A few thoughts on CPS fundamentals

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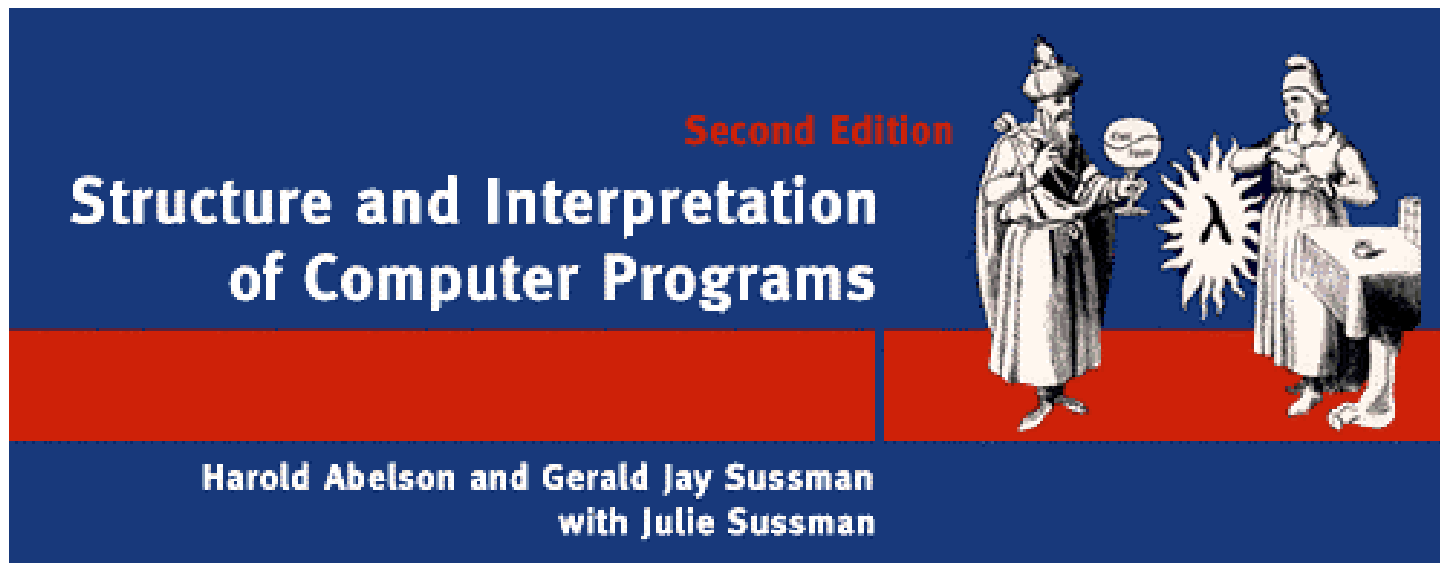
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Energy

- Energy efficient infrastructures
  - Visibility to energy production, distribution, consumption
  - Need new building blocks, programming languages, simulators

Computational thinking

The significance of Computer Science has little to do with computers. The computer revolution is a revolution in the way we think and in the way we express what we think."
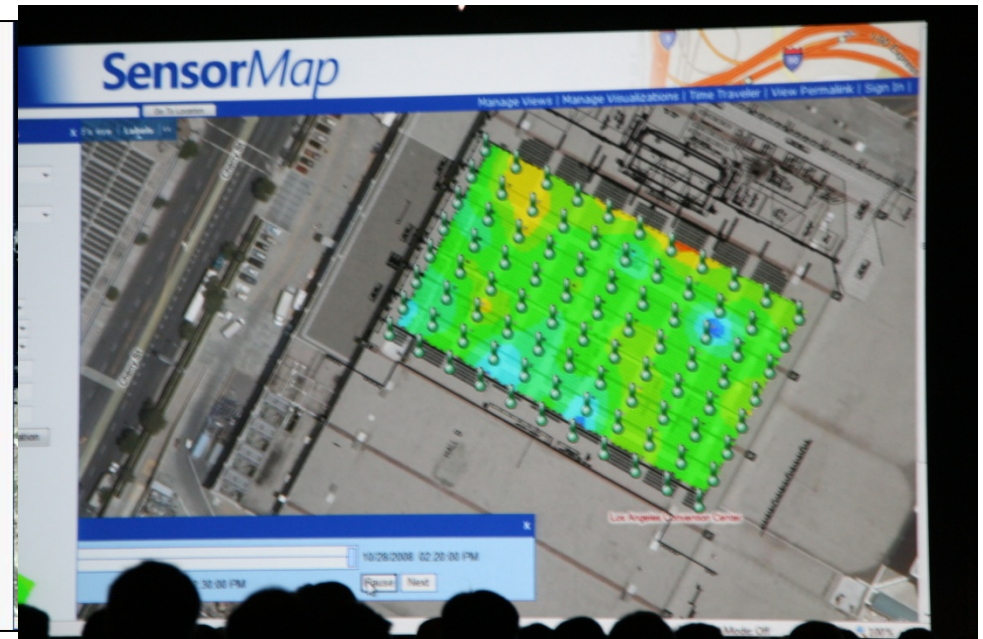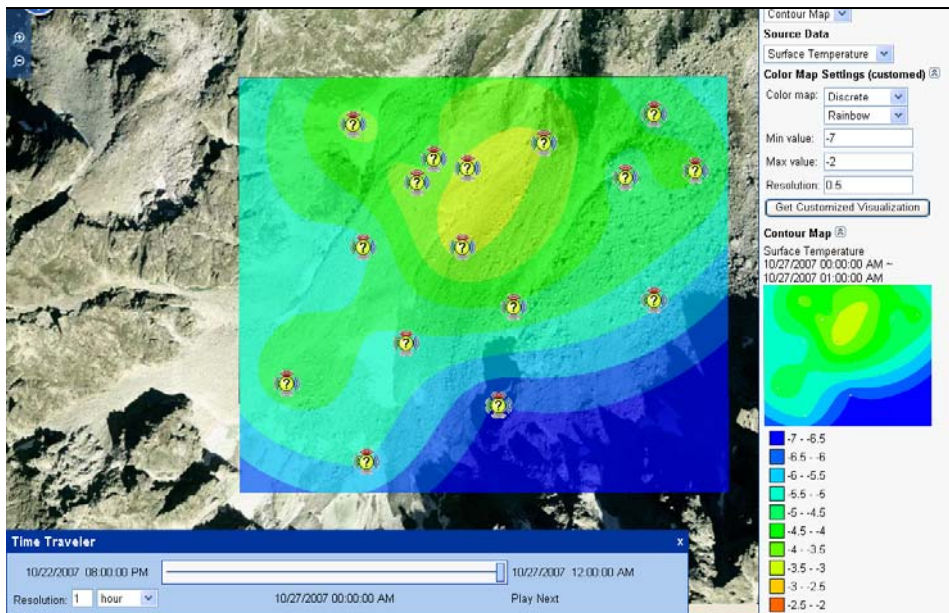
Energy

- Energy efficient infrastructures
  - Visibility to energy production, distribution, consumption
  - Need new building blocks, programming languages, simulators
- Energy aware computing
  - Today's computes are designed with mostly speed and memory in mind (embedded as an exception)
  - Energy complexity, trade-offs with performance
  - Re-think the compute, storage, IO, networking stack

Data

- Blogs from sensors, human, robotic agents

- Streams, real-time

- Compress, aggregate, index, query – what is the search engine for CPS?

- Data centric, erasing boundaries of apps/devices

- Privacy preserving, secure

Uncertainty

- Sensors, actuators, physical world
- The move from central/expensive to decentralized/low-cost parts
- One of 1st class concerns in CPS design