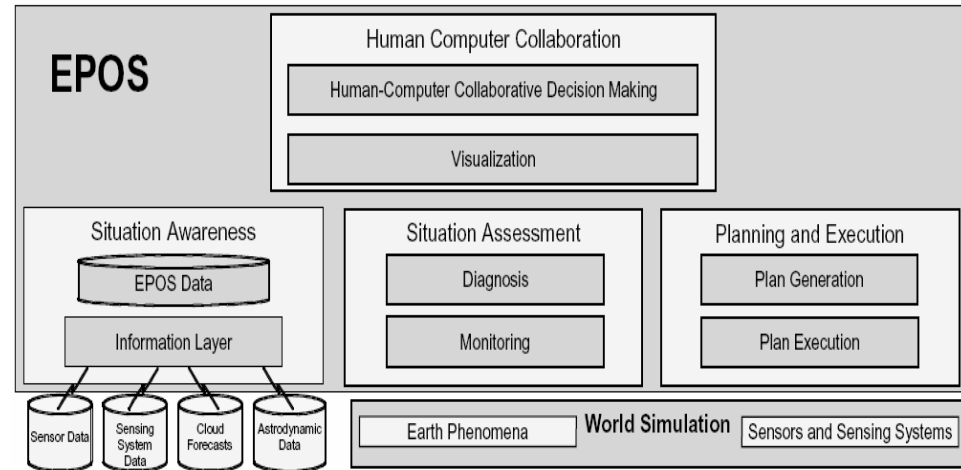# Sensor Web Dynamic Replanning

PI: Stephan Kolitz, Draper Laboratory

Objective

We propose to enhance and extend Earth Phenomena Observing System (EPOS) to include the replanning of sensors on UAVs (Unmanned Aerial Vehicles) and USVs (Unmanned Surface Vessels) being fielded by NASA over the next few years. The new dynamic replanning capability will utilize complementary and cooperative suites of heterogeneous sensor assets that can be triggered by observation data and/or predictive models to adaptively respond to significant events and provide enhanced understanding of temporal Earth phenomena. The extended EPOS will be both event-driven and model-driven.

High-Level Functional View of Enhanced EPOS

Approach

The fundamental EPOS concept of operation is that of optimized dynamic replanning and execution. Sensor data and model forecasts are inputs to a closed-loop decision-making system. The EPOS enhancements will provide the science community with innovative capabilities that can be used to advance science modeling of the phenomena of interest and provide governmental agencies and commercial interests early warning of possible hazardous situations. The enhanced capabilities will include Situation Awareness, Situation Assessment, Planning and Execution.

Additional Technical Contributors

• Mark Abramson, David Carter, Natasha Markuzon / Draper Laboratory

Key Milestones

• Develop Objective System ConOps   April 2007
• EPOS for Space & Surface Sensors   October 2007
• EPOS for Space, Surface & Air Sensors   October 2008
• EPOS for Operational Use   October 2009

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