Open-source Peer-to-Peer Environment to Enable Sensor Web Architecture
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Objective
Our long-term objective is to enable an evolution of distributed Earth system sensors and related processing/storage components into elements of the Sensor Web by providing a flexible, dynamic, and reliable secure peer-to-peer (P2P) communication environment for these components. This ultimately will include dynamic monitoring, control, and configuration as well as autonomous operations, real-time modeling and data processing, and secure ubiquitous communications.

Approach
We will be integrating "simulated" sensors and will apply our P2PSDE's low-latency messaging capabilities to the development of a suite of real-time remote monitoring and control interfaces to a multiplicity of distributed sensors. We will apply P2PSDE's rapid content-sharing capabilities to the development of modeling-peers. We will implement basic identity management features. Finally, the intuitive configuration features we will implement for the various peer-processes operating within our sensor web, as well as the intuitive graphical interfaces to these processes, will help to demonstrate that these technologies might be rapidly adopted.

Key Milestones
- Implement 'Identity Store' database, etc. 02/2007
- Demo Secure test-messaging using Identity Store 03/2007
- Demo Secure sensor-messaging ("dummy" data) 04/2007
- Complete Secure sensor-messaging 06/2007
- Demo Basic Modeling from sensor-data 09/2007
- Complete Customized Modeling from sensor-data 11/2007
- Complete GUIs with sensor/model access/control 12/2007

The conventional “Centralized Stand-Alone” (CSA) approach vs. our novel P2P “Science Data Environment”

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