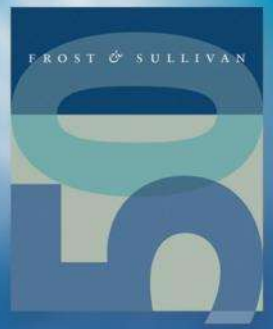
E-Government, Smart Solution and Good Governance

A perspective

By Shivaji Das,
Partner & Global Head for Public Sector
Frost & Sullivan



Agenda

1. ***About Frost & Sullivan***
2. *The Future of Government*
3. *Implications for e-Government*
4. *Smart Governance in the Smart City Context*

We enable clients to accelerate growth & achieve best-in-class positions in Growth, Innovation & Leadership

Frost & Sullivan at a glance

Global Footprint

- 40+ offices, 30 Countries
- 2000+ Consultants
- 250,000+ Clients serviced worldwide
- Fortune 1000 clients & SMEs

Consulting Services

- Corporate & Business Unit
- M&A
- Organization
- Operations
- Sales & Marketing
- Turnaround

Industry Expertise

- 12 Industries
- 50+ Product Categories
- Combination of Market, Technology, Economics & Applications

We have specialist teams that cover 12 broad industry verticals and the public sector space and collaborate to drive convergence themes

Comprehensive coverage

Aerospace & Defense

Measurement & Instrumentation

Consumer Technologies

Information & Communication Technologies

Automotive Transportation & Logistics

Energy & Power Systems

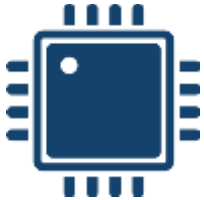
Environment & Building Technologies

Healthcare

Public Sector & Government

Minerals & Mining

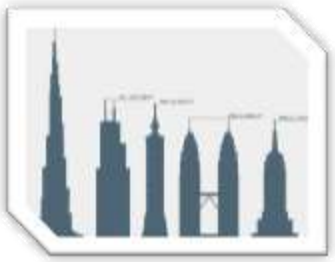
Chemicals, Materials & Food



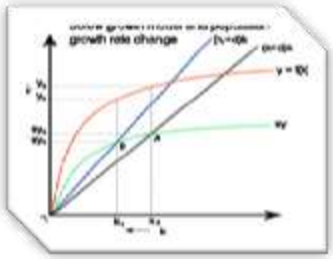
Electronics & Security

Industrial Automation & Process Control

Our dedicated Public Sector Consulting Practice has assisted government agencies in several areas:



Infrastructure Planning



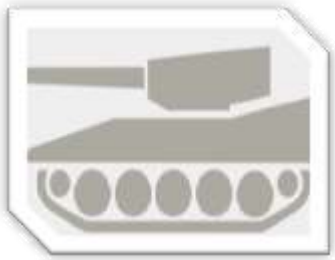
Economic Modelling

Industry Roadmap

Manpower Development

Organizational Transformation

Investment & Trade Promotion



Security & Defence

Policy & Regulatory

Stakeholder Surveys

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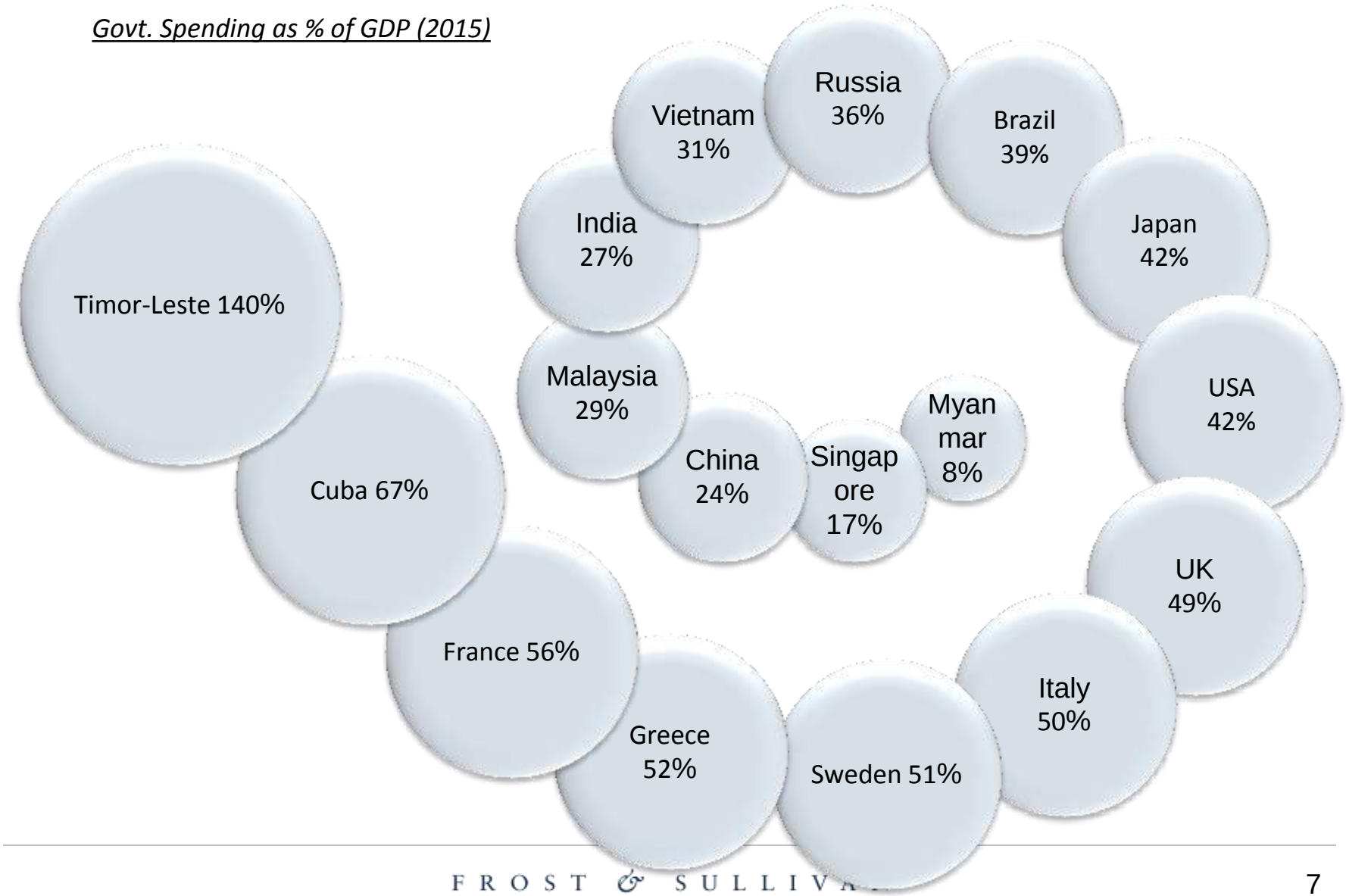
Governments have become big..

Govt. Spending as % of GDP (2015)



Just when it seemed that the government was everywhere…

It began to find itself powerless…..

Global Warming

STANDARD &POOR'S

FitchRatings

Ratings Agencies

Central Banks

… struggling to cope with megatrends…

Ageing Population

Growing Literacy

Urbanization

Increased yet fragmented awareness

Growing Individualization

Performing traditional government roles

New Forms of Community

In the face of these challenges, some are reducing their roles..

STARRING

Budget cuts $1.2trn – 10 yrs

USD 6 bn budget cuts

Budget cuts 12%

Budget cuts $13bn

….while others have already taken the path to nirvana

But, the next generation government is fighting back through outsourcing

Government

The Outsourcing Chain

IT

HR

Data Collection

Strategy

Policing

Prisons

Defense

Space Travel

Complete Outsourcing – Sandy Springs, Atlanta

It is fighting back through unique financing concepts

Government issues bonds to raise fund for objective (e.g. reduce crime)

Goals met? (Y/N)

Y

Government pays bond-buyer hefty returns

Government benefits from lower long term costs

N

Bond buyer loses money

Government suffers from high costs of future funding

…. and many other hitherto unimaginable innovations

Conditional Cash Transfers – Mexico, Brazil

Volunteering based resource allocation - UK

Chartered Schools - USA

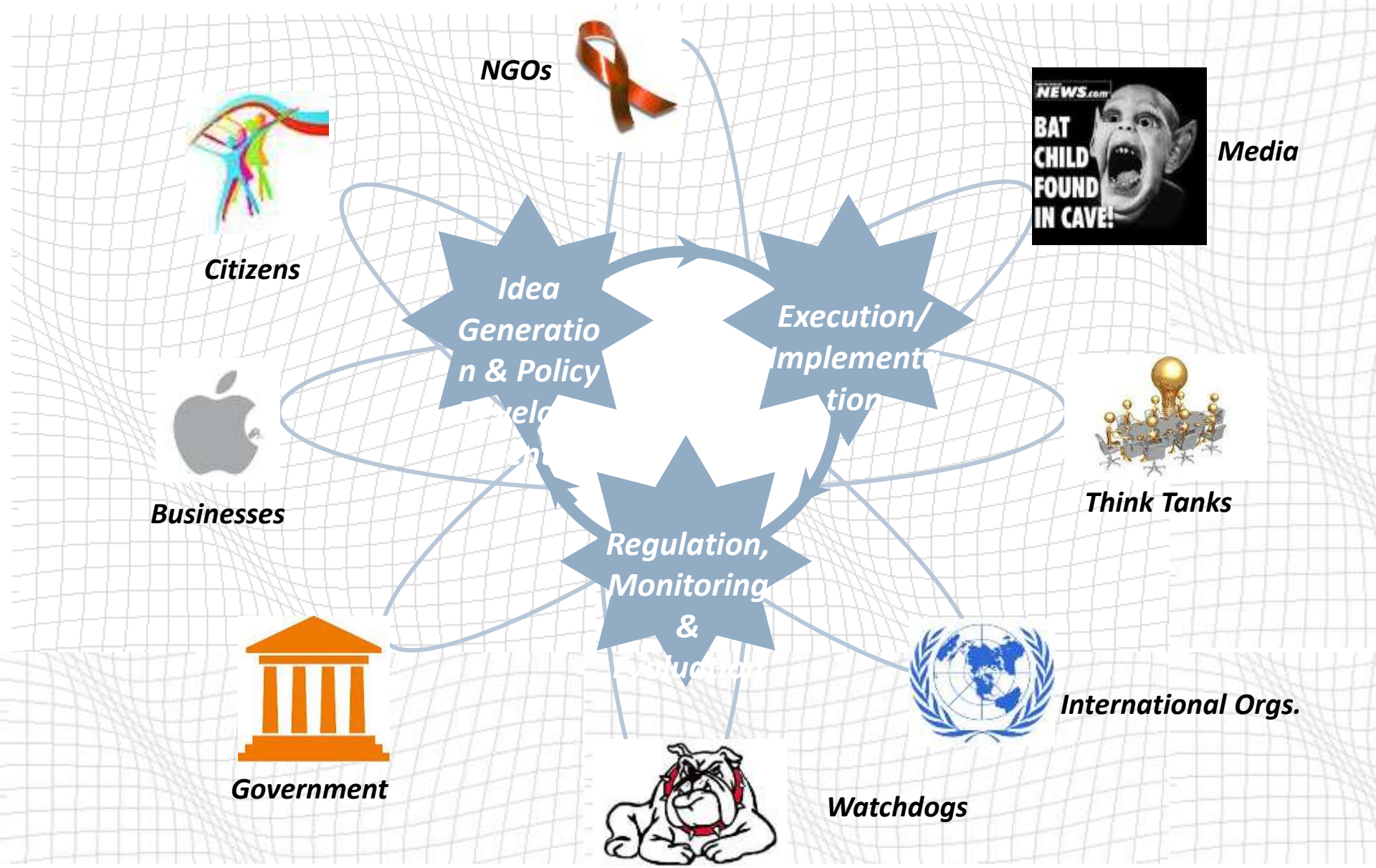
Prison reforms – Dominican Republic

Paying to stay healthy – NHS, UK

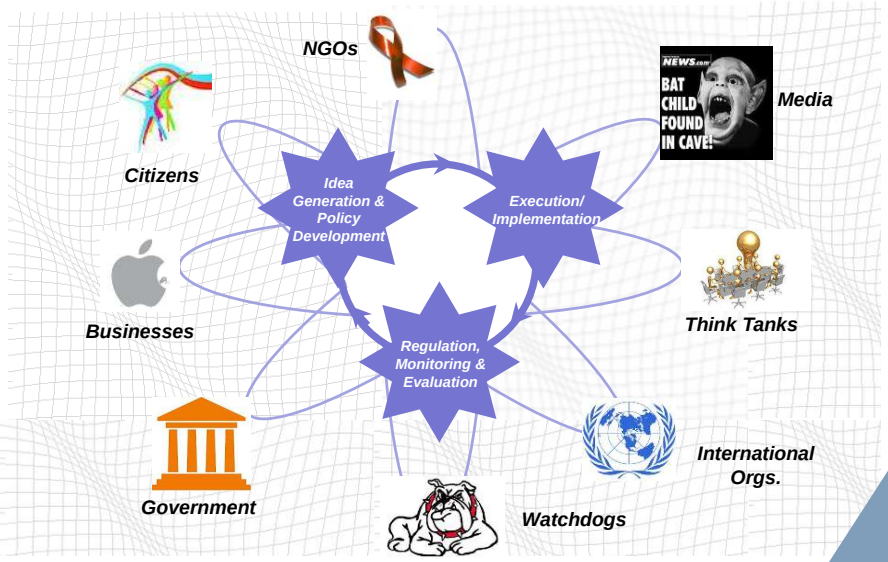
Tax no-filing – Singapore

REDD – United Nations

By 2050, most governments will be rather fluid



Features of such a society will follow post-modern principles



For all pillars of society, their role and scope will expand or contract on a case by case basis

Policies/ Ideas could come from anywhere

Implementation, Execution and Monitoring largely outsourced

Government will still retain the scepter of authority

The view of the government will depend on the perspective…

Government

From the outside….

… as a virtual authority

… as a platform provider

… as a vendor manager

From the inside….

Performance Driven

Lean, Fungible, contract based

Constantly balancing short term and long term goals

Heavily networked

Technology intensive

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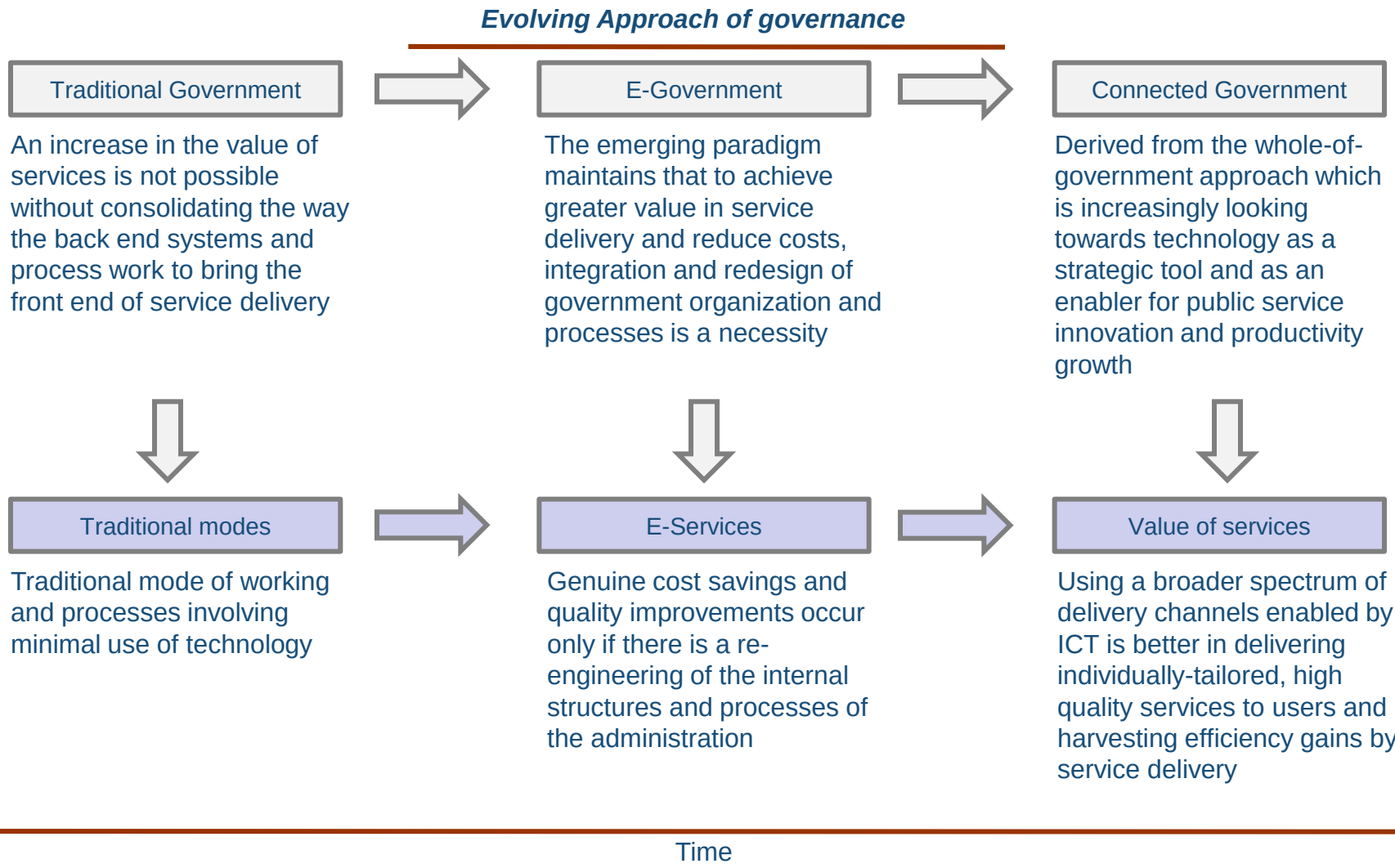
Transformative technologies have become a key factor in allowing governments to play its ever evolving role more effectively



Source: European Union, Frost & Sullivan Analysis

Governments at the frontier are increasingly exploring new technologies towards this purpose

Key Features

- Can be developed and applied by the government
- Ability to bring new approaches to the market place
- Potential to be deployed on a large scale

Key Impacts

- Change in existing establishment
- Open gate to new players
- Lead to new institutional forms
- Change the value chain and role of players
- Bring new solutions for complex problems

Several ICT driven governmental transformations are possible with the combination of emerging technologies with each role of government

- Transparency invoking change
- Changing Accountability Paradigm
- Changing Privacy Paradigm
- Networked government
- New forms of law enforcement
- Intelligent and responsive government

The examples highlighted below show the potential impact that can be created by incorporating transformative technology in government role

Transformation	*Technology*	*Impact*
Transparency Provoking Change	• PDAs and Mobile Phones • Web Technology, Knowledge Management Systems • Intelligent Agents, Semantic Web • Broadband, WiFi, WiMax	• Ubiquitous access to information resources • Stimulate the creation and dissemination of digital information • Support access to highly personalized information • Support high speed and large bandwidth data exchange
Accountability Paradigm Change	• Web Technology, Social Software • Knowledge Management Systems, Intelligent Agents	• Stimulate cross boundary cooperation and involvement of new stakeholders • Computerise procedures and decision making may support a clear and unambiguous practice • Quantification of the accountability process

Where countries stack up in this race

Country	2013 Ranking (Score)	2014 Ranking (Score)	2015 Ranking (Score)	Change in Rank (2013-2015)
Singapore	1 (94.00)	2 (93.77)	1 (93.80)	-
USA	3 (93.12)	1 (94.00)	2 (93.58)	+1
Denmark	8 (83.52)	11 (79.06)	3 (91.25)	+5
UK	5 (88.76)	4 (90.40)	4 (90.17)	+1
South Korea	4 (92.29)	3 (92.39)	5 (89.39)	-1
Japan	6 (88.30)	5 (88.00)	6 (87.77)	-
Australia	11 (82.10)	9 (82.37)	7 (86.30)	+4
Estonia	19 (71.76)	7 (84.41)	8 (84.87)	+11
Canada	12 (81.78)	6 (85.30)	9 (81.45)	+3
Norway	17 (75.53)	13 (77.97)	10 (79.63)	+7
Sweden	7 (87.80)	10 (81.93)	11 (77.95)	-4
Austria	-	15 (76.66)	12 (77.26)	+3 (2014-2015)
New Zealand	16 (77.29)	12 (79.04)	13 (76.66)	+3
Finland	2 (93.18)	8 (82.69)	14 (76.49)	-12
Germany	14 (80.08)	16 (75.97)	15 (76.46)	-1
France	20 (69.49)	19 (74.48)	16 (73.39)	+4
Taiwan	**8 (83.52)**	**18 (74.51)**	**17 (72.76)**	**-9 (-11.26)**
Belgium	18 (72.01)	21 (69.97)	18 (71.69)	-
Iceland	-	-	19 (69.73)	-
Netherlands	10 (82.54)	17 (75.80)	20 (69.53)	-10

Source: Waseda – IAC international e-Government Ranking

Where countries stack up in this race

Top 5 countries in each aspect

Network Preparedness	Government CIO	Online Services	Cyber Security
Netherlands	Singapore	Denmark	Denmark
Denmark	Korea	Estonia	Estonia
Singapore	USA	Korea	New Zealand
USA	Japan	Singapore	Australia
Iceland	Canada	Iceland	UK

Management Optimization	National Portal	e-Government Promotion	E-Participation/ Digital Inclusion	Open Government
Singapore	Denmark	Sweden	Australia	Australia
Canada	Estonia	USA	Estonia	Canada
Denmark	Singapore	Singapore	UK	USA
Estonia	USA	Korea	Canada	Denmark
Netherlands	Australia	Japan	Denmark	Germany

Source: Waseda – IAC international e-Government Ranking

5 common mistakes

- Finding a Way to Offline
- Getting limited by physical infrastructure
- Complexity finds its way in
- Ad-Hoc Execution, Limited Re-thinking
- No Change of Mind-set and Organization

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What is a Smart City?

*"A Smart City is an **enabling platform built by the government,** for the people, to **understand and manage the interactions** between people and the infrastructure in a city and to **guide informed policy** making through the **intelligent usage of technology**."*

- Although technology is a enabling platform to achieve the goals and vision of a smart city, technology should not be equated with smart city itself.

Source: Frost & Sullivan
Picture: Designed by Freepik.com

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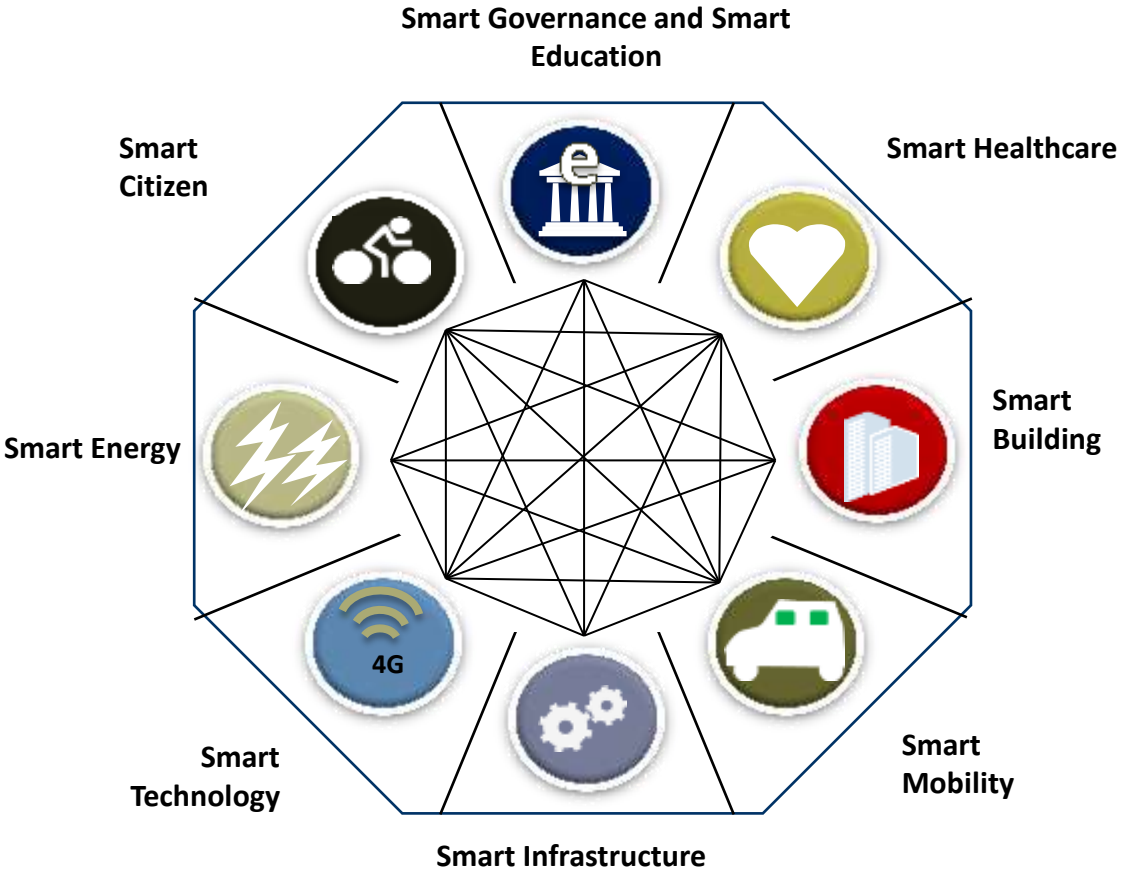
Overview and Introduction: Definition of Smart Cities

Smart cities are cities built on smart and intelligent solutions and technology that will lead to the adoption of at least 5 of the 8 following smart parameters



Note: Smart security is included as a part of the smart Infrastructure segment in this exhibit.

Source: Frost & Sullivan

Key Parameters That Will Define a Smart City

Smart Energy: Digital Management of Energy

- Smart Grids
- Smart Meters
- Intelligent Energy Storage

Smart Buildings: Automated Intelligent Buildings

- Intelligent Buildings
- Building Automation
- Building integrated Photovoltaic

Smart Mobility: Intelligent Mobility

- Integrated Mobility Solutions
- Parking Management
- Low-emission Mobility

Smart Technology: Seamless Connectivity

- Broadband penetration rate of over 80%
- 50% of households to have smart home
- Smart Personal Devices

Smart Infrastructure: Digital Management of Infrastructure

- Sensor Networks
- Digital Water and Waste Management
- Security Solutions

Smart Healthcare: Intelligent Healthcare Technology

- Use of eHealth and mHealth systems
- Intelligent and connected medical devices

Smart Governance: Government-on-the-Go

- e-Government
- e-Education
- Disaster Management Solutions

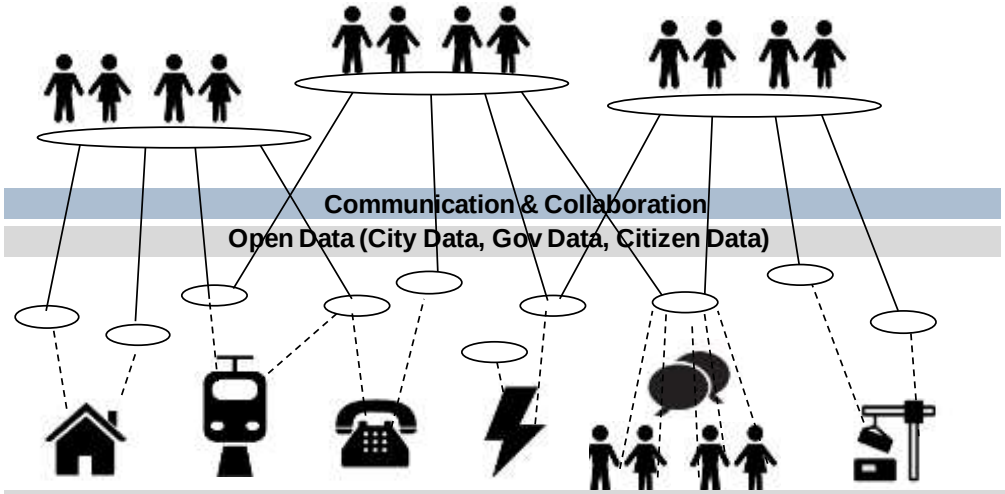
Smart Citizen: Civic Digital Natives

- Use of Green Mobility Options
- Smart Lifestyle Choices
- Energy conscious

Source: Frost & Sullivan analysis.

Developing a city platform to enable collaboration and co-innovation with citizens and businesses

Data driven services and business models



Service mashup: City application Software as a service leveraging shared city data a enabling the incubation of new open services and business model.

City middleware: City Platform as a Service, supporting communication, collaboration & orchestration. Data centric architecture and data framework leveraging on core industries in data center, IoT, cyber security &BDA to enable the offering of everything as a service.

Vitalizing the city: Sensorizing the city with sensors, actuators, digital signage, and cameras and offering the ability to access the sensor data via cloud by citizens, business and across government agencies.

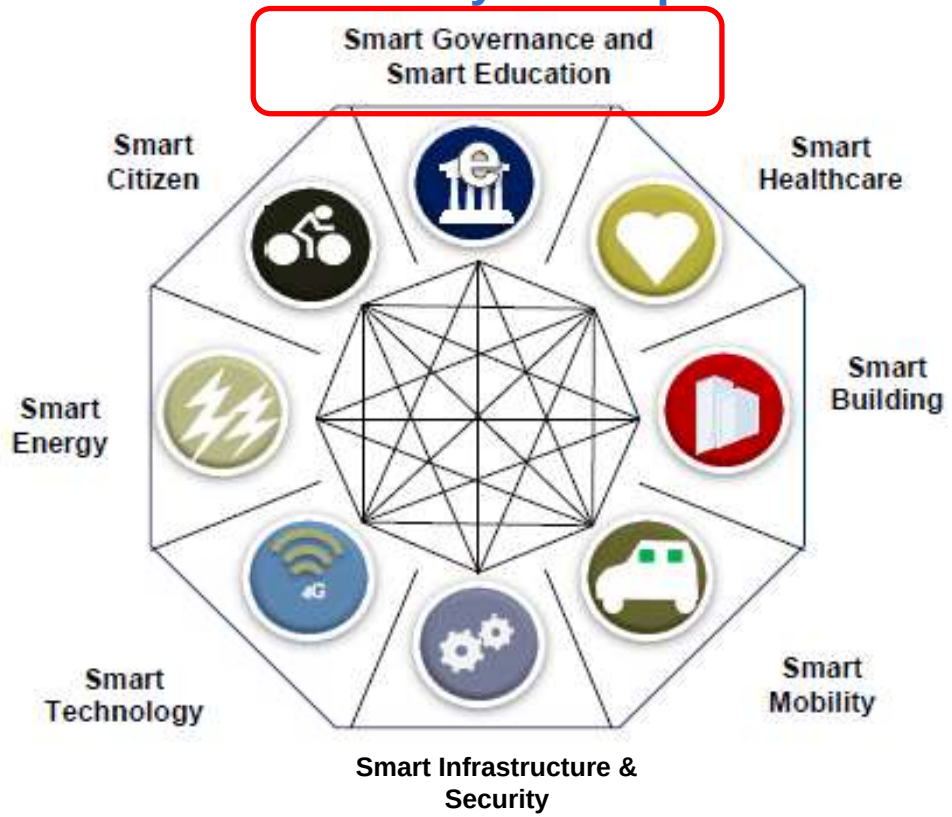
The Vision: Creating a city platform to enable innovation

- The creation of an innovation capital with **innovation labs** and development.
- Creation of **incubation hubs** and **living labs** as proof of concept to enable testing
- Revitalizing existing industries (ICT-data center, telecommunications . Other core industries - Manufacturing & logistics with IoT, 3D printing and logistics as a service), encouraging the flourishing of new industries (BDA and cyber security).

Source: Frost & Sullivan
Picture:Designed by Freepik.com

Smart Governance is one of the key dimensions for the overall Smart City concept

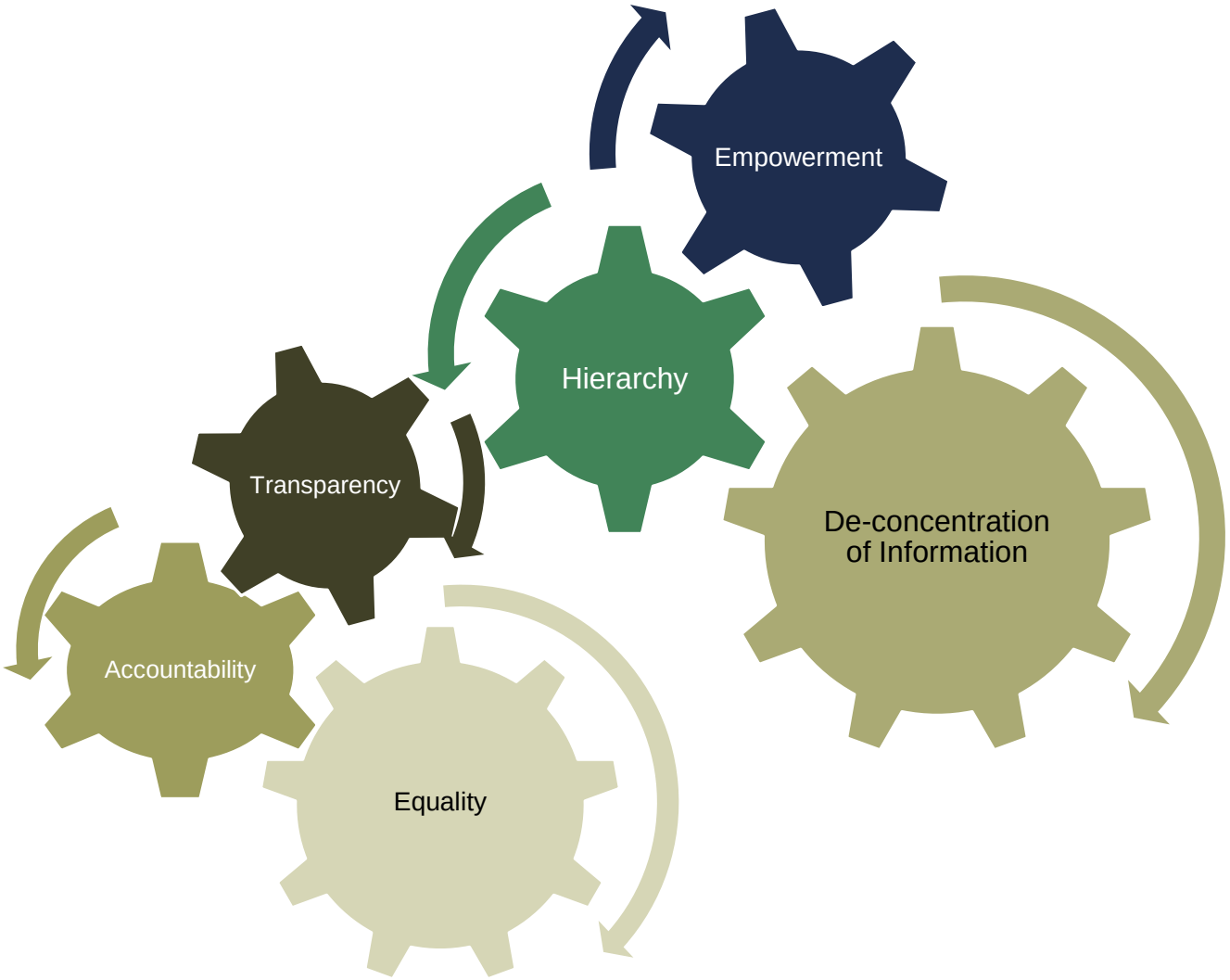
Smart City Concept



These 8 concepts in the Smart City diamond model needs to be mapped with citizen's expectations and Governments Vision to have an implementation roadmap which can be successfully executed to raise the overall quality of life

Source: Frost & Sullivan

So…. WHAT DOES Smart Governance REALLY mean?

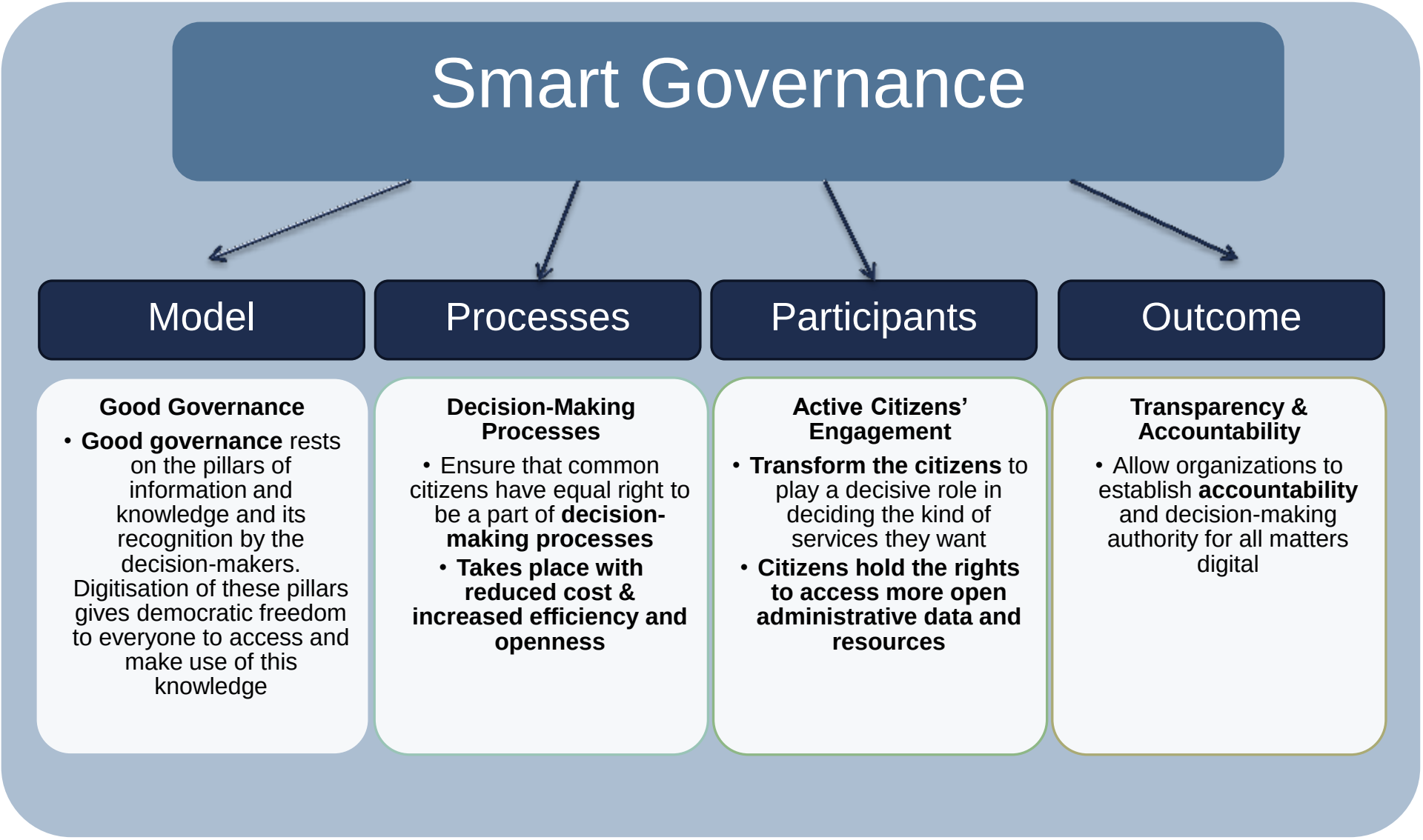


Effects of Smart Governance in terms of Citizen-Governance Relationship

	Conventional Governance	Smart Governance
Mode of Participation	Representative Off-Site Participation	Individual/ Collective On-Site Participation
Forms of Interaction	Passive Reactive	Pro-Active & Interactive
Impact & Speed	Indirect	Direct / Immediate / Real-Time

Source: Digital Governance Models, UNDP

The key pillars of Smart Governance?



Objectives of Smart Governance

Open Governance, Greater Transparency

- Increased accountability
- Gain public trust and confidence

More Prudent & Efficient Financial Control

- Better organized budget spending
- More convenience for the citizens to utilize public services

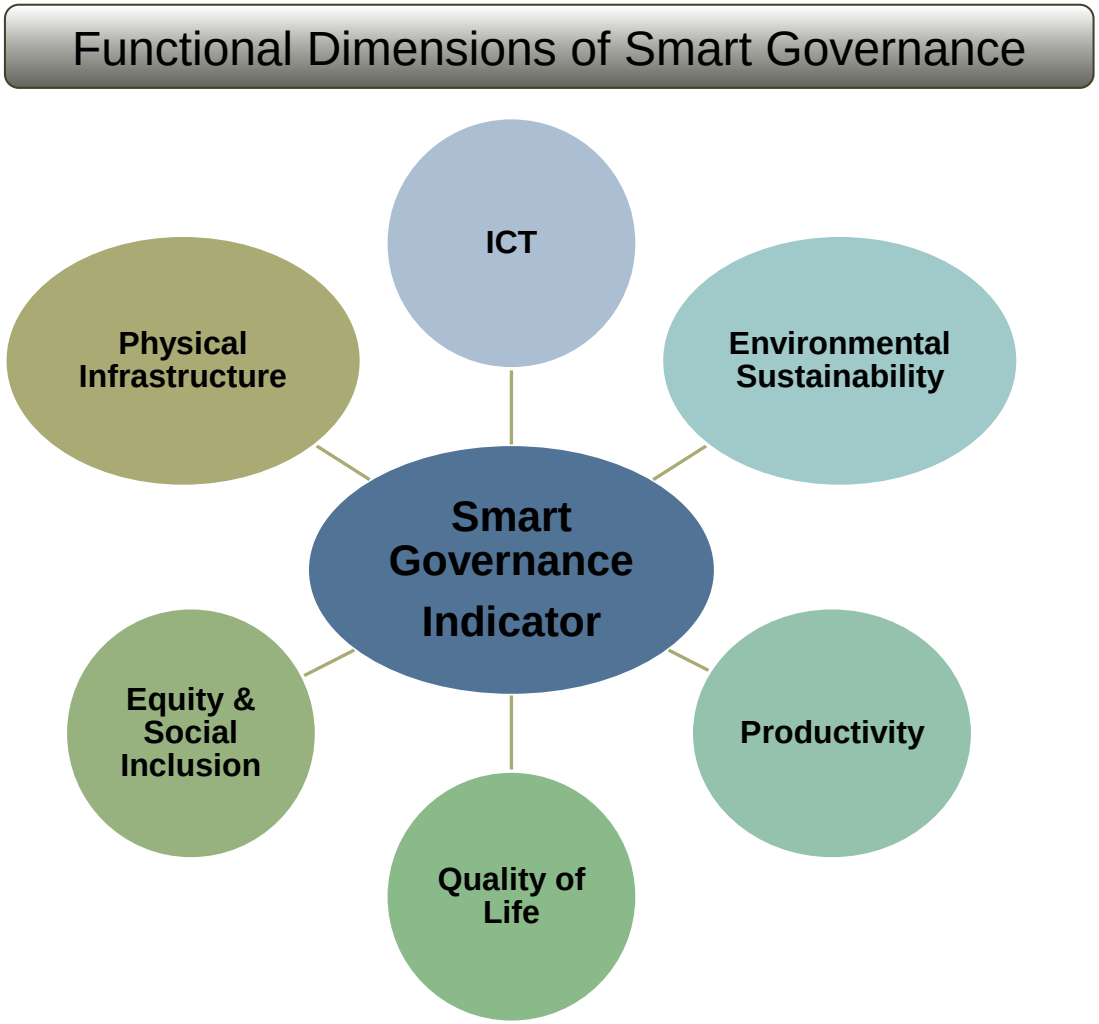
Increased Power of Stakeholders

- Greater reach of audience
- Empowers citizens who were previously excluded from decision-making processes

Smart Governance Indicators (Overview)

Participation in decision-making	Public and social services	Transparent governance
• City representatives per resident • Political activity of inhabitants • Importance of politics for inhabitants • Female city representatives	• Expenditure of the municipal per resident in PPS • Children in day care • Perception of quality of schools	• Perception on transparency of bureaucracy • Perception on fight against corruption

How do we measure Smart Governance – Designing Process



Smart Governance Indicators - ICT

ICT	D1.1 Network facilities	I1.1.1 Fixed (wired)-broadband subscriptions per 100 inhabitants
		I1.1.2 International Internet bandwidth (bit/s) per Internet user
		I1.1.3 Wireless-broadband subscriptions per 100 inhabitants
		I1.1.4 Percentage of households with Internet access
		I1.1.5 Coverage rate of next-generation broadcasting network
		I1.1.6 EMF compliance framework in place
		I1.1.7 Planning legislation incorporates ICT networks and antenna requirements
		I1.1.8 ICT EMF information availability to the public
	D1.2 Information facilities	I1.2.1 Percentage of enterprises providing network-based services (e-commerce, e-learning, e-entertainment, cloud computing)
		I1.2.2 Proportion of business based on cloud computing
		I1.2.3 Proportion of business based on GIS (location, navigation, etc.)
		I1.2.4 Percentage of households with at least one computer
		I1.2.5 Level of cyber-security
		I1.2.6 Ratio of children online protection

Smart Governance Indicators – Environmental Sustainability

Environmental sustainability	1 Environment	I2.1.1 Proportion of information published on environmental quality
		I2.1.2 Progress degree of ICT in the protection of main city water resources
		I2.1.3 Effect of flood control monitoring by means of ICT measures
		I2.1.4 Proportion of water pollution control by means of ICT measures
		I2.1.5 Proportion of air pollution monitoring by means of ICT measures
		I2.1.6 Proportion of toxic substances monitoring by means of ICT measures
		I 2.1.7 Proportion of noise monitoring by means of ICT measures
		I2.1.8 Solid waste disposal management with ICT measures
	2 Energy and natural resources	I2.2.1 Improvement of civilian electricity usage (per capita) with ICT measures
		I2.2.2 Improvement of industrial electricity usage (per GDP) with ICT measures
		I2.2.3 Improvement of civilian water usage (per capita) with ICT measures
		I2.2.4 Improvement of industrial water usage (per GDP) with ICT measures
		I2.2.5 Improvement of fossil fuel usage with ICT measures (per GDP)
		I2.2.6 Improvement of rare metal/noble metal usage (per GDP) with ICT measures

Smart Governance Indicators – Productivity

Productivity	1 Innovation	I3.1.1 Percentage of R&D expenditure in GDP
		I3.1.2 Ratio of knowledge-intensive enterprises
		I3.1.3 Revenue share of knowledge-intensive enterprise
		I3.1.4 Patent number per 100,000 inhabitant
		I3.1.5 Importance as decision-making centre (HQ, etc.)
		I3.1.6 SSC new projects opportunities
		I3.1.7 Penetration of teleworking system
		I3.1.8 Improvement of traditional industry with ICT
	2 Economic sustainability	I3.2.1 Percentage of knowledge economy in total investment
		I3.2.2 Percentage of knowledge economy in GDP
		I3.2.3 Employment rate in knowledge-intensive sectors
		I3.2.4 Percentage of e-commerce transaction amount

Smart Governance Indicators – Quality of Life

Quality of life	1 Convenience and comfort	I4.1.1 Satisfaction with online commercial and financial services
		I4.1.2 Satisfaction with environmental safety
		I4.1.3 Convenience of government services
		I4.1.4 Convenience of smart traffic information administration and service
		I4.1.5 Satisfaction with quality of public transport
		I4.1.6 Satisfaction with crime prevention and security control
		I4.1.7 Satisfaction with countermeasures against disaster
		I4.1.8 Satisfaction with food drug safety monitoring
		I4.1.9 Convenience of urban medical care
		I4.1.10 Convenience for citizens to access education resource
		I4.1.11 Perception of proof against risk of poverty
		I4.1.12 Satisfaction with housing conditions
	2 Security and safety	I4.2.1 Accident prediction ratio
		I4.2.2 Penetration of ICT for disaster prevention
		I4.2.3 Publication rate of disaster alert
		I4.2.4 Penetration of city video surveillance
	3 Health care	I4.3.1 Percentage of archiving electronic health records for residents
		I4.3.2 Usage rate of electronic medical records
		I4.3.3 Sharing rate of resource and information among hospitals
		I4.3.4 Coverage rate of household e-health services
	4 Education and training	I4.4.1 Effectiveness of hatching smart tech from knowledge centres (research centres, universities etc.)
		I4.4.2 Penetration of e-learning system

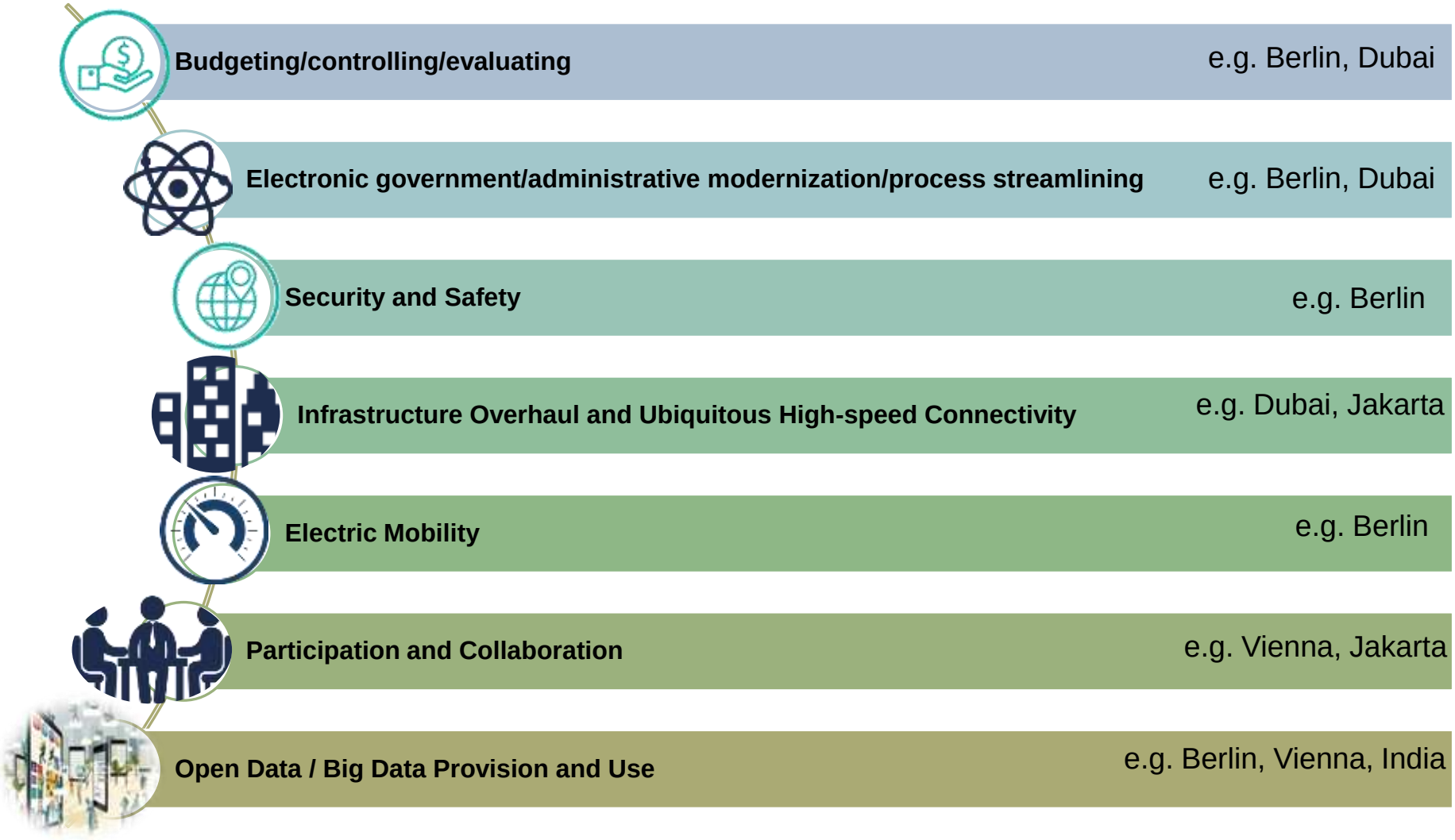
Smart Governance Indicators – Equity and Social Inclusion

Equity and social inclusion	1 Openness and public participation	I5.1.1 Immigration-friendly environment contributed by ICT measures
		I5.1.2 Improvement of turnout at city hearings by means of ICT
		I5.1.3 Online civic engagement
	2 Social sustainability	I5.2.1 Feasibility of appealing online
		I5.2.2 Atmosphere of free online comment
		I5.2.3 Contribution in increasing consciousness of citizenship and social coherence
	3 Governance sustainability	I5.3.1 Digital access to urban planning and budget document
		I5.3.2 Appliance of smart community services
		I5.3.3 Penetration rate of government online services
		I5.3.4 Percentage of government information open
		I5.3.5 Penetration of smart impediment removal (accessibility) system

Smart Governance Indicators – Physical Infrastructure

Physical infrastructure	1 Building	I6.1.1 Application level of energy saving technologies in public buildings
		I6.1.2 Percentage of public buildings with integrated technologies
		I6.1.3 Proportion of smart home automation adoption
	2 Transport	I6.2.1 Coverage of installation of road sensing terminals
		I6.2.2 Coverage of parking guidance systems
		I6.2.3 Coverage of electronic bus bulletin board
	3 Sanitation	I6.3.1 Sewage discharge management with ICT measures
		I6.3.2 Improvement of waste water recycling with ICT measures
	4 Municipal pipe network	I6.4.1 Drainage system management with ICT measures
		I6.4.2 Lighting system management with ICT measures
		I6.4.3 Gas system management with ICT measures
		I6.4.5 Water saving smart metering
		I6.4.6 Electricity supply system management with ICT measures
		I6.4.7 Improvement of underground pipelines and spatial integrated administration with ICT measures

Smart Governance Initiatives



The Path for Digital Governance to Mature

Implementation of Digital Governance takes time to successfully mature and function

The Digital Governance Maturity Curve

Source: Digital Governance Models, UNDP

Smart Governance is an invaluable mechanism to address societies' concerns regarding Smart Cities

Privacy concerns

Security concerns

What's in it for me?

Vulnerability concerns

Identity concerns

Too much Structure?

Thank you