Internet of Things Platform

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Who is INFOTEC?

CONACYT's Public Research Center focused on:

- Infrastructure (2 data centers, connectivity, manage and hosting applications)

- Application Development (technological Solutions, Systems)

- Business Process (critic process, reengineering)

- Strategic Consulting (What?, How?, Where?, Who? When?)

- Research (applied, on demand)

- Training & Education (3 masters degrees)

Semantic Web Products

SemanticWebBuilder

SWB Social

- CMS for Social Networks
- Social Network Listener
- Geographical, sentiments and influence Analysis

SWB SOCIAL.

SWB Process

- BPMS
- BPMN Engine
- BPMN 2.0 Modeler

SWB PROCESS

SWB Portal

- Portal Server
- Content Management System
- Context Management
- Portlet Container
- User Management

SWB PORTAL

+ 300 Federal Government Portal

SWB Platform

- Semantic Web Platform
- Development Framework
- OWL2Java (Code Generation)
- SPARQL Endpoint

SWB PLATFORM

The actual Home Automation issues:

- High cost devices

- Complex installation (not possible in many cases)

- Current approaches are based on centralized systems

  - One computer dedicated (Public IP required for remote access)

  - Costs and energy consumption increase

- Today exist many low cost devices that could be used for automate many functionalities of home's devices (but not designed for communication between them).

Objectives of IoT Platform

Create a prototype of generic platform for remote control and monitoring of electronic devices that can be used for automation, security and energy saving systems.

The prototype should include the following components:

- **Control Node**
    - Small and very low cost device (RF or PLC)
    - Communicates and manages sensors and actuators.

- **Gateway Device**
    - Communication between *Control Nodes* and *Cloud Server*

- **Cloud Service**:
    - Receives and processes data from gateways
    - Makes decisions based on business rules
    - Unique point of access to users
    - Linked Data endpoint for applications.

The Platform

Users

Server

Rules   Contexts   Events   Actions

Groups

Gateway

Arduino Ethernet   Raspberry Pi   < 15usd

Nodes

PLC 100m/200m   RF 433MH / 2.4GH 100m/1Km/3km   < 3usd

Sensors/ Devices

Impacts

- It will allow the automation of homes, buildings and offices at very low cost.

- It will be easy to implement, technical knowledge is not required.

- It will be easy to integrate with existing infrastructure

- New business opportunities at several levels

- The project could be Open Source and Open Hardware

Collaboration opportunities

- Open Source and Open Hardware Project

- Unification with existing APIs for integration of sensors

- Integration with IoT's related projects

- Easy integration with providers of existing devices and sensors

Conclusions

- This project, it is a current prototype, shows a great potential for interconnect existent electronic devices and sensor at very low cost.

- The proposed architecture, using a generic communication device and cloud services, that could facilitate their fast adoption for smart spaces.

Thank you!

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