The interconnected city: improving the quality of life of citizens
The smart city concept is a vision shared by major cities as they chart their future course — with more services, greater efficiency and a focus on sustainable development — and the industry players that are helping them to step up to the challenges of growing urbanisation and eco-awareness.

Half of the Earth’s current population of 7 billion lives in towns and cities. According to UN forecasts, it will have reached 9 billion by 2050 and 70% of that number will be city-dwellers. Such high concentrations of people pose many challenges to local authorities, among them atmospheric pollution, traffic congestion and security.

By improving their citizens’ quality of life and operating transport and security infrastructure in optimal fashion, cities everywhere hope to secure a position among the world’s Top 100 most attractive places to live.
Increasingly complex to manage

Running a major city is an increasingly complex challenge. At the same time, the information and communication technologies that interconnect the systems required to manage an urban area are opening up new opportunities for public policymakers. Today, two key groups of stakeholders are driving this trend. First, cities want to improve the quality of their citizens’ lives by providing innovative services and optimising operations on a day-to-day basis and during major events or crises. And second, transport, security and public service operators are looking to organise their information systems as a network to make their operations greener, less costly and more efficient.

By optimising how they manage the urban environment and offering a wider choice of new services, local authorities are also seeking to attract new businesses to drive economic growth.

Thales is positioned in two key segments: mobility and security

With a proven track record spanning more than 25 years, a detailed understanding of its customers’ activities and a broad portfolio of solutions and credentials, Thales has the experience and expertise to meet the concerns of city authorities, with a particular focus on mobility and security. For Thales, the ultimate objective is to pull together all the systems used to manage city operations through its smart city platform:

Mobility solutions are designed to make transport systems more agile, optimise network capacity and efficiency, and facilitate travel while improving traffic flows, saving energy and curbing greenhouse gas emissions.

Security solutions cover such areas as citizen protection, anti-terrorism, protection of critical infrastructure and information systems security.

Thales’s smart city platform enables closer integration of these solutions and other systems to coordinate day-to-day operations, plan and manage major events and provide high-level oversight in crisis situations.
Thales offers customers a range of solutions for smart cities both large and small:

- **major cities with an integrated approach to urbanisation:** large-scale projects incorporating security management and intelligent transport systems;
- **cities with a step-by-step approach:** optimisation of transport and security infrastructure to improve public services and operational efficiency.

Three case studies illustrate the kind of solutions Thales is deploying around the world.

**Mexico City - The world’s largest urban security system**

In Mexico City, a megacity of 22 million people, Thales and telecommunications operator Telmex have implemented a solution including more than 8,000 video cameras, gunshot sensors, automatic number plate recognition cameras, aerial surveillance drones and emergency call points in the city’s streets.

All these subsystems are operated by five local command-and-control (C2) centres, overseen by a city-wide C4I centre (command, control, communications, computers and intelligence). This “megasystem” transmits alarms to police, fire crews and emergency services whenever unusual events or behaviour are detected. In a major emergency, the police can also deploy two mobile tactical C2 centres that remain in contact with the C4I centre at all times.

The Thales solution offers much more than just technology. It is also vital to gain an in-depth understanding of the customer’s business processes and tailor the solution to each organisation’s culture, business practices and legal and operating environment. This insight into how customers operate is what makes the difference when deploying complex solutions.

Built around the intelligent use of data and multi-agency coordination, the solution implemented by Thales has significantly increased the security of Mexico City’s population, shortening average response times by a factor of three. Crime in the metro has fallen by 80%, while car thefts have been reduced by almost 8% and criminal activity is down 35% in certain previously neglected areas of the city that are now thriving.

**Mexico City – A comprehensive, integrated system**

With 22 million inhabitants spread over 5,000 square kilometres, Mexico City is the world’s third largest megacity. Thales has worked in partnership with the Secretariat of Public Security to transform citizen safety and security by deploying the world’s most comprehensive urban security system. In particular, this system features:

- 1 city-level C4I (command, control, communications, computers and intelligence) centre
- 5 local C2 (command-and-control) centres
- 2 mobile tactical C2 centres (Tetra, HF and satcom technologies)
- 4 aerial reconnaissance drones
- More than 8,000 CCTV cameras (mostly Pan-Tilt-Zoom models)
- 36 gunshot sensors
- 255 automatic number plate recognition cameras
- A city-wide emergency phone network
- 8,000 Public Address speakers
- Vehicle location capability for all 25,000 police cars
- Mobile Data Terminals and PDAs for police officers
A multi-modal travel pass for Auckland

Inaugurated for the 2011 Rugby World Cup, the multi-modal travel pass supplied by Thales made it easy for residents and visitors to New Zealand’s capital city to get around during the event. Passengers continue to benefit today, making trips on trains, buses and ferries with a single ticket.

Passengers can also use the rechargeable travel pass as an electronic wallet, and the local authorities are considering plans to extend the programme to include access to public monuments and museums.

In addition to travel passes, an online passenger information and service centre, and systems for topping up and validating passes, the Thales fare collection solution also manages and distributes ticket revenue to participating transport operators.

Today, Auckland’s residents and visitors have a practical way of getting around and will soon be able to use their mobile phones as contactless travel passes. At the same time, the city authorities are able to manage transport systems centrally and analyse travel statistics so they can tailor services to passengers’ evolving needs.

“Information systems are becoming increasingly interconnected, offering opportunities to develop new services. For example, a passenger can search the quickest way to get to a station by combining different modes of public and private transport, depending on traffic conditions and personal preferences.”

Thales has provided multi-modal, multi-operator ticketing systems in major cities including Toronto and Oslo as well as nationwide systems in the Netherlands and Denmark.

Strasbourg optimises transport and major event management

On a smaller scale, Strasbourg, the seat of the European Parliament, illustrates the trend towards integrated city management by combining its traffic control operations with an urban videosurveillance centre. Close coordination of transport and security systems is key to effective management of a crisis or major event.

For the Strasbourg Urban Community and its half a million residents, Thales has deployed a traffic control system to regulate vehicle flows, coupled to the city’s operations support and passenger information system. These systems work together to give priority to buses and trams and encourage use of public transport.

The automatic traffic information and control system, called SIRA C, has been extended to manage pedestrian areas and available parking spaces. The Strasbourg Urban Community has also decided to combine its videosurveillance and urban traffic control centres under one roof for better coordination, while each retains its own organisational independence and characteristics.

The Strasbourg Urban Community is now looking at the possibility of sharing data between the two systems to obtain as much information as quickly as possible and anticipate events before they occur.

These examples illustrate the smart city in which separate urban information systems are coordinated to increase operational efficiency and make cities more attractive.
**Thales technologies at the heart of the smart city**

The Thales Hypervisor supervision system is a key technology supporting the smart city concept through its ability to coordinate separate urban information systems, now or in the future. Its open, service-oriented architecture enables interconnected systems and subsystems to share the data needed to optimise individual applications as needs evolve.

From an operational standpoint, the intuitive, web-based interface gives users a city-wide picture in real time, providing unmatched decision support for coordination of operations and emergency responses.

Finally, data from the city’s transport, security and other systems is archived in the smart city platform and can be analysed to yield greater insight into the changing urban context in order to manage resources and plan future developments.
Besides the operational benefits of its mobility and security solutions, Thales’s smart city platform coordinates vital information and optimises services to citizens, now and in the future.

### THE SMART CITY PLATFORM

- Coordinated and secure data sharing between stakeholders to improve a city’s operations and quality of service to citizens
- Integrated city planning and management, from daily operation of public services to coordinated management of large-scale events and crises

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<thead>
<tr>
<th>MOBILITY</th>
<th>SECURITY</th>
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<tr>
<td>• Fully consistent multi-modal solutions</td>
<td>• Automatic incident detection</td>
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<td>• Improved urban traffic flows</td>
<td>• Optimised processing of data flows</td>
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<td>• More attractive transport with innovative passenger services</td>
<td>• Real-time decision support</td>
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<td>• Transport energy savings</td>
<td>• Multi-agency engagement and coordination in real time</td>
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<td>• Optimised flows help cut greenhouse gases</td>
<td>• Faster response times</td>
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• **Urban security in major cities**
  - Mexico City

• **Site security**
  - French Ministry of Defence (Balard), Mecca, Dubai Airport

• **Multi-modal and multi-operator ticketing systems**
  - Nationwide: Netherlands, Denmark
  - Urban: Auckland, Toronto

• **Metro command-and-control systems**
  - RATP France, Shanghai, Caracas, Mecca

• **Tram and bus operational support and passenger information systems**
  - Bergen, Marseille, Lyon, Charleroi

• **Web and smart phone passenger information systems**
  - Nationwide: Online Journey Planner (United Kingdom)
  - Urban: [www.map.rtm.fr](http://www.map.rtm.fr) (Marseille: metro, bus and tram)
    [www.car.to.strasmap.eu](http://www.car.to.strasmap.eu) (Strasbourg: road traffic, parking spaces, pollution, bicycles)

• **Urban traffic control systems**
  - Strasbourg, Seine-Saint-Denis department

• **Parking management systems**
  - Paris airports, 40% of car parks in France

• **Road toll and eco-tax solutions**
  - Brisbane (Australia), Ecotaxe (France)

• **Multi-domain supervision: metro, ticketing, car parks and airport security**
  - City of Dubai