Understanding HOW

Utilities can leverage OSGi to manage services that add value for their customers

EDF Project M@jordom

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Smart homes communicating devices...
but with whom, and what for?

- Communication with the user: for remote control
- Coordination of various devices: for automatisms

(But what do your shades have to tell your wash machine?)

There must be a purpose,
some reasons to communicate

and they must be located somewhere

When there are various reasons,
it is still better they were located in ONE place:

in a Home Service GATEWAY?
A Gateway talks also with the outside but with whom, and what for?

A smart home service is almost like a Web service, but not quite:

- **The Web services**
  - The content of the services is implemented on Web servers
  - The user has a purpose and expresses it through a browser
  - The user has to wait for the answers (to share external resources)

- **The smart home services**
  - The customer (user) must not be bothered, thus:
  - The smart home has the purpose of the services
  - It may or may not care to wait for answers
  - Thus, the (urgent parts of the) services should be implemented inside the gateway, not on the remote server.

For many providers, a standard: OSGi
OSGi is the standard focused on the purposes: smart home services

EDF project Majordom uses this standard

- because it facilitates deployment, maintenance, and administration of smart home services
- because it provides tools for remote control and automatisms through device coordinations, that we can readily reuse to build our services upon
- and these services are mostly located inside the gateway, to enable only sporadic communication and external resource sharing with the outside.
An example:

HHtariff offers reduced rates to customers who accept constraints

The part of the global load that is most influenced by residential/professional consumption can be « streamlined » if some of these customers accept to reduce their consumption during the « peak hours »

Thus, we could produce cheaper electricity
HHtariff is a new contract for residential customers.

If by this contract they engage to reduce their consumptions during the peak hours to 30%,

They will get a reduced rate of 80%

They will get their electricity for free during the peak hours, if they keep their engagement.

But they will pay for it at a penalty rate, if they don’t.
HHtariff will be implemented in an OSGi gateway as a service, which can also cooperate with other services.

- Every 5 min. the index of the power meter will be read and the constraints checked.
- The data are sent periodically to EDF, but may also be displayed locally any time.
- Any 2 sec. the service may fire an alarm telling other services that the constraints are currently not met!

The other services may then shut down some greedy equipments they are allowed to. The customer does not have to care about.
A demo Bundle that runs 60 times faster and simulates usage instead of metering was developed for the OSGi multi vendors DEMO.

The simulated listening service reacts to HH alarms just shutting down or restoring Nx5% chunks of the simulated consumptions.
Play with the demo
EDF project M@jordom
global communication scheme

- service provider
- service provider
- service aggregator
- PSTN / xDSL networks
- gateway
- gateway
- gateway
- devices
- devices
- devices

InterNet
Sporadic access
different home (automation) networks
EDF project M@jordom
in-house hardware/OSGi firmware

All kinds of services

Our

Our border line

The standard

OSGi
Java
(any suitable hardware)

Gateway

Equipments

Our Job!
all kinds of user services
our (service provider’s) job

platform identity services
our (aggregator’s) job

device drivers, etc.

our border line

OSGi
Java

the standard