-dimensional (3D) data used in mass appraisal? Please describe source of 3D data (e.g. floor plans). Does Valuation objects include condominium, strata title, freehold flats or other 3D units. | Only in some pilot projects.<br><br>The 3D use is mostly derived from large scale base map in combination with height information and sometimes |

| | | combined with picture information. |
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| 7. | Is there any relationship between the CAMA system and other public registers (e.g. cadastre, land registry, building registry, …)? | Municipalities use the other public registers to complete there registration for valuation purposes. Besides the data from public registers municipalities have to collect a lot of data themselves.<br><br>The results of the appraisal, the assessed values are shown in the WOZ-waardeloket in combination with data in the base register of buildings. |
| 8. | Please describe the statistical models (e.g. additive, multiplicative) applied in mass appraisal according to type or functions of properties? | For residential properties valuation models are based on sales comparison. Most systems in the Netherlands use clustering as main methodology, while some systems use linear regression (MRA).<br><br>For non-residential properties the valuation is based on income approach (rent prices, for shops, offices and other business properties) or corrected replacements costs for non marketable properties like schools, hospitals etc.) |
| 9. | Please indicate statistical analysis methods (e.g. multiple regression analysis, artificial neural network) applied in mass appraisal? | There is limited use of multiple regression analysis, because most system are based on clustering. No use of artificial networks, |
| 10. | Which land use characteristics (e.g. land use zones) are used as variables in mass appraisal models? Please describe the source(s) of these characteristics. | The formal allowed use of the property has of course influence on the market value. However mostly the effective use is in accordance with the allowed use.<br><br>Zoning plans are available for al area in The Netherlands. |
| 11. | Which environmental and locational characteristics (e.g. location nuisance, distance to points of interest / POIs, environmental risks) are used as variables in mass appraisal models? Please describe the source(s) of these characteristics. | Positive and negative locational characteristics are combined into a "school mark" for the quality of the location.<br><br>Environmental issues like soil pollution or earth quakes can lead to additional deduction of the value. |
| 12. | Which building or improvement characteristics (e.g. number of unit, construction type and material) are used as variables in mass appraisal models? Please describe the source(s) of these characteristics. | Type of property, size of property (floor area and size of plot), building year, annexes of the property like garages etc. quality of the property (rating), maintenance condition (rating) and |

| | | location (rating). |
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| | | Only size of plot is derived from Cadastre. |
| | | Building year and floor area must be in accordance with base register of buildings, but in general for valuations more detailed information is needed than can be found in this bas-register. |
| 13. | Does valuation legislation prescribe an investigation into the general quality or performance analysis (e.g. 'ratio study') of the mass appraisal system? If yes, please describe the indicators used in the performance analysis. | The Netherlands Council for Real Estate Assessment is responsible for the quality control. This council sets out guidelines for the quality control. Quality control includes ratio studies, but also quality protocols for analyzing the quality of object characteristics registered. |
| 14. | Please indicate whether single property appraisal is applied for improving accuracy of mass appraisal estimations. | Yes, especially for properties which are hard to compare to other properties. That can be very specific residential properties, but more often that are the high value non-residential properties. |

**Section C. Questions for single property valuation procedures in The Netherlands**

| Questions | Responses |
|---|---|
| 1. Which valuation methods are used for single property appraisal for property taxation? Please relate valuation methods with the type of valuation objects (e.g. sales comparison approach for unimproved parcels). | Sales comparison for residential properties, but also for agricultural properties.<br><br>Income approach for all commercial real estate (shops, offices etc.)<br><br>Cost approach (reproduction costs) for non-marketable properties. |
| 2. Which geographical or spatial datasets are used for single property appraisal? Please describe the source(s) of these datasets. | Same as for mass appraisal. |
| 3. Which legal property characteristics (e.g. property rights) are taken into account for single property appraisal? Please describe also the source of these characteristics. | For the formal assessing of properties all valuation are made based on the assumption that there is a full ownership of the property.<br><br>So the rights that are taken into account are the "zoning rights". |
| 4. Which land use characteristics (e.g. land use zones) are taken into account for single property appraisal? Please describe also the source(s) of these characteristics. | For all area of the Netherland there are municipal zoning plans. |
| 5. Which environmental and locational characteristics (e.g. location nuisance, distance to POIs, environmental risks) are taken into account for single property appraisal? Please describe the source(s) of these characteristics. | Most important are soil pollution, asbestos in the construction. These information is collected for the valuation or mentioned by the taxpayer.<br><br>Information about noise, air pollution etc. is mostly not of importance because market data is used with a similar level of nuisance for the characteristics. |
| 6. Which building or improvement characteristics (e.g. number of unit, construction type and material) are taken into account for single property appraisal? Please describe the source(s) of these characteristics. | Same as for mass appraisal. |
| 7. If there is a special valuation database, please indicate which sales comparison method related data (e.g. comparable property identifiers, monetary adjustment for time, physical differences) are kept in this database. | This is not a formal database. Of course the municipalty/valuer has this kind of information as part of his knowledge. |
| 8. If there is a special valuation database, please indicate which cost method related data (e.g. type and source of cost price, chronological age, depreciations) are kept in this database. | Cost data is only collected for non-marketable properties.<br><br>Cost data for these specific properties is collected by the union of municipalities and is available for all municipalities for their valuations. |

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| 9. If there is a special valuation database, please indicate which income valuation method related (e.g. gross income, net income, capitalization rate, discount rate) are kept in this database. | Municipalities have to collect all income related data for commercial real estate themselves. Mostly they send out questionnaires to owners of users of these properties for this purpose. |

**Section D. Information concerning respondent(s)**

| Questions X..Y have been answered by | Respondent |
|---|---|
| 1. Name | ir. Ruud M. Kathmann |
| 2. Affiliation / position | Netherlands Council for Real Estate Assessment (Waarderingskamer). |
| 3. Country | Netherlands |
| 4. E-mail | r.kathmann@waarderingskamer.nl |
| 5. Comments | |

| Questions Z..A have been answered by | Respondent |
|---|---|
| 1. Name | ir. Ruud M. Kathmann |
| 2. Affiliation / position | Netherlands Council for Real Estate Assessment (Waarderingskamer). |
| 3. Country | Netherlands |
| 4. E-mail | r.kathmann@waarderingskamer.nl |
| 5. Comments | |