The Interagency Fuels Treatment Decision Support System

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ABSTRACT

The Joint Fire Science Program (JFSP), acting in concert with the Fuels Management Committee (FMC), initiated the Software Tools and Systems (STS) Study in March 2007 to address the proliferation of decentralized software systems in the fuels treatment analysis and planning domain. A strategic assessment completed in March 2008 led to the development of a conceptual design to address the issue. Soon after, a software design for a service-oriented architecture (SOA) framework was developed for field-level fuels treatment planning. Both designs were developed under the guidance of an interagency team of fuels treatment planners and software system developers. The system, provisionally named the Interagency Fuels Treatment Decision Support System (IFT-DSS), will be released as a proof of concept in Spring 2010. The complete, fully functional system is scheduled to be in use by fuels treatment specialists by Spring 2012.

The IFT-DSS will provide a user interface that will enable command and control for pre-existing and newly developed software modules and data sets. It will support treatment unit-scale and landscape-scale analyses, provide data visualization functionality, estimate fire behavior and first-order fire effects, and support quantitative risk assessments. It will also permit the use and integration of standard and customized data sets. The IFT-DSS will allow fuels treatment analysts and planners to build custom analysis flow paths and store intermediate and final results for repeated analysis of alternative scenarios. The IFT-DSS is designed as a web-based, collaborative system that will enable scientific model developers to register their models and tools within the system as callable services and make them available to IFT-DSS users. In the longer term, it is envisioned that the IFT-DSS will be interoperable with a small number of broad-scope collaborative SOA systems such as the Wildland Fire Decision Support System (WFDS) and the BlueSky Framework. This poster explains the motivation for, functionality of, and vision behind the JFSP-IFT-DSS project.

METHODS

RESULTS

A study team from Carnegie Mellon University's Software Engineering Institute identified the best solution for addressing the current chaos in fire and fuels treatment software tools. The software selection was based on several factors: a collaborative, open-source, scalable software system that can function as a communications broker for current and future software tools. As an example, the study team pointed to a software system called the BlueSky Framework, a well-received software-packaging model developed jointly by the USDA Forest Service AirFire team and Sonoma Technology, Inc. (www.blueskyframework.org). The BlueSky Framework links several independent software models for fuel loading, fire behavior, and smoke dispersion into a collaborative environment.

The Software Engineering Institute also recommended the development of a detailed communications plan that carefully defines the project's stakeholder communities and the ways in which community members will interact with the project.

DISCUSSION

One of the strategic goals of the STS Study is to create a streamlined University's Software Tools and Systems Study (STS) that can be readily available to professionals working in the fire and fuels arena. As an example, the study team pointed to a software system called the BlueSky Framework, which is used to simulate and analyze fire behavior on a field-level fuel treatment planning. The BlueSky Framework is also used to simulate and analyze fire behavior on a field-level fuel treatment planning.

ACCESS TO THE IFT-DSS

IFT-DSS Proof of Concept System

Access to the IFT-DSS proof of concept system is available at:
http://iftdss.sonomatech.com

The Software Systems and Tools Study Website

Access to the IFT-DSS graphical user interface mock-ups is available at:
http://frames.nrlb.gov/iftdss_study

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