Smart Nation & Digital Government
*a digitalisation journey*

Government Technology Agency
2018
Government as a platform – riding the third wave

1st Wave
1985 to 2000
Foundation

2nd Wave
2000 to 2014
Structure

3rd Wave
2014 to ???
Integration
Digitisation is about transforming the operating model = innovation & disruption
Singapore Government’s digitalisation journey is constantly evolving

- **Automation**
  - 1980s: Automation of data, processes and systems
- **e-services**
  - 2000s: Delivered > 90% services online
- **Efficiency**
  - 2010s: Integrated service delivery, breaking down agency silos
- **Digitalisation**
  - 2015 - ongoing: Transformational changes with focus on the citizens
(1) Singapore’s data-driven **identical twin**
- Vision: to be the most accurate digital model of the physical city state.

**Virtual Singapore**

**Virtualise, Visualise, Venturise (V³)**

3D urban town and models
- LoD 0 Terrain Model
- LoD 1 Block models with no roof structures
- LoD 2 Explicit Roof Structure
- LoD 3 Detailed architectural models
- LoD 4 Interior Model

2D data platforms & info hubs
- Enrich the city models semantics and attributes
(2) Its all about semantics, really

2D Representation
- Maps & Atlases
  - Cadastral Information
  - Topographic Data

Data Capturing
- Digital Photogrammetry
- Remote Sensing

3D Models
- 3D Graphical Models
  - Visualization
  - Navigation Simulation

Enriched 3D Models
- 3D Semantic Models
  - Urban Planning
  - Training and Simulation
  - Disaster Management

Semantic Information
- Real world representation
- Hierarchical and topological relationships
- Thematic properties

Possible representation in CityGML

* Source: “Spatio-semantic coherence in the integration of 3D city models” (Stadler, Kolbe)
(3) Smart Nation data in real time

- Rich data environment is needed for planning and decisions-making purposes
- Examples include:
  - Resource management *(e.g. mobile network planning/ sensor network/ energy / transport)*
  - Disaster management *(e.g. floods monitoring)*
  - Management of diseases *(e.g. monitoring of infectious diseases)*
  - Pollution management *(e.g. heat/ noise)*
  - Pre-emptive provision of public services
  - Urban planning

*Simulating flood*  *Simulating traffic condition*  *Simulating wind flow & Urban Heat Island Effects*
(4) Best views of the city

Citizens & Residents of Singapore
- Co-Creation
- C-to-C Sharing
- C-to-G Engagement

Businesses
- Biz Analytics
- Resource Management & operations
- Location Planning

Government
- Service Delivery
- Policy
- Decision Making

Academic & Research
- Modeling & Simulation
- Research & Development
- Innovation
(5) The sky’s the limit

1. Virtual Experimentation
   - Better radio frequency (RF) coverage mapping to facilitate better planning and infrastructure design
   - Perform signal penetration loss predictive analysis

2. Provision of Pre-emptive Services
   - Understanding and predicting urban flow and pollutant dispersion for a more proactive urban planning
   - Predictive geo-modelling e.g. flooding effect in built-up areas
   - Study weather variations due to climate change

3. Planning & Decision Making
   Cross-domains Modelling & Simulation
   - Integrated analysis and visualisation on single M&S platform using multi-simulation models e.g. to understand micro-climatic condition of proposed development

4. Research & Development
   - Rich data environment for researchers to innovate and develop new technologies
   - New modelling & simulation apps for various domains e.g. security and disaster management, social behavioral studies
https://www.youtube.com/watch?v=y8cXBSl6o44

https://www.youtube.com/watch?v=Uf6I7Ff4EJw&feature=youtu.be