Communication Strategy for Community Development

Surrounding the Interagency Fuels Treatment DSS (IFT-DSS)

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Version: 7/22/2009

Purpose

The purpose of this communication strategy is to document the process of developing a network of stakeholders that have responsibilities for the functioning of and that gain valuable services from the Interagency Fuels Treatment DSS (IFT-DSS). In particular, this communications strategy will (a) describe the various stakeholder communities and their characteristics; (b) present a plan for enhancing the awareness about and use of the IFT-DSS software by various subgroups of these stakeholder communities; and (c) provide a roadmap of how the IFT-DSS development team proposes to transition the software from the originators, Joint Fire Science Program (JFSP) and the National Interagency Fuels Coordinating Group (NIFCG), to an agency Managing Partner for the National Wildfire Coordinating Group (NWCG).

Why is it necessary to consider the interaction of a number of stakeholder communities for getting the IFT-DSS successfully adopted and used? The literature of technology transition experiences clearly shows that it is rarely sufficient to engage only the end-user community (Forrester, SEI, 2007). Technology development teams allied with the early adopter end-users rarely have the resources or the staying power to move a new software technology from innovation to institutionalization. The goal must be to design and deliver a "whole product". "What is a "whole product"? It is the technology you are introducing plus everything else needed to ease [its] use. That is, it is a complete solution to the set of requirements you have developed" (Forrester, SEI, 2007). To deliver the IFT-DSS as a whole product, we need the help and support of a number of stakeholder communities: the Governance, Scientific Model Developer, Database Developer, Information Technology & System Maintenance, and the Fire & Fuel Management communities. In addition, an IFT-DSS Coordination Team is needed to monitor and guide the functioning of the software and the network of community stakeholders interacting with it.

Background

The Joint Fire Science Program (JFSP), through both formal and informal interactions with its partners and clients, became convinced that one of the more pressing problems facing fire and fuels managers is the confusion and inefficiency associated with the many existing software systems intended to help fire and fuels managers. These systems have proliferated in the last decade in response to various funding initiatives without any central control or vision. Managers are left with an assortment of unconnected systems in various stages of development with little guidance concerning the strengths and weaknesses of the various systems, and no framework for integration and fusion of data and outputs from these systems.

One of the principal voices articulating this problem has been the National Interagency Fuels Coordination Group (NIFCG). Acting in concert with NIFCG, the JFSP initiated Phase I of the Software Tools and Systems Study in March 2007. The strategic analysis, Phase I, resulted in the recognition that a software framework architecture was needed to facilitate the integration of fuels treatment models and data. Phase II was initiated in March 2008 with the objective of developing a conceptual (functional) design as well as a software architecture design of the Interagency Fuels Treatment DSS. It is important to recognize that the IFT-DSS is a software architecture framework that provides command and control for pre-existing and newly developed software modules executing from within a common user interface. In April 2009, JFSP funded the development of a proof-of-concept version of the IFT-DSS. It is anticipated that with the successful completion of the POC in April 2010, JFSP will likely fund the completion of the IFT-DSS resulting in a fully functional fuels treatment DSS by spring 2012. For more detailed information about the JFSP STS study, readers are urged to review all the documents that have been generated by the Software Tools and Systems Study published on the website: frames.nbii.gov/jfsp/sts_study .

IFT-DSS Project Vision

The increasing operational complexity and urgency in fire management, coupled with a surge in the number of decision support tools available, have highlighted the need for a transformative solution. The use of Distributed Service Oriented Software Architectures (distributed SOA's) to coordinate development and interaction of independently operating software tools, improve information exchanges and communications between stakeholder communities, and reduce business barriers that hinder the adoption of sophisticated risk management science concepts has the potential to positively transform the development and deployment of software tools for fire and fuels management. The ultimate goal of the communication strategy then is:

> Diffuse the IFT-DSS and its supporting vision throughout member stakeholders of the identified communities and increase the level of understanding, trial use and adoption across the communities such that institutionalization will be a foregone conclusion.

Definitions and Methology

A large, multi-faceted software product such as the IFT-DSS can only be used effectively if a well organized community of interested stakeholders exists. Six stakeholder groups were identified: 1) the Governance community, 2) the Scientific Model Developer community 3) the Database Developer community, 4) the Fire & Fuel Management community, 5) the Information Technology and System Maintenance community, and 6) the IFT-DSS Coordination Team. This document will further define the six communities of stakeholders, describe the roles that members of each community should play, and describe how we intend to introduce the IFT-DSS to each community and its major stakeholders.

Fig. 1. The network of stakeholder communities in which the IFT-DSS functions.

Each community above is composed of stakeholders that typically fall into the following categories: innovators, early adopters, early majority, late majority, and laggards. Each of these communities contain stakeholders that can have a varying degree of familiarity with the IFT-DSS project. These degrees of familiarity with the IFT-DSS project can be categorized as: ignorance, awareness, understanding, trial use, adoption, and institutionalization. The objective of this communication plan is to describe how the degree of familiarity is increased within each community beginning with the easiest target subgroup, the innovators.

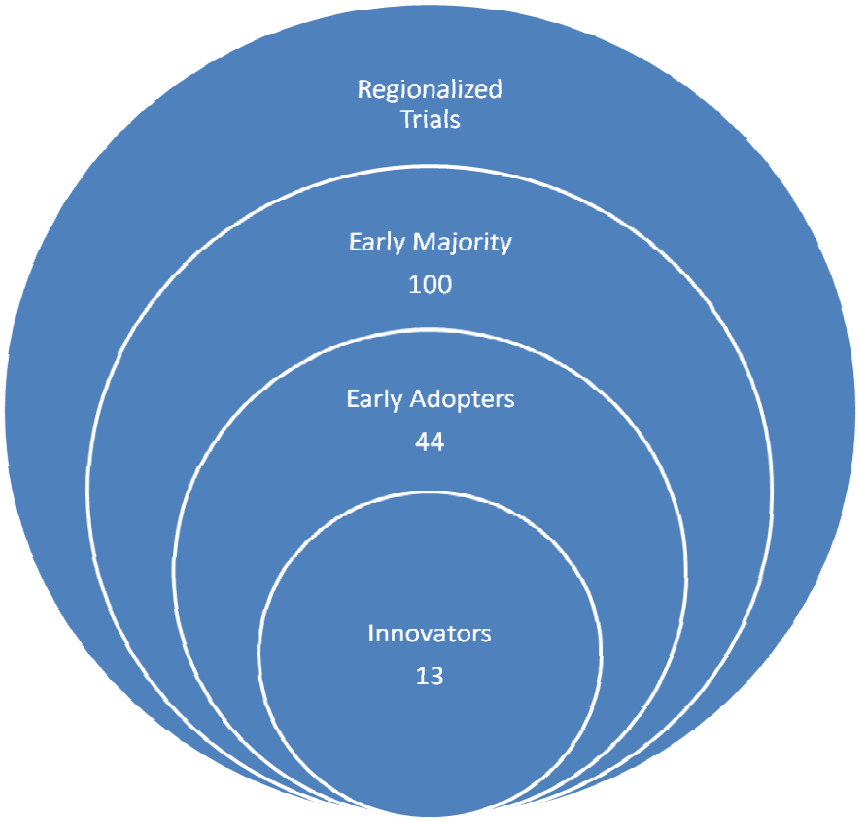

Fig. 2. A venn diagram showing how increasing awareness of the IFT-DSS project within a community can diffuse to an entire community.

We use the term 'snowball' to describe how we will go about increasing the awareness of the IFT-DSS project within each community. We think this snowball visualization depicts the communication challenge. The very shape of this Venn diagram implies expanding and ultimately encompassing the entire community of practice.

Our general approach for each community in this communication strategy is to work with a small group of innovators first to obtain a "rock solid" understanding of their needs and relationship with the IFT-DSS project. Typically a particular member of the IFT-DSS development team will be assigned to work personally with these innovators and guide them through the trial use stage into adoption of the system. The innovators, in turn, will guide our development of the Proof of Concept system through the feedback they provide to the IFT-DSS development team member. Once we are comfortable that the innovators are happy with the system implementation, we will move on to the next group, the early adopters in each community. The innovators will typically help us better identify the early adopters and help us develop the right communication media to most effectively reach the early adopters. Similarly, the early adopters will help us identify more fully the members of the early majority and help us develop the right communication media for them. So each group will help us reach out to the next group. The Innovator and Early Adopter groups are typically small enough that we plan individual contacts by phone, email or in person to work with members of those two groups. The Early and Late Majority groups are typically too large for individual contact to be practical. For these groups, effective mass communication methods such as the JFSP Digest and online training courses will need to be used.

A key concept is that we should advance the front of awareness evenly within the communities or we will risk negative disconnects. This means that as we work with the user community innovators, we must simultaneously work with the innovators of the scientific model and database developers, the governance, and the IT communities. Only when the innovators of ALL the communities are happy with the IFT-DSS in its current state can we move on to the early adopters. This strategy creates obvious tensions because the implementation of the software will be progressing continuously so that innovators will be exposed to increasingly more functional versions of the IFT-DSS. If we fail to try and adhere to this diffusion strategy, then we get into situations where users might be expanding rapidly because they like what we are offering but fire and fuels governance stakeholders in the immediate supervisory positions and higher remain ignorant of the project and consequently are not supportive or even worse, obstructive. In reality, we expect to attempt to adhere to the strategy of a simultaneous and even advance across communities recognizing that some raggedness will be unavoidable.

Community Stakeholder Description

This section identifies the communities targeted by this Communication Strategy document, describes the members and their characteristics. This background information about each community is used in the next section to craft a plan tailored specifically to the unique needs of each community.

Fire & Fuel Management Community:

IFT-DSS: Built for Fuel Managers by Fuel Managers

The Fire & Fuel Management Community is the key stakeholder group because the IFT-DSS will be expressly constructed and maintained to make their job easier. These men and women represent the

front lines that directly affect the present and future safety of the civilian population and their property. The focus of the IFT-DSS project is to make their jobs easier and more effective.

- Members:
    - IFT-DSS Proof of Concept (POC) Test User Group (Innovators): the PC Test User Group is composed of Fire & Fuel Managers that have expressed an early desire to evaluate and use the IFT-DSS software during its development process. They are: Randi Jandt, Brad Reed, Tessa Nicolet, Sean McEldery, Jon Wallace, Mack McFarland, Brenda Wilmore, Jim Roessler, Gwen Lipp, Perry Grissom, Eric Miller, Karen Folger, Nikia Hernandez, Gary Curcio.
    - Group of 44 Survey Respondents (Early Adopters): we assembled a mailing list of approximately 44 fuels treatment managers who responded to a survey in Phase II of the study. This group has been asked to continue their participation in the project leading to early use of the IFT-DSS software.
    - Group of 100 (Early Majority): we plan to ask each member of the Group of 44 Early Adopters to provide us a name, email address, and email introduction to 2-4 other fuel managers in their working circle to expand the use of the IFT-DSS to between 150 – 200 fuels managers out of an estimated population of 800 – 1000.
    - (Late Majority) the rest of the Fire & Fuel Managers, Other specialist members of ID Teams, Educators, and Scientist Developers as users: We lump all other potential users of the IFT-DSS into the Late Majority category. In particular, non-fire & fuels members of ID Teams, silviculturists, forest planners, entomologists, wildlife managers, etc., will need to know enough about the IFT-DSS that they trust the tool when it is used. Members of this community will need to be moved from ignorance to at least the understanding level of awareness.
- Roles: The fire & fuel manager is in the role of the fuels treatment specialist most commonly as one member of an ID Team charged with advising a decision maker. The fuels treatment specialist will use the IFT-DSS to analyze the Area of Interest (AOI) and bring the results to the team for discussion and evaluation within the context of the entire set of management options, fire and non-fire related. The other specialist members of the ID Team primarily need to trust that the system produces high quality results. Educators will use the system for student development and scientists will likely use the system to test quality and provide intermediate results for studies with a larger scope.
- Must-have Reason to Participate: The fuels treatment specialist needs the IFT-DSS to be easy to understand and use, provide the greatest possible data preparation and evaluation support, provide reliable and explainable results, and offer preprogrammed workflow scenarios where possible as well as customization capabilities to construct unique workflow scenarios as needed. The preprogrammed workflow scenarios provide ease of use and speed given that these

standardized solution processes are adequate to the task at hand. User customized solutions provide power to build solutions for difficult and/or unique fuel treatment problems situations.

- Expected results from IFT-DSS: The IFT-DSS will be expected to generate (a) tables, figures, and maps with the data supporting them; (b) these results must be available at the end of the analysis but also at the junction of any partial solution step; (c) these results will need to be available in common and efficient file formats because they will be used as part of reports; (d) a permanently stored file containing the setup information, input data, and output data for each analysis of record; (e) the ability to start and stop an analysis at the convenience of the user without losing time to restart the process at a later date and/or time; and (f) a file that can be named and saved containing just the analysis execution information needed by the IFT-DSS to duplicate the analysis at a later time.

- Expected inputs to IFT-DSS: The fuels treatment specialist must be able to (a) identify the Area of Interest (AOI) to the system; (b) provide and/or select the data appropriate to that AOI; (c) select an existing workflow scenario or construct a new one; (d) use the available tools within the IFT-DSS to evaluate quality of the input data; (e) guide the analysis process by making choices based on intermediate results at several stages of the analysis process; and (f) be able to examine analysis results, understand their meaning, and convey that meaning to others as needed.

- Expected inputs and outputs from/to other communities: (a) Scientific Model Developer/Database Developer Communities: users need first and foremost a way to communicate the deficiencies of the IFT-DSS and the software service tools it contains to someone that is prepared to handle the complaint properly. These deficiency reports from users might be best collected and processed by a representative of the Governance Community and then processed obtaining expert opinion as needed. Note: the deficiency reports do not deal with issues of software malfunction. They deal with issues of software quality, problem solving power, new functionality, etc. The community that should get these complaints should be as neutral and objective as possible. This criteria removes the scientific model developer/database developer community from consideration due to conflicts of interest. It probably also eliminates the IT/Systems Maintenance community because they will be doing the O&M for the IFT-DSS and have similar conflicts of interest. (b) Governance Community: Users will need to receive policy guidance from the governance community about such issues as what constitutes a good fuels treatment analysis, which software service tools (if any) are mandated to be used or not used as part of the solution process, which types of data are required, if any, which types of reports and in which formats will be required or suggested, what type of quality control reviews are to be done, what type of archival storage of the analysis are to be required or suggested, etc. (c) IT/System Maintenance Community: (a) users will need a helpdesk support system for errors and issues of software use. Note: the helpdesk handled by the IT/System Maintenance community deals with issues of software malfunction and with issues of how to use the software; (b) this community will control security procedures that users will

need to learn and follow; (c) this community will need to keep users informed about known bugs, correction timeline, updates, expansion of functionality plans, etc..

- Current level of participation: The STS study has been able to identify many users by name and has established a very good rapport with a large subset of the fuels treatment specialist population. There is no indication that further expansion into this community will be a problem. It is likely to be largely a matter of available time and energy resources.

The Scientific Model Developer Community:

The Scientific Model Developer stakeholder community is also vitally important to the development and ongoing success of the IFT-DSS. This stakeholder group develops new science-based models and updates for the software application tools that comprise the IFT-DSS. Because the IFT-DSS will serve as a framework for integrating legacy, existing, and new software applications, it is important that the developers of these applications are willing and motivated to participate. Without new tools and updates to existing ones, the IFT-DSS functionality would remain stagnant.

- Members:
  - POC Scientific Model Developer (Innovators): Initially, the Scientific Model Developer stakeholder community will consist of the individuals who have developed products that are proposed for implementation in the POC IFT-DSS. These initial developers took little convincing that the IFT-DSS distributed SOA concept was powerful and offers substantial improvement over the currently existing environment. The following table includes a list of the current Scientific Model Developer stakeholders.

Location	**person (Affiliation)**	**Data/Application**
Seattle, WA	Sim Larkin (BlueSky)	BlueSky Collaboration
Seattle, WA	Roger Ottmar Susan Prichard	FCCS-CONSUME
Ft. Collins, CO	Eric Twombly	INFORMS
Missoula, MT	Mark Finney	FlamMap
Missoula, MT	Joe Scott Elizabeth Reinhardt	Nexus
Missoula, MT	Alan Ager	ArcFuels

	John Anderson	
Moscow, ID	Nick Crookston	yaImpute; FFE-FVS
Boise, ID	Rob Seli (WFDSS)	WFDSS; WIMS; LANDFIRE; collaboration

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  - Expanded Scientific Model Developer Group (Early Adopters): This expanded Scientific Model Developer group represents developers of existing software tools that are needed to bring the IFT-DSS up to the full functionality envisioned by the end of the second year of implementation. This group will soon be identified by name so they can be addressed in the communication plan (see the next section). The early adopters in this group will number approximately 10 additional developers.

  - Developers of the most commonly used models (Early Majority): Survey results have shown that users currently use about 40 software tools and databases on a regular basis. The developers of this set of 40 tools will constitute our early majority group.

  - Broad Group of Scientific Model Developers (Late Majority): In addition to these commonly used tools, there are another 10-20 scientist developers of recently completed tools or tools that have not made the transition to a user community that could potentially increase the functionality of the IFT-DSS significantly. The total population of developers is roughly estimated at approximately 150. This group includes new developers not currently involved or associated with one of the known tools.

- Roles: The role of the software tool developer is to continually improve existing scientific models and construct new software services using the best available science. They give users one set of tools to improve their performance in making good decisions and understand their complex ecological world better. Initially, the developers decide when a new tool is ready to be made operational in the IFT-DSS or when an existing tool needs to be updated. The developers, with the help of the IFT-DSS Coordination Team (see description below), will then submit a proposal to make the needed changes to the library of software tools. All models in the library of tools for the IFT-DSS and other collaborative systems will be considered operational and the responsibility of the IT/Systems Maintenance community (discussed below). Tools will make the transition from development to operations by a successful transit through some, as yet unspecified, review process.

- Must-have Reason to Participate: Scientific Model Developers participate in the IFT-DSS concept because (a) it reduces their overall cost of developing new software tools because they can reduce effort devoted to user interfaces; (b) they can rely on the IFT-DSS community support

mechanism for providing user help systems, teaching and training, and advertising and selling their new tool; (c) they get an existing group of users that want to use their new or improved software tool at little to no effort on their part; (d) they get usage reports that objectively provide feedback and how their tools are actually used.

- Expected outputs from IFT-DSS: Developers (a) get a mechanism for "publishing" their software product as a service module for others to use; (b) they get an organized library of software service modules that they can access and use as pieces for developing new software tools; (c) they get a small set of coding standards which they can use to give their software service immediate access to large and growing user community; (d) they get a framework that facilitates model validation and comparison; (e) they get objective feedback about the components of their software tools that work well and those that don't.

- Expected inputs to IFT-DSS: Developers provide new software tools and updates to existing ones to the IFT-DSS.

- Expected inputs and outputs from/to other communities: Fire & Fuel Management Community: Developers have a better organized feedback system from the fire & fuel management community that provides information on how their tool works in application situations. They will not need to provide software helpdesk services, they will not need to carry the responsibility of training users how to use their tools, they will not need to market the tools to the users, just to the members of the review process. Governance community: developers have an increased relationship with the governance community which provides them with objective and steady information about how good or poorly their software tools are doing (feedback from users indirectly going to developers); what functionality is missing and needed; and what the governance community is willing to pay developers to develop at any given time. Developers have a chance to improve the information flow to the governance community about the limitations of the available software tools from a science perspective. This may help the governance community develop some reasonable application policy that may improve the quality control process dramatically. IT/System Maintenance Community: developers will learn from this community what new software technology issues are coming online, what software will be supported, what software will be dropped, what security requirement their software tools need to be able to adhere to. Developers can feed back to the IT community their preferences for software technology and their reasons for these preferences which may then help inform software support decisions.

- Current level of participation: With some very few reservations, the scientific model developer community are all completely supportive of the objectives of the IFT-DSS and its vision. Issues of time and resource availability are behind the only problems that the developer community has surfaced. As the first versions of the IFT-DSS emerge, it will be easier still to bring new scientist developers on board.

The Database Developers Community:

The Database Developer Community consists of national, regional, and local members that manage databases that describe the natural environment as it exists currently or as it potentially might exist at particular geographic locations. The importance of high quality input data for any type of fuels treatment planning is patently obvious.

- Members:

Location	person (Affiliation)	Data/Application
Ft. Collins, CO	Eric Twombly	FSVeg
Missoula,MT	Kristine Lee	LANDFIRE

  - Landfire Data Developers (Innovators): the recently developed Landfire data provides a coverage of the entire United States, with Alaska and Hawaii recent additions (2009).
  - FSVeg Data Developers (Innovators): the Forest Service's FSVeg data set is an important source of forest stand examination data in a uniform format that allows generation of tree list input files for the Forest Vegetation Simulator, a key vegetation dynamics prognostication tool.

- Roles: The database developers provide essential support for all fuels treatment planning analyses. Without adequate data, such planning is impossible.
- Must-have Reason to Participate: the database developers are uniformly eager to participate in the IFT-DSS project because they are anxious to see their databases used for all possible applications. This broad use of data helps justify the high cost of obtaining and maintaining good databases of all kinds.
- Expected inputs from IFT-DSS: None.
- Expected outputs to IFT-DSS: Data of many different kinds, found in several vegetation, geophysical, meteorological, and atmospheric databases will be used in the IFT-DSS.
- Expected inputs and outputs from/to other communities: Fire & Fuels Managers: the fire & fuels managers need to provide feedback to the database developers about the quality and availability of their data. They also need to communicate with the governance community to let them know when data deficiencies create serious problems for the fuels treatment analysis quality. Database Developers and Scientific Model Developers need to interact to make sure that new models are designed to use existing data and/or that new data needs for new models are recognized and filled when possible. A model without adequate data to run it is not operationally useful.

- Current level of participation: The developers of the major available databases have been contacted and are aware of the IFT-DSS project and its needs for their data. Participation and cooperation has been uniformly good.

Governance (Senior and Mid-Level Management) Community:

The Governance Community contains members of the various levels of line-officer and staff-officer management personnel. At each appropriate level of an organization, the leadership is responsible for questions dealing with business needs, resource allocation and prioritization, financial investments, and operational efficiency and effectiveness of the organization as a whole. In addition, the fire and fuels working environment contains governance community members that focus on Interagency operations as well as those whose responsibility is primarily or only for operations within a particular agency. Our communications plan therefore needs to address both agency and Interagency members.

- Members:
    - Joint Fire Science Program (Innovators): The governing board of the JFSP provided the vision, motivation, and resources to establish the Software Tools and Systems Study and the resulting development of the IFT-DSS. Their continued guidance and support is critical to a successful development and transition effort.
    - National Interagency Fuels Coordinating Group (Innovators): This staff and advisory group to the NWCG has been the primary governance sponsor for the IFT-DSS project since its inception. This subgroup is part of the Policy, Planning, & Management Branch of the NWCG. Eric Christiansen is the chair. The current thinking is that this NWCG subgroup be given the responsibility for playing the governance role for the IFT-DSS project as part of their responsibilities to the NWCG.
    - National Wildfire Coordinating Group (Early adopters): This group of senior managers representing the various participating agencies is the key senior management body concerned with the functioning and support of the IFT-DSS. Paul Schlobohm, leader of the Equipment and Technology Branch of NWCG, is the liason between the NWG directors and the IFT-DSS project. Elaine Waterbury, leader of the Policy, Planning, & Management Branch, and Tim Blake, Leader of the Preparedness Branch, are the two other NWCG Branch leaders that need to know about the IFT-DSS project.
    - Managers of other distributed SOA systems such as WFDSS and Bluesky. (Early Adopters)
    - Washington Office Fire and Fuels Staff of the Forest Service, BLM, NPS, BIA, USGS, etc. (Early Majority)

- Regional Fire and Fuels line officers and staff officers of the participating agencies. (Early Majority)
- Agency Research Station Directors and Staff especially Forest Service Research Stations. (Early Majority)
- State Fire and Fuels line and staff officers. (Late Majority)

- Roles: the roles of the governance line and staff officers vary somewhat by position and employer. In general, it is a governance responsibility to set priorities, establish policy, take responsibility for business needs, and supervise the efficiency and effectiveness of operations. Specifically for the IFT-DSS, the governance community concerns itself with such issues as: (1) establishing recommended processes for adequate fuels treatment planning (this means identifying what "should" be done vs. what "can" be done); (2) ensuring that the IFT-DSS enhances agency performance in terms of quality and quantity; (3) ensuring that agency fuels treatment planners are happy with the IFT-DSS functionality and accessibility; (4) collecting, evaluating and prioritizing user demands for expanded functionality and establishing a process through which high priority updates to the IFT-DSS occur in a timely manner as resources permit; (5) communicating with the IFT-DSS Coordinating Team to ensure that outputs are designed to support agency reporting needs in an efficient manner, etc.

- Must-have Reason to Participate: the IFT-DSS software architecture and the project vision for a limited number of distributed DOA's that collectively can organize and improve the numerous independent software tools will make supervision of fire and fuels software tools manageable, will make funding decisions in this area much easier to make, and improve the operating capabilities of the agencies by focusing scarce resources on high priority functions. The IFT-DSS is expected to produce a large improvement in the quality of fuels treatment planning analyses and their supporting documentation.

- Expected results from IFT-DSS: the IFT-DSS is expected to (1) demonstrate to the governance community the feasibility (along with WFDSS and Bluesky) of the distributed Service Oriented Architecture approach to software tool management in general and fuels in particular; (2) provide explicit and strong support for the NWCG NWFEA Blueprint by implementing several of the recommendations; (3) improve the quality of the fuels treatment analyses and recommendations across the agencies; (4) make the fuels treatment specialists across the agencies less frustrated and more efficient; and (5) provide outputs and example cases that can be summarized upward for governance reporting needs to OMB and Congress.

- Expected inputs to IFT-DSS: The governance community is expected to (1) provide resources for the long-term maintenance and operations of the IFT-DSS; (2) encourage other community members to use the IFT-DSS and function as part of the larger community of interest by communicating with other stakeholders about problems, issues, solutions, lessons learned, etc. (3) vocally and visibly show support for the IFT-DSS and its vision thereby persuading a growing number of stakeholders in the various communities to use it; (4) collect suggestions from the

field user community and prioritize them; (5) actively seek ways to make the high priority changes to the IFT-DSS happen; (6) collect guidance information from other senior management members, from OMB, from USDA/USDI level, and from Congress and communicate the relevant information to the IFT-DSS Coordinating Team (for example: OMB has mandated that agencies use modern risk assessment procedures in order to analyze and prioritize fuels treatment projects. Senior management needs to identify such directives and communicate such agency needs to the project where appropriate.)

- Expected inputs and outputs from/to other communities: (a) Scientific Model Developer community: the governance community may need to negotiate with the scientist developers and the science administrators when new functionality is needed by the field users but it is basically a science-side issue. For example, we know that FVS badly needs to be expanded in functionality to be able to provide vegetation dynamics simulation for non-forest ecosystems. The problem is that we have not yet developed the research knowledge of how to do this usefully. (b) Database Developer Community: the need for and accessibility of existing and planned new databases should be a governance community concern. For example, the Forest Service's FSVeg database is widely used within the forest service but essentially unavailable to other agency fuels treatment specialists because it sits behind the forest service's firewall. Open access to all fuels specialists of this valuable database is urgently needed. (c) Fire & Fuel Management Community: governance members must ensure that the IFT-DSS meets the needs of the field users, solves their problems with fuels management, and must manage the requests for improvement that the users will generate. (d) IT/Software Maintenance Community: the governance community must ensure that field user and science developer effectiveness is not unduly impaired by the existing security and information technology policy rules and regulations.

- Current level of participation: the current level of participation of members of the governance community is urgently needs improvement. Paul Schlobohm, Shari Shetler and Carol Saras have been representing the points of view of the governance community from the NWCG perspective and understand and support the IFT-DSS project and its vision. The NWCG directors have been repeatedly briefed by John Cissel so that they have moved from ignorance to awareness of the IFT-DSS project. Other members of the governance community are likely to be ignorant of the IFT-DSS project.

IT/Software Maintenance Community:

The Information Technology & Software Maintenance community consists of people with IT responsibilities, whether agency specific or Interagency in scope. It also consists of software systems managers that work on the servers that the IFT-DSS will use, maintain the software base of the servers, and manage the Internet broadband access. Software engineers that can maintain and improve the IFT-

DSS code and software user support specialists that provide help desk operations to the Fire & Fuels Operational community are also included in the IT/Software O&M community.

- Members:
    - NWCG Information Technology Committee (Innovators): This committee, with Shari Shetler as chair, has developed the IT Investment Management process. The proposal for the NWCG to sponsor the IFT-DSS is currently being managed by this process. Carol Saras is the IT Investment Management portfolio manager. Other members of this group are at the level of ignorance.
    - Agency IT Leaders at NIFC (Early Adopters): NIFC has a cadre of IT experts that are key to understanding the needs and requirements of the IT community as it relates to the IFT-DSS. This group will be key in providing information on how to perform the CPIC process for the IFT-DSS leading to the "Authorization to Operate". This group of members is at the level of awareness and needs to be moved to the level of understanding.
        - Forest Service Fire IT: Laura Hill, Joe Frost
        - BLM Fire IT: John Gebhard, John Noneman.
        - WFDSS IT: Gladys Crabtree
    - Managing Partner Agency IT (Early Adopters): Once a managing partner has been identified for the IFT-DSS, it will be necessary to inform that agencies IT group about the IFT-DSS leading to plans for the CPIC process, establishment of a server and hardware, providing user IT related support through a helpdesk system, and providing software maintenance and updating support.
    - Council of Agency CIO's (Early Majority): this group is composed of the CIO's for the 4 partner Interior agencies, the Forest Service, the Department of Agriculture and the Department of Interior
- Roles: The IT/Software Maintenance Community (1) issues the Authority to Operate the IFT-DSS software on an agency server as the final step in the CPIC management analysis process; (2) provides guidelines on what software and hardware is supported by the agency so that developers of software tools can conform; (3) provides and maintains internet broadband connections; (4) provides security and password protection systems for the IFT-DSS (it appears that, like WFDSS, the users of the IFT-DSS will need to establish a login-password, this is true for agency and non-agency users); (5) provide user helpdesk IT support; (6) provide software maintenance and updating support.
- Must-have Reason to Participate: The IT community needs to be sure that the IFT-DSS distributed Service Oriented Architecture is safe and conforms to agency IT policy to operate.

- Expected results from IFT-DSS: The IFT-DSS implementation will provide a test-case for the IT community on the feasibility, advantages, and disadvantages of multiple, large scale distributed Service Oriented Architectures in operation.

- Expected inputs to IFT-DSS: the IT community will provide the information that will allow the IFT-DSS to operate as an NWCG sanctioned and sponsored software program.

- Expected inputs and outputs from/to other communities: (a) Scientific Model Developer and Database Developer community: the IT community needs to communicate and work with the science developers to make it easy and possible for the developers to create conforming software tools; (b) Fire & Fuel Management Community: the IT community needs to make it as easy for Interagency and non-agency user access to the IFT-DSS as possible consistent with policy and security concerns; (c) Governance Community: The IT community needs to work closely with the governance community to ensure that the business operations of the agency can proceed as efficiently as possible within the constraints imposed by security concerns.

- Current level of participation: NWCG IT representatives, Shari Shetler and Carol Saras, are extremely familiar with the IFT-DSS project at the understanding level. The NIFC IT agency representatives have been briefed several times and have achieved awareness level. All other IT community members largely remain ignorant of the IFT-DSS software and vision.

IFT-DSS Coordination Team

This team is at the center of the communication flow between the other five communities. The purpose of the transition community is to pay attention to what is happening with the IFT-DSS and its communities of interest, draw conclusions, and then act accordingly. Members of this community will necessarily spend more of their working day on the IFT-DSS and its vision than most other members of other communities.

Members:

- Short Term IFT-DSS Coordination team: this team consists of the JFSP Project Manager, Mike Rauscher and the Sonoma Technology Inc. Project Manager, Tami Funk. Broadly speaking, Mike Rauscher is responsible for the stakeholder community development and Tami Funk is responsible for the development of the IFT-DSS software itself. In addition, Tim Swedberg of the JFSP is a member of this team also with a focus on stakeholder community development. This team will be active roughly during the time that JFSP maintains development responsibility, until spring of 2012 when the hand-off to the NWCG will be complete.

- Long Term IFT-DSS Coordination Team: The NWCG IT Investment Management Plan is being followed which will lead to the identification of a managing agency partner for the IFT-DSS. Until an agency managing partner has been identified, it is not possible to say precisely what form the long term IFT-DSS Coordination Team will take. It is critical that the transition from

JFSP to managing agency partner maintains the Interagency perspective of the IFT-DSS. Some possibilities that are currently being discussed are:

- The IFT-DSS project becomes a part of the Fire Decision Support Center of the Forest Service along with WFDSS. In this case, a Fuels Treatment Specialist may be hired to perform the role of Transition Community coordinator for the project.
- There is an initiative by the JFSP to establish Regional Science Delivery & Outreach Consortia. It seems reasonable that members of these consortia also perform the role of IFT-DSS Coordination Team members.
- Some type of Change Management Board may be established that will operate as part of the IFT-DSS Coordination Team to review and approve changes of all types to the software system.

Information Diffusion Plan for the IFT-DSS

As of the beginning of Phase IIIa, April 2009, the IFT-DSS development team has been working for 2 years already to communicate the project objectives and motivation to members of all of the six communities described above, but with more emphasis on the Fire & Fuel Management, Scientific Model Developer, and Database Developer communities. As a result, more members of those communities have passed from ignorance through awareness and onto understanding those of other communities. It seems best to organize this section first by community, then by type of members within each community, and finally by the state of awareness of those members. This plan then identifies our proposed actions to improve the awareness of all members of these target communities with targeted communication media.

Table 1, below, summarizes the presentation of this Information Diffusion Plan and should be used as a guide for understanding the rest of this section. We have concentrated primarily in detailing activities that will occurs as part of the Phase IIIa effort (May 2009 – April 2010). Communications events schedule for Phases IIIb and c are primarily placeholders with little detailed discussion of how this will occur. Please note that what innovators in each separate group actually do with the IFT-DSS is very different for each group. It is a function of the role a particular group plays in regard to the IFT-DSS.

Table 1.

Community	Segment	Objective & Method	Responsibility	Timeline
Fire & Fuels Management	Innovators	Move to Trial Use – Individual Coaching	Drury	Aug 09 – April 2010
	Early Adopters	Move to Understanding – Emailed Documents, Online Forum Discussions	Drury	Aug 09 – Dec 09
		Move to Trial Use – Online GUI Mockup, Online Guides	Drury	Jan 09 – April 10

	Early Majority	Move to Awareness – Mass Direct Mailings	Rauscher/Swedberg	Oct. 09 – April 10
Scientific Model Developer	Innovators	Move to Trial Use – Individual Coaching	Raffuse	Aug 09 – April10
		Plan for New Tools – Interviews, written plan, conference calls	Rauscher	Aug. 09 – Dec. 10
	Early Adopters	Move to Understanding – Emailed Documents, Online Forum Discussions	Raffuse	Jan. 09 – April 10
	Early Majority	Move to Awareness – Mass Direct Mailings	Rauscher/Swedberg	Oct. 09 – April 10
Database Developer	Innovators	Move to Trail Use – Individual Coaching	Raffuse	Aug. 09 – April 10
	Early Adopters	Move to Understanding – Emailed Documents, Online Forum Discussions	Raffuse	Jan. 09 – April 10
	Early Majority	Move to Awareness – Mass Direct Mailings	Rauscher/Swedberg	Oct. 09 – April 10
Governance	Innovators (NIFCG)	Move to Trial Use – Training Course	Rauscher/Christiansen	Aug. 09 – April 10
	Early Adopters NWCG	Move to Understanding – Training Course	Rauscher/Schlobohm	Aug. 09 – April 10
	Early Adopters Agency WO Staff	Move to Awareness	Rauscher/Swedberg	Nov. 09 – April 10
	Early Adopters Research Station	Move to Awareness – Executive Briefing	Rauscher	Dec. 09 – April 10
	Early Majority	Move to Awareness – Directed Mass Mailings	Rauscher/Swedberg	Oct. 09 – April 10
IT/Software Maintenance	Innovators	Move to Trial Use - Use the IT Inv. Man. Process	Cissel/Rauscher	July 09 – April 10
	Innovators Agency IT at NIFC	Move to understanding – Emailed documents, face to face discussions	Cissel/Rauscher	TBD
	Innovators Agency Sponsor IT	Move from ignorance to trial use – Emailed documents, face to face discussions	Cissel/Rauscher	TBD
	Council of	Move to awareness –	Shetler/Rauscher	TBD

	Agency CIO's	Executive Briefing		

Fire & Fuel Management Community

- POC Test User Group (Innovators): this group is currently at the awareness/understanding stage. They are ready to move into the trial use stage as soon as the IFT-DSS mock up interface is available by early-August 2009. The group is currently being asked to confirm the workflow scenarios that we have clarified in the document "Refined Work Flow Scenarios for the Interagency Fuels Treatment Decision Support System" (Drury et al., July 1, 2009). Stacy Drury of Sonoma Technology Inc. (STI) is in charge of working closely with this group, our first group of users, and moving them into the trial use stage. It is this personal interaction on probably a weekly basis at first that will provide our first real feedback on how the IFT-DSS implementation is being received by users. Their early feedback is crucial in guiding us quickly to a desirable product.
    - July 20 - Aug. 14: Review of workflow scenarios. Documentation of feedback from the POC Test User Group concerning the utility of the workflow scenarios we plan to implement.
    - July 31 - Oct. 9: Review of the GUI Mockup with documentation summarizing results and lessons learned.
    - Oct. 31 – Dec. 11: Review and feedback of First Interim release of the POC version of the IFT-DSS with documentation of results and lessons learned.
    - Jan. 31 – Mar. 6: Review and feedback of Second Interim release of the POC version of the IFT-DSS with documentation of results and lessons learned.
    - Apr 30 – June 1: Review and feedback of Final Release of the POC version of the IFT-DSS with documentation of results and lessons learned.
- Group of 44 Survey Respondents (Early Adopters): This group is currently in the awareness stage. They need to be moved to the understanding stage. This group will be contacted by email the week of July 27, 2009 and asked to read and respond to the document "Refined Work Flow Scenarios for the Interagency Fuels Treatment Decision Support System" (Drury et al., July 1, 2009). Stacy Drury will be collating the responses to the question: do the workflow scenarios described in this document provide the functionality you need to make your fuels treatment planning and analysis job better and easier? Stacy will plan some follow up interviews with selected respondents. Our goal with this group is to move them all from awareness to understanding by engaging them to review this workflow scenario document. They have all indicated they are willing to perform this function and they have all been exposed to several Phase II documents primarily the Conceptual Design and the Architectural Design documents. We need good feedback from this group to further confirm the utility of the workflow scenarios we are implementing. Stacy will then offer this group the opportunity to use the mock up interface once it becomes available and thus begin moving members of this group into the trial use stage to increase the number of actual users of the IFT-DSS and continue to obtain feedback and guidance for smarter development. A developing draft User's Guide will likely be one vehicle for training this group of 44 users in how to assess the Mock-up User Interface.

- Group of 100 (Early Majority Fuels Treatment Specialists): We have not put this group together yet by name and plan to have the Early Adopters above suggest and recruit member of this group by name. This group is intended to have state and NGO representatives as well as federal agency members. So this group and, actually, the rest of the approximately 800 fuels treatment specialists are in the ignorance stage as of June 2009. A mass mailing to begin creating awareness in this group is the first and most appropriate step to take. In addition, letters of invitation will be mailed to each individual in the Early Majority group to invite them to contact and us and participate as test users in the project. October is the selected month for the communication push to target this group because many field employees will be in the office and fire season should be winding down with the exception of California. We have a better chance of getting their attention. In Phase IIIb, STI will hire and organize a cadre of training specialists that will put together a training program aimed at the Early Majority with the goal of getting them using the IFT-DSS at a Basic Level. A second training course will be designed to get users in general to using the IFT-DSS at the advanced level. These trainers will act as coaches for users until the transition to the Agency Partner is accomplished. See the section entitled "Mass and Direct Communication" below for details.
- Later Majority (Fuels Treatment Specialists): the early majority group will be asked to help us identify all the remaining fuels treatment specialists in the US. This group will be targets of the mass mailings as well but will not receive a concerted communication campaign until the final verson of the IFT-DSS is complete.
- Other specialist members of ID Teams: this group, consisting of the other non-fire specialists in a typical ID team, is at the ignorance stage and needs to be moved to awareness and understanding. See the section entitled "Mass and Direct Communication" below for details. This group will be targets of the mass mailings as well but will not receive a concerted communication campaign until the final verson of the IFT-DSS is complete.

The Scientific Model Developer Community

- POC Scientific Model Developer (Innovators): This group of approximately 10 people is at the understanding stage. We have worked with them intensively for about 2 years and they are ready and waiting to be trial users as soon as the mock up interface is up and running in early August. Sean Raffuse from STI is responsible for working closely with this group to elicit development information as well as design evaluation feedback. Mike Rauscher will be working with this group to design and write up a plan describing how new software tools and updates of existing software tools will be entered into the IFT-DSS. Close coordination between the developers, governance, and IT community innovators will be required to come up with a plan that is acceptable to all.
- Expanded Developer Group (Early Adopters): this group of app. 10 members is at the awareness stage and represents the developers of the remaining existing scientific models that we need to complete the planned final functionality for the IFT-DSS. We have not constituted this group by name yet but that will happen in the next few months. Sean Raffuse of STI is responsible for moving this group from awareness to understanding and then to trial use and is part of the advance planning we need to do with developers to support Phase IIIb of the study. This group will provide development information to STI and will receive training and education about the IFT-DSS from STI.

- Developers of the most commonly used models (Early Majority): this group consists of approximately 40 developers of the most commonly used scientific models available today. This group is somewhere between ignorance and awareness concerning the IFT-DSS project. This group is a perfect target for the "Mass and Direct Communication" strategy detailed below beginning in October 2009. During Phase IIIb in spring of 2010, we will be working with select members of this group to test adding new scientific software models to the IFT-DSS. Following this test, after refining a good process, we will invite each member of this group to submit their model for inclusion in the IFT-DSS (in Phase IIIc and beyond).
- Broad Group of Scientific Model Developers (Late Majority): this group is believed to contain approximately 150 members and will be targeted with mass media publications in Oct. 2009 to move them from ignorance to awareness.

Database Developer Community

The Database Developer community is crucial to the successful use of the IFT-DSS. Poor quality or missing crucial data can quickly invalidate or make impossible a fuels treatment planning process.

- Landfire Database Developer (Innovators): Kristine Lee is our contact with the Landfire Database Developer community. She has already provided full access to the Landfire Data and given us a technical contact in case questions arise.
- FSVeg Database Developer (Innovators): We have obtained a test copy of the FSVeg data base for our temporary development needs. The real version of the FSVeg database is still not accessible outside the Forest Service firewall. However, we have talked with developers at NRIS in Ft. Collins that are working on this problem and expect to have a widely accessible version of the database available by the end of 2009. Discussions are ongoing.

Governance (Senior and Mid-Level Management) Community

- National Interagency Fuels Coordinating Group (Innovators), Erik Christiansen, Chair. As the original sponsors of the IFT-DSS software and vision, the NIFCG members will test out the governance roles and responsibilities. Mike Rauscher will work with Erik Christiansen to craft a plan of exactly what this means and how to proceed. In effect, the NIFCG will represent the NWCG and execute the governance responsibilities outlined above.
- NWCG Directors, Bonnie Wood, Paul Schlobohm, Elaine Waterbury, and Tim Blake (Early Adopters). Paul Schlobohm and Mike Rauscher will work together to increase the level of familiarity of the directors and staff of the NWCG from awareness (the current state) through understanding to support and adoption. Part of this change will occur through the successful sponsorship of the IFT-DSS proposal currently going through the IT Investment Management process. A second part will happen through the directed communications strategy that will be developed by Schlobohm and Rauscher.
- Washington Office Fire and Fuels Staff of the FS, BLM, NPS, BIA, USGS, etc. (Early Adopters). Mike Rauscher and Tim Swedberg will work with JFSP Board members and NWCG staff to craft a plan aimed at explaining the IFT-DSS project and vision to the WO fire and fuels staffs of the agencies. It is critical to move this group from ignorance through understanding to support as early in the implementation cycle as feasible. We anticipate that specialized, targeted communication media will need to be developed to reach and affect this group of stakeholders.

- Research Station Directors and Staffs (Early Adopters). Mike Rauscher will craft a communications plan to reach this group of stakeholders.
- Regional Fire and Fuels line officers and staffs of the federal agencies (Early Majority). Tim Swedberg and Mike Rauscher will craft a communications plan to reach this group of stakeholders.
- Regional Non-federal Fire and Fuels line officers and staffs (states, NGO's, etc) (Greater Majority). Tim Swedberg and Mike Rauscher will craft a communications plan to reach this group of stakeholders. Tim Swedberg operates mailing lists that encompass many of the members of this group.

IT/Software Maintenance Community

- NWCG IT Investment Management Process Community (Innovators): Carol Saras is the coordinator for this process and she is familiar with all the different members that operate this process. John Cissel and Mike Rauscher have submitted a proposal for the NWCG to sponsor the IFT-DSS and assign a managing partner. John Cissel is writing a decision document for the Change Management Board to approve.
- Agency IT Leaders at NIFC (Innovators): this small group is aware of the IFT-DSS project but now need to be moved toward understanding what the IFT-DSS vision of a collection of collaborative system architectures operating on the web will mean for them. The IFT-DSS project needs to understand the problems and issues that they see in wait for us as we proceed to institutionalization.
- Managing Partner Agency IT (Innovator): Once a managing agency has been designated, we have to move them from ignorance, to awareness, to understanding. We need to work with this group to plan the CPIC process, plan for the server and internet connections, how to provide user support, and how to perform software updating.
- Council of Agency CIO's (Early Adopters): this group needs to be brought from ignorance to awareness and understanding. Shari Shetler has met with this group several times and would be the partner to reach them.

Mass and Direct Communication Plan

- A special web section devoted on the JFSP website with latest announcements
  This should be created by October 1 – Mike Rauscher, Tamara Jenner, Tim Swedberg, and Randy McCracken

- Of particular importance will be displaying timelines, opportunities to get involved, and new information, an RSS feed of new information would be a very good tool to keep those most interested in the system as it develops in the loop
  This should be created by October 1 -- Mike Rauscher, Tamara Jenner, Tim Swedberg, and Randy McCracken

- We will use the monthly JFSP email alerts to keep the general audience abreast of developments, but this is going to take the help of Rose Tully to help Tim expand email listings.
  Ongoing

- We will direct mail 15,000 Fire Science Digests to the potential community of interest in both federal, state, tribal, ngo, and local agencies in October. Wherever possible, we will send a letter of introduction and invitation to participate to a broad number of Fire & Fuel Managers and their governance line officers and staffs. Paul Schlobohm suggests that the Digest should clearly explain how the IFT-DSS project relates to other DSS tools that have been suggested or exist: WFDSS, EMDS, FPA, NFPORS, IRWIN.

- We will narrate a 10 slide perpetual running introduction to IFTDSS that can run at conference display booths. Mike Rauscher and Tim Swedberg have already taken an initial first step in this direction and we will try it out in Savannah

- Mike and Tim will also develop a quick fact sheet explaining the potential benefits to the 5 communities in support of the narrated slide show. The key theme in all communications should be what are the benefits of the system and what's in it for me for Savannah.

- The 10 slide introduction can be used as a consistent messaging for any number of conferences, briefings, and meetings. John Cissel will need to determine who the ambassadors are for specific groups and should identify stakeholders who will need briefings. Paul Langowski, Tom Remus, Tim Sexton should all help in this regard along with the NIFCG in identifying speakers we can train in the fuel community or identify meetings that the Program Office can make presentations to.