



Images: Clker.com, Junklads.com

Aging in Place with an Internet of Things

CCC Aging in Place Workshop
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The Aging Place



What's the least reliable system in the home and garage?



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What is an Internet of Things (IoT)?



What would your house say about you if it could talk?

Image: popucity.net



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What is an Internet of Things (IoT)?

- Definition: An environment in which objects or people are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction
- Functions performed by internet appliances:
Sense and Communicate
 - Sense its environment
 - Respond to a query
 - Query another object
 - Optionally: perturb its environment



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Progression

- 1st Internet appliance: CMU coke machine (1982)
- Today:
 - Enablers: Wireless, sensors, MEMS, IPv6, world of open App developers, low/solar power ?
 - Examples
 - Nest Learning Thermostat
 - Capsule endoscopy (pill camera)
- Forthcoming:
 - Smart dust (computers/sensors smaller than a grain of sand)
 - Mind control through BCI



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Types of applications

- Information and Analysis
 - Tracking behavior
 - Enhanced situational awareness
 - Sensor-driven decision analysis
- Automation and Control
 - Process optimization
 - Optimized resource consumption
 - Complex autonomous systems



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Supporting IADL's

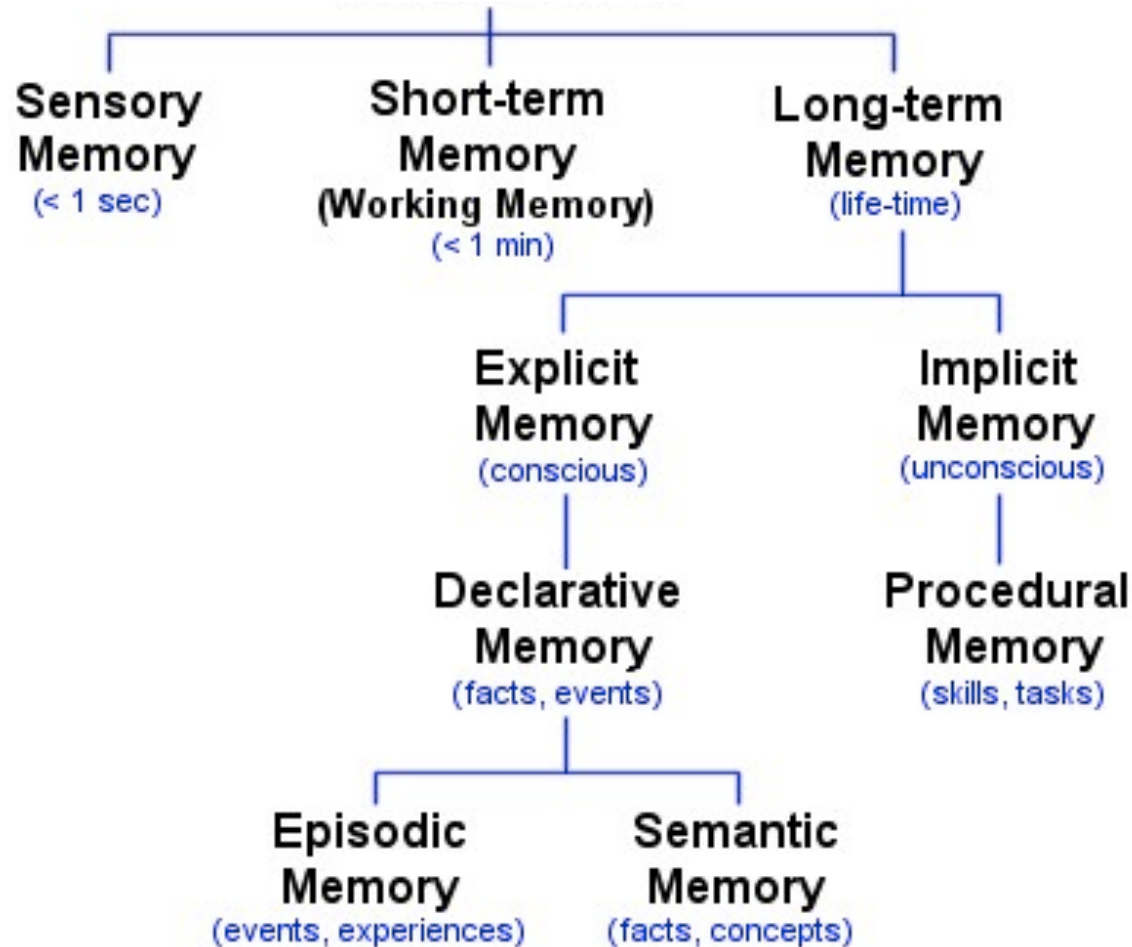
- Ability to use telephone
- Shopping
- Food preparation
- Housekeeping
- Laundry
- Mode of transportation
- Responsibility for own medications
- Ability to handle finances



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Human memory



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Examples

- Hygiene: smart diapers - Pixie Scientific
- Medications: ingestible sensor - Proteus Dig. Health
- Food prep: scanner reads food labels, sets cooking parameters for oven, stove top, microwave
- Shopping: retrofit scanner in/on fridge, cabinet, trash can, maintain inventory and prepare list
- Medical device prep: monitoring step sequencer
- Finances: auto-limits and auto-pays
- Laundry: auto-sequencer, item scanner
- Misplaced objects: RFID readers on door frames
- Face-minder on door



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Smart Homes

- IoT enables Smart Home functionality without embedded and custom implementations
- Innovation spurred by low-cost desktop manufacturing (3-D printing) prototype development (the Maker revolution) and open source design
- Affordability derives from open interfaces, all-consumer applications and abundance of App entrepreneurs



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IoT will bring good things to life

Thank You



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