Smart City Assessment Framework

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1. Introduction

> The assessment framework comprises of nine characteristics that are common to smart city projects

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Note: The assessment framework incorporates the findings from several papers that have proposed Smart City frameworks, including:

- "Understanding Smart Cities: An Integrative Framework"; Hafedh Chourabi, Taewoo Nam, et al, IEEE Computer Society, 2012;
- "Smart City Framework, A Systematic Process for Enabling Smart+Connected Communities"; Gordon Falconer, Shane Mitchell at Cisco, September 2012
- "Smart cities - Ranking of European medium-sized cities"; Centre of Regional Science at the Vienna University of Technology ,Research Institute for Housing, Urban and Mobility Studies at the Delft University of Technology and the Department of Geography at University of Ljubljana, 2007; http://www.smart-cities.eu/model.html
- Intelligent Community Indicators ; www.intelligentcommunity.org

2. Smart City Assessment Framework[1]

Characteristic	Description
Smart City Strategy	- What is the Smart City's vision and objectives? - Provide details of the Key Performance Indictors (KPI's) that are used to measure the city's performance in meeting the Smart City objectives? - Are KPI's benchmarked against international standards such as the "Global urban competitiveness index" www.gucp.org/en/; Global City Indicators Facility (GCIF) www.cityindicators.org/; Green City Index www.siemens.com/entry/cc/en/greencityindex.htm or other standards? If so, please provide details - Does the city have an ICT strategic plan in place to ensure major technology trends are included in their city planning? If so, please provide evidence
Stakeholders	- Who are the key stakeholders involved in the decision-making of the Smart City development? For example, stakeholders may include government (Federal, Municipal, Local), regulators, land & property developers, ICT service providers, systems integrators, utility providers, transport operators, citizens, etc. - Describe how citizens are engaged in the smart city development? - For example what role do citizens play in designing, developing and improving smart city services? - Does the City use crowd sourcing as a mechanism to engage with citizens? If so please provide an example - How does the city promote and publicise Smart City developments to stakeholders?

2. Smart City Assessment Framework(2)

Characteristic	Description

Governance	- Describe the organisational/management and governance structure of the Smart City development, for example,
	    o What are the roles of the leader and champion of the project?
	    o What are the roles, responsibilities and inter-relationships of the key stakeholders ?
	    o What level of cross-departmental governance structure is in place i.e. to ensure collaboration across the city planning development process?
	    o What is the process to allow stakeholders to participate in decision-making?
	    o How does the governance process ensure there is transparency and accountability of the various stakeholders?
	- Does the city use ICT to improve their governance i.e. enable new and better decision making processes and/or incentive systems ? If so, please provide examples

2. Smart City Assessment Framework(3)

Characteristic	Description

Funding	▪ What is the source of funding to finance the smart city development ? Foe example, Municipal government, Land sales, EU grant, Social Impact bonds, private investors etc.?
	   o How much of the funding was from private and public sources?
	   o What business structures have been established e.g. PPP, JVs?
	▪ How much funding was required to finance the smart city development?
	▪ What process was used to raise funding and how long did it take to secure funding?
	▪ Describe any funding issues that may have arisen e.g. budget over-runs, insufficient funding to complete the project goals

Value Assessment	▪ What are the economic, environmental, social and cultural outcomes / impact from the Smart City development? For example,
	   o What, if any, was the amount of business and/or jobs created ?
	   o What, if any, was the increase in GDP?
	   o What, If any, was the reduction in C02 emissions, traffic congestion, etc. and the value in financial terms?
	   o How were health services improved e.g. reduction in appointment waiting times, and the value in financial terms?
	   o Etc.
	o Does the city use any tools or a frameworks to measure the "Social Return on Investment'? If so, please specify

2. Smart City Assessment Framework(4)

Characteristic	Description

Business Models	▪ Provide a brief overview of the business models that are being used to monetise Smart City investments. For example
	    ○ Risk-sharing initiatives e.g. technology vendor / Telco providing the IT infrastructure in return for a share of future revenue streams
	    ○ Using revenue generated from road congestion charges to finance public transport systems

ICT Infrastructure	▪ Describe the current investment in ICT infrastructure i.e. hardware and software assets, including
	    ○ Broadband (fixed and wireless) network penetration
	    ○ Data centre infrastructure
	    ○ Geographic Information System technology
	    ○ Public, Private, Hybrid cloud platforms
	    ○ Passive/ intelligent sensors
	    ○ Video monitoring, etc.
	▪ Who are the key suppliers, vendors, System Integrators, partners involved in providing the smart city infrastructure?
	▪ Is the ICT infrastructure managed or shared across smart city projects? If yes, describe how this is achieved
	▪ What measures is the city taking to 'future proof' its investment in ICT infrastructure?
	▪ Does the city have a plan to roll-out ICT infrastructure to meet future demand? If so , who is responsible for developing the plan? Is their sufficient funding to finance the roll-out?

2. Smart City Assessment Framework[(5)]

Characteristic	Description

Smart City Services <u>**Classification**</u>
  o Education
  o Economic stimulus
  o Environment
  o Energy and utilities
  o Food safety
  o Health
  o Intelligent buildings
  o Logistics
  o Community Development
  o Open Data
  o Prevention e.g. crime, disasters
  o Public services /administration
  o Transportation
  o Waste management
  o Water
  o Other
	▪ Describe each smart city service (as per the classification in the left hand column) that are provided by the Smart City development. The description should include the following information
	  o The date the service was launched
	  o A high level system/technical overview of the service including details of whether the service is
	     • Scalable i.e. could the application be expanded within the city and /or to other cities?
	     • Delivered over the Cloud?
	     • A single service or part of a broader integrated offering?
	     • Designed with an open Application Programming Interface (API)?
	     • Making use of the Internet of Things
	  o Who the services is targeting e.g. businesses, health service providers, older people (60+), unemployed people, etc.
	  o The benefits (financial and non-financial) resulting from the services
	  o What plans the city has to develop/expand/enhance the service, e.g.
	     • Utilising advanced data analytics/big data technology to make better use of city data and information
	     • Making better use /sharing of ICT infrastructure
	  o What measures/actions have been taken to ensure that minority groups and people with no or poor digital literacy can use the service?
	▪ In your opinion, do any of the Smart City services represent "Best Practice"? If so, please explain why

2. Smart City Assessment Framework

Characteristic	Description

Legal and Regulatory Policies	▪ Describe the key legal and regulatory policies that have had a material impact (positive/negative) on the development of the Smart City development, for example
	   ○ Telecommunications
	   ○ Building regulations
	   ○ Security and privacy
	   ○ Intellectual Property
	   ○ Etc.
	▪ Describe what polices have been put in place to ensure the physical Smart City infrastructure is secure, for example
	   ▪ Disaster recovery management of ICT and other city infrastructure such as electricity, gas, water, etc.
	   ▪ Business Continuity planning
	▪ Describe any other areas where the city has developed new policies to improve the outcome of Smart City developments