

Managing City Assets:

A New Perspective; A New Model; and Transformed Value



Summary

Cities own a vast array of valuable assets, yet the collective oversight of these assets, across the various city agencies and their partners, is generally very poor. With high levels of locked-up capital and substantial operating costs, it is an area of business which any city leader must manage closely.

The potential to manage assets more efficiently, replace and upgrade them, and exploit them for purposes beyond their initial role, is significant.

However, technologies that support asset management in cities are numerous, fragmented and often inadequate. For any individual city agency, the level of cost and effort required to make improvement may seem daunting. That is why Capgemini proposes a change of model: to offer to city agencies a leading practice technical solution provided as-a-Service. This accelerates implementation, substantially removes funding hurdles, ensures an ongoing quality solution and incentivizes cities to migrate from a fragmented, costly and inadequate model to a common leading-edge solution.

Introduction

It's time for cities to get smart about their assets

Across the globe, the 'smart city' of the future is progressively becoming a reality. Integrated transport is within reach; better co-ordination of emergency services is now an actuality; and real-time data is turned into powerful insights, improving service delivery and citizen inclusion. Data enhances the ability to control environmental pollution and energy consumption, and to manage urban transportation. This all helps to make today's cities more sustainable. So understanding how best to exploit the power of information and technology offers cities an important opportunity.

However, the smart city is not just about bringing in the new; nor is it just about dealing with the data. It's about improving the now, and making existing assets—whether they are buildings, equipment, or indeed data—work harder and smarter.

Take a look at public buildings, for example. England owns 180,000 public properties across its almost 600 separate public sector entities, totaling £423bn book value. Their annual running costs top £25bn and the backlog of maintenance repairs has been estimated to be around £40bn¹. And a recent independent report found local government and the public sector in the UK could save up to £7bn a year in operational costs through better property management.

However, buildings are just one part of the picture. The value of a city's broader portfolio of assets is much larger, and often unknown. City assets range from public space assets, such as parks, trees, street scene and lighting, to vehicle fleets and infrastructure, schools, offices and residential buildings and their smaller constituent parts (telephones, desks, servers, printers, for example). To give some examples of scale: Berlin's

One report suggested that a failure to generate commercial returns from councils' assets could cost £50bn in lost revenue over the next decade.

'Asset management in local government' Audit Scotland, 2009

streets are lined with 439,000 trees; Washington DC has 70,000 street lights; Paris runs 38 public pools while Birmingham is responsible for 295 schools.

Too often, assets like these are accounted for and managed within multiple public agencies.

Cities are systems of connected systems, yet in many cases they are run as a group of disconnected islands. When information about assets is lost and the management and governance of assets sits in disparate organisational silos, there is a consequent likelihood of financial waste and duplication of manpower. Valuable opportunities to create synergies are missed.

Asset Management for cities is not just about adding value; it's about mitigating risk. The lack of a holistic joined-up approach to Asset Management across the whole city has multiple impacts, and over time, can lead to:

- Poor financial performance, due to a focus on tactical or reactive decision making, as opposed to a whole life cost view
- Absence of long term planning and performance sustainability
- Misalignment of Asset Management strategies and practices with the city's longer-term goals and objectives
- Asset Management being seen as an overhead to be 'controlled and managed', disjointed from the rest of the city's organisations' activities
- A sporadic and reactionary approach to improving Asset Management capability

Improving asset management should be considered an opportunity to streamline operations and cut waste. There exists significant savings and revenue potential. And if this discipline is not embraced, not only is the effective management of risk at stake, but the opportunity to see genuine gains in value terms is lost. Cities in the US in particular are picking up on this opportunity and are putting out tenders for computerized asset management and maintenance systems.

What is Asset Management in a city context?

"The systematic and coordinated activities and practices through which a city optimally and sustainably manages its assets and asset systems, their associated performance, risks and expenditures over their lifecycles for the purpose of achieving the city's strategic plan."

Based on ISO Standard (adopted from BSI PAS 55)

¹ Source: <https://www.gov.uk/government/news/first-public-property-map-councils-could-save-billions>

Clear Benefits for Cities and Citizens

In today's challenging economic times, public bodies are increasingly held to account, not just for the quality of their service delivery, but also for safeguarding and maintaining services related to these assets—and for maximising the value generated by them. When it comes to Asset Management for cities, the size of the challenge may be considerable, but the potential benefits are immense.

Cost savings, additional revenue generation and optimised end-user experience are all within reach. Though the hurdles to overcome are not insubstantial, we believe that cities are duty bound to revisit how they run their asset base, and to consider strategies and approaches that will help deliver transformed outcomes to their citizens.

Capgemini offers a robust approach to Asset Management for Cities, based on deep experience, tested methods, world-class technology partners, and an innovative 'as-a-Service' deployment model. It is time for cities to get smart about their assets, and we can help.

Creating tangible value

With an Asset Management approach that addresses the whole asset lifecycle, cities can begin to realise tangible benefits:

- **Optimised** maintenance **schedules**, and **early identification** of issues before repair costs start to escalate;

- **Better planning** and **risk mitigation**, through data management and predictive modeling;
- Extended asset life, **reducing** the need for **capital investment**; and
- **Maximising revenue generation** across the asset base, e.g. by ensuring up-to-date market rents are charged, and utilisation is maximised.

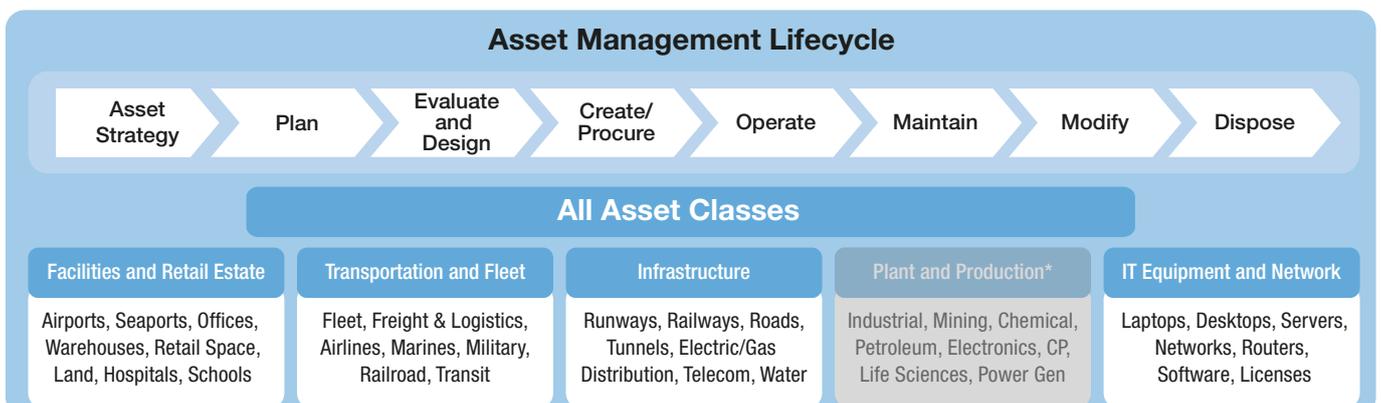
In addition, there are a number of secondary benefits that professional Asset Management can bring:

- **Greater transparency** of the use and state of publicly held assets
- **Increased collaboration** between agencies, and between agencies and providers (which in turn can generate cost savings through e.g. **procurement bundling or streamlined business processes**)
- A **boost to savings** potential (on average, 20% savings as a result of rationalising public assets or co-locating local services based on customer need)

Value does not exist only in savings terms. Effective Asset Management allows city agencies to identify where assets can generate income, break down information silos, improve business processes and increase responsiveness to citizen needs.

The result: better quality and consistency of service delivery, and better outcomes for citizens.

Figure 1: Asset Management Lifecycle



*Less relevant for cities and local government, but part of Maximo capabilities

Introducing Capgemini's Asset Management Approach

Our 'as-a-Service' solution, where cities 'rent' a managed service, offers significant potential in a number of ways. Moving to a cloud-based aaS solution requires understanding the status quo. Some cities can directly move to a managed service; others will need to review their current IT and organizational landscape more thoroughly. For those we typically recommend the exploratory phase outlined below to get ready for set up.

Assessment, Business Case, Readiness, and Roadmap

Capgemini uses a targeted, output-driven method to help organisations plan the improvements needed to manage assets better and deliver greater value:

Typically, a 6-10 weeks exercise will:

- Deliver a balanced, structured, evidence-based view of current Asset Management capability and maturity level, identifying any key shortcomings in existing approaches
- Quickly define a holistic, coherent, and leading practice approach to Asset Management, which will be endorsed by stakeholders
- Deliver a time-bound, value-driven roadmap for improvement, which sets out the practical steps needed to get the city from its current to desired position.

For cities, this will identify significant routes to value, and provide a decisive start for the journey to better management of assets.

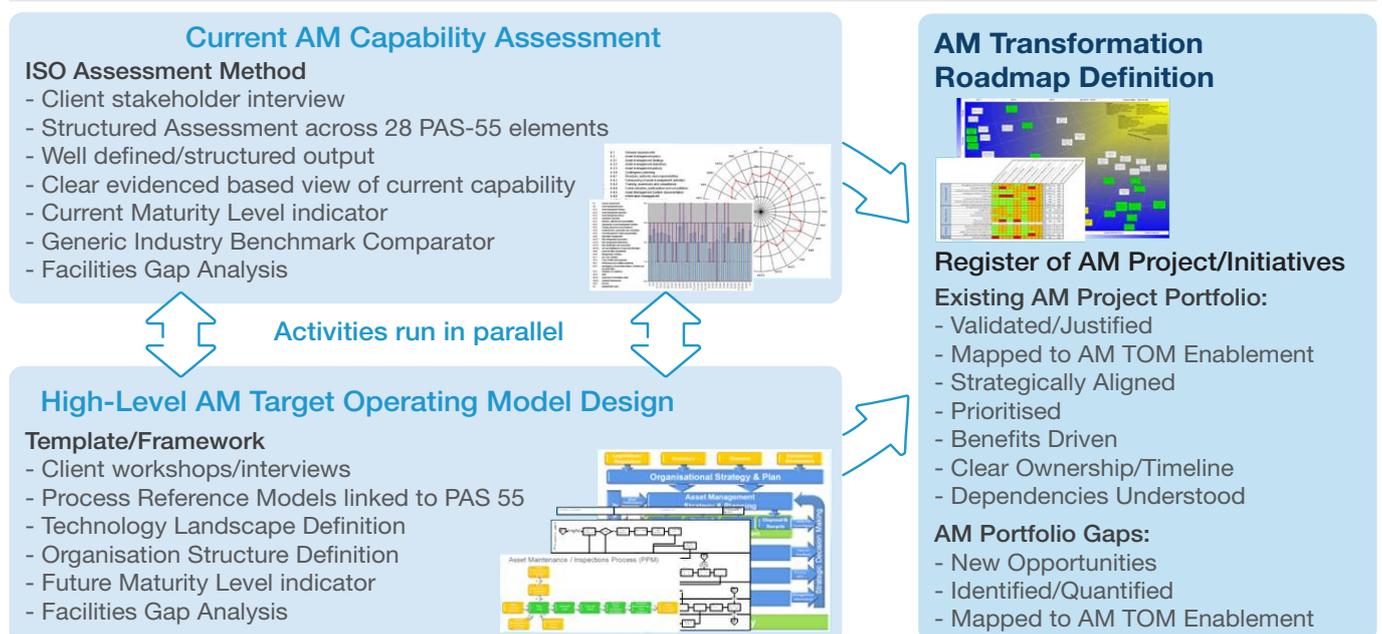
Assessment: Our structured assessment method provides a bird's eye view of the current state of play in relation to assets, allowing us to map the current level of Asset Management maturity, and identify gaps.

Operating Model: In parallel to this, we begin to build a high-level target operating model for Asset Management, which provides the outline for the future roadmap by defining the technology landscape and organisation structures which will underpin it.

Both of these concurrent phases reference PAS 55 / ISO across various elements, and draw on stakeholder interviews, ensuring that the most critical stakeholders are engaged, consulted and informed from the start—a key factor for future success.

Roadmap: From here, a Transformation Roadmap is developed, which validates and prioritises the existing Asset Management portfolio, identifies and quantifies gaps and opportunities. This addresses all aspects of the improvement

Figure 2: Mapping of Typical City Services highlighting Asset-Intensive Services



journey, from policy to technology and most importantly, creating the value case for the move.

Now, the city is becoming equipped to make immediate improvements to its Asset Management capability and benefit from quick wins. It also means that the city is then able to articulate clearly to all internal and external stakeholders, what Asset Management will look like in their organisation in the future.

In focus: Mapping & Prioritising Assets

Essential to establishing effective Asset Management is the ability to map and define all assets which come under a city's ownership and care. As we know, the range is exceptionally broad and highly complex. Capgemini's approach captures assets based on service type, not organisational form. This taxonomy of services focuses the approach on end users, putting them at the centre of the city's asset landscape. It provides a framework for asset classification and prioritisation at a city-wide level.

Prioritised assets can be managed comprehensively and proactively. Our approach is pragmatic, action-oriented, and swift, focusing on the 80% most important services first.

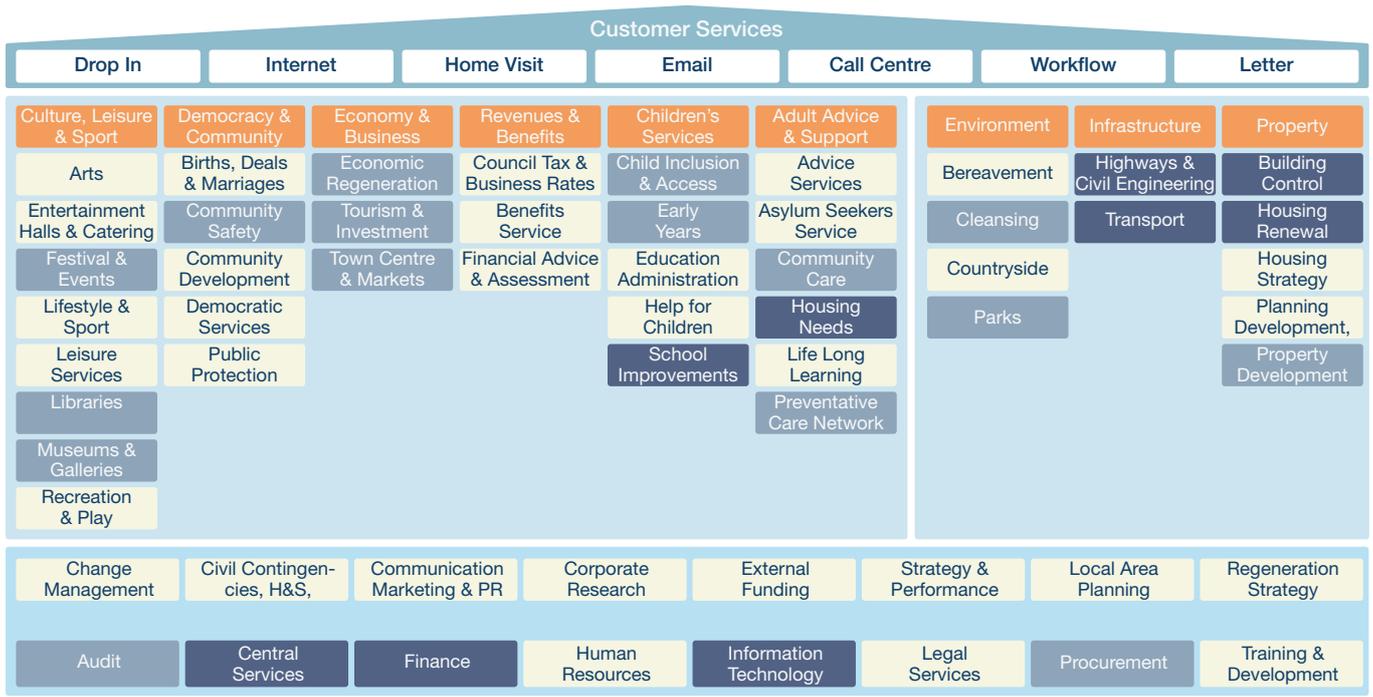
We characterise each service area, leading to the appropriate asset management actions, considering for instance:

Examples of high asset intensity services:

- Water, waste water and storm water services
- Street maintenance, including public lighting
- Waste collection and recycling
- Traffic planning, engineering and management
- Capital improvement programme delivery (such as the upgrade of parks and other public spaces; development of roads and bridges)
- Building management (this may include civic offices, schools, social housing)

- How critical are the assets? (for example, a high value / high risk sewage pipe versus a low value / low risk park bench)
- Who owns and manages the assets? (contractor versus council, or hybrid)
- Are the assets fixed or mobile?

Figure 3: Taxonomy of services graphic



Using Technology to Speed the Transformation

Transformation of a city's Asset Management should be driven by, and aligned with, the city's vision. After all, well run cities do not simply evolve—they take shape according to a set of priorities, principles and ambitions. Asset Management supports the bigger picture, and this is where Capgemini typically starts the transformation process, by understanding a city's ambitions—and what matters the most.

Technology, however, now offers 'disruptive' change potential. Information on assets can be held and manipulated in new and different ways, offering: predictive capabilities; visualisation; decision support, real-time (where it is needed); mobile; and social media insights. These are all things that were not easily attained or commercially feasible in the past.

Additionally, the potential to offer asset management capabilities as-a-Service (i.e. 'rental') on a cloud-based platform introduces a new business model and attractive commercial terms.

It is the combination of these that now offers cities, often collections of modest-budget local agencies, a new approach that enables the city to align to a common leading practice model for an affordable price, with sound return on investment. It can help to eradicate barriers to collaboration between agencies. This differentiated—and disruptive—technical model, complemented by appropriate alignment of strategies and operating practices, can help cities leap-frog to a leading practice solution.

The power of IBM® - as a Service, with Capgemini

State-of-the-art Asset Management requires the right technology solutions to underpin and power it. Two such solutions from our alliance partner, IBM, are IBM® Maximo® Asset Management (for general assets) and IBM® TRIRIGA® (for buildings). These sit at the technical core of our solution.

Cities in the past often have been restricted through lack of budget to use leading-edge solutions like Maximo and TRIRIGA. Capgemini is the first to offer a 'rental' model for the selected technology solution. This negates the need for major upfront investment, yet ensures that leading edge technologies are available at all times, and are able to be scaled as required, quickly.

Software as a Service

The growth of the Cloud has given rise to the emergence of new models for providing IT services. Software-as-a-Service (SaaS) is a way of delivering applications functionality without costly, time-consuming on-premise roll outs of traditional applications software.

Capgemini leverages its Cloud capability (RightCloud) in order to offer advanced as a service options to clients, from SaaS to Infrastructure-as-a-Service; Platform-as-a-Service. Our long-standing experience gives us the expertise to blend and optimise these forms of Cloud computing, to best serve our clients' needs.

The benefits of the as-a-Service model play well to the needs of progressive cities:

- *Agility*: on-demand and quick to implement
- *Savings*: no up-front capital investment
- *Excellence*: leading-edge solutions from our technology vendors
- *Reliability*: high availability, resilient cloud-based service levels
- *Green*: reduced carbon footprint

Capgemini and IBM have collaborated since 2001. Capgemini is proud to hold IBM Premier Business Partner Status, the benefits of which are passed down to our clients. Capgemini offers extensive expertise across the entire Asset Management lifecycle, supported by both Maximo and TRIRIGA: advisory, implementation, upgrade, enhancement and application maintenance support which help organisations manage their operations even more effectively.

As more and more cities embrace the 'smarter city' philosophy and gear their ambitions towards this vision, Capgemini and IBM remain ready to help. With a track record, tested methods in Asset Management, and a suite of tools aimed specifically at delivering Asset Management leading practice, we help speed the path to tangible results.

IBM Maximo and IBM TRIRIGA

A spotlight on IBM Maximo Asset Management

Maximo from IBM is recognised as one of the world's leading enterprise Asset Management (EAM) software solutions (ranked #1 Asset Management solution by ARC), and Capgemini is proud to have delivered numerous Maximo implementations for our clients.

The Maximo Asset Management solution helps achieve greater efficiency by managing all asset types on a single platform. Maximo delivers a comprehensive view of all asset types across the city, making it much easier to manage the portfolio and identify untapped potential within it.

Figure 4: Maximo Capability at a Glance



A spotlight on IBM TRIRIGA

IBM TRIRIGA provides a single, integrated workplace management system to manage the life cycle of facilities and increase their operational, financial and environmental performance. TRIRIGA delivers business analytics, critical alerts and automated processes to increase visibility, control and automation of real estate management, capital projects, space management, facility maintenance and energy management.

In 2012, IBM TRIRIGA was positioned in the Leaders quadrant of the “Magic Quadrant for IWMS” by Rob Schafer, May 31, 2012 with Gartner Inc.

It is time for cities to act

Capgemini’s Asset Management as-a-Service offering takes the best of IBM’s Asset Management solutions, and delivers them to scale, affordably—and exactly when needed. Add to that Capgemini’s Asset Management expertise and RightCloud capability, and the route to value is shorter than one might think.

“We know, from our work in multiple geographies, that Asset Management is a critical component of a high performing city. We also know that the task can seem daunting, with so many disparate agencies to join up, and with constant pressure on the public purse. That is precisely why we have developed an offer which exploits ‘aaS’ cost efficiency with robust solutions and tested methods.”

Graham Colclough, VP, Capgemini Global Lead for Cities

Figure 5: TRIRIGA Capability at a glance

- **Real estate management software**
 - Improves lease accounting and reduces occupancy costs.
- **Capital project management software**
 - Improves project planning decisions and accelerates project schedules.
- **Facilities management software**
 - Improves facility planning and increases facility utilization.
- **Facilities maintenance software**
 - Reduces the cost of facility maintenance services and extends the life of facility assets.
- **Environmental and energy management software**
 - Monitors environmental and energy impact and accelerate energy reduction goals.



Deep Dive into Asset Investment Planning (AIP)

A World of Ageing City Assets – How Can Cities Reduce Risk and Optimise Investment?

The Application of Asset Investment Planning (AIP) to develop “City Resilience”

For cities who have an Enterprise Asset Management (EAM) system, Asset Investment Planning (AIP) offers a powerful contemporary approach. This is an established practice in the utilities and transport industries, which complements the EAM in that it helps to make optimal use of the asset data. In other words, once you have improved the quality of your asset data through the implementation of an EAM system, the next point on the maturity curve is to understand where to best invest.

AIP comprises the systematic practices through which an organisation makes optimal risk-informed decisions about operations and investments in its assets, and addresses the performance of those investments—all for the purpose of achieving its organisational strategic plan.

AIP focuses on best use of all forms of assets (roads, rail, bridges, public space, buildings, underground utilities, tunnels etc) and optimising their maintenance and capital investment. When implemented correctly, AIP is fully aligned to PAS 55 (“Optimized Management of Physical Assets”), which has been adopted as ISO 55000.

For cities, the objective is to improve asset performance and increase city resilience; and seeking to minimise risk and disruption to the public (e.g. road works, unexpected events).

Through application of AIP there is an opportunity for Smart Cities to jump up the maturity curve.

Key components of AIP

Asset Investment Planning (AIP) has four principal components:

1. Development of a **City-wide Risk Framework**: to understand probability and consequence of asset risks. This enables cities to make optimal risk-informed decisions, and allows the focus to shift away from simply minimising spend to more mature and informed circumstances.
2. **Predictive Asset Analytics**: Determining the best investments for particular asset classes, based on past performance, costs etc.
3. **Optimised Investment Planning**: This includes prescriptive analytics across multiple assets and constraints (e.g. funds, resources, citizen disruption)
4. **Performance Management** of optimised investments: are we doing what we said we should be doing?

The technology applications that support AIP can sit atop several of the leading asset management packages, notably IBM’s Maximo.

Capgemini Experience and Supporting Technologies

Capgemini has deep experience in AIP, covering accelerators, case study experience, and a global expert community. Given the significant information requirements inherent within AIP (such as predictive analytics and optimisation, performance management, data governance, workforce enablement), a technology solution is often required to enable an optimised AIP process.

We have worked with a number of leading API vendors such as SEAMS, Copperleaf and Riva modelling. Within the context of cities, these vendors have existing proven use cases. For example:

- SEAMS has worked with several government and city transport agencies balancing tactical asset maintenance plans against long term performance objectives in budget constrained environments.
- Riva Modelling has 18 ‘city installations’ around the globe, including a number with integration to Maximo. Their clients have been able to meet asset valuation compliancy, experienced significant capital planning improvements, and work optimization across a network view of varied asset types.
- Copperleaf has numerous customers that manage a combination of plant assets, distributed assets, and linear assets, much like the breadth of assets owned by cities.

Many of these tools cover similar features and capabilities; our expertise supports the selection process.

The Business Case for AIP

Justification for AIP can be both operational and strategic:

- Many clients justify AIP based on improvements to the planning process, spending less time assembling the planning and regulatory documents, thus making operational savings. This is probably the most straightforward way to justify an investment in AIP.
- However, the real benefits lie in the better decision-making and the ability to do more and higher value work for the same cost, that AIP delivers. It can be hard, given asset lifecycles, to prove this; however, some organisations have approximated some quite compelling gains.

Furthermore AIP brings improvements in service delivery—providing citizens with less disruption and subsequently, a better perception of their government, through a holistic approach to asset management. For example, when a road undergoes significant repairs or replacement, the underground assets (water and sewers) can be addressed concurrently.

Building Information Management

Cities require a single source of reliable data that they can use to carry out predictive analytics and make proactive decisions. This in turn requires collaboration from multiple stakeholders throughout the asset lifecycle to increase asset data quality.

For example, in the UK, through the Building Information Modelling (BIM) program, the Government is seeking to leverage ‘open sharable asset information’ to improve all stages of the asset lifecycle from development of construction projects to operational / in use status. BIM will be mandatory for all public sector contracts in the UK by 2016. By getting the foundations right and delivering more integrated approaches to the management of data in all project phases, a smarter city will be able to make better informed asset investment decisions in the future.

Progressing with AIP

There are a number of typical starting points for AIP which deserve consideration:

- AIP Benchmark
- AIP Risk Framework Review
- Business Case Development
- AIP Software Selection

It's time to act. To discuss how Capgemini and IBM can work with you, contact:

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About Capgemini

With more than 125,000 people in 44 countries, Capgemini is one of the world's foremost providers of consulting, technology and outsourcing services. The Group reported 2012 global revenues of EUR 10.3 billion.

Together with its clients, Capgemini creates and delivers business and technology solutions that fit their needs and drive the results they want. A deeply multicultural organization, Capgemini has developed its own way of working, the Collaborative Business Experience™, and draws on Rightshore®, its worldwide delivery model.

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