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 South Korea

Questions	Responses
1. Please indicate the organizations responsible for valuation of properties for property taxation purposes through name in national language and English translation.	Ministry of Land, Infrastructure and Transport(MOLIT)
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.	Buildings(Single-unit Housing Price, Multi-unit Housing Price) Land
3. Please mention value type (e.g. market value, tax value, capital value) used by the responsible organization for property taxation?	Public tax 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?	Also Molit has developed the KRAS system that integrated cadastre and building registry). But land registry is still not integrated with KRAS system.
5. Which methods are applied for collecting market data needed for valuation?	The municipalities are doing the tax valuation per year annually. Local officers in municipality calculate the tax values of every parcels and buildings after making the sample valuation by the real estate certified public appraisers. Appraisers use past similar valuation cases or real sales price data recorded on the RTMS.
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.	The municipalities have the datasets for managing and producing for public tax valuation. These data can be collected the central government dataset in real time.
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. Molit provides the real estate price information via Internet (http://www.realtyprice.kr)
8. How frequently are general revaluations made?	Annually
9. Is there a system of indexation affecting property value between regular revaluations?	Sure. Parcel prices have been increasing. But it is depended on the sample price of the public appraisers
10. Do taxpayers have a right to appeal against the appraised values? If yes, please indicate how disputes are resolved.	Sure. In the May of year, local government provides the tax value for each parcel and buildings. And that time the owners can be raising of an objection within 60 days.

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 South Korea

Questions	Responses
1. Do you have a (computer aided) mass appraisal system in your country? If yes, please indicate also responsible authorities.	Yes. It is called the KRAS system in the municipality. But this system is working between local and central level. Molit is responsible for the valuation
2. Is there any other use of the mass appraisal system than property taxation?	No
3. Which CAD/GIS/CAMA (Computer-aided design / Geographic information system / Computer Assisted Mass Appraisal) software packages are used in mass appraisal?	KRAS is working that integrated with cadaster. So KRAS can be used GIS. Sometimes local governments are using the compensation for land developments.
4. Which geographical or spatial datasets are used in mass appraisal? Please describe the source of these datasets.	Cadastre and building geographic data in the municipality
5. Which geographic or spatial analysis methods (e.g. visibility analysis, proximity analysis) are applied in mass appraisal?	Simple analysis methods for mass appraisal are applied. All parcels pertained to mass appraisal all include geographic information. Therefore it is possible to analyze the distance between parcels and the density.
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.	No
7. Is there any relationship between the CAMA system and other public registers (e.g. cadastre, land registry, building registry, …)?	Still not integrated with cadasteral and land registry. However, information on public registers are utilized to survey land characteristics
8. Please describe the statistical models (e.g. additive, multiplicative) applied in mass appraisal according to type or functions of properties?	Hedonic price model
9. Please indicate statistical analysis methods (e.g. multiple regression analysis, artificial neural network) applied in mass appraisal?	Yes, multiple regression analysis $Y = b_0 + b_1X_1 + b_2X_2 + ... + b_pX_p$ Y = Dependent Variable(land price) b_0 = constant $X_1, X_2, …, X_P$ = Independent Variable(Land use , Altitude, Land form, Designated use district, etc) $b_1, b_2, …b_p$ = Coefficient of Independent
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.	21 land characteristics are being used for mass appraisals, and within those 21, 16 characteristics are utilized as independent variables. Land use characteristics consist of zoning, land use, altitude, land form, contact with road and etc. These factors are collected through both the Urban Planning Information System and field surveys.
11. Which environmental and locational characteristics (e.g. location nuisance, distance to points of interest / POIs, environmental risks) are used as variables in	Government has been developed the so many characteristics for valuation. And this is used

	mass appraisal models? Please describe the source(s) of these characteristics.	every local government supervised by the central government Within the 21 land characteristics, region factors are: Contact with road, Distance from rail road, Distance from waste treatment facilities and etc. These factors are collected through both the Urban Planning Information System and field surveys.
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.	Molit provides the sample valuation list for buildings. Also the local governments can calculate the mass building valuations comparison with the sample valuation by the public appraisers. Major characteristics are: floor area ratio, building coverage ratio, building construction, past history of remodeling, structure per floor and etc. These characteristics are provided by the Construction Administration System that is verified through field surveys.
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.	Korea's mass appraisal performance is assessed by a coefficient of dispersion with measures horizontal fairness.
14.	Please indicate whether single property appraisal is applied for improving accuracy of mass appraisal estimations.	Yes. This is making by the public appraisers. Condominiums, hotels, golf clubs and other large real estates are categorized as special real estate, and public appraisers apply single property appraisals.

Section C. Questions for single property valuation procedures in South Korea

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).	Three different methods are applied depending on the type of real estate property: Cost Approach to Value, Income Approach to Value, and Comparison Approach. Land: Comparison Approach Buildings: Cost Approach to Value, Income Approach to Value, Comparison Approach Factories: Income Approach to Value Vehicles, Ships, Air Planes : Cost Approach to Value Right(mineral, fishing and etc.) : Income Approach to Value

2.	Which geographical or spatial datasets are used for single property appraisal? Please describe the source(s) of these datasets.	Cadastre and building geographic data in the municipality
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.	Yes, special real estates where single property appraisals are applied, have several owners with individual rights, meaning the relationship between their individual rights is an important factor
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.	They are very similar to the land use characteristics utilized in the mass appraisal model. (refer to reply of question 10)
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..	Yes, for regional factors there are: Contact with road, Distance from rail road, Distance from waste treatment facilities and etc. These factors are collected through both the Urban Planning Information System and field surveys.
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.	Yes; however, real estate appraisal additionally takes into consideration building characteristics. Major characteristics are: floor area ratio, building coverage ratio, building construction, past history of remodeling, structure per floor and etc. These characteristics are provided by the Construction Administration System that is verified through field surveys.
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.	For the comparison method, the sample to be compared with is selected by an appraiser, it is usually a sample with nearby, with similar land use and form that has been recently transacted. Then time and other special adjustments are considered.
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.	For the cost method, the appraiser surveys the land factors and regional factors, then applying depreciation values the cost price
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.	For the income valuation method, the appraiser surveys the land factors and regional factors and estimates the profit, capitalization rate, and discount rate.

Section D. Information concerning respondent(s)

Questions X..Y have been answered by	Respondent
1. Name	YOUNG-HO, LEE
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5. Comments	

Questions Z..A have been answered by	Respondent
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