

The REAL Ratio

People centric policy making for smart cities
February 2017



“There is no logic that can be superimposed on the city; people make it and it is to them, not buildings, that we must fit our plans.”

Jane Jacobs,
The Death and Life of Great American Cities (1961)

Foreword

Technology is revolutionising the way we interact with each other, as well as with the places in which we live, work and travel.

Under the all-encompassing banner of 'smart city', a whole host of projects are being delivered across the globe, from automated lighting systems to train tickets, energy demand side response and traffic modelling. These projects have something in common. They integrate data and communication technologies to effectively manage city assets and systems more effectively.

These projects are exciting and visionary. They are bringing about a revolution in the way in which we live our every day lives. Nothing could be more exciting than working in this space, right here, right now.

But are all these smart city projects designed with sufficient reference to the priorities of those people actually bound to use them? Are they developed in a way that engages the citizen, in a way that maximises their transformative potential?

We believe that a new simple, user-friendly framework through which policy makers define, design and deliver smart cities is needed. We also believe this would increase support and buy-in from a broader group of stakeholders and importantly, ensure that smart city systems, are developed and designed as user friendly environments, relevant to the lives of individual residents.

This is why we have developed the REAL Ratio, a simple tool for city policy makers and others to assess the design and delivery of their strategies and projects so as to ensure that local residents maximise the benefits reaped from those transformative changes.

Smart cities need to be delivered for the whole population, in a way that's **resilient, efficient, affordable**, and **liveable**, and I hope the REAL Ratio can help in that endeavour.

Sacha Deshmukh,
Chief Executive



Smart is here to stay

Everywhere you look it seems the future is 'smart'. From phones to cars, water to energy, smart is here, and it's here to stay. For the best part of a decade now, cities around the world have started to frame their plans and strategies for the 21st century around this notion.

Smart city initiatives are popping up everywhere, and Great Britain is one of the most fertile testing grounds for these developments. From intelligent lighting to electric vehicles and smart ticketing systems, an array of new opportunities are open to city leaders, using digitisation, technology and data to make their cities more resilient, efficient, affordable and liveable for their residents.

As well as aiming to improve the quality of life for citizens, these smart city projects are also being driven out of necessity. Cities now face increasing urbanisation, changes in population, behaviours and expectations, and the increasing inadequacy of 20th century city infrastructure. Municipal leaders know that the way that their cities operate needs to change, and change fast.

However, leaders are also realising that while technology is key to transforming their cities, its impact will be dependent upon the ability of the population to make good use of it. Global leaders from Rio to Amsterdam, Manchester to New York recognise that ultimately their cities will only be smart if these systems are relevant to the aspirations of those living there.

In spite of this realisation, engagement amongst the population with the transformations underway in their towns and cities remains critically low.

In 2016, the Institution of Engineering and Technology (IET) found that less than a fifth of the British public had heard of the term 'smart city'. This is despite the fact that more than 80 per cent of the British public live in cities, and more than 80 per cent have access to internet at home.

The IET survey also provided a further insight, one that might dismay some city leaders - most people are apathetic about the technologies typically associated with smarter urban infrastructure¹.

Even amongst the connected generation (aged 18 to 34) only 37 per cent of people said that they had heard of 'smart cities'. And only six per cent of those aged 65 or over said they were familiar with the term. Generally speaking, awareness of what a smart city means to people is low and muffled as illustrated by the word map below, generated by the IET following their analysis.

How would you describe a smart city

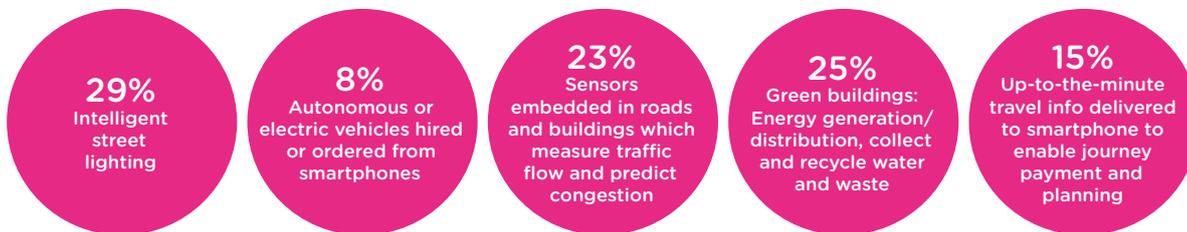


Source: IET survey, January 2016

¹ http://www.theiet.org/sectors/thought-leadership/future-cities/articles/smart-cities-involve.cfm?utm_source=redirect&utm_medium=any&utm_campaign=smartcities

Even where there is understanding of what smart means within a city population, there is a very real risk that for citizens it is something that happens around them, rather than with them.

The illustration below shows that citizens are far less interested in the technology being used and care more about the outcome and how it will impact and improve their lives. The survey asked consumers from the United Kingdom for their views on five types of smart city technologies and how useful those could be if they were introduced in their local area. Interestingly, by focusing on the technology per se, the public surveyed was unconvinced about the usefulness to their area.



Source: IET survey, January 2016

Our approach

Why should the citizen understand a piece of policy jargon? Even if they were able to articulate a definition, what would that achieve?

Surely central to this discussion is whether or not the services and systems upon which our lives depend, become ever more intuitive, ever more relevant to the tasks that busy working people, ambitious youngsters or the most vulnerable in our society grapple with day in and day out?

Smart Energy GB has therefore developed a framework through which policy makers can test their ideas, projects and designs for smart city projects in a way that is focused on outcomes that can be easily applied to everyday life.

This paper presents our approach to helping city authorities and key stakeholders **define, develop and deliver their smart city plans in a way that makes them relevant to real people.**

Our proposed approach helps cities to focus on outcomes rather than means, and aims to provide a framework through which any given city strategy or project is accessible to all, whatever their background, interest and knowledge of a particular sector.

The approach aims to provide a foundation for cities to enable this, while being extremely simple, transparent and accessible so that down the line, real people can relate to the project or overall city approach. We believe that this will facilitate greater engagement and buy-in with particular smart projects.

This approach will also help cities to avoid falling into traditional sector based silos, by providing a means with which to compare and contrast projects and plans for different sectors such as transport to energy. Our approach sets out a simple policy checklist to develop, and deliver smart city projects, and enables a city to assess one specific project in the same way that it would assess a city-wide strategy.

This approach should provide an easy way to compare at a glance and contrast different projects and city approaches.

The REAL Ratio

REAL is the acronym from the four desired outcomes of smart city infrastructure projects – Resilience, Efficiency, Affordability and Liveability. The REAL Ratio could be used to assess the city’s overall approach to delivering smart projects or be used specifically to assess one proposed project with a targeted group of stakeholders.

Resilience

The term Resilience is usually used to describe a material’s ability to spring back into shape after an external shock. It originates from the science of ecology, where it refers to an ecosystem’s aptitude to tolerate disturbance without being undone by it. In the context of a city, it describes the means by which a place has developed means to absorb both the expected and unexpected shocks and stresses to its social and economic fabric as well as to its infrastructure and the technological systems it depends on. A perfectly resilient city would therefore be able to bounce back into shape following an unexpected and substantial external shock like a climate catastrophe, or perhaps a cyber attack on its systems.

Resilience in practice

In developing their plans, Bristol has looked carefully at resilience. With the help of the Rockefeller Foundation and the 100 Resilient City Foundation, the city has put together a strategy to increase its resilience by 2050. It identified, through interaction with stakeholders, the key stresses and shocks which may affect it and its local residents, ranging from congestion to water shortages and severe weather (especially flooding) as well as mitigation strategies to address them.

Efficiency

Efficiency literally means the ability to do something well and effectively without wasting time, money or energy. Every city looking to become smarter by deploying innovative technologies and processes does this in large part to become more efficient. In often-difficult financial circumstances, city authorities are increasingly looking for ways to continue delivering vital services that local residents depend upon and/or expect while spending less, and saving energy. Being more efficient is an aspiration local residents understand, and often expect from their city.

Efficiency in practice

Nottingham has made efficiency central to their plans, especially when it comes to energy. The council has developed means to reduce waste, increase the use of heat and energy from waste and has retrofitted a number of buildings across the city. Through the REMOURBAN project, a £5 million European smart cities initiative, the Nottingham Energy Partnership (NEP) is delivering a number of energy efficiency measures such as private sector solid wall insulation and LED lighting to local residents. NEP is also leading on the last mile delivery aspect with WEGO Zero Carbon Couriers to reduce the amount of delivery vans coming into the city.

Affordability

Affordability is often linked to efficiency. In some circumstances, affordability can be an outcome of cities being run efficiently but this is not always the case. A city or a project could score highly on affordability, because it doesn't cost much to deploy, but very low on efficiency in that it doesn't help the city or the community to become more efficient. Vice versa, some projects may help the city be run more effectively, and cost very little to the city and its local residents.

Affordability in practice

In London, the Energy Efficiency Fund support programmes to help Londoners make energy saving improvements across the city. Their Energy for Londoners scheme aims to make the most of existing technologies and devolution to increase the affordability, sustainability and efficiency of energy consumption in the capital.

Liveability

This is perhaps the most subjective of the four REAL Ratio criteria, but undoubtedly the most important. Liveable cities can be defined in a number of ways but we believe that liveability is fulfilled where there is a strong sense of community, where the vulnerable are protected and individuals feel empowered to contribute to make their city better by changing their behaviour.

Liveability in practice

Melbourne, Australia has developed a focus on liveability. To ensure technology fulfills its transformative social potential, city policy makers have been working collaboratively with the community to design, develop and test the best ways for them to live, work and play in Melbourne. For example, the city is collaborating with people who are blind, deaf or deaf-blind to better understand how they navigate through the city. The city has earned the title of best city to live in, having topped the Economist Intelligence Unit's Global Liveability Survey for the sixth consecutive year.

A model for policy makers

In developing any smart city plan or project, we would invite policy makers and key stakeholders to engage with the REAL Ratio as early as concept phase. Even cities like the ones mentioned above, clearly at the forefront of one of the components, may find the tool useful to synthesise their approach and review the existing plans, approach and philosophy.

When engaging with the tool, city or project stakeholders are challenged to answer 12 questions (three per criteria) by rating each from one to five (one being very poor and five being very good). Once completed, they can be used to create a visualisation of their results.

The results generated could then be mapped out, and visualised in a way that enables comparisons. REAL results will help to paint a visually compelling view of how policy makers and other key stakeholders feel about a specific project or overall city's REAL Ratio. Based on the results of the initial assessment, conversations would follow to determine how specific criteria scored, and what could be done to make them score better.

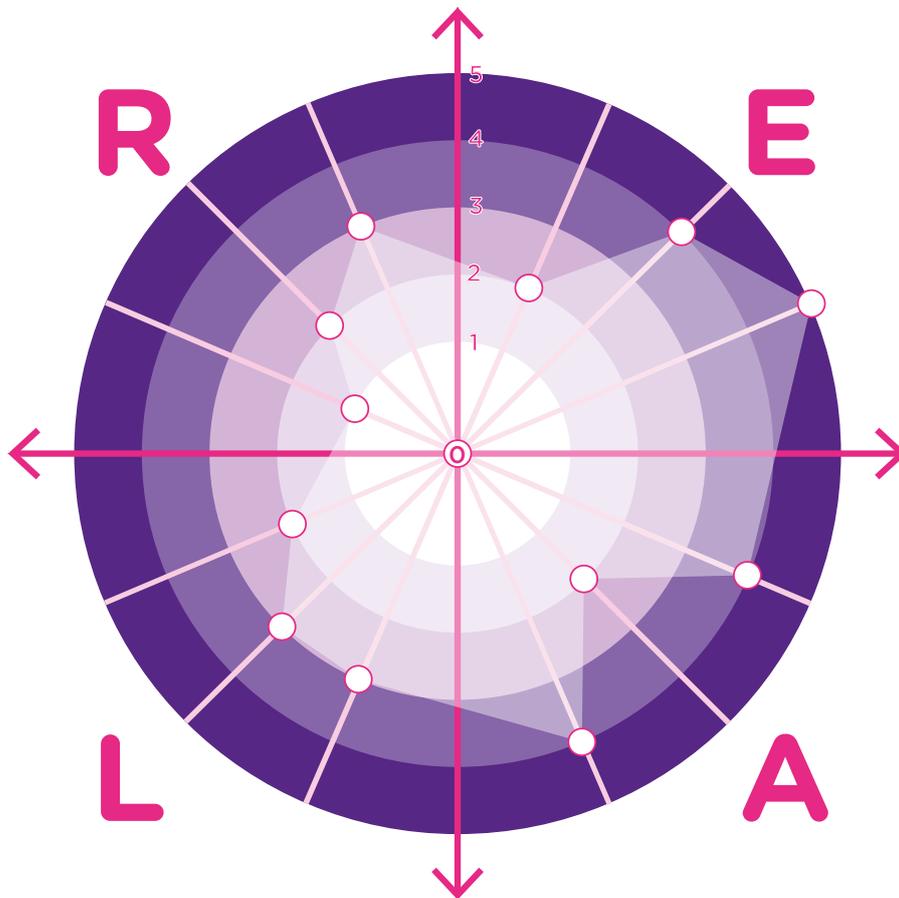
This could also help those driving the project to focus their efforts in communicating how their projects and their plans help to address each aspect of the REAL Ratio. By standardising the means by which projects and strategies are assessed, the REAL Ratio opens the door to making interesting comparisons, either between cities, between projects in the same city, and between different stakeholders on the same project or strategy.

Below is an illustration of the REAL Ratio breakdown:

	flexibility	Will this project enhance the city's ability to recover quickly from external shocks such as weather events or terrorist attacks?
Resilient	reliability	Will this project increase the reliability of the services local residents depend on?
	security	Will this project help the city authorities make the city safer?
	system operations	Will this project increase the efficiency with which the city is able to operate its systems (energy, transport and civic duties)?
Efficient	service provision	Will this project enhance the experience of local residents services?
	carbon emission reduction	Will this project help the city meet its carbon emission reduction targets?
	to the local resident	Will this project help local residents save money?
Affordable	to the city	Will this project help the city authority save money?
	to businesses	Will this project offer local businesses the ability to grow and save money?
	individual/community empowerment	Will this project empower local residents and communities?
Liveable	protecting the vulnerable	Will this project help the city protect vulnerable individuals and communities?
	behaviour change potential	Will this project incentivise behaviour change amongst local residents?

What will the REAL visualisation look like?

Once the assessment is undertaken, the REAL Ratio can be presented in a way which is both visually compelling and easily presented, so that it can be read and understood by a broad array of stakeholders, enabling comparisons between different cities and projects.



Based on the visualisation, it will become useful to make comparisons and analyses. As illustrated in Figure 1 and 2, different results will bring interesting perspectives.

Figure 1 displays a strong Liveability Ratio, however the Efficiency Ratio is relatively low, which might entail either a low level of understanding of how the project at play will help to increase Efficiency, or a lack of focus on Efficiency in the project.

Figure 2 on the other hand displays similar findings in terms of Efficiency, but much higher results in terms of Resilience and Affordability. Had these two visualisations come from two stakeholders on the same project, it would provide the means for a useful discussion. If these assessments had been done by the same stakeholder on two different projects, it could also provide a useful means to assess the relative merits of each project through the standardised rating system that the REAL Ratio provides.

Figure 1

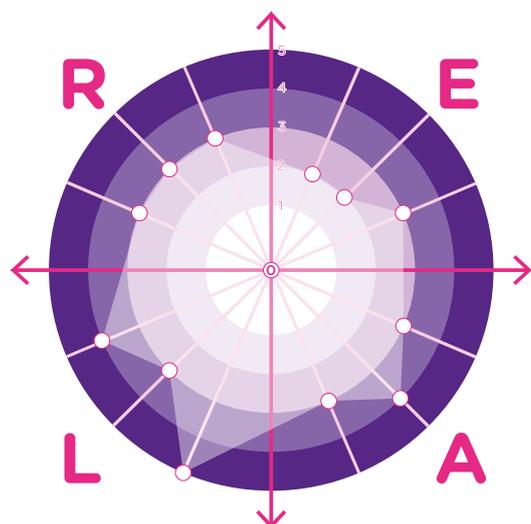
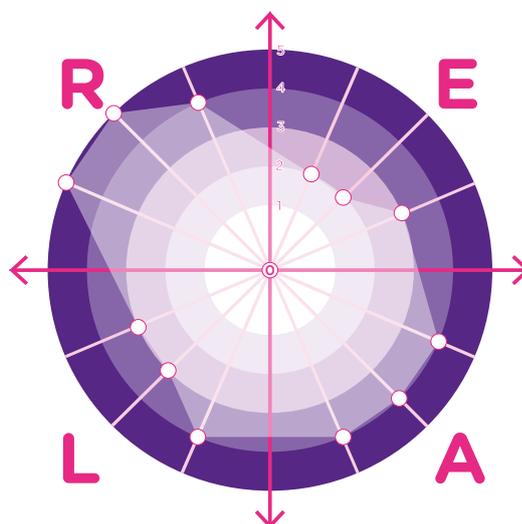


Figure 2



Bringing the REAL Ratio to life

As part of a city's planning, design and delivery of its digital transformation plans, the REAL Ratio may have different uses - whether as a framework through which to assess projects at different stages of their development or as a means to compare them to one another, its possible applications are broad.

In some cases, further down the line, some city authorities may even wish to use the structure of the REAL Ratio to provide local residents and key stakeholders with an opportunity to feedback their views, and rate projects or plans based on their experiences.

We hope you find the REAL Ratio a useful contribution to your plans for the smart, digital transformation of cities up and down the country.

Smart Energy GB aims to engage with city authorities up and down the country as we seek to help them and their local residents benefit from the smart digital energy revolution that is underway.

If you wish to get in touch, please contact us: smartfuture@smartenergyGB.org

