Bachelor Thesis Projects in Automatic Control

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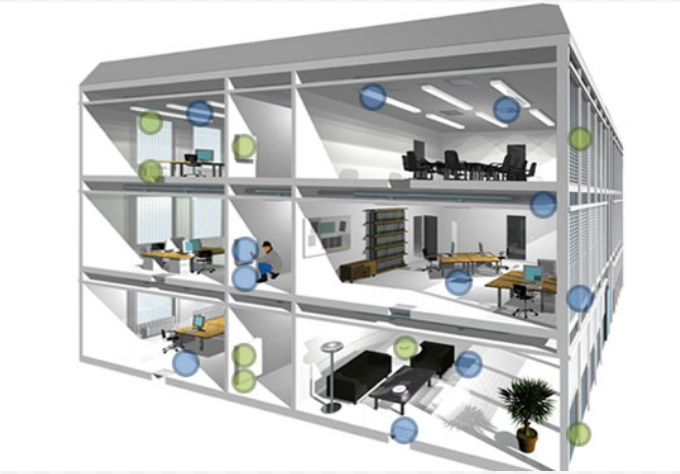
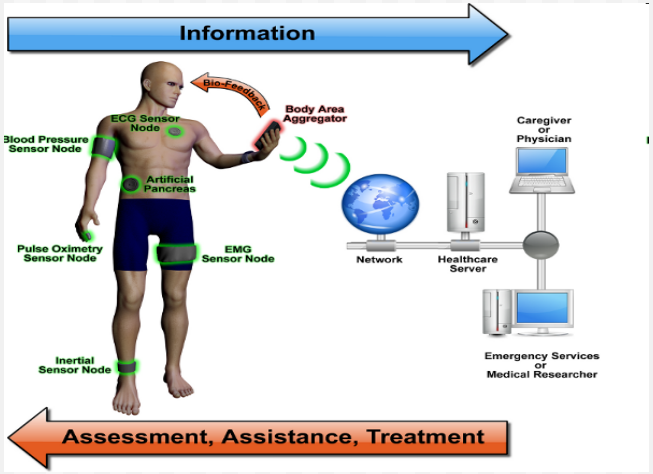
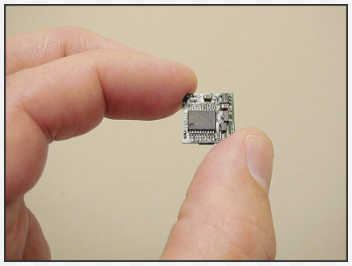
- By 2020, one of the most technological urban districts in the world
- Thousands of Smart Buildings will be built

Smart Buildings, an Internet of Things application







- Wireless sensor and actuator networks make Internet of Things possible

- Computing and communicating nodes, wirelessly networked for **communication**, **control**, **sensing** and **actuation** purposes

Smart Building: 6 projects

I1 Real-Time Scheduling in Smart Buildings

I2 PID Controllers in Smart Buildings

I3 Brain Activity Sensors and Health-Care Systems Control

I4 Networked Control of Autonomous Ground Vehicles

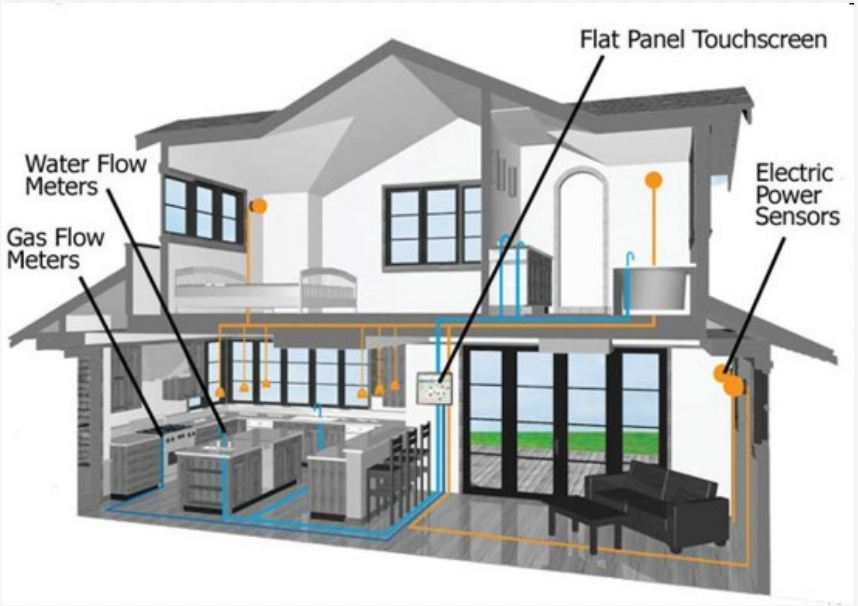
I5 Networked Control of Unmanned Air Vehicles

I6 Networked Detection and Tracking

I1 Real-Time Scheduling in Smart Buildings

- How schedule the control of the home appliances?
  - Example: how to reduce electrical energy consumption

I2 PID Controller in Building and Automation



- PID Controllers are the most versatile control strategies
  - Example: how to design PID controller with networks of sensors?

I3 Brain Activity Sensors and Healthcare Control

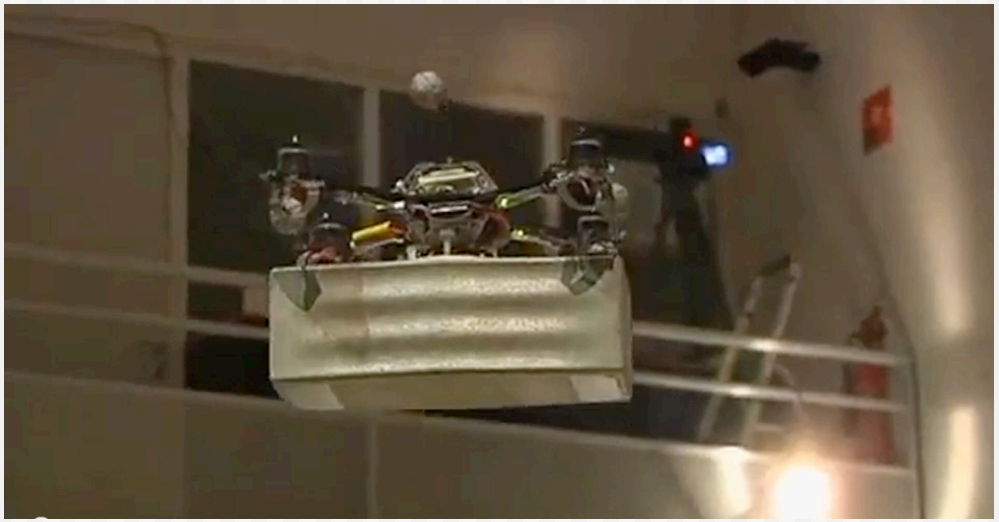
- We have sensor networks to detect the brain activity
  - Example: how to control home appliances directly by the brain

I4: Networked Control of Autonomous Ground Vehicles



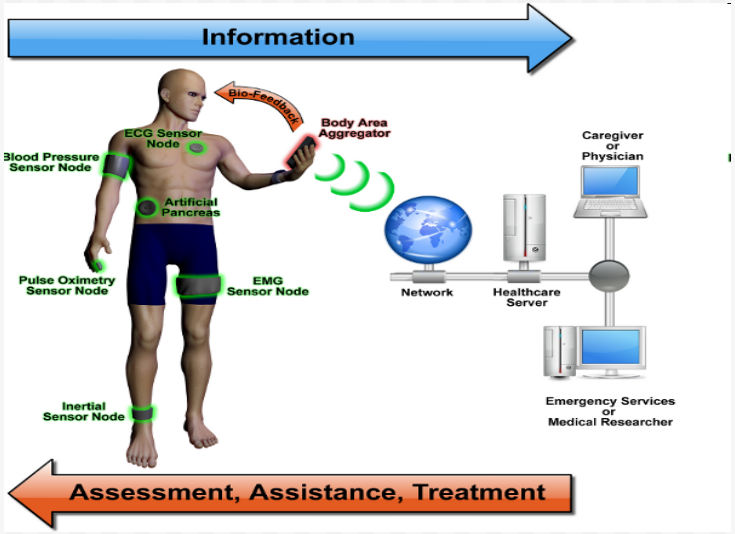
- Moving robots on the **ground** can give substantial assistance in buildings
  - Example: how to control autonomously these robots?

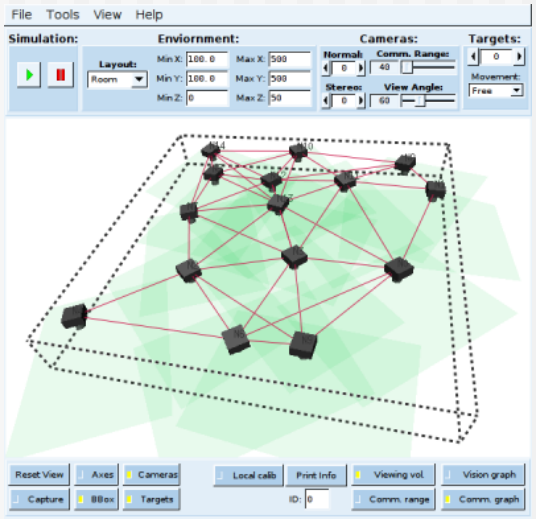
I5 Networked Control of Unmanned Air Vehicles



- **Flying** robots on the ground can give substantial assistance in the buildings
  - Example: how to control autonomously these flying robots?

I6 Networked Detection and Tracking





- Body sensors, cameras, etc. can be used to track the motion indoor, where GPS is not accurate
  - Example: how accurately track the movements of objects or people?