HP IoT platform enables Future Cities

Paolo Balella – WW Business Consultant
HP Communications Solutions Business, October 29th, 2015
IoT Definition
A living network of machines, data, and people. (<10 words)

Gartner: “The network of physical objects that contain embedded technology to communicate and sense or interact with their internal states or the external environment.”

Business Drivers:

Transform Offering to Customers
- product → service
- new services via connected products
- predictive maintenance / support
- customer behavior analytics

Optimize Operations / Processes
- smart factories, smart cities, smart <stuff>
- automated processes
- analytics-driven control
- surveillance & monitoring
HP’s Citizen Centric Approach to Future/Smart Cities
At the Core: Driving citizen outcomes and public value

Managed Resources

Connected “Places”

Integrated “Things”

Core Services

Quality of Life

Economic Growth & Jobs
IoT is driving Future/Smart Cities concepts

- Managed Resources
- Connected “Places”
- Integrated “Things”

Enabled through the use of IoT Technology coupled to Big Data & Analytics
HP IoT Platform – Logical model

Platform structured in Vertical Service Pack able to address different business scenarios with modular approach based on cross modules that provide common capabilities for each business scenario.
HP CMS IoT Platform Architecture

Integrated platform brings IoT management and analytics under one roof in a standardized but flexible architecture

**Data Service Cloud**
- Advanced data built from sensor data, enriched from contextual information
- Partner-oriented layer for securely managing data privacy, exposure, settlement

**Device and Service Management**
- Single Platform: Integrated architecture to both manage and connect sensors

**OSS, BSS**
- Adapted to the technical and business requirements of IoT

**Data Analytics**
- Enables discovery of meaningful patterns in data collected from sensors

**Data Acquisition and Verification**
- Separates data traffic
- Secured multi-tenant cloud environment

**Network Infrastructure Proxy**
- oneM2M compliant component supports IoT standards protocols and gateways enablement
Efficient management of multiple IoT devices/applications requires an IoT Platform

Federating multiple Gateways, sensors, and applications requires an IoT Platform.

HP IoT Platform

- Street lamp (Wireless Mesh Transceiver)
- GWs
- 3G/4G
- ZigBee
- Long Range

Home Energy Mgt (based on HP Labs Phoenix)

Street lighting Mgt

Connected Street lights

Connected Home/Building (simulated appliances)

Smart Environments

Apps

Metering aaS

Enterprise Specific Applications/Use Cases

Data Service Cloud

Device & Service Management

Data Analytics

Data Acquisition and Verification

Network Interworking Proxy

Private network (5G, WiFi, etc.)

CSP network (fixed/mobile)
HP IoT solutions overview

Integrated, modular platform

1. Smart Energy pack
2. Smart Lighting pack
3. Smart Metering pack
4. Smart Home pack
5. Smart City pack (mix of the above)
Smart Energy Pack

Solution for the monitoring and control of energy consumption, temperature and/or more in general to connect to any sensor present in a complex building. Allows the compliance of customers with regulations Dl 102/2014

Empower Enterprises and Government to securely manage their energy efficiency
Provides a simplified solution with fast ROI for PPP projects
Smart Lighting Pack

Innovative solution for energy efficiency on public lighting systems. Based on fully digital electronics and power-line connectivity capable to deliver a mixed variety of smart services by each light point.

Full digital on Power-Line and 4 comms boards

Integrated sensors and antenna’s

Control, monitor, activate

Smart Public Illumination

<table>
<thead>
<tr>
<th>Integrated portal and reporting</th>
<th>Web services</th>
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<tr>
<td>Powerline Network &amp; Lamps Management</td>
<td>Real Time Business Processes</td>
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<tr>
<td>Traffic Control</td>
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<td>Pollution Control</td>
<td>Video Surveillance</td>
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<tr>
<td>Alarm and events management</td>
<td>Scheduler</td>
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Data aggregation and analytics

ModBus Ctrl | Other Sensor Protocols

Discovery, added, suspended, managed, monitored, read, interoperable, secured, billed

Connectivity & tariff management, device/sensors management

Municipalities
ESCO
Energy Manager

High energy saving without infrastructural change such min 28% at full light flux
Allows fast ROI. Avg of 3 years allowing best practise for Esco in PPP projects
**Smart Metering pack**
From analog to Automated Metering Infrastructure ecosystem

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**Solution allow municipalities and utility the compliance to the GAS Metering CIG/UNI TS 11291**
Same solution and same infrastructure allows the water metering
Smart Home
New services opportunities coming from consumer energy efficiency & domotics

- **Gateways**
- **Sensors / Devices**
- **SIMs**

**Smart Home Pack**

- **Integrated portal (management & reporting)**
- **API Management**
  - **Scheduler**
  - **Alarm and events management**

**Data aggregation and analytics**

- **ModBus Ctrl**
- **Other Sensor Protocols**

**3rd Parties**
- Discovered, added, suspended, managed, monitored, read, interoperable, secured, billed

**End Users**
- Engaged, enabled, authorized, billed, integrated
- Connectivity & tariff management, device/sensors management

**Empower Telco and Utilities to securely provide energy efficiency and domotics services to consumers**

The identified partner produces easy-to-install and use devices for consumers
### Example HP Smart/Future City Projects...

<table>
<thead>
<tr>
<th>Location</th>
<th>Projects</th>
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</thead>
<tbody>
<tr>
<td>County of Norfolk, UK</td>
<td>• Citizen-centric service design&lt;br&gt;• Services catalog&lt;br&gt;• Mobile applications for social services, healthcare, C2G&lt;br&gt;• Cloud – HP ECS, MSFT</td>
</tr>
<tr>
<td>Anaheim &amp; San Diego, USA</td>
<td>• EVOC, emergency response&lt;br&gt;• Justice systems, case management&lt;br&gt;• Mobile applications for C2G and G2C&lt;br&gt;• Shared services and IT infrastructure</td>
</tr>
<tr>
<td>Flemish Government, Belgium</td>
<td>• Integrated citizen service interaction portal&lt;br&gt;• Unified citizen data repository&lt;br&gt;• Government shared services&lt;br&gt;• Mobile, kiosk apps</td>
</tr>
<tr>
<td>Auckland Transport, Auckland</td>
<td>• Transportation platforms and applications&lt;br&gt;• City operations &amp; management dashboard</td>
</tr>
<tr>
<td>Tokyo &amp; Kashiwanaha, Japan</td>
<td>• Smart meters&lt;br&gt;• Connected cars&lt;br&gt;• Healthcare and wellness stats and analytics</td>
</tr>
<tr>
<td>Singapore EDB</td>
<td>• Joint Singapore EDB + HP Center of Excellence&lt;br&gt;• Solutions for Smart Nation&lt;br&gt;• Thought Leadership &amp; IP creation&lt;br&gt;• Capacity &amp; capability development</td>
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</tbody>
</table>
Our vision is to deliver safe and efficient transportation services as part of Auckland Transport’s “safer cities” initiative.

Roger Jones, chief information officer, Auckland Transport, New Zealand

**Need for**
- Platform to integrate data for strategic planning, response and collaboration
- Increase public safety
- Reduce congestion/traffic
- Better services to customers in real-time

**Results**
- 24 x 7 integrated system for real-time insights (65K CCTVs, sensors)
- Reduce vandalism at VRD Systems (savings of $500K per machine)
- Big data and analytics for data driven decision making
- Alert the public on different routes to take due to incidents
- Improved customer satisfaction
Why HP?

• **HP’s IoT platform for CSPs/Enterprise/Public Sector** is the first solution to bring together the three critical elements of IoT -- **Connectivity, Devices and Applications** -- allowing CSPs to remotely manage millions of devices on the same cloud platform.

• **HP is applying M2M standardization (oneM2M) to create flexibility and scale into the platform and enable future growth and application.**

• **HP has the breadth and expertise to deliver unique value to IoT operators and help them reach their business goals.**
Last not least: ...Smart cities for smart people

Setting up a Smart City requires deep interlock between stakeholders:

- Local administration
- Technology providers
- Research institutions
- City planners
- and other stakeholders

as well as multi-dimensional (holistic) approach on many aspects about:

- Process
- Regulations
- Technology
- ... and Smart People!
Thank You