

Digital Transformation and the Future of SDIs

– Opportunities and Challenges
seen from a Country Perspective

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Digital Strategy 2016-2020

A STRONGER AND MORE SECURE DIGITAL DENMARK



- The fifth digital government strategy since 2001
- The previous strategy gave us The Basic Data Programme
- The strategy sets three goals supported by focus areas:



DIGITAL SOLUTIONS MUST BE EASY-TO-USE, QUICK AND ENSURE HIGH QUALITY

- 1 A USER-FRIENDLY AND SIMPLE DIGITAL PUBLIC SECTOR
- 2 BETTER USE OF DATA AND QUICKER CASE PROCESSING
- 3 BETTER AND MORE COHESIVE WELFARE SERVICES



DIGITISATION MUST PROVIDE GOOD CONDITIONS FOR GROWTH

- 4 BETTER FRAMEWORK FOR THE BUSINESS COMMUNITY
- 5 PUBLIC-SECTOR DATA AS A GROWTH DRIVER
- 6 AN EFFICIENT UTILITIES SECTOR



SECURITY AND CONFIDENCE MUST BE IN FOCUS AT ALL TIMES

- 7 THE PUBLIC SECTOR PROTECTS DATA
- 8 ROBUST DIGITAL INFRASTRUCTURE
- 9 DIGITISATION FOR EVERYONE

Addressing the opportunities and challenges of digital transformation

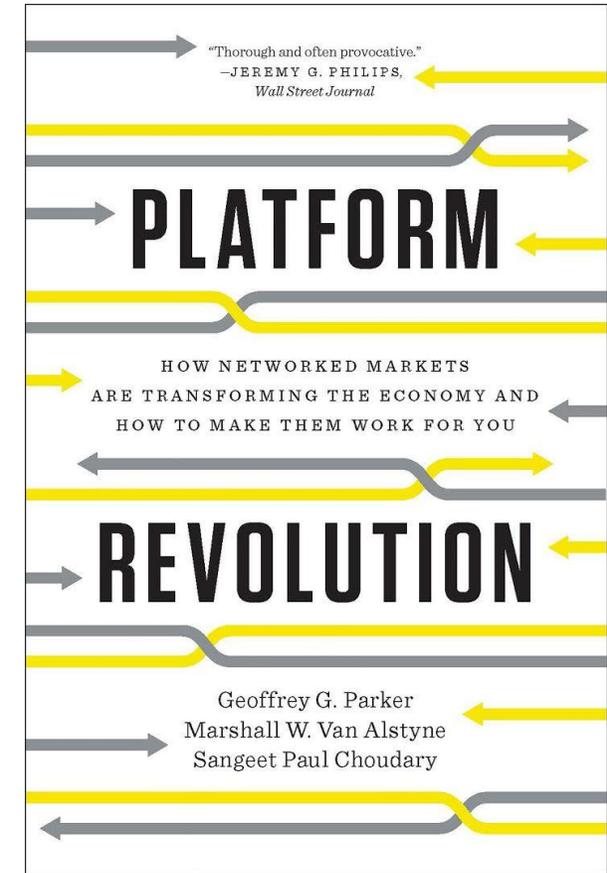
- Establish a solid backbone for digital government
 - **Robust digital infrastructure** so that citizens and businesses can continue to communicate safely and securely with the public sector
 - Renewal of shared solutions for digital signature, single sign-on and citizen letterbox for official letters
 - **Robust data infrastructure** in order to support better use of data by sharing relevant information between the authorities
 - Basic data (Foundation data) – implementation lead by Agency for Digitization (DIGST)
 - Individuals – Businesses – Real Property – Addresses, Roads and Areas – Maps and Geography
 - Domain data – implementation lead by domain authorities, under common (DIGST) umbrella
 - Health – Employment – Energy – Climate and Water – Environment – ...
 - **Robust architecture** to encourage use of open standards and sharing of infrastructure components in order to prevent that public digitization develop the same components many times and avoid provider lock-in with proprietary solutions
 - White Paper on a common public-sector digital architecture

Addressing the opportunities and challenges of digital transformation

- Digital Government policies supporting digital transformation
 - Cutting red tape
 - Rethinking of processes and a new approach to legislation (digitization-ready legislation)
 - Mandatory digital self-service and communication
 - Citizens use digital self-service and receive digital letters, notices and messages
 - Open data
 - Open Basic Data and an Open Government policy supporting more and better open data
- General industry trends supporting digital transformation
 - Data infrastructure including location data
 - Spatial data seen as integrated part of data infrastructure
 - Digital platforms embedded in government business models
 - Maturing government thinking regarding value creation in an ecosystem

Digital Platform definition

- A platform is a business based on enabling value-creating interactions between external producers and consumers.
- The platform provides an open, participative infrastructure for these interactions and sets governance conditions for them.
- The platforms overarching purpose is to consummate matches among users and facilitate the exchange of goods, services, or social currency, thereby enabling value creation for all participants.



The rise of Digital Platforms

The Platform Economy: innovation from the outside-in

Industry leaders are unleashing technology's power by developing new technology platforms. But more than that, it's the platform-based business models and strategies they enable that are driving the most profound global macro-economic change since the industrial revolution. In the digital economy, platform ecosystems are nothing less than the foundation for new value creation.



Digital Platforms will be everywhere – and work in interrelated ecosystems

Every Organization Needs a Digital Platform Strategy

Not every organization should assume a leadership role in a business ecosystem; however, every organization needs a digital platform strategy. To engage and manage business ecosystems, organizations are creating and integrating with a digital business platform to share critical assets.

The digital platform strategy will vary from company to company. Some companies will develop a platform business model that encompasses providers, consumers and employees to create or exchange goods, services and social interaction. Others might integrate with other organizations' digital platforms. Regardless of the setup, the strategy must integrate business and IT needs and establish a collective leadership vision. Companies must decide what makes sense for their organization and long-term business goals.



How 'location data transformation' and relevant business models can be embedded in vision

- Digital government is undergoing digital transformation utilizing digital platforms
- Digital government is data-driven
- A common data infrastructure is necessary to provide the reliable data that is crucial for making informed and transparent decisions
- Spatial data brings in the location dimension that allows for spatial analysis and map based presentation

Spatial Data Infrastructure as a Digital Platform

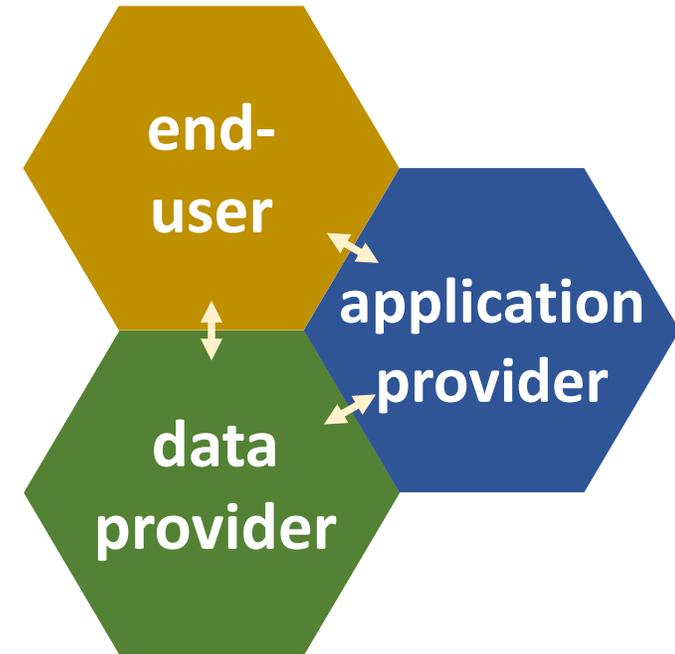
- The INSPIRE directive describes the business environment for spatial data infrastructure (SDI) as follows:

Spatial data come from many sources and is used within many domains. An efficient use of government resources requires that spatial data is stored, made available and maintained at the most appropriate level and that it is possible to combine spatial data from different sources and share them between several users and applications.

- The business environment for SDI enables value-creating interactions between producers and consumers
- The SDI provides an open, participative infrastructure for these interactions and sets governance conditions for them
- An overarching purpose of the SDI is to consummate matches among users and facilitate the exchange of data and services, thereby enabling value creation for all participants
- **Conclusion: the core of a SDI can be seen as a *digital platform***

Types of users of the digital SDI platform

- Users of the platform categorized in multiple, separate, complementary classes of users interacting with each other in a multi-sided network
 - **End-users**, whose primary interest in the platform is to utilize data
 - **Data providers**, whose primary interest is to distribute data from data custodians as a generic, multi-functional commodity
 - **Application providers**, subject-matter experts whose primary interest is to support end-users improve utilization of data



What can SDI learn from Digital Platform

A business enabled by technology

- SDI is about "the technology, policies, standards, and human resources necessary"
- Traditional SDI implementations focus on technology, standards and (to some degree) policies
- Users of a platform must understand the platform business model, the role they play and the value the platform offers to them
- A digital data infrastructure platform should support a holistic business approach, where the business model deals with the types of users of the platform, their roles, how collaboration is facilitated, how the network effects between the types of users are refined, etc.

What can SDI learn from Digital Platform

Multidirectional value creation

- SDI is about "acquire, process, store, distribute, and improve utilization of geospatial data"
- Traditional SDI implementation focus on distribution of data only (linear value creation)
- A platform will typically support exchange between its users of whatever *something of value* that is deemed value-creating for them in the context of the platform (multidirectional value creation)
- A digital data infrastructure platform should consider the need for exchange of other *value units* between its users, e.g. exchange of *reports about errors and omissions* from end-users to data providers

What can SDI learn from Digital Platform

Mainstream API supporting cost-effective application of data and services

- SDI is about "improve utilization of geospatial data"
- Traditional SDI implementations are typically limited to offering APIs that require geo-savvy application providers
- The success of a digital platform that must integrate with other digital platforms depends on the availability of an API that is fit-for purpose
- In order to attract subject matter experts as application providers a digital data infrastructure platform should support a mainstream API that is aligned with practices and expectations to data and data services on the web from developers and users as they have evolved

What can SDI learn from Digital Platform

Platform provider to ensure relevant measures for the quality of value units

- SDI is about “possible to combine spatial data from different sources and share them between several users and applications”
- Traditional SDI implementations have quality challenges when it comes to interoperability between the data and data services exchanged
- In a well managed digital platform the platform provider ensures that the value units exchanged are well defined and provides relevant measures for the quality of the value units actually exchanged between the users
- The provider of a digital data infrastructure platform should ensure availability of relevant measures for the quality of the value units, i.e. the data and data services provided

Digital Transformation and Future of SDIs

- Wrap-up from a country perspective
 - **Build a solid backbone** based on robust architecture, data infrastructure and digital infrastructure as the starting point
 - **Establish policies supporting/allowing/encouraging digital transformation** such as cutting red tape, mandatory digital self-service and communication, and open data
 - **Embrace general industry trends driving digital transformation** such as the *digital platform* revolution and *location data* (spatial data) being an embedded part of data infrastructure

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