



# Developing e-application strategies

## ITU ASP COE Senior Management Training On Telecom Strategy for the Pacific – Next Five Years

16-18 November 2015  
Nadi, Fiji



Australian Government

Department of Communications and the Art



# Why e-application strategy?..



Emergency



Education



Health



Agriculture



Investment



Applications



Policy & Regulation



Governance



Transport



Sensor Networks



Universal Broadband



Green ICT & E-Waste



Capacity Building



Measurements



Electricity



SMART  
SOCIETY



Infrastructure Security



Privacy & Security



Water



Digital Inclusion



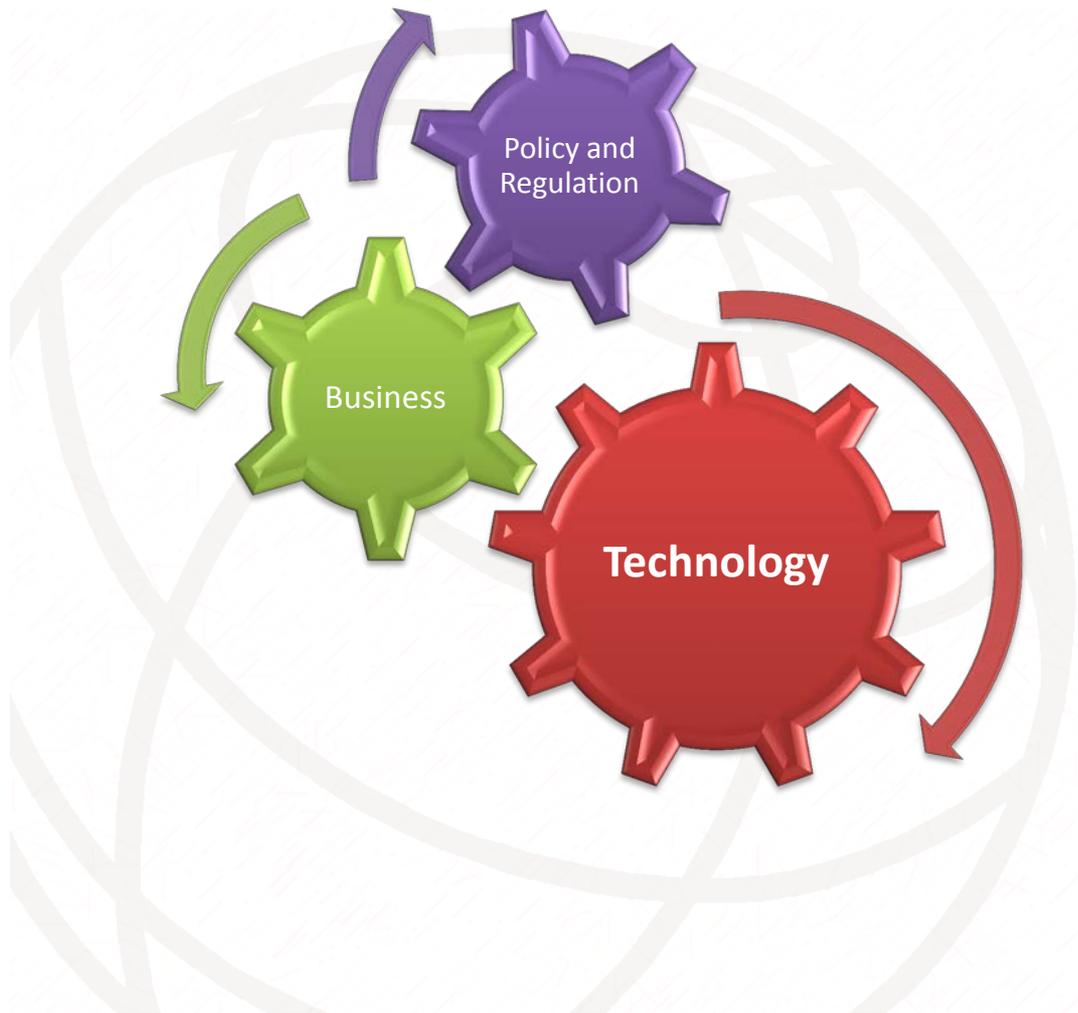
Spectrum Management



Standards, Conformity &  
Interoperability



Teleworking



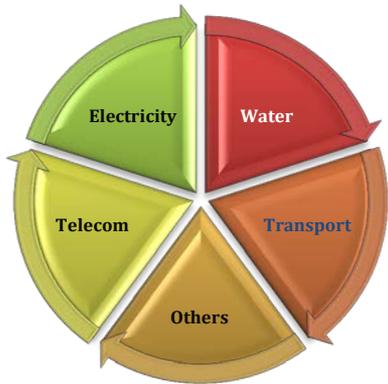
## Developing Cross-Sectoral Strategy...

*An alignment, synergy  
development and  
prioritization exercise....*



**SMART  
SUSTAINABLE  
CITIES**

# REGULATORY COLLABORATION



**MULTI UTILITY  
REGULATOR**



# COLLABORATION MECHANISMS



Emergency



Education



Health



Electricity



Governance



Transport, Trade, Logistics



Water



Teleworking



Infrastructure Security



**Integrated Policy**



**Legislation**



**Co-Regulation**



**Standardization (International / National)**



**MoU or Cooperation Agreement**



**Coordination Committee**



**Projects, Coordination on Case to Case basis**





Mobile Banking

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Tanzania	<b>MoU</b> signed between Bank of Tanzania (BoT) and Tanzania Communication Regulatory Authority (TCRA).
India	Statutory guidelines for operationalizing M-Banking issued by the Reserve bank of India (RBI) for banks and Regulations by the Telecom Regulatory Authority of India ( <b>TRAI</b> ) on QoS, Tariffs for service providers.
Pakistan	<b>MoU</b> between Pakistan Telecommunication Authority ( <b>PTA</b> ) and State Bank of Pakistan (SBP)

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Competition

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Australia	Legislation separates powers between Australian Consumers and Competition Commission (ACCC) and Australian Communications and Media Authority ( <b>ACMA</b> ). Chairman of ACCC and ACMA are <b>Associate Members</b> in <b>ACMA</b> and ACCC respectively.
Mauritius	<b>MoU</b> Signed between Competition Commission (CCM) and <b>ICT Authority (ICTA)</b>
United Kingdom	<b>Agreement on procedures</b> between Office of Fair Trade (OFT) and Office of Communications ( <b>OFCOM</b> ).

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Green ICT & E-Waste

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Egypt	Green ICT Strategy implemented through a <b>MoU</b> between <b>Ministry of Communications &amp; IT (MCIT)</b> and Ministry of Environmental Affairs (MEA)
Singapore	E2PO is a <b>multi-agency committee</b> led by the National Environment Agency (NEA) and the Energy Market Authority (EMA) and comprises the Economic Development Board (EDB), Land Transport Authority (LTA), Building and Construction Authority (BCA), Housing and Development Board (HDB), <b>Infocomm Authority of Singapore (IDA)</b> , Agency for Science, technology and Research (A*STAR), Urban Redevelopment Authority (URA), Jurong Town Corporation (JTC) and National Research Foundation (NRF). The Ministry of the Environment and Water Resources (MEWR) and Ministry of Trade and Industry (MTI) are also represented in the committee.

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Health

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Singapore      **Joint project** on Tele-health by Ministry of Health and Infocomm Development Authority (**IDA**)

United States      Joint Statement and **MoU** between Federal Communications Commission (**FCC**) and Food and Drug Administration (FDA) on broadband and wireless enabled medical devices

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Electricity

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Thailand      MoU between National Broadcasting and Telecommunications Commission (NBTC) and the Electricity Generating Authority of Thailand (EGAT)

UAE      [Environment Agency - Abu Dhabi \(EAD\)](#) and the **Telecommunications Regulatory Authority (TRA)** have signed a Memorandum of Understanding (**MoU**) to promote cooperation and partnership in the field of technology and information security,

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Transport, Trade, Logistics

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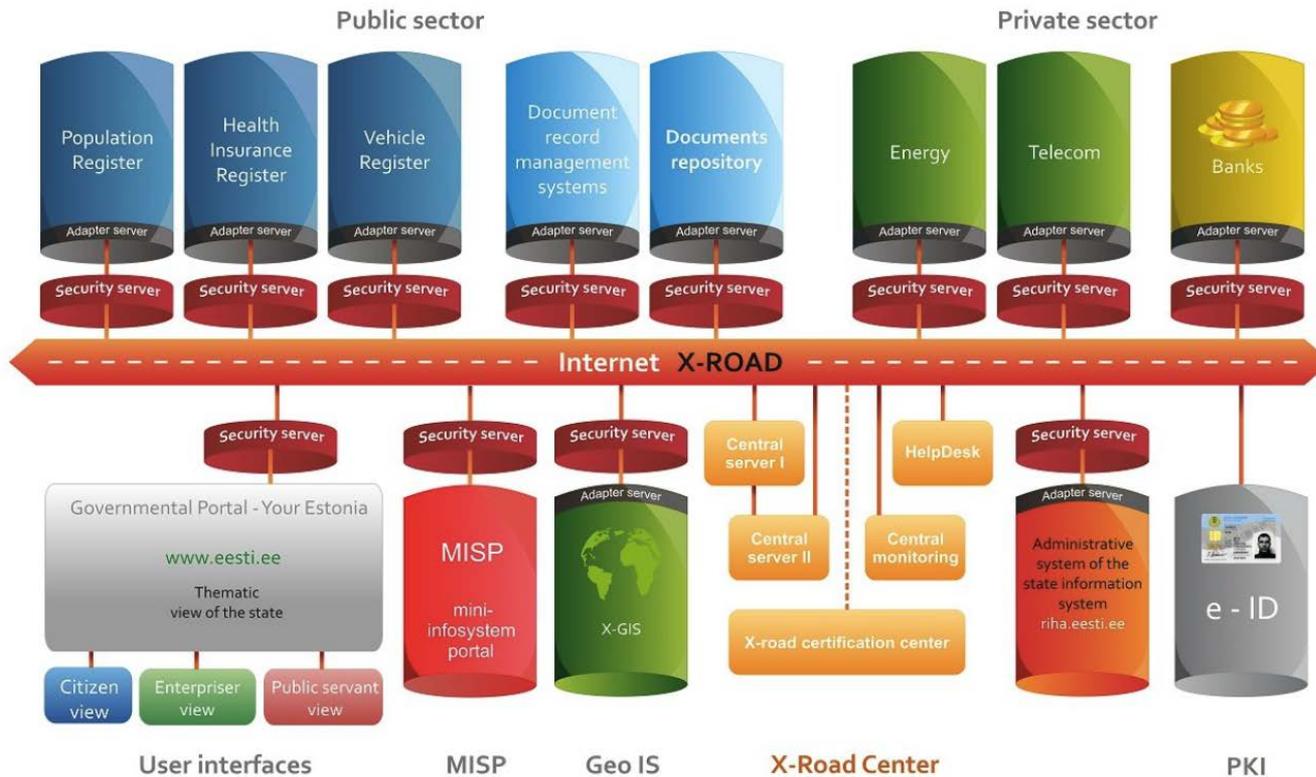
Singapore      Infocomm@SeaPort programme is a collaboration between the Infocomm Development Authority of Singapore (**IDA**) and the Maritime and Port Authority of Singapore (MPA). e-freight is a **joint programme** between IDA and Civil Aviation Authority of Singapore seeking to enhance competitiveness and increase productivity in the air cargo logistics sector through infocomm.

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UK Regulators' Network (UKRN) is an initiative of the UK economic regulators: [CAA](#), [FCA](#), [Ofcom](#) [Ofgem](#), [ORR](#), [Ofwat](#), [UR](#). Monitor and the Water Industry Commission for Scotland (WICS) are also participating as observers

## Example Estonia

### Estonian information system



## Different Services, Different Requirements - Examples

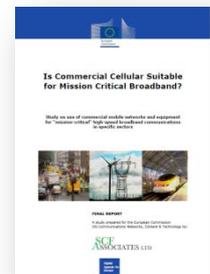
### PPDR services

- **Constant availability** –
- **Ubiquitous coverage** – not just outdoors, but inside buildings (including large ferroconcrete structures such as shopping malls) and in tunnels (including subways).
- **Regionally harmonised spectrum** –
- **Differentiated priority classes** .
- **Support for dynamic talkgroups**,
- **Automatic identification with authentication**.
- **Automatic location discovery and tracking**
- **The ability to maintain connectivity**
- **Fast call setup** (<200ms) and immediate access on demand: the **Push-to-talk** (PTT)function and **all-calls** (internal broadcasts).
- **Relay capabilities**
- **Support for Air-Ground-Air (AGA) communication** when and where needed.
- **Adequate quality of service**
- **The ability to roam onto commercial networks**
- **Interworking between various PPDR services**, and increasingly, across borders.

### Utility industry :

- **Teleprotection** – safeguarding infrastructure and isolating sections of the network during fault conditions whilst maintaining service in unaffected parts of the network.
- **Data monitoring** via SCADA (Supervisory, Control And Data Acquisition) systems.
- **Automation** – systems to autonomously restore service after an interruption or an unplanned situation.
- **Security** – systems to ensure the safety and security of plant.
- **Voice services** –.
- **Metering** – collecting data from smart meters and communicating with them for various reasons, such as demand management and to implement tariff changes.
- **Connectivity** – telecommunication networks to interconnect the above services in a reliable and resilient manner under all conditions.
- Other operational requirements include:
- **Coverage of all populated areas with points of presence throughout the service territory**
- **Costs must be low**
- **Continuity of service is vital**, and price stability
- **Utilities want network separation**,

## Intelligent Transport Services... *and more*



## **What type of network is required to deliver these services?**

- Private networks
- Public networks

## **What preparations are required to make best use of commercial networks to deliver smart services (some of them such as Emergency Telecommunication, Utilities, Transportation critical in character)?**

- Technical (e.g. coverage, resilience, quality, spectrum, interoperability)
- Commercial (e.g. availability, long term pricing, SLAs)
- Policy & Regulatory (e.g. critical services as priority, quality of service, long term tariffs, security, privacy, USO, infrastructure sharing, licensing)

## Cross-sector e-strategies: Examples of ITU experiences



e-Agriculture Strategy  
Guide

Implementing e-strategies requires some common requirements e.g. Cloud, Security, Privacy, Sensors, Big Data Analysis, Interoperability, Open Data, Applications Development, Digital Literacy etc.



# E-HEALTH STRATEGY





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# Role of a national strategy

- Force to consider ICT as a strategic tool to transform/reform the health sector
- Set the vision of what changes should be achieved by eHealth
- Used as an overarching framework to guide all eHealth efforts in the country and align stakeholders
- Build country enabling environment
- Ensure government leadership and ownership





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# Role of a national strategy

- Ensure short versus long term balance
- Communication tool for stakeholders, funding agencies, partners, etc.
- Prioritize and maximize return on (limited) investments
- Move to national deployments rather than pilots
- Many issues (standards, Legislations, evidence, infrastructure, capacity building, etc.) can be better dealt with at national level



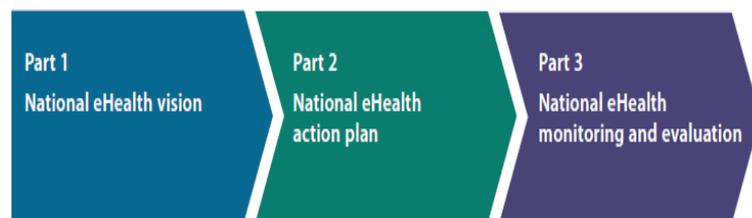
# National eHealth Strategy Toolkit

A resource for developing or renewing a country's eHealth strategy

From countries just setting out to those that have already invested in eHealth

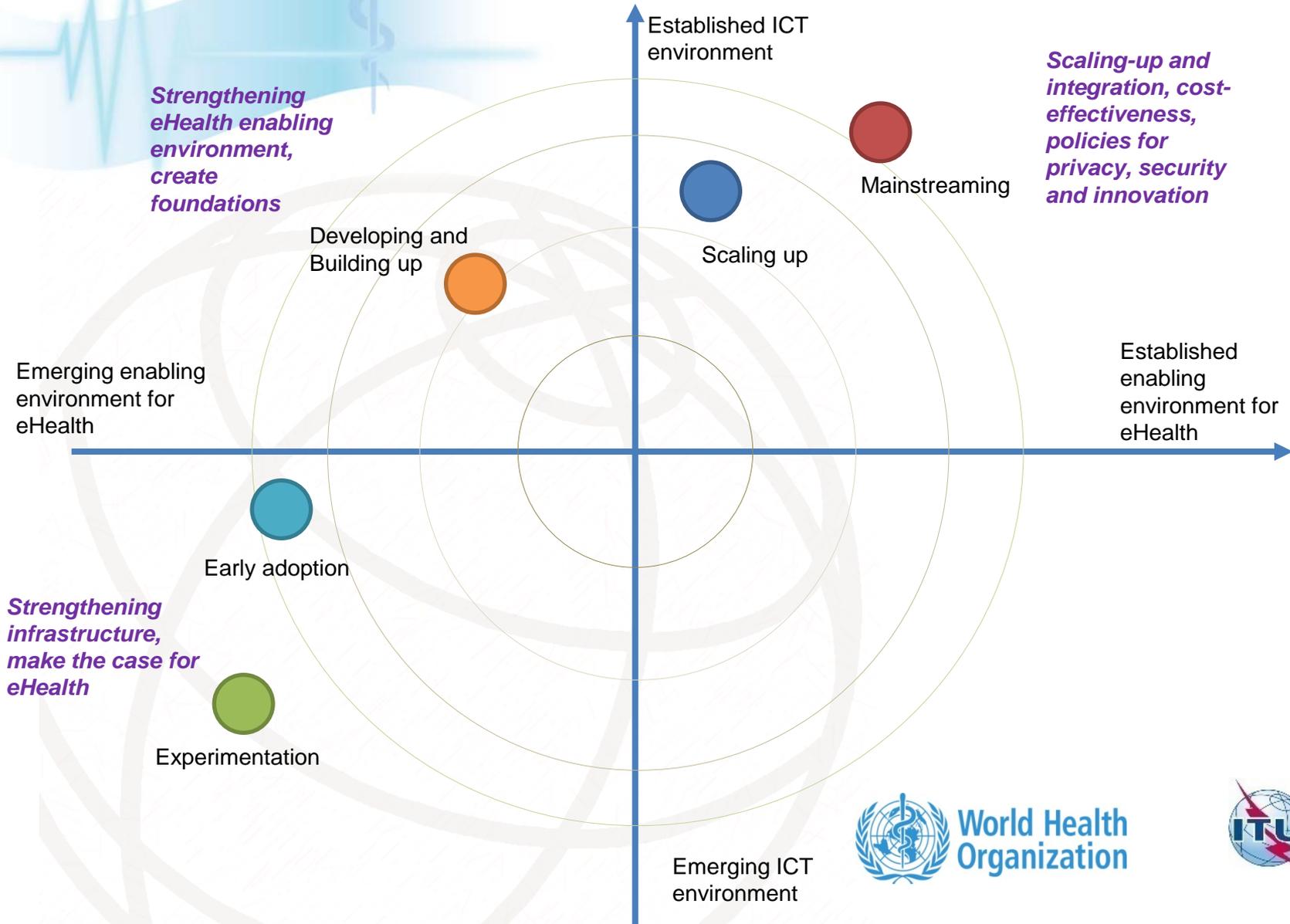
A framework and method for the development of a vision, action plan and monitoring framework

## Toolkit for developing a National eHealth Strategy



- Engage with stakeholders
  - Manage the process
  - Establish the strategic context
  - Learn from trends and experience
  - Draft an initial vision
  - Identify required components
  - Gather information on the eHealth environment
  - Assess opportunities and gaps
  - Refine vision and develop recommendations
- Engage with stakeholders
  - Manage the process
  - Develop eHealth action lines
  - Develop an integrated action plan
  - Determine high-level resource requirements
  - Apply funding constraints to refine plan
  - Define implementation phases
- Define indicators for monitoring and evaluation
  - Define baseline and target measures
  - Define governance and process

# National context for eHealth development



# Part 1: Establishing a national eHealth vision and strategy

## A framework for a national eHealth vision

**Strategic context** → **Rationale for eHealth**

- Population health
- Health system status
- Health strategy, goals and priorities
- Economic and social development goals
- Goals and challenges
- Implications for eHealth

**eHealth vision** → **Desired outcomes**

- eHealth outcomes for the health system
- Changes and impact on key stakeholder groups

**Required components** → **Foundations for change**

- Leadership and governance
- Strategy and investment
- ICT services and applications
- Infrastructure
- Standards and interoperability
- Legislation, policy and compliance
- Workforce



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## Initiating a national eHealth strategic planning process

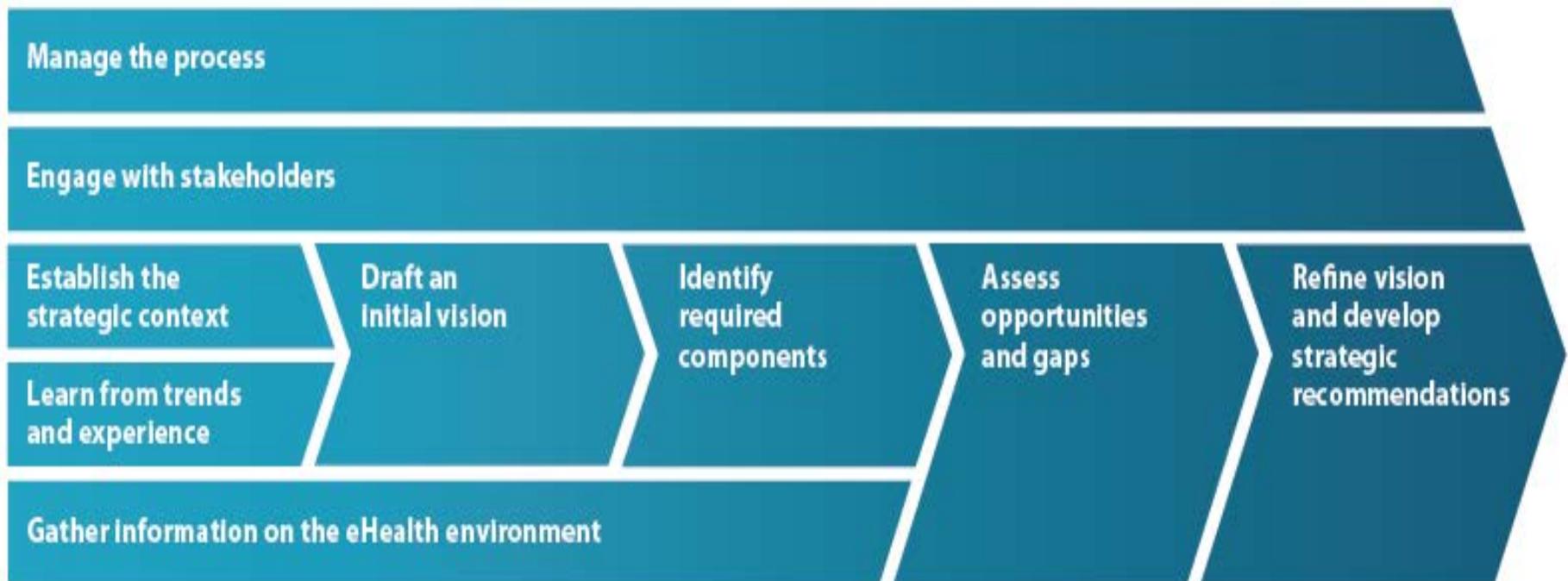
- 1. *Confirm health sector leadership.*** National planning requires sustained leadership and commitment from senior government officials and health sector leaders. Development of a national eHealth plan often launches a country's formal program in eHealth.
- 2. *Establish governance mechanisms*** to provide improved visibility, coordination and control of planning activities. This includes the formation of a steering committee and an eHealth strategy team.
- 3. *Identify key health and non-health sector stakeholders*** to be involved in the development of a national vision and plan and implementation.





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# Overview of the process





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# Establish the governance

How to manage the vision development process





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World Health  
Organization



ment i mentation.

# Identify and work with stakeholders

## Broader stakeholders and general public

Individuals, carers, families, community groups, employers

## Engaged stakeholders

Advocacy groups, health executives, insurers, patient associations

Broader stakeholders and general public

Engaged stakeholders

Key influencers

Decision-makers

## Key influencers

Advisors, academics, and senior executives in health, funding and investment organizations

## Decision-makers

National eHealth steering committee

How to work with stakeholders



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## Initiating a national eHealth strategic planning process

- 4. *Establish the strategic context for eHealth.*** This provides the foundation for eHealth vision and planning, and enables the government to assess and make informed decisions on how to better harness ICT for health system strengthening and improved health outcomes.
- 5. *Learn from eHealth trends and experience.*** How eHealth is being used in similar countries, the types of goals it can address, benefits in similar settings.



# The strategic context : Rationale for eHealth

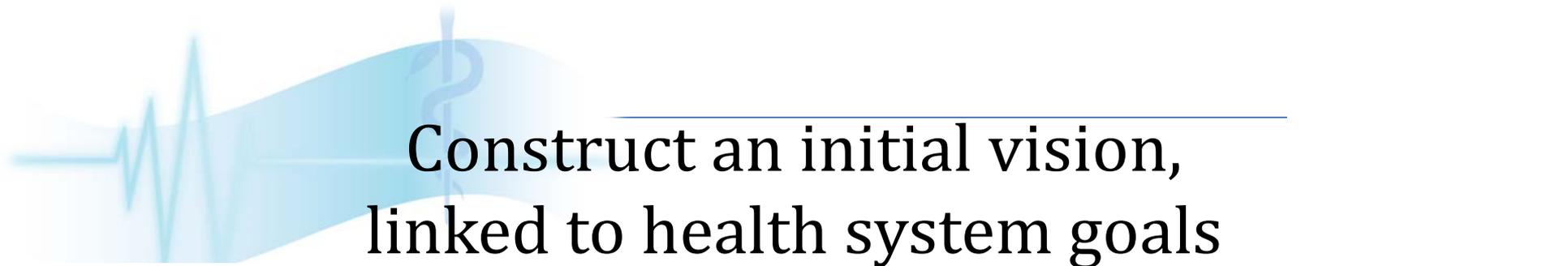
Area	Sample questions
Population health	<ul style="list-style-type: none"><li>▪ What are the strategic goals for improving the health outcomes of the population?</li><li>▪ What challenges will be created by current and expected changes in population health?</li></ul>
Equity and accessibility	<ul style="list-style-type: none"><li>▪ What are the challenges impacting the delivery of equitable and accessible health services across the population?</li></ul>
Health workforce supply and distribution	<ul style="list-style-type: none"><li>▪ What are the challenges facing the supply of the nation's health workforce and its ability to support effective and efficient healthcare delivery at all levels of care?</li><li>▪ What are the challenges related to the distribution of a nation's health workforce and its ability to support effective and efficient healthcare delivery in metropolitan, regional, rural and remote parts of the nation?</li></ul>
Health system structure and organization	<ul style="list-style-type: none"><li>▪ What are the challenges caused by the existing structural, funding, governance and leadership arrangements of the nation's health system?</li></ul>
Effectiveness and efficiency of healthcare delivery	<ul style="list-style-type: none"><li>▪ What are the challenges that affect the quality and safety of health services delivered to the population?</li><li>▪ What are the challenges affecting the effort, time and cost associated with delivering health services to the population?</li></ul>
Emergence of advanced medical treatment regimes	<ul style="list-style-type: none"><li>▪ What are the opportunities and challenges associated with the emergence of advanced medical treatment regimes and the demand for these by the population and healthcare providers?</li></ul>
Funding	<ul style="list-style-type: none"><li>▪ What are the challenges regarding funding of national healthcare, such as the growth in public and private spending, sustainability of the health system, projected funding and its impact on future health services?</li></ul>



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## Initiating a national eHealth strategic planning process

- 6. *Draft an initial vision.*** The time horizon, desired outcomes, link to the strategic context, and what eHealth will mean for stakeholders.
- 7. *Identify the required eHealth components.*** What components are needed to deliver the vision? How do they link together? Models such as eHealth architecture, stakeholder benefits model, and component maps can be useful at this stage.



# Construct an initial vision, linked to health system goals

## Health system goal or challenge

Health workforce shortages primarily affect rural and remote communities, due to the concentration of highly trained professionals in urban areas.

### eHealth outcome

Enable electronic access to appropriate health care services for patients in rural and remote communities

### Rationale

Enabling individuals to access services through electronic means will partly compensate for health workforce shortages.

## Health system goal or challenge

To have halted by 2015 and begun to reverse the spread of HIV/AIDS in our country.

### eHealth outcome

Provide individuals with electronic access to the information they need about preventing HIV/AIDS and other diseases.

### Rationale

Access to education and awareness information about HIV/AIDS and other sexually transmitted diseases is an effective way to combat the spread of these diseases.

### eHealth outcome

Facilitate improved monitoring and surveillance of population health through more effective data collection, reporting and exchange.

### Rationale

Surveillance and reporting on HIV/AIDS is essential to the planning and implementation of programs aimed at halting and reversing the spread of the disease.



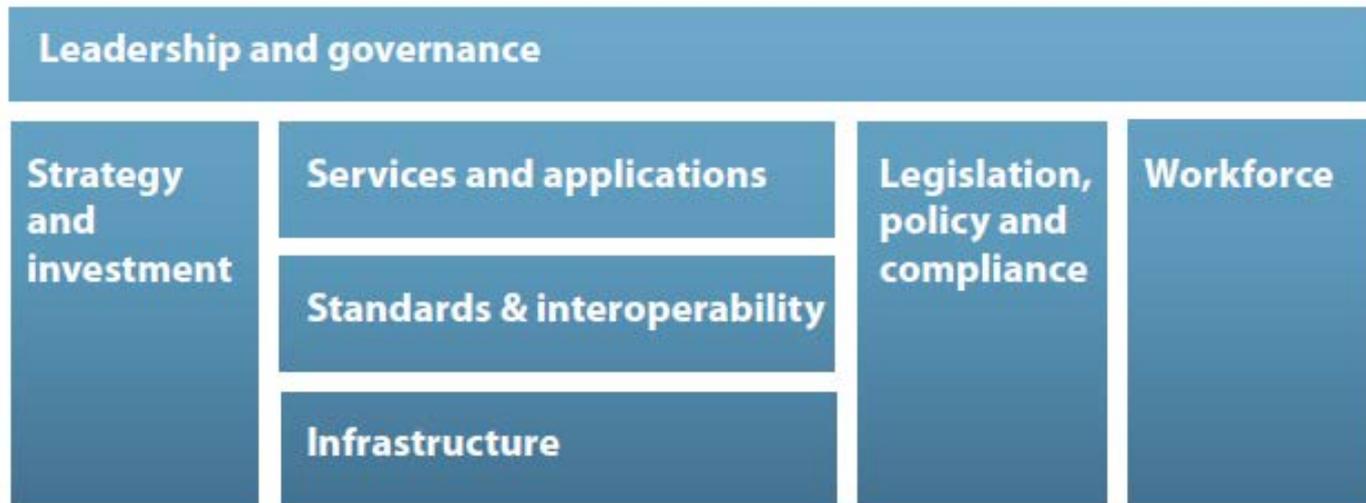
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## Initiating a national eHealth strategic planning process

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# Identify the required eHealth components: Foundations for change

## eHealth components



Building blocks of a national eHealth environment that need to be in place to achieve your eHealth vision.



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# Show the link between the components and the desired outcomes

## Linking a service and application component to an eHealth outcome

### Health system goal or challenge

Health workforce shortages primarily affect rural and remote areas and communities due to the concentration of many highly trained professionals in urban and metropolitan areas.

### eHealth outcome

Enable electronic access to appropriate health care services for citizens in rural and remote communities.

### Rationale

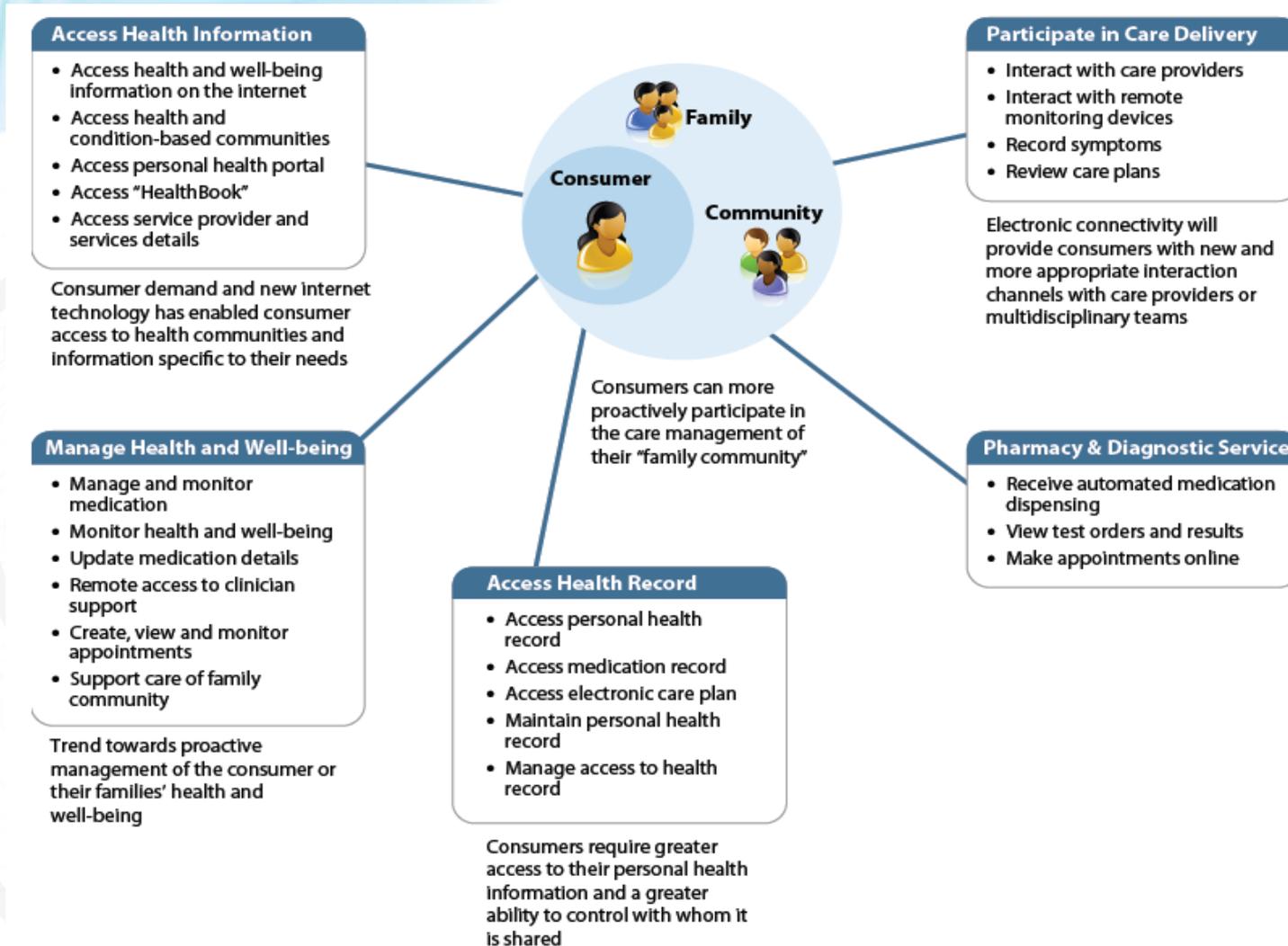
Enabling individuals to access healthcare services remotely through electronic means will partly address challenges of health workforce shortages.

### Required eHealth service and application components

#### Service delivery channels (Telehealth)

Telehealth services for electronic consultations support delivery of quality care to individuals living in rural and remote communities affected by workforce shortages. These systems provide remote access to clinical and co-consultations in which a local care provider jointly consults with the patient.

# How eHealth benefits stakeholders



This model describes the benefits for stakeholders (e.g. consumers, health-care providers, etc), from their perspective.



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## Initiating a national eHealth strategic planning process

- 8. *Gather information on the current eHealth environment.*** Taking a broad focus, this stage identifies components that could be shared, re-used or built on.
- 9. *Assess opportunities, gaps, risks and barriers.*** Describes what is currently available, and what must be developed, and the risks or barriers to doing so. This is a critical analytic step, sometimes requiring external assistance.



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## Initiating a national eHealth strategic planning process

8. *Gather information on the current eHealth environment.* Taking a broad focus, this stage identifies components that could be shared, re-used or built on.
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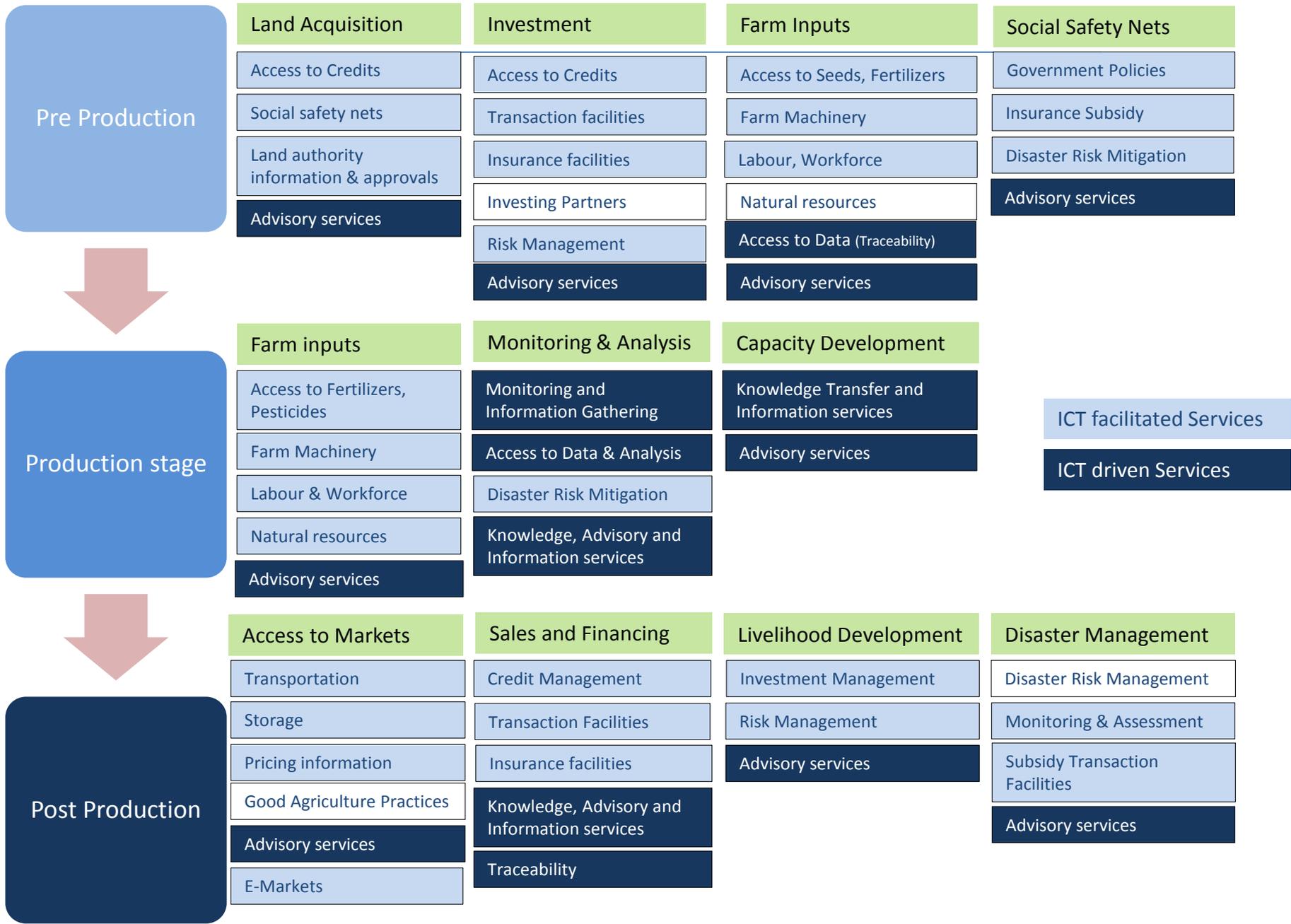
# Initiating a national eHealth strategic planning process

## **10. Refine the vision and develop strategic**

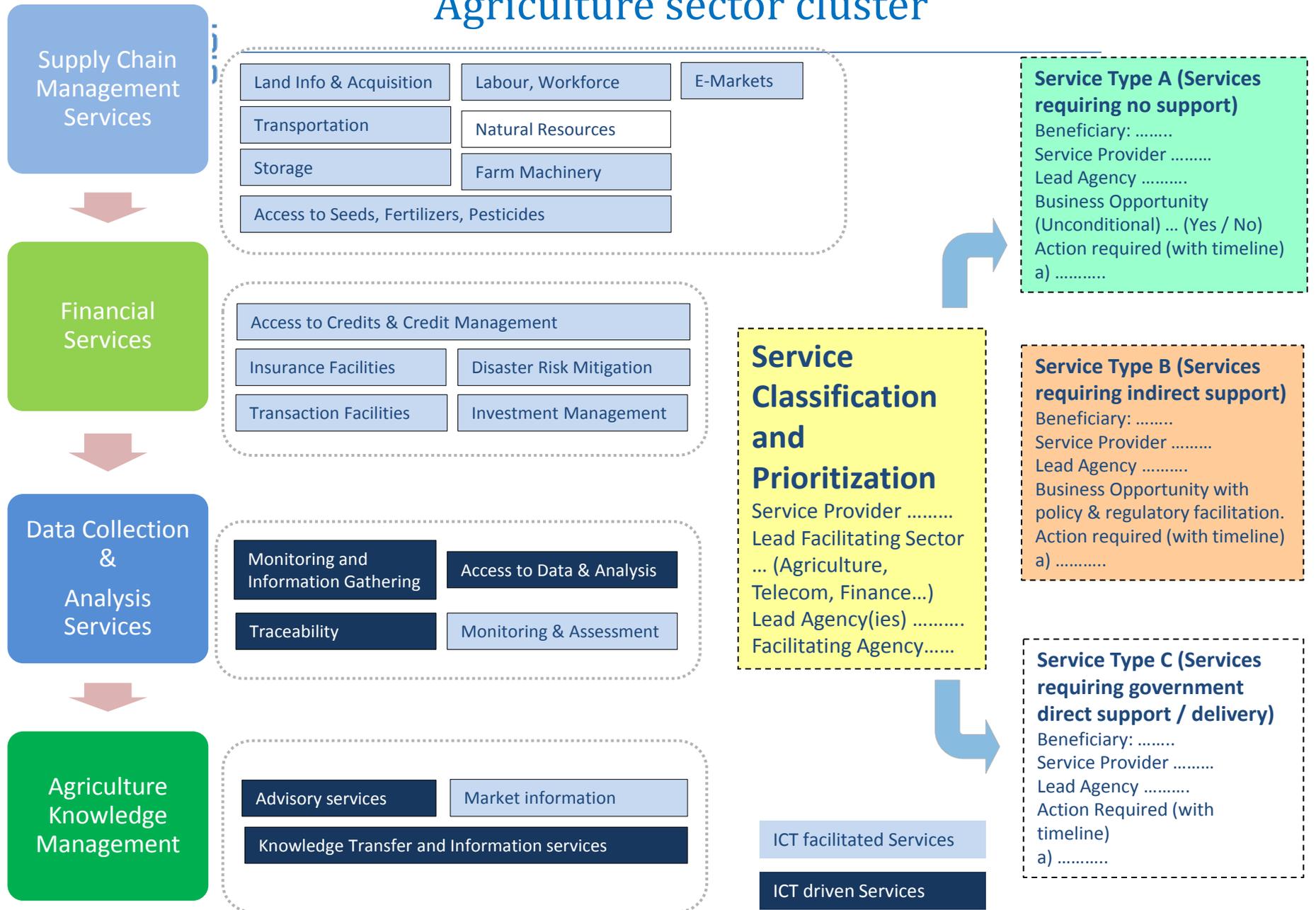
**recommendations.** Takes the initial vision and refines it to be realistic, practical and achievable. Communicates the vision to stakeholders. This is a high-level view of the main components, and the rationale for their selection.



# E-AGRICULTURE STRATEGY

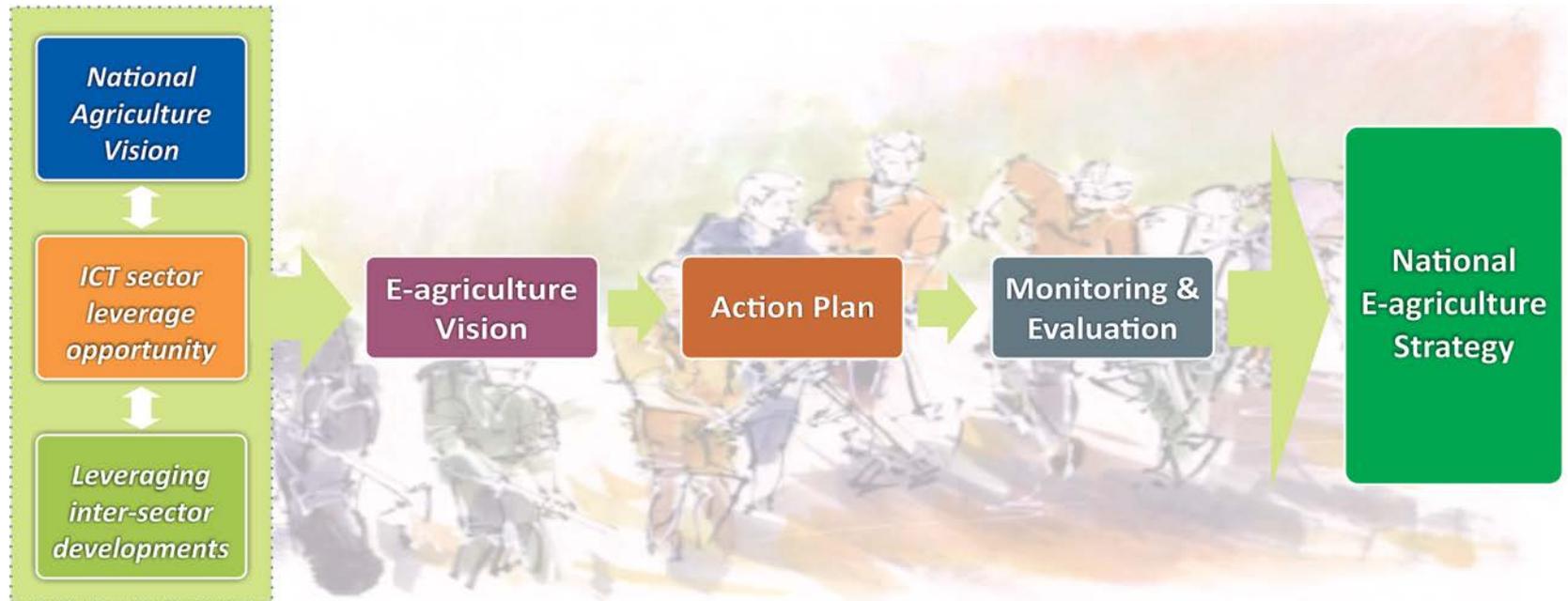


# Agriculture sector cluster





## Developing e-strategies example: E-Agriculture



The final outcome is a National Strategy on e-Agriculture comprising of three parts.

Ongoing assistances to Bhutan and Sri Lanka on development of e-Agriculture Strategy / Masterplan

Interactive  
voice response



TELEPHONE

Agriculture info  
and markets



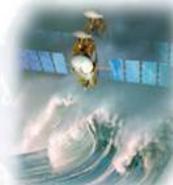
COMPUTERS AND  
WEBSITES

Expertise sharing  
, Advisory,  
Community



BROADCASTING

Weather, Universal  
accessibility,  
Remote Sensing



SATELLITE

Advisory, Sales,  
Banking, Networking



MOBILE

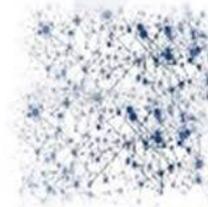
Global knowledge sharing,  
social media, e-community,  
banking, market platform,  
trading, etc.

INTERNET AND  
BROADBAND



Real time information  
availability, better data  
quantity and quality,  
decision making

SENSOR  
NETWORKS



DATA STORAGE  
AND ANALYTICS

Big data

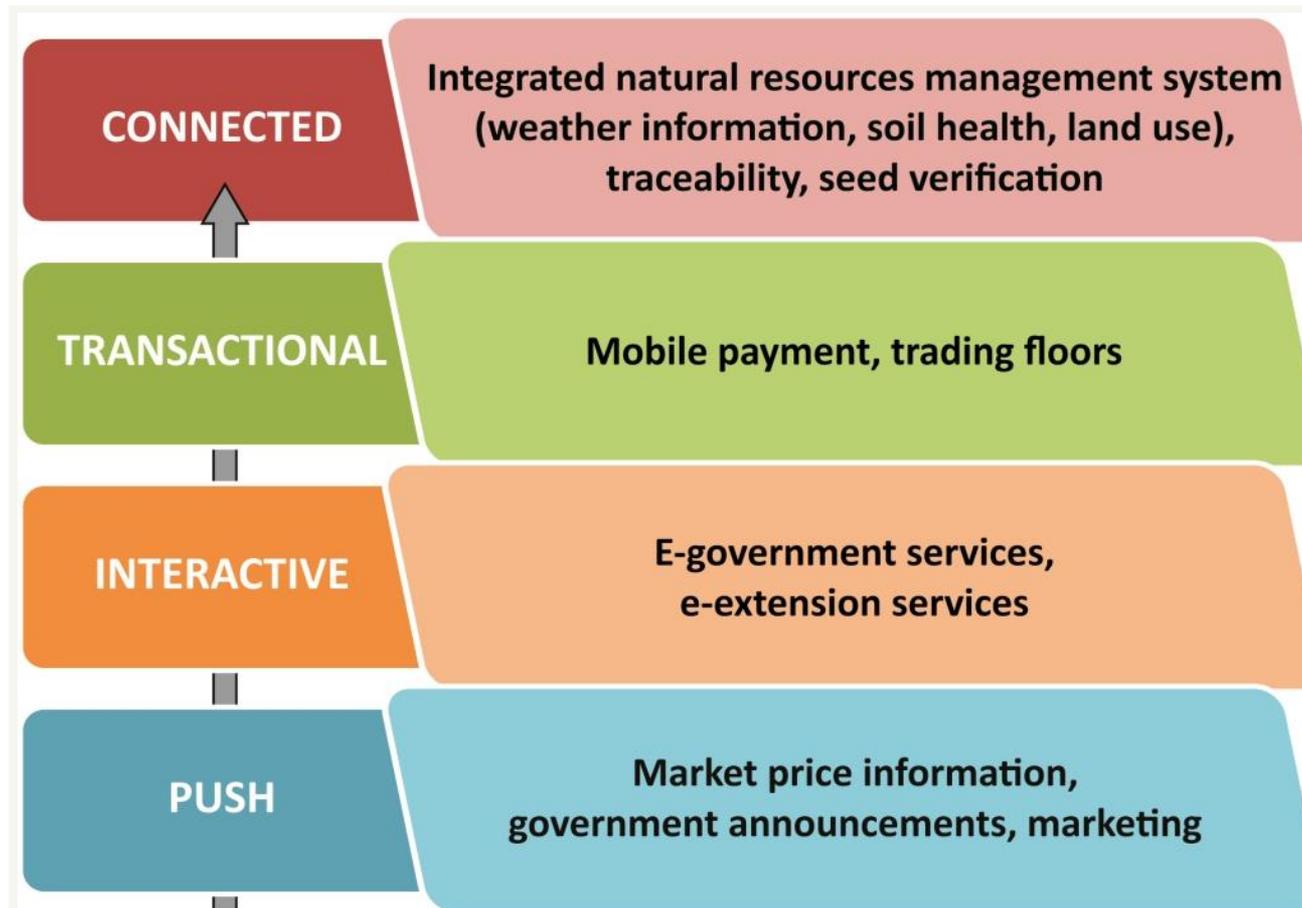
Precision agriculture, Better  
informed decision making,



© en.people.cn



## E-service categories



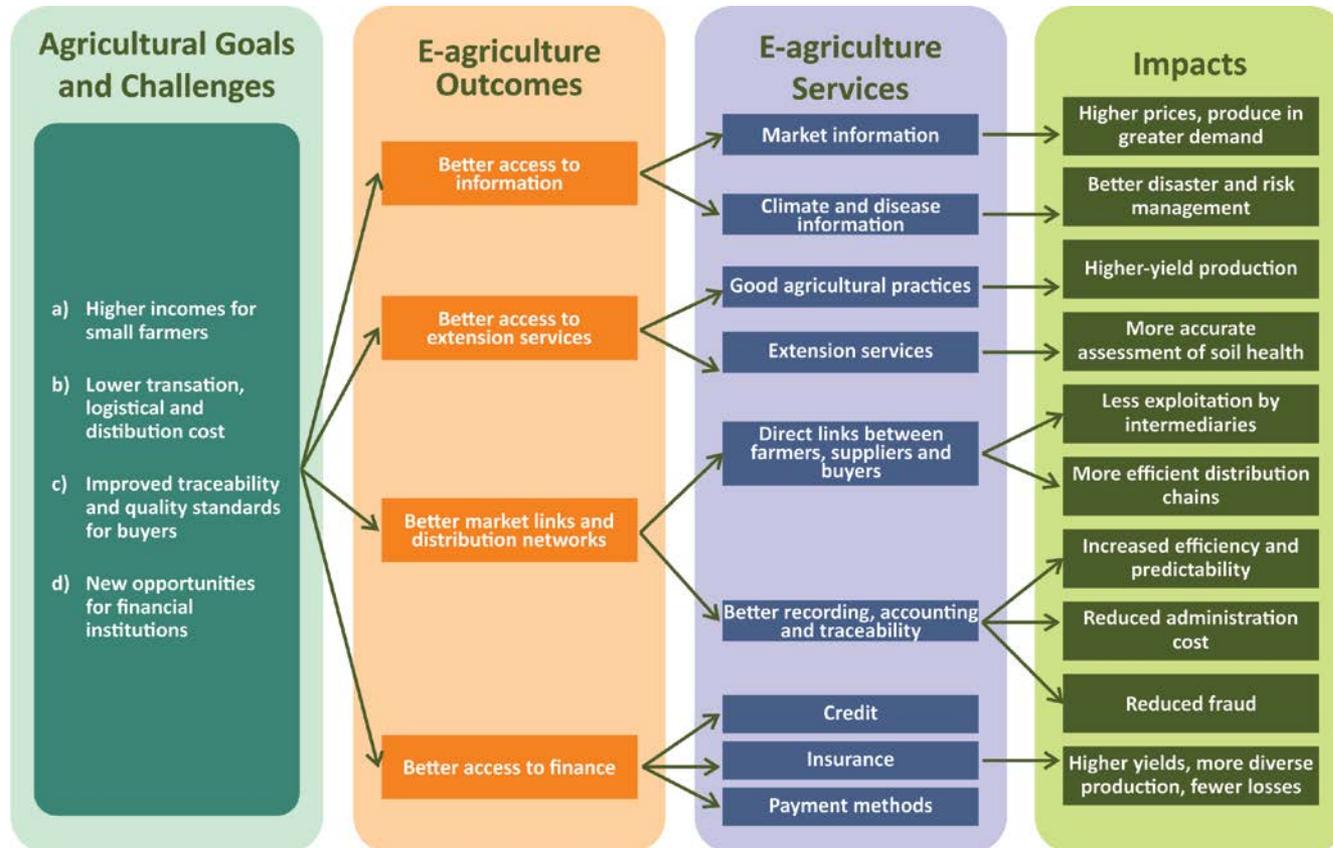
# E-agriculture vision development



- 1 Research agriculture sector growth and demographics;
- 2 Describe the existing agricultural extension systems;
- 3 Describe the existing agricultural services, information flow and transaction streams in agricultural value chains;
- 4 Review the national agricultural strategy, goals and priorities;
- 5 Identify socio-economic development goals relevant to e-agriculture;
- 6 Identify work already done on strategies for e-agriculture;
- 7 Identify goals and challenges where e-agriculture will have the most impact;
- 8 Describe how e-agriculture will support selected goals.



## Outcomes and Services Linkages with agricultural goals



Source: World Bank [adapted] (2011).



## E-agriculture components





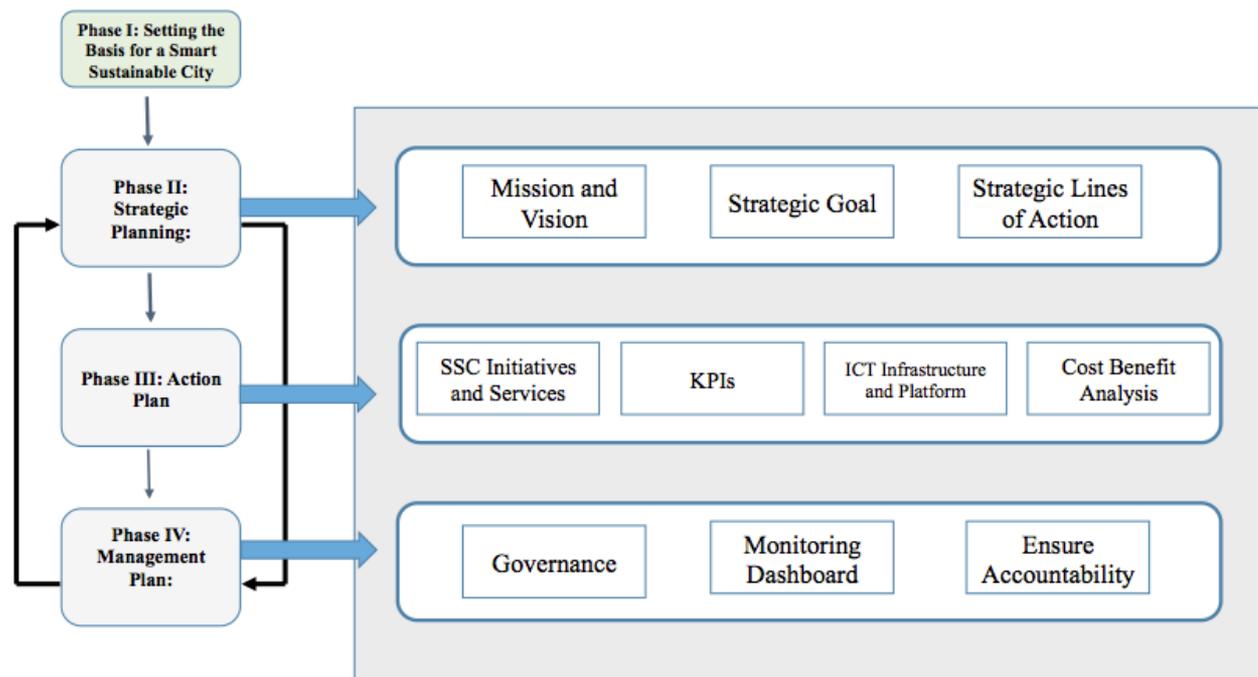
# EXAMPLE

e-Agriculture Action Plan		Examples of Outcomes, Outputs and Activities Linkages			
		Year 0	Year 1	Year 2	Year 3
<b>e-Agriculture Outcome 1</b>	<b>e-market to buy and rent agriculture goods and services</b>				
	<i>Output 1-1 (e.g. Web based e-Agriculture Market Information System)</i>	Activity 1-1-1	Activity 1-1-2		
	<i>Output 1-2 (e.g. Credible e-Agriculture market platform with customer redressal system)</i>		Activity 1-2-1	Activity 1-2-2	
	<i>Output 1-3 (e.g. Electronic and mobile transaction facilities on e-Agriculture platform)</i>	Activity 1-3-1	Activity 1-3-2	Activity 1-3-3	Activity 1-3-4
<b>e-Agriculture Outcome 2</b>	<b>Easy access to credit and improved credit management</b>				
	<i>Output 2-1 (e.g. Guidelines for mobile and electronic banking and transaction services)</i>	Activity 2-1-1			
	<i>Output 2-2 (e.g. Credit availability and management service for small holding farmers and fishermen)</i>		Activity 2-2-1	Activity 2-2-2	
	<i>Output 2-3 (e.g. Micro insurance service for low income farmers and fishermen)</i>	Activity 2-3-1	Activity 2-3-2	Activity 2-3-3	Activity 2-3-4
<b>e-Agriculture Outcome 3</b>	<b>Better data availability and collection services (weather station data, market data, satellite data, farm quality data etc.)</b>				
	<i>Output 3-1 (e.g. Framework (open and secure) for sharing and access to data critical for agriculture sector )</i>		Activity 3-1-1	Activity 3-1-2	
	<i>Output 3-2 (e.g. Portal for collecting and disseminating the data to users)</i>	Activity 3-2-1	Activity 3-2-2		
	<i>Output 3-3 (e.g. Export driven advisory and investment services)</i>			Activity 3-3-1	Activity 3-3-2
<b>e-Agriculture Outcome 4</b>	<b>Improved and better informed advisory service for production</b>				
	<i>Output 4-1 (e.g. RFID identification for farm inputs)</i>	Activity 4-1-1	Activity 4-1-2		
	<i>Output 4-2 (e.g. Credible agriculture content (text, audio, video) for extension workers on mobile, broadcast and electronic platform)</i>			Activity 4-2-1	Activity 4-2-2
	<i>Output 4-3 (e.g. Wider adoption of tablets and smart phones amongst extension workers)</i>	Activity 4-3-1	Activity 4-3-2		
<b>e-Agriculture Outcome 5</b>	<b>Others</b>				
	<i>Output 5-1</i>	Activity 5-1-1	Activity 5-1-2		
	<i>Output 5-2</i>	Activity 5-2-1	Activity 5-2-2		
	<i>Output 5-3</i>		Activity 5-3-1	Activity 5-3-2	

# SMART SUSTAINABLE CITY

# Smart Sustainable City

## Stages of Action: SSC Master Plan



Source: ITU-T Focus Group on Smart Sustainable Cities:  
Master plan for smart sustainable cities

# Smart Sustainable City 6-step Transition cycle

(adapted from on ICLEI's  
'Sustainability Cycle')

Source: ITU-T Focus Group on Smart Sustainable Cities:  
Smart sustainable cities: a guide for city leaders

## A multi-tier SSC ICT architecture from communication view (physical perspective)

# Smart Sustainable City

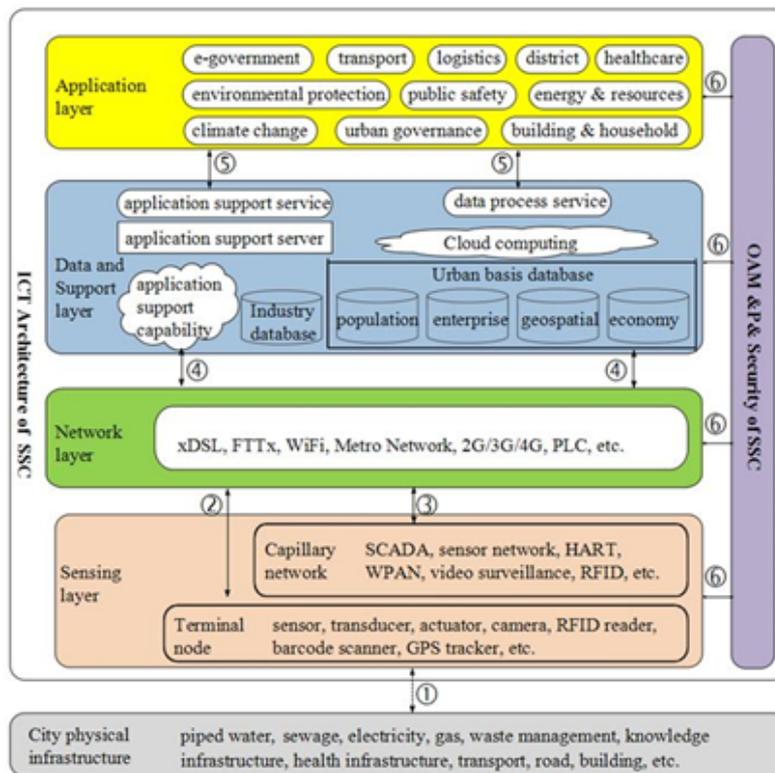
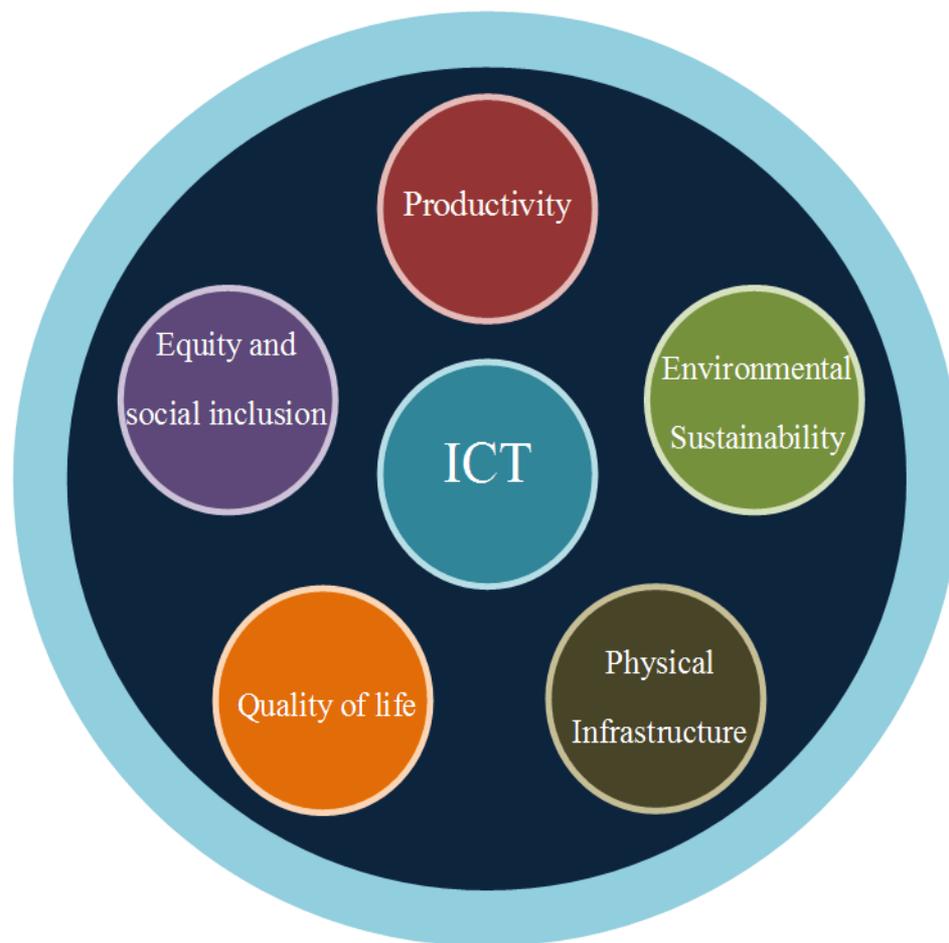


Figure source: ITU-T Focus Group on Smart Sustainable Cities: *Overview of smart sustainable cities infrastructure*



**Source: Overview of key performance indicators in smart sustainable cities, ITU-T Focus Group on Smart Sustainable Cities**

**Table 1 – Sub-dimension of KPIs**

Dimension #	Dimension	Sub-dimension #	Sub-dimension
D1	Information communication and technology	D1.1	Network and access
		D1.2	Services and information platforms
		D1.3	Information security and privacy
		D1.4	Electromagnetic field
D2	Environmental sustainability	D2.1	Air quality
		D2.2	CO <sub>2</sub> emissions
		D2.3	Energy
		D2.4	Indoor pollution
		D2.5	Water , soil and noise
D3	Productivity	D3.1	Capital investment
		D3.2	Employment
		D3.3	Inflation
		D3.4	Trade
		D3.5	Savings
		D3.6	Export/import
		D3.7	Household income/consumption
		D3.8	Innovation
		D3.9	Knowledge economy
D4	Quality of life	D4.1	Education

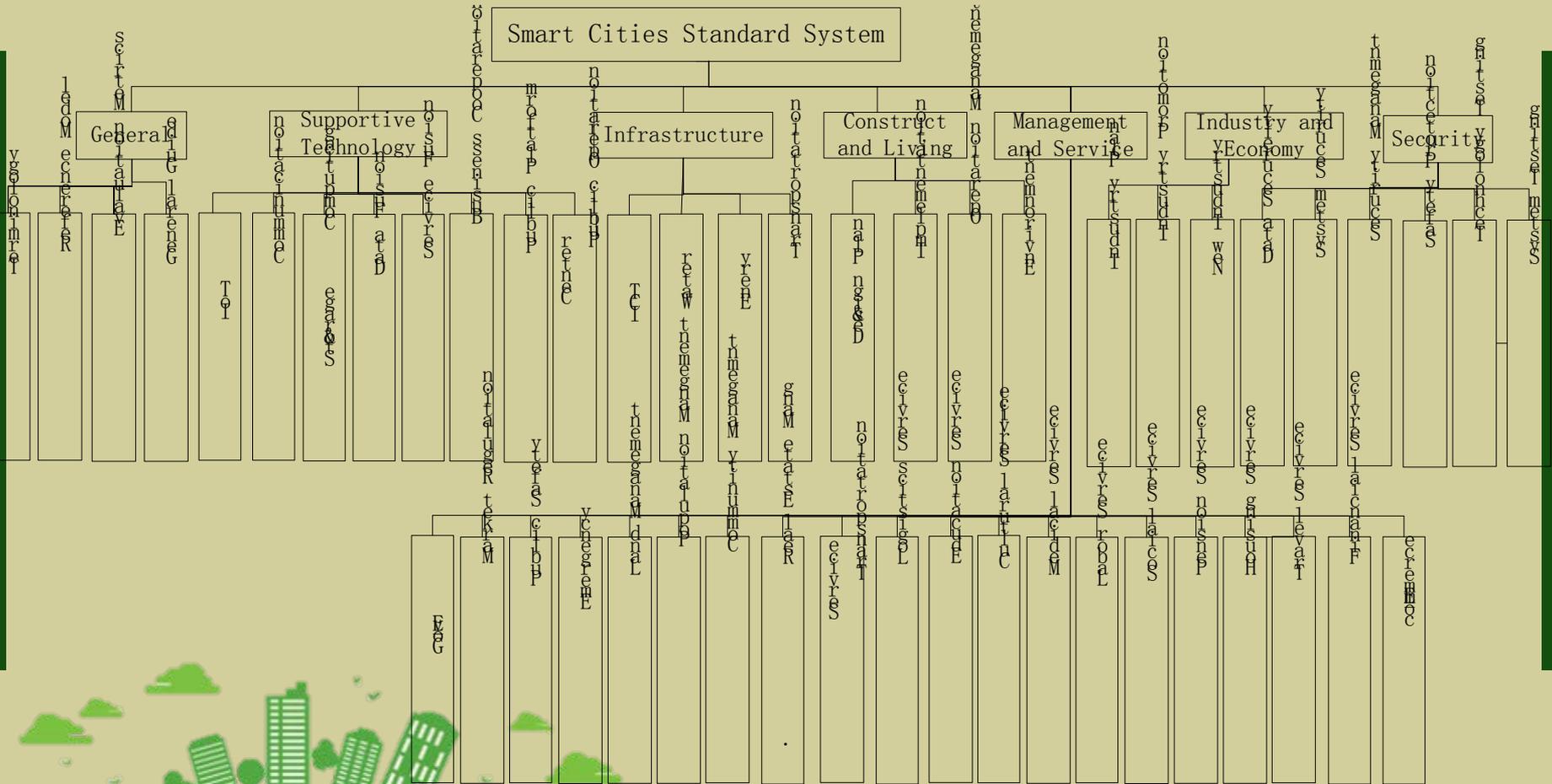
Source: Overview of key performance indicators in smart sustainable cities, ITU-T Focus Group on Smart Sustainable Cities

**Table 1 – Sub-dimension of KPIs**

Dimension #	Dimension	Sub-dimension #	Sub-dimension
D4	Quality of life	D4.1	Education
		D4.2	Health
		D4.3	Safety/security public place
		D4.4	Convenience and comfort
D5	Equity and social inclusion	D5.1	Inequity of income/consumption (Gini coefficient)
		D5.2	Social and gender inequity of access to services and infrastructure
		D5.3	Openness and public participation
		D5.4	Governance
D6	Physical infrastructure	D6.1	Infrastructure/connection to services – piped water
		D6.2	Infrastructure/connection to services – sewage
		D6.3	Infrastructure/connection to services – electricity
		D6.4	Infrastructure/connection to services – waste management
		D6.5	Connection to services – knowledge infrastructure
		D6.6	Infrastructure/connection to services – health infrastructure
		D6.7	Infrastructure/connection to services – transport
		D6.8	Infrastructure/connection to services – road infrastructure
		D6.9	Housing – building materials
		D6.10	Housing – living space
		D6.11	Building

# 初步规划了智慧城市标准体系 Draft Smart Cities Standards System

China



Source: Lei Zang, China Academy of Telecommunication Research (CATR), ITU Green Standards Week, 22-26 September 2014, Beijing

## **SMART ISLANDS!**

### **SMART STRATEGY?**

- **Where is the business growth going to come from?**
  - **Do we have the enabling environment?**
    - **Are networks ready?**