



KANTOR STAF PRESIDEN
REPUBLIK INDONESIA

Seizing the opportunity

Challenges of digitalisation and development in IR4.0

Yanuar Nugroho

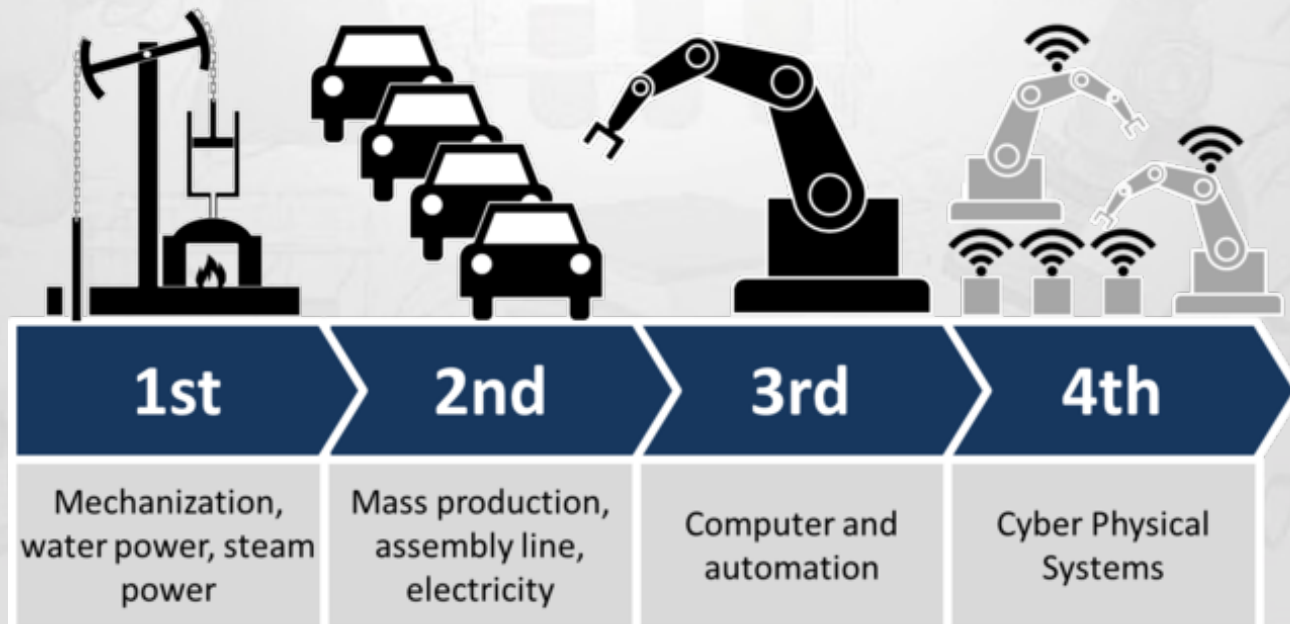
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28 April 2018



Industrial Revolution 4.0: Digital economy and others

INDUSTRY 4.0





Smart government? Digital governance?

How does the government respond to the digital era?

← OPPORTUNITIES →

← CHALLENGES →

Smarter decision making



Created by Rflor
from Noun Project

Digitalisation gives opportunity to **the government** to have **better decision making processes**

Smarter services



Created by Gregor Cresnar
from Noun Project

Digitalisation opens prospects for **better** and more **accurate, targeted, public services**

Smarter regulation



Created by Luis Prado
from Noun Project

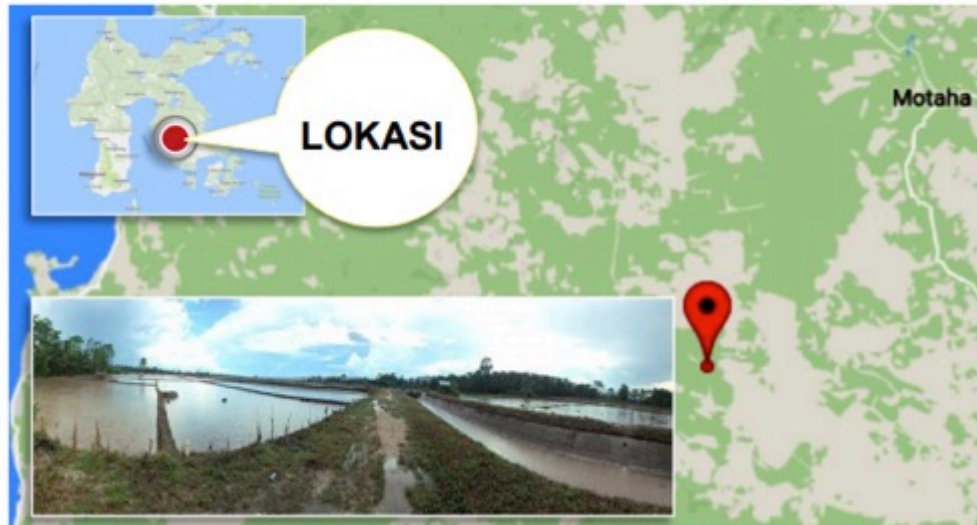
Digitalisation impacts on complexity, hence requires much **higher capacity and capability of regulator and policymaker.**

1. Opportunity: Smarter Decision Making



Problems in development delivery and decision making (1/3)

Case #1 Irrigation system



Irigasi Lambandia di Kab. Kolaka Timur, Sulteng (progress fisik: 100%)
4°18'54.8"S 121°58'15 »E

MASALAH:

Tidak ada peta pemanfaat irigasi



Irigasi Koak Aweng di NTB (progress fisik: 100%)
4°18'54.8"S 121°58'15"E

MASALAH:

Waduk yang dibangun sangat besar, sedangkan daerah irigasi hanya terdiri dari beberapa petak sawah (kurang dari 10 x 15 meter)

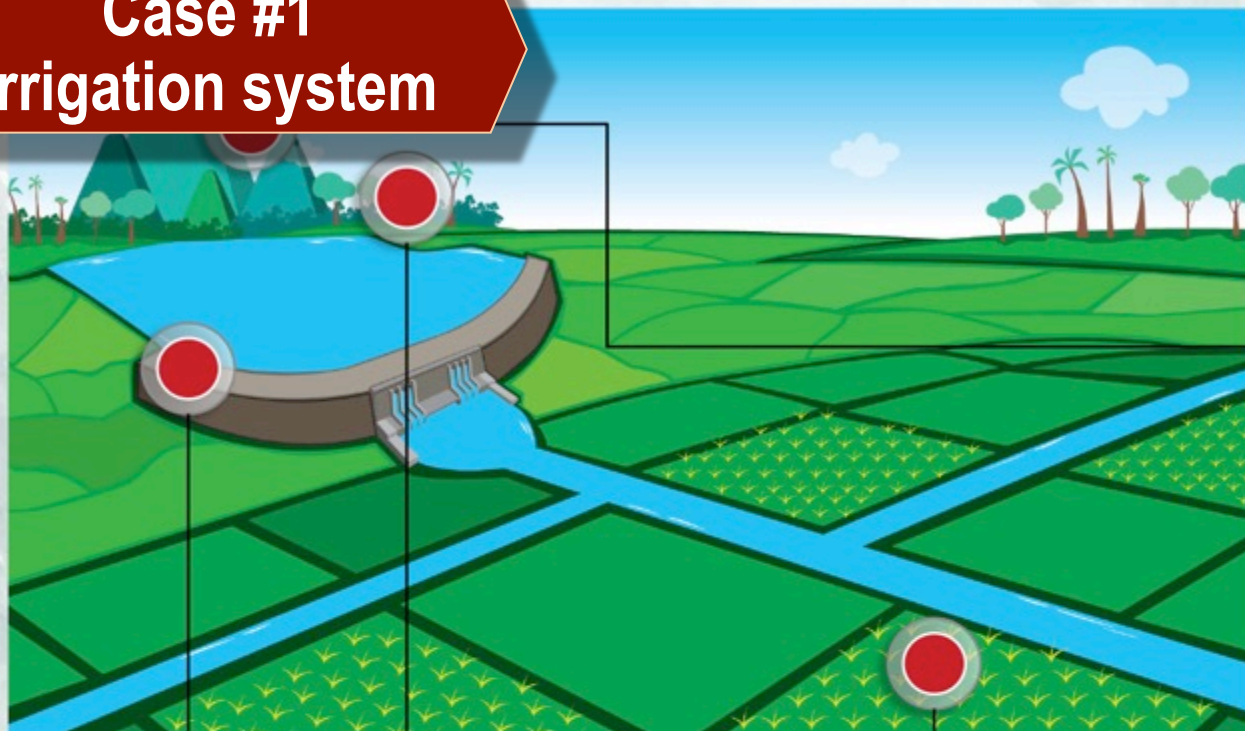
No proper planning before undertaking development programmes/projects: Dams and irrigation were built without geo-spatial map.

Unmatched demand and supply: The dam was built only for few small-sized rice fields.



Problems in development delivery and decision making (2/3)

Case #1 Irrigation system



PEMDA

Risk of public
resistance

BMKG &
BNPB



Disaster Mitigation:
Planning should consider
the risk of disasters
caused by the built dam,
which requires information
such as capacity and
annual rainfall

PUPR/BBWS



Engineering:
Ministries and local
government requires
information regarding
engineering e.g.: dam
capacity, sedimentary
attributes

KLHK



Ecological Impact:
Planning should
consider damage of
dam to forestry and
water ecosystem

KEMENTERIAN PERTANIAN



Return on Investment:
Planning should
consider outcome
measures such as
farmer welfare and their
productivities



Problems in development delivery and decision making (3/3)

Case #1 Village Fund

Disconnected
approach between
those of bottom up
and top-down

2

Inequitable
allocation of fund

3

Inefficient
monitoring of
village fund use

Asymmetry allocation based on
per capita (2015)



Desa Birang, Kab. Berau, Kaltim

- Poverty rate (%): 4.8
- Population : 286
- Allocation of fund : Rp. 266 juta
- Allocation per capita : Rp. 932.000

Desa Senaru, Kab. Lombok Utara, NTB

- Poverty rate (%): 35.9
- Population : 6,350
- Allocation of fund : Rp. 328 juta
- Allocation per capita : Rp. 52,000

Asymmetry allocation based on
area (2017)



Desa Sungai Enau, Kab. Kubu Raya, Kalimantan Barat

- Poverty rate (%): 13
- Population : 5,861
- Area: 7836Ha
- Allocation of fund : Rp. 720 juta
- Allocation per Ha: Rp. 91,940

Desa Losari, Kab. Banyumas, Jawa Tengah

- Poverty rate (%): 18
- Population : 8,646
- Area : 645 Ha
- Allocation of fund : Rp. 720 juta
- Allocation per Ha: Rp. 1,116,480

Desa Darek, Kab. Lombok Tengan, NTB

- Poverty rate (%): 13
- Population : 9,197
- Allocation of fund: Rp. 720 juta
- Allocation per capita : Rp. 78,334

Desa Padang Lampe, Kab. Pangkajene & Kepulauan, Sulawesi Selatan

- Poverty rate (%): 13
- Population : 2015
- Allocation of fund: Rp. 720 juta
- Allocation per capita : Rp. 357,539



Pressing urgency for higher quality of data

Jumat 28 Apr 2017, 20:42 WIB

Salah Data, Pangkal Gagalnya Program Swasembada Daging Sejak 2009

Muhammad Iqbal, detikFinance



Wrong data, the cause of the failure of meat self-sufficiency programme since 2009



Data Tahanan Kabur Pekanbaru Belum Diberi, Polisi Pakai Naluri



M Syukur

09 Mei 2017, 08:05 WIB



Total
69

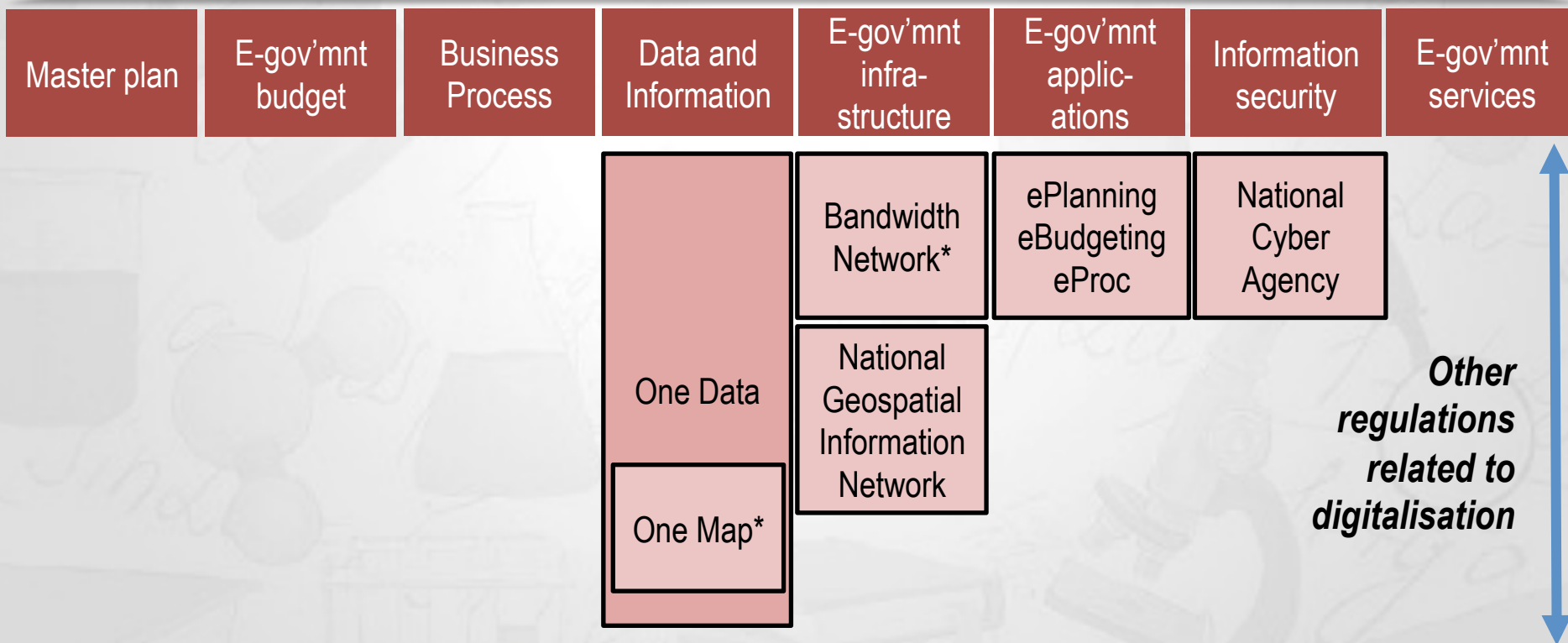
Escapee prisoners data from Pekanbaru prison unavailable, police uses intuition





The government currently prepares a set of regulatory framework to support the digitalisation of governance process

(The draft-) Presidential Regulation on E-government

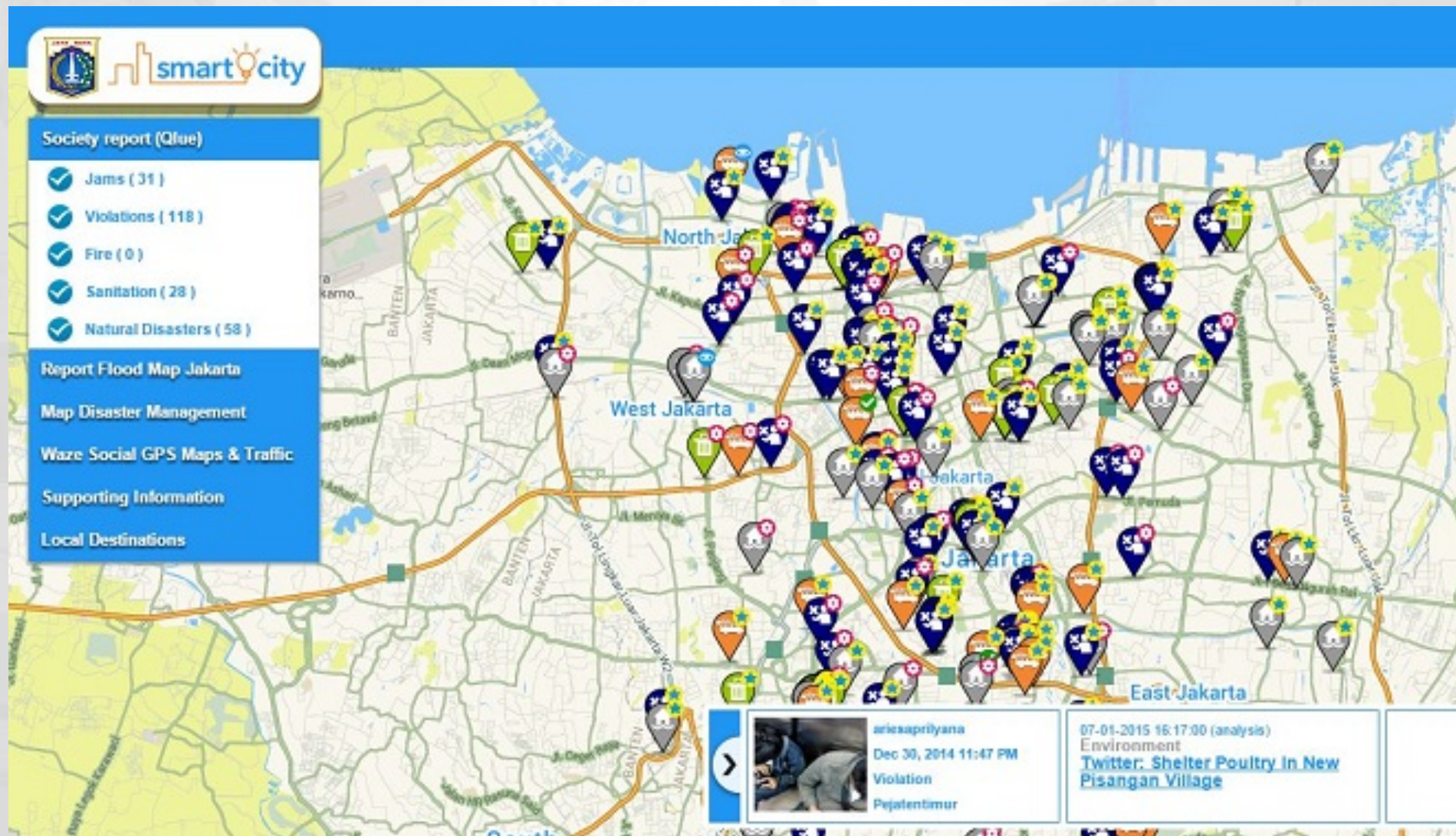


Presidential Regulation on e-Government (at finalisation stage) will serve as the main/umbrella regulatory framework for government digitalisation

2. Opportunity: Smarter Services



Digitalisation provides opportunity to improve the quality of public service delivery





Digital solutions by the public can be part of the solutions for development planning



The use of web and mobile applications to provide technology solution for traceable and transparent commodity supply chain.

See **SDG-12: Sustainable consumption and production**

'Hacking the growth of farmers':

Digital solutions for farmers in the aquaculture sector to reduce inefficiency and accelerate the learning cycle (e.g. smart feeder).

See **SDG-14: Conservation and sustainable use of 'under-water' resources for sustainable development**





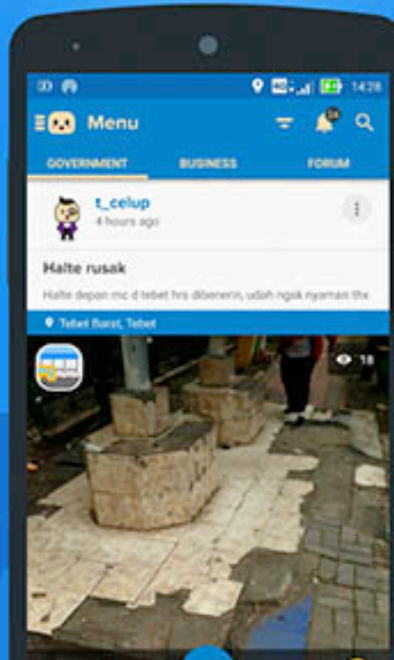
Such opportunities, in turn, demand for the improvement of government's capacity (1/3)

Qlue works because there is integration of complaint handling system with the evaluation mechanism of the state apparatus performance

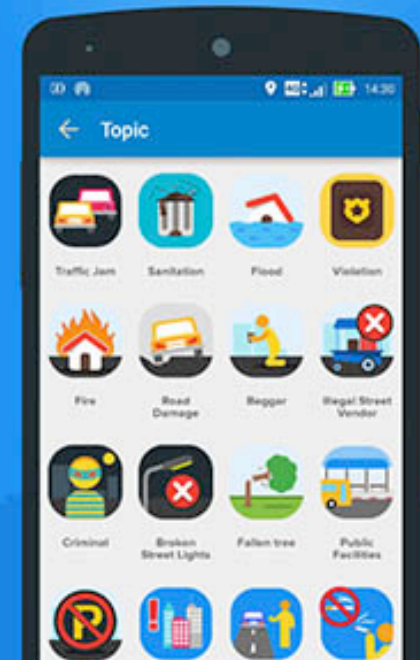
Skillset:
Process business analyst



Monitor the environment's condition by looking through comment, color status report, and the total of support



Choose variety of aspiration to get accepted directly by government and business





Such opportunities, in turn, demand for the improvement of government's capacity (1/3)

The traffic of *spotify* app increases 100% after the improvisation of *user interface*

Skillset:

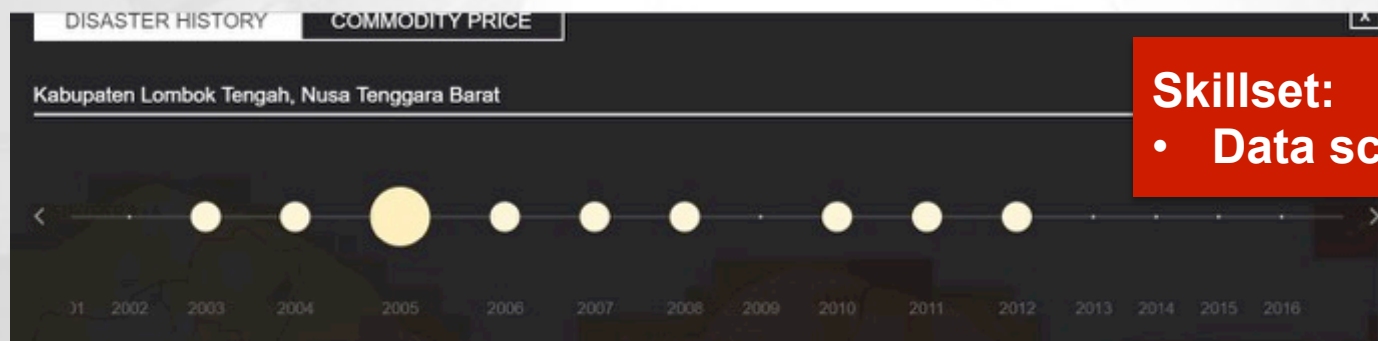
- UX engineer
- Front-end developer
- Ethnographer





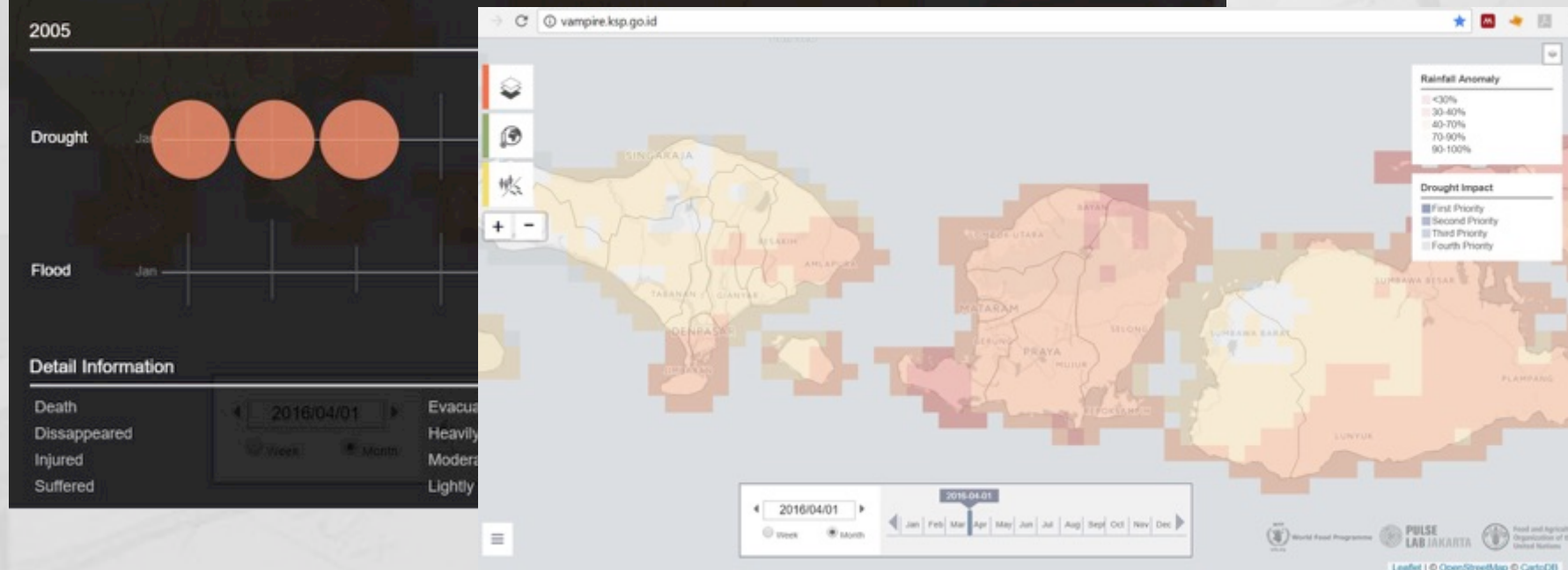
Such opportunities, in turn, demand for the improvement of government's capacity (1/3)

The capacity for analysis determines the planning for the need of data (e.g. FSVA – Food Security and Vulnerability Atlas)



Skillset:

- Data scientist/ analyst



2. Smarter Regulation



Digital era demands new way of thinking in creating regulatory framework

The tension of regulation today





Digital era demands new way of thinking in creating regulatory framework

The tension of regulation tomorrow?

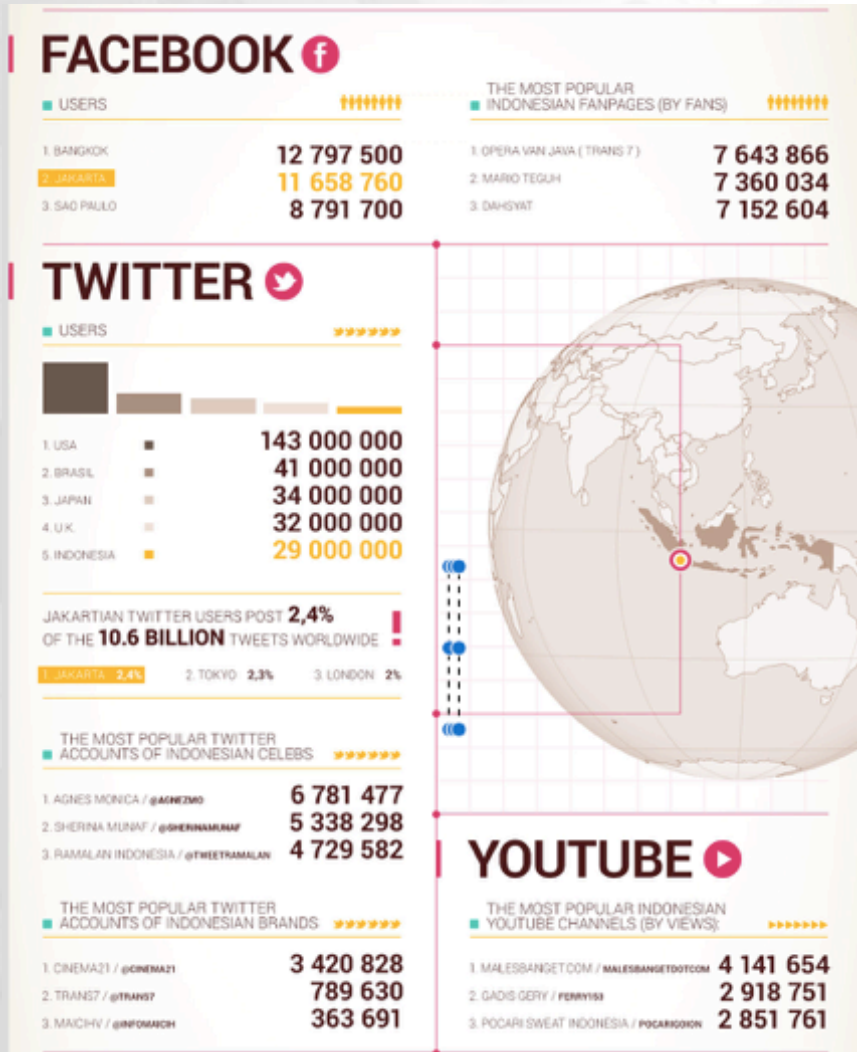


<https://www.youtube.com/watch?v=ecClODh4zYk>

3. Opportunity and challenges in digital-era



The challenge: How to synchronise the consumption of IT/ICTs services and the capacity and productivity? (1/2)



CNN Indonesia Home Nasional Internasional Ekonomi Olahraga Teknologi Hiburan Gaya Hidup

Home > Teknologi > Berita Teknologi Informasi

Indonesia Darurat Tenaga Programmer

Bintoro Agung, CNN Indonesia | Jumat, 28/07/2017 12:02 WIB

Bagikan :

Data peta okupasi tenaga TI di Indonesia menunjukkan Indonesia sangat kekurangan tenaga pemrogram (dok. Unsplash/Luis Ulerena)

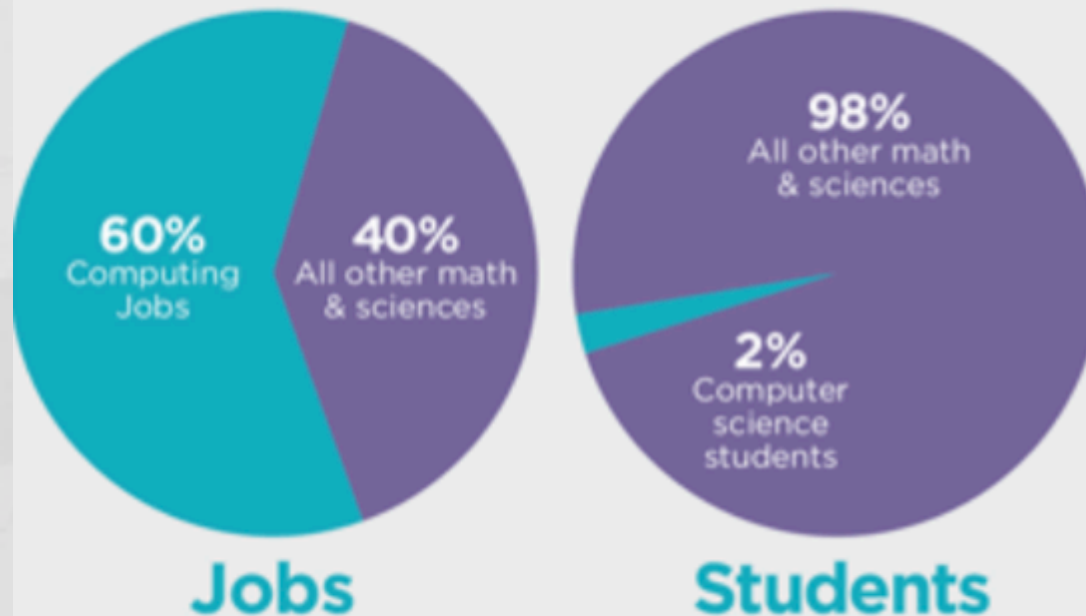
The 'demand side' ...

.. is not matched by the 'supply side'



The challenge: How to synchronise the consumption of IT/ICTs services and the capacity and productivity? (1/2)

The job/student gap in computer science



Less than 2.4% of college students graduate with a degree in computer science. And the numbers have dropped since last decade.

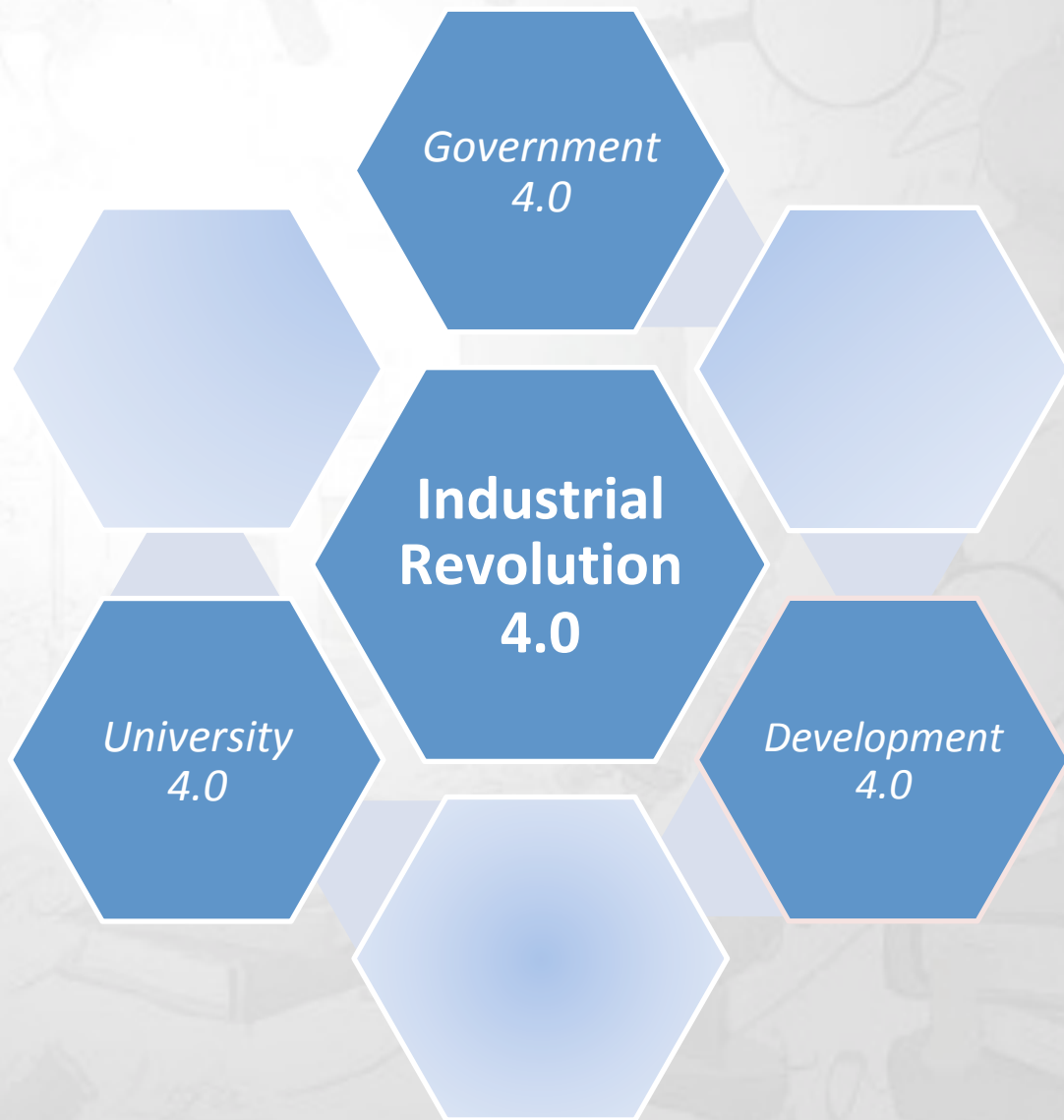
Source : <http://evolist.co/computer-science-degree-jobs/yorkville-high-school-computer-science-department-jobs-in.html>



Implications: 4.0 of everything?

**The process of
adapting to the IR4.0
requires new pillars
in government,
education and
development ...**

... at least





Implications: 4.0 of everything?

How should we respond to the 4th Industrial Revolution?

Reform
education
system



Increase
opportunities
to explore
entrepreneur-
ship



Utilise
networks to
maximize
investments



Create fair tax
incentives





Implications: 4.0 of everything?

Education system must enable our human resources to participate in the digital era.

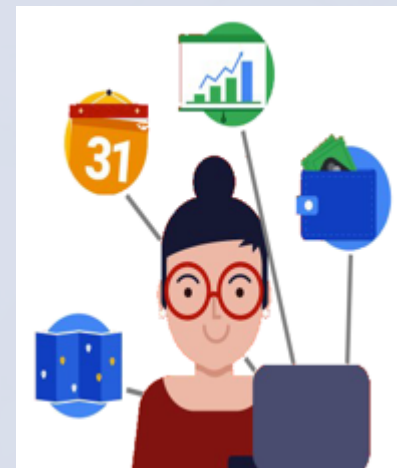
Elementary and secondary

- Bridge the **digital divide** by teaching basic digital skills, e.g. mandating the study of **coding**



High school and HEIs

- Opening **new college majors** that are relevant with the digital age





Implications: 4.0 of everything?

(Possibly) five clusters of sciences that will be in high demand in the digital economy

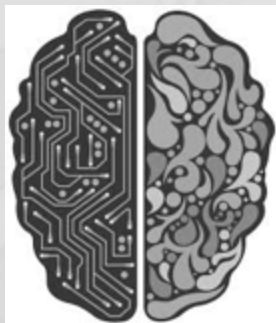
- **Artificial intelligence**
- **Machine learning**
- **Automation**
- **Cyber security**
- **Big data**
- **Data analytics**

- Bio-technology
- Biomedical science
- Biomedical engineering
- Genomics
- Healthcare

- Climate, energy
- Natural resources
- Environmental studies

- Digital art
- Digital design
- Creative technology

- Education and training of digital skills





The future challenge for the government: How to improve the capacity and adjust the institution

US example/illustration:

The Office of the President set up a special unit for ICT, and recruited ICT experts from the Silicon Valley to be government's officers



US Digital Service



Presidential Innovation
Fellow



18F



How to foster the paradigm for more participatory government?

The initiative of Open Government Indonesia initiates participatory government business process





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Thank you

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