



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 automatism**

(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

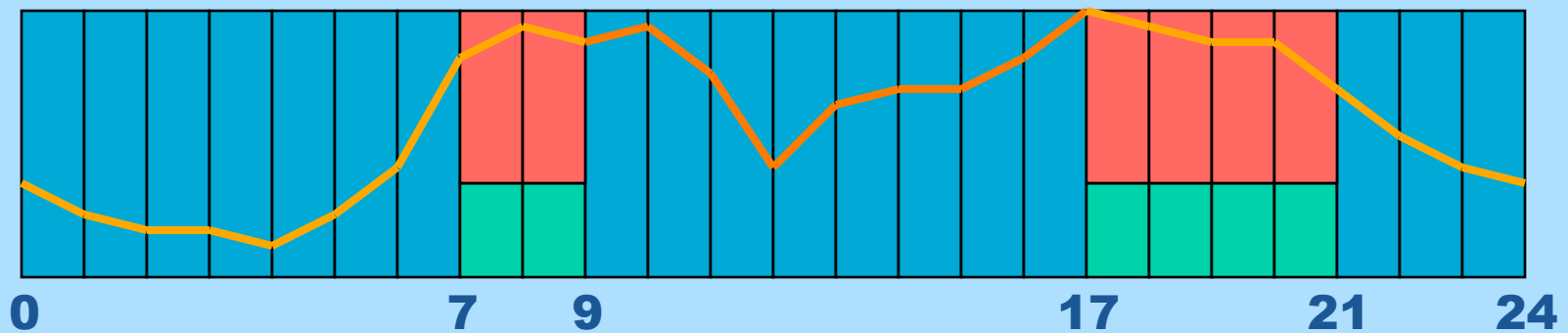
**is the standard focused on
the purposes : smart home services**

EDF project M@jordom 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**



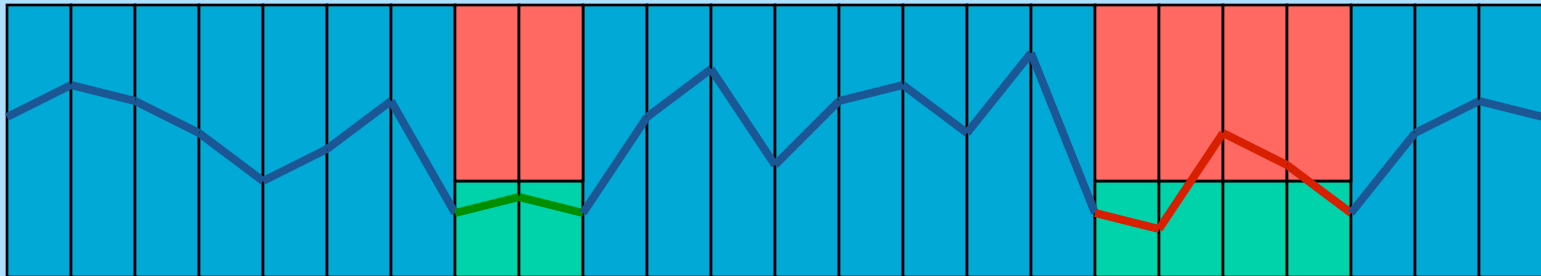
**The part of the global load that is most influenced
by residential/professional consumption
can be « streamlined » if some of these customers
accept to reduce their consumption during the
« peak hours »**

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

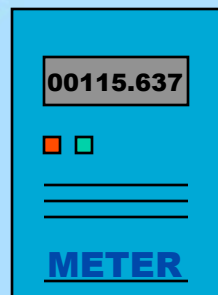
But they will pay for it at a penalty rate, if they don't



HHtariff

**will be implemented
in an OSGi gateway as a service,**

which can also cooperate with other services



TELE INFO

- **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 !**



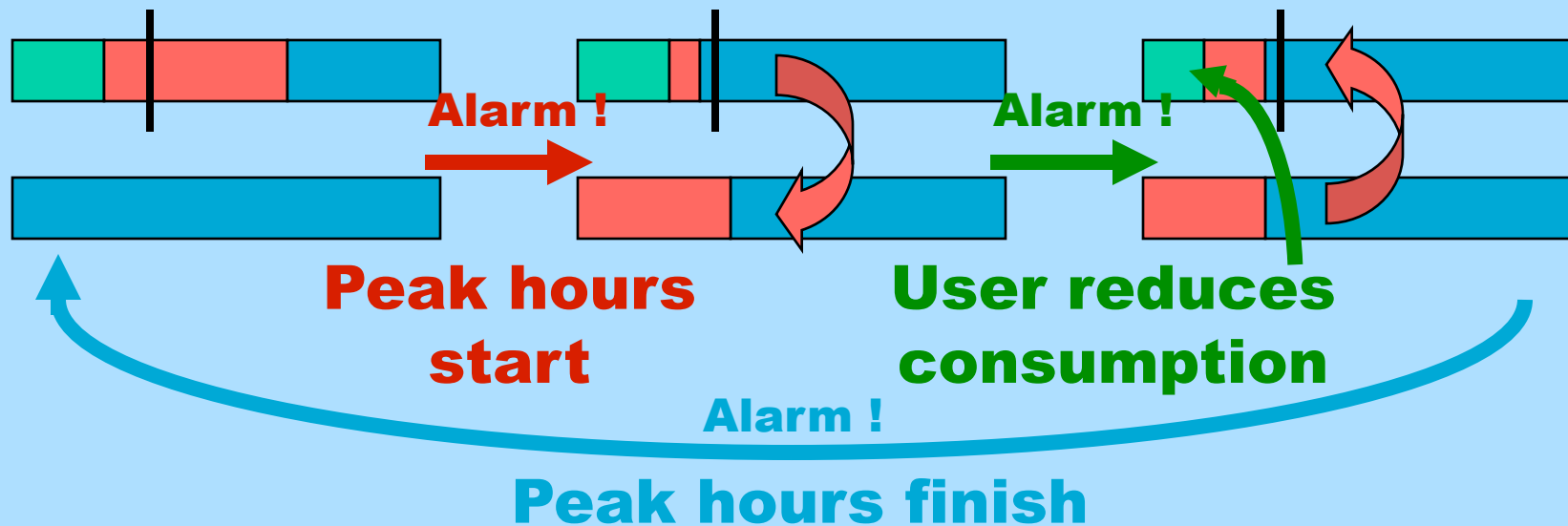
to EDF every week

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 - OSGI - Microsoft Internet Explorer

Fichier Edition Affichage Favoris Outils ?

← Précédente → Recherche Favoris Média

Adresse <http://130.98.36.215/fr/edf/services/hhtariff/index.html> OK Liens >>

Can I ?

See it !

How ?

Help us !

0% 100% 00 h

28

0% 100%

40

Automatic shut-down

GO

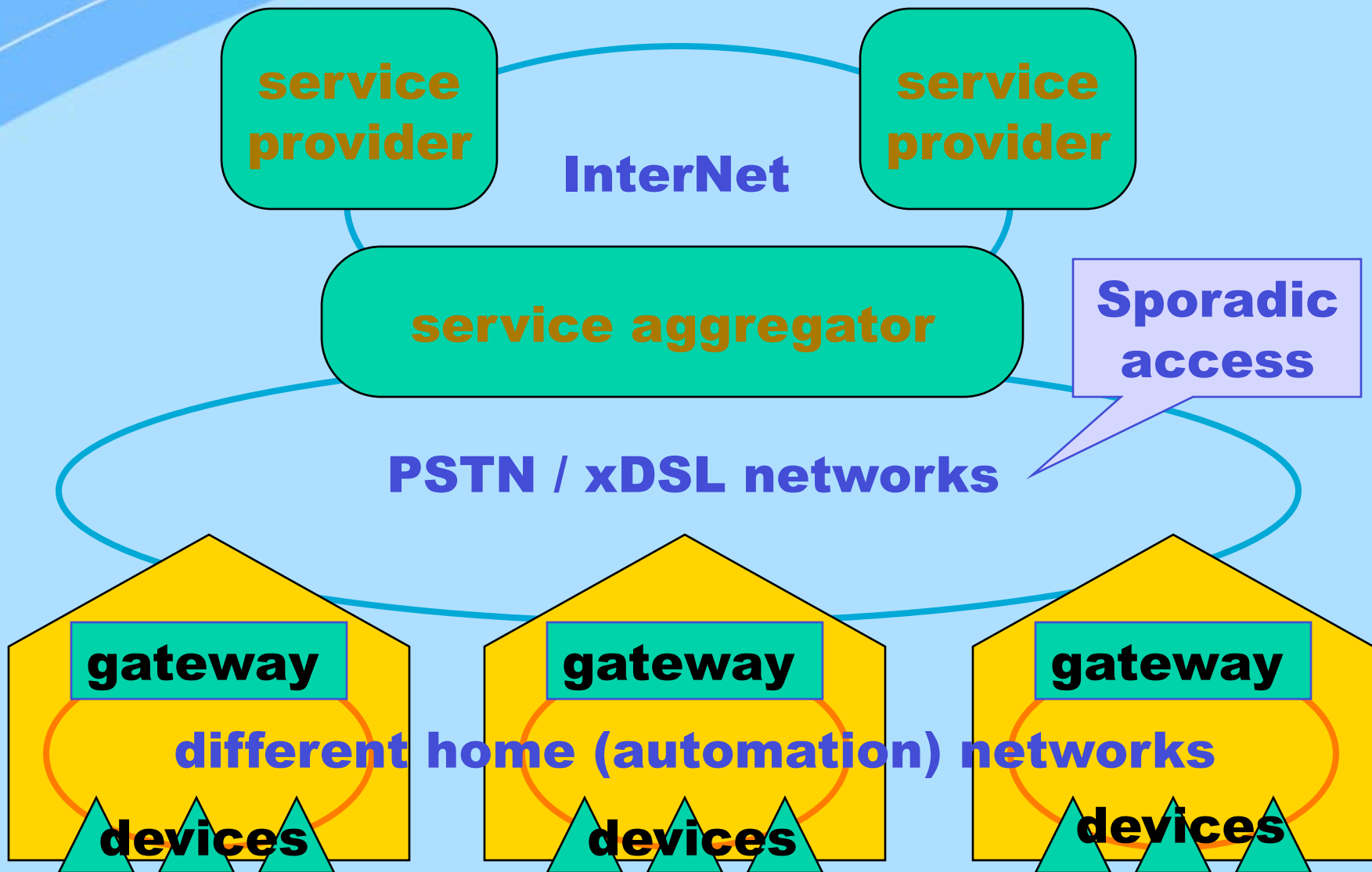
| Consumptions and cost day 1 (from 1) | | |
|--------------------------------------|--------------|---------|
| | Consumptions | Cost |
| Normal Tariff | 155.348 kWh | 24.86 € |
| Free | 8.141 kWh | 0.00 € |
| Penalty | | |
| Total | 163.489 kWh | 24.86 € |
| Benefit | | 7.84 € |

<< >> Total

Applet HHApplet started Intranet local



EDF project M@jordom global communication scheme





EDF project M@jordom in-house hardware/OSGi firmware

all kinds of services

our

Job!

our border line

the standard



(any suitable hardware)



equipments





EDF project M@jordom OSGi components architecture

all kinds of user services
our (service provider's) job

platform identity services
our (aggregator's) job

device drivers, etc.

our border line

the standard

**OSGi
Java**