WHERE'S THE ROI?

How smart cities can deliver social, economic and environmental
benefits, providing a three-dimensional return on investment.

Worldwide, we can see an emerging or growing trend in smart cities and an acceleration of long-term trends due to the global coronavirus pandemic. In this document we will address progress so far, how cities are navigating the pandemic challenge and future potential. We examine how smart communities can achieve a three-dimensional return-on-investment that delivers economic, environmental and social benefits.

SMART CITIES: THE CHALLENGES AND OPPORTUNITIES

A great deal is expected of our cities and communities, both today and in the decades ahead, as their infrastructures come under continual pressure from expanding populations. The United Nations statistic predicting that two-thirds of the world's people will live in urban areas by 2050 is a much-used headline-grabber but its significance should not be under-estimated.

Cities have an opportunity to improve quality of life by addressing major local issues such as air and water quality, resource scarcity, traffic congestion, public health and safety, as well as digital inclusion. Cities are also stepping up as key leaders in environmental sustainability, sitting on the frontline of climate change action.

Today's pandemic environment adds even greater complexity to this picture. Preserving public health is the most fundamental responsibility of local government. Yet, the essence of what makes a city thrive–the density and clustering that facilitates dynamic economic and cultural relationships between residents, businesses and visitors–is unfortunately one of the key drivers that are spreading the disease. Protecting public health requires cities and national governments to limit economic activity to only the most essential services. Government-imposed shelter-in-place restrictions and widescale business closures have shriveled the tax-base, putting unprecedented pressure on the municipal budgets that fund smart city programs.

Adapting to this new reality will require substantial changes to the way people live, work and move around cities. Whether it's the *re-discovery of the bicycle* as the future of urban transport, the *rapid evolution of transit systems* to accommodate for social distancing, or the *widespread embrace of remote work*, cities must evolve to restore economic vitality while embracing a long-term strategy for modernization.

If cities are to achieve all of this, they must *transform themselves* into far more intelligent, agile and resilient organizations that can react and flex to the needs of citizens and businesses, respond to global demands and opportunities, while maintaining their central role protecting the public health and delivering essential services. The emergence of the internet of things (IoT) provides cities with a diverse range of solutions to modernize operations. As the pace of innovation continues to accelerate, cities and communities are empowered with even better solutions to become more efficient, sustainable and resilient.

In short, if they are to be successful, smart communities must ensure they deliver a social, economic and environmental benefit, providing a three-dimensional return on investment (ROI).

DEFINING A VISION FOR TRANSFORMATIONAL CHANGE

Delivering a three-dimensional ROI requires transformational change–not only in terms of technology, but also how cities think and operate. They need to move away from the traditional siloed way of working and foster closer collaboration across key stakeholder groups. This requires both cultural change and modernisation to align towards a common vision for the long-term.

The immediate challenge for communities is maintaining continuity of essential services while reducing the need for on-site personnel, utilising IoT and cloud-based services to facilitate remote work.

Capturing "low-hanging fruit" through operational efficiencies can provide much needed near-term savings while cities cope with the pandemic response.

Cities now recognize that becoming a 'smart city' is not an end state, but rather a process, which enables an efficient and ongoing evolution of technical solutions across city services.

The key is being able to balance strategic vision with a practical plan that delivers near-term results while bolstering public support for more comprehensive investments in modernization.

Looking ahead, there remains significant uncertainty about which trends will take hold in the long run. Effectively navigating these uncharted waters will require data to make smarter decisions coupled with an agile organization that encourages collaboration and resource conservation.

BUILDING A FLEXIBLE PATH FORWARD

There is a huge amount of detail and complexity involved in building smarter organisations. The coronavirus pandemic will have a dramatic impact the future of remote work, mobility and commerce. In this case, the only certainty is uncertainty.

All of these tectonic changes will impact how residents, businesses and visitors interact with city services. For example, the rapid shift towards commuter cycling highlights how consumer preferences can lead to *bottoms-up policy changes*. Likewise, the adoption of remote work practices has led to substantial *changes in the demand profile for electricity*.

Cities that have the data to identify these changing behaviours and macro trends quickly can make smarter decisions for how to re-allocate resources to maximise efficiencies and deliver a higher quality of service for taxpayers. This will require an investment in new infrastructure that enables real-time visibility and control for all essential city services. Choosing the right technology amidst this environment of severely limited budgets demands a careful evaluation process.

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With a plethora of technology vendors competing for mindshare, cities should have a structured, yet flexible process for evaluating solutions that do everything from streamlining administrative processes to protecting citizens from natural disasters such as earthquakes and flooding. It is a big ask for any city but the key to finding the right solution is as much to do with visionary leadership as choosing the right solution and partner.

Smart lighting, for instance, is often the starting point of a smart city journey because its cost-and energy-savings offer predictable return on investment. However, every city will have different priorities and local cultures will shape long-term adaptation in the post-pandemic era. Those that value sustainable transportation can start with traffic monitoring solutions that provide real-time visibility to conditions on the roadways, identify changing consumer behavior such as the adoption of micro-mobility, and guide long-term decisions about shifting traffic on the roadways. In areas where water scarcity is a top concern, communities may choose to start with smart water metering to help empower consumers with better information to manage their budgets and reduce waste.

MULTI-PURPOSE PLATFORM

As the long-term trend toward urbanisation continues apace, cities should embrace a multi-faceted approach that delivers economic returns while accelerating environmental and social initiatives. Modernisation cannot be achieved overnight. New technologies should be accretive towards a long-term strategy to *connect, digitise* and optimise city services. Whatever it may be, the investment in the initial smart city application must be viewed as part of a multi-purpose platform that enables the bigger picture modernisation initiative: something that is crucial to future smart city plans and achieving the three pillars of smart city success.

Intelligent street lighting, for example, has proved to deliver social, economic and environmental benefits because the brighter, more efficient LEDs decrease energy cost, reduce carbon dioxide pollution, and improve safety on the roadways. So, it is a perfect example of how cities are delivering this three-dimensional return on investment.

Cities can define a vision for modernisation and put in place the technology infrastructure and processes to achieve this. It makes the case for thinking big and starting small.

There will always be fresh challenges and new questions to answer in the smart city space. What is certain is that no city will find all of the answers, nor all of the technology, from one provider. Communities need long-term flexibility, which requires an open ecosystem approach to continuous innovation and competition.

Finally, we must not neglect the importance of open standards, which are key to enabling a dynamic ecosystem of interoperable suppliers and technology innovators. Nevertheless, choosing the right partners from the start is crucial for both short-and long-term success.

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