



Energy Saving Information Platform (ENERsip)

ICT infrastructure for energy-positive buildings and neighborhoods

GREEMBED 2010
Stockholm, April-12

Boris Kantsepolsky
Motorola
Boris.Kantsepolsky@motorola.com

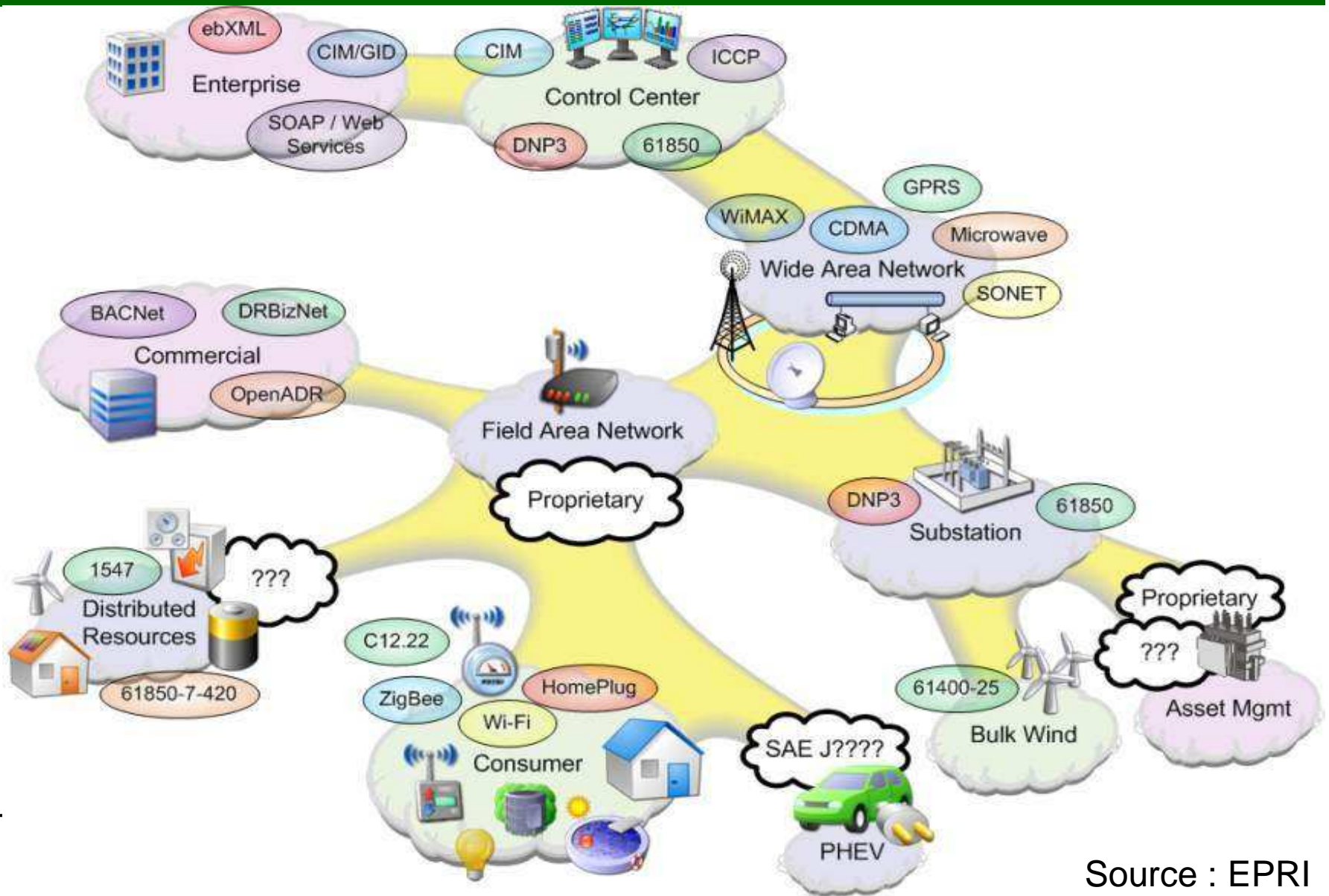
ICT 4.6.3 – ICT for Energy Efficiency

Rafael Morillo
Amplia
Rafael.Morillo@amplia.es

- The current distribution infrastructures do not enable a sufficient level of control, monitoring and management of the grid.
- The integration of renewable energies and local generation represents a key technical challenge.
- The evolution of the electricity grid in Europe is a key challenge for Europe's electricity networks.
- The successful combination of smart processes (e.g. demand side/response management, real-time consumption management) and smart technologies (e.g. smart meters, home energy management devices...) will enable to deliver the expected energy reduction.
- ICT can play a major role in reducing losses, increasing efficiency and managing ever increasing local energy sources.

- Develop and test in real-world conditions, an open Information and Communication Technologies (ICT) platform that will provide a set of tools for near real-time matching and optimization of generation and consumption in buildings and neighborhoods.
- ENERsip will introduce an adaptive, customizable, and service-oriented ENERGY monitoring and control system for energy grids and decision makers to allow reduction of energy consumption.
- ENERsip platform will allow the integration of the different domestic networks within the distributor's network. This will help grid operators move from a *generate-sell* model, to a *generate-predict-sell* model.
- ENERsip will contribute to the emergence of an open electricity market by using components from different suppliers, unifying their protocols and providing reliable information services, promoting European industrial and technological position in ICT-enabled energy efficiency technologies.
- The main impact of ENERsip project will be *the energy consumption reduction* achieved by coordinating the actual users' needs with the in-buildings and neighborhoods positive-energy generation facilities.

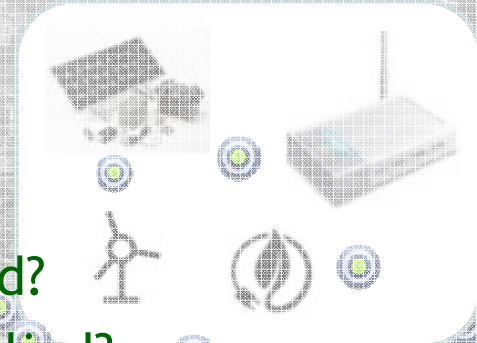
Smart Grid Communication Complexity



Source : EPRI

“Within million devices deployment 344526 doesn’t send data anymore”

- Is it still registered on the network or answering to pings?
- What firmware does it have?
- Did anyone see it alive lately?
- What happens if the data was lost?
- What was the last command applied?
- What happens if the service wasn’t supplied?
- What happens if the wrong service was applied?



M2M infrastructure becomes a vital part of the Smart Grid system solutions

6.8 Billion Connected People



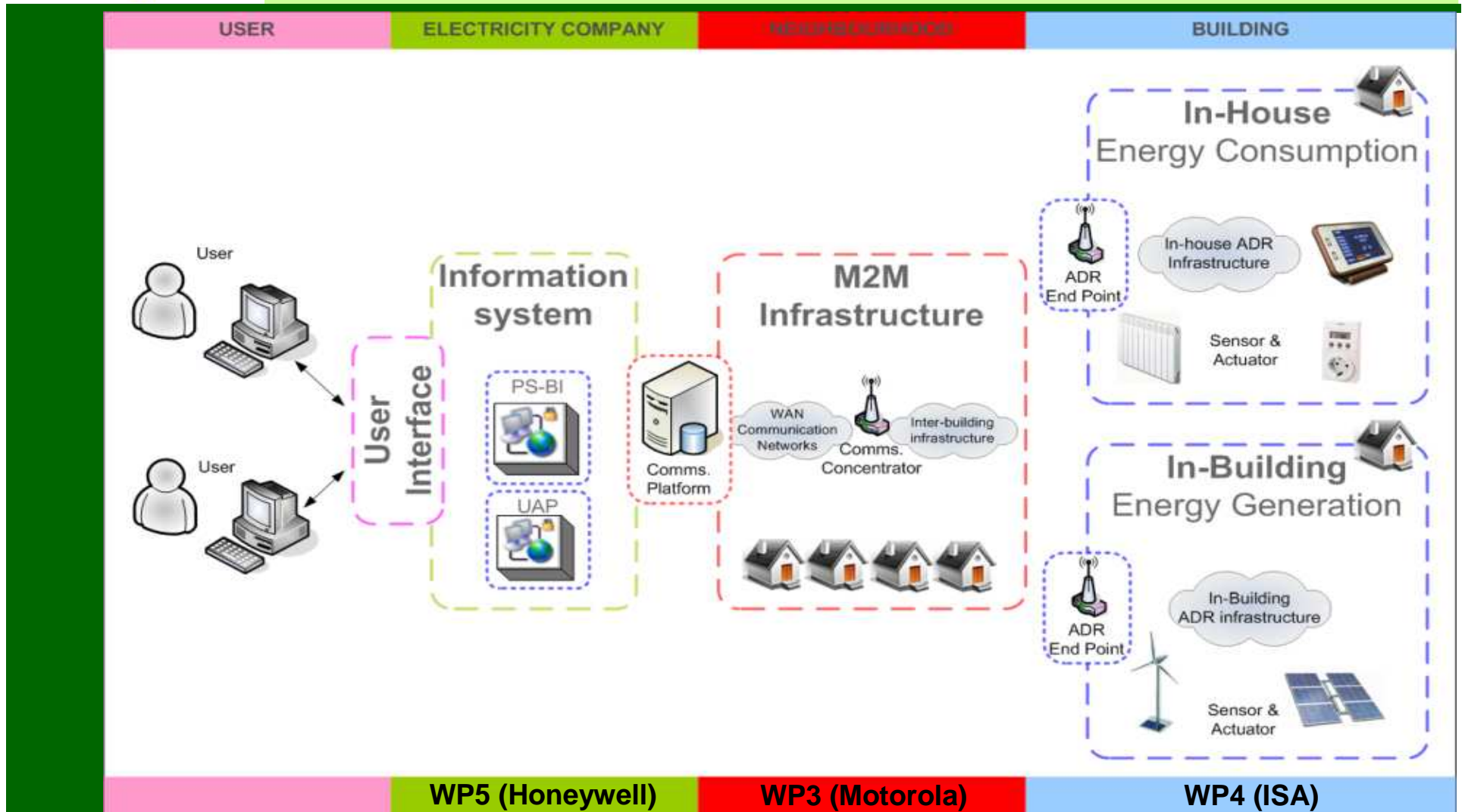
50 Billion Devices



- Technology connecting machines with machines and people
- Connecting machine/device to end-user IT infrastructure
- Pervasive Internet of Things/Connected Objects/Services
- Control, monitoring and management of the wireless networks
- Service business models enabler

- Removes the complexity of cellular/wireless networks based solutions by unifying their communications protocols
- Allows focusing on the application needs without dealing with device and communication management
- Allows cost effective integration and fast deployment of vast amount of remote devices
- Full control, monitoring and management of remote devices with built-in two way real time information exchange capabilities.

- M2M Infrastructure will to provide a core communications infrastructure between Servers, Intelligent concentrator and In-building infrastructure to allow advanced energy efficiency services
- The focus will be on
 - Reliable two-way information exchange
 - Local information monitoring and processing
 - Aggregated information exchange within the network
 - Commanding the communication network
- Users, energy grids and decision makers will be exposed to the set of a new energy efficiency services and recommendations for the better practices.

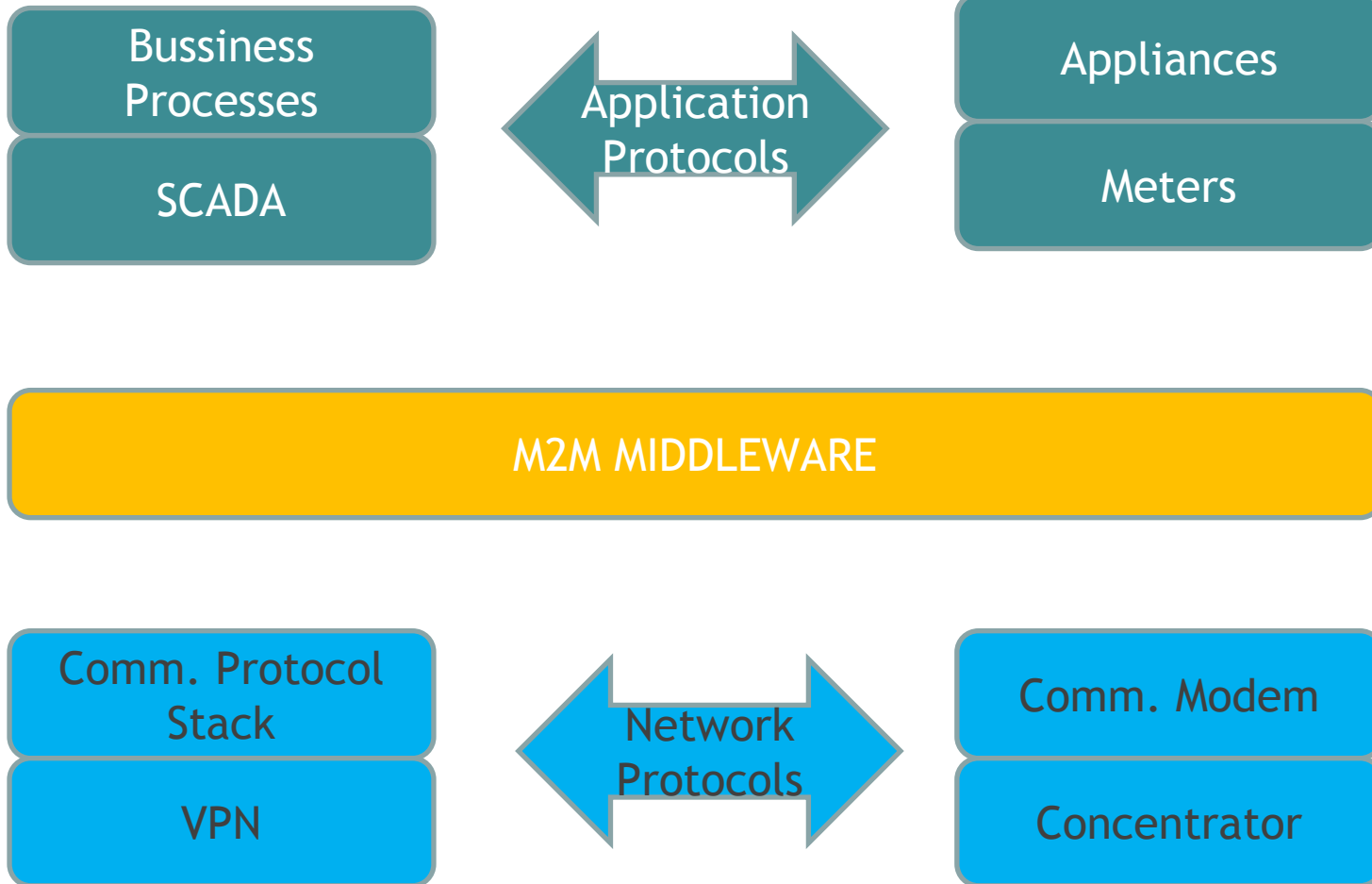


- Business Processes:
 - Acquire data
 - Process data
- Communications
 - M2M Core communication Infrastructure
 - transparent communication link
 - from electrical meters
 - to control, billing, BI, SCADA...
 - Reliable Communication Link
- Integration and deployment on cross-platform technology

1. Remote management of
 - Households, considering appliances data
 - Energy positive buildings & neighborhoods
2. Transmit near real time to the electricity company
3. Store, process, analyze data
4. Configure the network
5. Inform the user

M2M infrastructure helps...

- Focus on customers needs while M2M focuses on communication
- Complete control of the wireless networks
- Communicate device with Electricity Company
- Provide communication services to applications



Virtual Peer-to-Peer Communication

Message Broadcast (Unit-Units, BO-Units)

Security Management

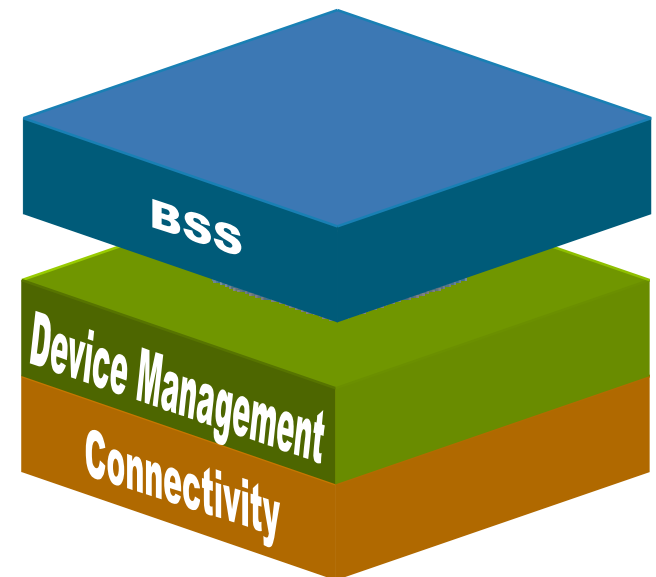
- Access Control:
 - User/Password
 - IP List
- SSL- Secure Connection end-to-end

Messaging

- Routing (SMS, USSD, GPRS)
- 3 level delivery notifications
- Multi-application & multi-node
- Message persistence at both ends
- Logger (statistics)

File Transfer Service

- Light FTP (low overhead)
- FTP RFC 959
- HTTP 1867



Inventory (Auto Discovery)

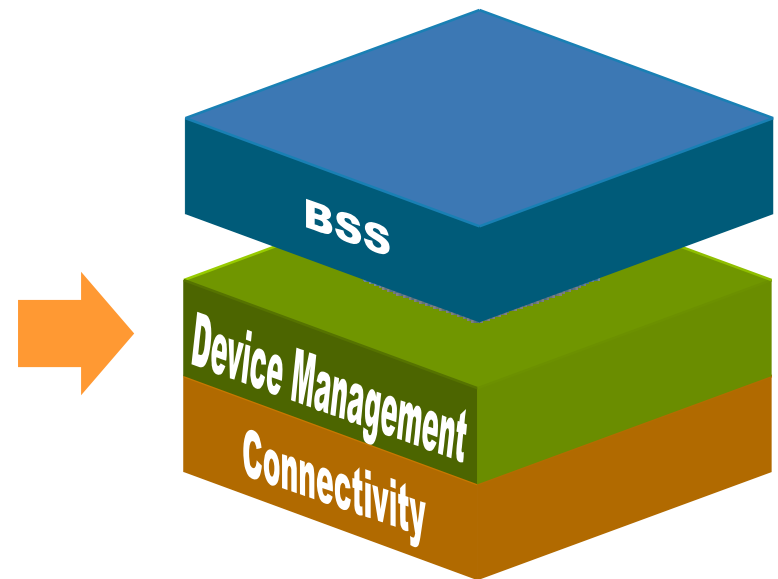
- Automatic inventory of deployed devices

Inventory Data:

- SIM data (MSISDN (*), IMSI)
- Module serial number
- Software version (Agent, Firmware, Configuration)
- Device model
- Device IMEI
- Manufacturer info

Provisioning

- Activation / Deactivation
- Registration
- Authentication
- Authorization



Update Service

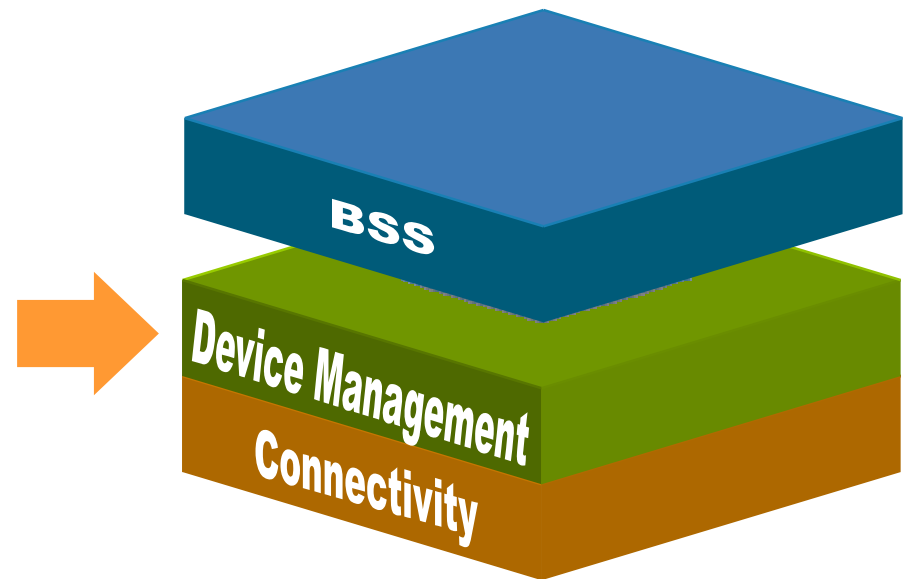
- Management Software Bundles
 - Software: Remote agents
 - Configuration
 - Firmware
- Update Planning
- Reports of the update status

Monitoring and Status (device specifics)

- Battery Level
- Temperature
- Signal quality
- Antenna detection (TBD)
- Jamming detection (TBD)
- Operator name
- Cell ID
- Connection retries
- Type of network registry: GSM, GPRS

Remote Operations

- Communications restart (s/w)
- Device restart (s/w)
- Operation status reports



- Energy saving shall be possible,
 - if all the elements involved are coordinated,
 - including generation and demand,
 - Acquiring and processing information,
 - As near real time as possible,
 - Giving its weight to communication infrastructure.
-
- An open platform for energy saving should provide
 - Business Processes
 - Communications with interfaces
 - Infrastructura monitoring

amplía)))



Honeywell



Thank you

www.enersip-project.eu