The Multi-agent Architecture for Coordinated, Responsive Observations

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Objective

Univ.

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Responsive Observations (MACRO), an extension of our current work on the Adaptive Network Architecture (ANA) is a natural technology for enabling the deployment and operation of a sensor web. We will focus on the following main topics that provide significant value to NASA's Earth science missions: • Incorporation of self-describing sensor processing and	In situ soil gauges signal GPM	Core Spacecraft replans and	InSAR constellation
 reasurement models Collaborative observations between agents via on-board planning, scheduling, and resource management Validation on a representative hardware testbed with multiple demonstrations of a disaster management Earth science scenario 	spacecraft	reconfigures constellation for higher temporal data acquisition Coordinates higher spatial data acquisition with an InSAR constellation	coordinates data acquisition and processing with resources in "local" logical network
	A Sensor Web Operational Concept for Earth Science involves in situ and remote sensor platforms		
Approach The realization of MACRO requires research and development in several Technology Elements to both	<u>Key Milestones</u>		
development in several Technology Elements to both	• Standards for senso	rs and processing model	ls 11/2007
The realization of MACRO requires research and development in several Technology Elements to both address limitations of the existing ANA work and add capabilities required for the deployment and operation of Smart Sensors, These Technology Elements include the	 Standards for sensor Planner (SA-POP) an for distributed plann 	rs and processing model d RACE design extensioning	ls 11/2007 ons 11/2007
development in several Technology Elements to both address limitations of the existing ANA work and add capabilities required for the deployment and operation of Smart Sensors. These Technology Elements include the incorporation of standards for sensor and processing models and the development of a rigorous framework for	 Standards for sensor Planner (SA-POP) an for distributed plann MACRO agent design preliminary system in 	rs and processing model d RACE design extension ing and implementation, ategration	ls 11/2007 ons 11/2007 05/2008
The realization of MACRO requires research and development in several Technology Elements to both address limitations of the existing ANA work and add capabilities required for the deployment and operation of Smart Sensors. These Technology Elements include the incorporation of standards for sensor and processing models and the development of a rigorous framework for collaborative observations. The Technology Elements are verified, validated, and tested via a hardware-in-the-loop	 Standards for sensor Planner (SA-POP) an for distributed plann MACRO agent design preliminary system in Weather forecasting refinement of disast 	rs and processing model of RACE design extension ing and implementation, ategration simulation integration, er management scenarion	ls 11/2007 ons 11/2007 05/2008 08/2008
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 $TRL_{in} = 4$

Earth Science Technology Office