

Next Generation Land and Urban Systems → 3D

A 3D architectural rendering of a modern urban street. The scene features tall, white, minimalist buildings with a grid of windows. A prominent building on the left has a facade with a pattern of circular perforations. The street is paved with a mix of grey and red tiles, and lined with green trees. The sky is a clear blue with a bright sun or moon in the upper center. The overall aesthetic is clean and futuristic.

Mika-Petteri Törhönen


Lead Land Administration Specialist
The World Bank

Global Trends: Food production

Global food demand

To meet global food demand in 2050, agricultural production must be 60 percent higher by weight than in 2005.

Alexandratos and Bruinsma, 2012



F. Fiandella, IRI/CCAFS

- **Increase of population**
 - 2 to 3 billion by 2050
 - 60% increase in agricultural production
-
- **Needs of...**
 - another 2 billion tons of cereals
 - another 200 million of meat
 - another 130 million of oilseeds



Global Trends: Climate Change

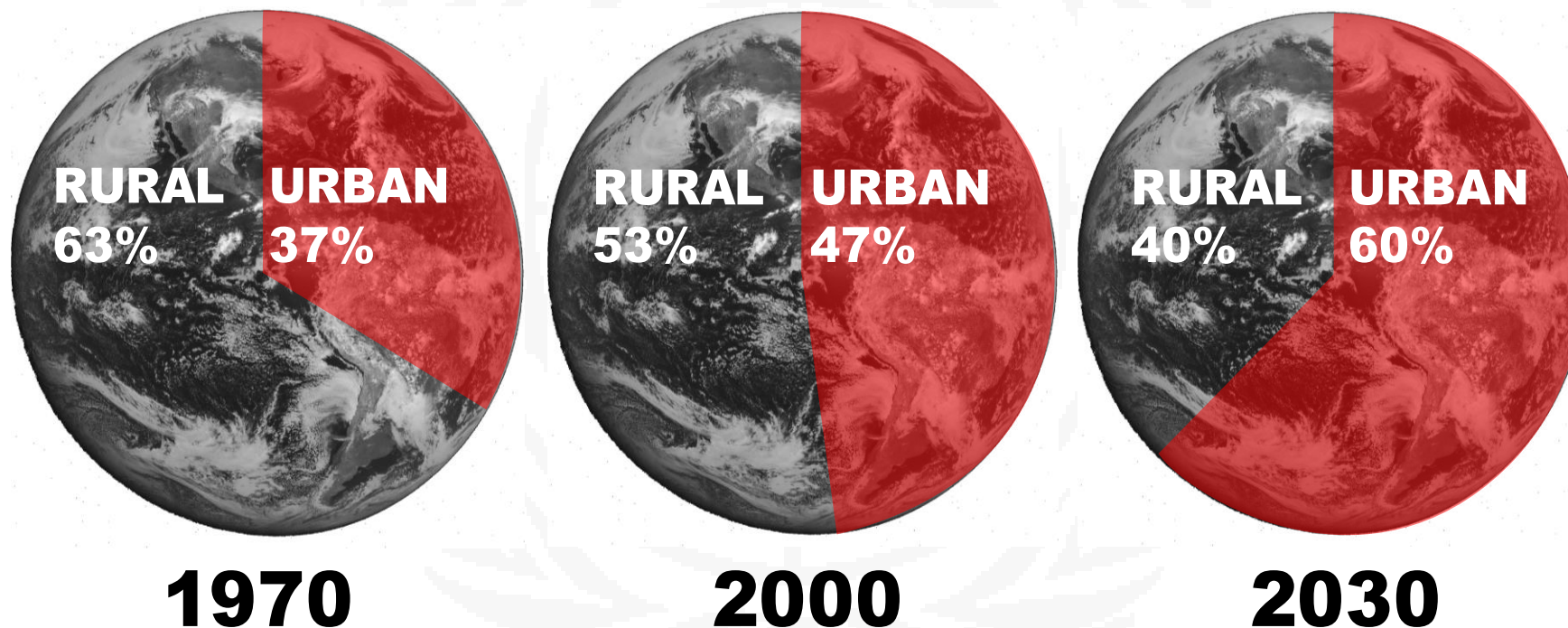
Global Trends: Growing Prosperity



Since 1990, the number of the poor living on \$1.25 per day was significantly reduced by 700 million, mostly in China and Asia

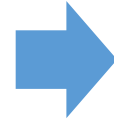
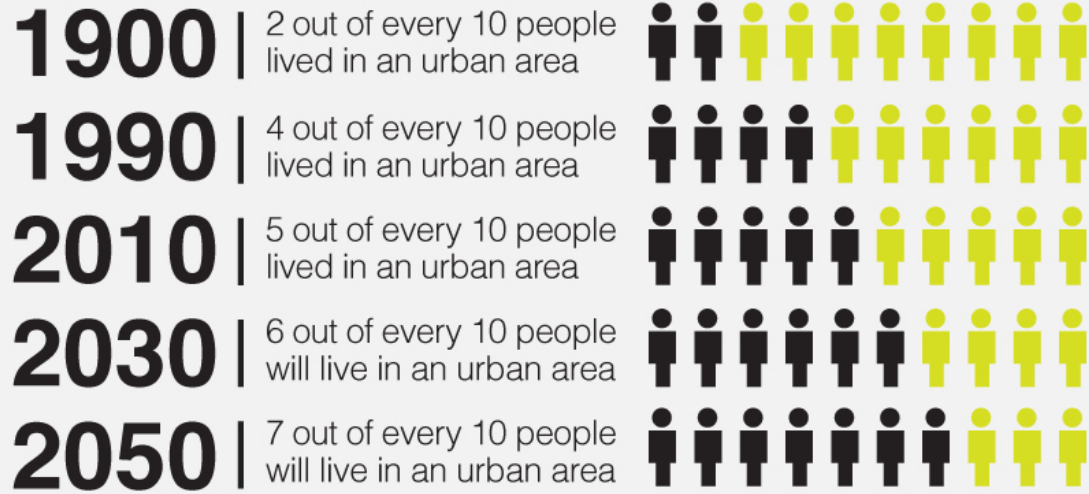
But... 1.2 billion people are still living in extreme poverty

Global Trends: Urbanization



+ 2 billion new urban residents
1.2 million new km² urban area

Urbanization



Defined by UN HABITAT as a city with a population of more than 10 million



Challenges:

- ❖ Manage & support urban development
- ❖ Communicate with stakeholders & citizens

Social, Urban, Rural and Resilience Global Practice of

Sustainable Communities



And land is at the center of it all...

Land Administration Successes

World Bank Support on Land

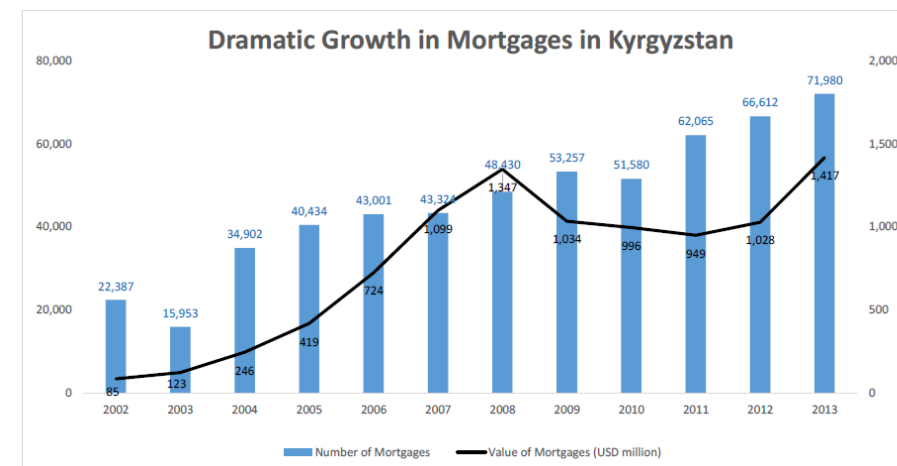
- Recognition of **property rights**
- **Land reforms** and anti-discrimination
- **First registration** and cadastral mapping
- Digitalization and **web-based services**
- Land and geospatial records and **eGovernance**
- Sustainable **business models** for land agencies

EASTERN EUROPE AND CENTRAL ASIA

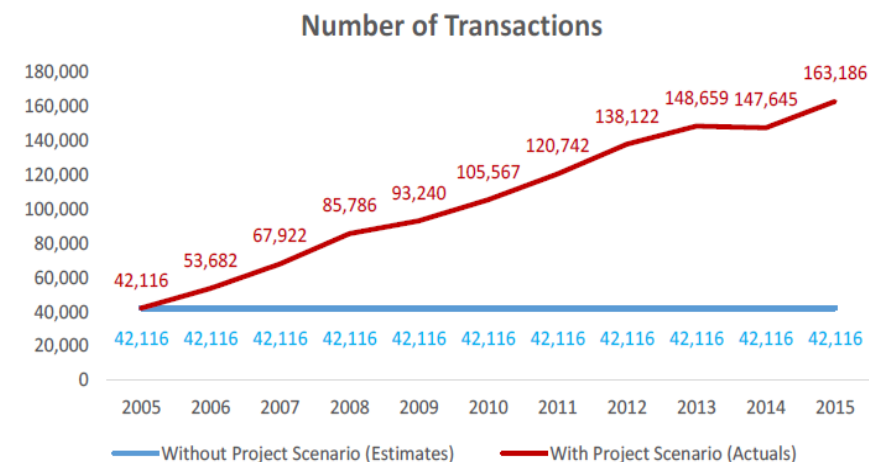
Doing Business 2016; Registering Property

| | | | |
|----|--------------------|----|----------------------|
| 1 | New Zealand | 11 | United Arab Emirates |
| 2 | Lithuania | 12 | Denmark |
| 3 | Georgia | 13 | Armenia |
| 4 | Rwanda | 14 | Norway |
| 5 | Belarus | 15 | Iceland |
| 6 | Estonia | 16 | Switzerland |
| 7 | Slovak Republic | 17 | Taiwan, China |
| 8 | Kyrgyz Republic | 18 | Kazakhstan |
| 9 | Russian Federation | 19 | Singapore |
| 10 | Sweden | 20 | Finland |

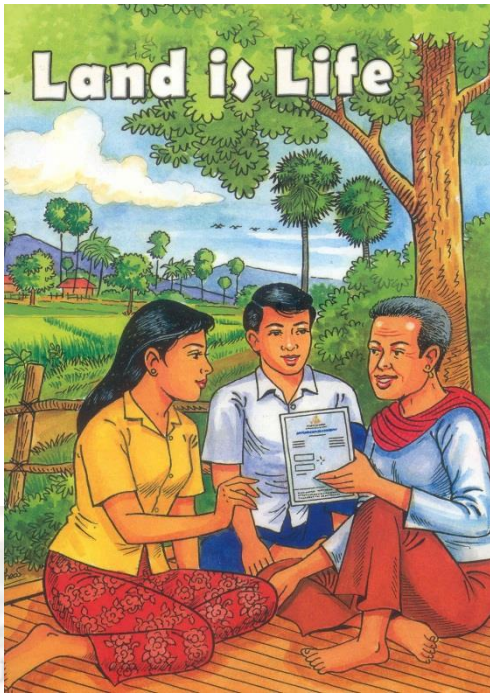
KYRGYZ REPUBLIC



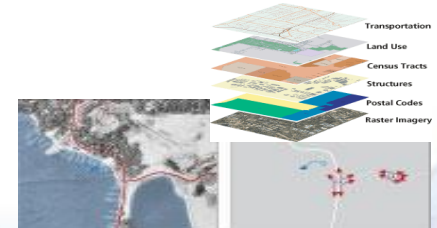
MACEDONIA



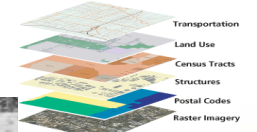
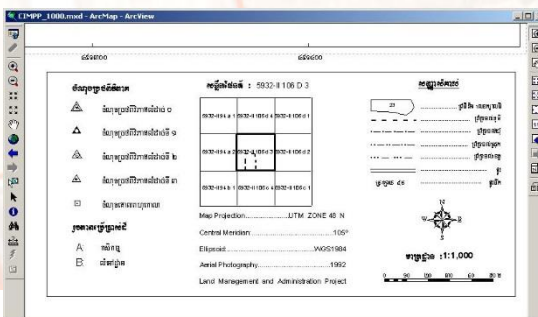
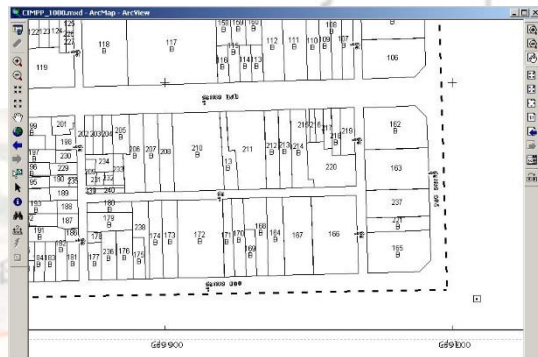
Cambodia; Participatory Land Registration



- Public Awareness
- Adjudication
- Demarcation
- Surveying



Parcel Based Land Registration in Cambodia

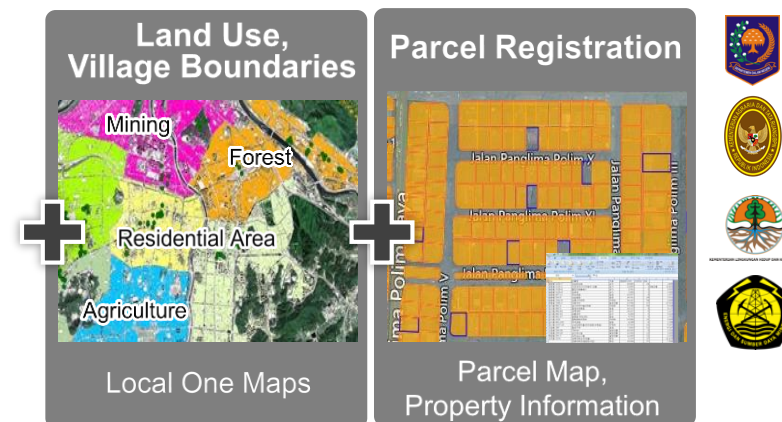


Applied Land Administration; Trends

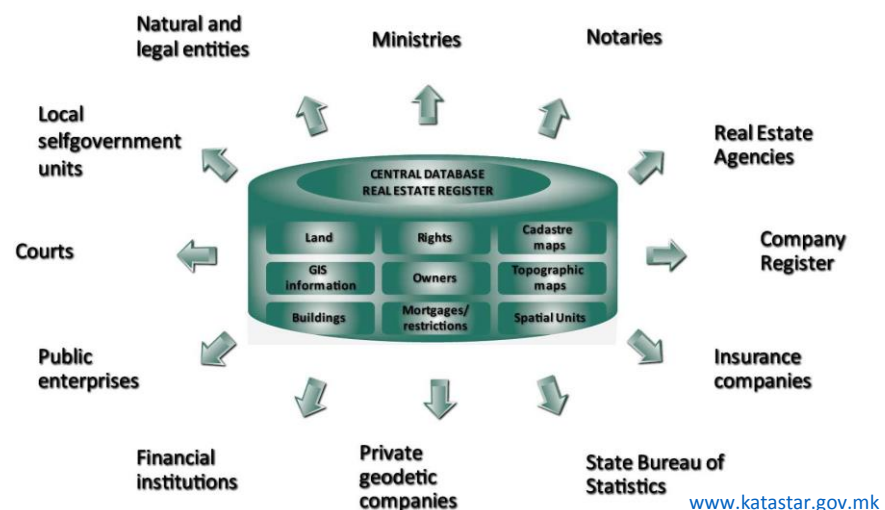
Modern Land Applications

- Register outputs produced from **interlinked public datasets**
- Digital land and geospatial records used for **mass valuation systems** for property taxes
- **State lands inventory and management** integrated to the land administration system
- One Map defined as the baseline for **environmental conservation and management**
- **Geospatial data provides the base for Early Warning Systems** and other disaster resilience.

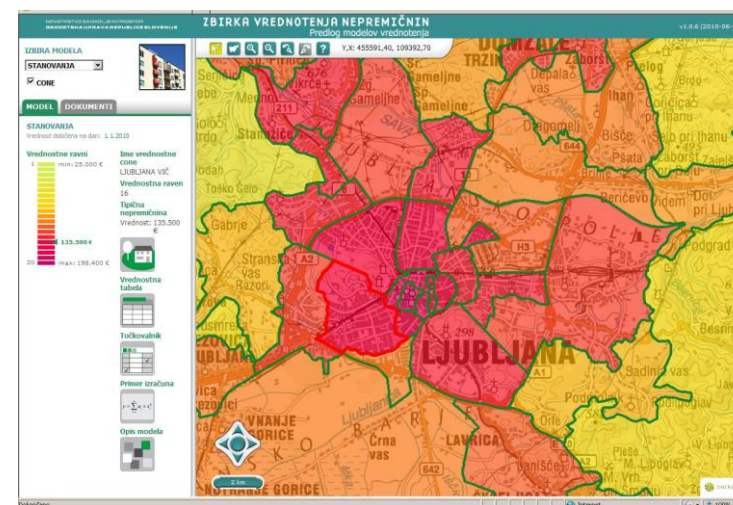
One Map on Land Use in Indonesia



Interlinked Data and Services in Macedonia



Land Records for Mass Valuation in Slovenia





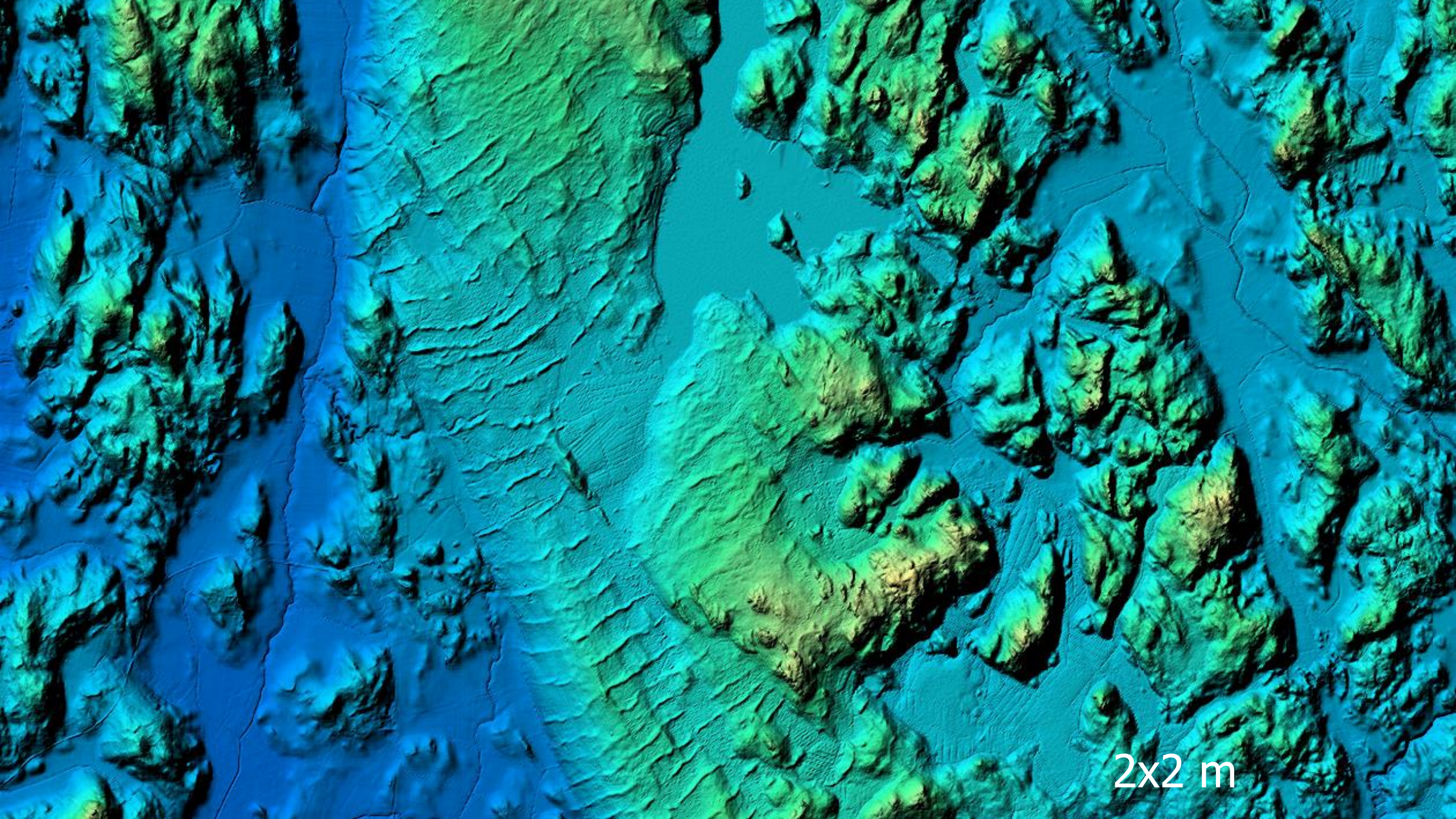
MoDev East 2013 Hackathon – Geospatial Category



Where do we go from here?

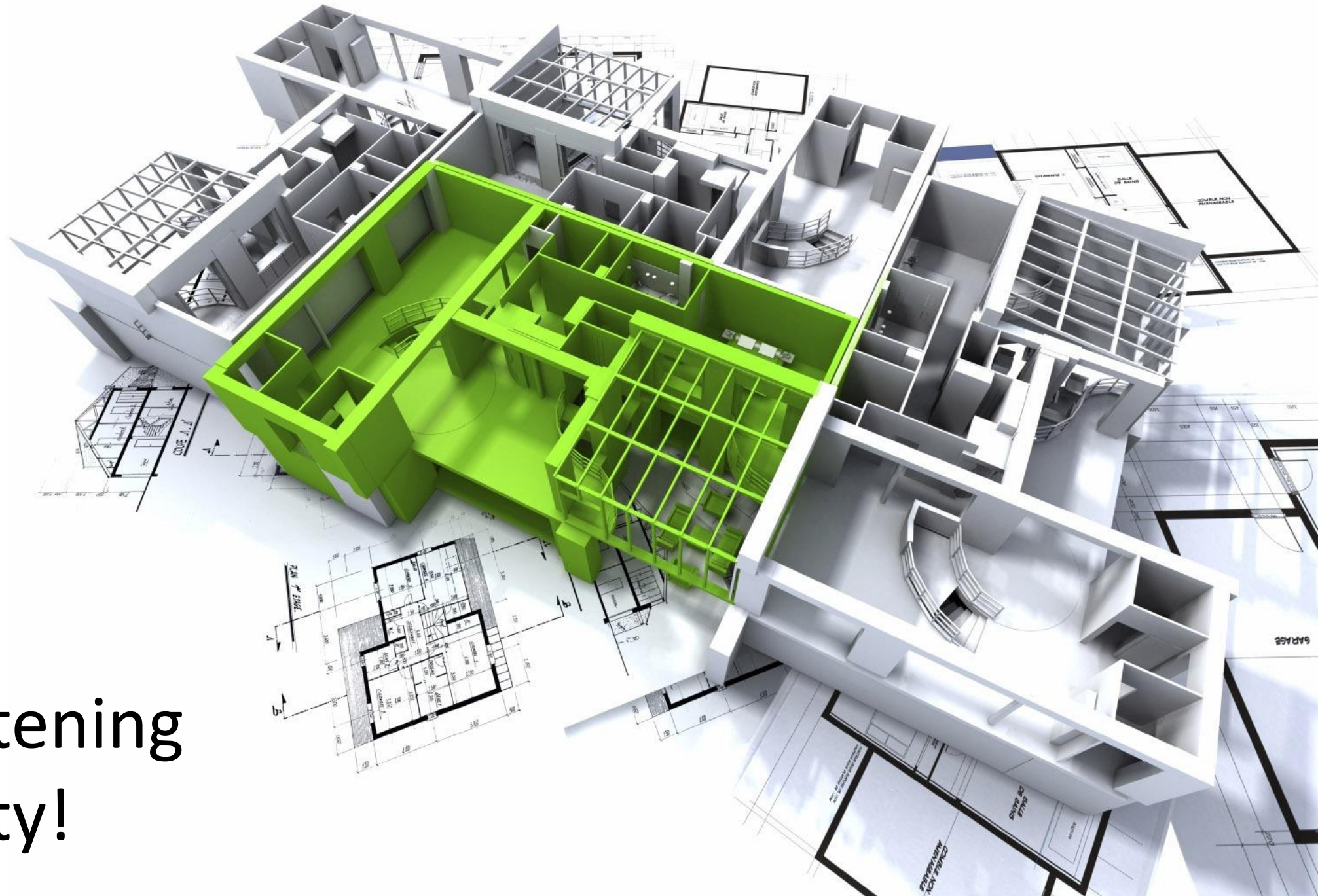




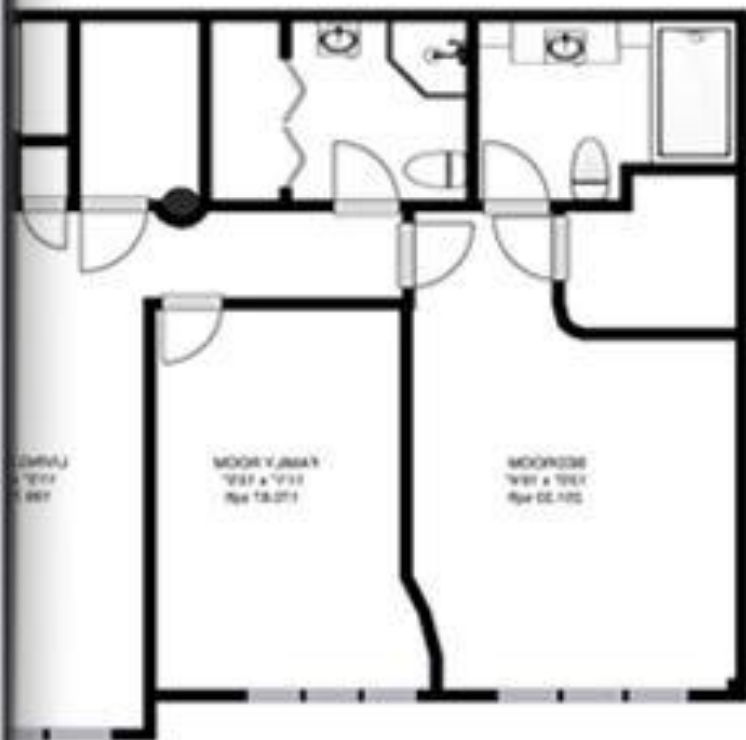


2x2 m

Stop Flattening
the Reality!



123 Elm St., City Town, DE 12345



12345 ELM ST. CITY TOWN, DE 12345

Land and Building



Modern Finland



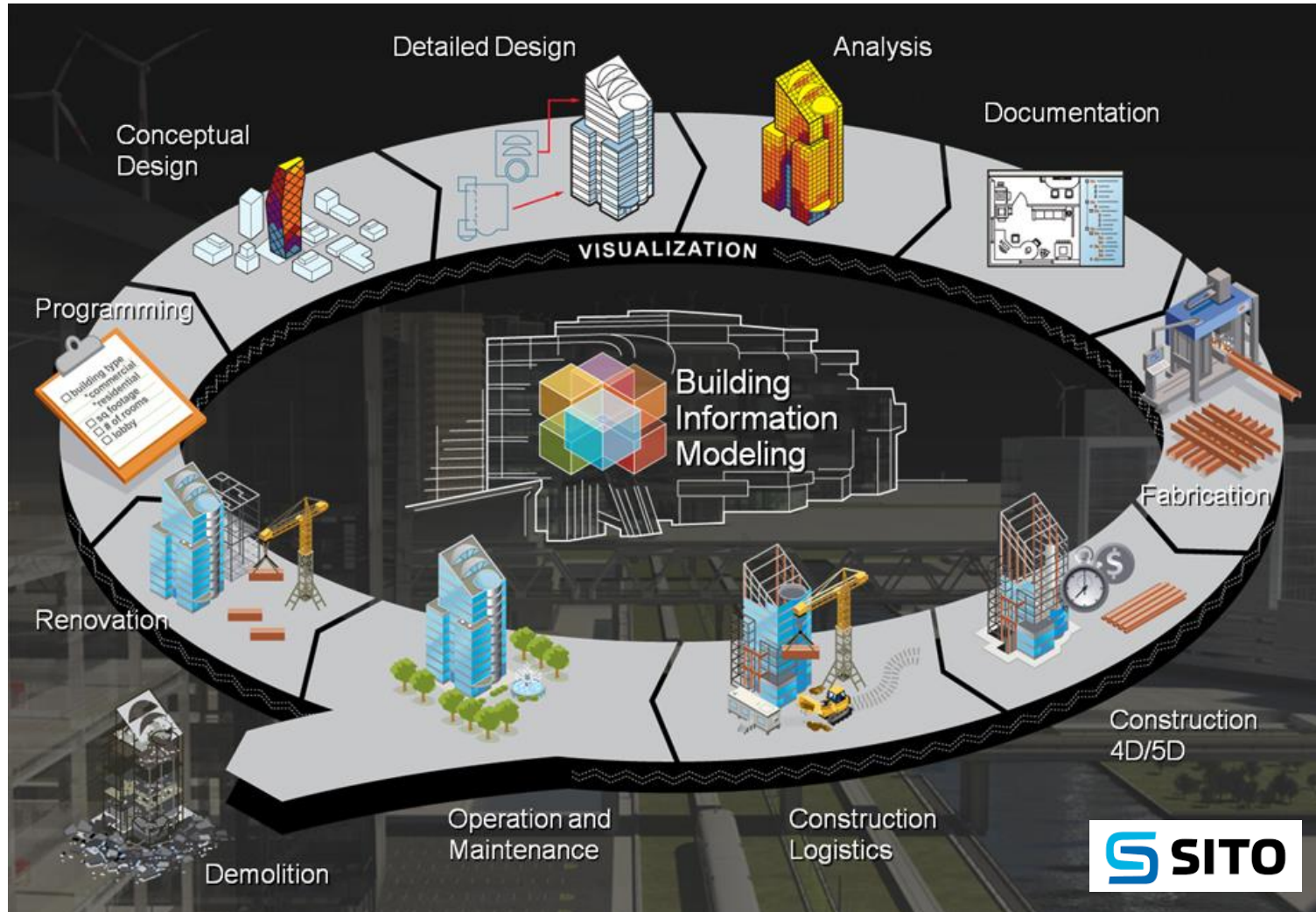
New

Helsinki



GIS and BIM will need to
integrate in a new Urban 3D
Cadastral and Spatial
Infrastructure Approach

Solution: 3D SDI + BIM



Buildings & infrastructure are already planned in 3D

But regulatory processes and municipal SDI's are still 2D + paper





Case: 3D building permit

- ❖ Scenic review
- ❖ Technical evaluation
- ❖ Fire & rescue aspects, etc...



...instead of a pile of paper...

Camera type: Automatic / Manual

Animations: Manual

Time and date: 15:01 26/6 2015

Weather: [icon]

Avatar selection: [icon]

More: [icon]

Clock speed: [icon] 0 Clock paused

© You can manually set the date, time and clock speed. Application uses this data to determine the position of the Sun in this location.

Menu Timeline

Super Thanks for Listening

Copy URL for a relevant article by me and Kari Tuukkanen, SITO:

https://www.conftool.com/landandpoverty2017/index.php/10-03-T%C3%B6rh%C3%B6nen-415_paper.pdf?page=downloadPaper&filename=10-03-T%C3%B6rh%C3%B6nen-415_paper.pdf&form_id=415&form_version=final

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