Software update solution for Wireless Sensor Networks on top of MPL

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A2Nets project:

- Type: ITEA2
- From: 2011 to 2014
- Partners:
  - **Finland**: VTT, Polar, Vipsolas, Tracker, Planray
  - **France**: LAAS-CNRS, Thales Communications, CEA, Gemalto, eDevice, Bull, Université Paris XII
  - **Spain**: AGGRUPPA, Mirakonta, Universitat Autonoma de Barcelona, Tecnalia-ESI, Rucker Lyypsy SA, ATOS Origin
  - **Turkey**: Innova, Vector, C2Tech, Bizitek

- Main objective:
  - Assist transition from M2M fragmented vertical markets to interoperable horizontal markets.

- One outcome (among many):
  - Don’t introduce a new framework for interoperability. Extend or contribute to existing framework.
    - Example: ETSI M2M standard
The solution needed to be:

- OTA
- Scalable => Multicast
- Reliable and robust (support radio channel variations, interferences, failures,...)
- Energy efficient (updating software should not drain sensor batteries)
- Compatible with OMA DM (as part of ETSI M2M).
**MPL** *(Multicast Protocol for Low power and Lossy Networks)*:

- IETF draft (ROLL group), RFC soon.
- Typically above 6LoWPAN.
- Dissemination of IPv6 datagram through WSN.
- Different from RPL multicast (which is not dissemination oriented).
- Based on “tickle timers” defined in RFC 6206.
- *Well adapted to OTA firmware update*

- ➔ see MPL simulator
Implementation:

• Based on Contiki OS
  • Provides 6LoWPAN stack
  • Provides MPL (version 2.4, 3.x)
• Hardware: Zolertia Z1 sensor platforms.
• Exploits Contiki’s “module” capabilities.
  • Fine grained software update, at module level.
  • Small update files => better energy efficiency.
• Provide CRC mechanism to check correct recovery of modules, and to report success or failure to the gateway.
• Possibility to interface with OMA DM Gateway.

• => 2 minutes video, if time allows.
THANK YOU!

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