Smart City Promotion Policy and Strategy

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Working Experience
  - **Professor of Soongsil University(Sept 2011~)**
  - **Researcher, ZTC Corrporation(2013.9~)**
  - **Researcher, UNIZON Corporation(2010.4.~2011.9)**
  - **Researcher, the Korea Chamber of Commerce Industry(March 2002 ~**
          January 2004)

◦**Educational Background**
  - **BA on Accounting, Soongsil University(March. 1992 ~ Aug., 1998)**
  - **MS on Accounting Information System, Soongsil University (March, 1999 ~**
    Aug., 2001)
  - **Ph.D. on Management Information Systems, Soongsil University (March.**
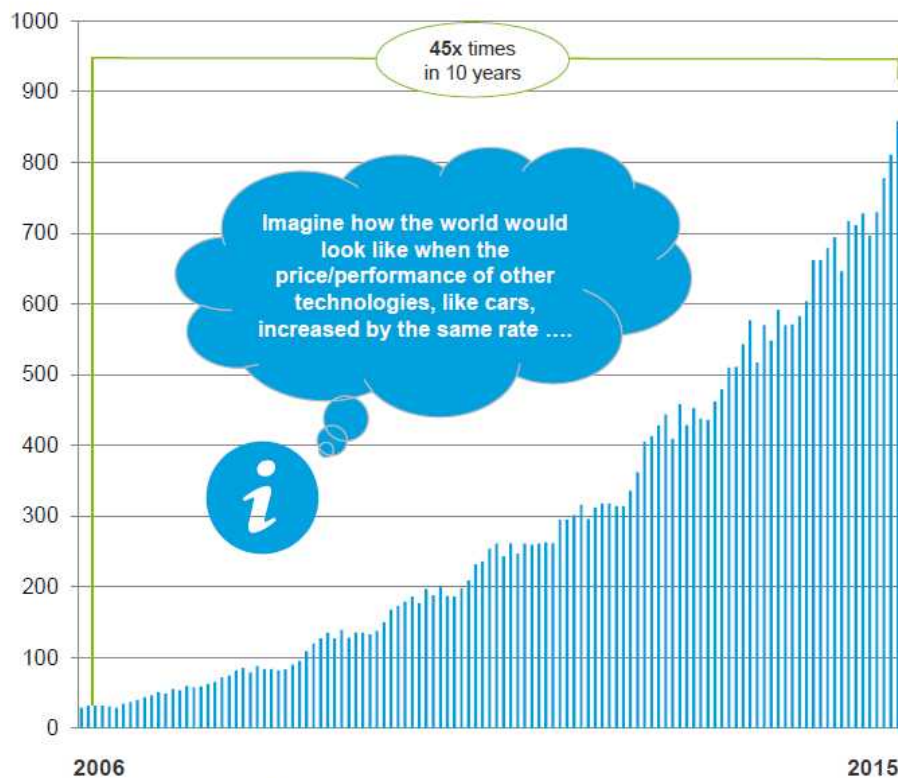   **2002 ~ Feb., 2008)**

1. **Digital Economy**
2. **What's Smart City**
3. **Challenges for Smart Cities**
4. **Capability Framework and Maturity Model**
5. **Smart Cities in Korea**
6. **Appendix – for AP**

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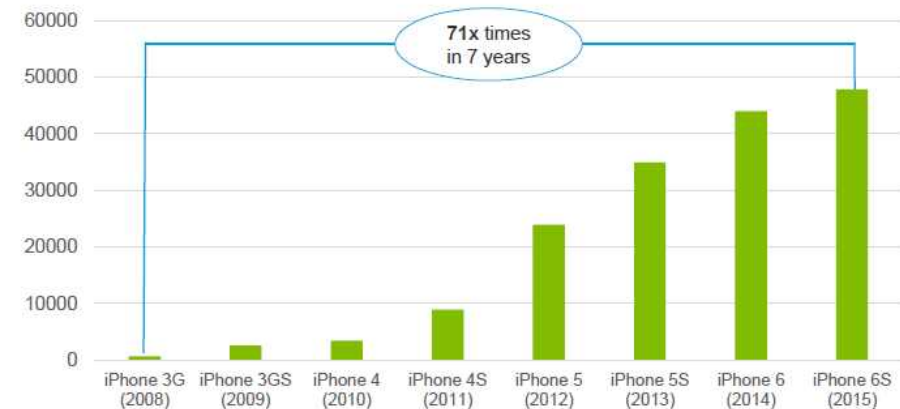**Continuous advances in technology are driving the digital economy**

- Digital technology shows a spectacular growth in capacity and price /performance, for example in internet bandwidth and traffic, processor speed and storage capacity. This pace of this growth outperforms any other technology

Monthly volume (in Peta Byte) of AMS-IX Internet Traffic

45x times in 10 years

Imagine how the world would look like when the price/performance of other technologies, like cars, increased by the same rate ....

2006   2015

Source: https://ams-ix.net/technical/statistics/historical-traffic-data

Processor speed benchmark of iPhone generations

71x times in 7 years

| iPhone 3G (2008) | iPhone 3GS (2009) | iPhone 4 (2010) | iPhone 4S (2011) | iPhone 5 (2012) | iPhone 5S (2013) | iPhone 6 (2014) | iPhone 6S (2015) |

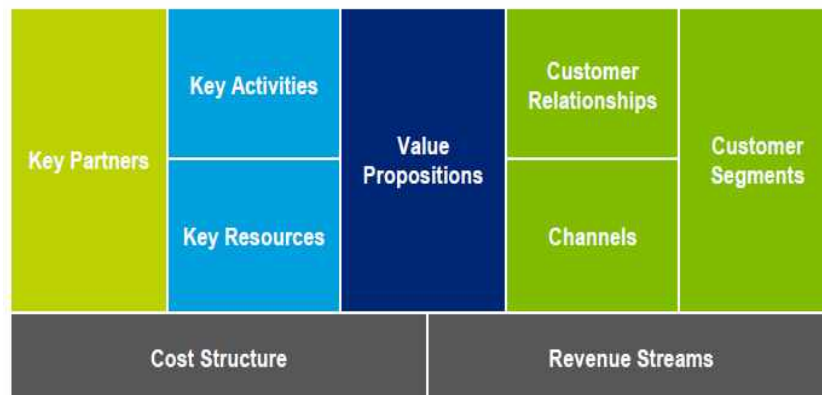Source: iphonebenchmark.net

Gordon Moore's Law: Computing power doubles every two years, and decreases in relative cost. The law fits data from 1970 to 2014.

Jakob Nielsen's Law of Internet Bandwidth: The speed of a high-end user connection grows by 50% per year. The law fits data from 1983 to 2014.

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Digital technology is enabling big shifts in the economy

- Smart Cities: part of the broader Digital Economy
  - Smart Cities are not an isolated phenomenon but are part of a broader transition towards a digital economy

Value Propositions
Customers, Channels and Relationships
Activities and Resources
Partners
Costs and Revenues

Network effect

- It is the positive effect described in economics and business that an additional user of a good or service has on the value of that product to others

Increasing returns to scale

- An increasing returns to scale occurs when the output increases by a larger proportion than the increase in inputs during the production process. For example, if input is increased by 3 times, but output increases by 3.75 times, then the firm or economy has experienced an increasing returns to scale

Convergence

- Convergence is the coming together of two different entities, and in the contexts of computing and technology, is the integration of two or more different technologies in a single device or system

Hype Cycle for Emerging Technologies, 2018

gartner.com/SmarterWithGartner

Hype Cycle for Digital Government Technology, 2018
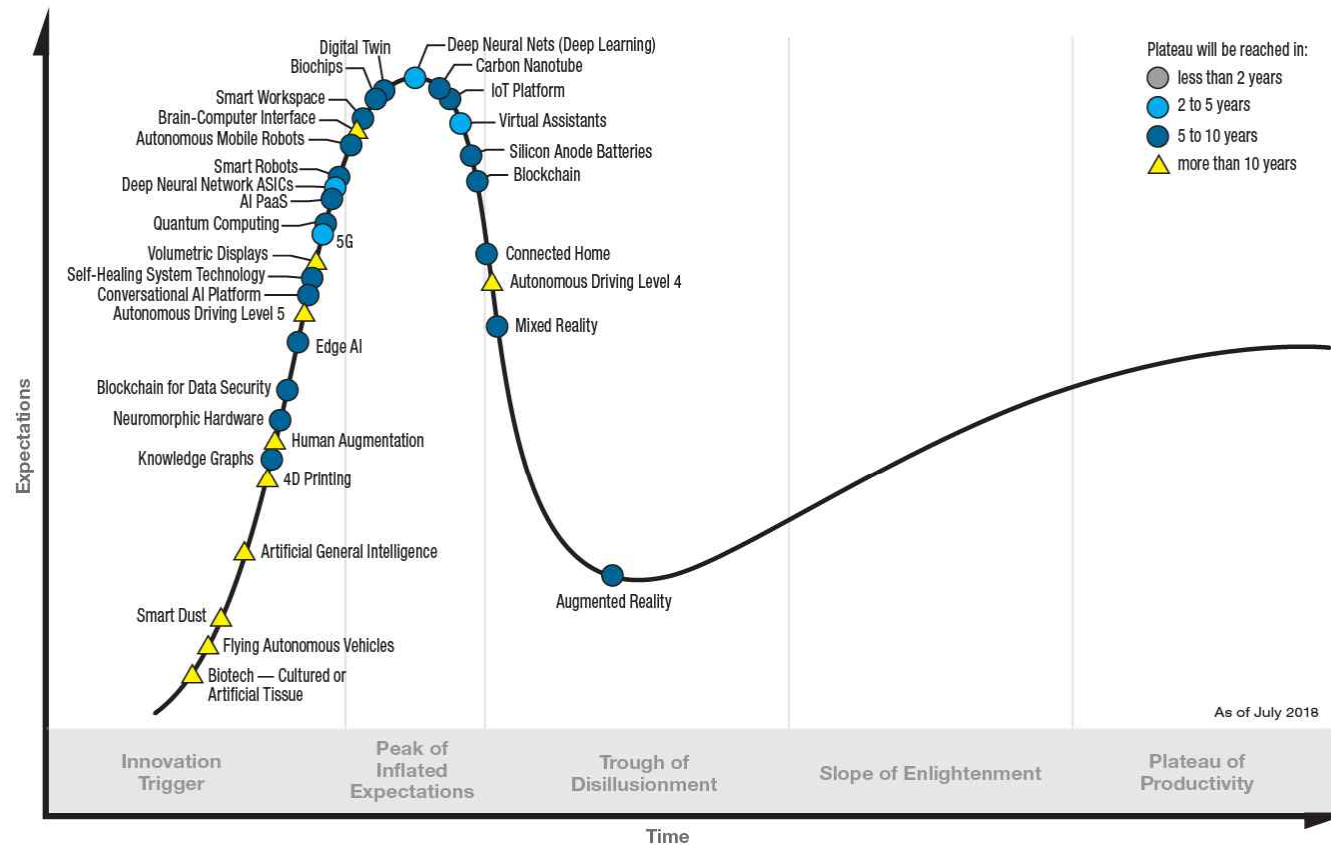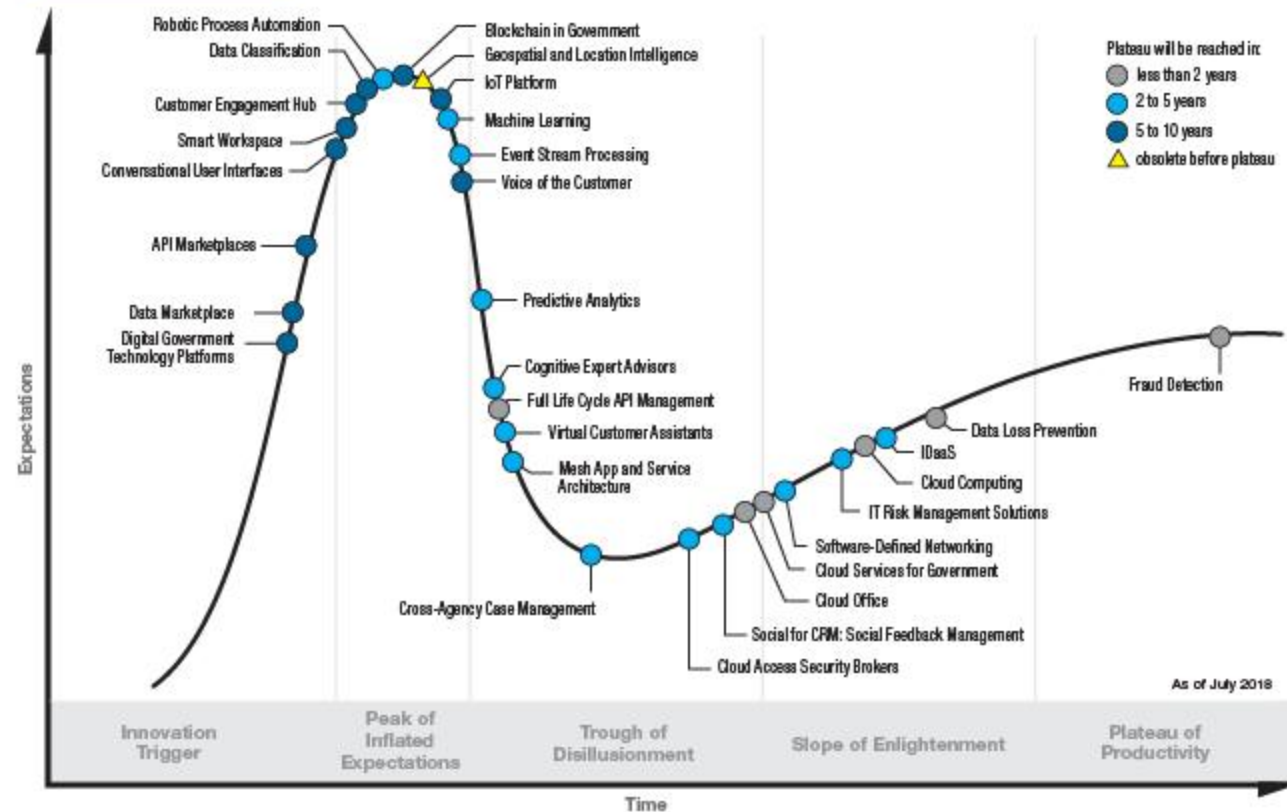
gartner.com/SmarterWithGartner

Source: Gartner (August 2018)
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Gartner

Digital technology is enabling big shifts in the economy

- Everything can be digital, will be digital: entirely, in part, and augmented with apps
- Shift to subscription based business models
  - VoD, Netflix
- Shorter product life cycles
- Information transparency
- Digital is the new normal
- Trust and reputation
- On-demand
- Disintermediation
- Manual work is automated / robotized
- Processes become data-centric
- From 'push' to 'pull'
- Mobile processes
- From efficiency to fast learning

Product / service

Niche operators

Scale-and-scope operators

Infrastructure providers	Aggregation platforms
Digital Technology (Cloud)	Broker / Market
Logistics	Social
Manufacturing	Finance
Facilities management	Data
Back Office	Content

Infrastructure

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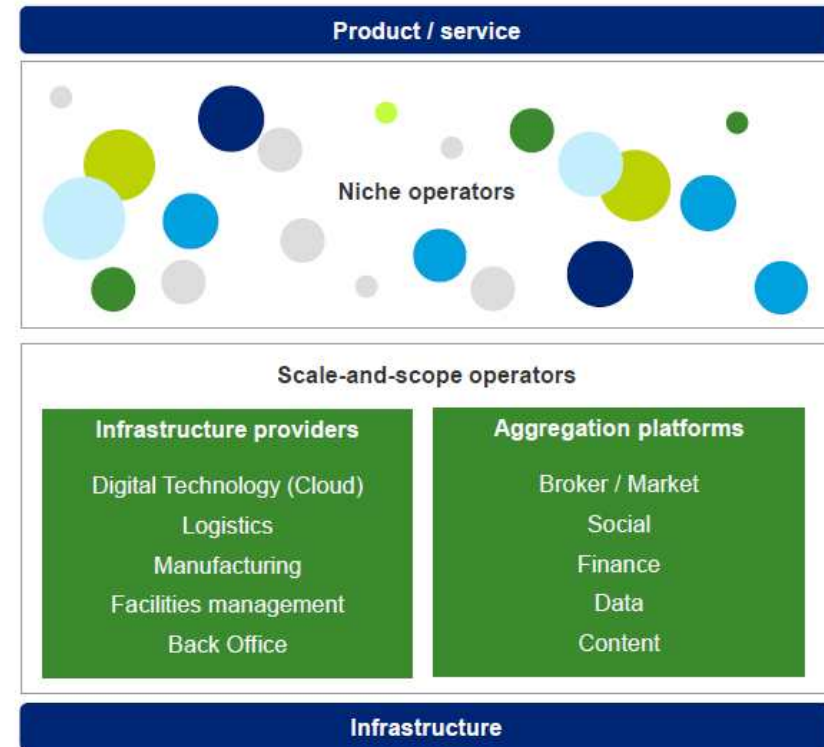
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What's Smart Cities – Delloitte point review

- A city is smart when investments in (i) human and social capital, (ii) traditional infrastructure, and (iii) disruptive technologies fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance

- UN: A smart sustainable city is an innovative city that uses information and communication technologies (ICTs) and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social and environmental aspects as well as cultural

New Connectivity, New Experience

■ **The smart city concept integrates information and communication technology (ICT), and various physical devices connected to the network (the Internet of things or IoT) to optimize the efficiency of city operations and services and connect to citizens.**

■ **It can allows city officials to interact directly with both community and city infrastructure and to monitor what is happening in the city and how the city is evolving.**

- Traffic congestion, losing cost due to electricity shortage, Water lost and waste in the distribution system, cover & monitor senior people

The global smart cities market size

- Valued at USD 563.36 billion in 2016
- Be estimated to grow significantly over the coming years.

U.S. smart cities market, by application, 2014 - 2025 (USD Billion)

Smart Education ■ Smart Governance ■ Smart Buildings
Smart Mobility ■ Smart Healthcare ■ Smart Utilities
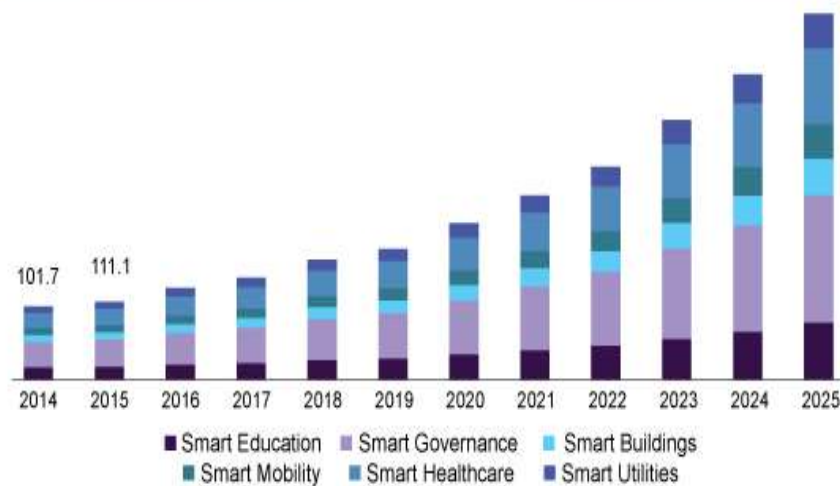
Global Smart Cities Market Value Share (%)
By Application (2016)

So
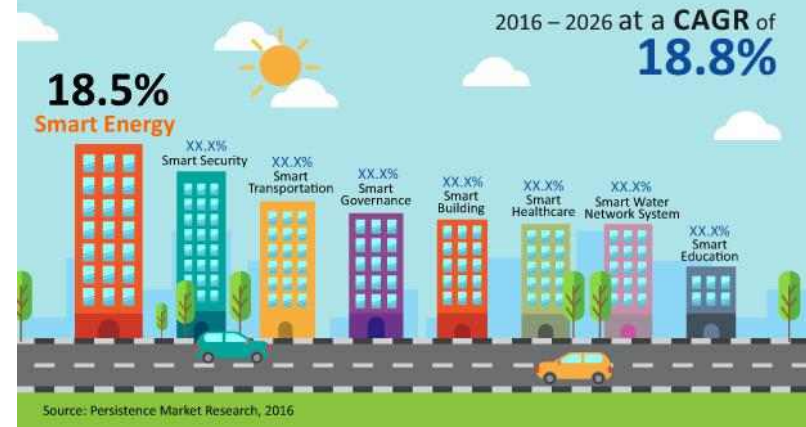
■ **Smart cities emerge as the result of many smart solutions across all sectors of society**
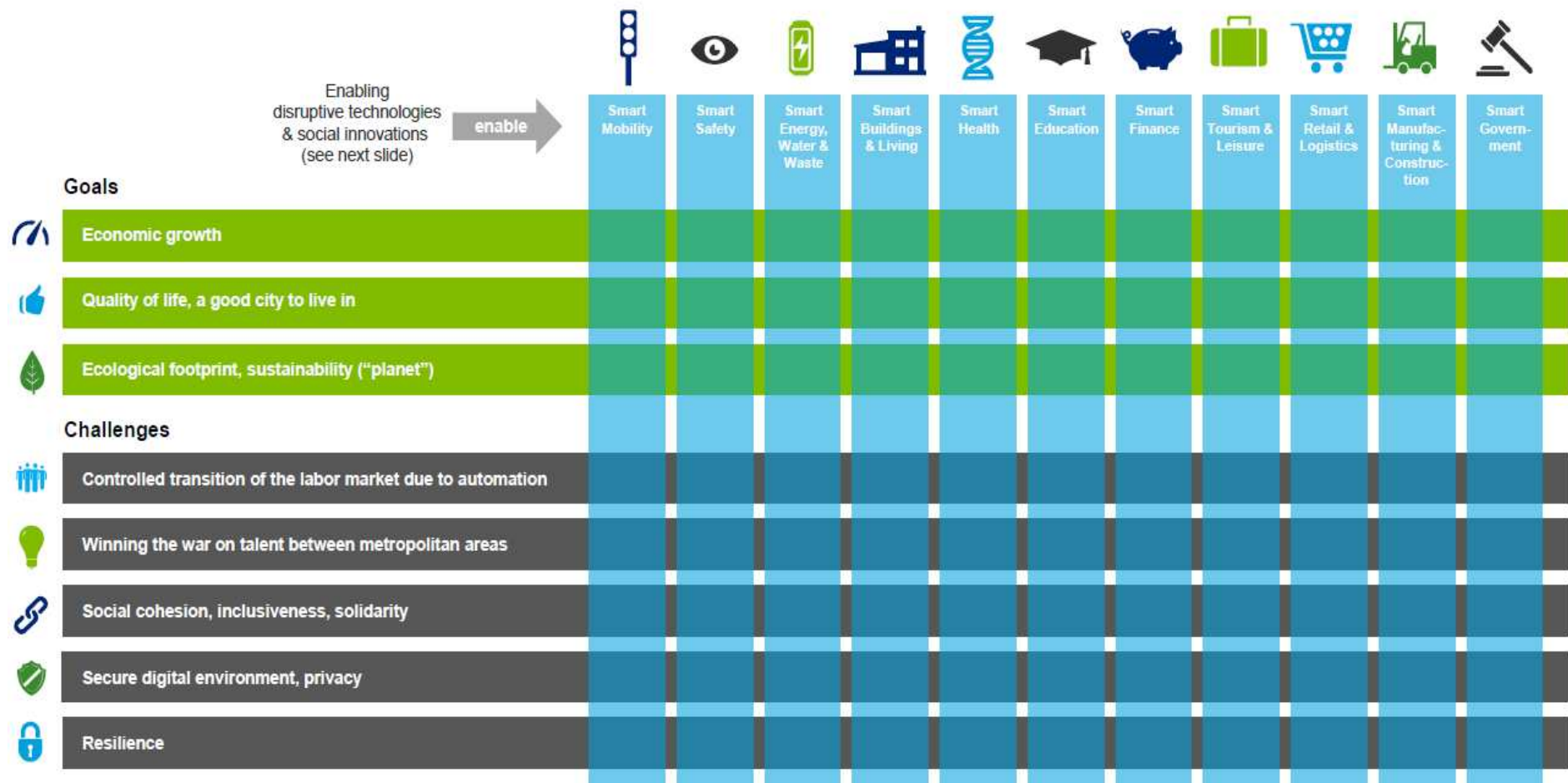
- **It's fueled by a combination of disruptive technologies and social innovations.**
  - Most new technologies and social innovations are disruptive on their own. The combination of them is even more powerful and creates a 'perfect storm' of disruption

- **It combines changing human behavior with the use of data and innovative technology.**
  - True smart solutions combine disruptive technological capabilities with changes in human behavior. The latter can only be achieved by simple, intuitive solutions that appeal to real human needs

Human Behavior — Data — Technology

Meaningful - Smart solutions address real needs of city users and are perceived as meaningful

Durable – The combination of easy to use and meaningful solutions results in lasting changes of behavior

Easy to use - Smart solutions are simple and intuitive. They are designed to be adopted naturally, even to the extent that people are not aware of them any more

Inviting - Provide people the right incentives to change behavior voluntary, because they are recognized as beneficial

Always there - Smart solutions are resilient and always available. People do not have to worry about them

Scalable - Smart solutions can be scaled from small pilot to city wide use easily

Typical smart city benefits are already becoming visible…

- Each sector contributes with its own unique innovations to the overall success of the smart city. Harvesting the potential benefits from all relevant sectors is the challenge of the city

Faster reaction to public safety threats by real-time analysis of sensor and surveillance camera video data

Smoothened distribution of tourists (geographical and over time) by analysis of tourist movements and real-time incentives

Exchange of products and services in a peer-to-peer model (sharing economy, from possession to use)

Dynamic groups of citizens organize themselves to work together on collective interests

Co-creation of decision making, new forms of digital democracy and participatory government

Data-driven policy making leads to more focused interventions and measured evidence of effectiveness

Better diagnostics and personalized treatment through artificial intelligence on massive volumes of patient data

People who need care can live in their own home longer through advanced sensoring and health care robotics

Lower congestion and pollution through optimal use of transportation infrastructure (roads, parking places)

Energy savings through real-time insight in energy usage, combined with gamification concepts

Responsive household appliances react to dynamic energy prices to adjust energy demand to supply

More efficient waste collection due to sensors in waste containers

Analysis of data provided by sensors in the water distribution network identifies leakages and allow fast repairs

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The imminence of change and the size of impact differs per industry

- Major disruptions in industries like Retail, Media and Banking are already happening. Other industries are expected to follow later. Ultimately, our entire economy will be disrupted
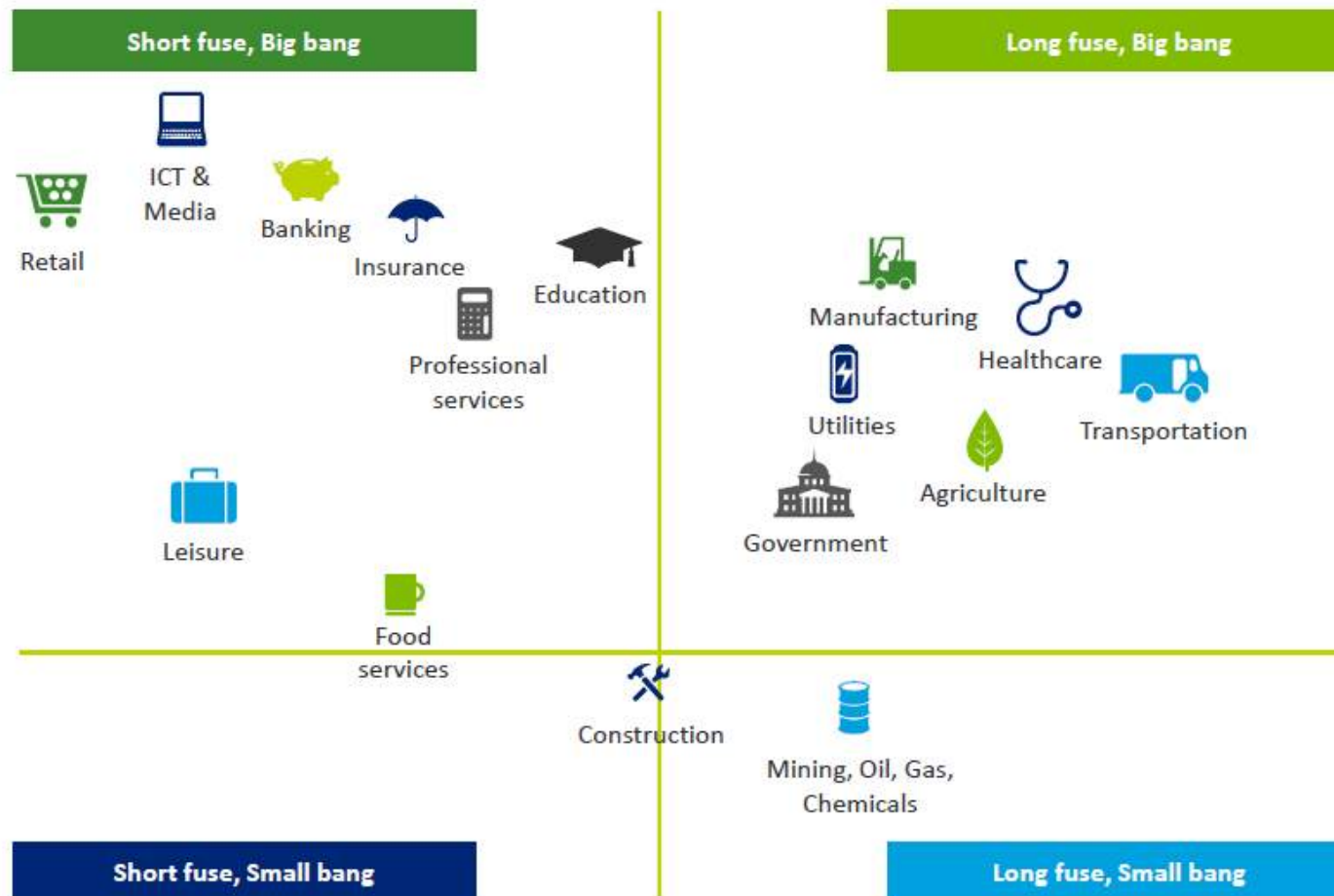
- **Challenge1 : Disruption of the labor market**
  - Oxford Univ.(2013)
    - Estimate the change of each job being fully computerized in the next 10 to 20 years.
    - The results were clear : 47% of total employment has a high probability of disappearing due to computerization.
    - Many of those jobs are in the categories Office and administratives upport, Sales and Service.

- **Challenge2: Winning the 'war on talent'**
  - Winning the war on talent is a challenge closely linked to the disruption of the labor market, but related to the other side of the 'demand/supply'

- **Challenge 3: Social cohesion, inclusiveness and solidarity**
  - Securing that the benefits of smart cities are reaped by all groups in our society alike

- **Challenge 4: Security and Privacy**
  - The use of disruptive technologies has downsides too. Our society becomes more vulnerable for cyber crime as much more data is stored digitally and a plethora of physical objects becomes connected to the Internet

- **Challenge 5: Resilience**
  - The ability to prepare for and adapt to changing conditions, and withstand and recover rapidly from disruptions due to deliberate attacks, accidents or naturally threats

- **20 common occupations high at risk (probability < 0.9)**

1. Telemarketers
2. Insurance underwriters, Insurance claims clerks, Insurance appraisers
3. Cargo and freight agents
4. Packaging and filling machine operators
5. Procurement clerks
6. Bookkeeping, accounting and auditing clerks
7. Real estate brokers
8. Counter and rental clerks
9. Cashiers
10. Dental laboratory technicians
11. Electromechanical equipment assemblers
12. Administrative assistants
13. Counter attendants
14. Office clerks
15. Receptionists and information clerks
16. Postal service clerks
17. Paralegals and legal assistants
18. Couriers and messengers
19. Accountants and auditors
20. Truck and tractor operators

Capability Framework and Maturity Model

Smart City actors

- A smart city is the result of the efforts of many stakeholders, working together in partnerships of different shape and form.
- The citizen / user is at the center of the map, indicating that successful smart cities are always user-centric.
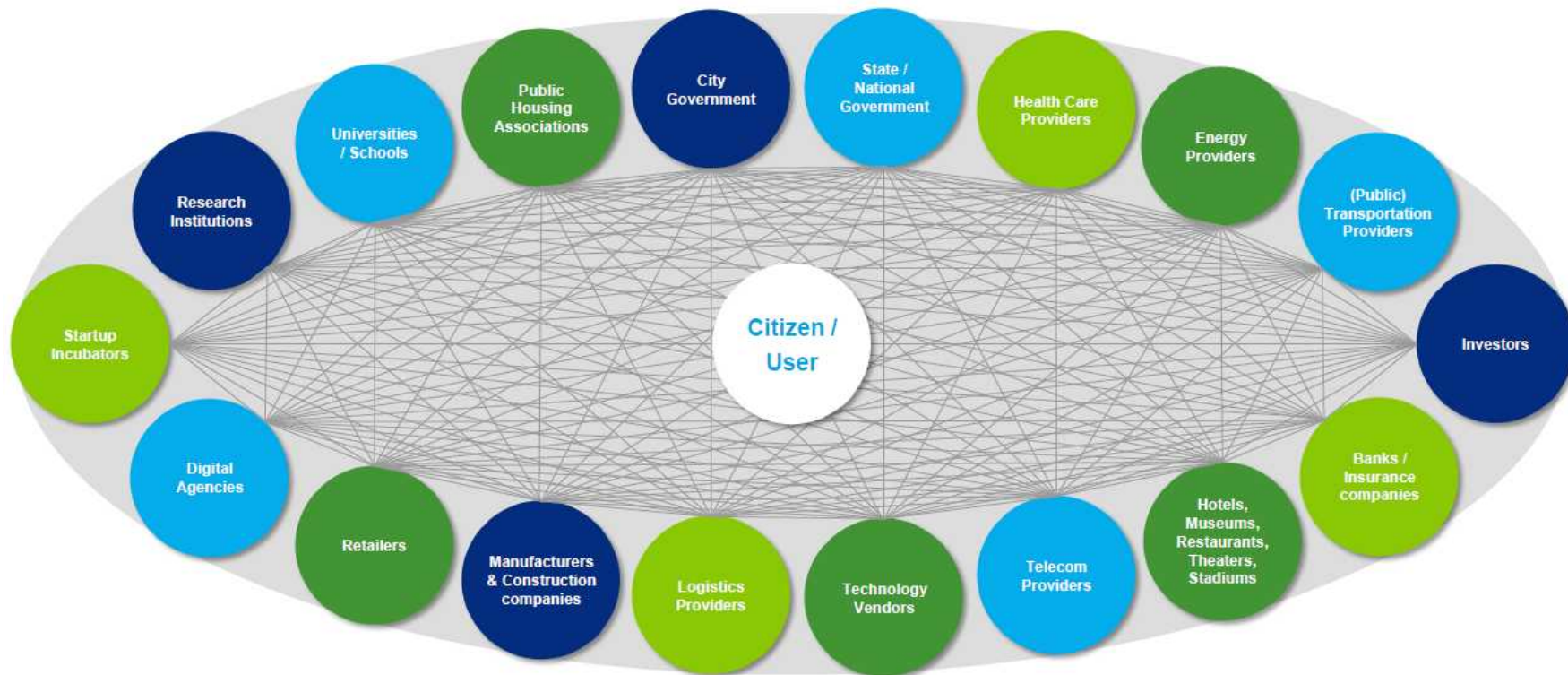
■ The roles of city government

- Smart cities are user-centric and citizens are the main category of city users. They engage with the city government in six different roles. A successful strategy is aware of these roles.

STRATEGIST & ADVOCATE

Sets out a clear direction for the city: what is our vision and ambition as smart city and how do we want to realize this? Furthermore: be an active advocate of the city as innovative hub for new business.

SOLUTION ENABLER

Build ecosystems by gathering parties that normally do not work together to deliver creative new solutions that neither of the parties could have realized on its own.

DIRECTOR & REGULATOR

Create or change laws and regulations to allow new business models and disruptive entries, and simultaneously protect the interests of citizens and users of the city.

STEWARD

Create an environment in which new businesses and smart solutions can emerge and grow. For example by providing 'open data' and by facilitating start ups.

CONNECTOR & PROTECTOR

Secure modern transportation infrastructures, energy grids and digital networks. Set standards and take measures to make these vital infrastructures resilient and safe.

INNOVATOR & INVESTOR

Apply the principles of innovation in the internal organization and processes. Stimulate innovative solutions by acting as launching customer.

The roles of civilians

- To be most effective, city government must make deliberate choices on the mix of roles through which it engages city challenges in the most effective way.
- Each role must be developed at a mature level

VOTER

The citizen as voter expects to be represented by elected politicians, who have a clear vision and live up to what they promise

TAX PAYER

The citizen as tax payer expects the government to be efficient and spend tax money wisely. The costs of living in the city most match the quality of living in the city.

CUSTOMER

The citizen as customer expects good quality of service: good information, digital channels if possible, favorable opening hours for services provided non-digitally, short waiting times, reasonable prices.

LOCAL RESIDENT

The citizen as local resident expects his living environment to have a certain quality: clean, green and with transportation and other services within reach.

SUBJECT

The citizen as subject expects the government to protect his safety. The right balance between personal freedom and enforcement of law and order is important.

PARTNER

The citizen as partner expects to be taken seriously in the process of creating policy. He expects the government to make sound choices in spatial planning, economic development, social services and education.

Smart City Capability Framework

- Successfully building a smart city requires a clear strategy and maturity in seven capability dimensions.

Goals

- Economic growth
- Quality of life, a good city to live in
- Ecological footprint, sustainability

Challenges

- Social cohesion, inclusiveness
- Secure digital environment, privacy
- Resilience

Smart Mobility
Smart Safety
Smart Energy, Water & Waste
Smart Buildings & Living
Smart Health
Smart Education
Smart Finance
Smart Tourism & Leisure
Smart Retail & Logistics
Smart Manufacturing
Smart Government

Smart City Development Stages

- Smart cities do not emerge overnight but develop over the years.
- During this development process, cities grow from early maturity phases to fully developed maturity stages.
- The maturity model is used to assess the current maturity and to set goals for the aspired maturity..

Strategy & Vision

Projects & Solutions

Data

Technology

Skills & Competences

Attractiveness

Openness

Ecosystems

"Initial"   "Intentional"   "Integral"   "Transformed"

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Smart City Development Stages

Strategy & Vision			
• Unconnected fragments of a smart city vision are found in some departments. • Strategy fragments have an operational focus, such as increasing efficiency. • Strategy development is an internal activity of city government. • No clear image of what the city wants to be in the long term. Highly driven by technology push. Act as living laboratory. • Consequences of innovations like Airbnb or Uber overtake city government.	• Cross-departmental vision and strategy emerges with key stakeholders aligned around it. • Strategy focus shifted from internal efficiency to user-centricity. User demands are driving the digital transformation. • Increasing awareness of the need to involve users in strategy development. • Fragmented image of what the city wants to become. Counterweight to technology push is growing but not yet mature. • Partial response of the city to innovations like Airbnb and Uber.	• Integral citywide vision and strategy based on a thorough assessment of strengths, opportunities and challenges of the city. • User-centric strategy becomes increasingly focused on transforming business models. • Users and stakeholders are consulted to provide input for strategy development. • Clear vision on the cities long term future. City priorities are driving the investment portfolio. • Balanced and effective response of the city to innovations like Airbnb and Uber.	• Vision and strategy are subject to continuous optimization in an agile environment, based on measurement/data of realized benefits • Successful realization of the user-centric strategy to transform business models. • Users and stakeholders are actively involved in strategy development through co-creation. • Strategic investments have clear impact realizing the long term vision. • City is able to act pro-active, fast and effective to innovations that impact the city.
Projects & Solutions			
• Ad hoc, department based projects driven by technology push and random initiatives. • In general, experimental by nature. • Mainly small scale pilot projects and proof of concepts to prove the business case for further investment. • Project execution and monitoring is subject to classic project-bureaucracy.	• Cross-departmental projects emerge but still in an opportunistic way. • First projects go beyond the pilot phase and scale up to city wide use. • First attempts to execute innovation projects in an agile way.	• A cohesive citywide portfolio of cross-departmental projects delivers recurring success. • City wide foundational technology, processes and standards emerge. • Benefits tracking is in place.	• Initiatives are characterized by agility and focused on innovation. • Continuous improvement of service delivery brings competitive advantage. • Superior outcomes that deliver differentiation.
1 "Initial"	**2** "Intentional"	**3** "Integral"	**4** "Transformed"

Smart City Development Stages

	Data			
Data	• Data is collected in the context of traditional city processes / responsibilities only. • Data is used for the delivery of a particular service and not re-used for other purposes. • Basic analysis of data in the form or simple reporting on isolated data sets. • Data is stored in disparate systems and is difficult to access and combine. • Some data sets are opened to the public, but only historic data (no real-time data). • Data quality of open data is not guaranteed, no mature data management processes. • Policies for data sharing, privacy, anonymization, authorization, charging & monetization etc. are not in place.	• Small scale pilots to collect (IoT) data specific for smart solutions are in place. • Small scale re-use of data to fuel smart solutions and data analytics. • Pilots with advanced data analytics on city data emerge. • Technical solutions (data platform) to combine and re-use data emerge. • Pilots with providing real-time (IoT) data are being set up. • Initiatives to define data management standards and processes are in place • Partners (city and external parties) have identified the need for such policies and initiatives are in place to define them.	• First city wide collection of (IoT) data specific for smart solutions is operational • Data is combined from multiple sources in new creative ways. • Data analytics is applied on combined data sets to provide new insights • Government services and external partners use the data platform for their open data • First city wide examples of real-time (IoT) data are operational • Data management standards and processes are being implemented. • Partners have agreed a first version of data policies and start using them in practice.	• Data fueling the full spectrum of smart solutions is collected. • Data from various sources is used to create a complete visual overlay of the city. • City wide use of mature advanced data analytics (real-time, big data, predictive). • All data is available through a single "data hub" and via open standards. • Open data encompasses full real-time (IoT) data to be used by smart solutions. • Operational data management standards and processes, data quality is guaranteed. • Data by parties in the ecosystem use is governed by agreed data policies.
Technology	• Fixed and mobile internet broadband networks are in place. • Technology architecture is characterized by point solutions for line of business applications. • Limited investments in sensors and M2M networks.	• Shared architectures are deployed on a limited set of services. • Stakeholders are intentionally investing in sensoring technologies. • Dedicated M2M / IoT networks (low bandwidth, high range) are in place.	• City wide implementation of an IoT platform unifying management of all kinds of sensors. • Joint investments plans for city wide deployment of connected assets with multi purpose sensors. • Standards and policies are in place to create integral architectures.	• Cross organizational technology architectures are in place. • Continuous learning and improvement of the joint architecture to support innovation and transformation. • City wide deployment of connectivity infrastructure and sensors networks for all major smart solutions.
	① "Initial"	② "Intentional"	③ "Integral"	④ "Transformed"

Smart City Development Stages

	Competences	Openness	Ecosystem
1 "Initial"	• No clear view on the skills and competences that are needed to execute the digital strategy successfully. • Smart city initiatives are executed with existing skills and competences.	• Low appetite for taking risks and experiment. Mechanisms for employee appraisal favor a risk-averse way of working. • Government tends to focus on securing internal buy-in rather than on delivering customer needs.	• Siloed internal organization with respect to smart cities. • Private parties purely in the role of technology vendor. • Attempt to match technology push with existing city policies.
2 "Intentional"	• Required skills and competences are pinpointed and a plan is in place for developing the workforce capabilities. • Efforts mainly directed at equipping existing workforce with new awareness.	• Growing awareness for the need to become open for new ideas, experimenting and taking calculated risks. • Government is actively looking for new ideas through competitions, hackathons, etc.	• Internal and external collaboration is growing. • Government is still organized in the traditional way, but becomes conscious of its assets (e.g. data) and open for new ways of working together with external parties.
3 "Integral"	• Skills and competences of the workforce are developing but deficiencies still exist at some pockets of expertise. • Efforts are made to develop genuinely new skills: research and analysis, technology skills, agile project management, user experience skills, financial modelling for digital business models and commercial skills.	• City wide transition towards an altered attitude to risk and willingness to experiment with new ideas. • New ways of collaboration between departments and with external parties emerge.	• Government is becoming part of creative public-private ecosystems in which neither of the participants has top-down control. • Parties in these ecosystems are working together to create a result that has value for them all.
4 "Transformed"	• City government uses a blend of investment, innovative approaches and external support to secure the right skills and competences. • The next generation of talent is attracted by a workforce strategy that highlights and communicates the impact of the work on the lives of citizens, and by offering employees the flexibility to work creatively.	• The "fail fast, fail quickly and fail cheap" approach has become part of the organization's DNA. • Ability to learn fast and to adopt new ideas quickly.	• The new way of working in creative ecosystems has transformed the government organization itself. • Government is successfully acting according to its new roles (see page xx)

■ **Government can solve these problems by investing in smart city.**

■ **Government will reap long term benefits by investing in smart cities**

Cost Saving	Revenue Generation	Revenue Generatino
• Technological Innovation • Reduce cost including transportation, energy, water, security etc. introducing smarter concepts	• Attract hug FDI • Building of smart cities with investor friendly policies of 100% FDI and easy norms will increase FDI investmemts • High GDP • Rise in toruism, expansion of industries, corporates will lead to higher GDP contribution	• Sustainable Development • Smart environment, health, transportation, waste management & energy will contribute to better livings • Higher Employment 10-15% rise in employment due to this projects • Wide-spread Smat education through Education • Distance learning will help in increasing the reach of Edu.

Smart City Seoul

New Connectivity, New Experience

Citizen-oriented Digital City	Digital Economy	New Citizen Experience	Global Digital Leading City
Citizen-driven Digital Governance	Business Incubation	Solving Urban Challenges with Digital Tech.	Infrastructure
Participation	Digital Platform		Digital Business Ecosystem
Cooperation	Convergence	Improving Citizen Value	Digital Events

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- Seoul Open Data Plaza

▪ Smart City - Busan
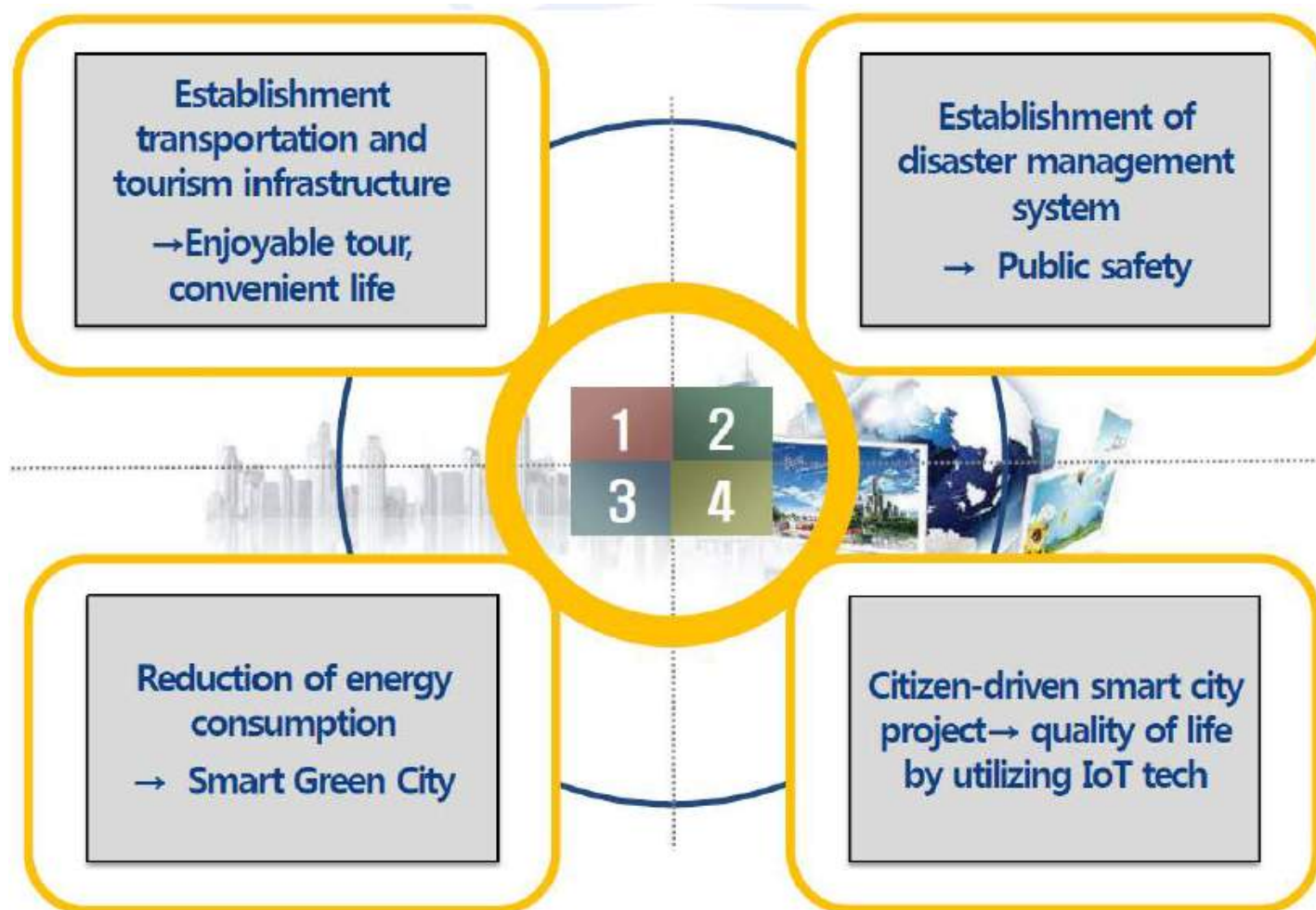
■ Smart Parking - Busan

① Implement Infrastructure
- Installation of sensor, video camera and gateway

Gateway for smart parking
(Video Camera)

Smart parking sensor
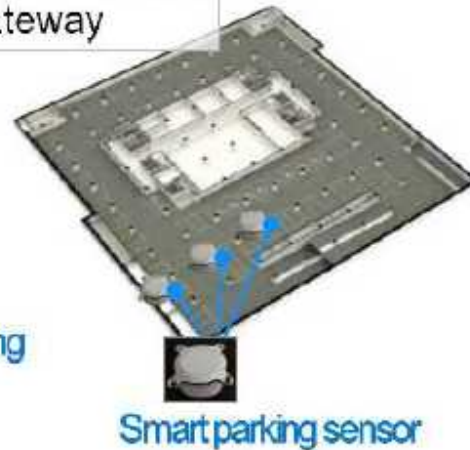
② Search for lots
- Searching for the real-time information on available parking lot - location, distance, fee

Device for Android, iOS

③ Linkage with navigation
- linkage with Tmap
- Linkage with applications without input the destination

⑤ Monitor the parking lot
- Real-time video information
- Battery information for parking sensor

④ Inform the estimated parking fee
- Push service for the setting time/estimated fee
- Automated calculation with parking fee DB

주차정보알림
7000원

확인

Songdo – Public transportation information providing service & fusion

1 Bus Information Provision
- Bus arrival
- Expected arrival
- weather
- Government promotion
- event

2 Connecting the subway
- Subway information provision near the bus stop
- Bus stop information provision at station

3 Multilingual Information Provision

	버스정보 잠시후 도착 버스		
91	1분 후 도착	92	3분 후 도착
909	5분 후 도착	6405	10분 후 도착
1301	15분 후 도착		

4 BIT display monitoring and surveillance in shelter

- Connecting 112 center and Michuhol call center

5 Wireless Internet Provision(plan)

6 Automatic power saving at night

Pattern analysis of suspect vhicle through personal data - Anyang

Low-Carbon Green City

- A city designed to reduce potential carbon emissions and absorb emitted carbon to actively respond to climate change issues
- Green City Projects in Korea commissioned by central government and conducted by municipal governments are 9 projects in total

eco-friendly city
- ecosystem preservation
- national symbiosis
- clean environment

+

sustainable city
- sustainable development
- energy self-sufficiency
- resource recycling

+

carbon-reduction city
- carbon reduction
- carbon absorption
- new renewable energy

Green Land and Green City

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▪ Low-Carbon Green City - Wonju

Minimizing GHG and pollution

Low-Carbon Green Growth

Happy Livable Green Healthy City
Wonju
G-Healthy City

Growth Center

Excellent University

Clean, Healthy, Green City

" Happy & Livable & Green Healthy City "

- Respecting diversity of individuals
- Ensuring best quality of living
- Participatory urban development
- An urban-rural complex city with improved physical, social environment
- Caring about physical, mental health of citizens
- Fostering advanced medical and healthcare industries

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■ Reference

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- Gyu Myoung Lee(2014), Smart Cities and e-Government in Korea, The 4th Asia-Pacific Regional Forum on Smart Sustainable Cities and e-Government 2018,

The stakeholders and their roles in ICT sector
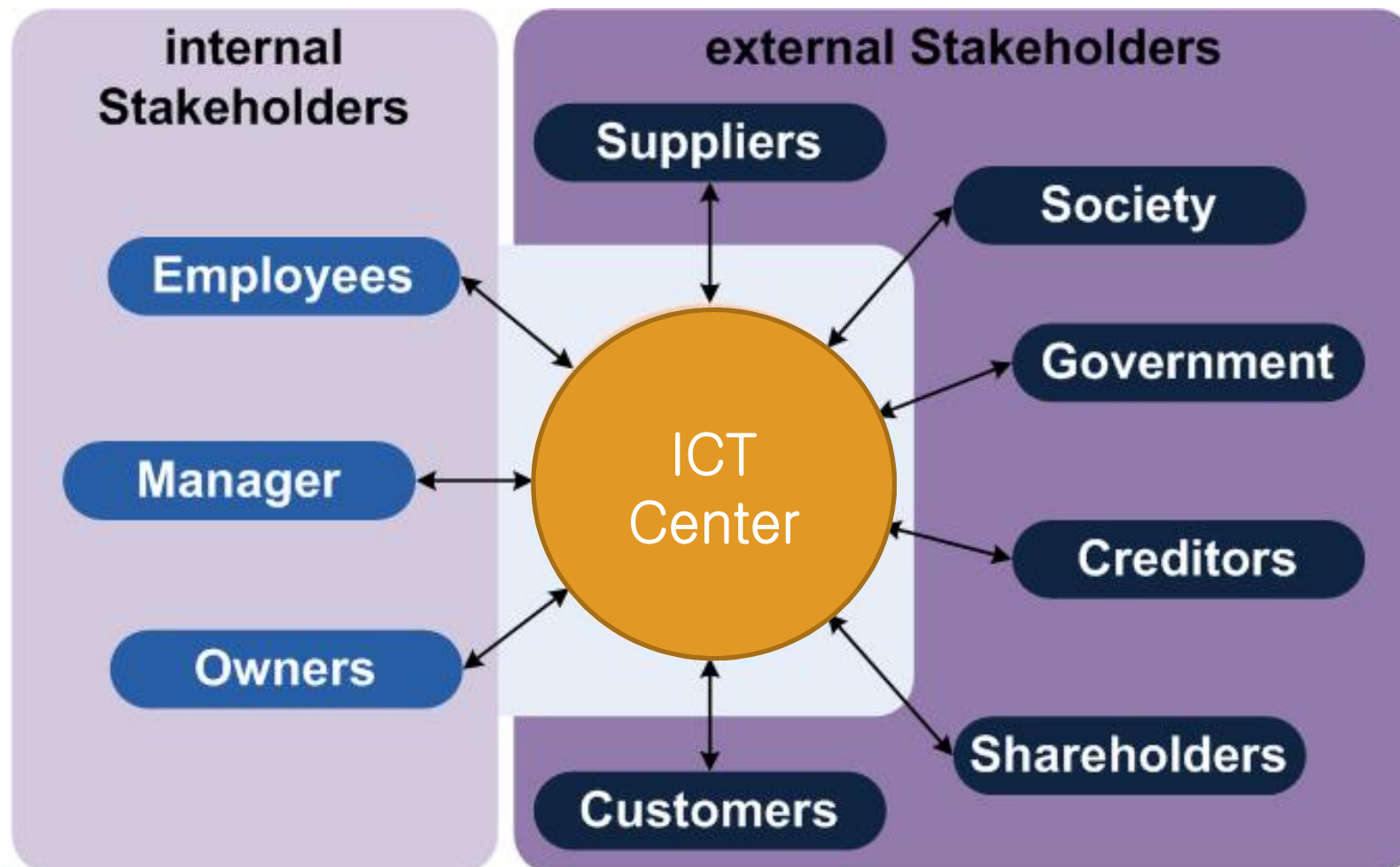
Strategic management process

- A method by which managers conceive of and implement a strategy that can lead to a sustainable competitive advantage.

- A systematic or emerged way of performing strategic planning in the organization through initial assessment, thorough analysis, strategy formulation, its implementation and evaluation

Model of the Strategic Management Process

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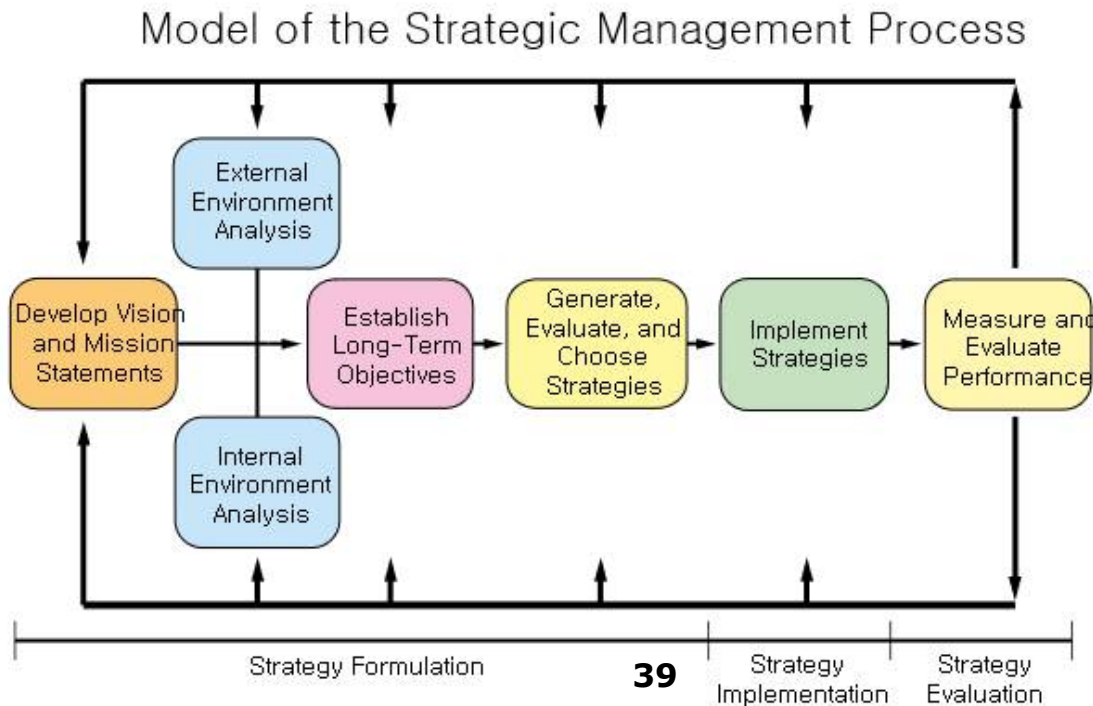
■ Initial Assessment

- Vision is the answer of the question:
  - What does an organization want to become?
  - Vision is the ultimate goal for the firm and the direction for its employees

- Mission describes organization's business
  - It informs organization's stakeholders about the products, customers, markets, values, concern for public image and employees of the organization
  - Thorough mission statement acts as guidance for managers in making appropriate daily decisions.

Situation Analysis

- Internal environment analysis: Critical Success Factors, SWot, Internal Factor Evaluation Matrix, Financial Ratios, Value Chain Analysis, VRIO Framework, Core Competencies.

- External environment analysis: PEST, Porter's 5 Forces, External Factor Evaluation Matrix, swOT, Benchmarking, Market Segmentation,

- Competitor analysis:, Competitor Profile Matrix, Benchmarking,

- Etc : Scenarios Forecasting

■ PEST & PESTEL Analysis

- PEST analysis is an analysis of the political, economic, social and technological factors in the external environment of an organization, which can affect its activities and performance.

- PESTEL model involves the collection and portrayal of information about external factors which have, or may have, an impact on business
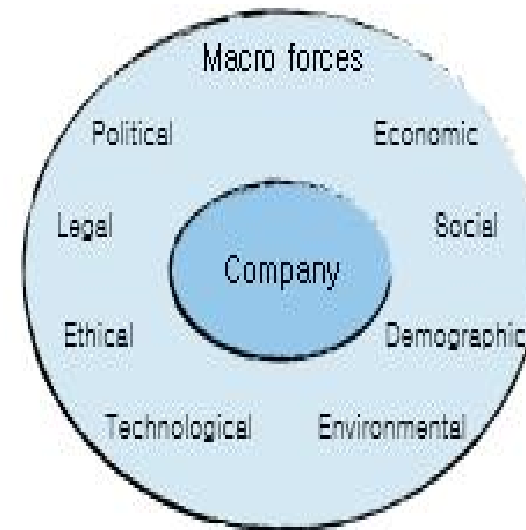
SWOT Analysis

- Swot analysis involves the collection and portrayal of information about internal and external factors which have, or may have, an impact on business.

- SWOT is a framework that allows managers to synthesize insights obtained from an internal analysis of the company's strengths and weaknesses with those from an analysis of external opportunities and threats

  - Strengths: factors that give an edge for the company over its competitors.

  - Weaknesses: factors that can be harmful if used against the firm by its competitors.

  - Opportunities: favorable situations which can bring a competitive advantage.

  - Threats: unfavorable situations which can negatively affect the business

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ICT SWOT Analysis

STRENGTH

- Strong political will in support of ICT
- Existing of National ICT Policy, NICI
- ICT sector budget is on par with OECD countries at 1.6 percent, far above the African average
- Smallness of the countries would facilitate ICT Network infrastructure
- Strong Institutional organization (RDB/RITA, MINISTR, RURA, etc.
- ICT is the most attractive in terms of Investment
- E-Government and E-Governance

WEAKNESSES

- Lack of necessary technical and professional level of human resources
- Insufficient of electricity which is a prerequisite to the ICT accessibility
- Inadequate financial resources
- High cost of communication in comparison with neighboring countries
- Lack of awareness about ICT and the benefits of e-government in both urban and rural areas
- Weak private sector
- Existing of high rate of illiteracy

OPPORTUNITIES

- Regional Communication Infrastructure Project (RCIP)
- Kalisimbi Project
- Kigali Metropolitan Network and Wibro Mobile Wimax Technology
- Rwanda National Backbone Project
- Rwanda is integrated to the EASSY Project
- National Data Center
- Regional interconnectivity (MTN Rwanda, MTN Uganda, Safaricom, Vodacom, Com Burundi

THREAT

- Existing of strong competition in the region. Each EAC member is aiming to become in ICT hub in the region.
- Potential ICT crime and difficult to control it
- Loss of job due to ICT application

Strengths	Weaknesses
S1. Favourable policy environment S2. Strong and coherent institutional framework S3. District Development Plans S4. Imihigo Performance Contracts S5. Basic farming abilities S6. Social cohesion and social capital S7. Common culture, language and values S8. Low corruption and a strong judicial framework S9. Internal and regional security	W1. Weak capacity in P,M&E at district level W2. Poor mobilization of stakeholders W3. Illiteracy W4. Shortage of off-farm competencies and skilled labour within local community W5. Traditional farming practices W6. Low levels of citizen participation W7. Poor service delivery W8. Inadequacy of social and economic infrastructure network W9. Weak institutional framework for CD coordination and implementation
Opportunities	**Threats**
O1. Strong political will O2. Existence of potential partners for LED & CD O3. Government's favourable education policy O4. Regional integration O5. Young population O6. Natural resources (Land, water, minerals) O7. Structures in place for participation	T1. Limited access to finance and advisory services T2. Limited access to public infrastructure T3. Poor linkages between products and markets T4. Poor industry-specific capabilities T5. Limited entrepreneurial drive T6. Population growth

Porter's 5 Fores model

- An analysis tool that uses five industry forces to determine the intensity of competition in an industry and its profitability level.
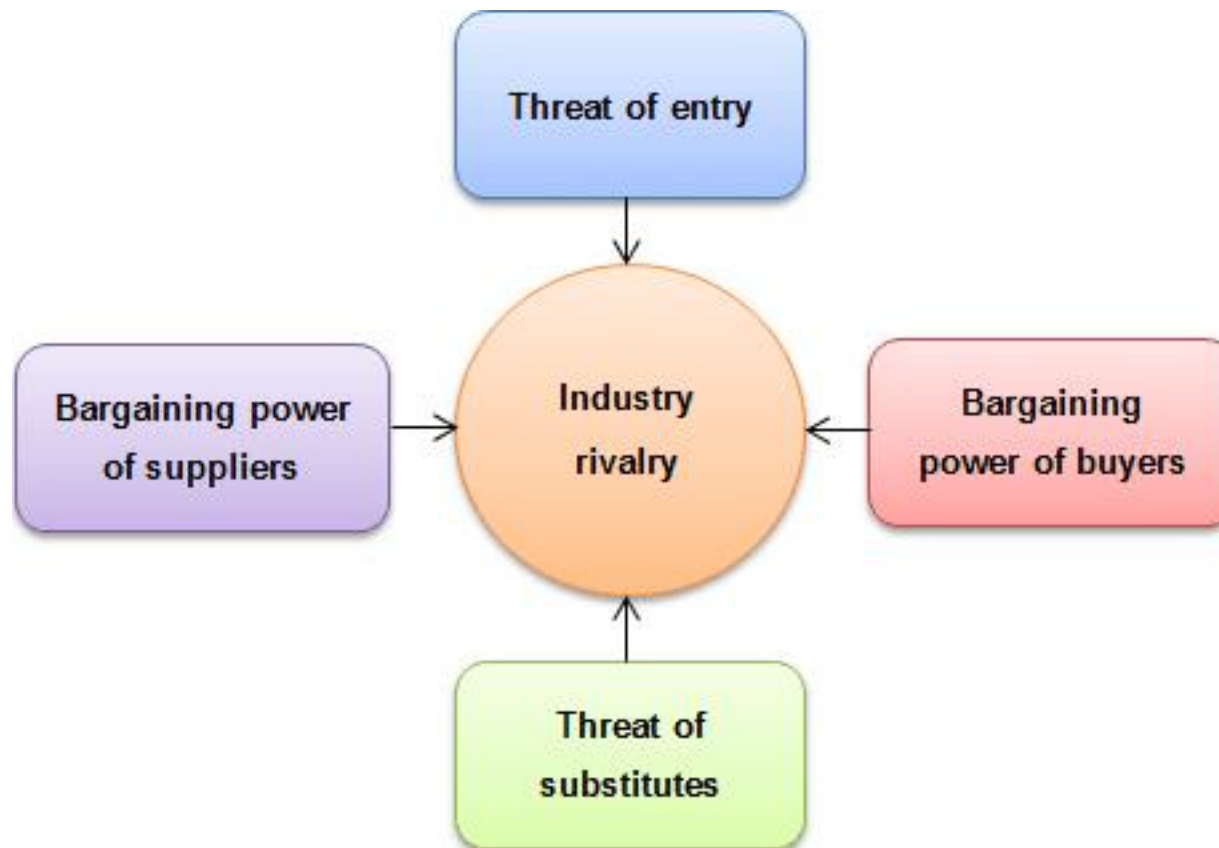
■ The Competitive Profile Matrix (CPM)

- a tool that compares the firm and its rivals and reveals their relative strengths and weaknesses

CPM Table							
		Company A		Company B		Company C	
Critical Success Factor	Weight	Rating	Score	Rating	Score	Rating	Score
Brand reputation	0.13	2	0.26	3	0.39	1	0.13
Level of product integration	0.08	4	0.32	3	0.24	1	0.08
Range of products	0.05	3	0.15	1	0.05	2	0.10
Successful new introductions	0.04	3	0.12	3	0.12	3	0.12

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IFE & EFE Matrices

- Internal Factor Evaluation (IFE) Matrix
  - A strategy tool used to evaluate firm's internal environment and to reveal its strengths as well as weaknesses.
- External Factor Evaluation (EFE) Matrix
  - A strategy tool used to examine company's external environment and to identify the available opportunities and threats

External Factor Evaluation Matrix

Key External Factors	Weight	Rating	Weighted Score
Opportunities			
1. New trade agreement that lifts the ban of imported food is signed with a neighboring country.	0.11	3	0.33
2. Signing a contract with a new supplier.	0.09	1	0.09
3. Processed food market growing by 15% next year in our largest market.	0.24	2	0.48
4. Incorporating a new company in neighboring country, where the tax rate is decreasing by 3% next year.	0.10	1	0.10
Threats			
5. The contract with the main customer expires in 2 months.	0.17	4	0.68
6. Extreme cases of natural disasters occurring next year.	0.03	2	0.06
7. New law, requiring decreasing the amount of sugar in the food by 20%, could be passed next year.	0.14	3	0.42
8. Competitors opening 3 new stores in the town.	0.12	2	0.24
Total	1.00	-	2.40

■ Benchmarking

- A strategy tool used to compare the performance of the business processes and products with the best performances of other organizations inside and outside the industry.
- The search for industry best practices that lead to superior performance

Benchmarking history	
1950-1975	Reverse engineering
1976-1986	Competitive benchmarking
1982-1986	Process benchmarking
1988+	Strategic benchmarking
1993+	Global benchmarking

Source: J. Blakeman, University of Wisconsin-Milwaukee[3]

Value Chain Analysis

- A process where a firm identifies its primary and support activities that add value to its final product and then analyze these activities to reduce costs or increase differentiation.

- Value chain represents the internal activities a firm engages in when transforming inputs into outputs.

| Inbound Logistics | Operations | Outbound Logistics | Marketing & Sales | Service |

| Firm Infrastructure | Human Resource Management |
| Procurement | Technology |
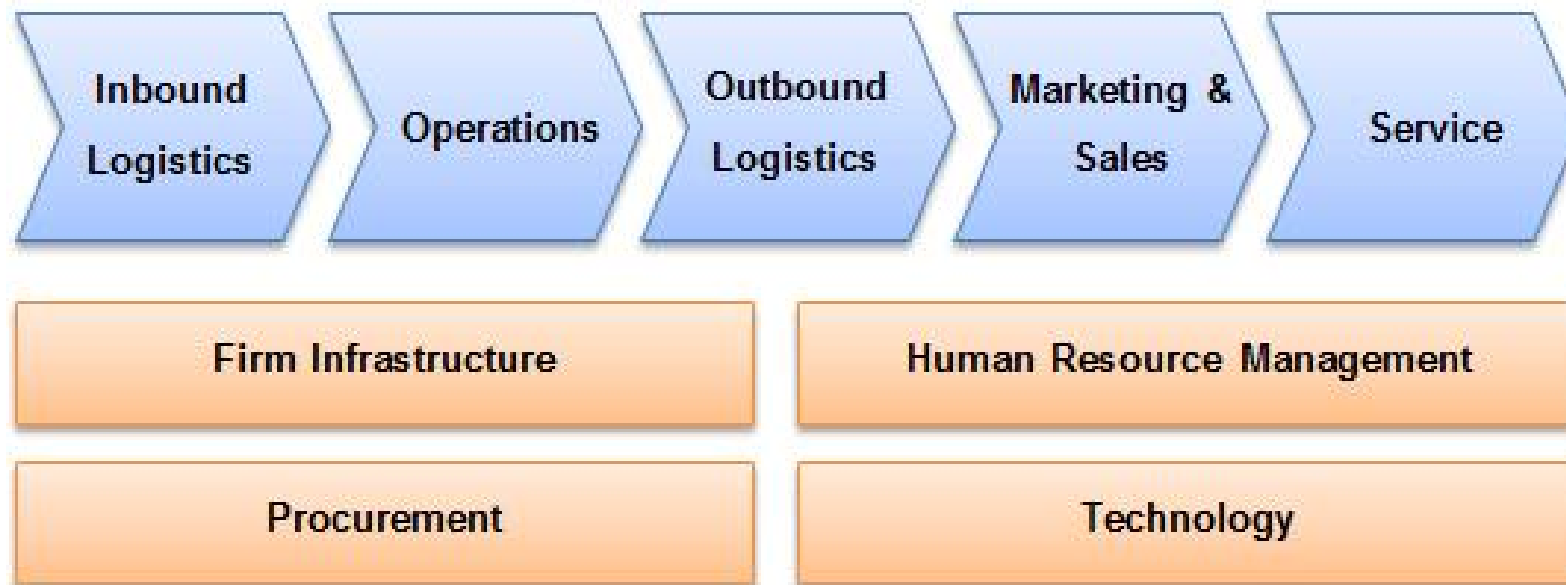
Is the Resource or Capability…

Valuable? — No → Competitive Disadvantage
Yes ↓

Rare? — No → Competitive Parity
Yes ↓

Costly To Imitate? — No → Temporary Competitive Advantage
Yes ↓

and is the Firm…

Organized To Capture Value? — No → Temporary Competitive Advantage
Yes ↓

Sustained Competitive Advantage
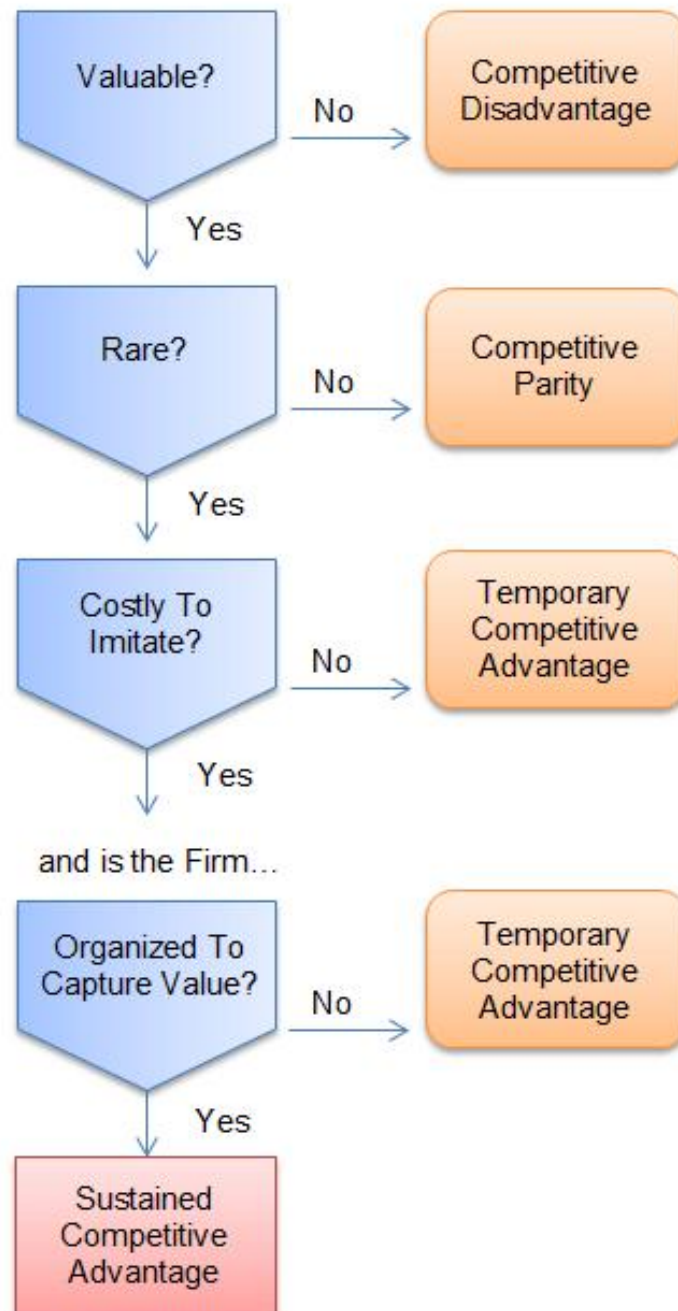
VRIO Framework

- VRIO framework is the tool used to analyze firm's internal resources and capabilities to find out if they can be a source of sustained competitive advantage

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Strategy Formulation

- In an organization, strategies are chosen at 3 different levels:
- Business level strategy.
  - This type of strategy is used when strategic business units (SBU), divisions or small and medium enterprises select strategies
- Corporate level strategy
  - At this level, executives at top parent organizations choose which products to sell, which market to enter and whether to acquire a competitor or merge with it.
  - They select between integration, intensive, diversification and defensive strategies.
- Global/International strategy
  - The main questions to answer: Which new markets to develop and how to enter them? How far to diversify?

Strategy Implementation

- Communication in strategy implementation is essential as new strategies must get support all over organization for effective implementation.

- It consists of the following 6 steps:

  - Setting annual objectives;

  - Revising policies to meet the objectives;

  - Allocating resources to strategically important areas;

  - Changing organizational structure to meet new strategy;

  - Managing resistance to change;

  - Introducing new reward system for performance results if needed

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Strategy Monitoring

- Implementation must be monitored to be successful.

- Due to constantly changing external and internal conditions managers must continuously review both environments as new strengths, weaknesses, opportunities and threats may arise.

- If new circumstances affect the organinzation, managers must take corrective actions as soon as possible - tactics rather than strategies are changed to meet the new conditions

- Measuring performance is another important activity in strategy monitoring.

  - Performance has to be measurable and comparable.

  - Managers have to compare their actual results with estimated results and see if they are successful in achieving their objectives. If objectives are not met managers should:

  - Change the reward system/Introduce new or revise existing policies

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Balanced Scorecard

- A strategic planning and management system that is used extensively in business and industry, government, and nonprofit organizations worldwide to align business activities to the vision and strategy of the organization, improve internal and external communications, and monitor organization performance against strategic goals.

- It was originated by Drs. Robert Kaplan (Harvard Business School)

BSC – Strategy mapping
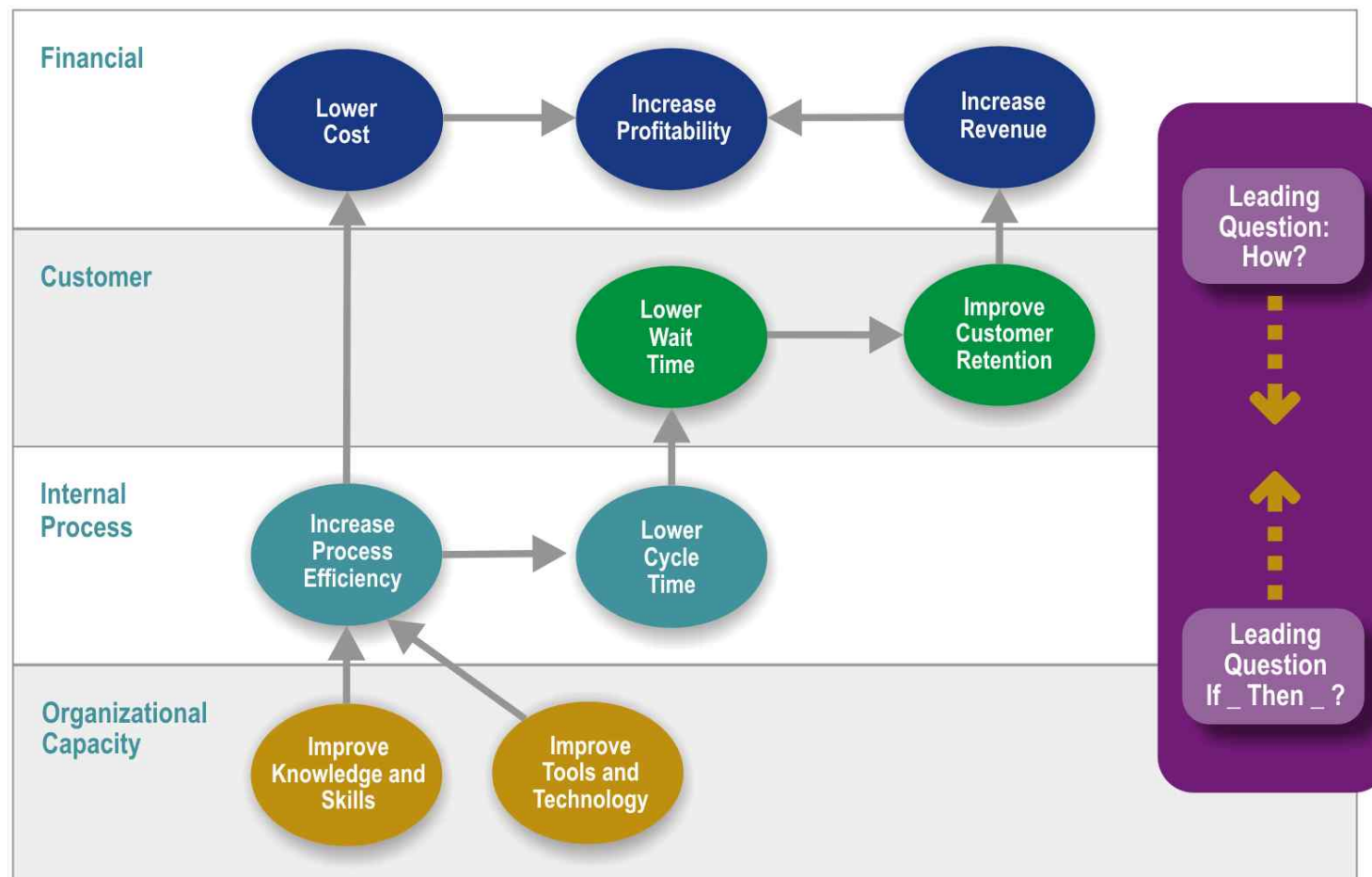
- **What What is a Key Performance Indicator (KPI)?**
  - KPI is performance measures that indicate progress toward a desirable outcome.
  - Strategic KPIs monitor the implementation and effectiveness of an organization's strategies, determine the gap between actual and targeted performance and determine organization effectiveness and operational efficiency.

- **Good KPIs:**
  - Provide an objective way to see if strategy is working
  - Offer a comparison that gauges the degree of performance change over time
  - Focus employees' attention on what matters most to success
  - Allow measurement of accomplishments, not just of the work that is performed
  - Provide a common language for communication
  - Help reduce intangible uncertainty
  - Are valid, to ensure measurement of the right things
  - Are verifiable, to ensure data collection accuracy