



Smart Cities:
Creating the right conditions for
success using Outcomes Based
Framework (OBF)

salience whitepaper

Authors: Hasan Iftikhar, Owen Stubbs and Simon Mycock
December 2015



Table of Contents

Introduction	3
What makes a city a Smart City?	3
Ecosystems of Smart City projects	4
Stakeholders.....	4
Solution partners.....	4
Enablers.....	5
Sample of Smart cities across the globe	5
Amsterdam.....	5
Stockholm.....	5
Barcelona	5
Singapore	6
London	6
What are the drivers for Smart City projects?	6
Dubai's Smart City project.....	8
Creating the conditions for Dubai's success as a Smart City	10
Infrastructure example: A city-wide WiFi	12
Salience Consulting's Outcomes Based Framework (OBF) for Smart City projects..	13
Setting Smart City objectives	13
Metrics and KPIs.....	14
Outcomes-based framework	15
Salience Consulting engagement methodology.....	16
Authors	17

Introduction

Through a variety of open, collaborative public and private sector initiatives, Amsterdam, Stockholm, Barcelona, Singapore and London have established themselves as global examples of Smart Cities. This has been achieved through a number of city-wide transformation projects delivering Smart Government, Smart Buildings, Smart Transportation, Smart Energy and Smart Water services.

Dubai government's Smart City projects underpin its ambition to join these global examples of Smart Cities by 2021. Aligned to Dubai's Expo2020 masterplan, these stakeholder-led investment projects are setting the pace and scale for other Smart City developments across the UAE and the wider region.

Solution partners operating within the Middle East will be looking for discrete business opportunities within the supply chain of smart City projects. However, new business opportunities can also be created by 'enablers' who are able to demonstrate to stakeholders and solution partners how to derive value from seemingly diverse smart city initiatives.

Through experience of working in regulated environments with national operators in the Middle East, Salience Consulting is well positioned to enable telecoms operators, regulators and systems integrators to capitalize on opportunities from smart city projects. This whitepaper presents Salience Consulting's Outcomes-Based Framework (OBF) and the methodology of applying it to smart city projects.

What makes a city a Smart City?

A Smart City deploys and utilizes a wide range of digital technologies, or Information and Communication Technologies (ICT), to enhance the life of its citizens through innovation and knowledge. The evolution of cities into Smart Cities has gone hand-in-hand with the development of the 'internet of things', a network of physical objects embedded with technology that enables them to exchange data in real time. Cities have now become intricate systems, generating large and complex data sets collectively known as 'big data'.

The challenge for stakeholders and solution partners involved in Smart City projects is how to effectively use technology and data together to address common economic, social and environmental challenges. As a result of changes in population, demographics and lifestyles, smart cities are typified by a number of strategic transformation projects.

Examples of these projects are shown in Figure 1 and include:

- Smart Water and Smart Energy projects providing intelligent meters to monitor consumption, reduce waste, reduce costs and ultimately lessen the impact on the environment

- Smart Transportation and Smart Mobility projects providing better solutions for traffic flows and population mobility
- Smart Government projects providing digital gateways to information, such as access to or requests for public records; social forums for collaboration on community projects; and mobile applications for bill payments

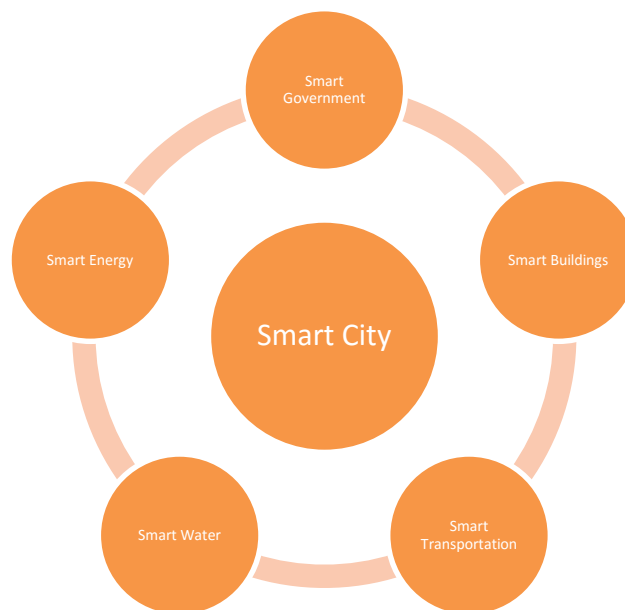


Figure 1: Typical Smart City projects

Ecosystems of Smart City projects

Smart City projects can be thought of as complex mechanisms with many moving parts that must synchronize with each other, hence an ecosystem.

Stakeholders

The stakeholder role is played out generally by the city, district or national government implementing Smart City projects. In collaboration with the other parties, the stakeholders must drive the policy and the strategy elements of the projects. Governance is ideally led by stakeholder representatives.

Solution partners

Partnerships are formed for solutions, and these can come from providers across a broad range of fields with different roles. Real estate firms, academia, private engineering firms, international solution firms, technology research firms and investment bodies are examples.

Enablers

Enablers are specialist advisors who are neutral to the solution partners and enable the outcomes of Smart City projects for the stakeholders. Salience Consulting plays a role in this segment to enable solution partnerships through its Outcomes Based Framework approach for Smart City projects, working out the models that are applied across the value chain through metrics and KPIs.

Sample of Smart cities across the globe

Amsterdam

Started in 2009, Amsterdam Smart City describes itself as ‘a unique partnership between companies, governments, knowledge institutions and the people’. Now, with over 100 partners, it has grown into a platform for more than 75 innovative projects including participation in public policy and government expenditure, smart grids, heat networks and sustainable housing, a citizen engagement platform, tourist signs in native languages and a service developer kit to help open up data in other cities.

Stockholm

Efficient cooperation between inhabitants, private industry, and the public sector has been key to achieving Stockholm’s smart city status. The areas of focus have been measures designed to improve the environment with the help of IT, e-services for permits, and a fibre network with competition-neutral infrastructure capable of meeting future communication needs, spurring economic activity, diversity and freedom of choice.

Barcelona

Barcelona’s Smart City projects cover all areas of the city management including a domestic care service provided free of charge to vulnerable citizens, encouraging children to go to and from school in an independent and safe manner, and hundreds of Near Field Communication (NFC) or Quick Response (QR) codes throughout the city that provide access to information on mobile websites.

Singapore

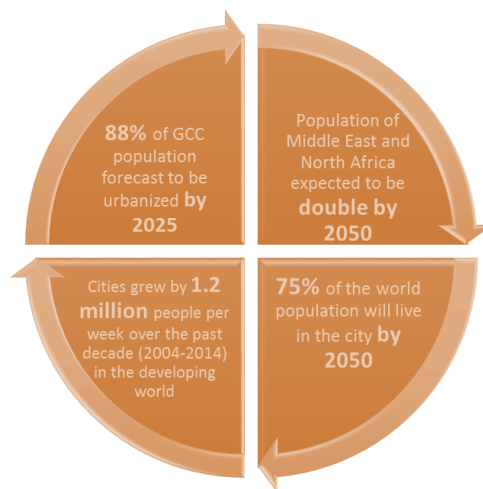
Singapore's strategy has been to develop as a 'smart nation' through a framework that brings together projects for planning, estates, environment and living. This has involved putting in place infrastructure, policies, systems and capabilities (such as access to real-time transport information) so that citizens can better plan their journeys.

London

By being given access to open data, Londoners and entrepreneurs are being encouraged to engage in how the city is performing, and to help find more innovative solutions to the city's challenges. London collects data such as the number of people who commute into London; local air quality; schools' locations and their performance; the number of new homes and where they're being built; and local crime rates. This information is available for anyone to use, for any purpose, at no cost.

What are the drivers for Smart City projects?

Cities worldwide are going through an unprecedented period of transition as result of increasing pressures on their urban infrastructure. Figure 2 below provides statistical forecast of the key population changes impacting cities. In order to cope with these and similar issues governments are looking at technology for solutions.



http://www.un.org/esa/population/migration/turin/Turin_Statements/ALNAJJAR.pdf

Figure 2: Key changes to cities worldwide

While this has led to the drive for Smart City projects across the globe, the number of projects and their key focus areas vary between regions (see Figure 3). This as a result of differing population and infrastructure challenges in each geographic region.

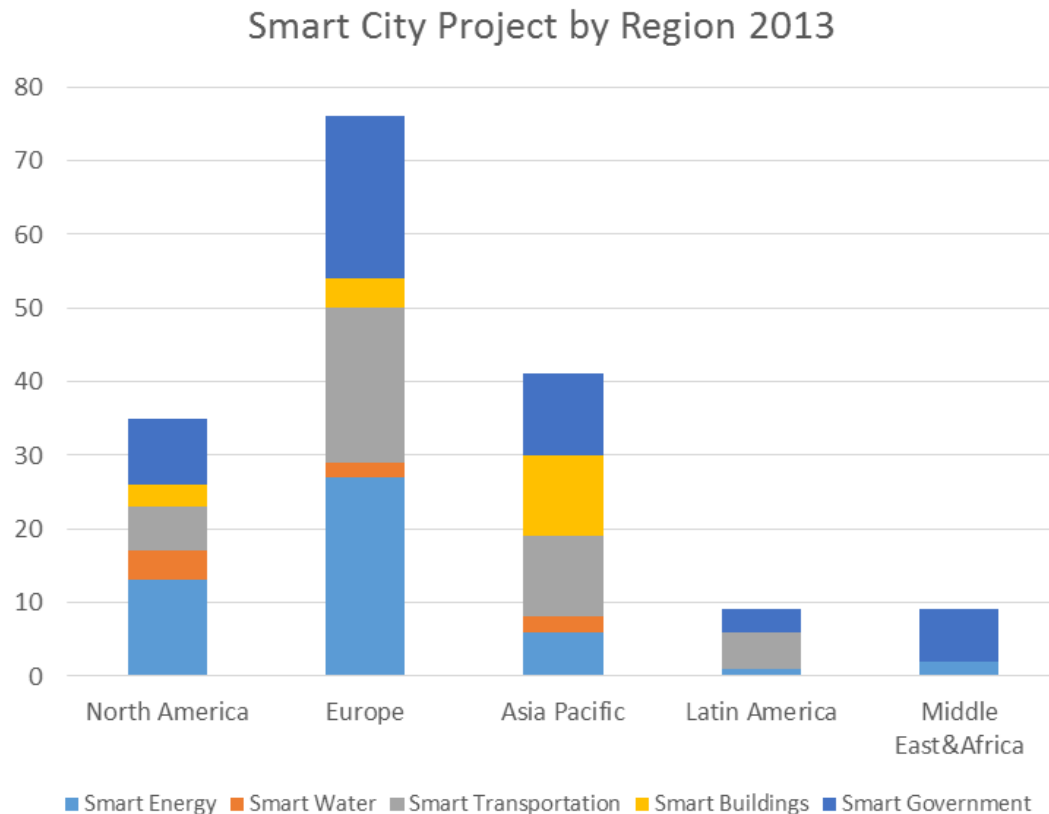


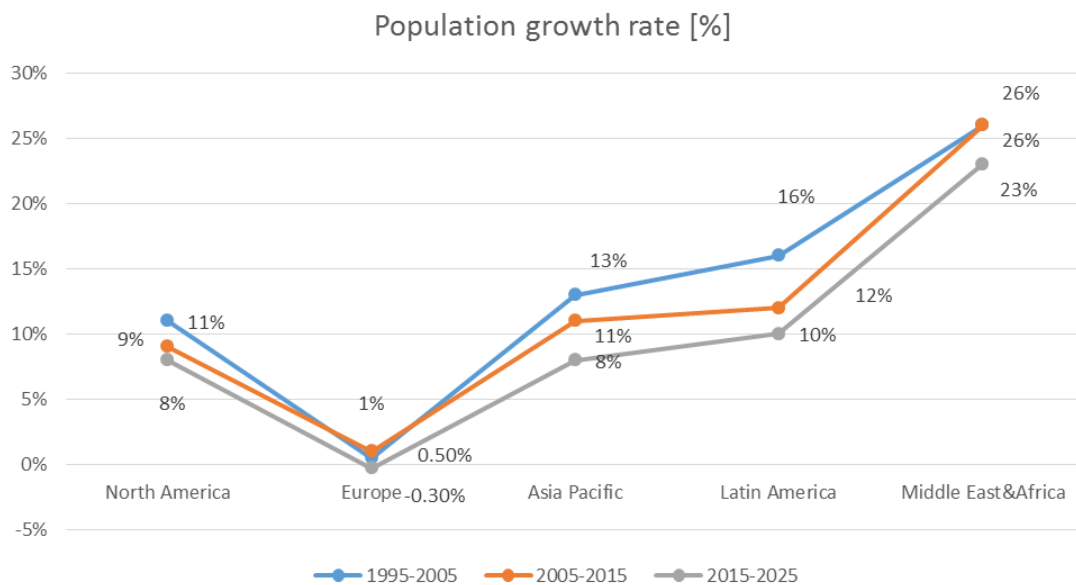
Figure 3: Smart city projects by region, 2013

Europe, for example, has the largest number of Smart City projects overall, where governments have had to look to technology and data for new ways to relive the pressure from dense populations on historic urban infrastructure. The number of Smart Government projects themselves is a factor of the maturity of European public services, with a focus on Smart Transportation and Smart Energy where projects have the greatest potential impact on standards of living.

On the other hand in Middle East and Africa, most Smart City strategic transformation projects are related to Smart Government. This is a logical starting point for countries with a large population engaged in public sector works and a relatively new or developing urban infrastructure led by government investment.

Dubai's Smart City project

Population pressure on the GCC, whilst showing signs of slowing down, is still significantly higher compared to other global regions. The next highest population growth is expected for Africa, it's nearest neighbouring region. As per the Figure 4 below the future forecasts of the combined territory (Middle East & Africa) is significantly higher than any other global region.



<http://populationpyramid.net/>

Figure 4: Population growth forecast by region, 1995-2025

With 88% of the GCC's population forecast to be urbanized by 2025, Dubai has recognized the need for smart city strategic transformation projects. As reported in Gulf News (5/03/2014), His Highness Shaikh Mohammad Bin Rashid Al Maktoum, the ruler of Dubai, launched the strategy for transforming Dubai into the smartest city in the world through:

'100 initiatives, and transforming 1,000 government services into smart services... Our goal is for the entire city's services and facilities to be available on smart phones... We want to provide a better quality of life for all.'

Smart Dubai now comprises six key focus areas, similar to other Smart City projects.

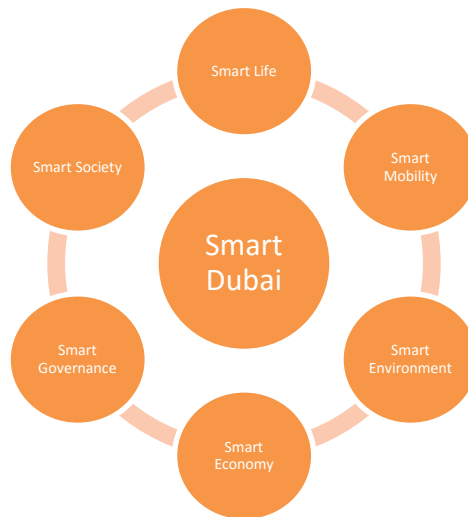


Figure 5: Dubai smart city key focus areas

As reported in The National (28/10/2014) Dubai is to invest Dh4.5 billion to make the emirate an innovation hub for global technology businesses and entrepreneurs. At the heart of this is Silicon Park which is set to be Dubai's first smart city project that complies with the government's strategic vision in all six key focus areas.

Giving a sense of scale and pace to Dubai's plans, the 150,000 square meter park (the size of 21 football pitches) is expected to be completed under the Dubai Silicon Oasis Authority in late 2017. In addition, the investment will fund the incubation centers in Dubai's free zones to encourage small to medium-sized start-ups.

Dubai Plan 2021 also supports its goal to be 'a smart and sustainable city' as well as a reinforcing its position as a global center and destination. The plan sets out its aims along the themes of people, society, experience, place, economy and government.

Creating the conditions for Dubai's success as a Smart City

By comparing Dubai's Smart City projects to those of other Smart Cities, it is possible to summarize its strengths, weaknesses, threats and opportunities (SWOT).

Strengths	Weaknesses
<ul style="list-style-type: none"> Projects are driven top-down by the government with a clear delivery mandate Dubai has set global ambitions and a vision closely linked to Expo 2020, supported by scalable levels of investment Large-scale consumption of public services is at the heart of all Smart City projects 	<ul style="list-style-type: none"> The number of different projects underway could make realization of benefits across different Smart City areas difficult The relative emphasis on public services could mean innovative new business opportunities for private sector companies take longer to come to fruition
Threats	Opportunities
<ul style="list-style-type: none"> Dubai is a relatively new and globally still unknown as a Smart City, so it quickly needs to deliver on its projects to establish its position in the global hierarchy of Smart Cities ahead of the competition from elsewhere in the region 	<ul style="list-style-type: none"> Learn from mature Smart Cities and create the unique selling points (USPs) for Dubai to stimulate foreign and domestic commercial developments Integrate smart city infrastructure and establish neutral networks and platforms Capture data and present it in an accessible and informed way to enable innovation and value creation for third parties

Source: Salience Consulting analysis

Figure 6: Dubai smart city SWOT analysis

Whether it is reducing carbon emissions or enhancing mobility for citizens, the vital factor that differentiates successful smart city projects from not so successful ones is the framework adopted by stakeholders and solution partners. A successful framework should be able to demonstrate to stakeholders and to solution partners:

- The importance of gathering data well, and the extent to which data can be interpreted
- The role data can play in understanding a problem and solving a challenge
- The value of accurate and actionable data in reducing a cost or enhancing an experience

By opening up data to their solutions partners and the public, stakeholders can create the right conditions for successful Smart City projects. Conditions which act as a catalyst for new business opportunities resulting from an information-led, knowledge-based economy.

Infrastructure example: A city-wide WiFi

WiFi rollouts either city wide or in city hot-spots usually form a major part of Smart City projects under Smart Mobility. Enhanced connectivity, enabling E-government initiatives and driving access to applications based services play key roles and drive inputs in WiFi plan development. Examples of successful initiatives across the globe include the UK, through the BT WiFi program, and Singapore, through the Wireless @SG program.

Within Smart City projects, public and city wide WiFi coverage delivers strategic enablers for the wider program. Some of these are:

- Enablement of connectivity for the public across the city;
- Enhancement of consumer experience through “everywhere” access to internet and services;
- Increasing consumption of smart city products and services;
- Monetized retail services and mobile advertising platforms through increased availability and easy discovery of services;
- Creation of a variety of new mobilizing services.

In the UAE, Dubai’s WiFi roll out is one of the key strategic areas of investment with the downtown boulevard, malls and a few of the public beach spots offering free WiFi services. In Saudi Arabia, free WiFi services have been announced along Dammam and Al-khobar beaches.

The public WiFi value chain (formed by service providers, fibre infrastructure companies, government agencies and WiFi equipment providers) is complex and it is important to craft innovative economic models that benefit each player of that value chain. As advisors to operators in the region, Salience Consulting has been leading projects on some of the most innovative WiFi models. As Smart City public WiFi projects progress, there is high probability that wholesale capacity models will be developed and adopted. The main driver for such a model is neutral networks and platforms which promote wider coverage and a better end-user experience.

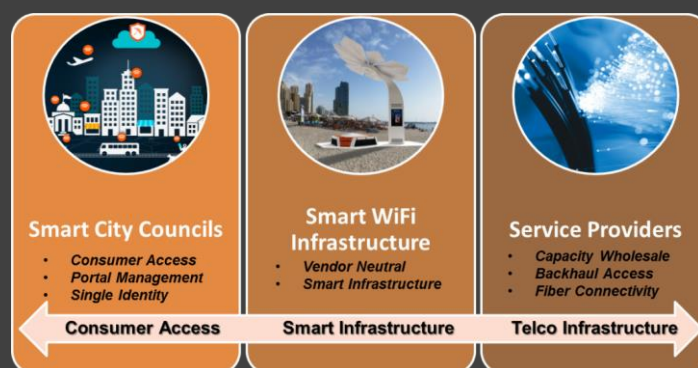


Figure 7: Snapshot of a wholesale WiFi economic model

Salience Consulting's Outcomes Based Framework (OBF) for Smart City projects

The success of all Smart City projects will largely depend on how well articulated the Smart City strategy is in terms of answering key questions on the outcomes. Some of these include:

- What are the desired outcomes from Smart City projects?
- What are the objectives that will drive those outcomes?
- What are the metrics and key performance indicators (KPIs) to measure the success of those objectives?
- How are the outcomes qualified?

A combination of thought leadership and best practice helps government stakeholders to find answers to those questions. Smart City projects need to incorporate methodologies and processes that enable policy making which is well rounded with tangible outcomes.

Salience Consulting has a developed specific approach based on proven methodology to address the outcomes challenge. This approach is known as the Outcomes-Based Framework (OBF).

Setting Smart City objectives

Smart City projects are aimed at improving the quality of life for the citizens. That entails experience improvements around government, buildings, transportation, water and energy. With that broad spectrum against which to measure performance, objective setting becomes a critical step in the framework in order to define success. Figure 8 provides overview of various smart city objectives.



Figure 8: Summary of government smart city objective setting

For example Amsterdam's and Stockholm's Smart City projects focus on economy, people, governance, mobility, environment and living.

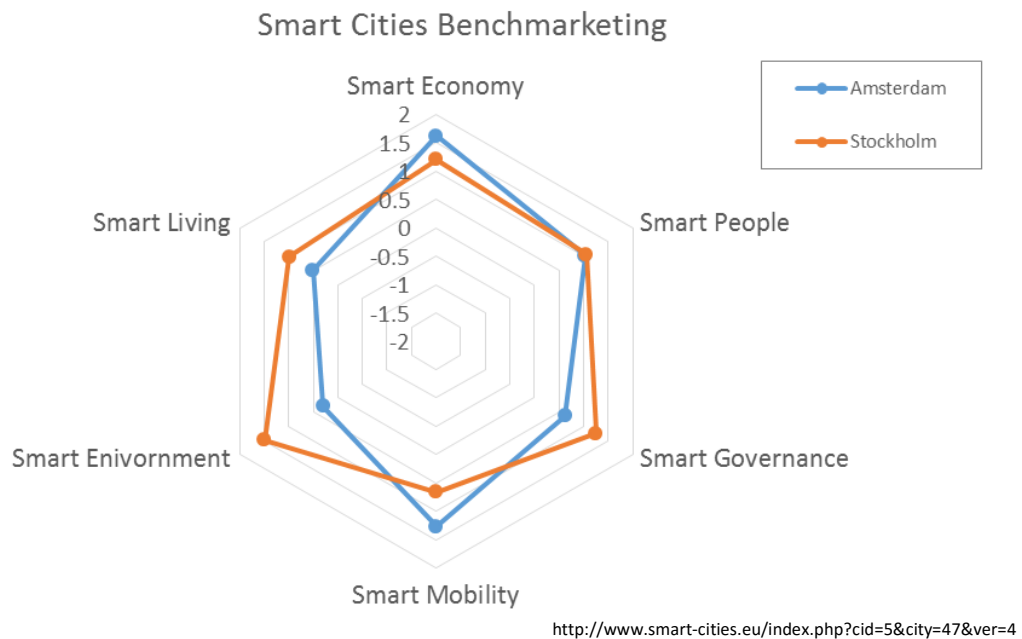


Figure 9: Comparative index of Smart City projects in Amsterdam and Stockholm

Similarly Dubai Plan 2021 revolves around people, society, experience, place, economy and government.

Metrics and KPIs

Objectives aligned to the wider strategy, provide the foundation to build metrics and KPIs into an OBF for Smart Cities. The metrics must be thought of as those areas of improvement that have direct benefit to the public while helping to achieve the government's overall strategic imperative. Therefore the metrics generally do have similarities across different global Smart City projects however they are not identical across all cases. As an example, the metric for Smart Environment for Dubai could be carbon reduction while for Amsterdam and Stockholm it could be recycling and green spaces.

KPIs on the other hand must be firmly aligned into the resources, capabilities and solutions that are available to execute the project. A thorough audit carried out across strategic objectives, metrics and desired outcomes will enable the creation of a set of KPIs. Examples of KPIs for Smart Environment projects are:

- Target percentage reductions in CO2 emissions
- Target percentage reductions in traveler commute times
- Target growth in GDP per capita
- Target recycling waste percentage

Outcomes-based framework

The metrics, KPIs, and desired outcomes to achieve results, can be summarized in an OBF for Smart City projects. Smart City projects are a complex combination of technological innovation, integration of varying large scale transformation of organizations. This complexity is quite different from regular change management projects. Hence it calls for a well-integrated and embedded process that drives the projects towards achieving real outcomes.

The metrics of the OBF include those key areas for Smart Government, Smart Building, Smart Transportation, Smart Water and Smart Energy that will enable the Smart City projects to achieve the results. These metrics fall through KPIs and are mapped onto the outcomes of the projects. Benchmarking studies reveal that projects generally use a fragmented approach which runs the risk of over running the capital and operational expenditure budgets as well as falling short of the desired outcomes. Salience Consulting's approach presents an OBF for Smart City projects that addresses some of these risk and cost challenges. Examples of elements involved in OBF framework can be seen in Figure 10.

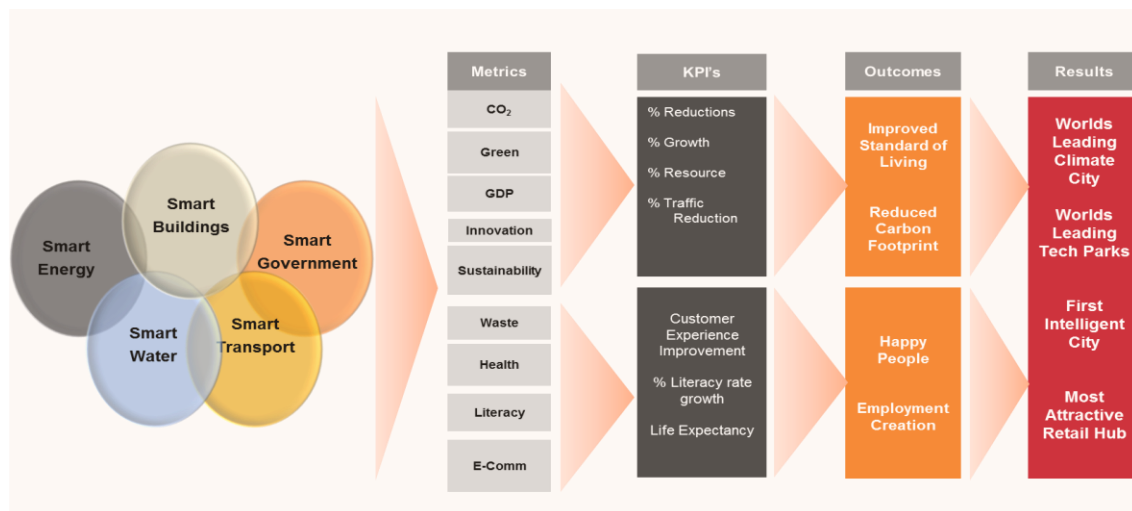


Figure 10: Salience Consulting's example of an OBF for Smart City projects

Salience Consulting engagement methodology

Salience Consulting can help stakeholders and solution partners derive value from Smart City projects through thought leadership and industry benchmarking best practice. The engagement methodology is based on building an OBF that can implement large scale transformations and bridge gaps across Smart City projects. A technology neutral approach gives Salience Consulting a unique position in the ecosystem of Smart City stakeholders and solution partners. Salience Consulting's engagement methodology can be for brand new projects to set out the outcomes or within running projects where there is a need to audit progress and assess real success.

By partnering in the policy stage, Salience Consulting's engagement methodology can help stakeholders achieve global benchmarks for Smart City projects. This delivers a set of metrics through which stakeholders can manage and run Smart City projects with their selected technology solutions. The four steps of the engagement methodology is shown in Figure 11 below.

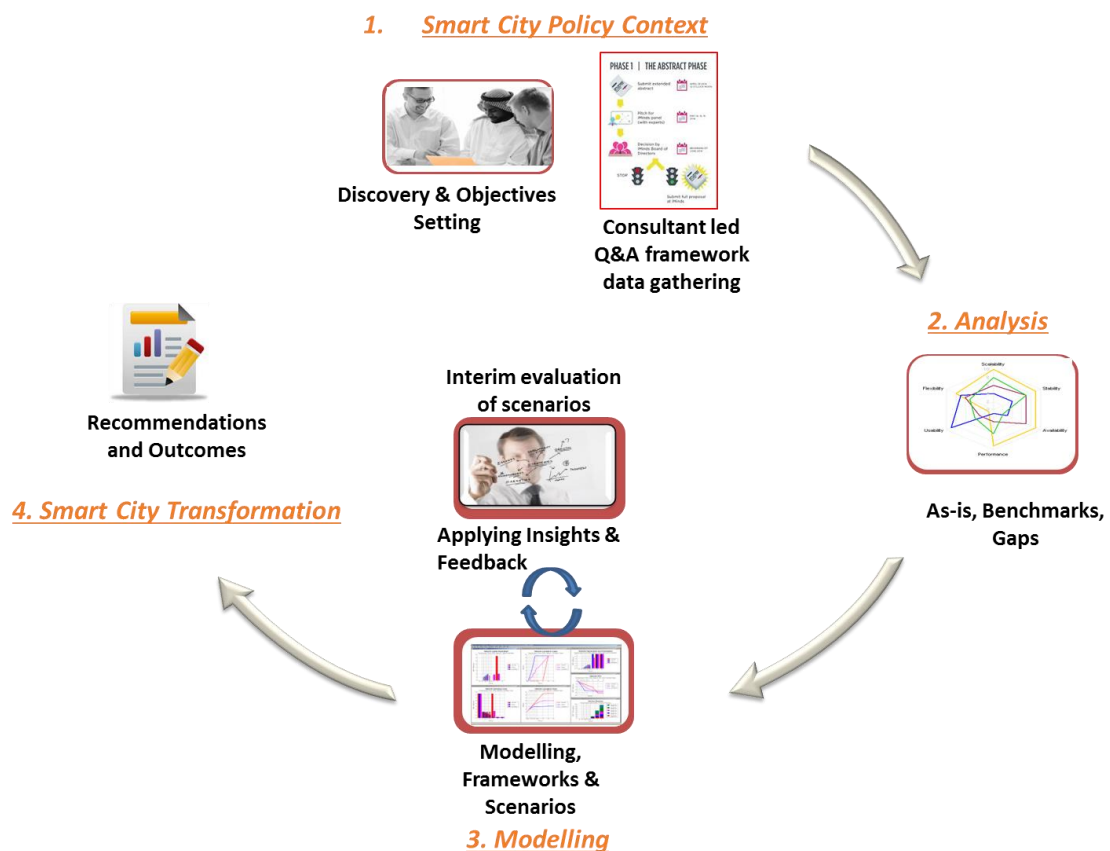


Figure 11: Salience Consulting's engagement methodology

Authors



Hasan Iftikhar, Partner

Hasan is an experienced telecoms, media and technology management consultant with a strong focus on driving business transformation, strategic change and operational efficiency. He has advised service providers, MVNOs, utilities and regulators to identify growth and optimization opportunities and implement change programs that have quantifiable impacts on their business. Hasan has industry expertise on OSS/BSS, SaaS, NFV, cloud solutions, spectrum valuation, IoT and how these investments are monetized to a business advantage. He joined Salience Consulting in 2015 and has previously worked for Ciena Corporation, Huawei Technologies and Telenor at various senior positions in EMEA and APAC markets, with the last eight years focused on Middle East. He is an engineer with specialization in telecoms and holds an MBA from Manchester Business School in England, in addition to industry certifications from CEB®; and TM Forum®.



Simon Mycock, Principal Consultant

Simon has over 15 years' international experience, including product development for Oracle Corporation and British Telecom, and trade and investment advisory services for UK businesses in the Middle East. During his career he has led a number of major commercial programmes, including the UK-wide rollout of superfast fibre broadband.



Owen Stubbs, Associate Partner

Owen Stubbs has over 17 years enterprise IT experience working with major global finance, media and telecoms organisations including Thomson Reuters in the UAE and UK, and one of the world's largest Investment Banks in London and Paris. He has proven technology expertise supporting business change across IT strategy, operations, technical architecture, product software development, M&A integration, vendor management, outsourcing/offshoring and cybersecurity. Owen has in-depth knowledge of the enterprise IT market and the major business trends driving technology in the enterprise and carrier/Service Provider sectors. He joined Salience Consulting in 2015 as Associate Partner to create growth in Salience's service portfolio focused on enterprise technologies across networks, data centre, Cloud, Big Data and enterprise applications. He holds a Master's degree in Management from the University of Cambridge in England.

Salience Consulting provides advisory services for telecom operators, governments and private investors in the Middle East.

Salience Consulting DMCC
2407 Mazaya Business Avenue AA1
Jumeirah Lakes Towers
Dubai
United Arab Emirates
Tel: +971 4 438 7041

www.salience.ae