



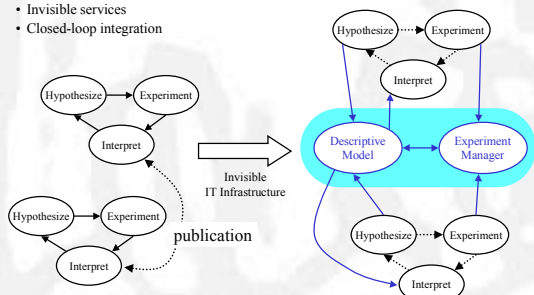
LabScape

Invisible Computing for Molecular Biology

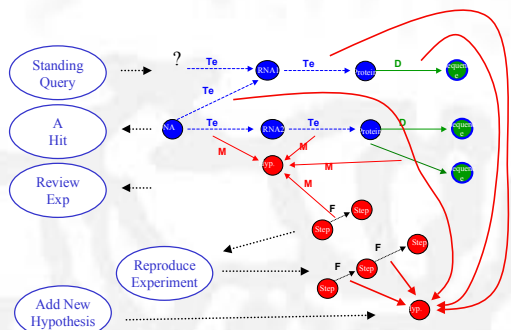
Larry Arnstein, Adam MacBeth, Stefan Sigurdsson, Jing Su

Why

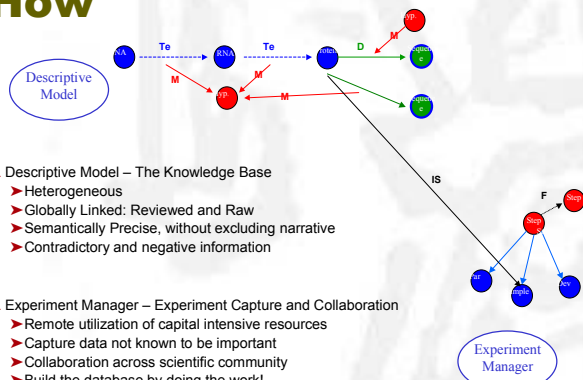
- Biology is a hard science with a soft infrastructure – capture and use of knowledge
 - Move from loosely connected centers to highly integrated collaboration
 - Invisible IT infrastructure for
 - Global knowledge bases
 - Invisible services
 - Closed-loop integration



What



How



▲ Descriptive Model – The Knowledge Base

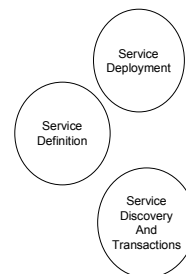
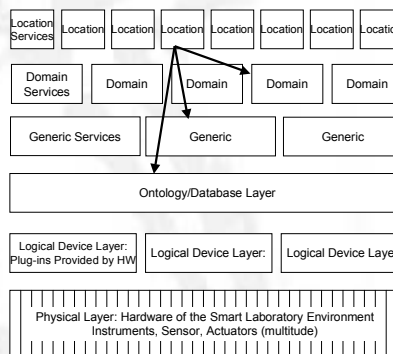
- Heterogeneous
- Globally Linked: Reviewed and Raw
- Semantically Precise, without excluding narrative
- Contradictory and negative information

▲ Experiment Manager – Experiment Capture and Collaboration

- Remote utilization of capital intensive resources
- Capture data not known to be important
- Collaboration across scientific community
- Build the database by doing the work!
- Access and augment the knowledge base using best methods

- Rapid assembly of smart laboratories from basic components
- Integration into the global network for sharing of knowledge and analytical resources.

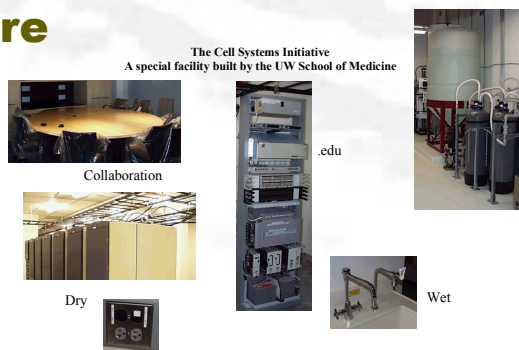
- Oligo Synthesis
- T-Cell Models
- Etc.
- Lead/Follow
- Statistical/Mining
- Quality Control
- Scheduling
- Logistics
- Location Tracking
- Event Logging
- Data Integrity
- Device Independence
- Real World



- Quality Control: Find all experiments affected by Mis-calibrated pipette
- Scheduling and Logistics: Prepare lab to perform experiment X, tell me when its ready
- Education: Teach Student how to perform a procedure
- Science: Has anyone else done a similar experiment on a different sample type?
- Logging: Convert lab events into experimental steps (primarily used by other services)

The primary research challenge of LabScape is to deliver these benefits to the biology community through **generalized embedded technologies** that can be applied to other application domains.

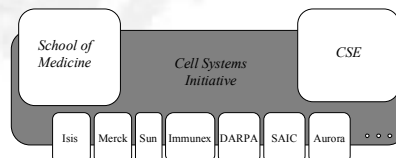
Where



Who



University Of Washington



An Application Domain for The Portolano Expedition into Invisible Computing

<http://www.cs.washington.edu/research/portolano/>

*Sextant Graphic by Ken Yasuhara