Safe Cities

Digital Transformation and its Impact on Collaboration, Communication and Response

Milipol, Paris
November 2015
Defining a Safe City

Safe City is an extension of a Smart City – connection of sensors and systems which will enable more efficient operations.

Safe: Protected from or not exposed to danger or risk; not likely to be harmed or lost.

How do we measure Safe?
- Perceptions?
- Stats; Crime, Floods?
- Risk or Threat Levels?
- Effectiveness of Response and Contingency Planning?

How do we improve Safety?
- Prevent
- Planning
- Collaborate
- Communicate
- Review
Technology Progress is Rapid
Technologies and applications talked about today weren’t on people’s minds 5 years ago

2011 Themes
• Video Analytics
• PSIM (Physical Security Information Management)
• Crime Mapping
• Centralised City Command & Control

2015 Themes
• 4G LTE Public Safety
• Apps
• Wearable Devices
• Big Data Analytics
• Internet of Things
• Intelligence (web, communication...)

2019 Scenario?
• 4/5G
• IP enabled devices becoming ubiquitous
• Data storage gets cheaper
• Crime changes
Top Transformational Shifts that will Shape Safe Cities to 2019

Collaboration, Connectivity and Automation will continue to be key themes for the next 5 years

- Internet of Things
- Managed Services
- Connected Citizens
- Machine Based Learning
- Wearable Devices
- Unmanned Systems
- Intelligence
- Biometrics
Internet of Things
What is IoT in the context of Public Safety?

Report by the President’s National Security Telecommunications Advisory Committee

Strengths of IoT

• Ubiquitous sensing
• Increased productivity
• Speed and accuracy of information
• Ability to immediately affect targeted change in the physical world

Opportunities for IoT

• Real-time NS/EP operational efficiency
• Expanded situational awareness with interoperable systems
• Economic revenue growth
• New functionality
• Rethink end-to-end system security and resiliency

Real time decision making
Predictive and Intelligent Analytics
Operational Effectiveness
Operational savings

F R O S T & S U L L I V A N

## Internet of Things

*Smart devices are an essential part of the IoT taxonomy. Today the business case is built around time saved.*

<table>
<thead>
<tr>
<th>Police force</th>
<th>No police officers</th>
<th>Staff with mobile device</th>
<th>Officer hour benefit assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sussex &amp; Dorset</td>
<td>2,847, 1,301</td>
<td>50%</td>
<td>20% increase in officers on patrol, from 4 hours 29 mins to 5 hours 22 mins/ day</td>
</tr>
<tr>
<td>Surrey</td>
<td>1,970</td>
<td>36%</td>
<td>Implies 1/7(^{th}) of officer/staff time saved overall, but no explicit assumptions</td>
</tr>
<tr>
<td>West Yorkshire</td>
<td>5,062</td>
<td>100%</td>
<td>10% less officer time in office based on 40:60 office:street split – ie 4% overall</td>
</tr>
<tr>
<td>S Yorkshire &amp; Humberside</td>
<td>2,767, 1,771</td>
<td>55%</td>
<td>2 hours per officer/CSO per day switch from office to car/foot</td>
</tr>
<tr>
<td>Metropolitan Police</td>
<td>30,398</td>
<td>50%</td>
<td>37 minutes per officer per shift</td>
</tr>
<tr>
<td>Merseyside</td>
<td>3,909</td>
<td>28%</td>
<td>1 hour per officer per shift per day</td>
</tr>
</tbody>
</table>
Internet of Things
The future business case will include improved situational awareness.

Cambridgeshire Police.

Objectives:
- To provide a 21\textsuperscript{st} Century policing Solution
- Enable business transformation
- Enhanced Federated System Searching
- Improve Data Quality
- To improve efficiency and function

The Solution:
- Universal Microsoft application
- Modern User Experience
- Real time information access
- Event Hub that control can task officers and give a common platform for information sharing

Phase 1:
- Digital notebook that can take video, images and signatures
- Record Events
- Around me awareness of emerging situations
- Ticketing
- Evidence

Phase 2:
- Body worn integration – live streaming
- Remote camera access
- UAV through applications
- Translation Services
- Unified Communications Integration

Output: Increase in operational hours
Save the office 1 hour for every 10 hour shift. This equates to 74 hours per shift and a saving of £860 extra a year that can be reinvested into local policing.
**Internet of Things**

The growth of internet enabled devices will transform policing operations as devices grow. The benefits will also create challenges.

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2024</th>
</tr>
</thead>
<tbody>
<tr>
<td>Law Enforcement Personnel</td>
<td>15.2 million</td>
<td>16.9 million</td>
</tr>
<tr>
<td>Law Enforcement Vehicles</td>
<td>1.2 million</td>
<td>1.3 million</td>
</tr>
<tr>
<td>Law Enforcement Cameras</td>
<td>6.8 million</td>
<td>11.2 million*</td>
</tr>
<tr>
<td>IP Enabled Devices</td>
<td>5.07 million</td>
<td>16.2 million</td>
</tr>
</tbody>
</table>

*owned and accessible
Customer Technology Challenges
6 critical considerations for public safety IoT networks

Larger networks and increasing connectivity will increase the risk of vulnerability and will lead to increased demand for;

- **Data Bandwidth**
  Can the network cope with the data requirement?

- **Data Storage**
  How do we store the data whilst complying with data privacy requirements?

- **Device Management**
  How do I manage the increasing number of devices?

- **Information Overload**
  How can we avoid data paralysis and make sure we get real value from the investment?

- **Cyber Security**
  How do we ensure that the network and operating technology is resilient?

- **Interoperability**
  How do we share networks and infrastructure with other agencies and private business?
Data Storage and Cost
Technology and edge based solutions won’t solve the data storage conundrum

“20,000 cops all streaming video for 5hrs a day will generate 95 petabytes of video per year. How do you come with a policy that discards the 99% of that which is of no interest?“

The increasing amount of data requires a mixed strategy with a focus on the future data requirement and user scenarios. This will lead to an increased demand for safety and security managed services. Information management will also become a stronger market.
City Challenges are not only Technological

Technology adoption is showing early returns but challenges remain from transitioning from legacy IT systems to next generation IT and communication

<table>
<thead>
<tr>
<th>Initiating Change</th>
<th>Handling Change</th>
<th>Implications of Change</th>
<th>Future Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budgets and Cost Benefit Analysis</td>
<td>Transitioning</td>
<td>Training &amp; Education</td>
<td>Recording and understanding benefits</td>
</tr>
<tr>
<td>Legacy Systems</td>
<td>Impact on Operations</td>
<td>Changes to Operational Procedures</td>
<td>Building a Plan for the Future</td>
</tr>
</tbody>
</table>
Business Models

New business models will allow agencies to manage transitioning plans, ensure the latest technology is available and to focus on core policing and operations.

- Outsourcing of core IT requirement and move to the cloud
- Managed Services
- Technology and IP share
- Risk Based Models
- Success based models
- Develop systems and tools with vendors
- Technology and IP share
- Performance Contracting
- Rewards based on achieving KPIs
Summary

• International, national and local policy all influence city safety
• Technology is a key enabler but it evolves quickly; tackle the problems today, plan for the future
• Transparency. Privacy is a personal and emotional subject. Governments needs to be bold and transparent.
• Engagement and collaboration with local communities is challenging but vital. Technology can improve interaction
• Business models will evolve and managed services will become an increasing necessity.
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