| 결과보고서 |

KLRI-OECD International Legal Conference

Recent Trend and Tasks of IT related Policy

Date & Time: May 2, Friday 10:00-13:00
Place: France OECD Headquarter
Host: KLRI, France OECD Headquarter

Program

~ 10:00	**Registration**
10:00 ~ 10:20	**Opening Session**
	Moderator: Dr. **Keum, Bong Su**(OECD) Opening Speech: Dr. **Hyun Cheol Kang** (Vice President, KLRI)
10:20 ~ 10:30	**Photo Time**
10:30 ~ 11:10	[Working Session 1]
	Moderator : Dr. **Bong Su Keum**(OECD)
	[Tomorrow's Internet of Things] **HERNANDEZ Gael**(OECD)
	[Recent Trend and Debate on IT law of Korea] Dr. **Sang Mo Lee**(KLRI)
11:10 ~ 11:30	**Panel Discussion**
	PALTRIDGE Sam(OECD) **WEBER Verena**(OECD)
11:30 ~ 12:10	[Working Session 2]
	Moderator : **Sukham SUNG**(OECD)
	[K-ICT Strategy, IoT Convergence Project in Korea] Dr. **PARK Sang-Hyun**(National Information Society Agency)
	[Jobs and Skills in the Digital Economy] **REIMSBACH-KOUNATZE Christian**(OECD)
12:10 ~ 12:30	**Panel Discussion**
	YOKOMORI Yuki(OECD) **BOURASSA Frédéric**(OECD)
12:30 ~ 13:00	**Closing Session**

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Session 1-1

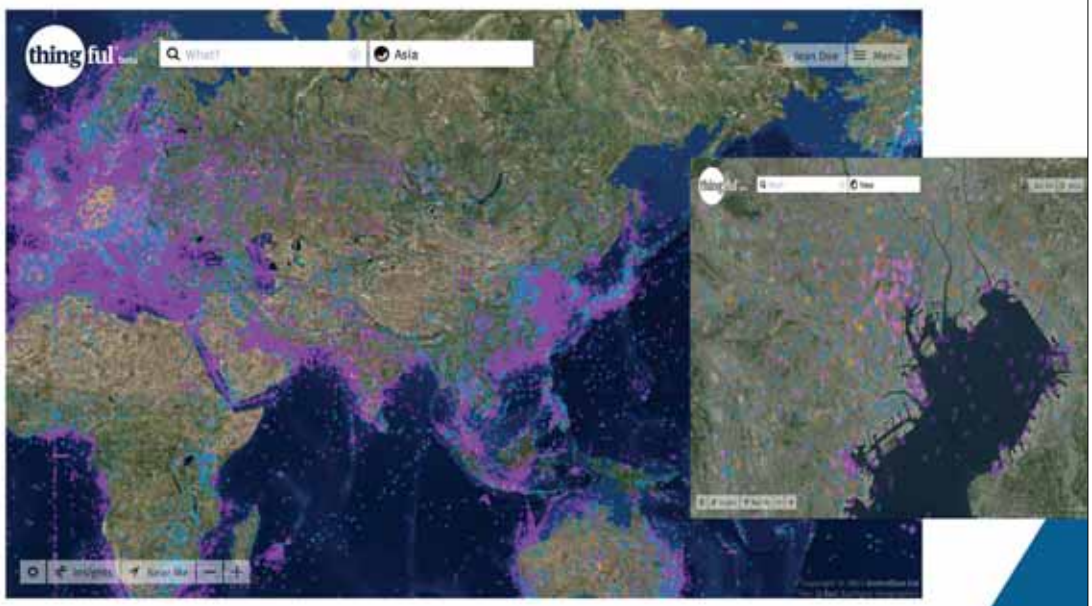
Tomorrow''s Internet of Things

THE INTERNET OF THINGS AND THE DIGITAL ECONOMY

Gael HERNANDEZ
Paris, May 2015
gael.hernandez@oecd.org

OECD
BETTER POLICIES FOR BETTER LIVES

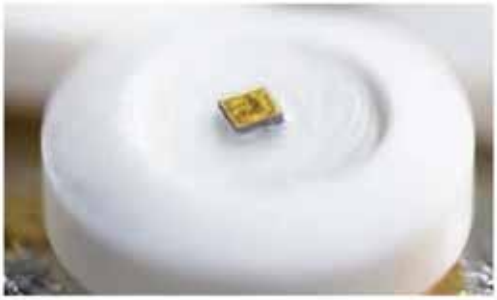
Where is the Internet of Things (IoT)?




The IoT is all around us such as on this tram in Amsterdam


Or catching a bus in London
ID: 1433
Stop: 36947
LAN IP: XXX.XXX.XXX.200
Connected (IP:XXX.XXX.XXX.154)
Authenticating ...

Or even inside us!



Maybe not Sushi but “yes” for ingestible sensors!

And often without us as in the case of autonomous machines

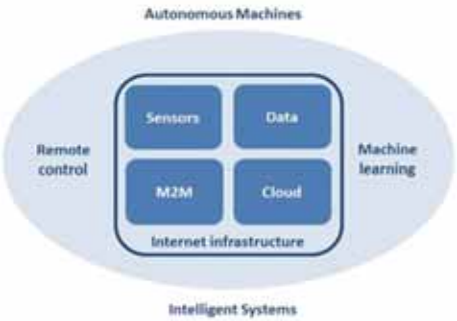
How big will IoT be? Lets start with a household (2 adults/2 children)

25 in 2017, 50 in 2022 .... 50 Billion?

How to define IoT?

Each word a problem

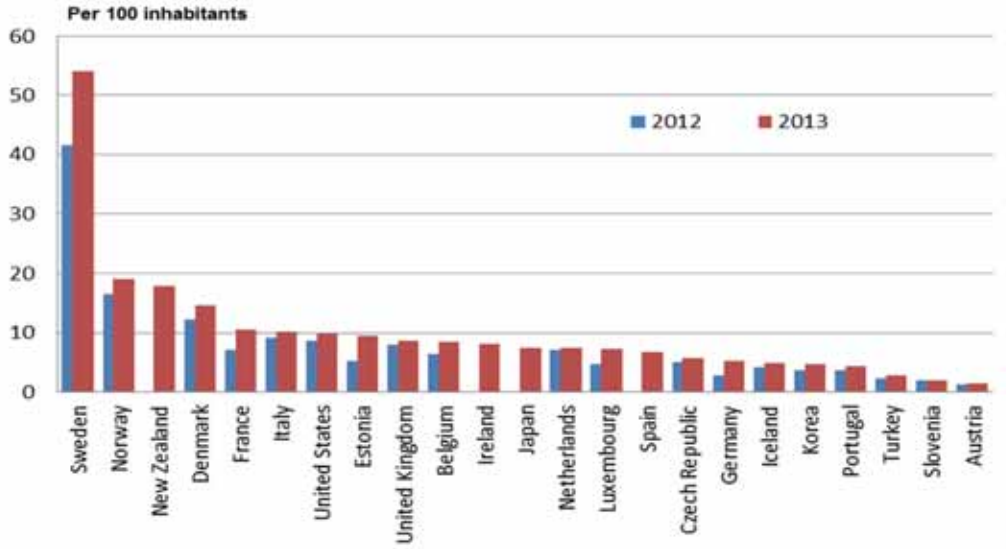
- Things
- Internet



Definition:

all devices and objects whose state can be read or altered via the Internet, with or without the active involvement of individuals using the devices

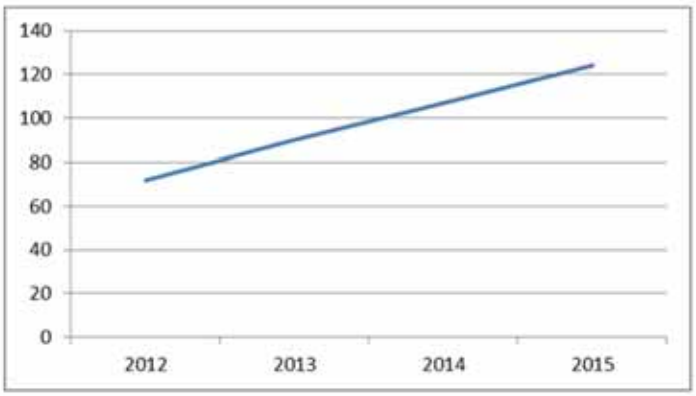
Can we measure IoT?



M2M SIM Cards per 100 inhabitants

Trend in OECD area

M2M SIM card subscriptions in the OECD area, millions



Note: The data are estimates. 2015 data are estimates from June 2015. There are 4 countries in the OECD area for which data are not available.

Policy Areas

- Encourage private sector innovation
  - Improve conditions for new firms
- Adapt research and innovation policies
  - Incorporate the IoT as a part of the overall effort
- Evaluate and assess existing policies and practices
  - Some might constitute unintentional barriers
- Promote skills to maximise opportunities in labour market
  - Adjust skills and support displaced workers

Policy Areas (ii)

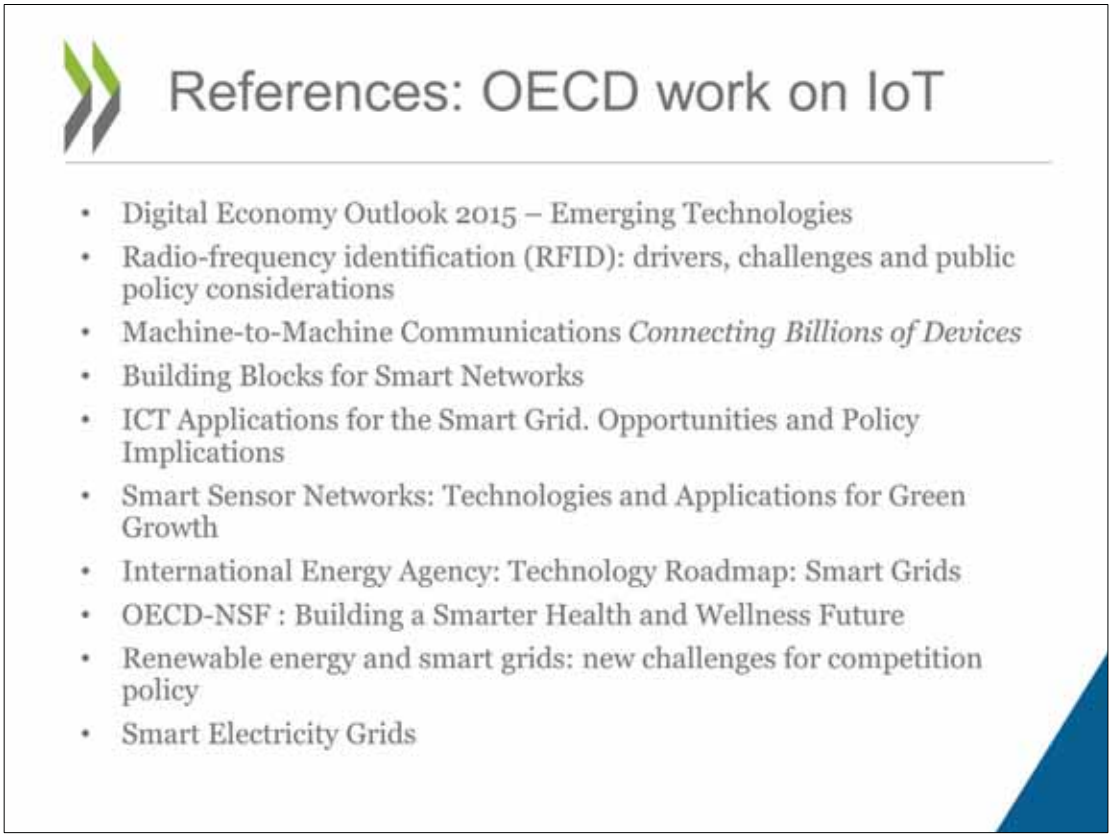
- Numbering (SIM-cards, extra-territorial)
- Evaluate Spectrum resources
- Standardization
- Autonomous machines
- Further Develop Open Data Frameworks
- IPv6

Building trust in the IoT

- Consumer/Business
  - Privacy
  - Security
  - Reliability
  - Longevity
  - Liability
- Cross border and cross-sector interoperability of policy frameworks
  - Dialogue across regulatory agencies
- Young industry, long term impact

Ongoing and future OECD work

- Panel at the Ministerial 2016
- Input into work on Big Data and eHealth
- Focus on privacy, security, trust and consumer protection
- Future of manufacturing
- Effect on jobs and skills


References: OECD work on IoT
Digital Economy Outlook 2015 – Emerging Technologies
Radio-frequency identification (RFID): drivers, challenges and public policy considerations
Machine-to-Machine Communications Connecting Billions of Devices
Building Blocks for Smart Networks
ICT Applications for the Smart Grid. Opportunities and Policy Implications
Smart Sensor Networks: Technologies and Applications for Green Growth
International Energy Agency: Technology Roadmap: Smart Grids
OECD-NSF : Building a Smarter Health and Wellness Future
Renewable energy and smart grids: new challenges for competition policy
Smart Electricity Grids

Session 1-2

Recent Trend and Debate on IT law of Korea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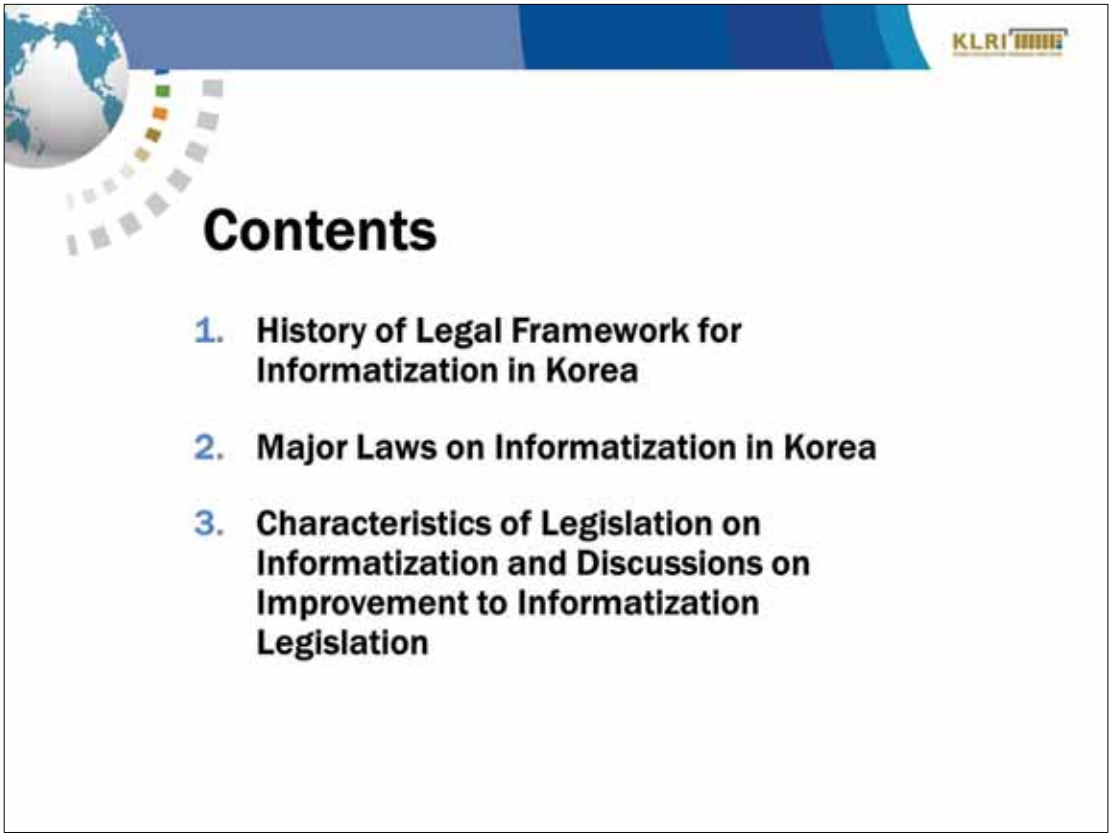
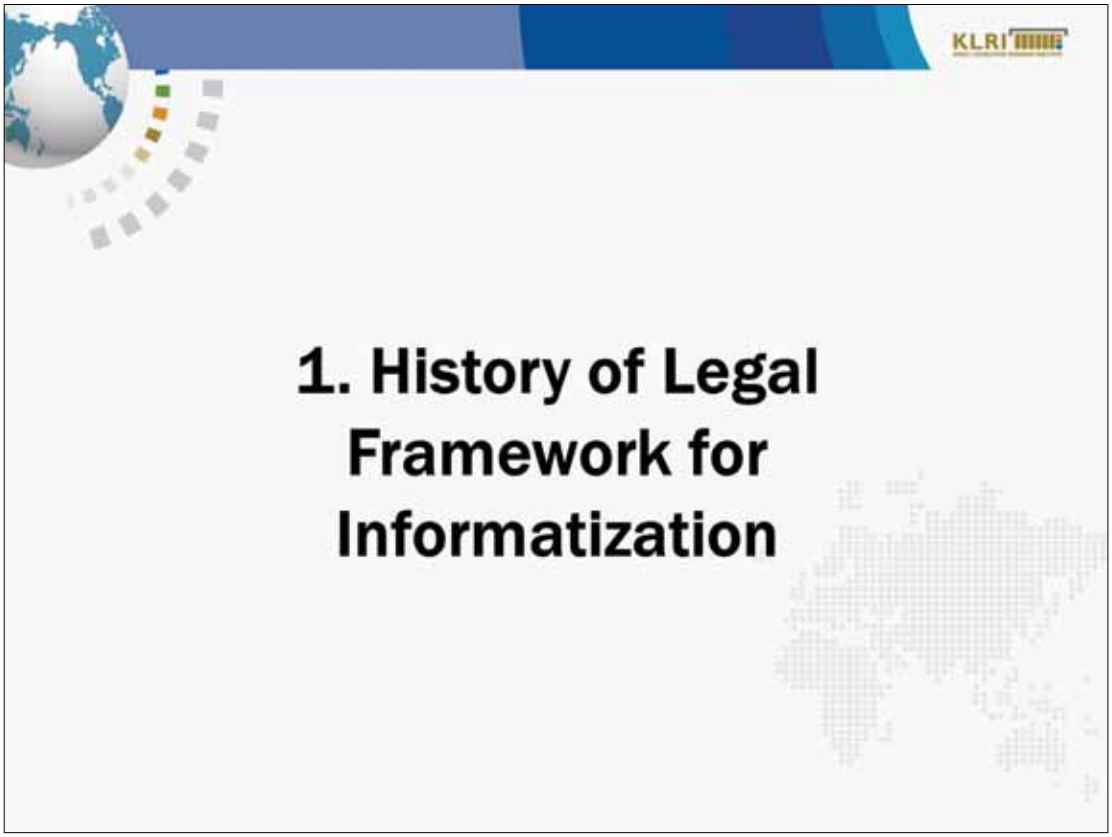
Recent Trend and Tasks of IT related Policy
Recent Trend and Debate on IT law of Korea
Dr. Sang Mo Lee | KLRI
peacekeeper@klri.re.kr


KLRI
Contents
1. History of Legal Framework for Informatization in Korea
2. Major Laws on Informatization in Korea
3. Characteristics of Legislation on Informatization and Discussions on Improvement to Informatization Legislation



1. Overviews of Legal Framework for Informatization in Korea

1) History of Legal Framework for Informatization in Korea

1980s	1990-1995	1996-2000	2001-2005
• **1986: Enacted the Act on Expanding and Promoting the Use of Digital Network** • **1987: Established and implemented the 1st Basic Plan on National Backbone Computer Network** • **1987: Established NCA (current NIA)**	• 1994: Established the Ministry of Information and Communications • 1994: Established and implemented the Comprehensive Plan on Implementing Information Superhighway Infrastructure • 1994: Started commercial Internet service • **1994: Enacted the Act on Protection of Personal Information Maintained by Public Institutions** • **1995: Enacted the Framework Act on Promotion of Informatization**	• 1996: Established the 1st Basic Plan on Promotion of Informatization • 1998: Started delivery of public services through the Internet • 1998: Enacted the Regulations on Sharing Public Information • 1998: Started the 2nd phase of implementation of the Information Superhighway Infrastructure project • 2000: Established the Implementation Plan for Knowledge E-Government	• **2001: Enacted the E-Government Act** • 2002: Official launch of E-Government of Korea(www.e-Gov.go.kr) • 2003: Established the E-Government Roadmap and its 31 tasks • 2004: Established the IT839 policy • 2004: Implemented the BcN pilot project • 2005: Established the mid-to-long term Personal Information Protection Roadmap

1. Overviews of Legal Framework for Informatization in Korea

1) History of Legal Framework for Informatization in Korea

2006-2010

- 2006: Established the Basic Plan on u-Korea
- 2007: Announced the Basic Plan on Next Generation E-Government
- 2007: Launch of the NCIA
- 2008: Established the Korea Communications Commission (abolished the MIC)
- 2008: Established the Basic Plan on National Informatization
- **2009: Enforced the Framework Act on National Informatization (launch of the National Informatization Steering Committee)**
- 2010: Amended the E-Government Act
- 2010: Enacted the Act on Informatization of National Defense
- 2010: Placed first in the UN E-Government evaluation

2011

- Announced the Implementation Plan on Smart E-Government
- **Enacted the Personal Information Protection Act (launch of the Personal Information Protection Commission)**
- Announced the mid-to-long term Implementation Plan on Mobile E-Government Services
- Established the National Cyber Security Master Plan

2012

- Placed first in the Un E-Government Evaluation
- Launched the Public Data Quality Management Center
- Started one-stop service for public institution data disclosure

1. Overviews of Legal Framework for Informatization in Korea

2) Legal Structure for Informatization in Korea

Framework Act on National Informatization

E-Gov. & Public Sector Informatization

- E-Government Act
- Civil Petitions Treatment Act
- Regulations on Efficient Public Administrative Work Processing
- Act on Promoting the Provision and Use of Public Data, etc.

Private Sector Informatization

- Act on Promotion of Information and Communications Network Utilization and Information Protection, etc.
- Internet Address Resources Act
- Electronic Trade Facilitation Act
- Digital Signature Act
- Framework Act on Electronic Commerce, etc.

Resolving Negative Effects of Informatization

- Personal Information Protection Act
- Act on the Protection of Information and Communications Infrastructure
- Act on the Consumer Protection in Electronic Commerce Transactions, etc.

Developing IT Technology and Industry

- Framework Act on Telecommunications
- Telecommunications Business Act
- Software Industry Promotion Act
- Contents Industry Promotion Act
- Game Industry Promotion Act
- Radio Waves Act
- Information and Communications Construction Business Act

2. Major Laws on Informatization

1) Framework Act on National Informatization

- *Purpose of Enactment:*
  - Define implementation structure in order to build the basis for ICT industry and promote informatization throughout the nation
  - Present principles and basic direction of national informatization that can cope with the changes in the ICT environment and realize knowledge information society by identifying the necessary steps for establishing and implementing related policies

Contents of the Framework Act on National Informatization (2009)

1. Basic and mid-to-long term development direction of policy for national informatization
2. Regional informatization
3. Support for informatization in the private sector such as financial · manufacturing industries
4. Creation of information culture and resolving the digital divide
5. Protection of the rights of users and intellectual property
6. Standards and sharing of data
7. Improving legal framework related to national informatization
8. Promotion of international cooperation activities related to national informatization
9. Securing and managing funding for national informatization

2. Major Laws on Informatization

1) Framework Act on National Informatization

Framework Act on Promotion of Informatization (1995)
- Promotion of Informatization
- Composition of IT infrastructure

Framework Act on National Informatization (2009)
- Focus on Information Literacy
- Realization of Knowledge-based society

2. Major Laws on Informatization

2) E-Government Act

- *Purpose of Enactment :*
  - *Promote projects that will realize e-government by defining basic principles · procedures and implementation methods as well as improve the quality of life for citizens in the knowledge information society by increasing government efficiency · transparency and openness*
  - *Improve the rights of citizens and quality of public service delivery through informatization of public administration and its processes by setting down the principles for realization and management of e-government*

Contents of E-Government Act (2007)

1. Provide and promote the utilization of e-government public services
2. Digital public administration
3. Expand sharing of public data and secure safety
4. Implement and utilize information technology architecture
5. Efficiently manage information resource
6. Standardize e-government and expand shared services
7. Implement e-government and regional informatization projects and manage their performance

2. Major Laws on Informatization

2) E-Government Act

Act on Promotion of Digitalization of Public Work Process for Realization of E-Government (2001)

- Re-engineer previous organization and work process to facilitate the implementation of IT technology
- Ensuring Productivity, transparency and democracy of government agencies

→

E-Government Act (2007)

- Expand sharing of public data
- Security Enhancements
- Avoid overlapping investment

2. Major Laws on Informatization

3) Act on Promotion of Information and Communications Network and Information Protection, etc.

- *Purpose of Enactment :*
  - *Promote the use of information and communications network and its reliable management·operation and improve the quality of life for citizens and common welfare by building the basis for information society through the protection of personal information of users of information and communications technology*
  - *Disseminate information and communications related services between individuals*

Contents of the Act on Promotion of Information and Communications Network Utilization and Information Protection, etc. (2001)

1. Promote the use of information network and the Internet
2. Protect users on information network (personal information protection)
3. Protect young users on information network
4. Provide legal basis for service and principles for service restriction of the information and communications network
5. Raise reliability and safety of the information and communications network

2. Major Laws on Informatization

3) Act on Promotion of Information and Communications Network and Information Protection, etc.

Act on Promotion of Information and Communications Network Utilization, etc. (1999)
- Develop · distribute and promotion of utilization of network
- Creation of the foundation for the information society

the Act on Promotion of Information and Communications Network Utilization and Information Protection, etc. (2001)
- Promote the use of information network, the Internet and the internet services
- Protect personal information on information network
- Regulation of telecommunications and Internet service providers
- Stable operation of telecommunications facilities
- Regulation of pornographic, violence on internet

2. Major Laws on Informatization

4) Personal Information Protection Act

- *Purpose of Enactment :*
  - Protect the privacy of citizens by strengthening remedies for invasion of privacy based on principles and processing standards for personal information in both the private and public sector and guarantee the rights and benefits of personal information (improvement of digital human rights through personal information protection and privacy protection)

Content of Personal Information Protection Act (2011)
1. Implemented the 8 principles for personal information protection of OECD
2. Established the Personal Information Protection Commission
3. Guaranteed the rights of the subject of information
4. Personal information impact assessment
5. Class action law suit related to personal information

2. Major Laws on Informatization

4) Personal Information Protection Act

2. Major Laws on Informatization

5) Other Informatization Related Laws

- Various Laws on Promotion of ICT Industry
  1. Software Industry Promotion Act
  2. Information and Communications Construction Business Act
  3. Radio Waves Act
  4. Telecommunications Business Act
  5. Contents Industry Promotion Act

- Laws on Fostering Information Society by Promoting the Use of Information Technology
  1. Digital Signature Act
  2. Framework Act on E-Commerce and E-Document
  3. Framework Act on Intellectual Property

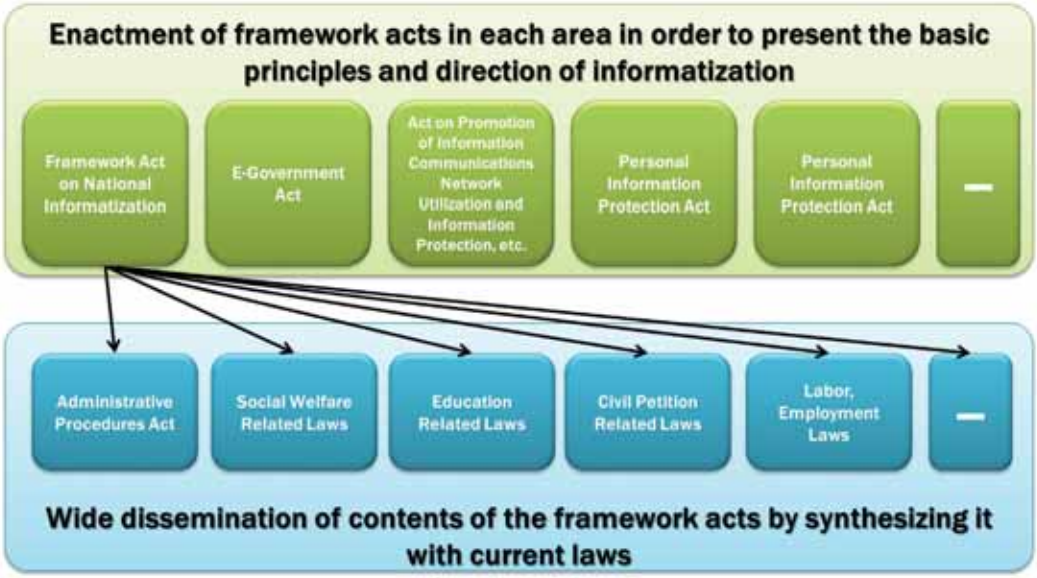
2. Major Laws on Informatization

5) Other Informatization Related Laws

- **Laws for Resolving Legal Issues on the Use of Information Technology**
  1. Issuance and Distribution of Electronic Bills Act
  2. Electronic Trade Faciliatation Act
- **Laws on Informatization for Resolving Social Issues such Cyber-Crime**
  1. Act on the Consumer Protection in the Electronic Commerce Transactions, etc.
  2. Act on the Protection of Information and Communications Infrastructure
  3. Use and Protection of Credit Information Act

3. Characteristics and Implications of Legislation on Informatization

1) Characteristics of Laws on Informatization in Korea

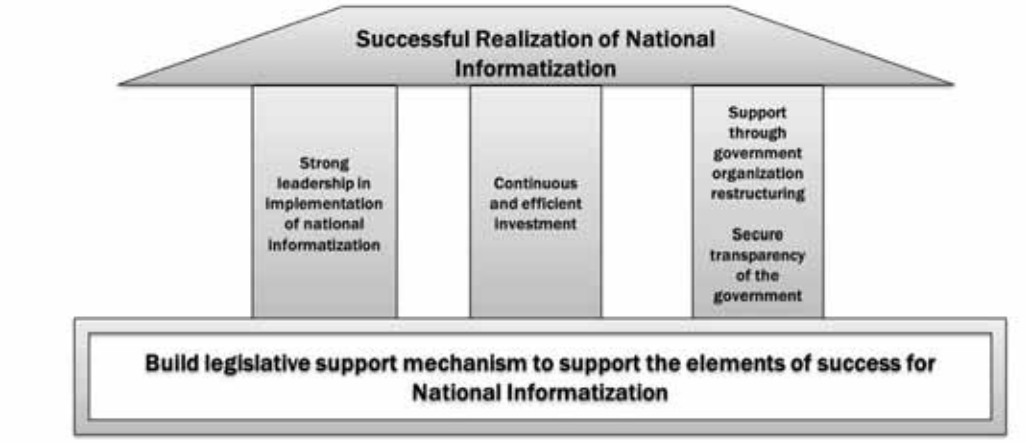


3.Characteristics and Implications of Legislation on Informatization

2) Discussions on Improvement of ICT Legal Framework in Korea

3. Characteristics and Implications of Legislation on Informatization

Elements of Success for National Informatization



Management of Legislation

- Enact and amend appropriate laws at each stage of development in informatization
- Secure and establish funding and institutions for sustainable investment(Funds, Budget)
- Provice systemic support such as tax and education policy to promote informatization in the private sector
- Build institutional mechanism to promote informatization in the government(personal affairs, Reorganization and Established professional organizations)

Thank you

Session 2-1

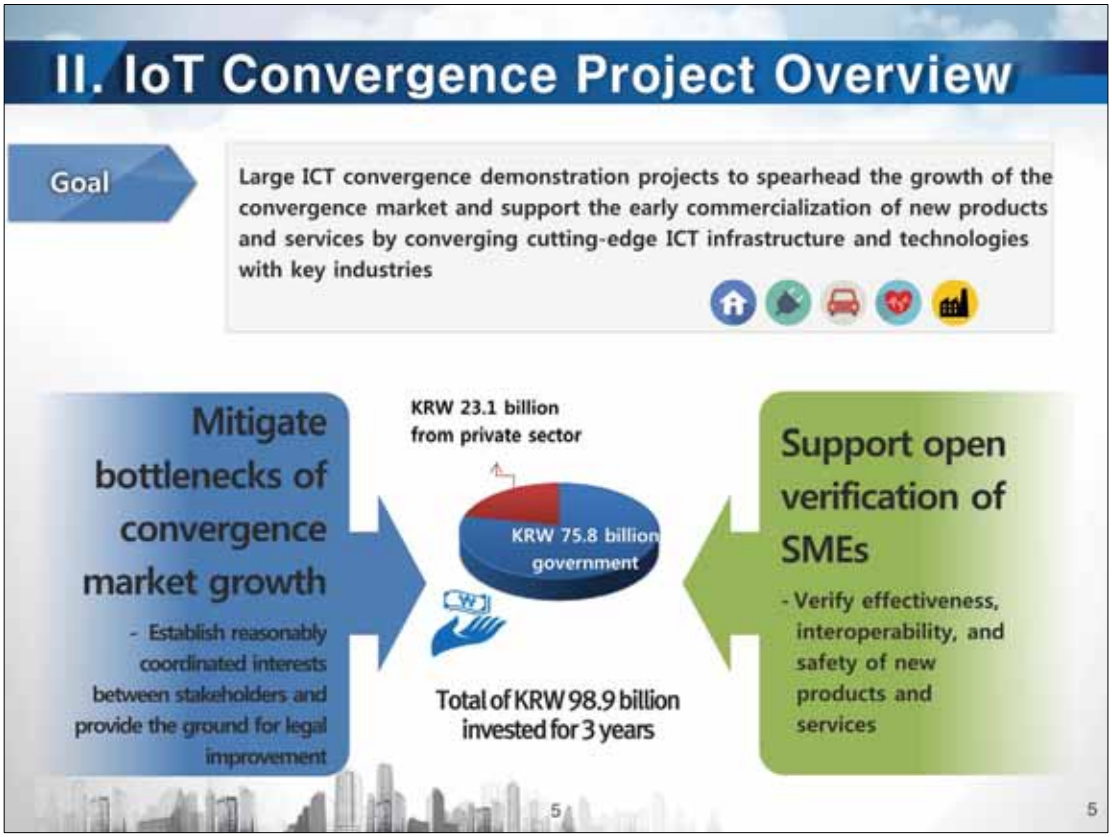
K-ICT Strategy, IoT Convergence Project in Korea

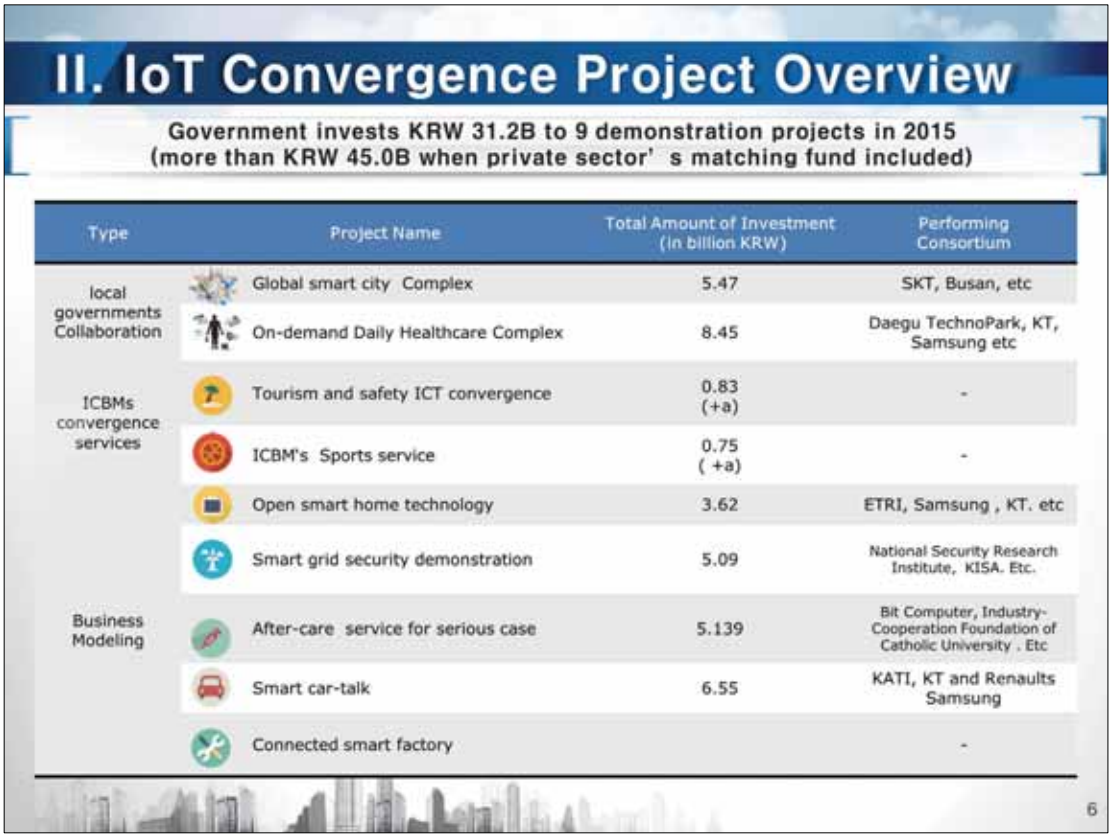

K-ICT Strategy,
IoT Convergence Project
in Korea
2015. 9. 14.
Director of IoT Planning Team
PARK Sang-Hyun, Ph.D.
NIA


CONTENTS
Ⅰ. K-ICT Strategy
Ⅱ. NIA's IoT Convergence Projects
Ⅲ. IoT OpenLab in Gasan
Ⅳ. K-ICT Convergence
2


I. K-ICT Strategy for Creative Economy (1/2)
Vision
Creative Korea , led by ICT
Goal
Industry
GDP
Export
8.0%
KRW 280 trillion
USD 210 billion
2020
New innovative industry - more powerful engine for economic growth,
K-ICT Strategy
Ministry of Science, ICT and Future Planning (MSIP,)
announces K-ICT Strategy ('15. 3. 25)
Government Investment Plan
Investment of KRW 9 trill. By 2019
9,341
20,503
22,070
21,463
17,398
2016
2017
2018
2019
3


I. K-ICT Strategy for Creative Economy (2/2)
Strategy
Accelerate technologic al innovation
Foster creative talents
Globalize startups and venture companies
ICT industry reform
Achieve convergence in 6 areas
Improve regulations
Expand investment in ICT convergence
Expand public demand
Main Focus of Plans
[Contents] Digital contents /Big data
[Service] 5G/UHD
[Device] Smart devices
[Infrastructure] Software/ IoT / Cloud/ Information
Foster industries in 9 strategic areas
Improve global cooperation
Facilitate tailored overseas market entry
Strengthen global leadership
4
4


II. IoT Convergence Project Overview
Goal
Large ICT convergence demonstration projects to spearhead the growth of the convergence market and support the early commercialization of new products and services by converging cutting-edge ICT infrastructure and technologies with key industries
Mitigate bottlenecks of convergence market growth
- Establish reasonably coordinated interests between stakeholders and provide the ground for legal improvement
KRW 23.1 billion from private sector
KRW 75.8 billion government
Total of KRW 98.9 billion invested for 3 years
Support open verification of SMEs
- Verify effectiveness, interoperability, and safety of new products and services
5
5


II. IoT Convergence Project Overview
Government invests KRW 31.2B to 9 demonstration projects in 2015
(more than KRW 45.0B when private sector' s matching fund included)
Type
Project Name
Total Amount of Investment (in billion KRW)
Performing Consortium
local governments Collaboration
Global smart city Complex
5.47
SKT, Busan, etc
On-demand Daily Healthcare Complex
8.45
Daegu TechnoPark, KT, Samsung etc
ICBMs convergence services
Tourism and safety ICT convergence
0.83 (+a)
-
ICBM's Sports service
0.75 (+a)
-
Open smart home technology
3.62
ETRI, Samsung , KT. etc
Smart grid security demonstration
5.09
National Security Research Institute, KISA. Etc.
Business Modeling
After-care service for serious case
5.139
Bit Computer, Industry-Cooperation Foundation of Catholic University . Etc
Smart car-talk
6.55
KATI, KT and Renaults Samsung
Connected smart factory
-
6

II. IoT Convergence Project Overview

Adopting IoT, cloud, big data, and mobile (ICBM) technologies to develop and innovate devices and services and applying brand new IoT business models to promote IoT convergence industry in Korea

7 strategic areas for IoT convergence demonstration projects (based on local government – business collaboration)

- Home electronics
- Manufacturing
- Healthcare
- Sports
- Automobile
- Energy
- Tourism

Investment of KRW 124.2 bil. by 2019

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II. NIA's IoT Convergence Projects(1/2)

On-demand Daily Healthcare Complex

Build a common IoT platform based on international standards
Develop service platform based on the common IoT platform and demonstrate new convergence services

IoT , Cloud, Bigdata, Mobile, security Sports service

Build smart training rooms in National Training Centers
Analyze athletes' movement and tool information in yacht, short track, and curling competitions and develop and demonstrate feedback services

Tourism and safety ICT convergence service

Provide new services providing accommodation/ restaurant coupons around famous tourist sites, explanations on cultural assets, guide map, etc. Analyze disaster types using intelligent CCTVs, smoke-detecting sensors and drones and develop/ demonstrate service for resident evacuation and tourist site protection

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II. NIA's IoT Convergence Projects(2/2)

Open smart home technology

Develop an open API where various smart home products and services are interoperable
Build and operate a demonstration environment (test house)

Smart grid security demonstration

Analyze vulnerabilities in smart grid security
Secure safety and reliability through security technology verification

After-care service for serious case patients

Develop smart after-care services for discharged serious case (cancer, heart disease, etc.) patients
Verify effectiveness and safety of the services based on clinical demonstration

Smart Car-Talk service

Build environment for smart car service demonstration for early domination of the global smart car market
Develop key services and demonstrate effectiveness

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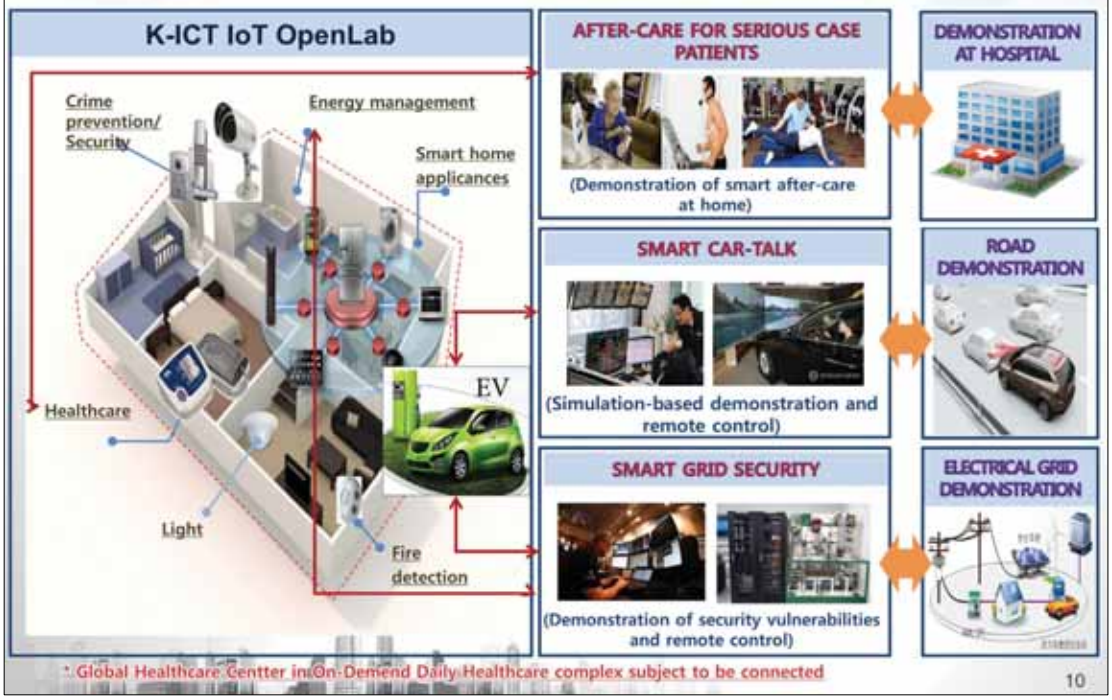
III. IoT OpenLab in Seoul(Gasan)



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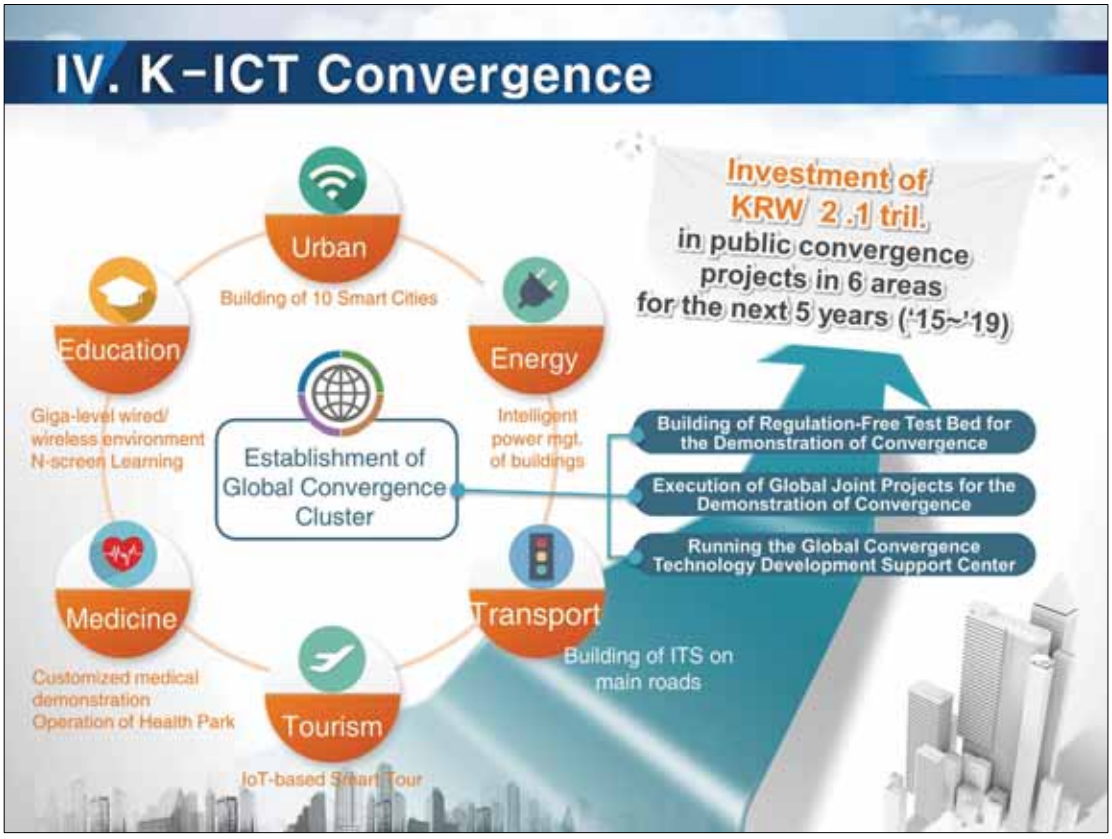
IV. K-ICT Convergence
Urban
Building of 10 Smart Cities
Education
Giga-level wired/ wireless environment N-screen Learning
Energy
Intelligent power mgt. of buildings
Establishment of Global Convergence Cluster
Medicine
Customized medical demonstration Operation of Health Park
Transport
Building of ITS on main roads
Tourism
IoT-based Smart Tour
Investment of KRW 2.1 tril. in public convergence projects in 6 areas for the next 5 years ('15~'19)
Building of Regulation-Free Test Bed for the Demonstration of Convergence
Execution of Global Joint Projects for the Demonstration of Convergence
Running the Global Convergence Technology Development Support Center


Thank you!
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Session 2-2

Jobs and Skills in the Digital Economy

2 May 2016

DATA-DRIVEN INNOVATION

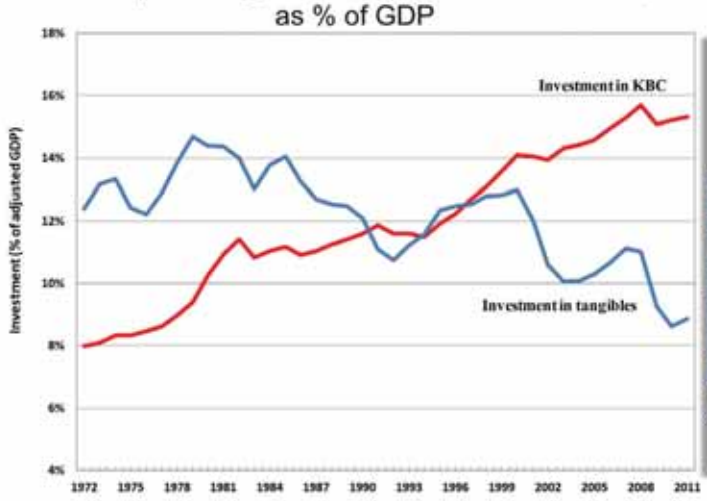
(DDI) for Growth and Well-Being

Christian.Reimsbach-Kounatze@oecd.org
Twitter: @chreko

OECD
BETTER POLICIES FOR BETTER LIVES

Investments in knowledge-based capital (KBC) is a source of growth …

Business investment in intangible (knowledge-based) and tangible assets in the United States, as % of GDP



Source: Corrado, Hulten, and Sichel (2012)

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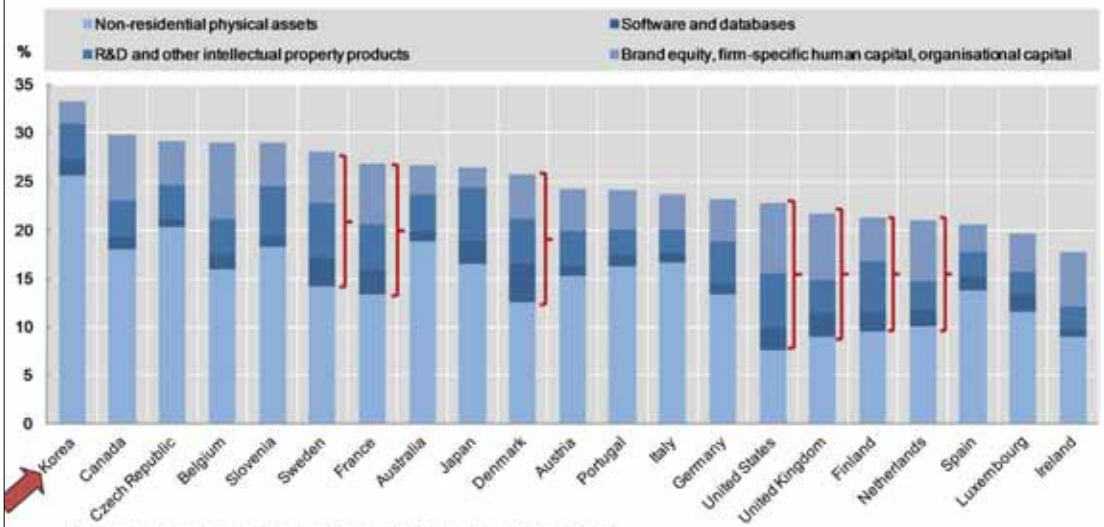
… including investments in databases and software

Investment in physical and knowledge-based capital, 2010
(As a percentage of value added of the business sector)



Source: OECD Science, Technology and Industry Scoreboard 2013.
http://dx.doi.org/10.1787/888932889820

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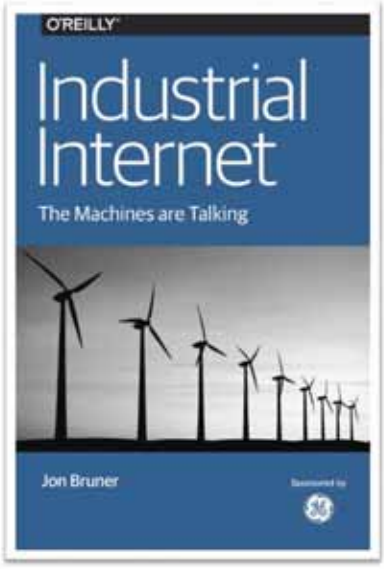
Example: DDI in 21st century manufacturing



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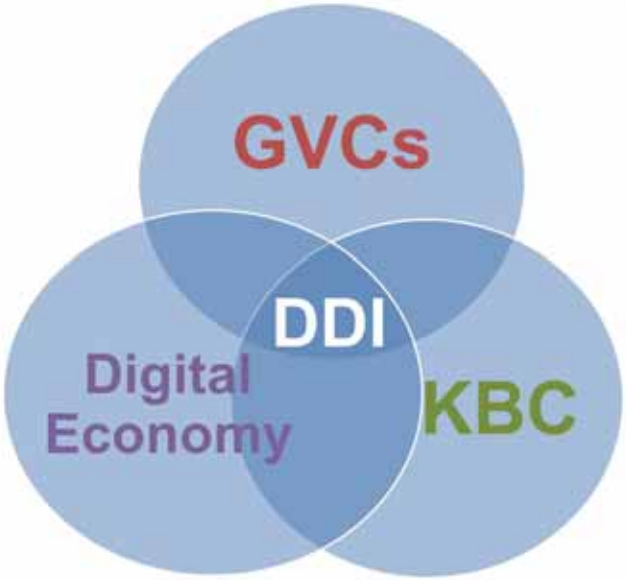
Key drivers of 21st century economies



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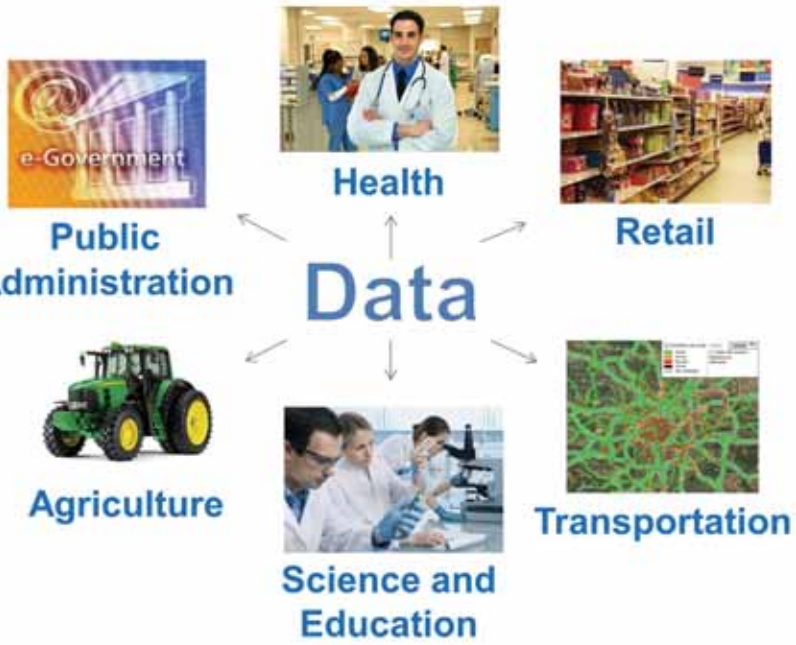
What is data-driven innovation (DDI)?

DDI refers to the **use of data and analytics** to improve or foster new products, processes, organisational methods and markets

6

Data is the "new R&D" for 21st century innovation systems

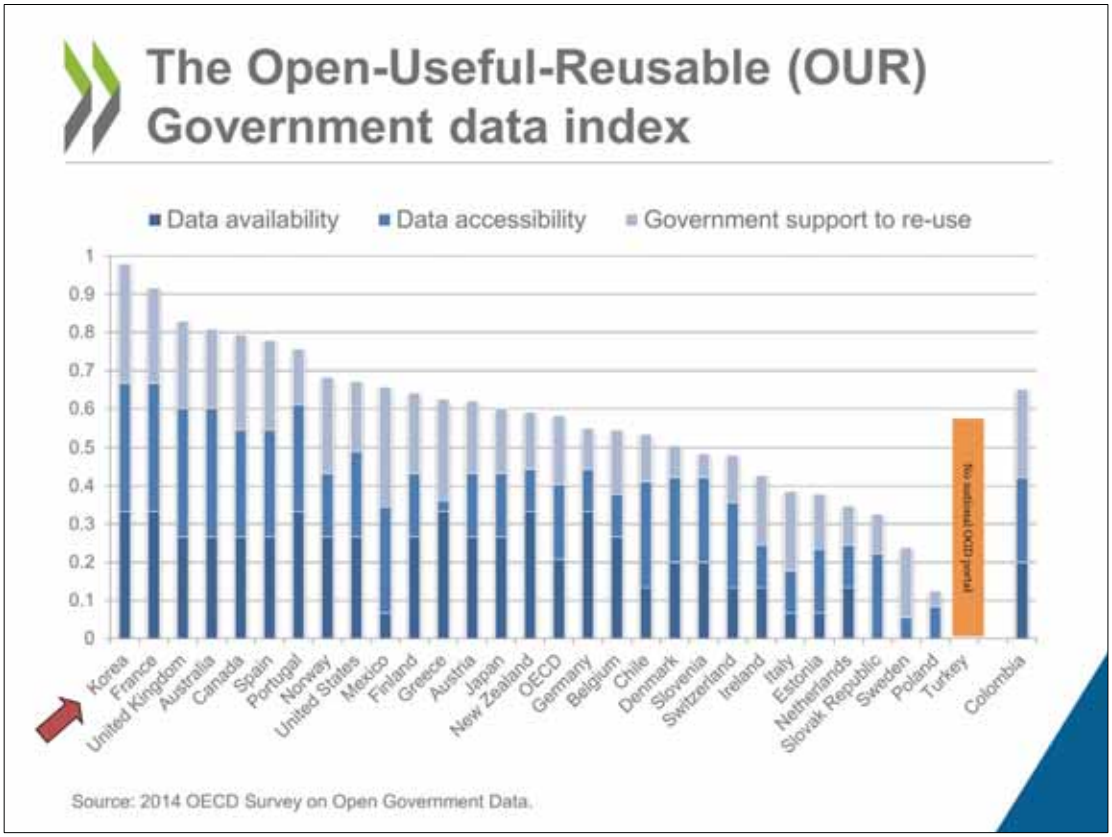


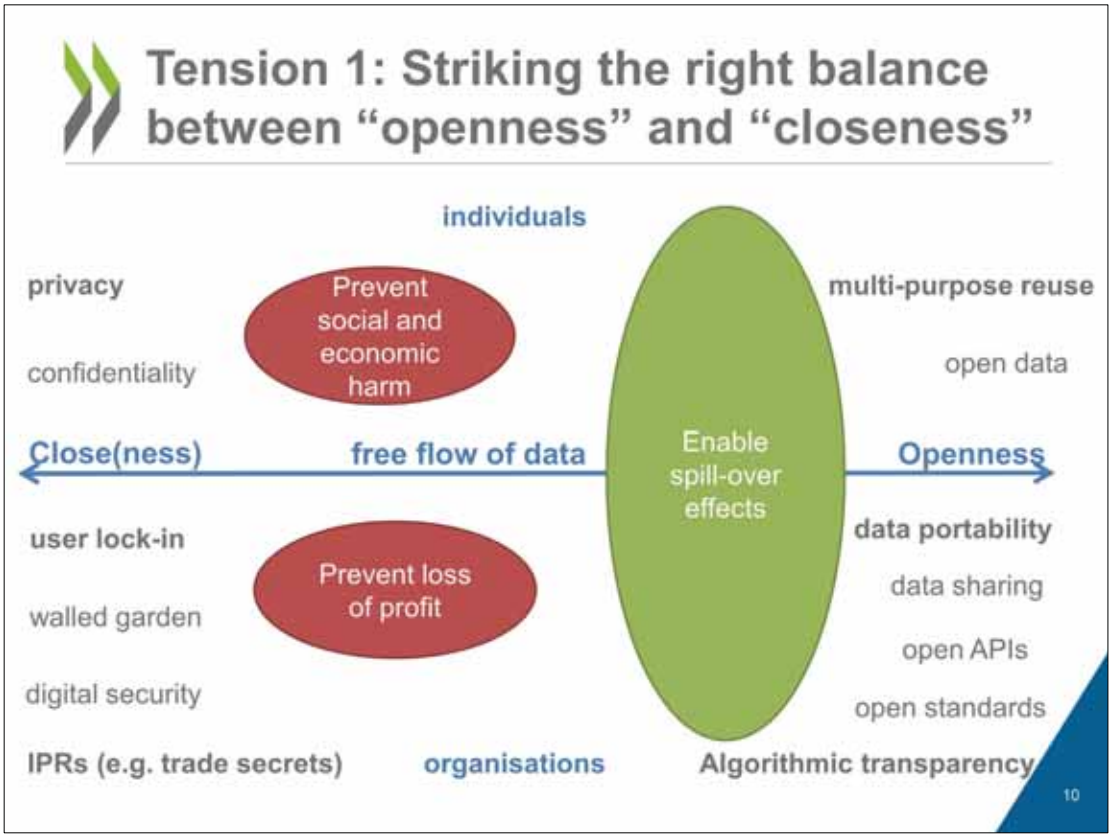
7

Data is not oil, but an infrastructure

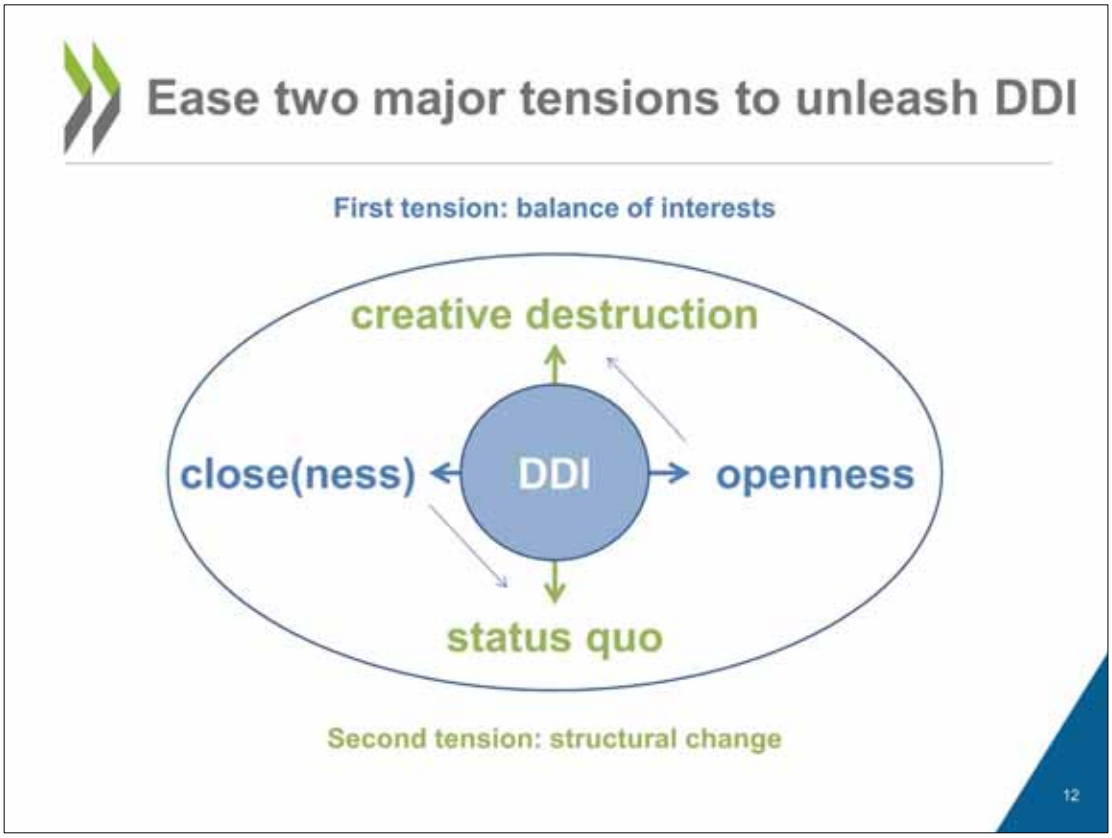
- **Data is non-rivalrous (but excludable)**
  - Data re-use and non-discriminatory access can maximize its value
  - Data enables multi-sided markets
- **Data is a capital with increasing returns**
  - Data can be re-used as input for further production
  - Data linkage is a key source for super-additive insights
- **Data is a general purpose input with no intrinsic value**
  - Data are an input for multiple purposes
  - Its value depends on complementary factors related to the capacity to extract information (e.g. skills, software)

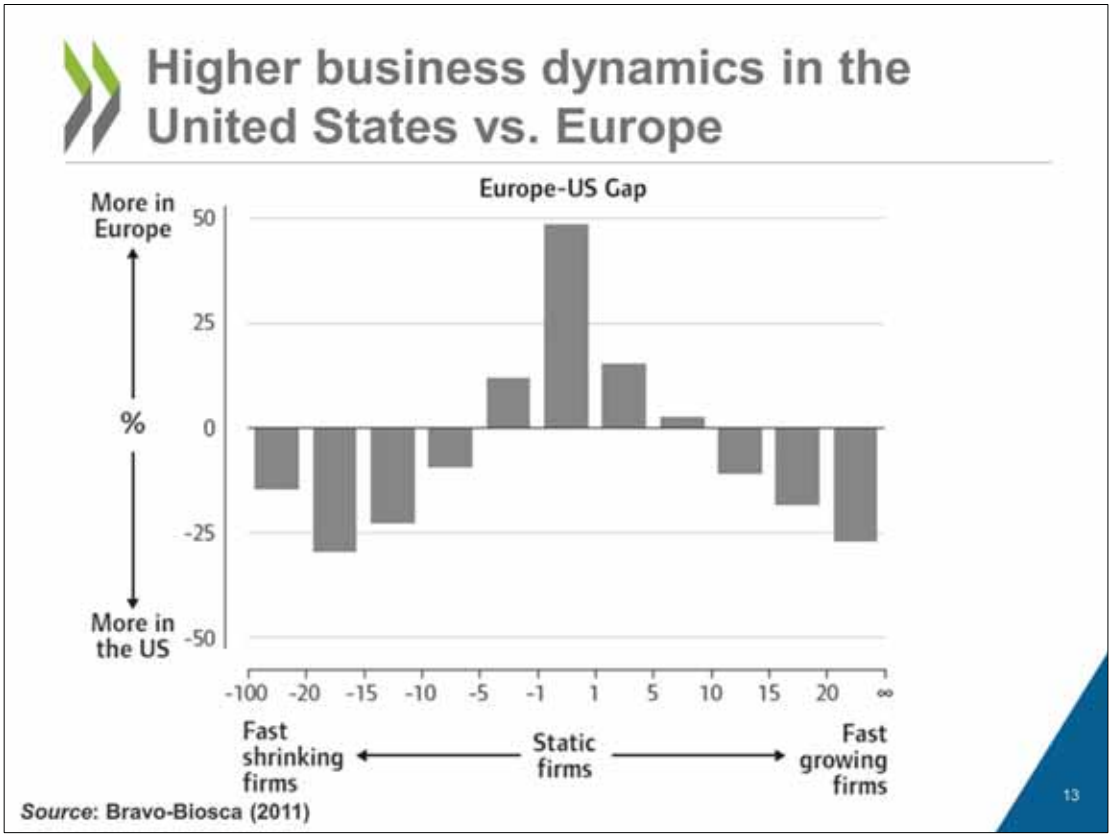
8

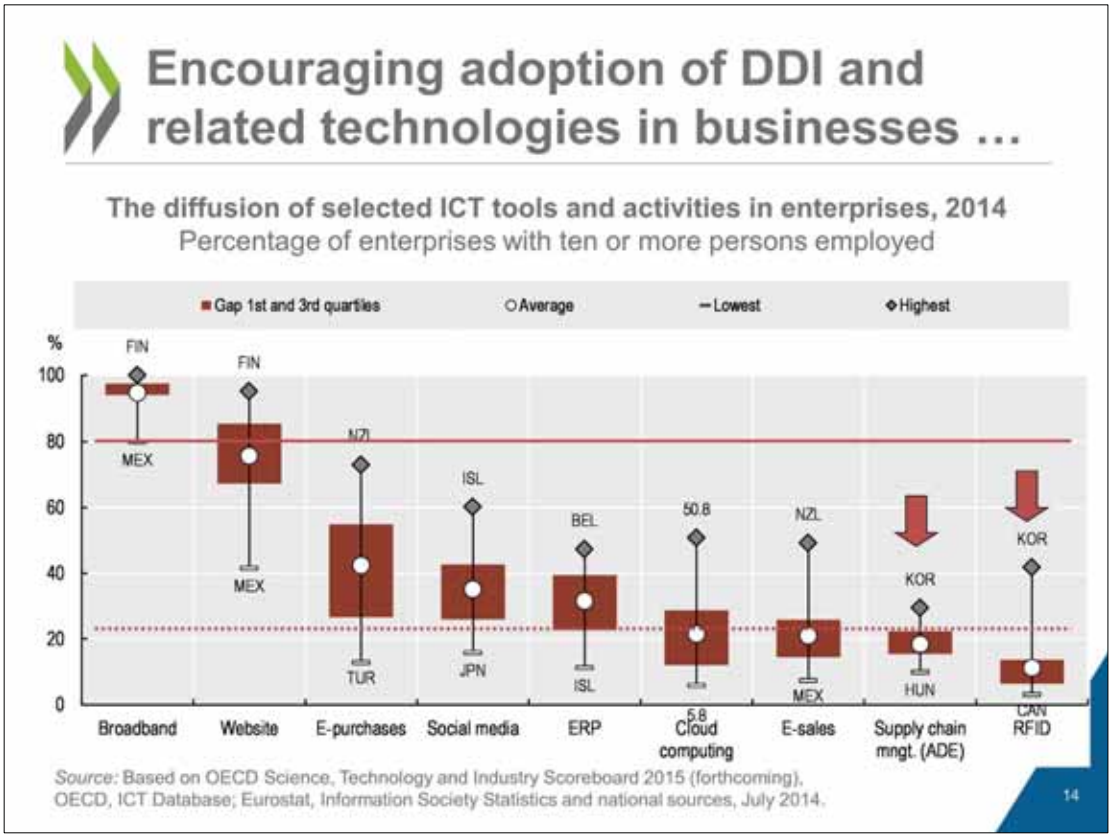

The Open-Useful-Reusable (OUR) Government data index
Data availability
Data accessibility
Government support to re-use
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Korea
France
United Kingdom
Australia
Canada
Spain
Portugal
Norway
United States
Mexico
Finland
Greece
Austria
Japan
New Zealand
OECD
Germany
Belgium
Chile
Denmark
Slovenia
Switzerland
Ireland
Italy
Estonia
Netherlands
Slovak Republic
Sweden
Poland
Turkey
Colombia
No national OGD portal
Source: 2014 OECD Survey on Open Government Data.


Tension 1: Striking the right balance between "openness" and "closeness"
individuals
privacy
confidentiality
Prevent social and economic harm
multi-purpose reuse
open data
Close(ness)
free flow of data
Enable spill-over effects
Openness
user lock-in
walled garden
digital security
Prevent loss of profit
data portability
data sharing
open APIs
open standards
IPRs (e.g. trade secrets)
organisations
Algorithmic transparency
10


Tension 2: Encouraging disruptive innovation and mitigating the risks
Lack of skills
individuals
Dynamic labour markets
Skills mismatch
Inequality and lack of participation
"Better" skills and competences
Unemployment
(Long-term) competitive ness
Status quo
creative destruction
Structural change
Competition
Risk aversion
Loss of (short-term) profit
Entrepreneurship
Investments in organisational capital
Systematic inertia
organisations
Change management
11

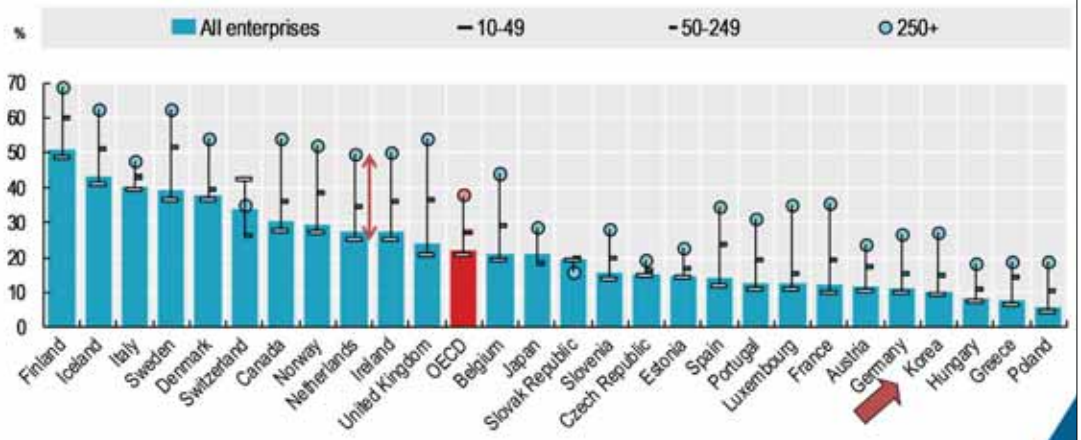

Ease two major tensions to unleash DDI
First tension: balance of interests
creative destruction
close(ness)
DDI
openness
status quo
Second tension: structural change
12


Higher business dynamics in the United States vs. Europe
Europe-US Gap
More in Europe
%
More in the US
50
25
0
-25
-50
-100 -20 -15 -10 -5 -1 1 5 10 15 20 ∞
Fast shrinking firms
Static firms
Fast growing firms
Source: Bravo-Biosca (2011)
13


Encouraging adoption of DDI and related technologies in businesses …
The diffusion of selected ICT tools and activities in enterprises, 2014
Percentage of enterprises with ten or more persons employed
Gap 1st and 3rd quartiles
Average
Lowest
Highest
%
100
80
60
40
20
0
FIN
MEX
FIN
MEX
NZL
TUR
ISL
JPN
BEL
ISL
50.8
5.8
NZL
MEX
KOR
HUN
KOR
CAN
Broadband
Website
E-purchases
Social media
ERP
Cloud computing
E-sales
Supply chain mngt. (ADE)
RFID
Source: Based on OECD Science, Technology and Industry Scoreboard 2015 (forthcoming).
OECD, ICT Database; Eurostat, Information Society Statistics and national sources, July 2014.
14

… with a focus on small and medium enterprises

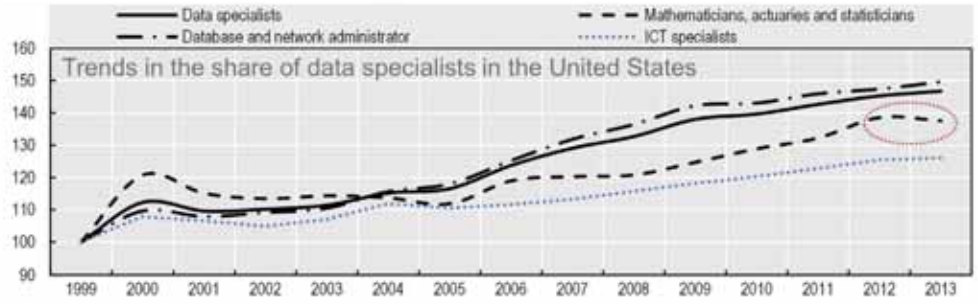
Use of cloud computing as a percentage of enterprises in each employment size class, 2014

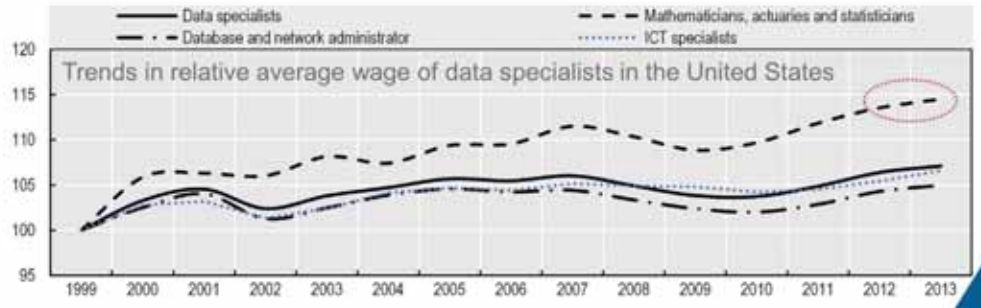


Source: OECD, ICT Database; Eurostat, Information Society Statistics and national sources, January 2015.
http://dx.doi.org/10.1787/888933224863

15

Tackle skills shortages and mismatch



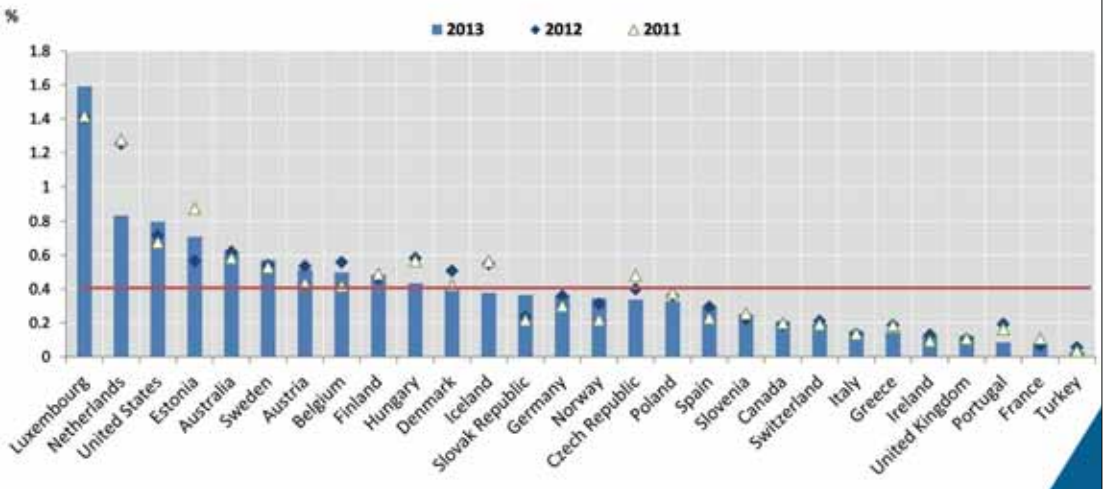


Source: Bureau of Labor Statistics, Occupational Employment Statistics (OES), November 2014.

16

The lack of data specialists is also a missed opportunity for job creation

Data specialists as a share of total employment in selected OECD countries

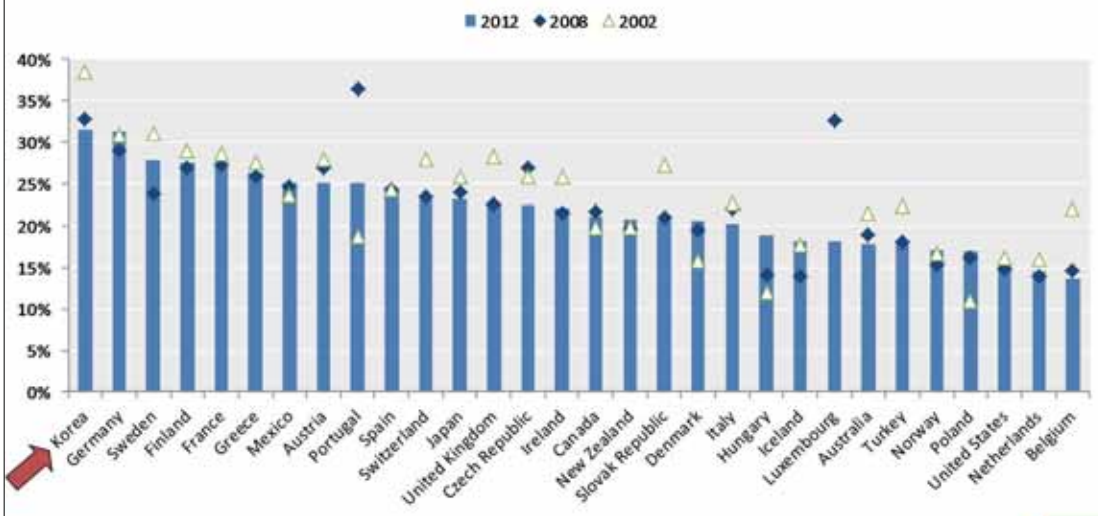


Source: OECD based on data from Eurostat, Statistics Canada, Australian Bureau of Statistics Labour Force Surveys and US Current Population Survey March Supplement, February 2015.

17

Noticeable decline in the share of STEM graduates in some countries

STEM graduates, 2002, 2008, and 2012

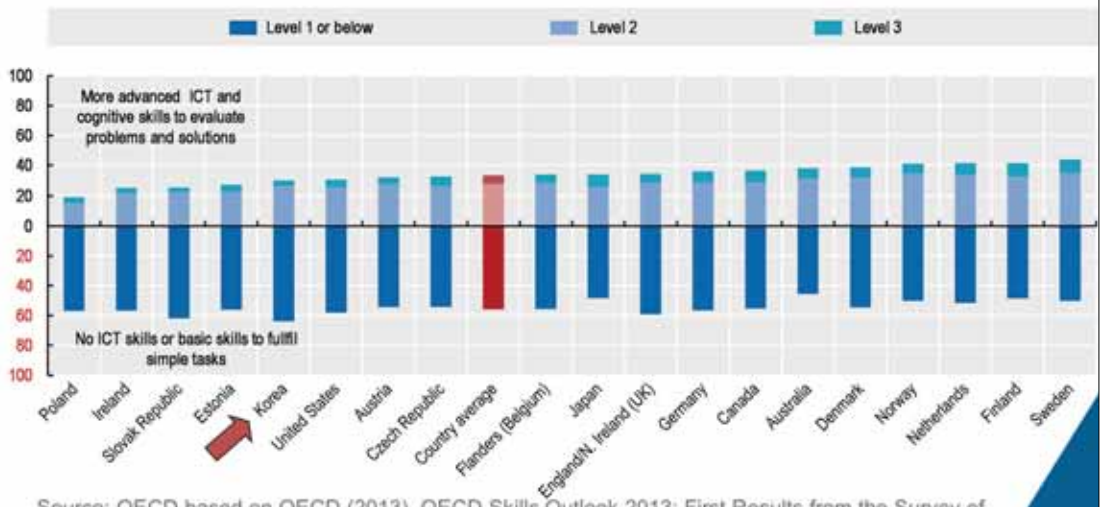


Source: OECD based on OECD (2013), OECD Skills Outlook 2013: First Results from the Survey of Adult Skills (PIAAC), OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264204256-en.

18

The large majority of the population still lack the most basic ICT skills

Adult population by level of proficiency in problem solving in technology-rich environments, 2012



Source: OECD based on OECD (2013), OECD Skills Outlook 2013: First Results from the Survey of Adult Skills (PIAAC), OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264204256-en.

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Education beyond STEM is needed

"… – it's technology married with liberal arts, married with the humanities, that yields us the results that make our heart sing."

Steve Jobs during the launch of Apple's iPad 2 in March 2011

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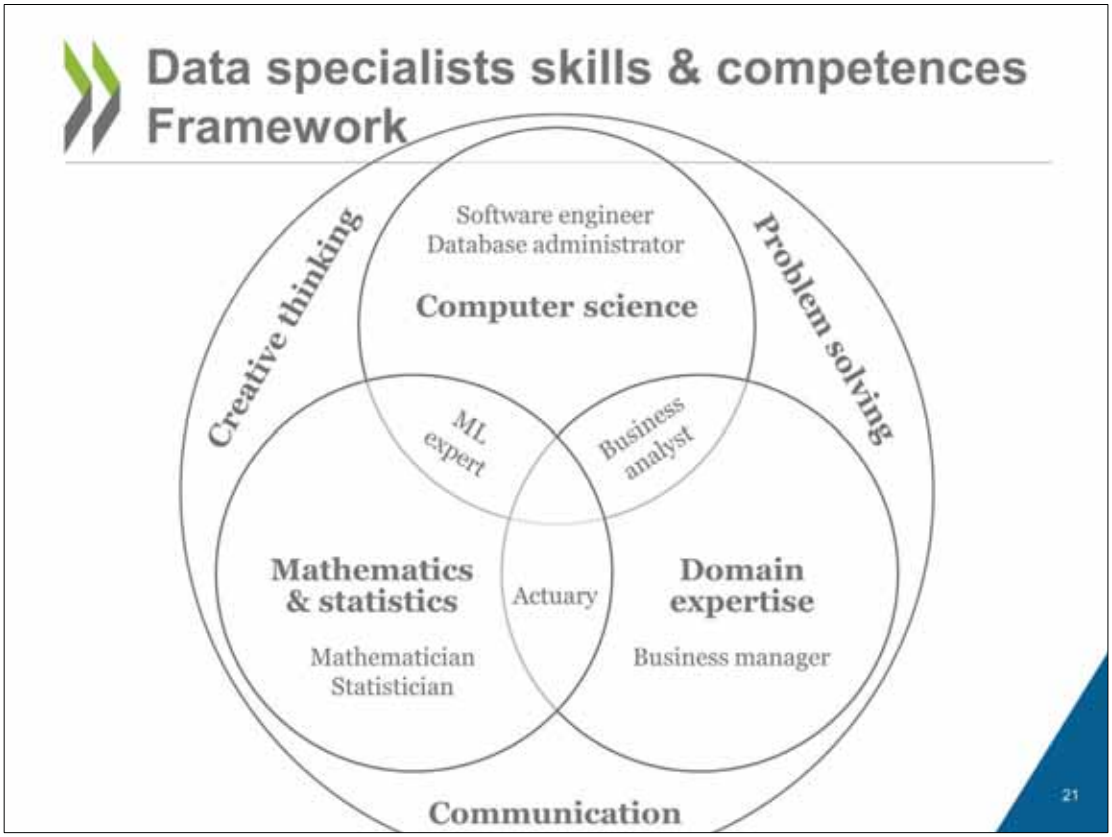
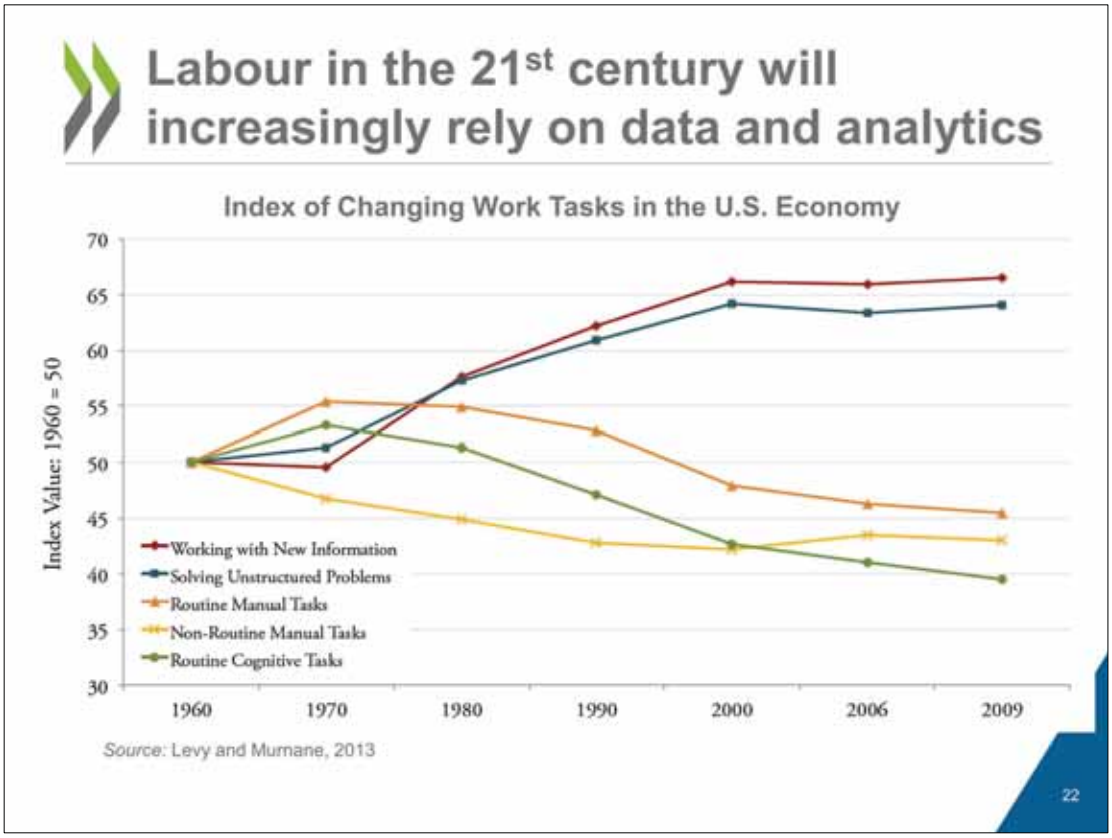
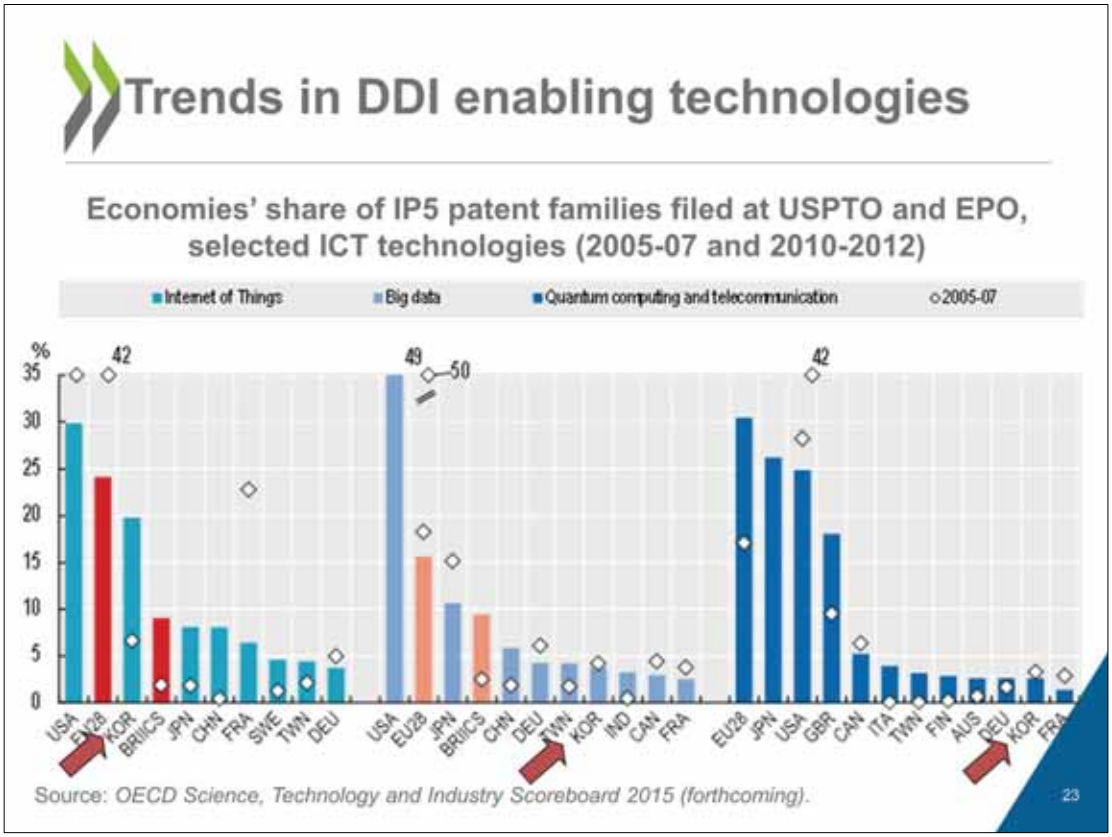
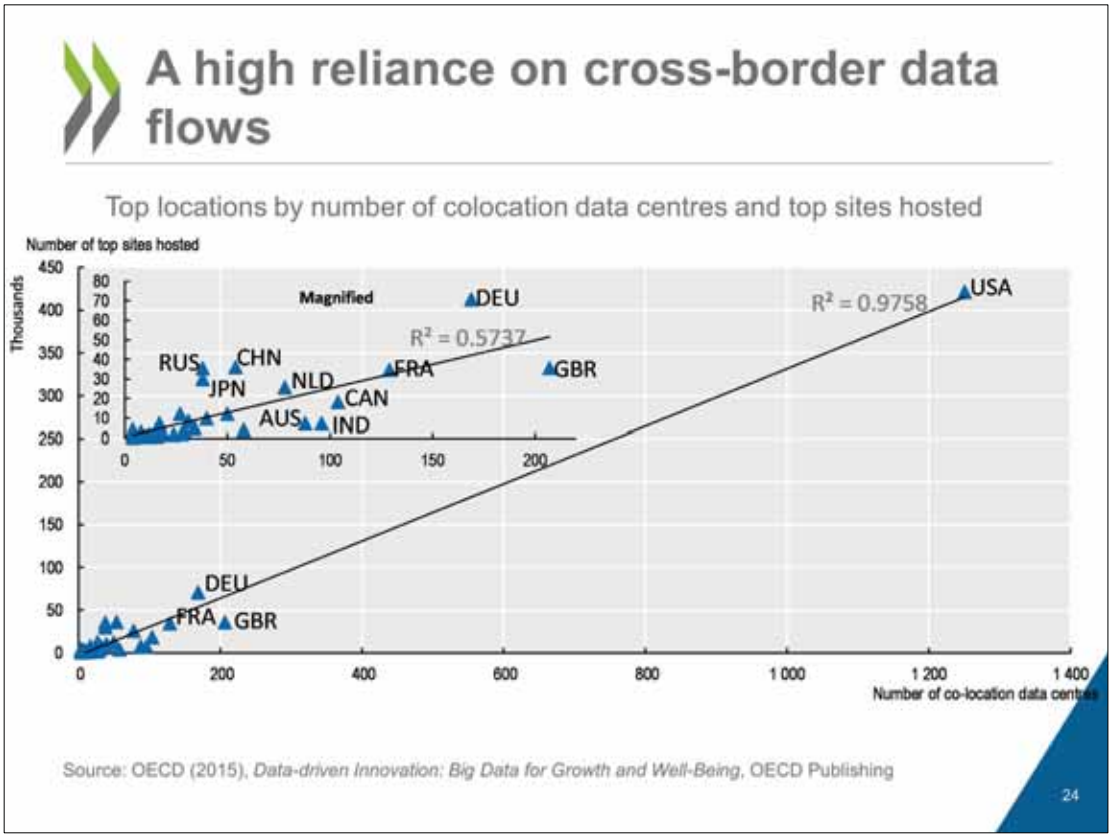

Data specialists skills & competences Framework
Creative thinking
Problem solving
Software engineer
Database administrator
Computer science
ML expert
Business analyst
Mathematics & statistics
Mathematician
Statistician
Actuary
Domain expertise
Business manager
Communication
21


Labour in the 21st century will increasingly rely on data and analytics
Index of Changing Work Tasks in the U.S. Economy
Index Value: 1960 = 50
70
65
60
55
50
45
40
35
30
1960
1970
1980
1990
2000
2006
2009
Working with New Information
Solving Unstructured Problems
Routine Manual Tasks
Non-Routine Manual Tasks
Routine Cognitive Tasks
Source: Levy and Murnane, 2013
22


Trends in DDI enabling technologies
Economies' share of IP5 patent families filed at USPTO and EPO, selected ICT technologies (2005-07 and 2010-2012)
Internet of Things
Big data
Quantum computing and telecommunication
2005-07
%
Source: OECD Science, Technology and Industry Scoreboard 2015 (forthcoming).
23


A high reliance on cross-border data flows
Top locations by number of colocation data centres and top sites hosted
Number of top sites hosted
Thousands
Magnified
R² = 0.5737
R² = 0.9758
USA
DEU
GBR
FRA
CHN
RUS
JPN
NLD
CAN
AUS
IND
Number of co-location data centres
Source: OECD (2015), Data-driven Innovation: Big Data for Growth and Well-Being, OECD Publishing
24

How ready are countries?

Note: Index in relative terms to unweighted OECD average. Index value is set to 200 where it exceeds that value.

25

DDI-related indicators: Mexico

Note: Index in relative terms to unweighted OECD average. Index value is set to 200 where it exceeds that value.

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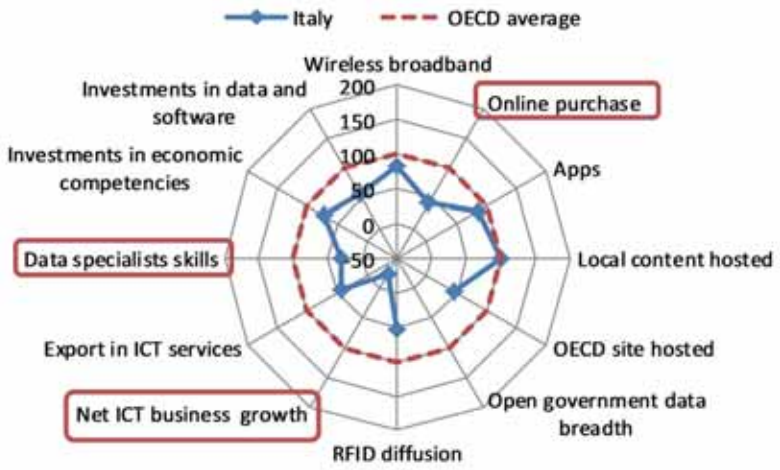
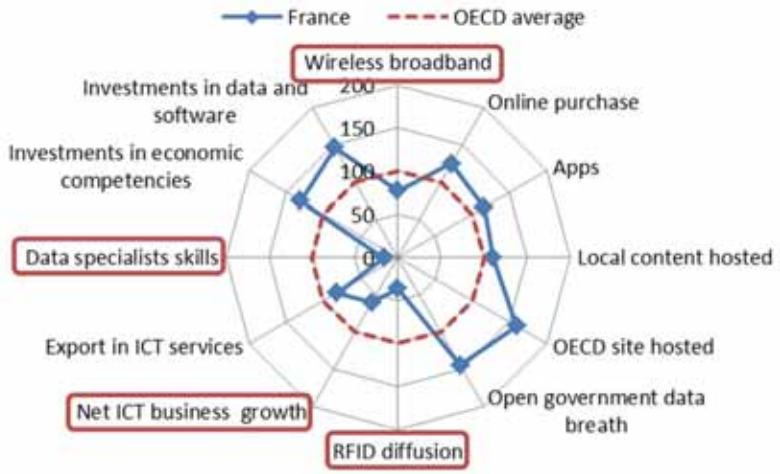
DDI-related indicators: Italy



Note: Index in relative terms to unweighted OECD average. Index value is set to 200 where it exceeds that value.

27

DDI-related indicators: France



Note: Index in relative terms to unweighted OECD average. Index value is set to 200 where it exceeds that value.

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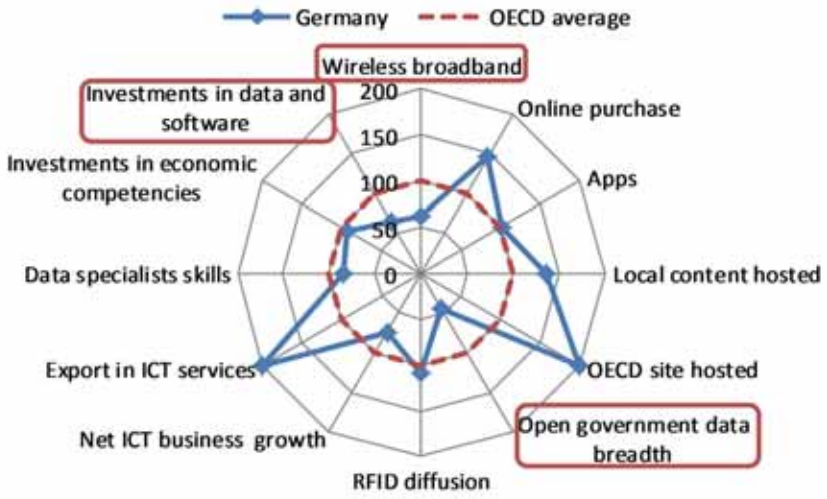
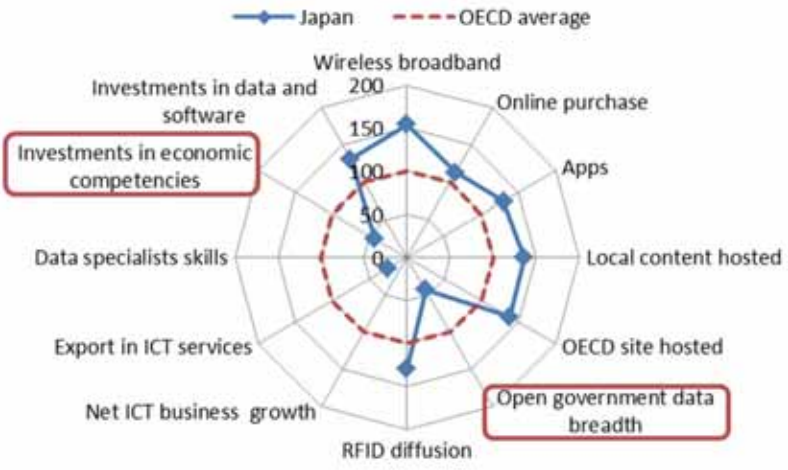
DDI-related indicators: Germany



Note: Index in relative terms to unweighted OECD average. Index value is set to 200 where it exceeds that value.

29

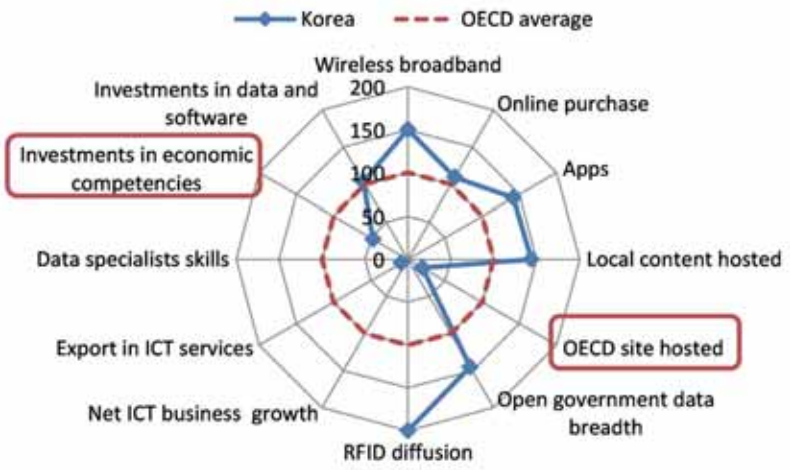
DDI-related indicators: Japan



Note: Index in relative terms to unweighted OECD average. Index value is set to 200 where it exceeds that value.

30

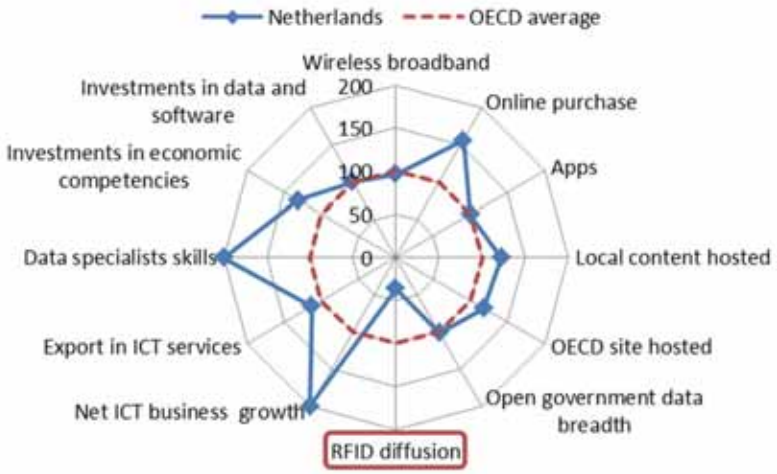
DDI-related indicators: Korea



Note: Index in relative terms to unweighted OECD average. Index value is set to 200 where it exceeds that value.

31

DDI-related indicators: The Netherlands



Note: Index in relative terms to unweighted OECD average. Index value is set to 200 where it exceeds that value.

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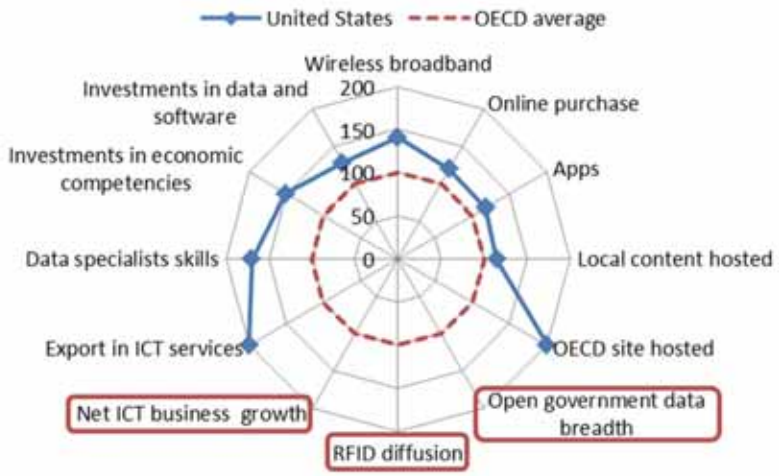
DDI-related indicators: United States



Note: Index in relative terms to unweighted OECD average. Index value is set to 200 where it exceeds that value.

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Main policy considerations

1. Recognise that infrastructure in the digital economy includes not only broadband networks, but also data
2. Encourage investments in data, data sharing and reuse, and reduce barriers to data flows that could disrupt GVCs
3. Balance between the benefits of openness and legitimate concerns over privacy and intellectual property rights
4. Focus on SMEs which face severe barriers to the adoption of DDI-related technologies
5. Address shortages of data specialist skills, which point to missed opportunities for job creation
6. Anticipate and address the disruptive force of DDI that could lead to a new digital data divide
7. Take a whole-of-government strategic approach that leverages data as the "new R&D" in innovation systems

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OECD report on Data-driven Innovation

- **Ch.1** The Phenomenon of data-driven innovation
- **Ch.2** Mapping the global data ecosystem and its points of control
- **Ch.3** How data now drive innovation
- **Ch.4** Drawing value from data as an infrastructure
- **Ch.5** Building trust for data-driven innovation
- **Ch.6** Skills and employment for a data-driven economy
- **Ch.7** Promoting data-driven scientific research
- **Ch.8** The evolution of health care in a data-rich environment
- **Ch.9** Cities as hubs of data-driven innovation
- **Ch.10** Governments leading by example with public sector data

Find out more about our work at http://oe.cd/bigdata
Christian.Reimsbach-Kounatze@oecd.org / @chreko / @OECDinnovation

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행사동정


KLRI
Recent Trend and Tasks of IT related Policy
Date & Time: May 2, Monday 10:00-13:00


Recent Trend and Tasks of IT related Policy
Host: KLRI, France OECD Headquarter


Trend and Tasks of IT related


related Policy
Host: KLRI, France OECD Headquar
OECD report on Data-driven Innovation