

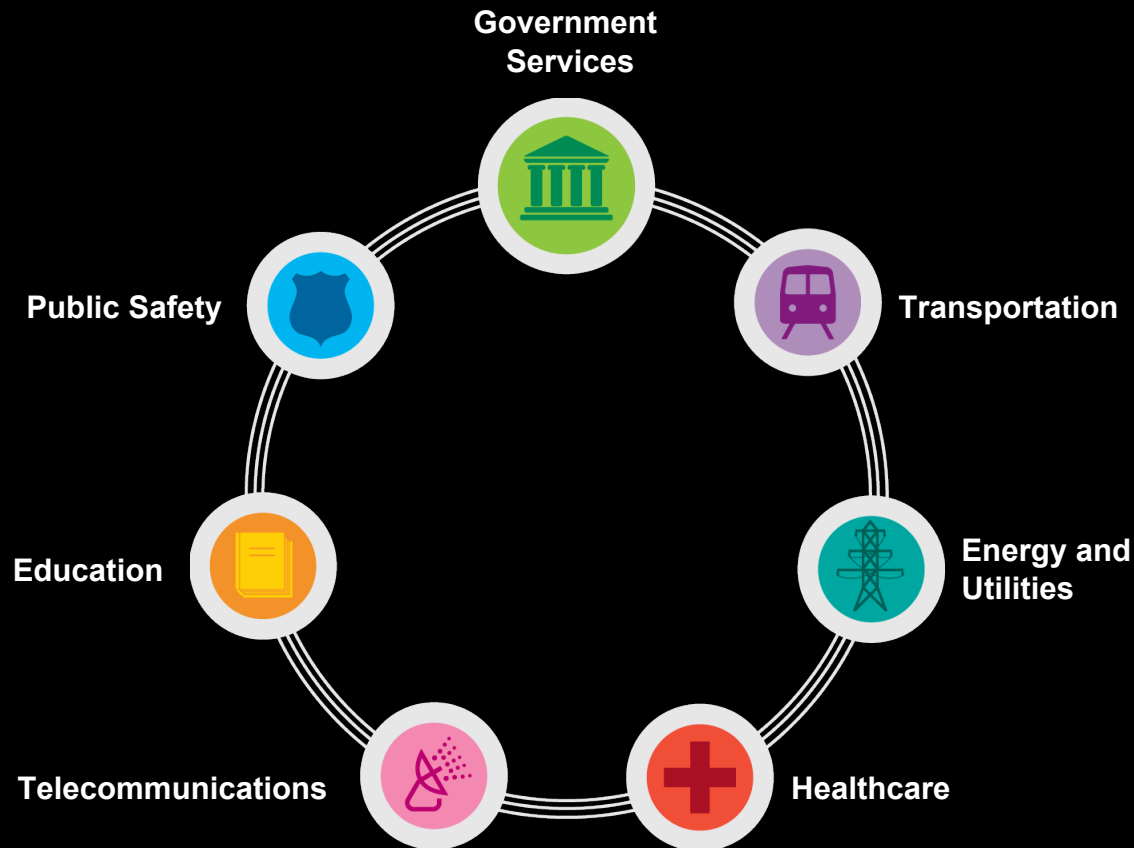
Let's Build a Smarter Planet: Smarter Cities



A planet of smarter cities: In 2007, for the first time in history, the majority of the world's population—3.3 billion people—lived in cities. By 2050, city dwellers are expected to make up 70% of Earth's total population, or 6.4 billion people.



The city is a microcosm of the major challenges and opportunities facing the planet today—intensified and accelerated. Here, all man-made systems come together and interact with one another.



Time to act: Cities—more than states, provinces or even nations—will increasingly serve as the crucibles where the success or failure of our planet is determined.



We are experiencing the reality of global integration.

The world is connected

ECONOMICALLY.

SOCIALLY.

TECHNICALLY.

A series of shocks:

Climate change

**Energy
geopolitics**

**Global supply
chains**

Financial Crisis

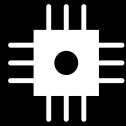
Plus rapidly evolving and ongoing significant trends:

**Changing
demographics**

**Empowered consumers
and citizens**

Impact of technology

...because intelligence is being infused into the way the world works.



Our world is becoming

INSTRUMENTED.



Our world is becoming

INTERCONNECTED.



Virtually all things, processes and
ways of working are becoming

INTELLIGENT.

We now have the ability to measure, sense and monitor the condition of almost everything.

30 billion

By 2010, 30 billion RFID tags will be embedded into our world and across entire ecosystems.

1 billion

By 2010, there will be more than 1 billion camera phones in existence.

85%

Nearly 85% of new automobiles will contain event data recorders by 2010.



Instrumented



Interconnected



Intelligent



People, systems and objects can communicate and interact with each other in entirely new ways.

2 billion

There will be an estimated 2 billion people on the internet by 2011.

4 billion

There are an estimated 4 billion mobile phone subscribers worldwide.

1 trillion

Soon, there will be 1 trillion connected devices in the world, constituting an "internet of things."



Instrumented



Interconnected



Intelligent



We can now respond to changes quickly and accurately, and get better results by predicting and optimizing for future events.

15 petabytes

Every day, 15 petabytes of new information are being generated. This is 8x more than the information in all U.S. libraries.

1 petaflop

Scientists are working to prevent influenza pandemics by modeling the viruses with a supercomputer that can operate at one petaflop, or one quadrillion operations per second.

1 square kilometer

New analytics enable high-resolution weather forecasts for areas as fine as 1 to 2 square kilometers.



Instrumented



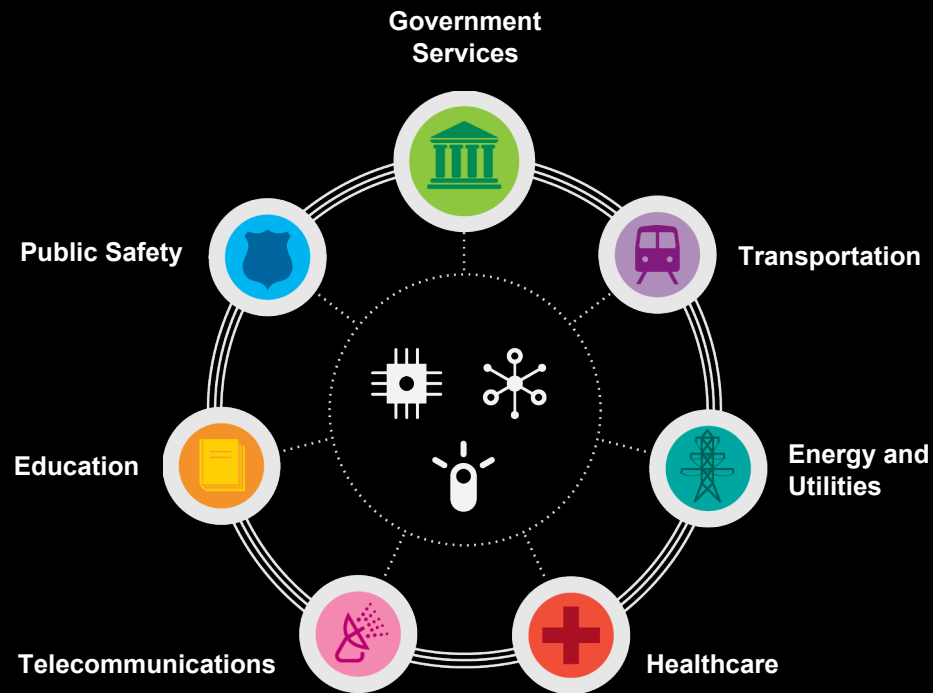
Interconnected



Intelligent



Smarter cities are working to infuse intelligence into each of their core systems.





Smarter transportation : Client transformations



Stockholm implemented an intelligent toll system in the city center, which resulted in 20% less traffic, 40% lower emissions and 40,000 additional users of the public transportation system.



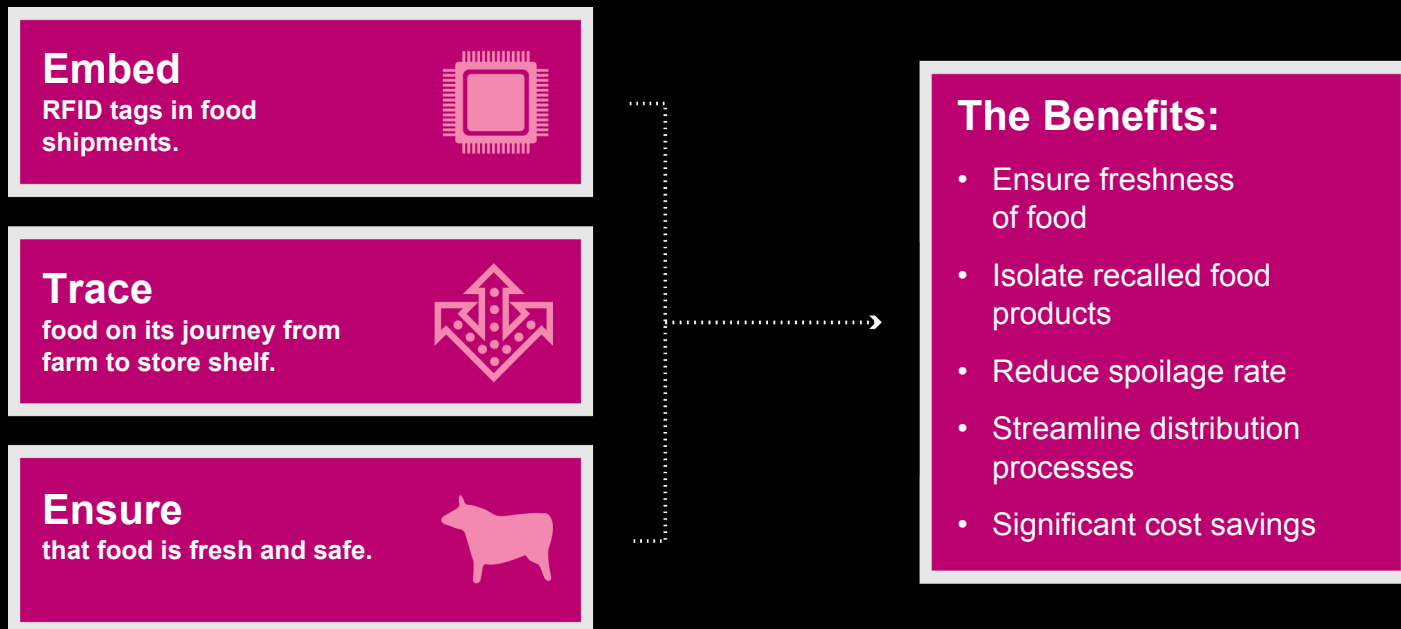
To encourage citizens to use multiple modes of transportation and make it easier to align the cost of transit with its impact on the environment, the **Singapore Land Transport Authority** implemented fare management with smart cards that can be used to pay for buses, trains, taxis, road-use charging and parking.




Smarter telecommunications: Ensure food safety and freshness

The Innovation:

RFID labels applied to food shipments at the farm are used to track it throughout the supply chain onto store shelves. There it can be monitored for freshness and easily tracked in the event of a recall.





Smarter education : An opportunity to nurture our most valuable resource

Smarter cities take a systemic view of their education systems, evaluating students in multiple dimensions throughout their lifetimes and equipping them with the skills and knowledge they need to contribute to employers, communities and society.

SMARTER CLASSROOM

Deliver effective learning content and tools to every student and teacher according to their needs, preferences, abilities, technology and aspirations.

SMART ADMINISTRATION

Incorporate data across education systems to optimize operations, improve services and lower costs.

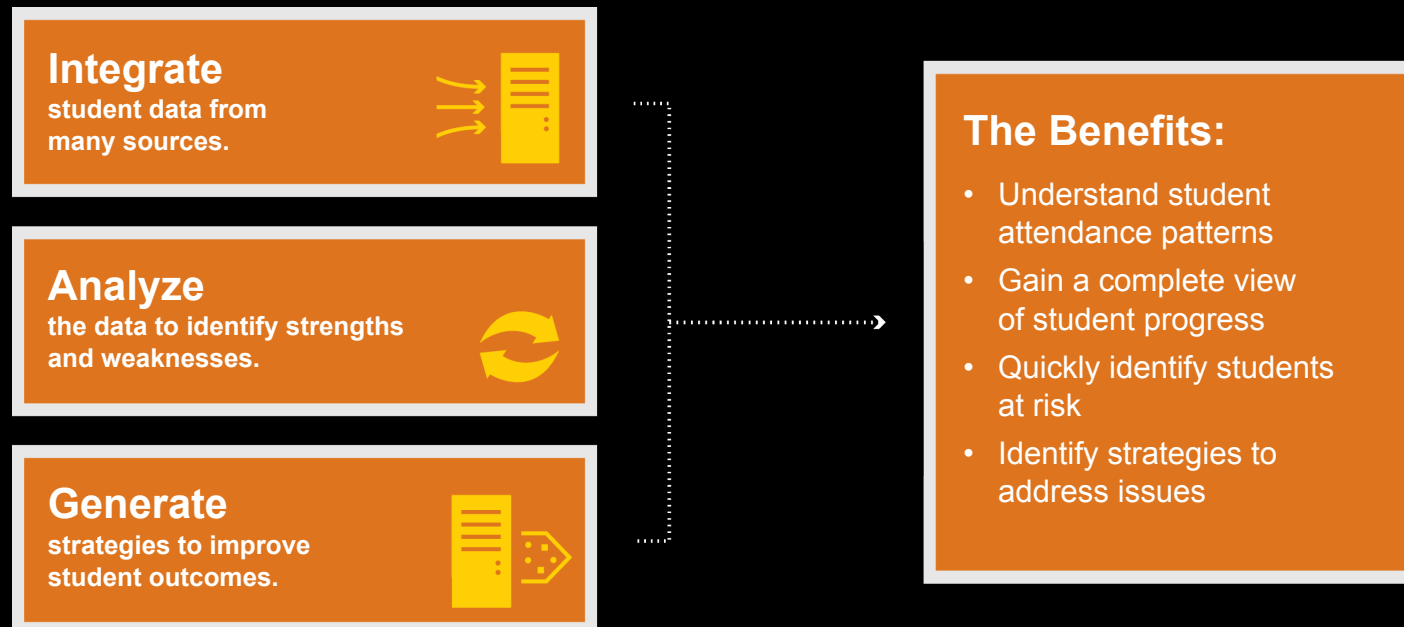
**INNOVATION
IN RESEARCH**

Accelerate innovation, knowledge creation and the economic impact of science with powerful tools for researchers.

Smarter education : Help teachers personalize learning for every student

The Innovation:

Gain insights into personalized, effective learning strategies by integrating multiple sources of historical, current and projected data about student performance and successful strategies.

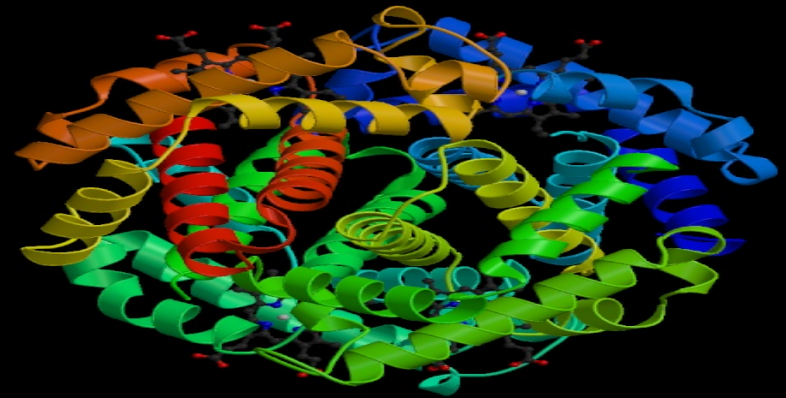




Smarter education : Client transformations



North Carolina State University provides computing lab resources to schools and colleges throughout the state via a central service. Students, faculty and teachers are able to receive a customized image of the content and applications to meet their learning needs.



A leading research group at a prestigious university in Massachusetts obtains the powerful computing environment it needs when it leverages the IBM-powered World Community Grid to perform its innovative energy research. .



Smarter public safety : An opportunity to turn data into insight to protect citizens and communities

A smarter city uses advanced technologies and community-based approaches to anticipate and prevent—not just respond to—crimes and emergencies.

CRIME DATA AGGREGATION

Put decades worth of crime information at the fingertips of law enforcement officers at all times.

EMERGENCY MANAGEMENT INTEGRATION

Connect police, fire departments, ambulance services and other first responders so all are instantly alerted when an emergency takes places.

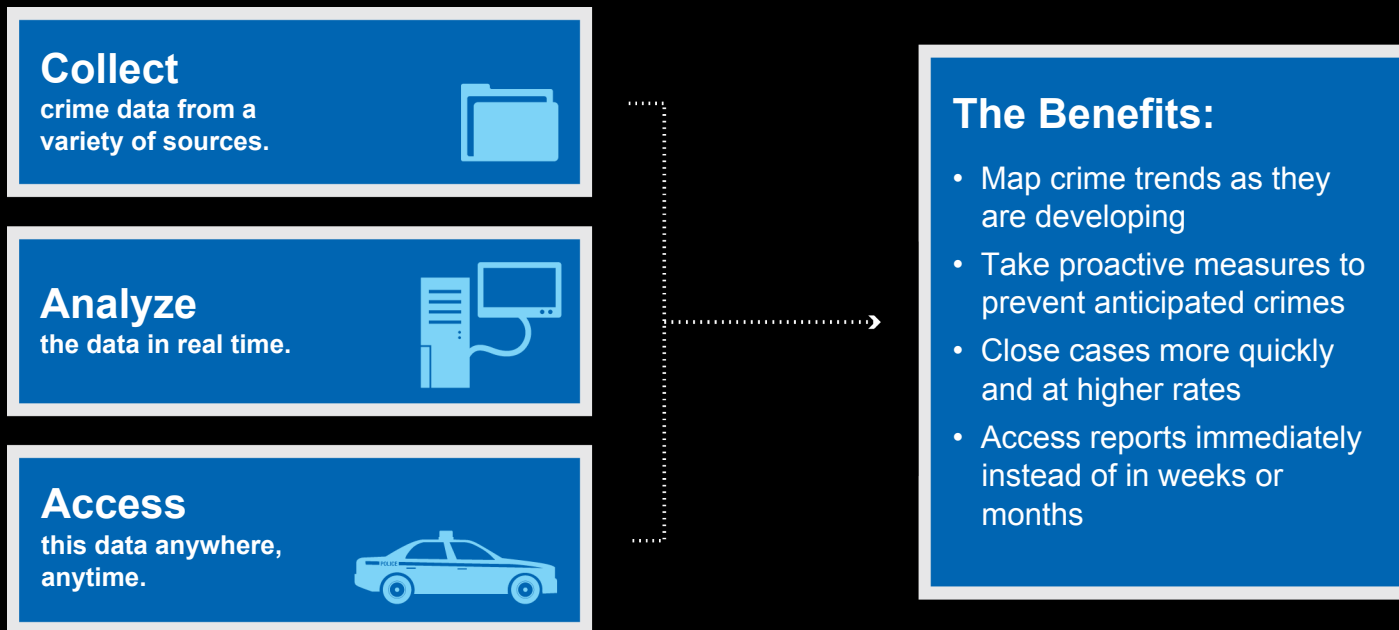
SMART SURVEILLANCE SYSTEMS

Use digital cameras to continuously monitor urban areas and automatically alert authorities when a suspicious event occurs or when a license plate, vehicle or other entity is recognized.

Smarter public safety: Provide real-time information and improve situational awareness across the public safety spectrum

The Innovation:

The crime information warehouse links and analyzes data on virtually all crimes committed in an urban area. Crime fighters have access to this information anywhere, anytime.






Smarter public safety: Client transformations



The **NYPD Crime Information Warehouse** gives officers mobile access to more than 120 million criminal complaints, arrests and 911 records, as well as 5 million criminal records, parole files and photographs—resulting in a 27% reduction in crime.



The **City of Madrid** has developed a new Emergency Response Center, which aggregates emergency call data and instantly alerts the proper authorities, including police, ambulance services and the fire brigade. The city has experienced a 25% reduction in response time as a result of the implementation.

 **Smarter government services:** An opportunity to infuse intelligence into needed services, stimulate economies and save taxpayer time and money

Increased information sharing and collaboration drives smarter decision-making.

CITIZEN-CENTERED DESIGN

Shift towards a citizen-centered business model to improve services, experiences and outcomes while lowering costs.

INTEGRATED DELIVERY OF SERVICES

Connect people to needed programs with speed and accuracy. Enable cities to predict potential issues so preventative measures can be taken.

BUSINESS AND CITIZEN SERVICES

Interconnect dynamically with citizens, communities and businesses to spark growth, innovation and progress. Enable online license renewals and validation of license holders.

GOVERNMENT ACCOUNTABILITY

Results-driven agencies manage, monitor, analyze and report on key initiatives, with measurable outcomes.



Smarter government services: Client transformations

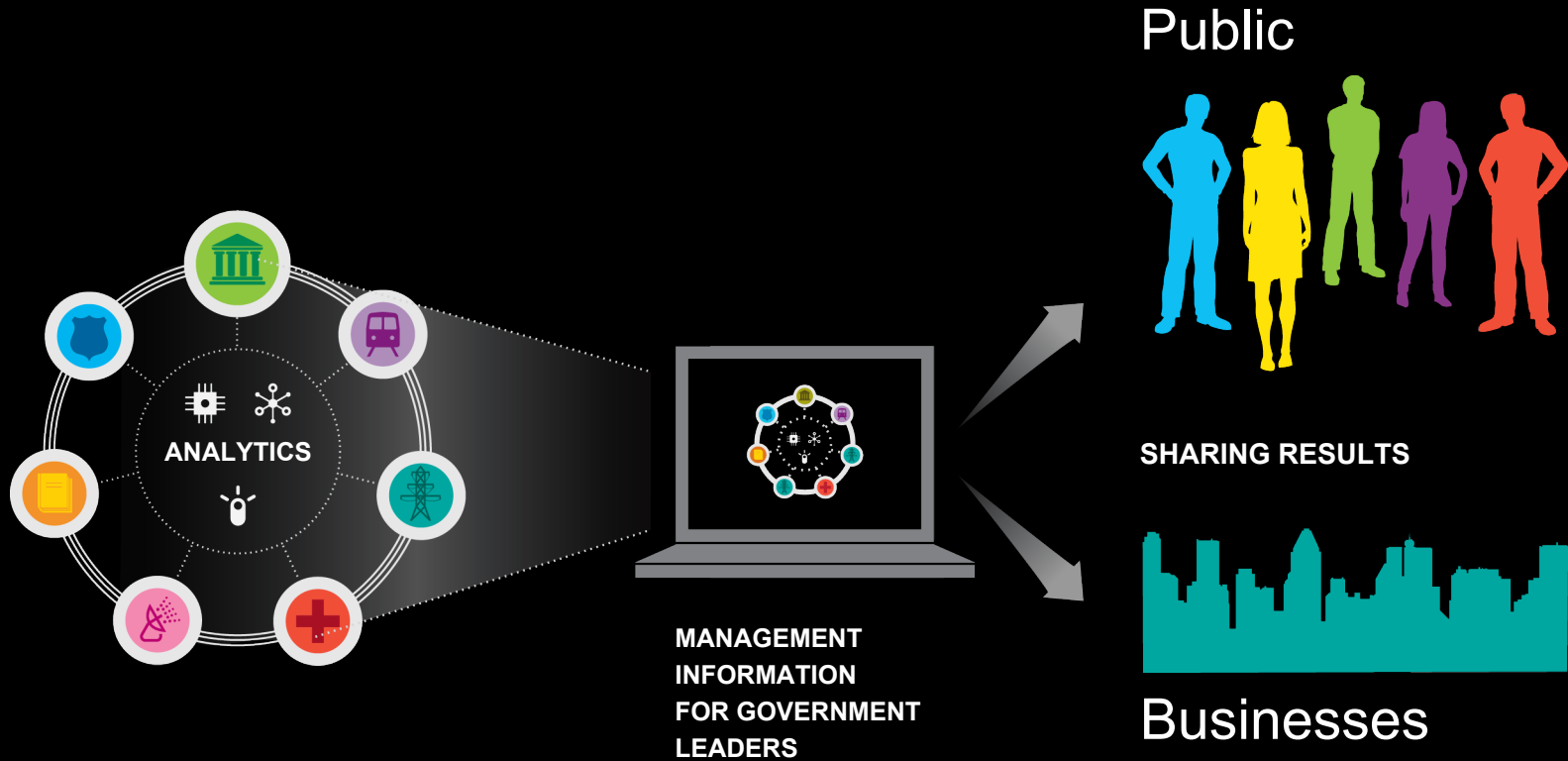


City of Albuquerque introduced a performance management system that reduces manual data collection from disparate sources while enabling actionable, timely information for citizens, emergency personnel and others—realizing an initial cost savings of almost 2,000% ROI.

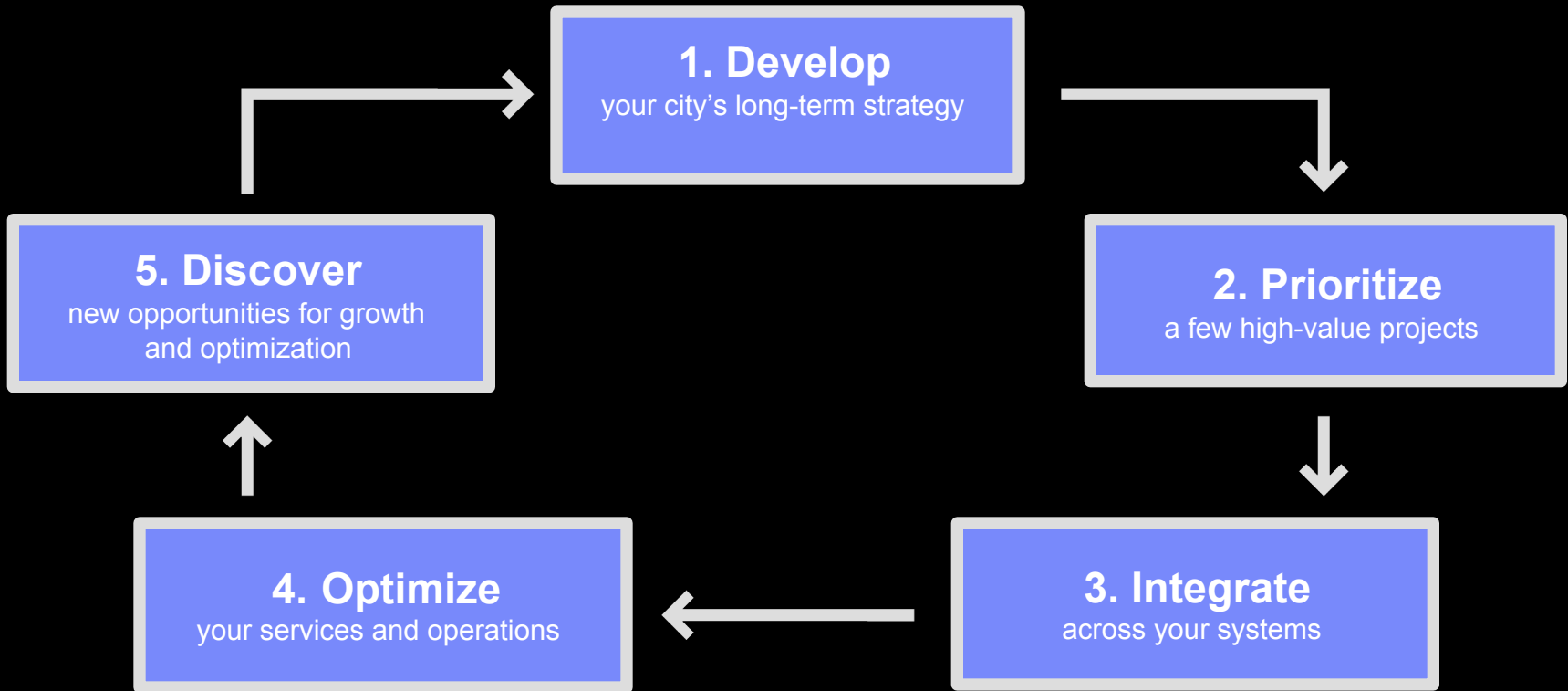


The Cheshire County Council achieved a 20% reduction in time and cost required to perform in-home senior visits, improving the ability to proactively manage the course of health and social care for senior citizens.

Performance management gives cities the ability to set priorities, assess progress and share results with the public.



Smarter cities roadmap: Starting with your goals and a long-term strategy, select high-value projects that can be managed carefully to produce visible results.



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