Fit-For-Future Land Administration: Unlocking the Benefits of Sustainable, Cost-Effective Technologies

Fredrik Zetterquist
Ordnance Survey

Agenda

1. Global trends, expectations and constraints
2. Future scenarios
3. Data-driven solutions
4. Evolutionary technology
5. Conclusion
Development within social and planetary boundaries

Megatrends

Define what we do, how we do things and what is possible to do
## Megatrend analysis

<table>
<thead>
<tr>
<th>Megatrend</th>
<th>R1</th>
<th>R2</th>
<th>R3</th>
<th>R4</th>
<th>R5</th>
<th>R6</th>
<th>R7</th>
<th>R8</th>
<th>Average</th>
<th>Ranking</th>
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<tr>
<td>1. Demographic change</td>
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<td>2. Societal disparities</td>
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<td>3. Differentiated Lifeworlds</td>
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<td>5. Volatile economy</td>
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<td>6. Business Ecosystems</td>
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<td>8. Decentralised environments</td>
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<td>9. New political world order</td>
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<td>10. Global/regional power shifts</td>
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<td>11. Urbanisation</td>
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### Feedback comments

**Business ecosystems:**

“Open data and less motivation for citizens to pay for the services. We do not have customers but open data”

“Enable new ways for land administration, especially due to platform economy and data integration”

**Urbanization:**

“Need for better tools for planning, information in 3D/4D. Also increased need for tools to deal with illegal buildings and slums”

“Will lead to increased importance of rights, responsibilities and restrictions affecting land, real estate and infrastructures”
Feedback comments

Digital transformation:
“We are moving into an age where our core business will be delivering ‘digital trust’. Digital networks may become so strong that the land agencies may have no added value anymore if they keep operating in the ‘classical’ way”

Differentiated livelihoods:
“The shift towards a more liberal direction regarding the perception of the relationship between citizens and public institutions result in that the rights and obligations nowadays start from the individual and it is then for the public institutions to respond to the citizens' preferences”

Decentralized environments:
“PPP. Authorities need only for “stamps”, private companies’ role is increased”

+ Expectations
- People want to make sound judgements for themselves
- Land information on demand
- Mobile device for property transaction and geospatial data capture
- Origin of data clearly defined
- More advanced RRR
- Legal and environmental data increase to better manage megatrend effects
+ Involvement in state priorities

- Housing - 700,000 in 10 yrs
- Climate change initiatives
- Smart cities
- Digital first – speed up planning and building process
- E-government
- Framework for national 3D geospatial data
- Blockchain technology
- Standardized geospatial processes with local gvt
- Update national Geospatial Strategy focusing on solving future challenges in the society
- Licensing of dissemination of information from UAVs
- 3D/4D and closing the gap between BIM and GIS
- Open data - consequence analysis

- Increased interaction
- More complex decision-making processes
- Make necessary priorities
- Control processes
- Designate accountability
- Increased business intelligence and international collaboration

+ Constraints

- Unsustainable custom-made systems
- Human resources constraints
- Financial constraints
- No holistic policy
- Limited political will
- Weak performance of services
- Siloed data and institutional overlaps/competition
- Low data quality and coverage
- Legal barriers
- Paper-based systems
- Exclusion from formal system
Data-centric organisations - ’the world’s most valuable resource is no longer oil, but data’

Data integration – geospatial + RRR + thematic data + key registers
Data-driven approach to facilitate decisions supporting sustainable development

Unlocking the data – integration across government, business and citizens

<table>
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<tr>
<th>Enables:</th>
<th>Government benefit:</th>
<th>Business benefit:</th>
<th>Citizen benefit:</th>
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<tbody>
<tr>
<td>Faster property transactions</td>
<td>Thriving economy</td>
<td>Increased profitability</td>
<td>Improved citizen satisfaction</td>
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<td>Simplified property searches</td>
<td>Improves property asset management</td>
<td>Confident decision making</td>
<td>Greater accessibility</td>
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<td>Greater breadth of property information</td>
<td>Comprehensive decision-making</td>
<td>Lower risk decision making</td>
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<td>Single version of the truth across multiple agencies</td>
<td>Greater national resilience</td>
<td>Efficient working processes</td>
<td>Improved user experience</td>
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<td>Transparency of information</td>
<td>Citizen confidence in Government</td>
<td>Confident decision making</td>
<td>Greater trust in Government</td>
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Built-in evolution: scalable solutions and digital trust

- 3D/4D representation
- GIS/BIM
- Automated change detection
- Blockchain
- Automated feature extraction
- Big Data
- AI/AR
- Automated generalization

Future scenarios

- As-a-service LA
- Platform LA
- Conventional LA
- Shared LA

Three aspects from which LA execution and governance should be studied – (i) data, (ii) technology and (iii) functions/processes.
Platform technology for land development and building process

Unlocking the benefits of new technology and aaS

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<th>Customer Benefits</th>
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## Unlocking the benefits of new technology and aaS

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<th>Modular architecture</th>
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<td></td>
<td>• Scalable architecture • Ubiquitous access • Flexibility in hosting</td>
<td>• Embedded capabilities • Highly configurable • Global/shared platform • Accept flexibility in data source • Capable of swift evolution • Schema-driven approach which will natively support multiple data structure epochs</td>
<td>• Data sharing and collaboration improvements • Alignment with new business models and ecosystems • Ability to expand storage and processing capability • Data security</td>
</tr>
<tr>
<td>Cloud-based</td>
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<td>• Increased ability to deal with change – swift evolution • Allow for differing levels of data completeness and quality • Easily configurable workflow and business rules • Enable content transformation and easily adapt to process and legislative changes • Quickly absorb new types of data (e.g. 2D -&gt; 3D) • Reduced upgrade costs and re-engineering work • Resilient to architecture erosion</td>
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<tr>
<td>Modular architecture</td>
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<tr>
<td>Configurable as-a-service model, leverage domain expertise</td>
<td>• De-risk capacity constraints • Inherit new functionality as technology evolves • Reduced up-front investment and maintenance cost/time • Faster time-to-deployment</td>
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Reducing the need for upfront cost
plus levelling the cost of technological innovation over time.

Sustainable, trustworthy land administration

- Protect land security & investment
- Deliver Economic Growth
- Improve data quality and data sharing
- Participatory and transparent processes
- Cope with continuous change
- Increase societal benefits
- Remain Trustworthy

Land Administration
Thank you for your attention!

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