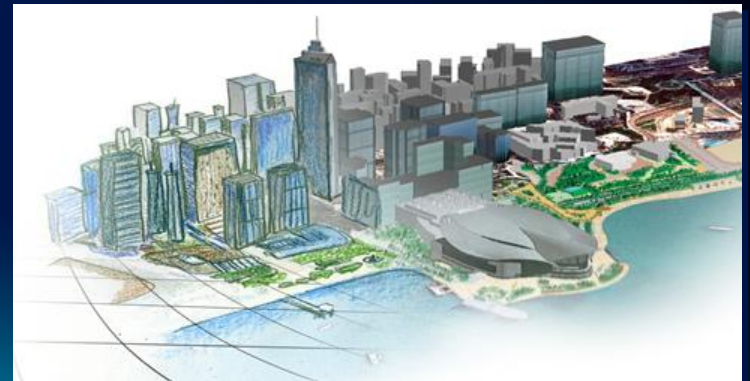


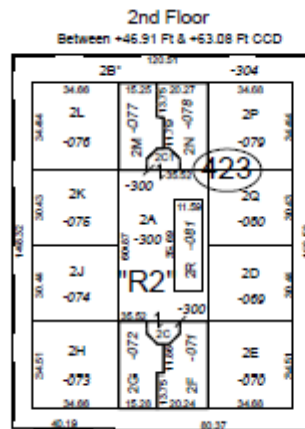
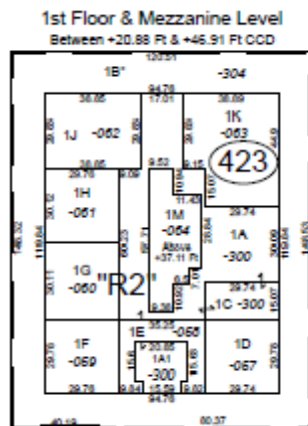
ArcGIS for Land Records: Current status and future 3D considerations

Carsten Bjornsson and Nick Land



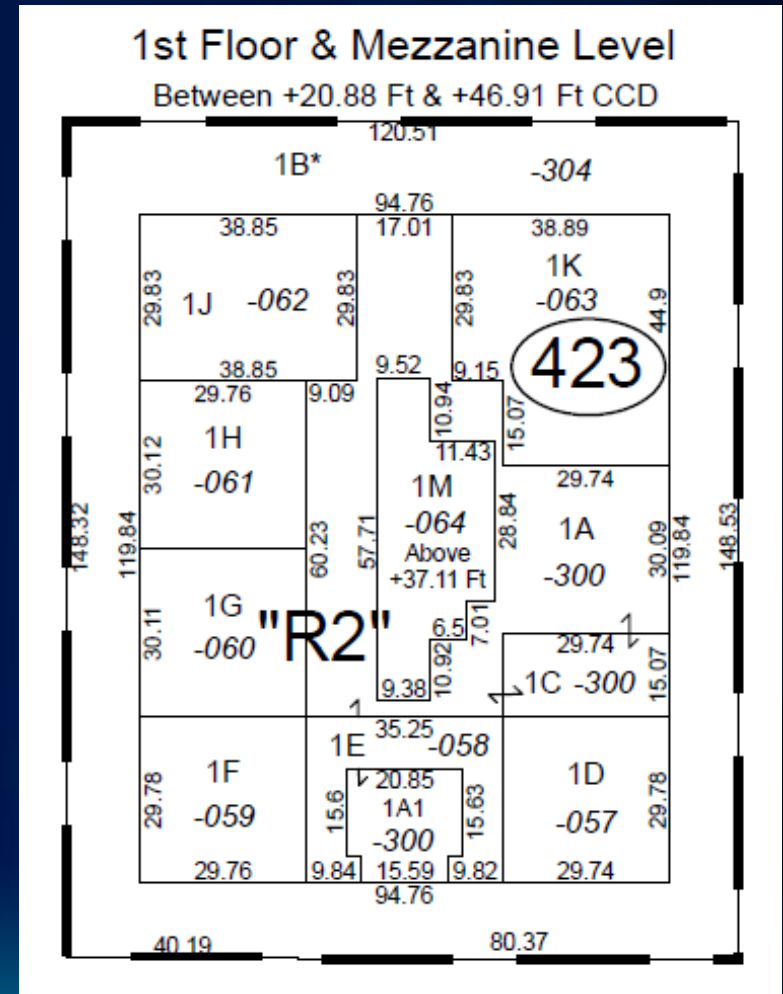
Why 3D Cadaster?

- Better mapping of certain types of Land Units
- Managing complex spatial relationships and dependencies



Purpose of the Cadaster

- Identification of the Land Unit
- Boundary definition of the Land Unit
- Legal rights associated to the Land Unit

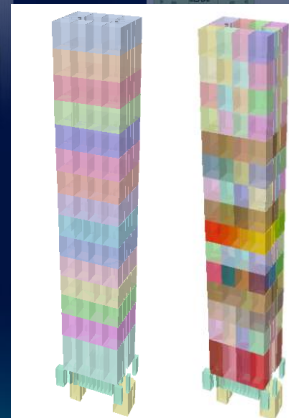


Current challenges of the 3D Cadaster

- Boundary definition of 3D objects – legal description
- Measurement procedures will have to be extended
- Topological relationships between objects
- Implemented into maintenance operations

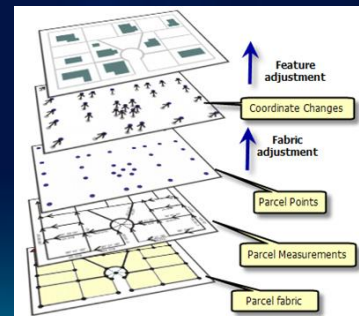
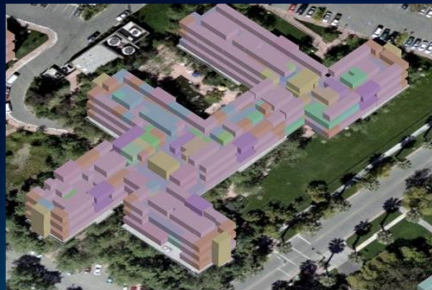
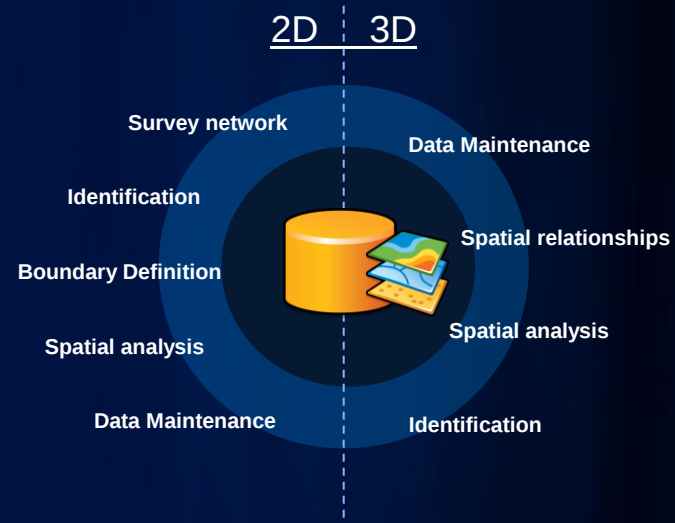
Concepts of 3D Cadaster

- Full 3D cadaster registration
- 3D tagging
- Hybrid 3D Cadaster
- 4D Cadaster – Time as the fourth dimension



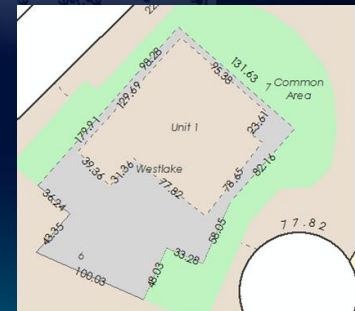
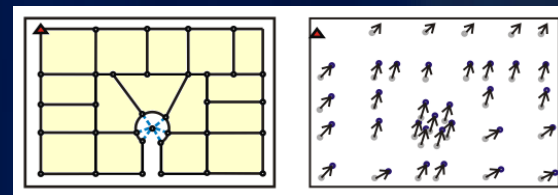
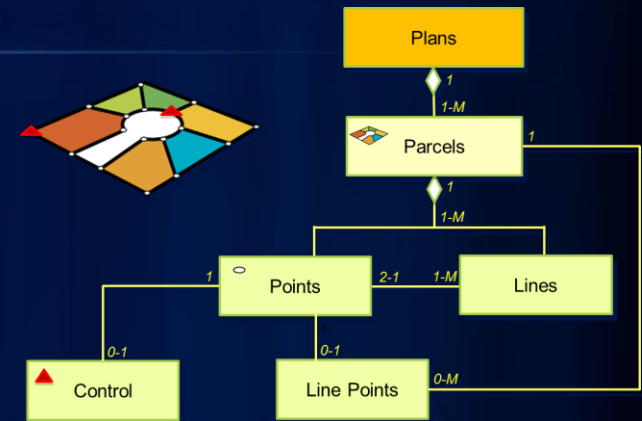
The hybrid solution – All in one database

- Supports the identification of a land unit
- Supports boundary definitions
- Supports and maintains topological relationships
- Allows maintenance in both 2D and 3D
- Allows display of complex spatial relationships
- Allows spatial analysis
- Allows maintenance of other types of objects



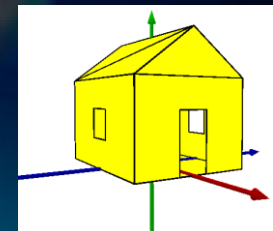
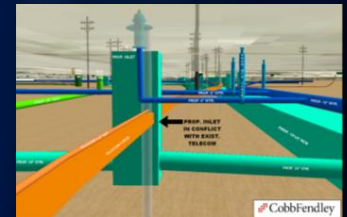
Parcel fabric data model

- Stores and maintains parcels
- Maintains relationships between points, lines, and polygons
- Defines parcel network where record values are used to maintain coordinates if required through Least Squares Adjustment
- Maintain external relationships through adjustment vectors or topology
- Keeps parcel history
- Allows overlapping polygons maintained through the above



3D Datatypes in the Geodatabase

- Vector feature classes with X,Y,Z geometry
 - 3D Points
 - 3D Geometric primitives (spheres, pyramids, ...)
 - 3D Models: Street furniture, etc.
 - 3D Character Markers, or Billboarded Markers
 - 3D Lines
 - 3D Geometric primitives (ribbons, tubes. ...)
 - 3D Texture Line Symbols
 - 3D Polygons
 - 3D Texture Fill Symbols
- Elevation grid rasters (DTM/DEM)
- Terrains (TIN, Point cloud, surface)
- Multipatch (volumetric bodies)



Displaying the principle – A demo

- The hybrid solution
- Topologic relationships
- Spatial Analysis

Cadaster as the central repository



Questions

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