

Towards the Implementation of IoT for Environmental Condition Monitoring in Homes

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smart homes

clusters of sensors

collecting different types of data

can improve standard of living

reduce costs of home-ownership

Smart home Gator Tech., USA



smart homes

other research focuses:

resource management

interconnection mechanisms

hardware

protocols

smart homes

GatorTech Smart House,

Casas Smart Home,

iDorm,

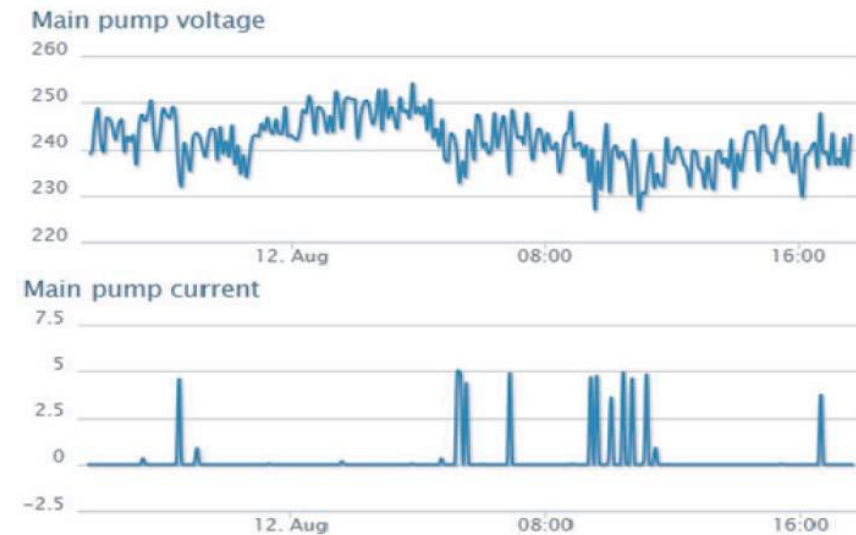
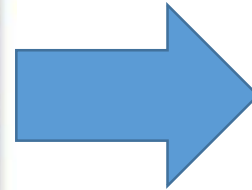
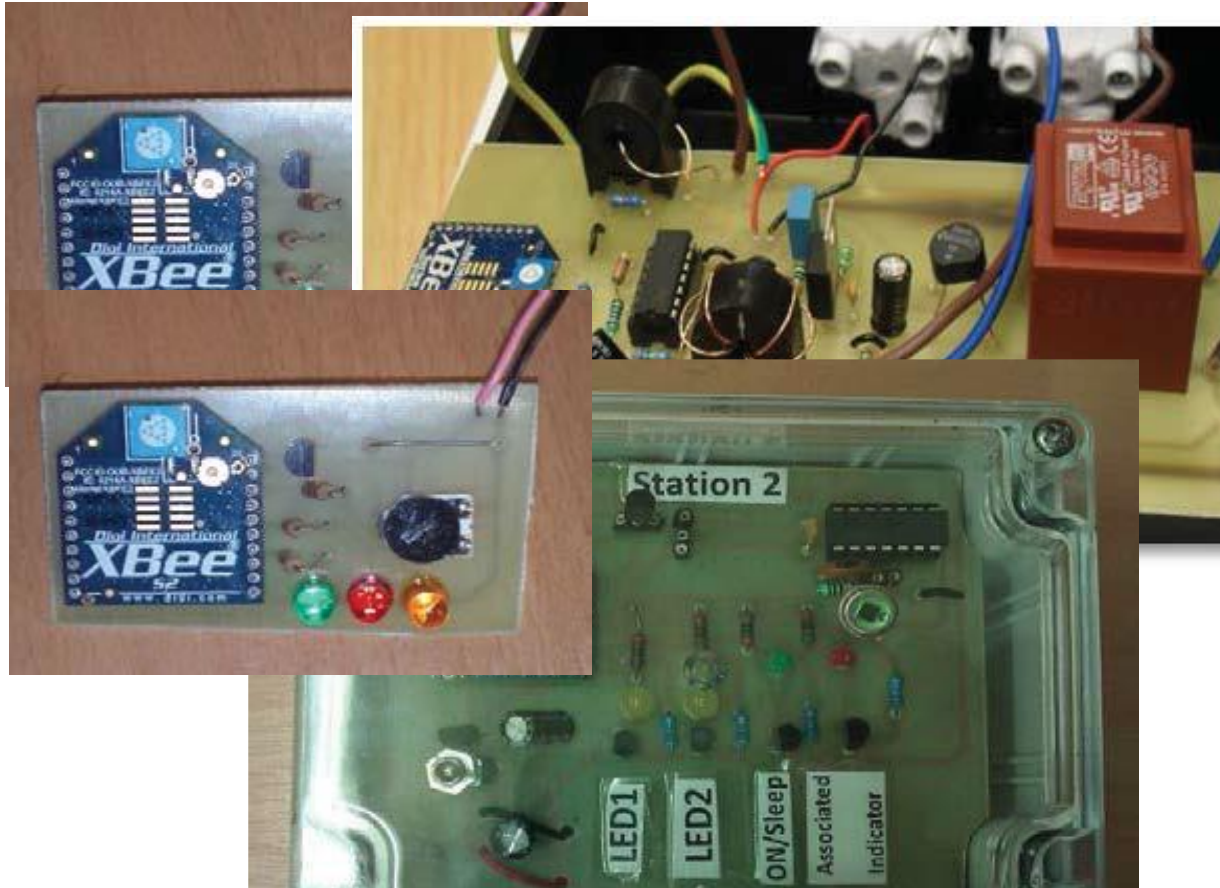
Georgia Tech Aware Home,

Place Lab



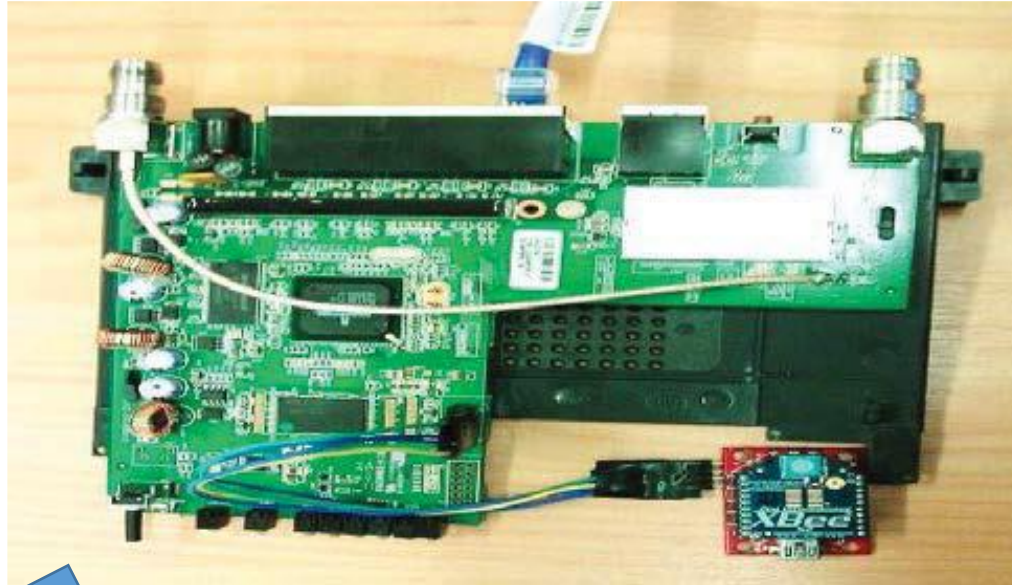
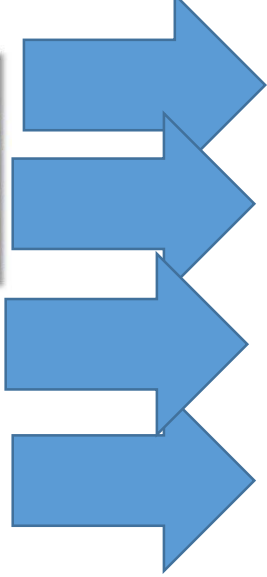
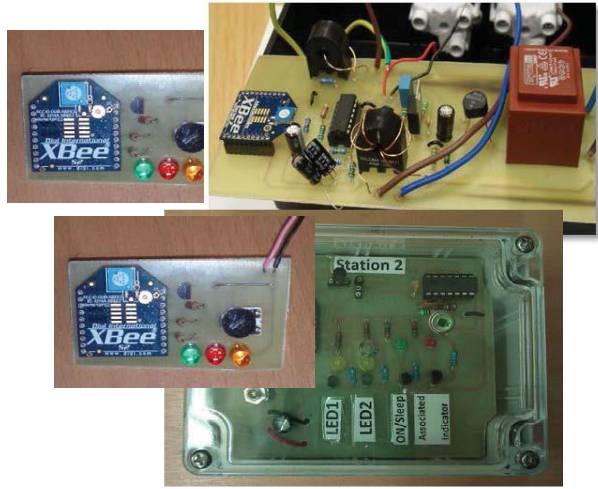
contribution

internetworking mechanisms for interoperability



platform

WSN

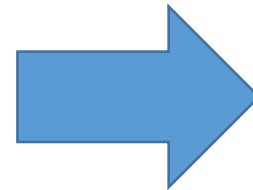
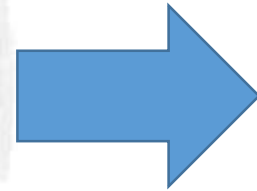


gateway

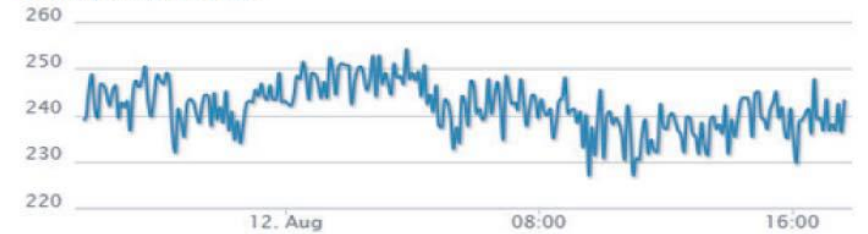
VPN



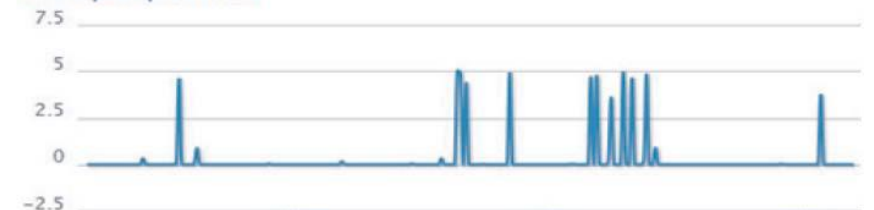
server



Main pump voltage



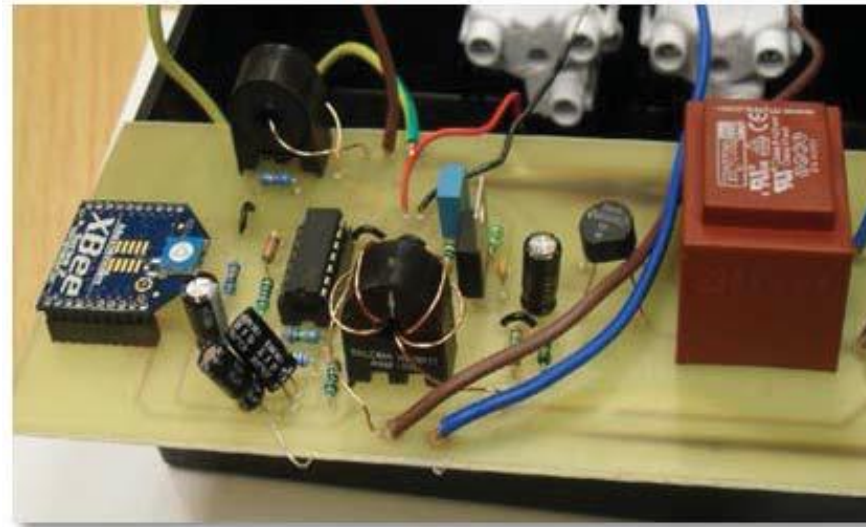
Main pump current



sensors



hot water monitoring
continuous, 40 mA

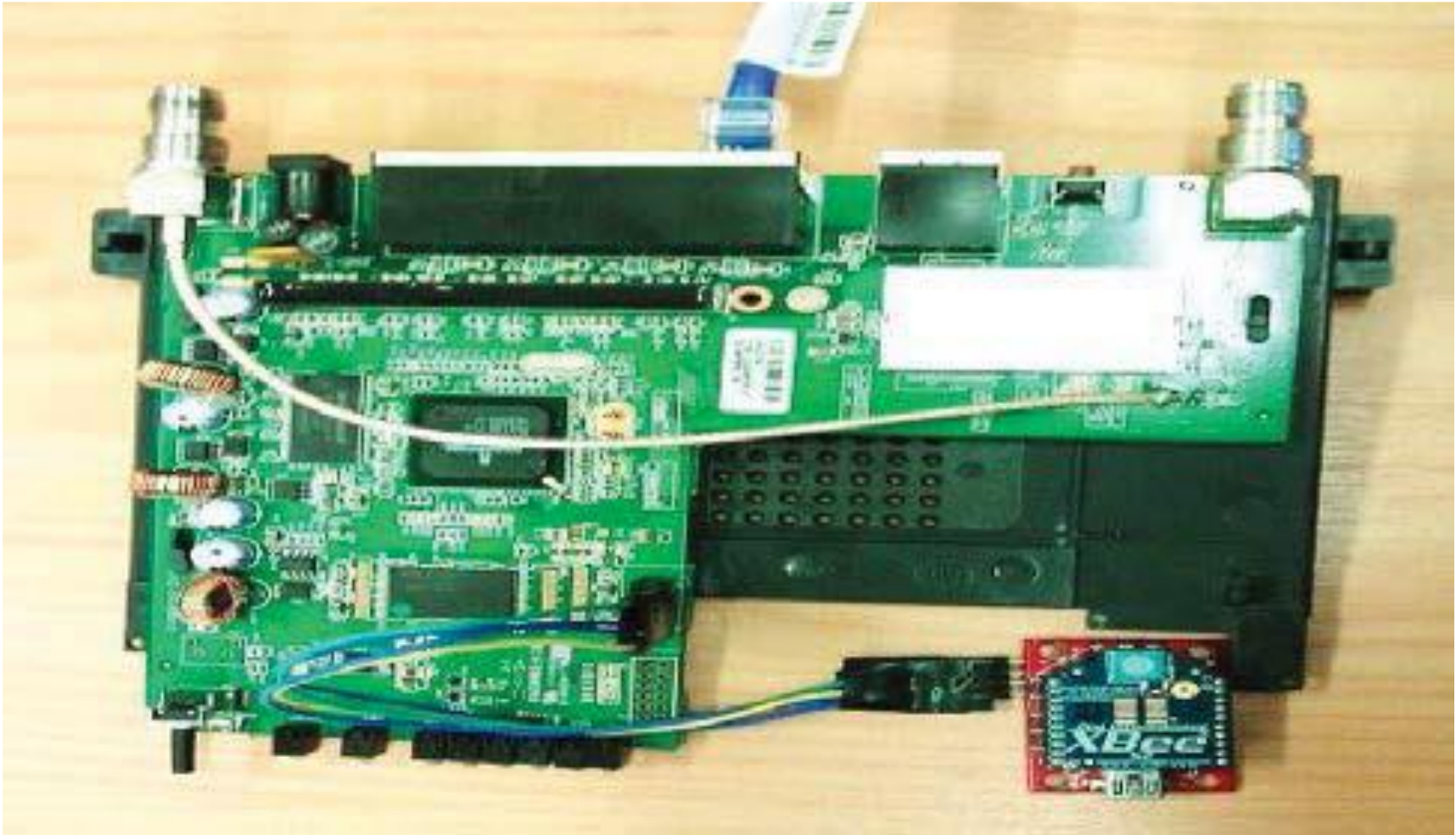


current monitoring
continuous, 40 mA



environment sensors
 $30\text{ms} / 5\text{s} = 0.24 \text{ mAh}$

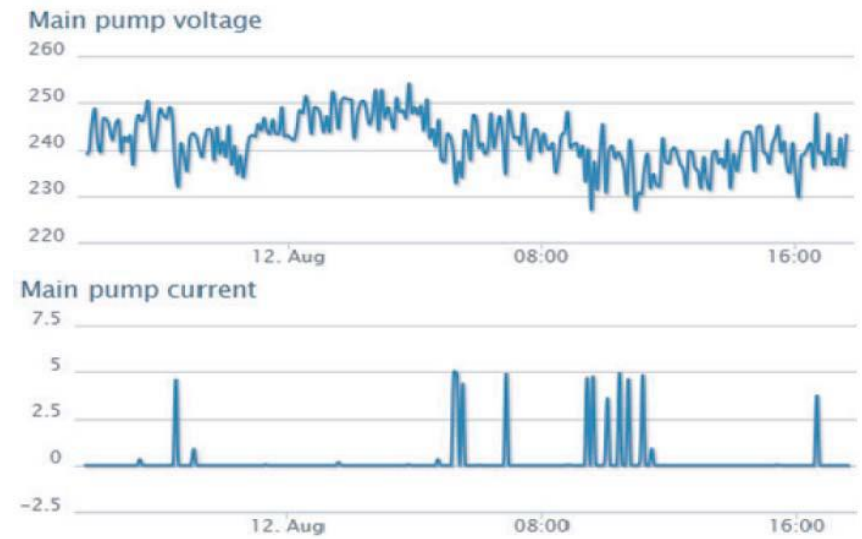
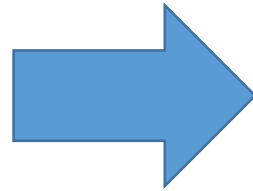
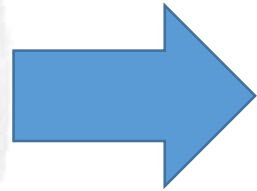
gateway



server and web interface



server



NAT – Network Address Translation

2004:0000:0000:0234:0013:A200:4076:473D

| | | | |
|----------------|--------|-------------|------------|
| 2004:0000:0000 | 0234 | 0013:A200 | 4076:473D |
| Network ID | PAN ID | Serial High | Serial Low |



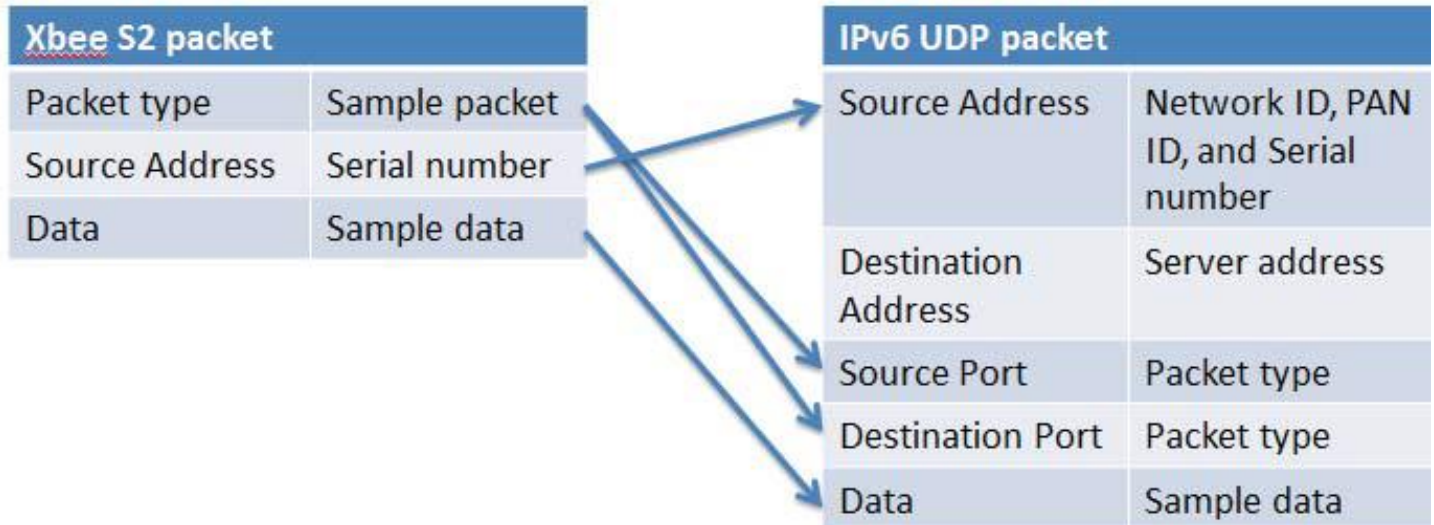
Router



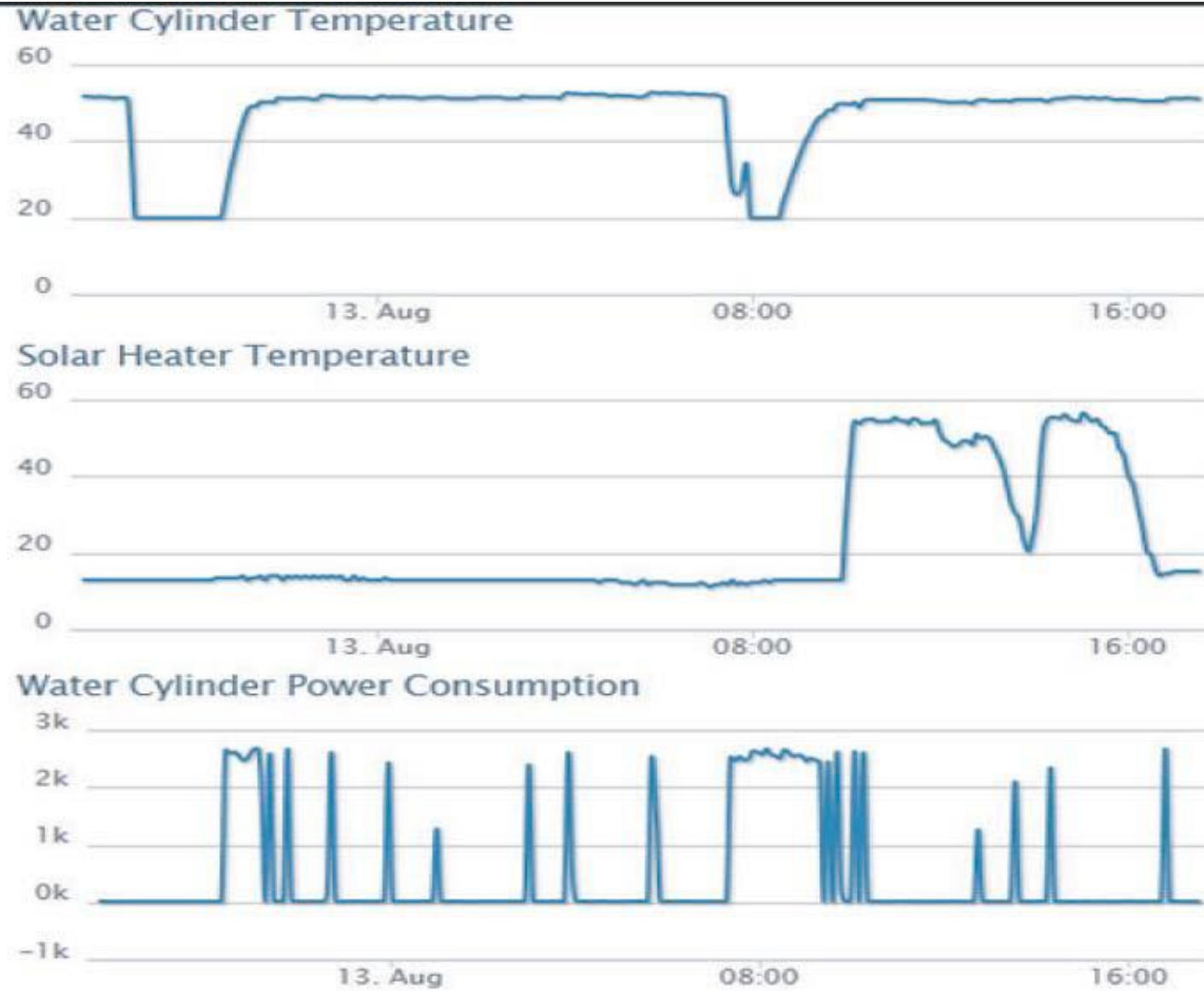
Coordinator



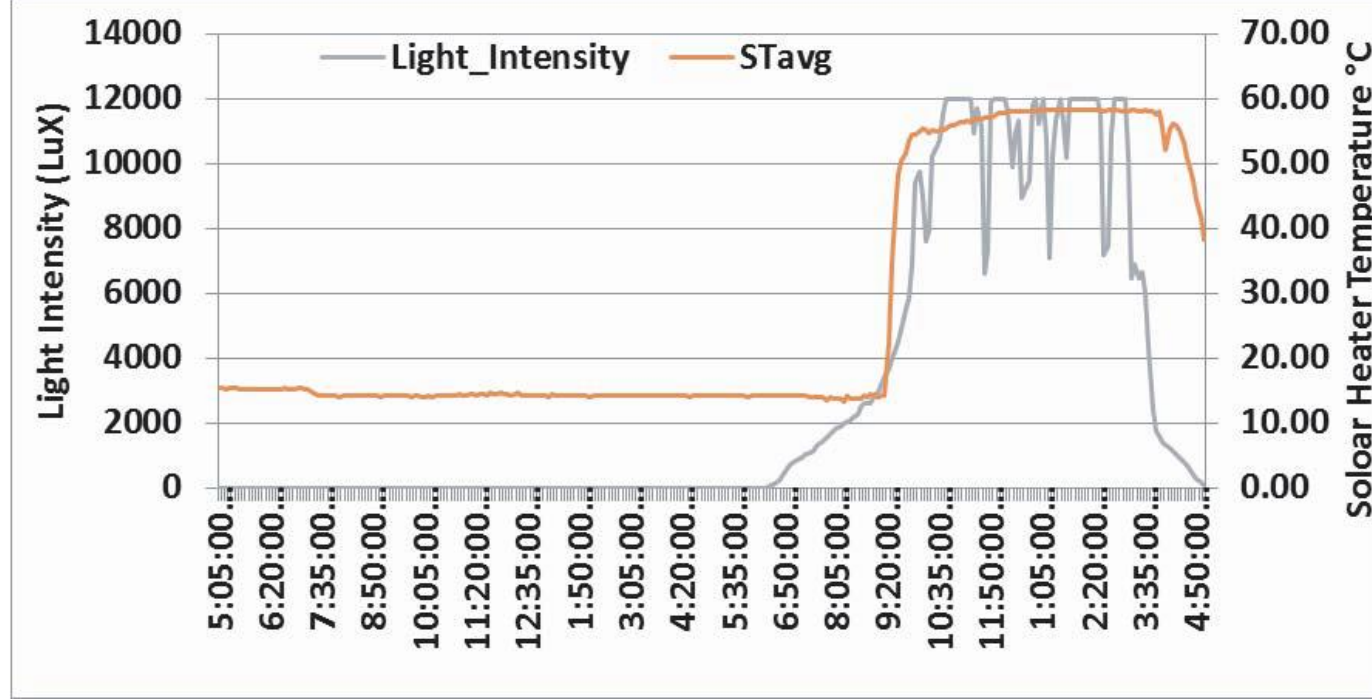
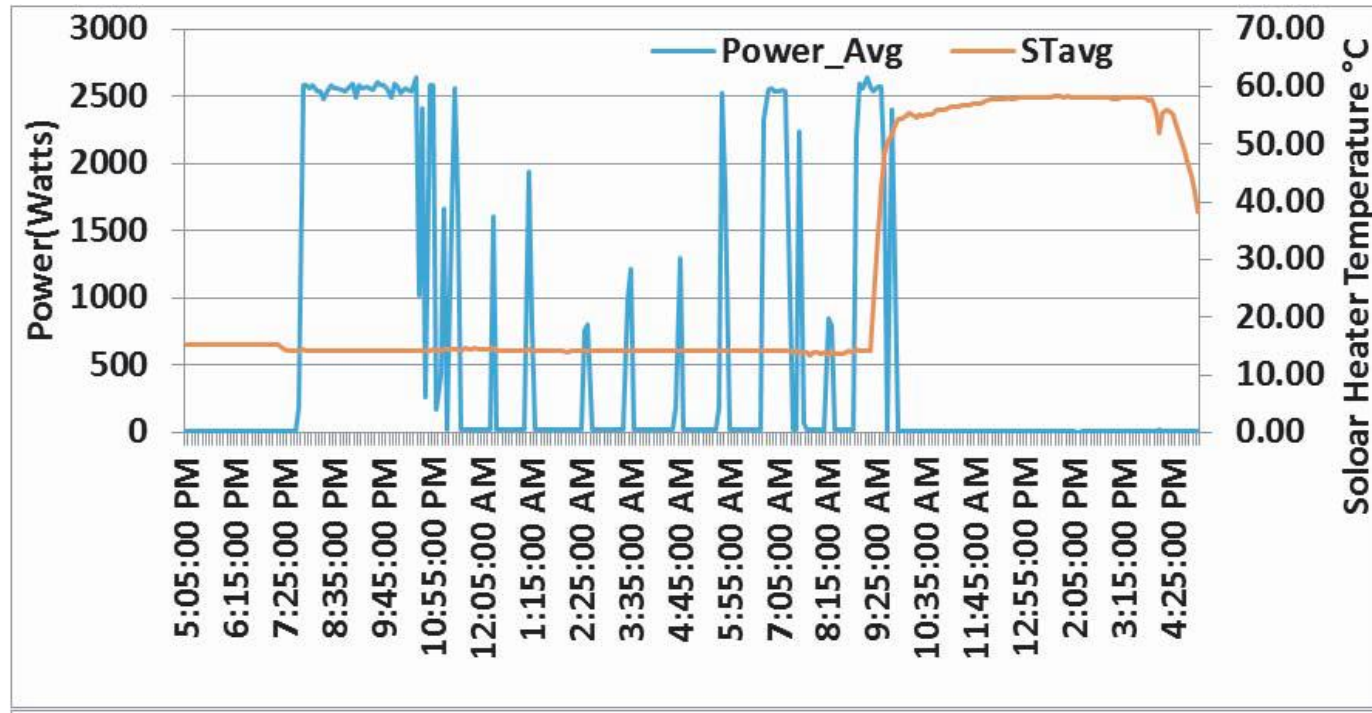
End device



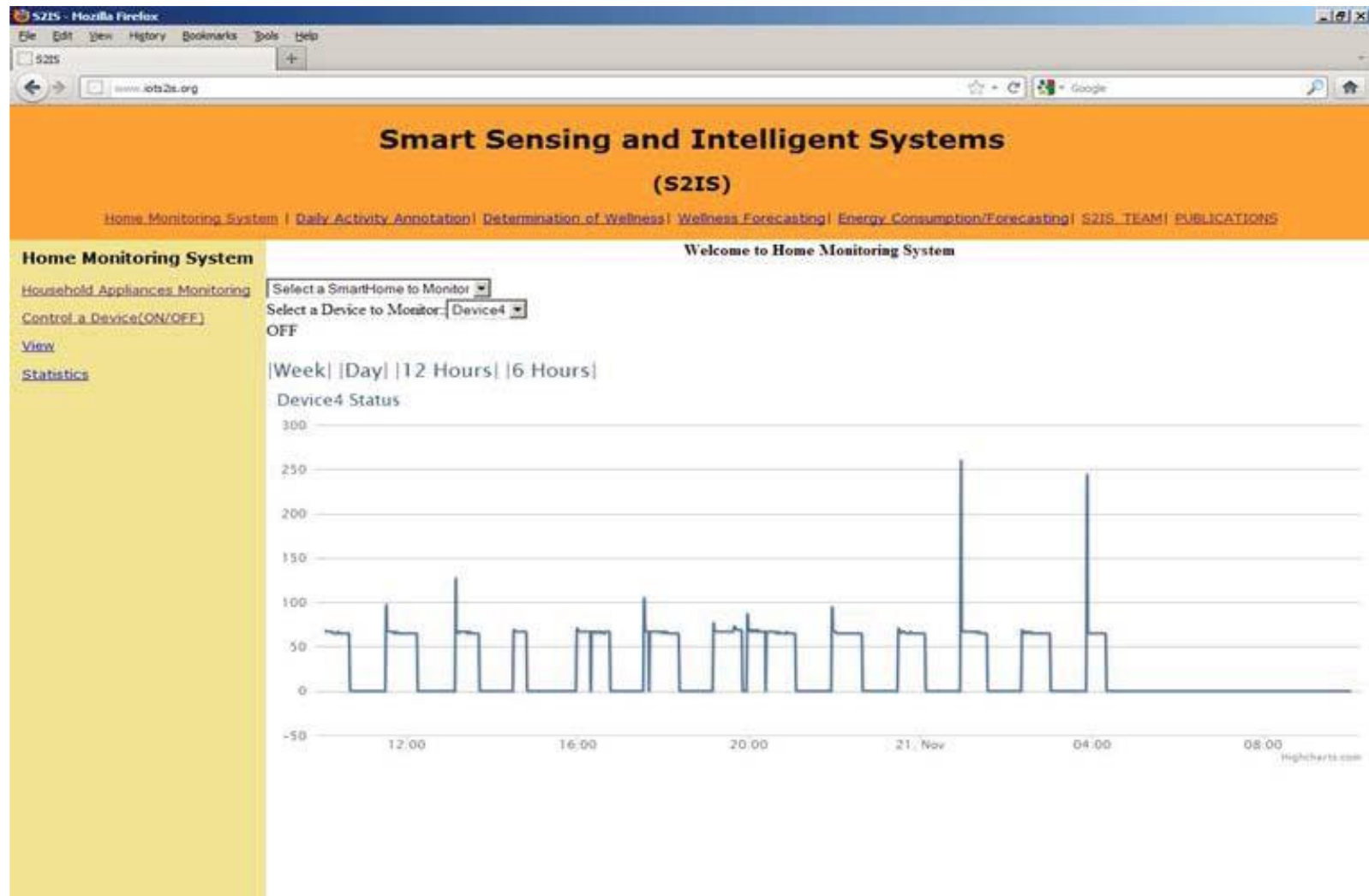
data



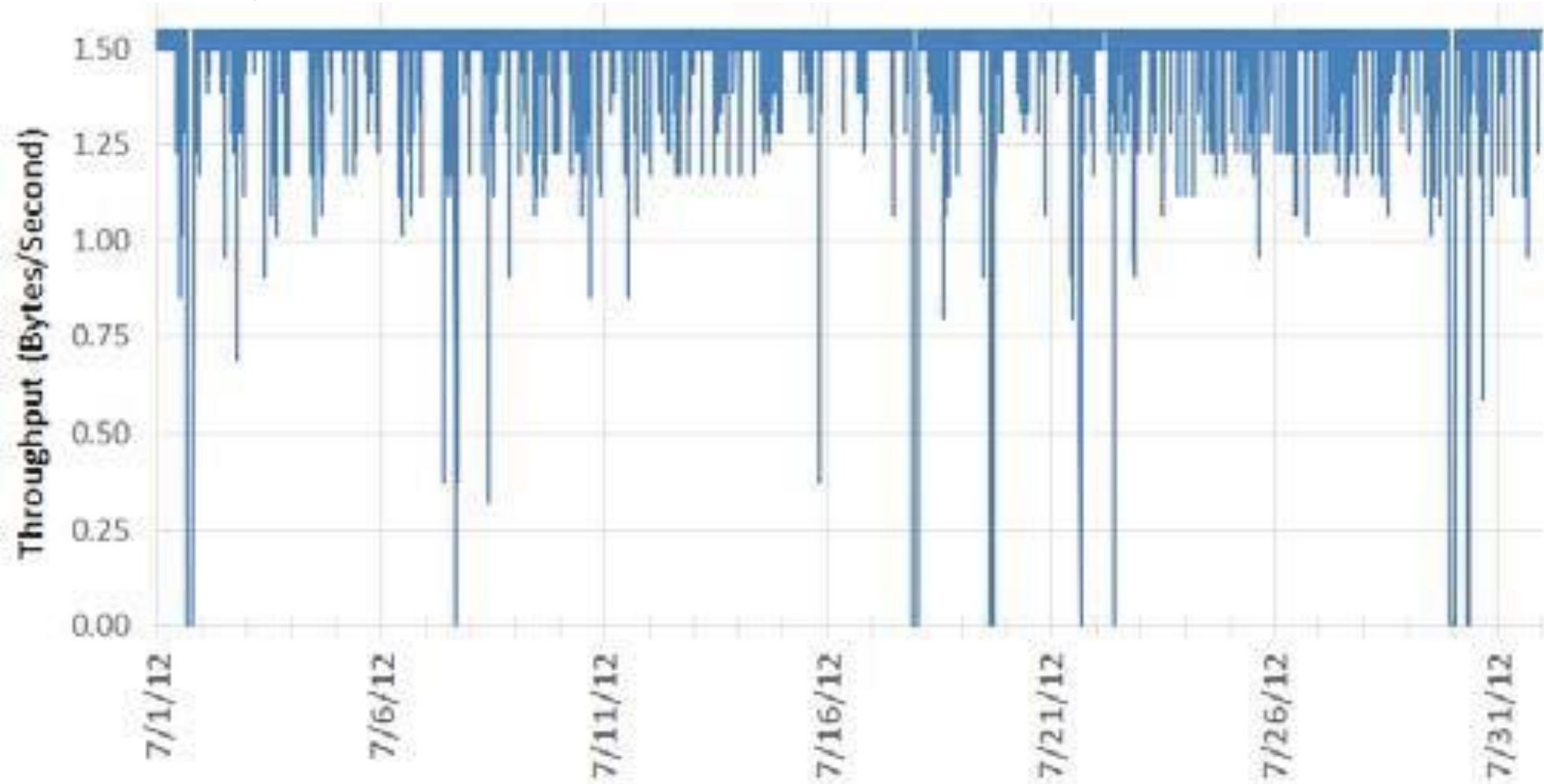
data



“smart” thresholds



Reliability



conclusions, advantages

greater control over routing of packets (security and customization)

ability to adapt to other wireless sensor networks

discussion

smart houses are not succeeding...is it really technology?

they criticize focus on hardware and interoperability

how to make use of all this data?

raw visualizations only so useful

app explosion

I translation of XBee to IPV6 really worth a paper?