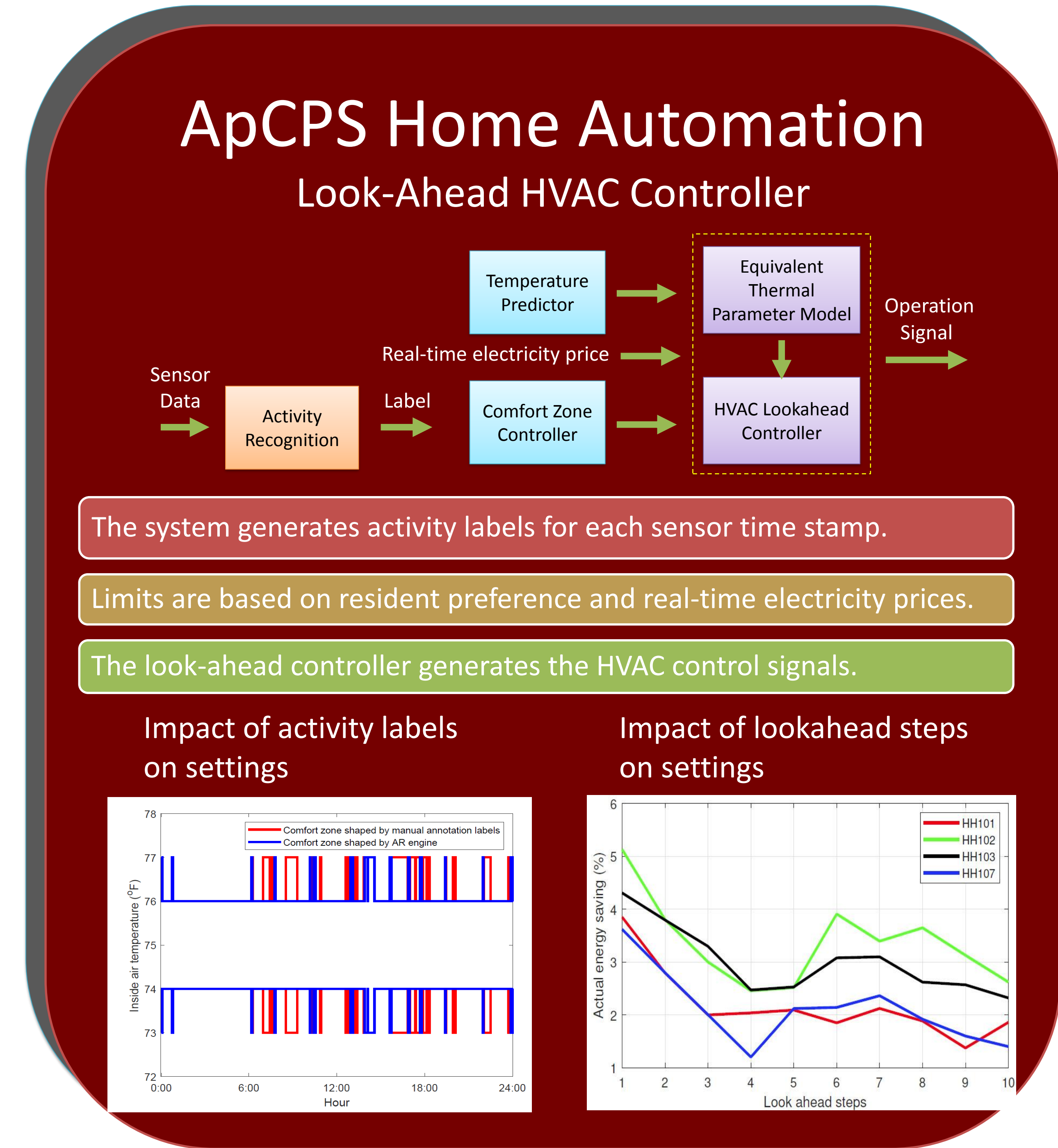
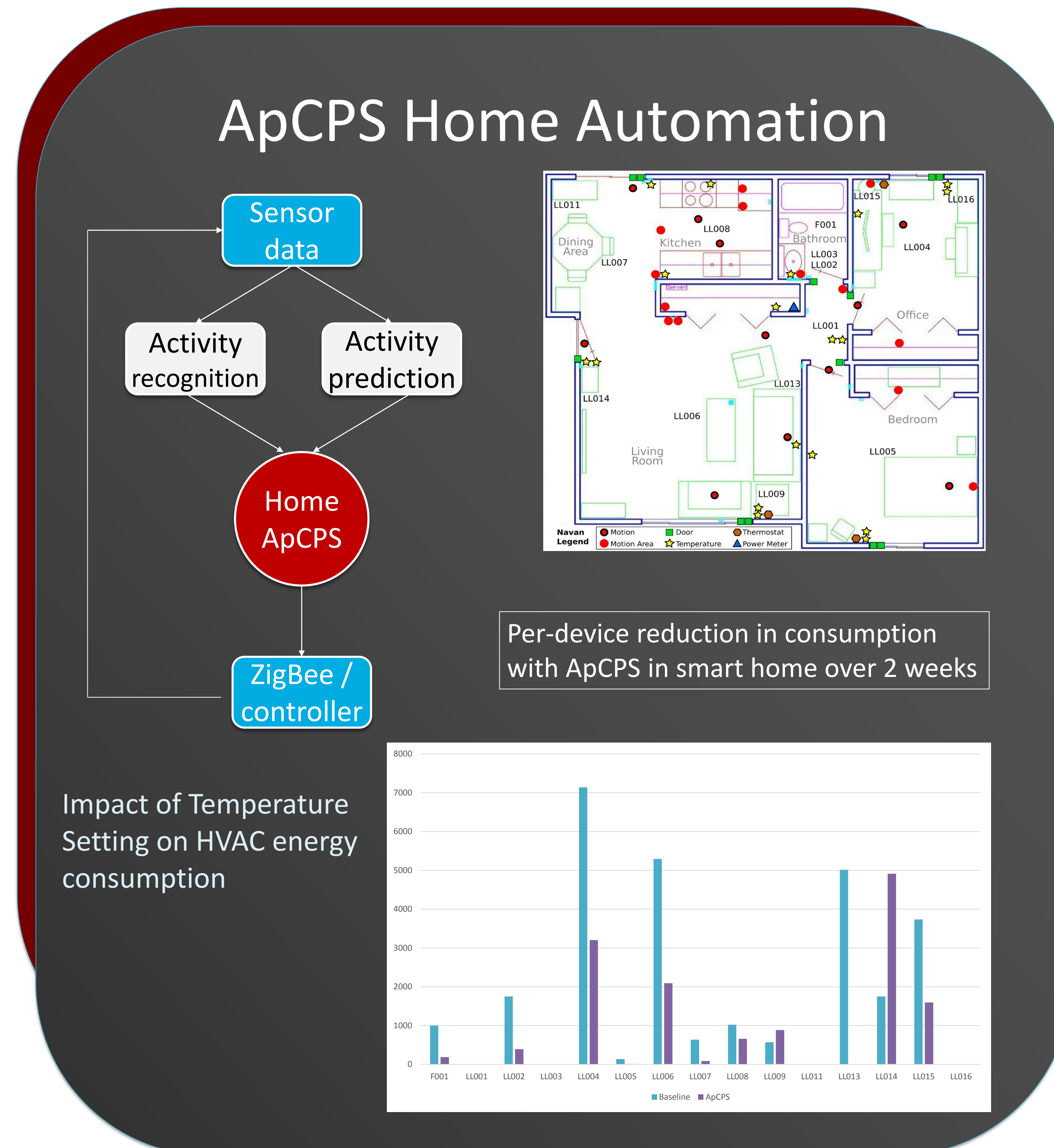
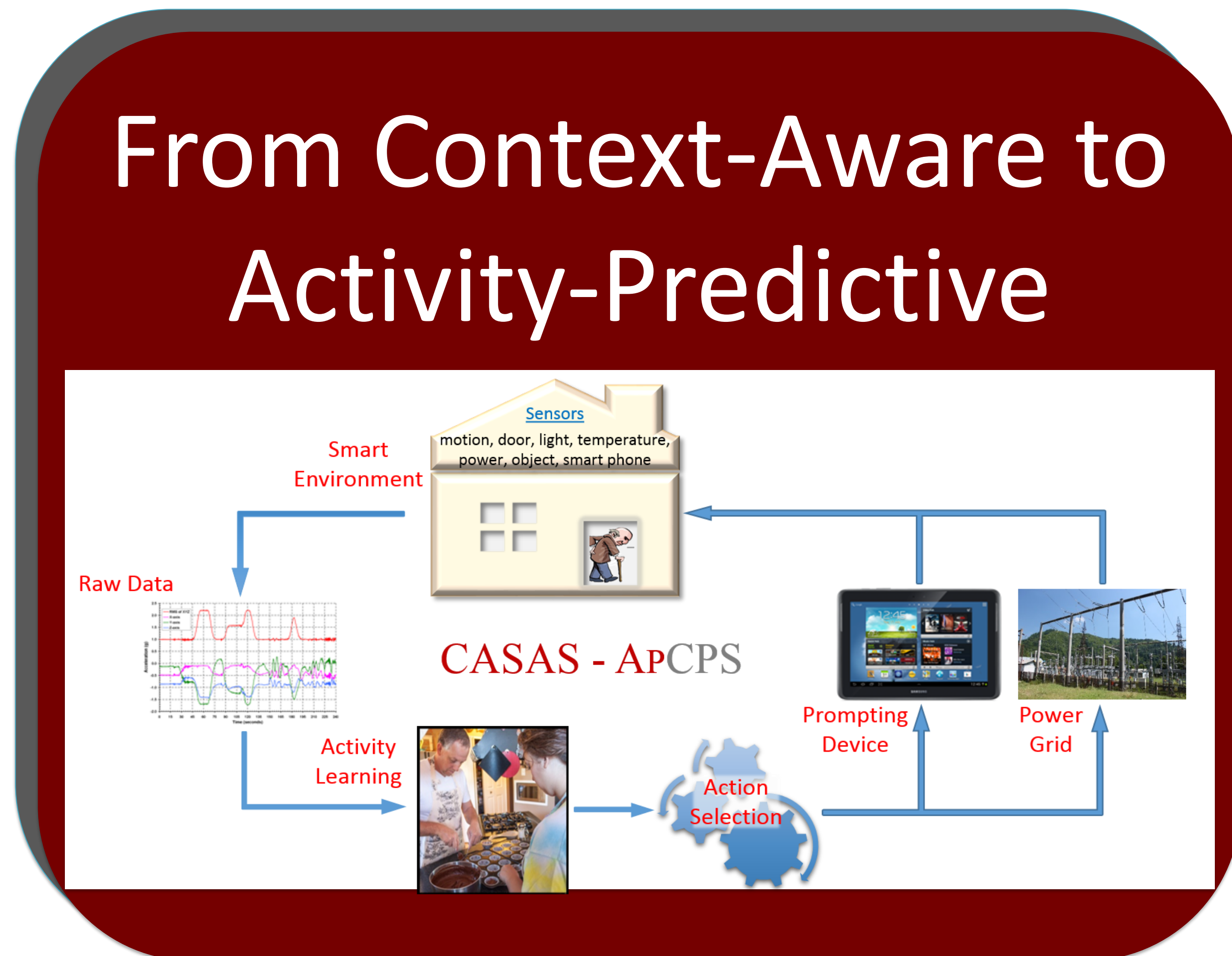




The Science of Activity-Predictive Cyber-Physical Systems (APCPS)

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Washington State University, Web: casas.wsu.edu, Award: 1543656



Activity Learning

2016-06-15 03:38:34.62 Bedroom ON
2016-06-15 03:38:37.31 Bedroom ON
2016-06-15 03:38:41.45 Bedroom ON
2016-06-15 03:38:44.48 Bedroom ON
2016-06-15 03:38:17.81 Bathroom ON
2016-06-15 03:38:23.20 Bathroom ON

- Activity Recognition:
 - 98% accuracy, 11 activities, 100 homes
 - 85% accuracy leave-one-home-out
 - 84% EMA validation
- Forecasting times of future activities:
 - 98% accuracy
 - n=30 homes
 - 11 activities
 - r=.9873
- Indirectly-supervised anomaly detection:
 - Falls, nocturia, depression, weakness
 - 5 homes, ≥6 months each
 - Gmean = 0.132 (supervised: 0.107; unsupervised: 0.064)

ApCPS Digital Memory Notebook

Cognitive prosthesis for individuals with memory impairment

Smart home-generated task checklist and task prompting

Evaluated with younger adult, currently testing in homes with older adults
[youtube.com/watch?v=m07GCqgGBGk](https://www.youtube.com/watch?v=m07GCqgGBGk)

Broader Impacts

Multi-disciplinary training ntg.aialab.wsu.edu

Shared data, tools, & smart home kits around the world

K-12 museum exhibit