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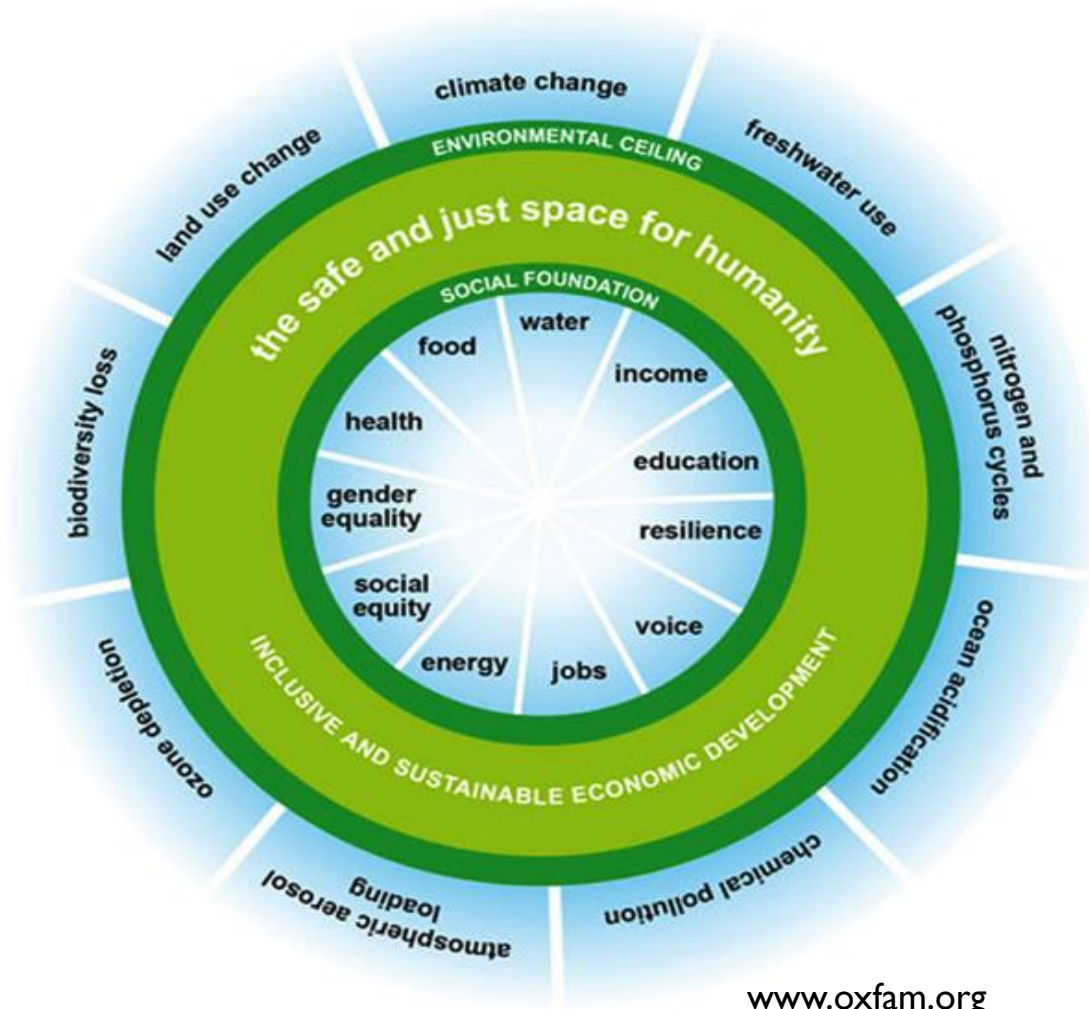
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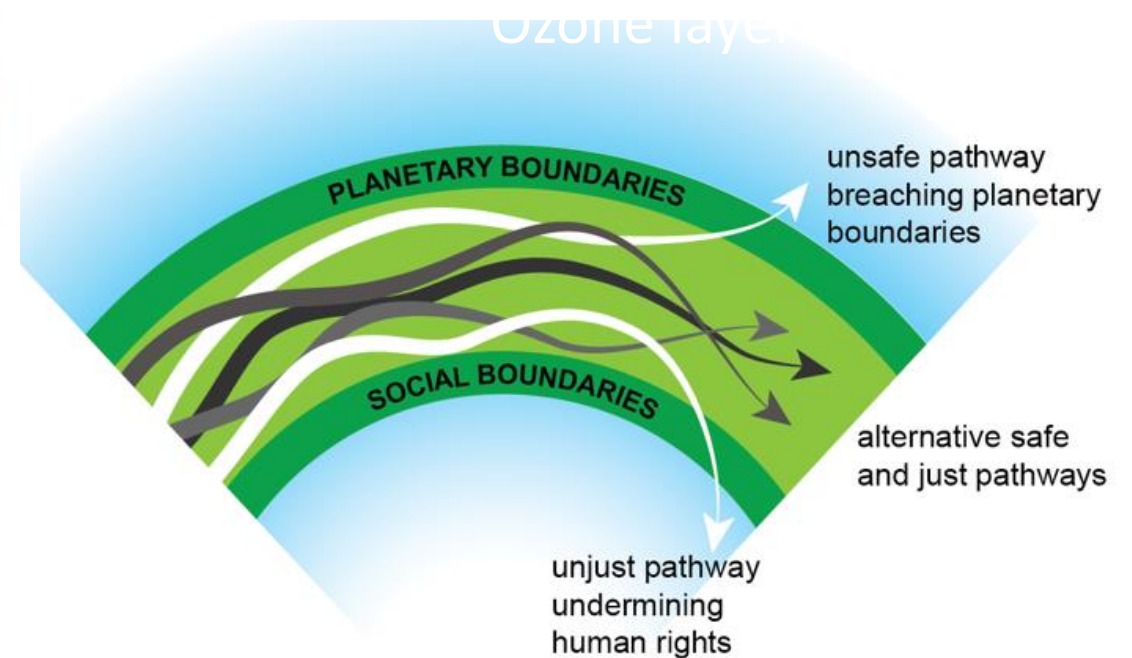Ordnance Survey

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

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Just, Secure, Inclusive, Sustainable

Transformation within boundaries

Megatrends

Define what we do,
how we do things and what
is possible to do

The digital transformation

Globalization

Urbanization

Technological advancement

New business ecosystems

Climate change

Individualization

Knowledge-based society

Diversity and pluralism

THE GLOBAL GOALS
For Sustainable Development

Agenda 2030

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Megatrend analysis

Megatrend	R1	R2	R3	R4	R5	R6	R7	R8	Average	Ranking
1. Demographic change	4	3	6	6	3	8	7	2	**4.9**	7
2. Societal disparities	3	2	6	4	6	5	4	3	**4.1**	8
3. Differentiated Lifeworlds	2	2	2	2	8	2	7	6	**3.9**	10
4. The digital transformation	10	10	10	10	10	10	8	10	**9.8**	1
5. Volatile economy	8	6	3	7	8	4	5	3	**5.5**	6
6. Business Ecosystems	8	7	8	8	10	4	8	10	**7.9**	3
7. Anthropogenic Environmental Damage	5	8	7	7	8	2	8	6	**6.4**	5
8. Decentralised environments	8	6	5	5	10	6	6	8	**6.8**	4
9. New political world order	3	5	3	3	3	7	6	2	**4.0**	9
10. Global/regional power shifts	3	5	5	4	2	-	4	3	**3.7**	11
11. Urbanisation	7	5	9	8	10	-	8	10	**8.1**	2
Average	5.5	5.4	5.8	5.8	7.1	5.3	6.5	5.7	**5.9**	

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Feedback comments

Business ecosystems:

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

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

Urbanization:

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

"Will lead to increased importance of rights, responsibilities and restrictions affecting land, real estate and infrastructures"

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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"

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+ 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
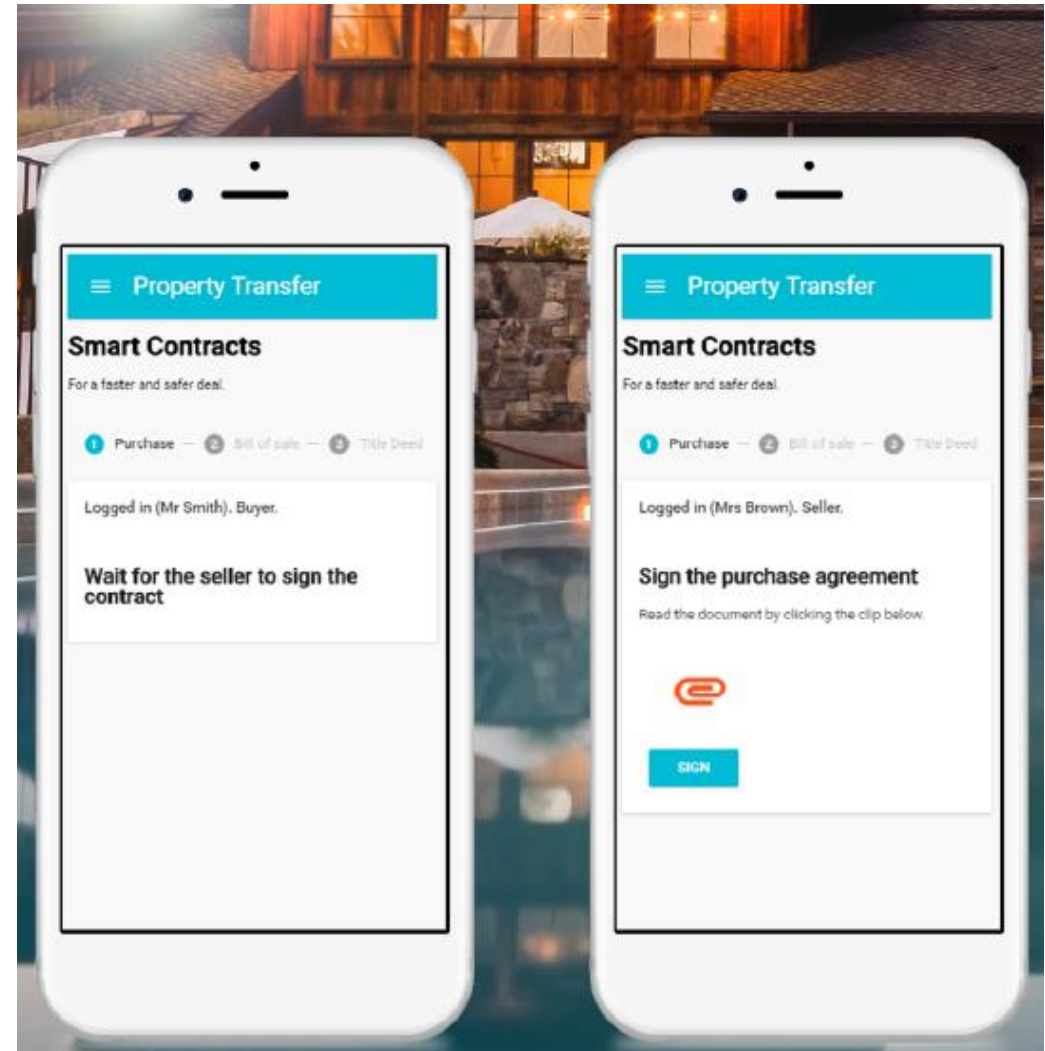
+ Involvement in state priorities

- 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 gvmt

- 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 neccessary priorities
- Control processes
- Designate accountability
- Increased business intelligence and international collaboration

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+ 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

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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

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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**

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Future scenarios

Private

As-a-service LA

Platform LA

execution

Traditional, hierarchic

Land administration

governance

Digitally enabled ecosystem

Land administration

Conventional LA

Shared LA

Public
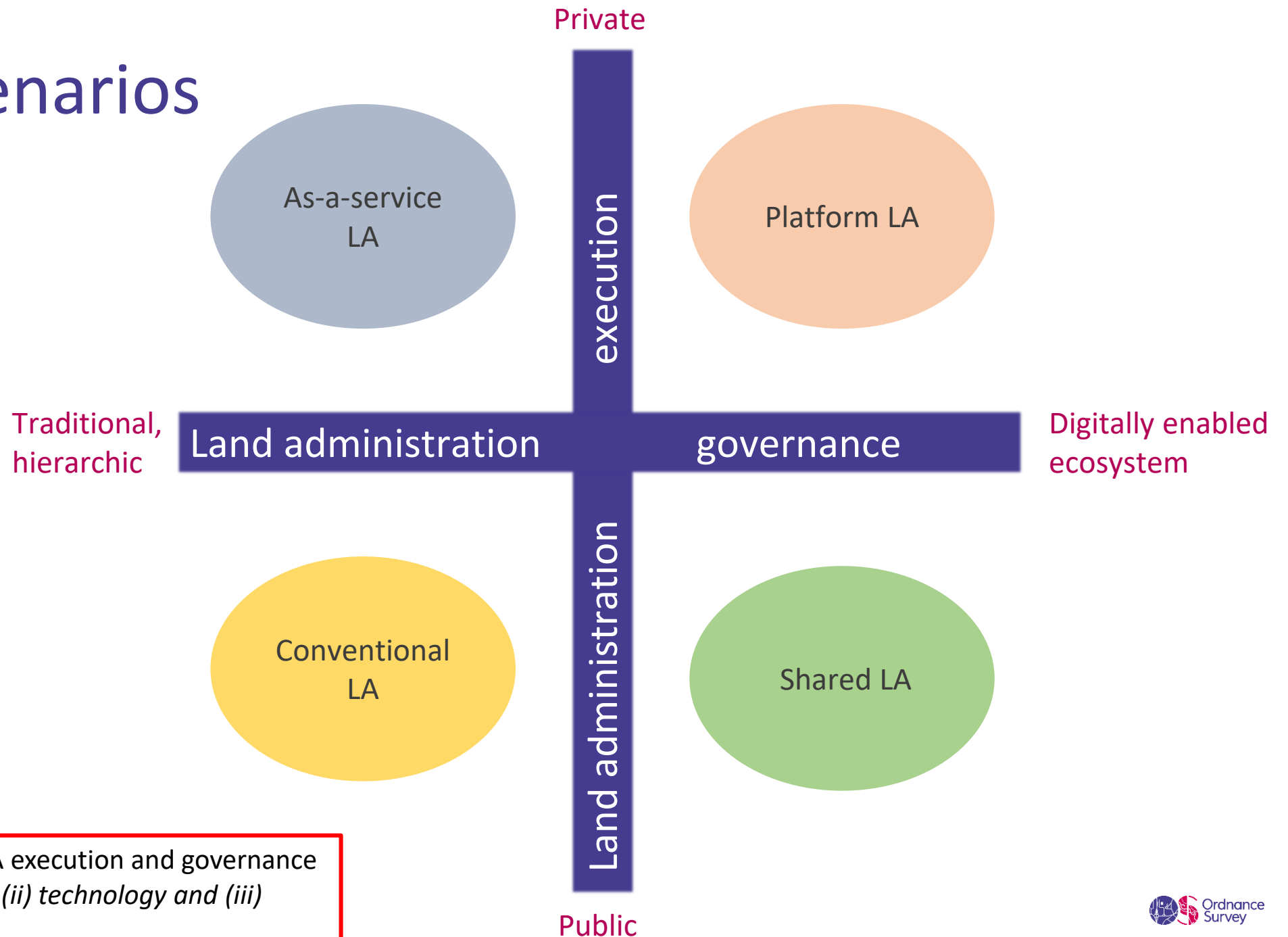
Three *aspects* from which LA execution and governance should be studied – *(i) data, (ii) technology and (iii) functions/processes*

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Platform technology for land development and building process

3. Regional planering IT-stöd för framtagande av regionala strukturbilder och utvecklingsplaner t ex inom RUFS 2050 processen i Stockholm

4. Översiktsplan och detaljplan
- Informationsförsörjning för planering, fastighetsbildning och bygglov – Smart Built Environment
- Digitalisering av gamla och nya detaljplaner till vektorformat med ny planstandard som grund. Pågår i ett antal kommuner
- Örebromodellen, beskriver effektiv handläggning av planärenden i Örebro kommun
- Framställning av generella planer, beslut om detaljer i planen tas i bygglovsskedet

5. Medborgadialog, samråd mm
- Ett antal kommuner använder visualisering i olika former för att visa pågående utbyggnadsprojekt regionalt och i kommunen.
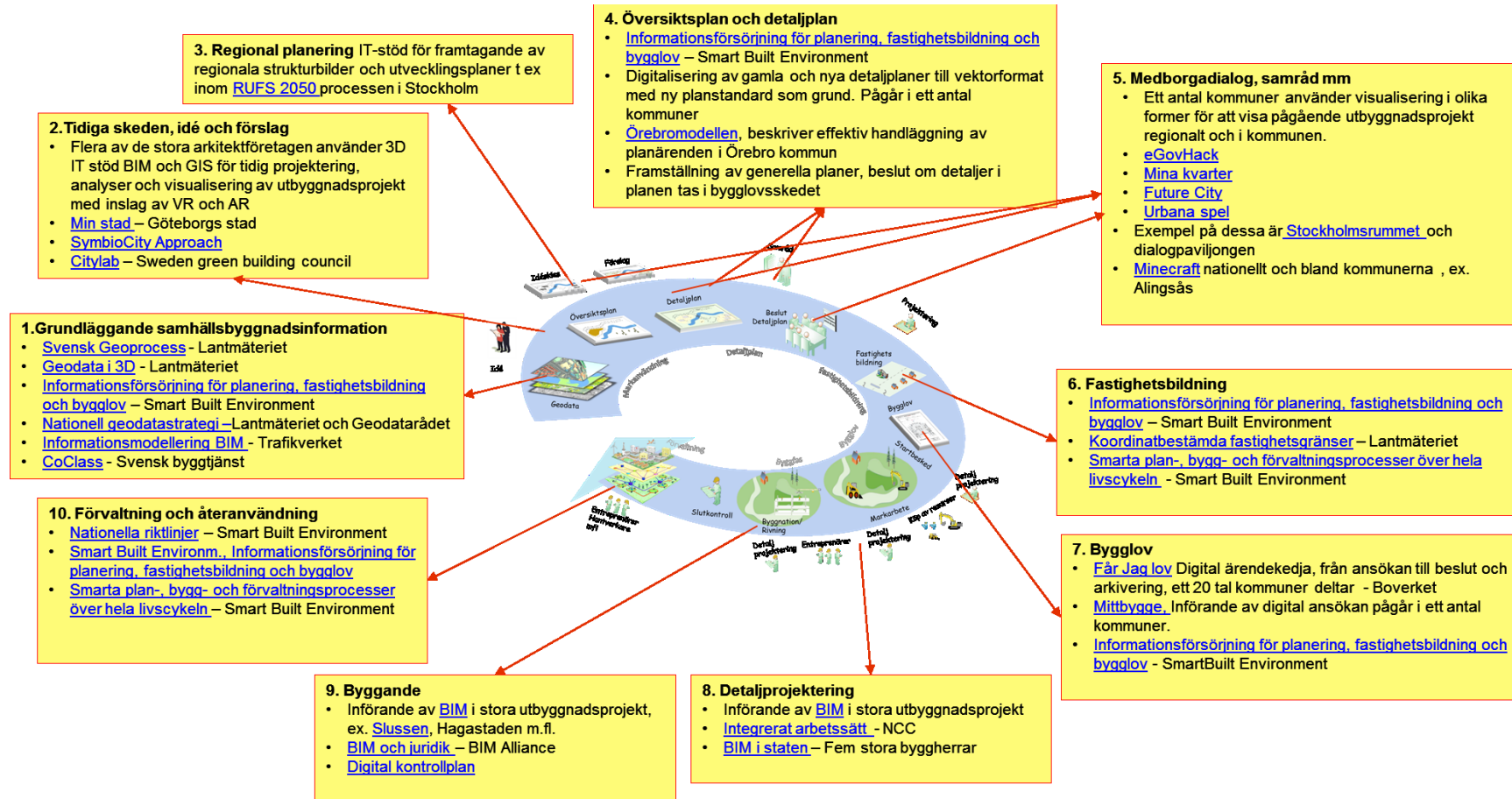- eGovHack
- Mina kvarter
- Future City
- Urbana spel
- Exempel på dessa är Stockholmsrummet och dialogpaviljongen
- Minecraft nationellt och bland kommunerna , ex. Alingsås

2.Tidiga skeden, idé och förslag
- Flera av de stora arkitektföretagen använder 3D IT stöd BIM och GIS för tidig projektering, analyser och visualisering av utbyggnadsprojekt med inslag av VR och AR
- Min stad – Göteborgs stad
- SymbioCity Approach
- Citylab – Sweden green building council

1.Grundläggande samhällsbyggnadsinformation
- Svensk Geoprocess - Lantmäteriet
- Geodata i 3D - Lantmäteriet
- Informationsförsörjning för planering, fastighetsbildning och bygglov – Smart Built Environment
- Nationell geodatastrategi –Lantmäteriet och Geodatarådet
- Informationsmodellering BIM - Trafikverket
- CoClass - Svensk byggtjänst

6. Fastighetsbildning
- Informationsförsörjning för planering, fastighetsbildning och bygglov – Smart Built Environment
- Koordinatbestämda fastighetsgränser – Lantmäteriet
- Smarta plan-, bygg- och förvaltningsprocesser över hela livscykeln - Smart Built Environment

10. Förvaltning och återanvändning
- Nationella riktlinjer – Smart Built Environment
- Smart Built Environm., Informationsförsörjning för planering, fastighetsbildning och bygglov
- Smarta plan-, bygg- och förvaltningsprocesser över hela livscykeln – Smart Built Environment

7. Bygglov
- Får Jag lov Digital ärendekedja, från ansökan till beslut och arkivering, ett 20 tal kommuner deltar - Boverket
- Mittbygge, Införande av digital ansökan pågår i ett antal kommuner.
- Informationsförsörjning för planering, fastighetsbildning och bygglov - SmartBuilt Environment

9. Byggande
- Införande av BIM i stora utbyggnadsprojekt, ex. Slussen, Hagastaden m.fl.
- BIM och juridik – BIM Alliance
- Digital kontrollplan

8. Detaljprojektering
- Införande av BIM i stora utbyggnadsprojekt
- Integrerat arbetssätt - NCC
- BIM i staten – Fem stora byggherrar

Unlocking the benefits of new technology and aaS

Solution Attributes		Customer Benefits
Cloud-based	• Scalable architecture • Ubiquitous access • Flexibility in hosting	• Data sharing and collaboration improvements • Alignment with new business models and ecosystems • Ability to expand storage and processing capability • Data security

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Modular architecture	• 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	• 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 -> 3D) • Reduced upgrade costs and re-engineering work • Resilient to architecture erosion

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Unlocking the benefits of technology and aaS

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Configurable as-a- service model, leverage domain expertise		• De-risk capacity constraints • Inherit new functionality as technology evolves • Reduced up-front investment and maintenance cost/time • Faster time-to-deployment

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Sustainable, trustworthy land administration

Thank you for your attention!

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