



# Designing User Experiences for Internet-Connected Devices

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# Today

- IA2 demos! 2 minutes/ea to talk about:
  - What you did
  - Why you did it
  - How you did it—especially anything extra cool or extra hard
- IA3
- Lecture & discussion about design metaphors

# Demos!

# New assignment dates

- Because of extra week for IA 2, due dates have been modified
- New assigned/due dates:
  - IA3: 9/29–10/15
  - GP1: 10/15–11/3
  - GP2: 11/3–11/24
  - Final project proposal: 11/17–11/24
  - Final project: 11/24–12/15

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# Individual Assignment 3

- This is the last individual assignment; next ones are group assignments
- The goal of these has been to give you a breadth of skills and knowledge that you can dive deeper into

# Individual Assignment 3

- Goals
  - Learn to 3D model and 3D print
  - Learn to 2D model and laser cut
  - Learn to incorporate existing objects

# Individual Assignment 3

- C-level work
  - using laser cutter *or* 3D printer, design & fabricate a case for your IA2 electronics
- B-level work
  - do it with both laser cutter *and* 3D printer
  - make one case work with another object
- A-level work
  - also add a new input or output element, integrated with 3D printed or laser cut elements

# Questions?

# Lecture time

# Interaction metaphors in ubiquitous computing systems

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# SMART THINGS

Ubiquitous Computing User Experience Design

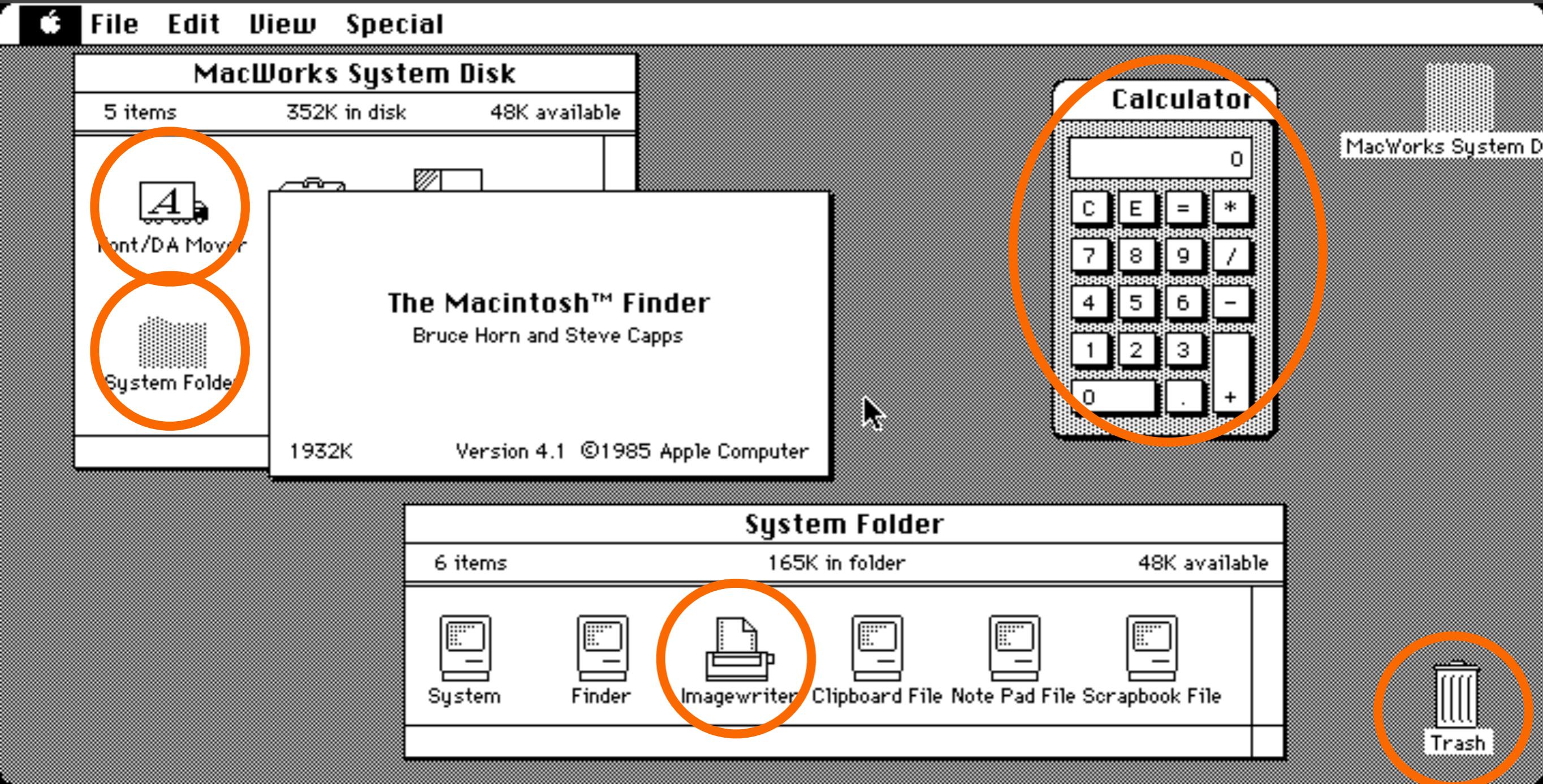


MIKE KUNIAVSKY

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# What's a metaphor?

- Mapping one category of ideas to another—implies that two things belong to the same class
- Examples:
  - “lawyers are sharks”
  - “love is a rose”
  - “the Internet is a series of tubes”
- Metaphors allow us to reason about new things with the help of familiar things



# Categories of ubicomp interaction metaphors

- Organizational metaphors: how systems relate to each other and the people using them
- Interaction metaphors: how people will interact with ubicomp systems

# Organizational metaphors

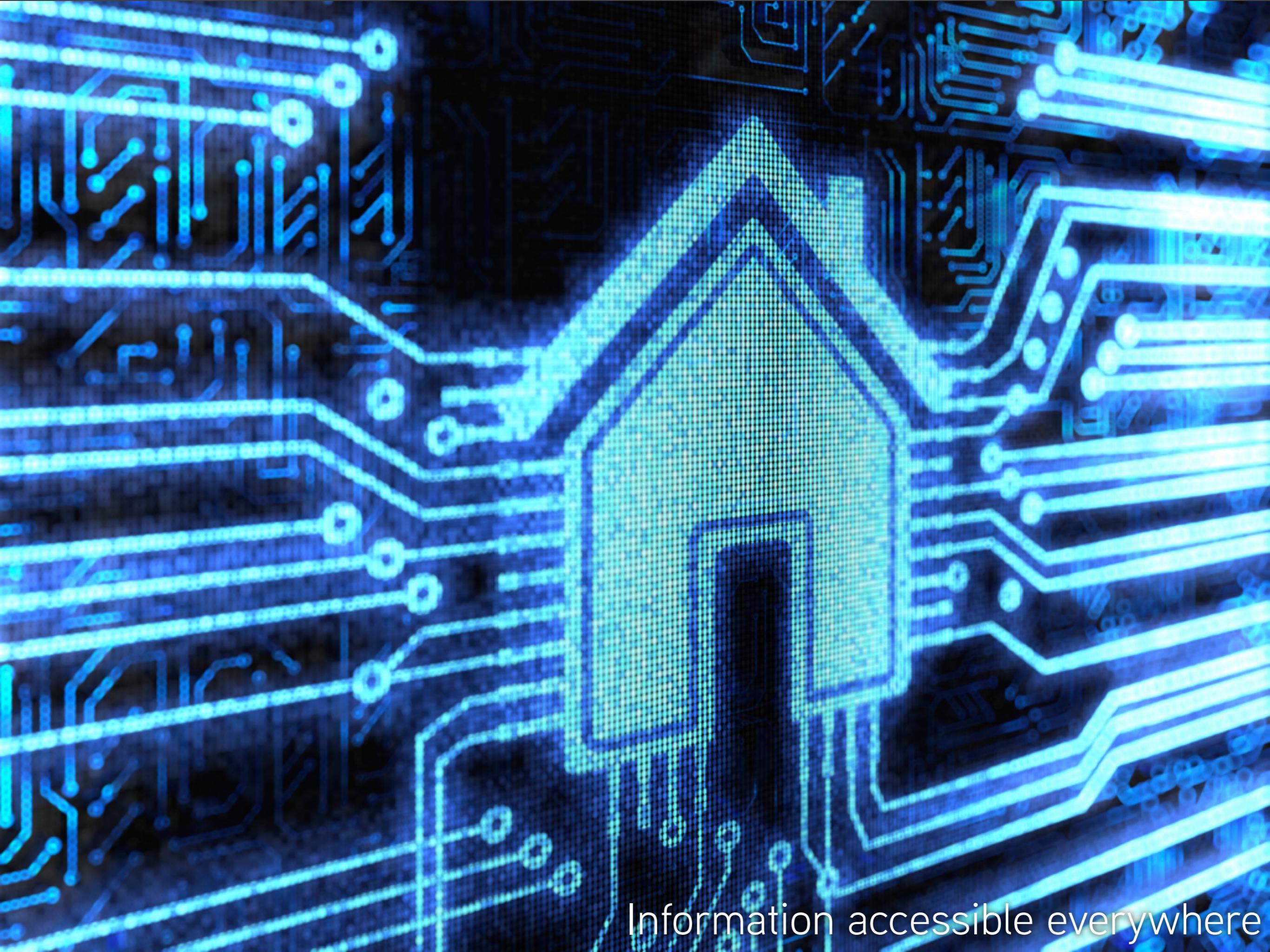
- The Factory



Home automation

# Organizational metaphors

- The Factory
- Public Utility



Information accessible everywhere

# Organizational metaphors

- The Factory
- Public Utility
- Back to Nature

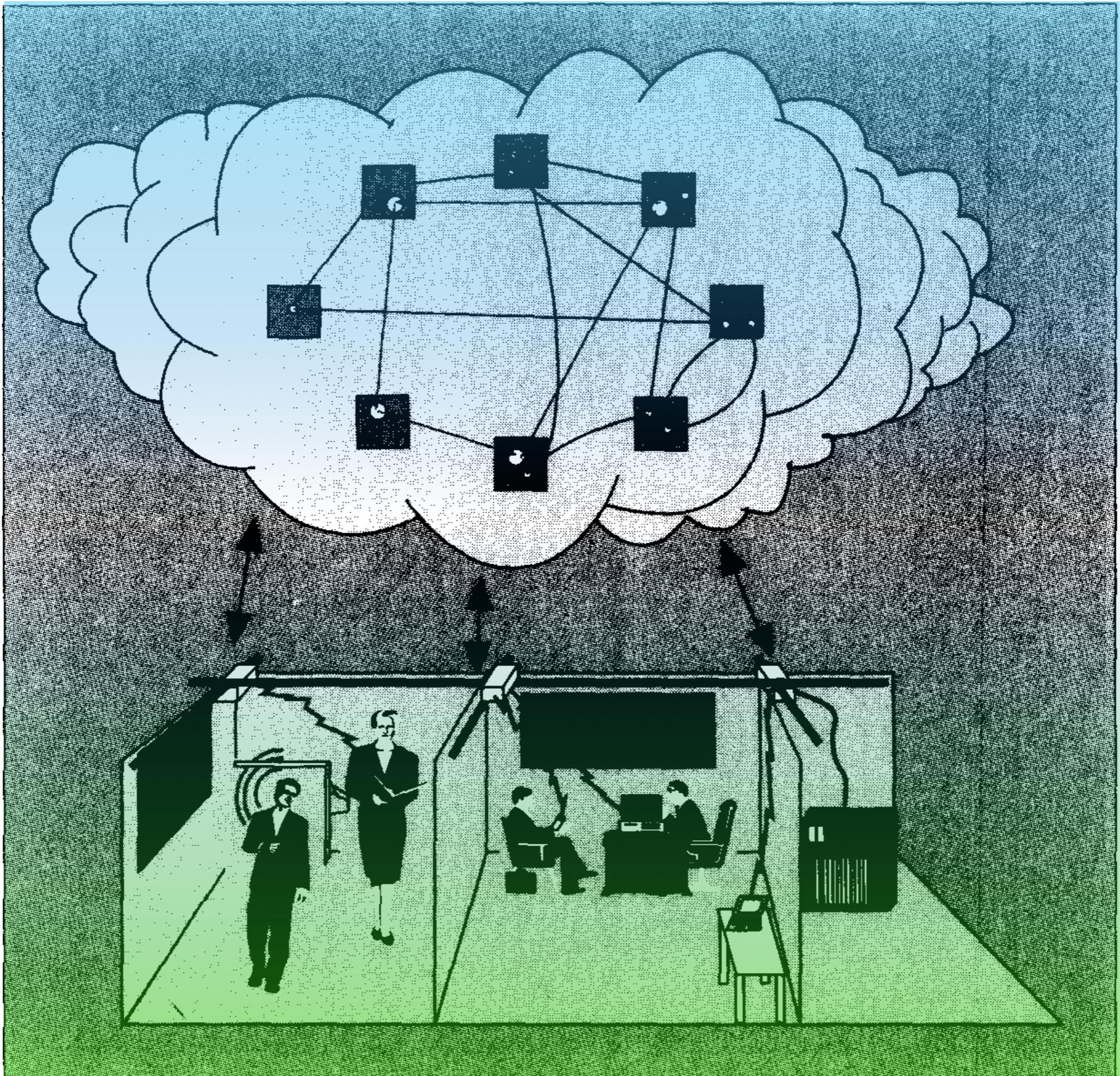


<http://tangible.media.mit.edu/project/zero-levitated-interaction-element/>

# Organizational metaphors

- The Factory
- Public Utility
- Back to Nature
- The Vapor

A "computational cloud"



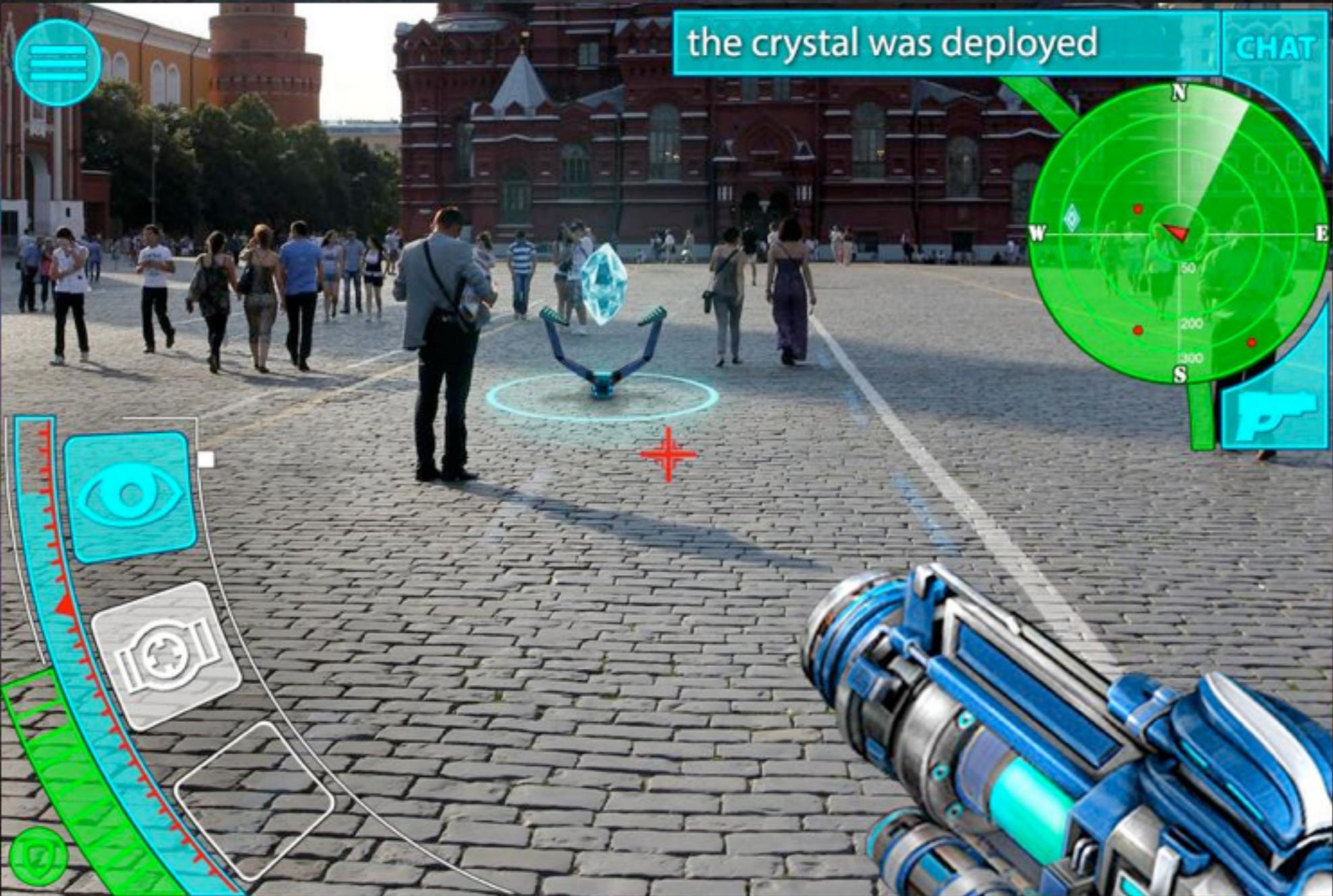
■ **Figure 3.** *Fusion of computers and communications into a computational cloud.*

# Organizational metaphors

- The Factory
- Public Utility
- Back to Nature
- The Vapor
- Parallel Universes

the crystal was deployed

CHAT



# Organizational metaphors

- The Factory
- Public Utility
- Back to Nature
- The Vapor
- Parallel Universes
- The Inescapable Prison



# Interaction metaphors

- Terminals everywhere

GORNING



# Interaction metaphors

- Terminals everywhere
- Invisibility

MASS AIR FLOW  
SENSORTHROTTLE  
POSITION  
SENSORDETONATION  
(KNOCK)  
SENSORMANIFOLD  
ABSOLUTE  
PRESSURE  
SENSOREGR VALVE  
POSITION  
SENSORCRANKSHAFT  
POSITION  
SENSORCOOLANT  
LEVEL  
SENSOR

OXYGEN SENSOR

TRANSMISSION  
TEMPERATURE  
SENSORTRANSMISSION  
SHIFT  
POSITION  
SENSORTRANSMISSION  
INPUT SPEED  
SENSORCAMSHAFT  
POSITION  
SENSORVEHICLE  
SPEED  
SENSORCOOLANT  
TEMPERATURE  
SENSORAMBIENT AIR  
TEMPERATURE SENSORHEATER CORE  
TEMPERATURE  
SENSORBAROMETRIC  
PRESSURE SENSORAIR CLEANER  
TEMPERATURE SENSORTRANSMISSION OUTPUT  
SPEED SENSORACCELERATOR PEDAL  
POSITION SENSOR

EGR PRESSURE FEEDBACK SENSOR

ABS WHEEL  
SPEED SENSOR

WASHER FLUID LEVEL SENSOR

BRAKE FLUID LEVEL SENSOR

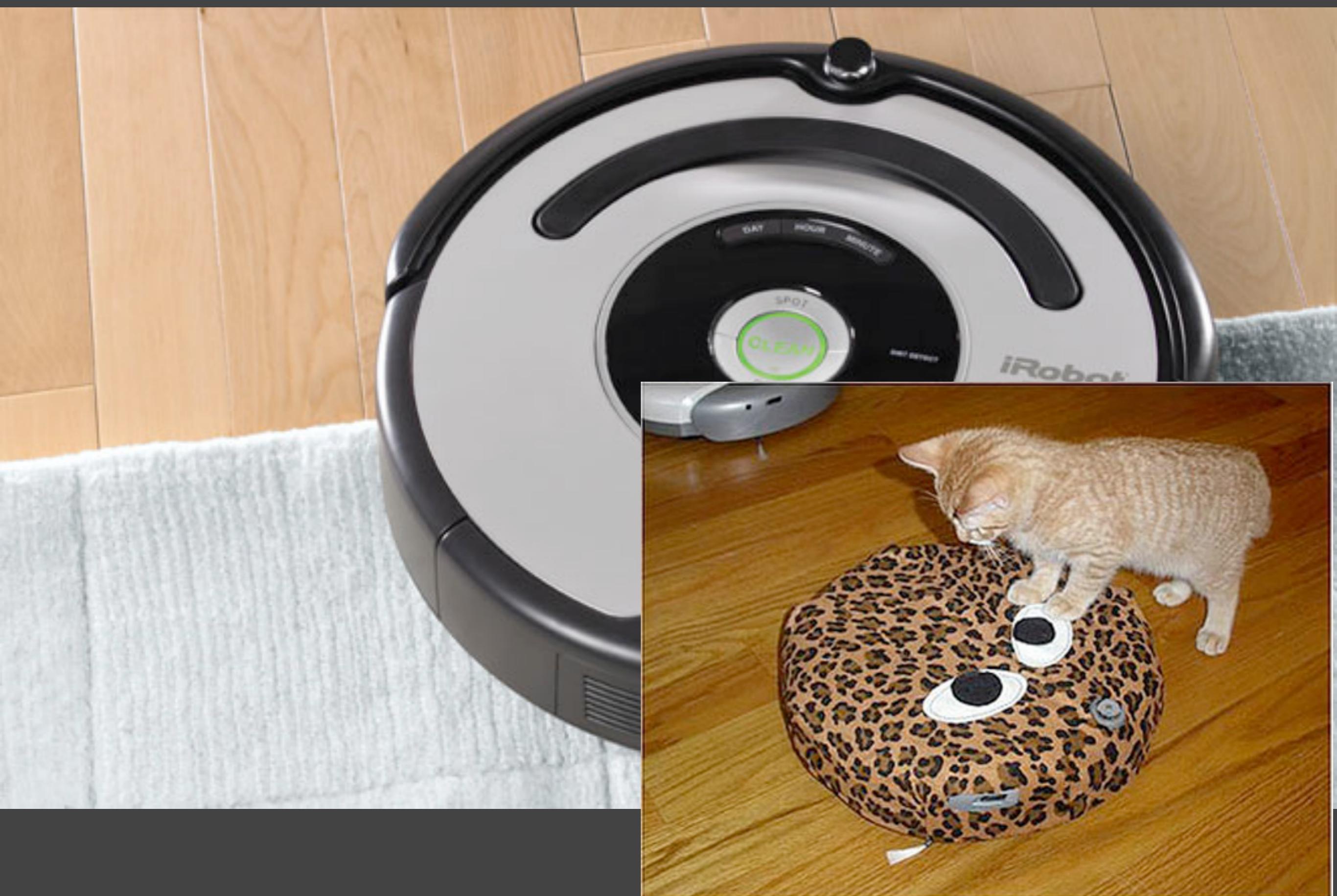
TURBO  
BOOST  
SENSOR

METHANOL FUEL SENSOR

STEERING RATE  
SENSORREAR  
WHEEL  
LEVEL  
SENSORAIR  
TEMPERATURE  
SENSORABS WHEEL  
SPEED SENSOR

# Interaction metaphors

- Terminals everywhere
- Invisibility
- Animism



# Interaction metaphors

- Terminals everywhere
- Invisibility
- Animism
- Prosthetics



Using a prosthetic episodic memory device.



# Interaction metaphors

- Terminals everywhere
- Invisibility
- Animism
- Prosthetics
- Enchanted objects

# Mother Bear

Harder to open when money is tight



# Next time

- More printing 3Ds and cutting lasers