



XXVII FIG CONGRESS

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3D Description of Condominium Rights in Turkey: Improving the Integrated Model of LADM and IFC

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Introduction

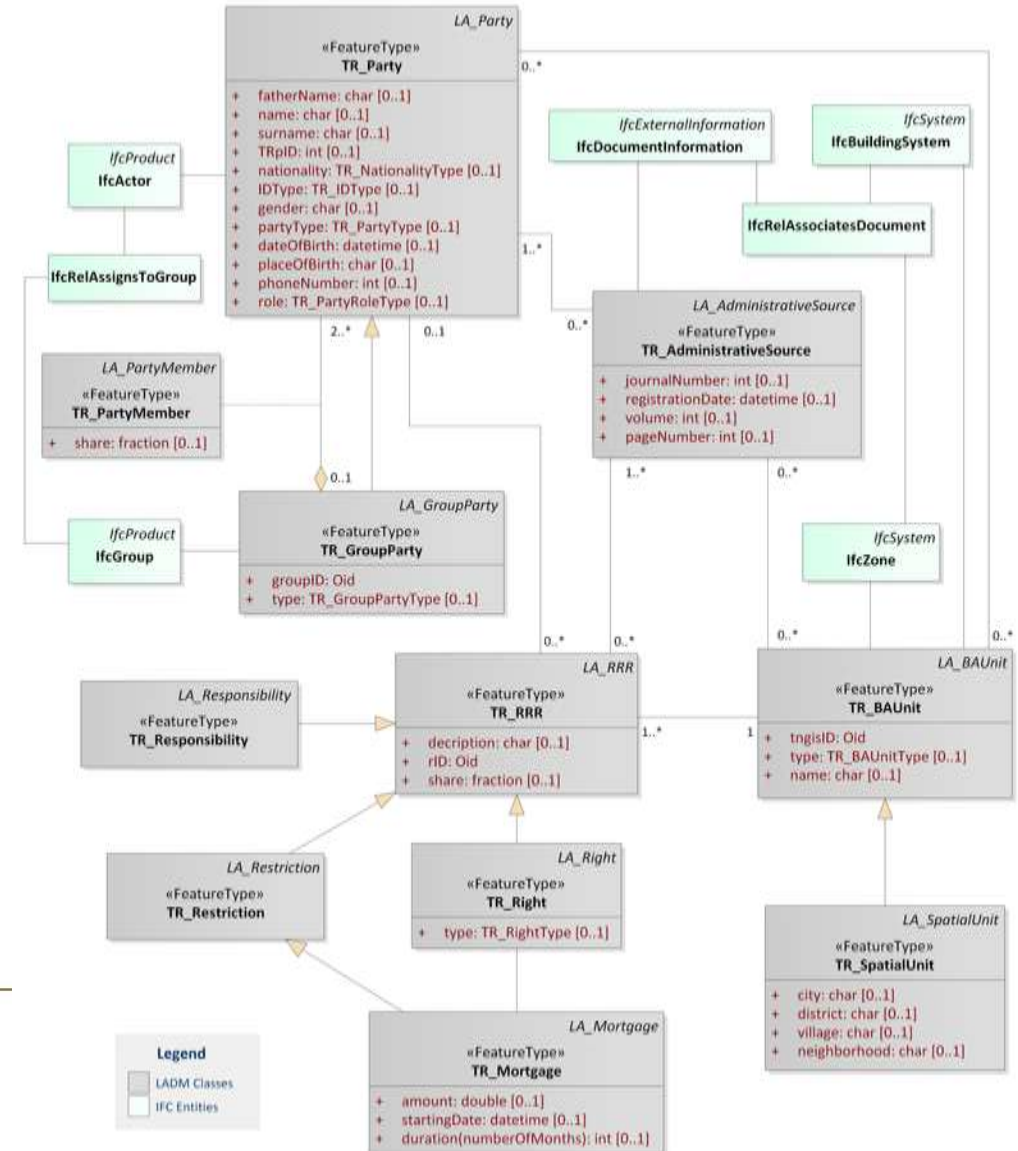
- Increased complexity of the built environment (complex and high-rise buildings)
- Improving the LASs to meet the needs (3D Cadastre \longrightarrow 3D Land Administration)
- The need for 3D delineations due to insufficiency of 2D representations
- Growing interest in Building Information Modeling (BIM) (designing buildings digitally, detailedly, and collaboratively) (The Netherlands, Sweden, Australia, Saudi Arabia, and Turkey)
- Land Administration Domain Model (LADM) & Industry Foundation Classes (IFC)

Introduction

- To improve the initial conceptual model in a way that integrates LADM and IFC for thoroughly representing the condominium rights in Turkey by considering legal spaces and detailed building elements as well
- To enable the IFC models that contain and provide physical objects with the required semantics for 3D representation of condominium rights
- The integrated model can be utilized by land registry and cadastre agencies for registering and disseminating cadastral information and also by architects/designers as a guideline in creating building models in a way that includes legal spaces

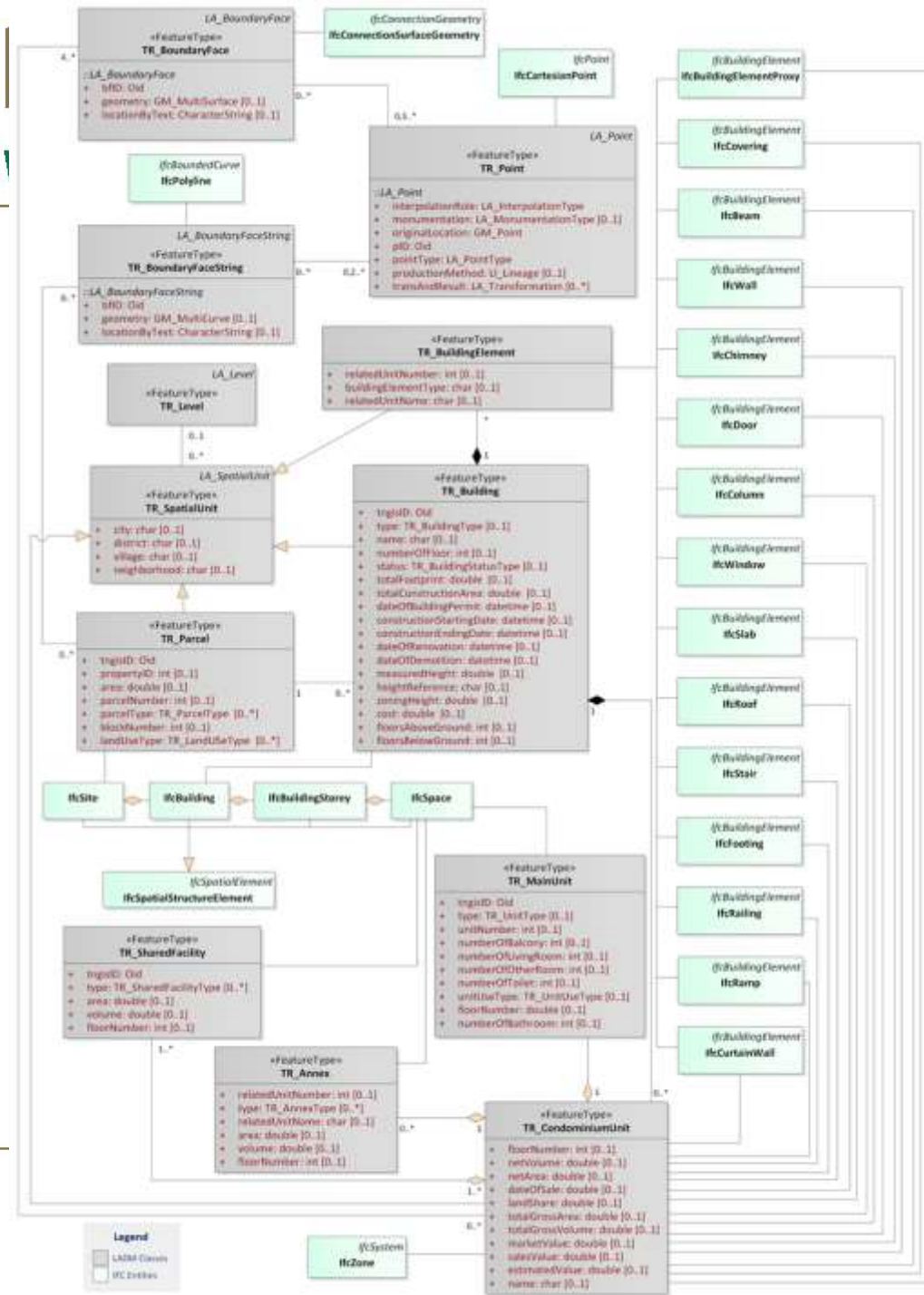
Model Development

- The different parties involved in the registration of condominium rights: TR_Party (IfcActor)
- More than one IfcActor instance modeled as IfcGroup through the IfcRelAssignsToGroup
- IfcDocumentInformation that is aimed to store metadata information for an external document (TR_AdministrativeSource)



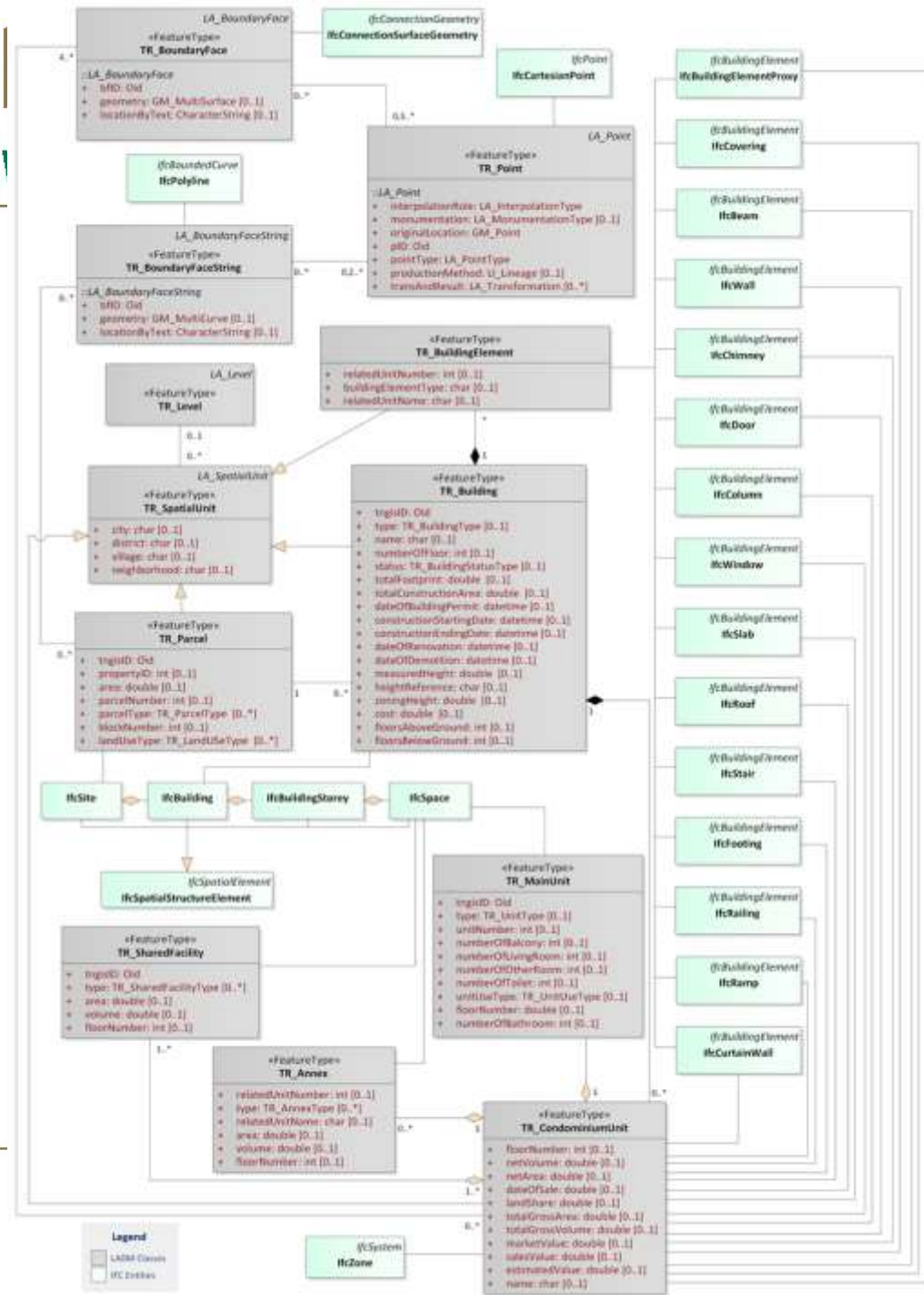
Model Development

- Condominium units can have different building elements
- Association between TR_CondominiumUnit and IFC entities regarding building elements
- **IfcBuilding**: TR_Building
- **IfcSpace**: to model legal spaces regarding condominium units (TR_MainUnit, TR_Annex, and TR_SharedFacility)



Model Development

- To delineate all spaces that the condominium has the right to use: **IfcZone** entity that represents the group of spaces
- The property set of TR_BuildingElement can be added to subtypes of **IfcBuildingElement**
- IfcCartesianPoint**, as a subtype of **IfcPoint**, feasible for describing TR_Point
- IfcPolyLine**: to model TR_BoundaryFaceString



Conclusions

- The reuse of **as-built BIMs** can be highly beneficial in the registration and visualization of condominium rights with their physical counterparts in Turkey
- The representation of the IFC models that current or prospective condominium owners can detailedly view and explore their cadastral rights as 3D is a crucial part of **3D LASs**
- There is a huge potential to **estimate values of condominium units** by means of IFC models that provide a large amount of information regarding attributes that affect the value

Conclusions

- It is vital to investigate the usability of IFC models for **spatial planning** purposes since the urban planning checks that restrictions are specified in approved zoning plans
- The conceptual model that can benefit from the IFC schema, and related property sets can be extended by taking **valuation and spatial planning** paradigms into account

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