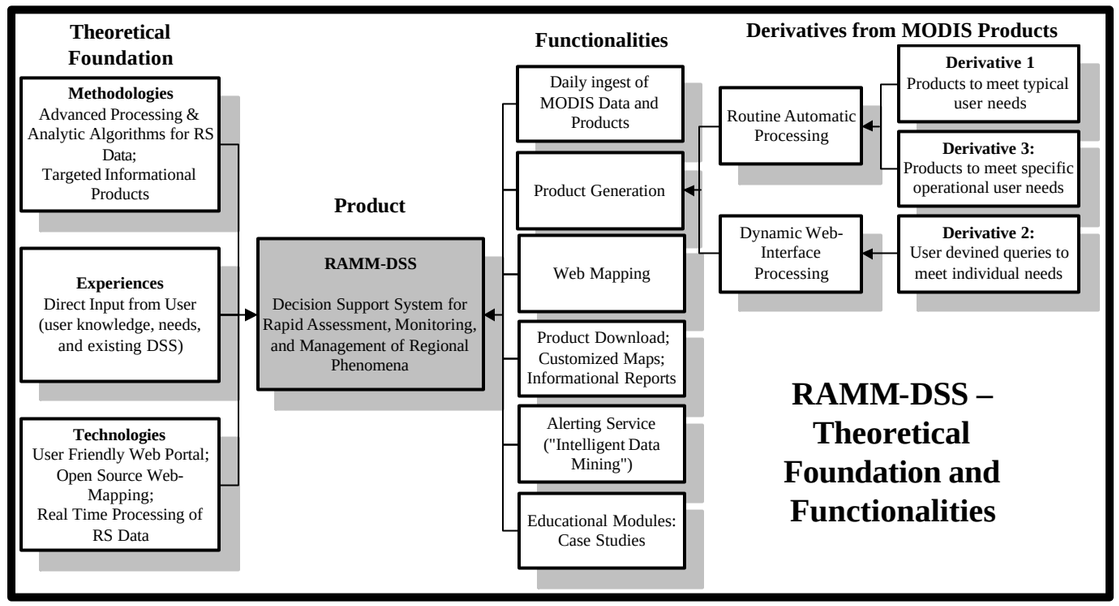
MODIS-Based Products for Operational Decision Support Systems



Problem

A gap exists between the availability of RS data and its routine use and incorporation into operational, decision-making scenarios. The main reasons for this include:

- RS data is commonly difficult to access, handle, process, and interpret
- The majority of potential end-users of RS data are not well-versed in the GIS/RS field
- Many domain experts and decision makers cannot visualize the appropriateness of the data to their problem at hand
- Potential end users are usually unaware of the range of ways in which the incorporation of RS data can inform and improve their current operational procedures
- There is a lack of systems and companies which can implement a "shortest-path" solution between the acquisition of RS data and the generation of useful information for decision-making purposes

Solution

SMH Consulting proposes to develop an innovative decision support system to assist in Rapid Assessment, Monitoring, and Management (RAMM-DSS) on a regional scale. The RAMM-DSS will provide value-added Remote Sensing data and information products for decision making. The RAMM-DSS will effectively remove the technical and logistical barriers to the use of NASA ESE data thereby allowing the routine and automated use of NASA data products within an overall decision-making pipeline. The RAMM-DSS will be particularly useful as management support tool for practitioners who are not experts in GIS or Remote Sensing. It will allow for both rapid, emergency assessments and long-term monitoring of land, air, and water. Further, SMH Consulting will develop an educational component to the RAMM-DSS which will present a set of real-world case studies with detailed explanations of the source data as well as the product derivation process.

Proposed System

- Web-based decision support system to assist in Rapid Assessment, Monitoring, and Management (RAMM-DSS) on a regional scale
- Will supplement operational decision support tools already in use with tailored products routinely derived from NASA's MODIS data
- Will support NASA missions by making ESE data easy-to-use for practitioners and by supporting educational initiatives on use of RS data in operational scenarios
- Will support Open Standard Formats for files and web-mapping protocols

Tasks to be performed during Phase I

- Develop RAMM-DSS Requirements and Specifications Documents
- Develop a framework RAMM-DSS website with a sample dataset and educational case study module
- Prepare the Phase I Final Report

Phase II Proposed Work

- Full-scale operational RAMM-DSS system
- Stand-up all servers, full implementation of the software architecture and applications necessary to run the RAMM-DSS
- Extension of web mapping capabilities and data products
- RAMM-DSS validation

Applications: NASA and non-NASA

- Monitoring of soil and crop conditions over the growing season, identifying "problem" areas, and improving planting and harvesting schedules;
- Monitoring ground conditions and cost effectively allocating resources during, for example, snow storms and floods, and for open mine reclamation;
- Identifying areas of land cover changes to reduce expenses of county and state wide re-mapping programs and introducing information on current land cover for county and regional planning activities and assessments, modeling, and development initiatives;
- Enabling an early warning system for the detection and monitoring of, for example, forest fires and gypsy moth outbreaks;
- Providing regular citizens with near-real time snap shots of the area; and
- Providing climate/weather modeling and forecasting commercial entities, with improved regional and global datasets on cloud and snow cover and dynamics.

Contact

Dr. Dmitry Varlyguin, PI
SMH Consulting/GDA Corp.
200 Innovation Blvd, Suite 234
State College, PA 16803
T: 814-237-4060 • F: 814-237-4061 • dmitry@gdacorp.com