

A New Decision Support System Based on a Service-Oriented Architecture

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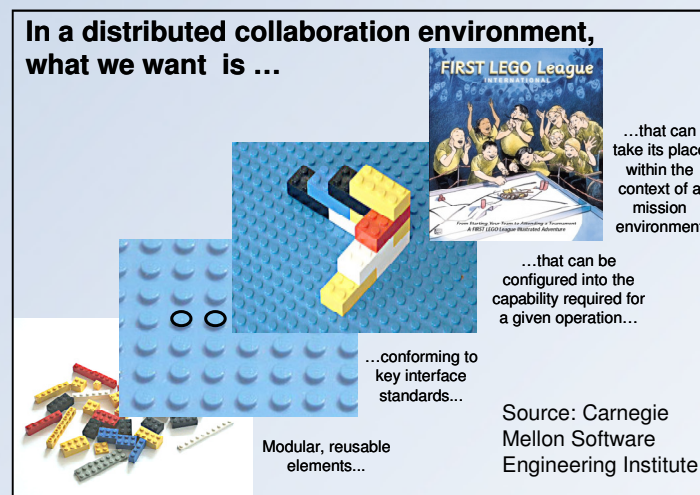
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Introduction

- Joint Fire Science Program (JFSP)
- Design issues
- Software Tools and Systems (STS) study
- Interagency Fuels Treatment Decision Support System (IFT-DSS)
- JFSP vision
- STS future
- An approach, not a solution



Design Issues

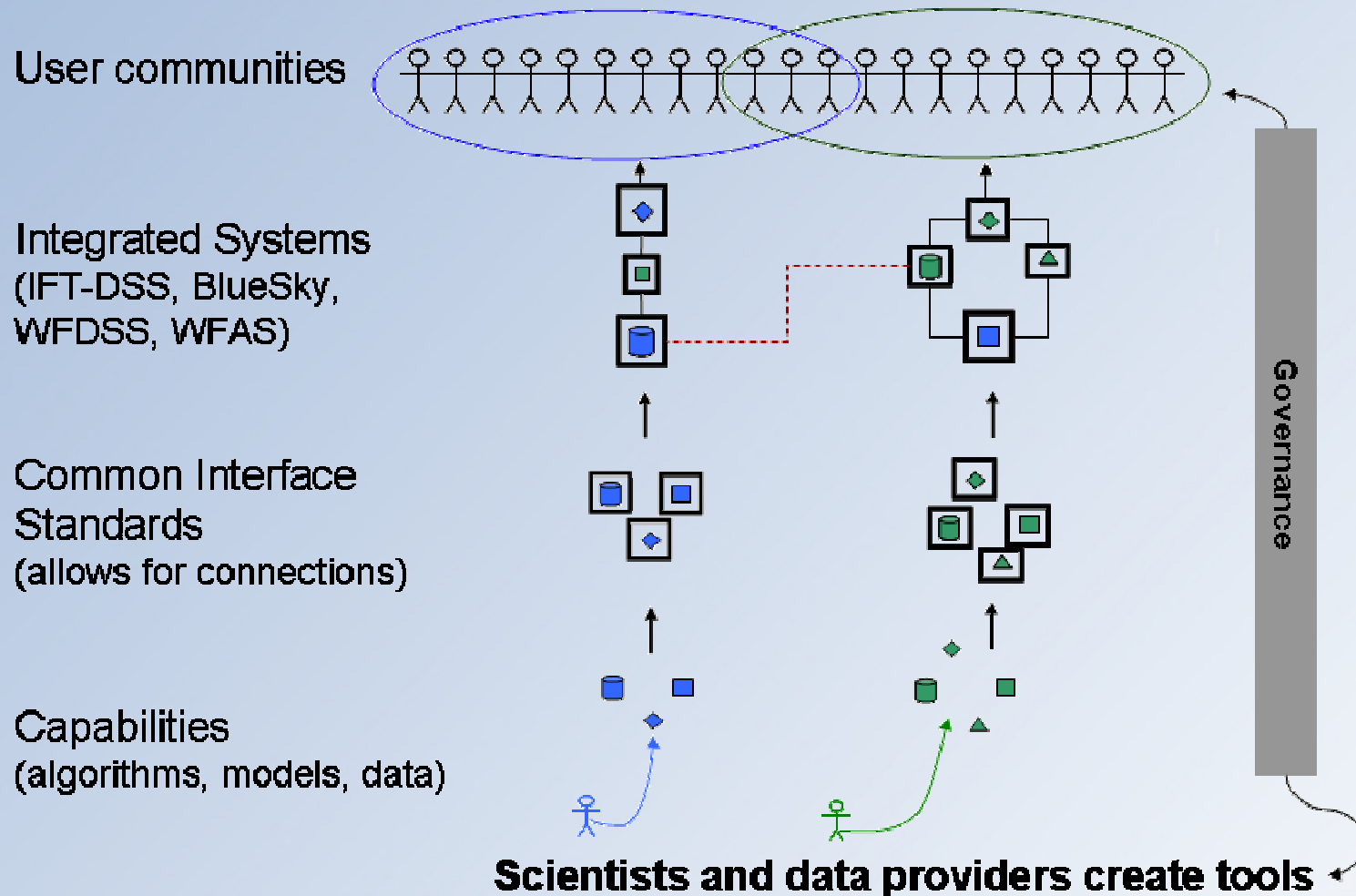
- Multiple communities
- Implementation restrictions
 - Multiple agencies
 - IT policies
 - Skill levels
- Overlapping process implementations
 - Science
 - Interfaces
 - Modularity



Multiple Communities



JFSP Vision

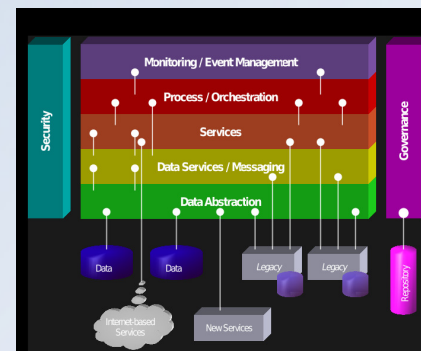
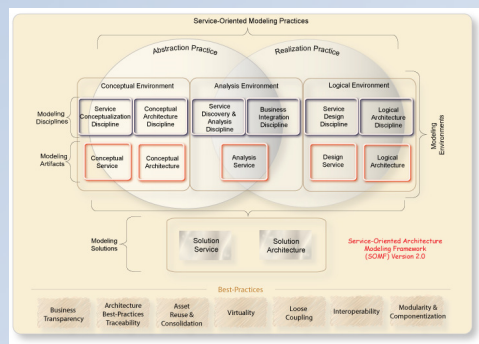


Design Approach

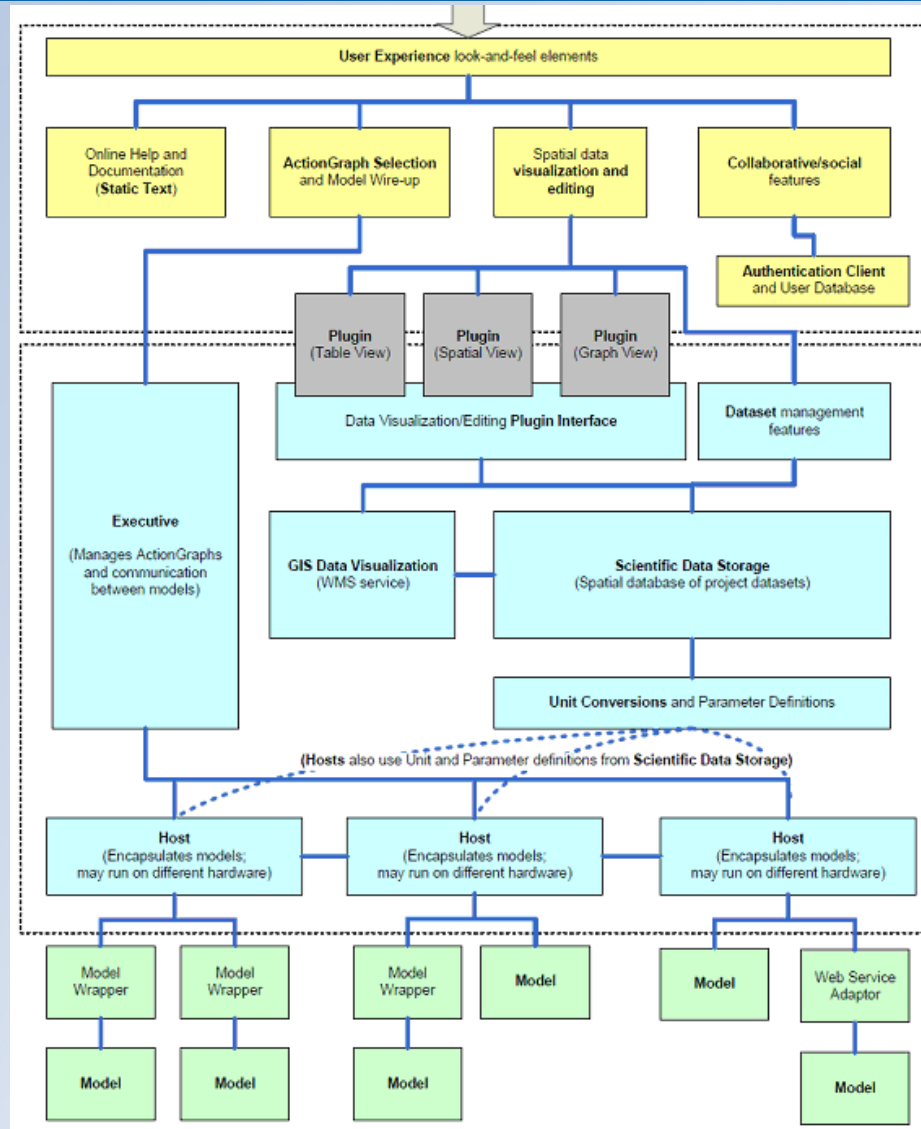
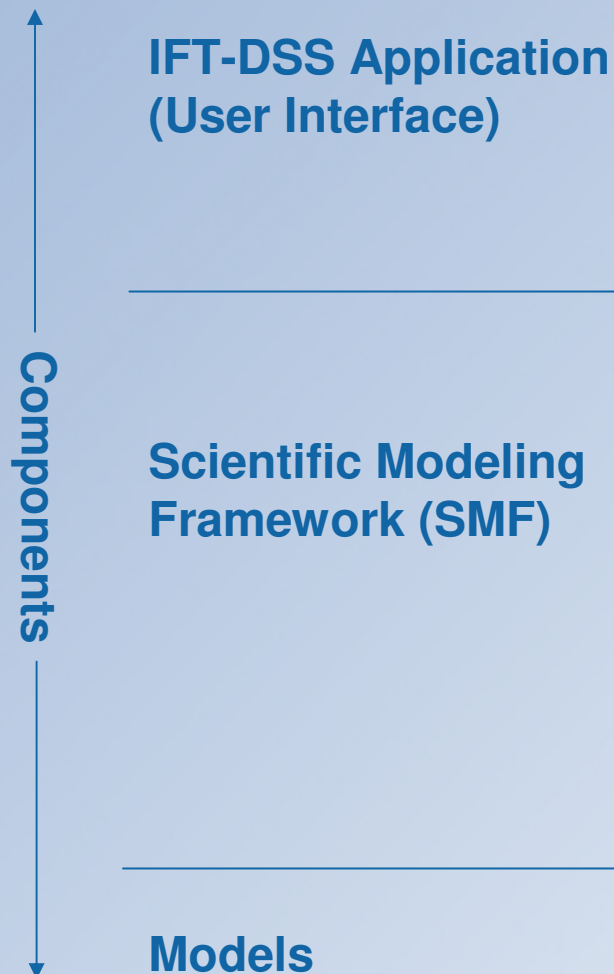
- Community engagement
- Workflows
- Service Oriented Architecture (SOA)
- Separation of functions
 - User interface
 - Scientific modeling framework
 - Models
- Process level science

Service Oriented Architecture

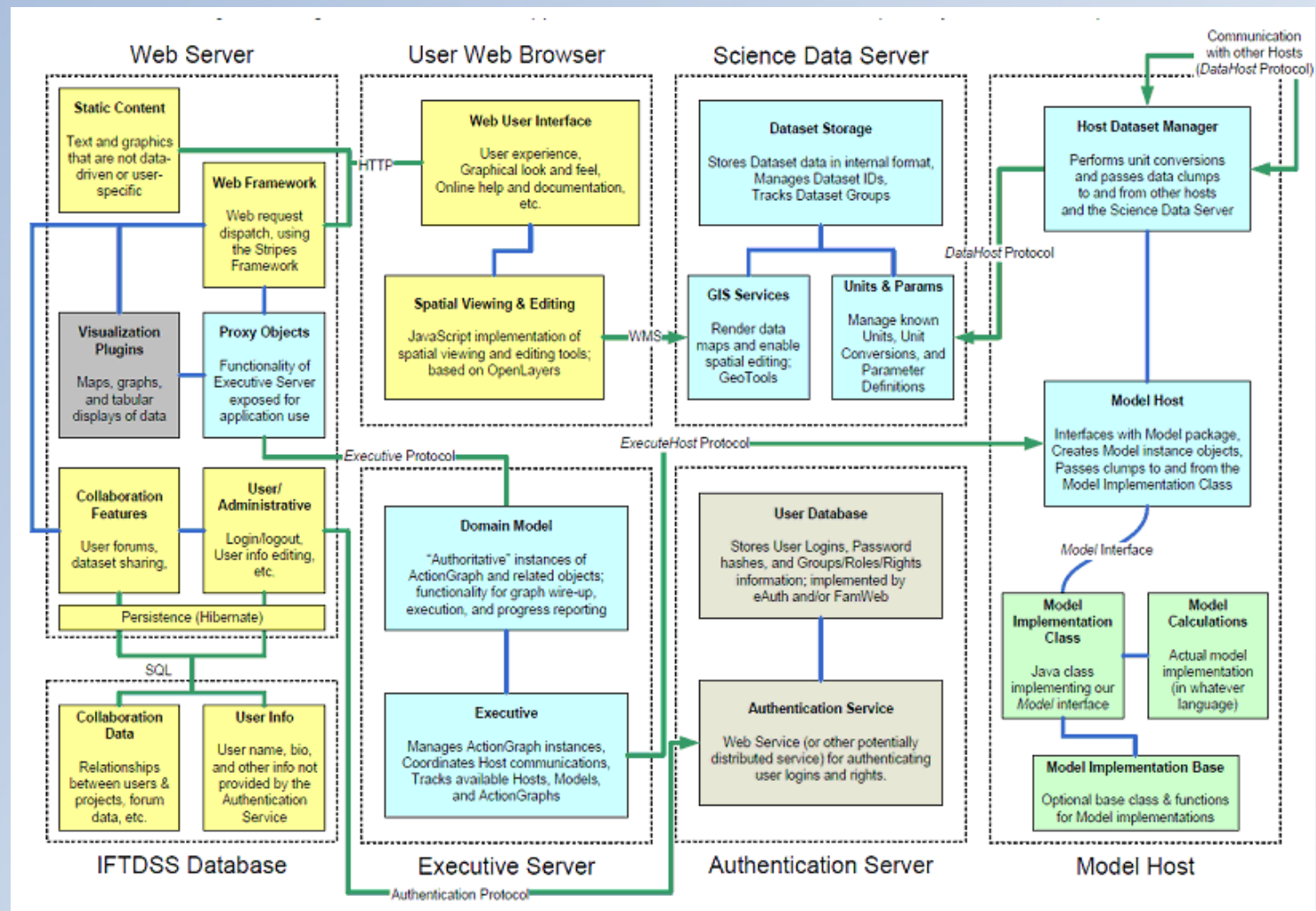
- A generic software architecture framework designed to support a collection of services, such as databases and software applications
- Has well-defined software and data interfaces
- Facilitates the integration of new and legacy software applications
- Facilitates inter-operability with other systems



Architecture (1 of 3)

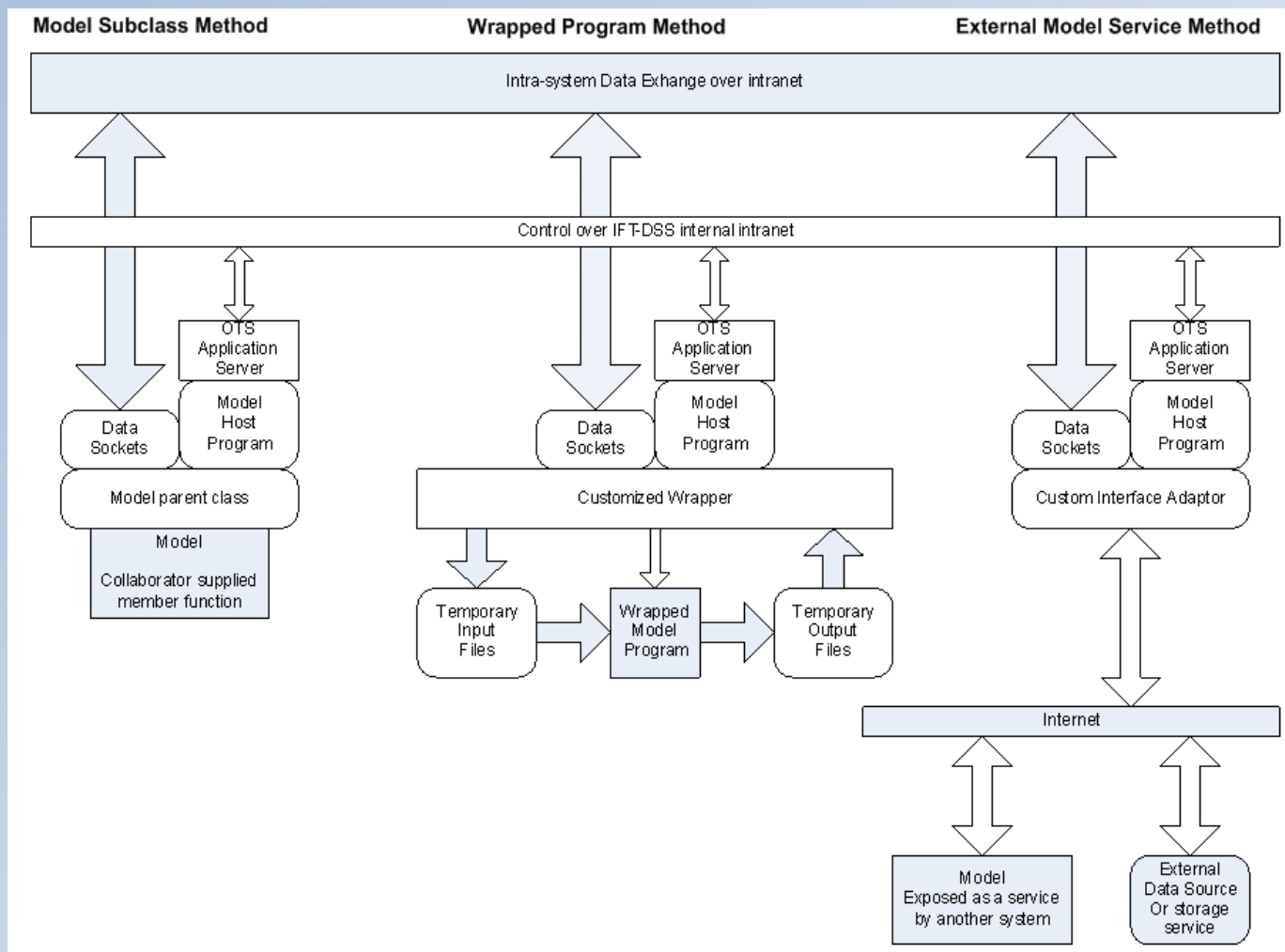


Architecture (2 of 3)



IFT-DSS topology and the communication mechanisms

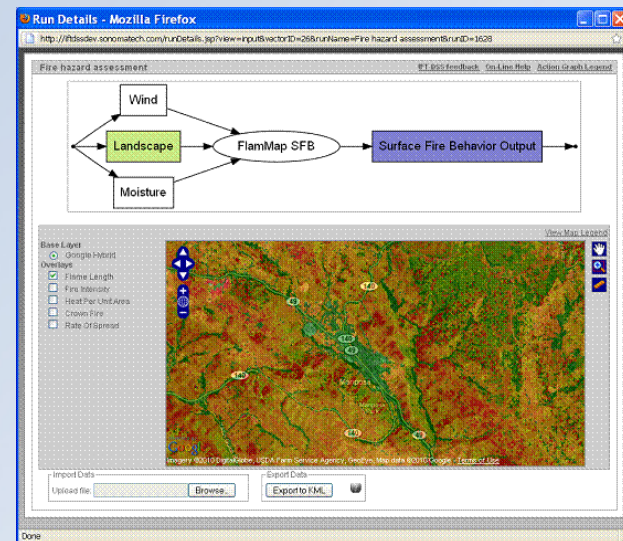
Architecture (3 of 3)



Model Integration Methods

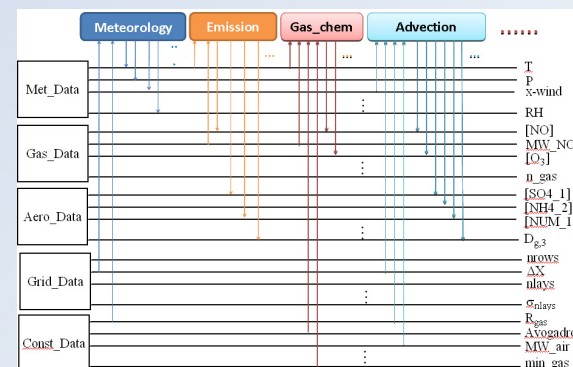
Implementation Schedule

- Prototype – completed (June 2010)
 - Functional
 - One workflow
 - Limited GIS capability
 - All model interfaces
- Development and testing
 - Version 1.0 (June 2011)
 - Version 2.0 (June 2012)
- Enterprise operations – fall 2012



Discussion

- SMF is applicable to any discipline
- The SOA facilitates access to authoritative systems that are external to a DSS
- Some of the approaches to model integration in the IFT-DSS might be transferable to the integration of process-level science in meteorological, emissions, and air quality modeling



Summary and Conclusions

- A DSS is more than a model
- The development of an effective and sustainable DSS requires the participation of a community
- The STS study and IFT-DSS attempt to address long-standing issues with modularity and model interactions in the fuels treatment community
- The CMAS community faces many of the same challenges and might benefit from the lessons learned and engineering practices employed as a result of the STS study

Acknowledgments

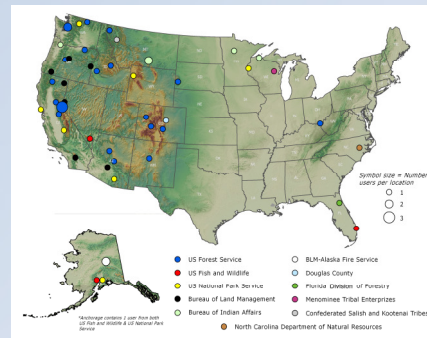
Joint Fire Science Program



Fuels Management Committee



Test User Group



Collaborating Fire Scientists

Questions

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JFSP STS Study

http://frames.nbii.gov/jfsp/sts_study

IFT-DSS

http://www.firescience.gov/JFSP_IFFT-DSS.cfm