An appstore ecosystem for automation
Houses are morphing into complex technology platforms
… waiting for an app store
Key challenges

- A vendor independent standard **semantic** enabling device-device and device-application interworking (« BACnet like » plus device profiles…).
  - No expert at home…

- Standardized architecture adapted to any automation application

- Scalable : millions of homes

- Secure : Which application is allowed access which sensor?

→ **The answer is being prepared in ETSI within « Technical Committee M2M »**
Solution overview

Smart Grid & EV
Smart Building
3rd Party applications

ThingPark Store®

- Application layer
- REST SDK
- Publication
- Deployment
- Billing

ThingPark® infrastructure

- First M2M ETSI solution
- IMS 3GPP standard
- Secured
- Multi M2M protocol (Zigbee, W-M-bus, LON, KNX…)

Multi M2M protocol
ThingPark Infrastructure

User premises

ETSI M2M mla

Network core

Bootstrap Monitoring Config. Mngt.

TR069 configuration servers

Registration NA/GA messages

ETSI M2M NSC (Registration, NAT traversal, Routing, security)

ThingPark Portal (ETSI M2M configuration middleware)

ETSI M2M Network Applications

Multiple protocols (ZigBee, wMBus, KNX, …)
### Subscription Wizard

#### Search Offers

- **Offer Name:**
- **Categories:**
- **Reseller:**
  - [Search]

#### Offers List

<table>
<thead>
<tr>
<th>Name</th>
<th>Price</th>
<th>Category</th>
<th>Reseller</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visio Conso</td>
<td>Upfront price: 50€</td>
<td>Energy mettering, home automation, instruction alarm sy...</td>
<td>DSmarter</td>
</tr>
<tr>
<td></td>
<td>Periodic pricing: 1€/m...</td>
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<td>Smart Home</td>
<td>Upfront price: 89€</td>
<td>Home automation</td>
<td>DSmarter</td>
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<td>Cocoon</td>
<td>Upfront price: 150€</td>
<td>ThingPark App store</td>
<td>Actility</td>
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<td></td>
<td>Periodic pricing: 1€/m...</td>
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<tr>
<td>Smart DR</td>
<td>Upfront price: 50€</td>
<td>Smart energy</td>
<td>Green Park</td>
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<td>Periodic pricing: 5€/m...</td>
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</table>
Key features of ETSI M2M (1)

- Standardization of course
- Scalability and security: « telecom grade »
Key features of ETSI M2M (2)

- Security at the heart of the system: which app/device can do what, on which app/device.

| <app> |
|--------------------|------------------|
| accessRightId      | Access right id of the parent resource |
| announceTo         | list of resources to which the resource is announced at the moment. |
| aPoC               | Local application point of contact |
| aPoCPaths          | Retargeting application paths and optional accessRight associated with the path. The paths are relative to the path of the application. |
| applicationStatus  | ONLINE | OFFLINE | NOT_REACHABLE |
| creationTime       | Creation time of the resource |
| expirationTime     | Expiration time. The expiration mechanism is optional. The expiration mechanism is mainly useful when the application is connected over a network access (e.g. CoAP devices). |
| id                 | Application id |

Certificates, SIM cards....
Key features of ETSI M2M (3)

- Standard reactive NAT friendly bidirectional communications Gateway ↔ Core: **HTTP long poll**.
- Standard publish/subscribe model for any application/device.
- Standardized and automatic management of history/logging.
- Unified management/supervision interface.
- Telecom protocol type independent from the OS and development language/tools.
First level of syntax standardization:
- REST: do everything with 4 verbs and ‘documents’
- Documents use XML and MIME types

« REpresentational State Transfer »
Model mandated by NIST for future standard
‘Smartgrid’ applications and ZigBee 2 ‘Smart Energy’. REST may be carried by CoAP
defined in IETF
### Semantic level:

#### Generic concepts

<table>
<thead>
<tr>
<th></th>
<th>ZigBee</th>
<th>BACnet</th>
<th>KNX</th>
<th>Zwave</th>
<th>DLMS/COSEM</th>
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<tbody>
<tr>
<td>Network</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Object</td>
<td>ZB node</td>
<td>BACnet device</td>
<td>KNX device</td>
<td>Zwave node</td>
<td>Cosem server</td>
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<tr>
<td>Object App.</td>
<td>endpoint</td>
<td>Not native use Structured view</td>
<td>No (just 1)</td>
<td>Device class</td>
<td>Logical device</td>
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<tr>
<td>Interface</td>
<td>cluster</td>
<td>Structured View</td>
<td>Functional block</td>
<td>Command class</td>
<td>Interface object</td>
</tr>
<tr>
<td>Basic elements (incl. Point)</td>
<td>Simple types</td>
<td>Objects</td>
<td>Datapoints</td>
<td>Types attributes</td>
<td>Attributes</td>
</tr>
</tbody>
</table>
Each technology manages networks

Each network contains nodes

Each node contains applications

Each application contains interfaces

Each interface contains points…
ETSI M2M: everything is a document...

Generic semantic template

<obj href="m2m:ApplicationDescriptor"
     xmlns="http://obix.org/ns/wsl/1.1"
     xmlns:m2m="http://uri/etsi.org/m2m/obix">
   <str name="applicationID"/>
   <list name="Interfaces" of="obix:ref m2m:Interface"/>
</obj>

ZigBee specific derivation

<obj href="zigbee:AppDescriptor" is="m2m:ApplicationDescriptor"
     xmlns="http://obix.org/ns/wsl/1.1"
     xmlns:m2m="http://uri/etsi.org/m2m/obix"
     xmlns:zigbee="http://uri/etsi.org/m2m/zigbee/obix">
     <str name="extendedPanID"/>
     <str name="ieeeAddress"/>  <!-- optional element -->
     <int name="endpoint"/>  <!-- optional element -->
     <int name="applicationProfileID"/>
     <int name="applicationDeviceID"/>
     <int name="applicationDeviceVersion"/>
</obj>
Actility delivery:
Open Source Cocoon project

http://cocoon.actility.com

Download

The Cocoon Open Source project is available for you to test, evaluate, deploy, customize, and improve.

In doing so, we hope you will participate in the Cocoon community, so that we can work together to make Cocoon a better product for everyone.

Please note that you have to be registered to download files.

Cocoon 1.0.5 (2011-11-08)
THANK YOU!

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