

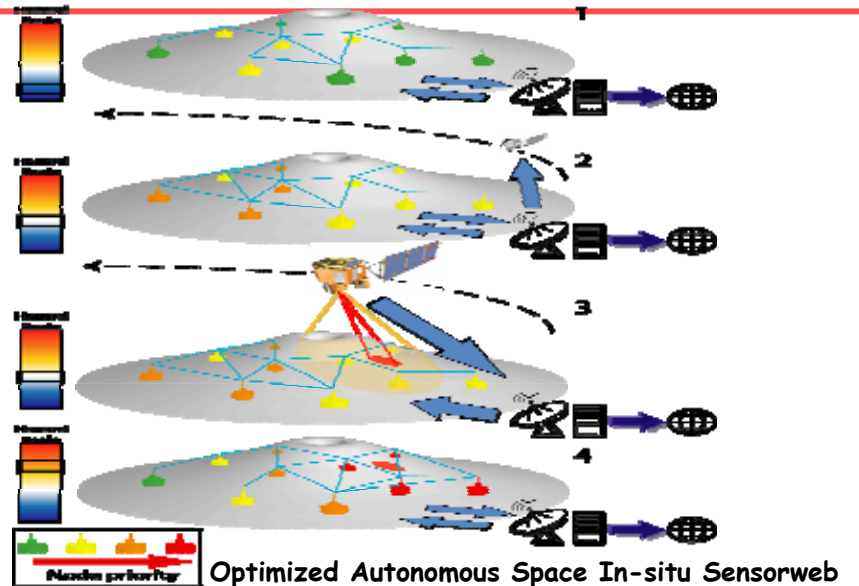
Optimized Autonomous Space - In-situ Sensorweb

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Objective

We will develop a prototype real-time Optimized Autonomous Space - In-situ Sensor-web, with a focus on volcano hazard mitigation and with the goals of:

- Integrating complementary space and in-situ elements into an interactive, autonomous sensor-web.
- Advancing sensor-web power and communication resource management technology.
- Enabling scalability and seamless infusion of future space and in-situ assets into the sensor-web.



Approach

- Develop a test-bed in-situ array with smart sensor nodes
- Develop new self-organizing topology management and routing algorithms
- Develop new bandwidth allocation algorithms in which sensor nodes autonomously determine packet priorities
- Develop remote network management and reprogramming tools.
- Integrate the space and in-situ control
- Synthesize the sensor-web data ingestion and dissemination through the use of SenosrML.
- Demonstrate end-to-end system performance with the in-situ test-bed at Mount St. Helens, and EO-1 platform.

Co-I's/Partners

- Frank Webb, Sharon Kedar, Steve Chien / JPL
- Richard LaHusen / USGS
- Behrooz Shirazi / Washington State University

Key Milestones

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| • System Requirements | 3/2007 |
| • System Design | 9/2007 |
| • Testbed H/W Assembly | 3/2008 |
| • System S/W Design | 3/2008 |
| • Existing St. Helens Array Linked to EO-1 | 3/2008 |
| • SensorML Development | 9/2008 |
| • S/W Implementation and Testing | 6/2009 |
| • Field Demonstration | 12/2009 |
| • Evaluations, Reports, Publications | |

TRL_{in} = 2 TRL_{out} = 5

