NWCG Incident Based Automation Strategic Planning Project

National Wildfire Coordinating Group (NWCG)

Incident Based Automation Strategic Plan

Final Version

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Revisions

Revision Number	Date	Description
1.0	4/7/2005	Initial Rough Draft Format
1.0.1	4/13/2005	Revised Initial Rough Draft Format, based on internal SAIC review comments
1.0.2	4/26/2005	Revised Format based on discussions with the Project Manager, Dorothy Albright
1.0.3	4/26/2005	Revised Format based on discussions with the Business Lead, Mary Ann Szymoniak
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1.0.6	9/2/2005	Revised based on team discussions
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1.0.8.1	12/2/2005	Refined draft submitted to the Government Senior Project Manager
1.0.9	12/15/2005	Final DRAFT Strategic Plan
1.1.0	04/03/2006	Final Version

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Executive Summary

The Incident Based Automation Phase 2 (IBA2) project is chartered by the National Wildfire Coordinating Group (NWCG). The main objective of this project is to develop a Strategic Plan for identifying automation and business process changes, as well as standardization opportunities.

To build this Strategic Plan, 20 visits to incidents – both wildland fire and All-Risk incidents – were conducted during 2005. In total, 164 interviews were conducted with representatives of Incident Management Team (IMT) personnel as well as external entities (e.g., Multi-Area Coordination or MAC, Coordination Centers).

Through the site visits and interviews, a number of challenges were observed and discussed. Highlights of some of these challenges are summarized below and detailed more comprehensively throughout this document:

- Extensive use of paper-based manual processes that resulted in inefficiencies and duplication of effort, as well as an overall reduction in the effectiveness of IMTs.
- A consistent struggle to get computers and/or connectivity to incidents, absent which, team members were unable to share needed information among the team and external entities.
- A lack of data standards and an inability to share information effectively and efficiently both within the incident itself as well as with external entities.
- Difficulties during transfer of command from team to team – while some transitions occurred seamlessly, most transitions were poor and inefficient.
- An inability to take advantage of new technologies. Many of today's technologies (e.g., 3-dimensional spatial coverage) could be of tremendous benefit to IMTs; there is no clear mechanism for evaluating and implementing these technologies. Some technologies were being used that served similar business needs, but without standardization or support.
- All-Risk incidents had unique needs that go far beyond those of a traditional wildland fire incident. As more and more IMTs are called for duty on All-Risk incidents, changes must occur to more robustly support All-Risk incidents.
- IMT members possess varying levels of skill with the tools and technologies available to them. As a result, training emerged as a critical need.

IMTs have attempted to address these limitations in a variety of resourceful and creative ways. However, a new approach is warranted – it is essential that dramatic changes occur to better serve the needs of IMTs and the external entities that support them.

This Strategic Plan outlines a number of specific recommendations for achieving this dramatic change. Three synergistic and inter-dependent strategic areas were identified and serve as organizing principles for the recommendations contained within the Strategic Plan:

1. Data/Information and Applications/Technology
2. Infrastructure/Connectivity
3. Trained and Skilled Workforce.

Figure 1 graphically depicts the three strategic areas. It is critical to also describe the interdependencies of these three areas. ***Data/information and applications/technology*** sits atop the concentric rings because it is the centerpiece of the Strategic Plan and is the most critical area. It focuses on developing the information architecture necessary to facilitate data sharing through appropriate technologies and applications. ***Infrastructure/connectivity*** focuses on ensuring that hardware, software, and connectivity to utilize applications and technology for incident management are standard, scaleable, agency-independent, and capable of being set up quickly. Without infrastructure and connectivity, the data and applications will not be adequately supported. This strategic area is the foundation of this Strategic Plan. Absent robust infrastructure and connectivity, the centerpiece – data/information and applications/technology – have no foothold. The third area, a ***trained and skilled workforce*** centers on ensuring that the incident management workforce is well as trained and skilled to utilize and support an automated environment. Without a skilled workforce, the data and applications will not be leveraged effectively.

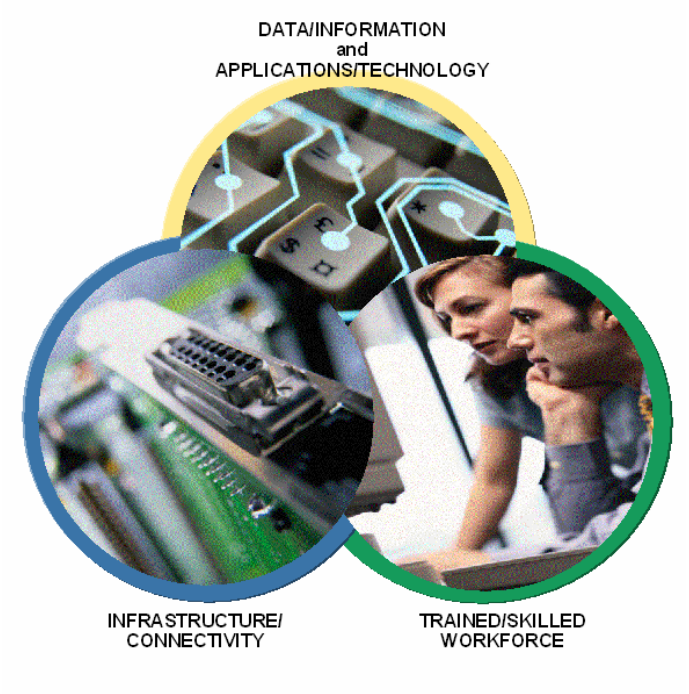


Figure 1: Synergy Among Strategic Areas

Recommendations

Ten recommendations were identified for each of the three strategic areas. Table 1 lists those recommendations grouped by strategic area. Additional supporting information, along with suggested action items for each recommendation, is detailed in later sections of this plan.

Along with these recommendations, there are two other considerations for management.

1) The needs of All-Risk incidents should be further evaluated due to the nature of All-Risk.
2) Given the dynamic nature of both fire management and technology, it is important to foster a culture of continuous improvement and develop appropriate mechanisms for collecting

feedback, analyzing it, and making decisions regarding business processes changes, automation opportunities, and standardization.

Table 1: Summary of Recommendations

Strategic Area	Recommendation
1. Data/Information and Applications/ Technology	**Recommendation 1.1:** Develop a comprehensive incident support system that allows information sharing and efficient data management throughout the lifetime of the incident, increases situational awareness, and provides for better decision support.
	Recommendation 1.2: Enable better information flow within an incident's operational boundaries and to external entities. Provide teams with an interagency portal for dissemination of and access to current fire information.
	Recommendation 1.3: Actively participate in enterprise architecture and data standardization activities across the interagency incident management community to ensure that incident management activities are well-supported by these efforts.
	Recommendation 1.4: Formalize and standardize the process for implementing current and emerging technologies for incident management. Integrate the technologies with the comprehensive incident support system described in Recommendation 1.1.
	Recommendation 1.5: Apply the use of Automated Identification Technology (AIT) to incident business processes identified as potential candidates. Integrate AIT into the incident support system described in Recommendation 1.1.
2. Infrastructure/ Connectivity	**Recommendation 2.1:** Standardize and provide the computing and communications infrastructure for incident management for: use in a variety of incident settings, availability within the "first operational period" (defined as within 12 hours of the IMT's arrival), and ability to scale to the incident environment.
	Recommendation 2.2: The interagency community should remove information technology (IT) barriers that inhibit incident management teams.
3. Trained/Skilled Workforce	**Recommendation 3.1:** Expand and modernize training methods to more effectively and efficiently teach emerging technologies, applications, and automation for business practices that will touch virtually all incident management positions.
	Recommendation 3.2: Review all NWCG positions to more appropriately reflect "qualified" and "current" and to recognize the increasingly rapid change in automation, technologies, and applications.
	Recommendation 3.3: Develop, design, and implement a streamlined method for training (which includes current technology and applications), that is focused on non-agency personnel with previous incident-related experience.

Appendix Information

The following are included as appendices to this Plan:

- Appendix A: Acronym List
- Appendix B: Project Charter
- Appendix C: Action Plan
- Appendix D: Site Visit Plan
- Appendix E: List of Automation Products
- Appendix F: List of Interviewees

Background and Purpose

IBA2 was chartered by the NWCG in 2004. This project is part of a three-phase project regarding incident base automation. These three phases are described in the IBA2 NWCG Project Charter and are depicted in Figure 2.

NWCG Incident Base Automation Project Phases

Phase 1 - Project 1	Phase 2 - Project 2	Phase 3 - Multiple Component Projects (Modules)
I-Suite Stabilization and Support Project (IRSS, ICARS, ITS, IAP)	Incident Base Automation Strategic Planning Project	Incident Base Automation Component Projects
• **Stabilize Application** • **Initiate Change Management** • **Provide User Support** • **Provide Application Maintenance**	• **Identify Key Business Areas** • **Conduct Business Area Analysis** • **Conduct Strategic Project Planning** • **Prioritize and Recommend Phase 3 Projects**	• **Infrastructure Components** • **Business Area Components**

Figure 2: IBA Project Phases

The NWCG chartered IBA2 in 2004 to:

1) Identify and obtain agreement from NWCG agencies on key incident business areas to be included in strategic analysis and resulting planning documents.
2) Conduct business area analyses for the business areas identified by the IBA2 Team and agreed upon by NWCG agencies.
3) Develop a strategic plan that identifies recommended priorities for incident business area automation.
4) Utilize cost efficiencies by coordinating and sharing information with existing groups for addressing issues relating to incident processes.

(Source: NWCG Project Charter, May 12, 2004.) This charter can be found in Appendix B.

- Stakeholders potentially affected by the IBA project include all agencies that are members of the NWCG. This audience is defined in the Project Charter as National Type I IMTs, National Type II IMTs and Fire Use teams as well as Area Command teams. In addition, other audiences, such as buying teams and agency units, may also be affected.

In accordance with the objectives stated in the Project Charter, the NWCG approved the following business areas for analysis:

- Operations
- Plans
- Finance
- Logistics
- Safety
- Information
- Dispatch
- Cache
- General

The IBA Phase 2 Project Charter defines this Strategic Plan deliverable as follows:

> ***"Strategic Plan*** *- a holistic review and high level analysis of the business areas will result in a strategic plan that will identify the needs for changes to current incident practices that may or may not be currently automated, as well as the interconnectivity requirements of the various incident management functions. The plan will display the "as is" and the "to be" functionality and will identify the strategies that are part of a business modernization plan and overall agency strategic goals. This plan will describe a modular approach to future development, providing management with the "big picture" of the interrelated incident management business requirements."*

This Plan lays the framework for future reengineering/process improvement activities. It focuses on the needs of incident personnel "on the ground" as well as external entities that require information generated by the incident management community.

"Incident management" entails functional processes employed at an incident by the IMT. For the purposes of this Plan, "incident" is defined in accordance with the Interagency Incident Business Management Handbook (IIBMH) (April 2004) and is as follows:

> *"An occurrence, either human caused or natural phenomena, that requires action by emergency service personnel to prevent or minimize loss of life or damage to property and/or natural resources."*

Methodology

To initiate information-gathering activities in accordance with the IBA Project Charter, two activities were conducted: (1) Development of a draft "as is" process model, and (2) Development of a Site Visit Plan.

The draft "as is" process model was prepared by reviewing literature and conducting informal discussions with subject matter experts. The process model was used to help ensure a common understanding of incident business among IBA2 Strategic Planning Team members. This common understanding provided critical context to the overall project.

The Site Visit Plan was focused on providing an overall framework for coordinating a series of site visits. (The full Site Visit Plan can be found in Appendix D.) Two types of site visits were identified in the Plan:

1) Visits to Incident Command Posts (ICPs)
2) Visits to external entities (defined as both a non-ICP entity where incident business was conducted [e.g., payment centers] and a non-ICP entity where IMT personnel were being interviewed in their capacity as IMT members).

The Site Visit Plan documented the types of questions that would be asked of interviewees and laid out a number of objectives for the site visits. These objectives included visiting eight to ten incident sites representing a variety of agencies, geographic areas, phases, and types as well as visiting four to six external entities that conduct incident business at places other than the ICP. All these objectives were met or exceeded. In total, 20 site visits were conducted. Nine were wildland fire incidents. Three were at an all-risk (hurricane) incident. Eight were external entities. Table 2 details the site visits.

Table 2: Site Visit Details

Site Visit Name	Host Agency	Geographic Area	Setting/ Management Phase	IMT Type	IMT Home Geographic Area	Number of Interviews
Northwest Coordination Center	Interagency	Northwest	Non-fire	N/A	N/A	7
Rocky Mountain Multi-Agency Coordination (MAC)	Interagency	Rocky Mountain	Non-fire	N/A	N/A	11
National Interagency Fire Center	Interagency	Western Great Basin	Non-fire	N/A	N/A	9
Alaska Bureau of Land Management (BLM)/Alaska Fire Service (AFS)	Interagency	Alaska	Non-fire	N/A	N/A	17

Site Visit Name	Host Agency	Geographic Area	Setting/ Management Phase	IMT Type	IMT Home Geographic Area	Number of Interviews
Cave Creek Complex	U.S. Department of Agriculture (USDA)	Southwest	Wildfire Urban Interface/Build-Up	I	Southwest	14
Three Fire Complex	USDA	Southwest	General Wildfire/Steady State	II	Southwest	6
Mason Gulch Fire	USDA	Rocky Mountain	Wildfire Urban Interface/Steady State & Demobilization	I	Rocky Mountain	12
Pack Trail	USDA	Rocky Mountain	Remote Wildfire/Steady State	Wildland Fire Use (WFU)	Rocky Mountain	6
Dammeron Fire	U.S. Department of Interior (DOI)	Western Great Basin	General Wildfire/Steady State	I	Eastern Great Basin	10
Dirty Face	USDA	Northwest	Wildfire Urban Interface/Steady State	II	Northwest	11
Central Washington Expanded Dispatch	State	Northwest	Wildfire Urban Interface/Steady State	N/A	N/A	4
I-90 Fire	USDA	Northern Rockies	Wildfire Urban Interface/Build-up	I	Northern Rockies	13
Missoula External	Interagency	Northern Rockies	Non-fire	N/A	N/A	9
School Fire	State	Northwest	Wildfire Urban Interface/Steady State	State Type I	Northwest	7
National Park Service (NPS) Fire Use Team	Interagency	N/A	Non-fire	WFU	Eastern Area	2
Katrina Logistics Management Team	Interagency	Southern Area	Non-fire	N/A	Southern Area	4
Katrina IMT	Interagency	Southern Area	Non-fire	N/A	Southern Area	5
All-Risk Area Command	Interagency	Eastern Area	Non-Fire	N/A	Southern Area	5
Wireless	N/A	N/A	Non-fire	N/A	N/A	1
California Department of Forestry and Fire Protection	State	Northern California	Non-Fire	N/A	Northern California	11

A total of 164 interviews were conducted during the course of these 20 site visits. All interview results were compiled in a database to facilitate an organized capture of information from interviewees and to allow detailed analysis of interview results. The IBA2 Strategic Planning

Team worked together through a series of teleconferences and meetings to identify commonalities and synthesize the information gathered from the interviewees. Appendix F contains a list of interviewees.

Incident Management: A Strategic Plan for Business Area Improvements

The IBA2 Strategic Planning Team used interview results to create three strategic areas and organize the recommendations put forth in this Plan: The strategic areas are:

1) ***Data/information and applications/technology*** – this area centers on developing the information architecture necessary to facilitate data sharing through appropriate technologies and applications.
2) ***Infrastructure/connectivity*** – this area focuses on ensuring that hardware, software, and connectivity to utilize applications and technology for incident management are standard, scaleable, agency-independent, and capable of being set up quickly.
3) ***Trained/skilled workforce*** – this area focuses on ensuring that the incident management workforce is appropriately trained and skilled to utilize and support an automated environment.

The following statement unifies the three strategic areas and demonstrates the desired result from the interaction among these three areas:

The synergy among three inter-related areas: 1) applications or technologies that facilitate transformation of data into information, 2) infrastructure/connectivity, and 3) a trained and skilled workforce, will increase situational awareness, improve decision support, foster information sharing, and enhance accountability.

Table 3 provides a brief explanation of each strategic area and describes the desired future state.

Table 3: Strategic Areas and Future States

Strategic Area	Desired Future State
1. Data/ Information and Applications/ Technology	A comprehensive incident support system exists. This system ensures that incident information is available and shared internally during incident operations and externally to appropriate agencies and stakeholders. In addition, this system supports visibility of data and enhances accountability. Transfer of command is standardized and seamless (e.g., incoming teams have immediate access to information on the incident). Interagency data standards are in place and used widely. An interagency enterprise architecture (EA) exists, and compliance with the EA is assured. Appropriate technologies and applications are applied throughout Incident Management functions. Specifically, 3-dimensional spatial coverage, real-time resource tracking, and personal digital technology are standardized and widely used. In addition, Automated Identification Technologies are used to enhance the efficiency of incident business. Routinely evaluate and leverage new to support incident management activities.
2. Infrastructure/ Connectivity	The infrastructure required to use the applications and technology for incident management is standard, scalable, and agency-independent. Connectivity is established by the end of the first operational period so that teams are up and running quickly. No Information Technology (IT) barriers exist to challenge IMT's ability to do their job
3. Trained/Skilled Workforce	Web-based training for IMT members is regularly used and expert information sharing is common. NWCG qualifications include currency in technologies and applications that support IMT job functions. Non-agency personnel who participate on IMTs have ready access to a wide variety of training courses and are therefore familiar with all the technologies and applications.

Recommendations: Bringing the Future into Reality

Recommendations, for each strategic area, were identified by analyzing interview results and considering a number of factors. These factors included, but were not limited to, the following:

- The frequency that an area was mentioned during interviews.
- The potential impact on more than one business area (e.g., reduced redundancy across business areas; reusability).
- The potential to:
  - Streamline processes, saving time and money
  - Enhance accountability (e.g., gives users better data to make more informed decisions)
  - Enhance efficiency or safety
  - Were most urgently needed (i.e., most "painful") according to interviewees
  - Could be addressed expediently.

It is important to note that these factors were considered of equal importance when developing the recommendations. For each recommendation, the following information is provided:

- Summary information that identifies:
  - Strategic area(s) supported
  - Potential timeframes for implementing the recommendation:
    - Short-term – those that the IBA2 Strategic Planning Team believes can be accomplished within 12 - 18 months.
    - Medium-term – those that can be accomplished within 24 - 36 months.
    - Long-term – those expected to be accomplished in more than 36 months.
  - A high-level assessment of the expected relative level of effort required to implement the recommendation.
    - Small effort – those that require few person-hours to accomplish and represent minor changes to existing systems or processes.
    - Medium effort – those that are more labor intensive and require changes to existing systems or processes.
    - Large effort – those that may have major interagency policy implications and/or require a significant new development effort.
  - Related recommendations and dependencies.
- An "Analysis/Discussion" section that details the origin of the recommendation and provides context regarding interviewee feedback and how it became part of the recommendation.

The remainder of this section expands on each strategic area and its accompanying recommendations.

Strategic Area 1: Data/Information and Applications/Technology

This Strategic Area is the centerpiece of the Strategic Plan. Applications and technologies are the main conduit for capturing incident-related data and providing a flow of information among various incident management entities and to stakeholders external to the incident. Applications, technology, data, and information are dependent on adequate infrastructure and connectivity (For more information on infrastructure and connectivity, see Strategic Area 2).

Incident information is used to:

- Understand and communicate the current fire situation
- Model fire behavior
- Make strategic and tactical decisions
- Support ordering, tracking, and payment of incident resources
- Support fire-related research

Rapidly evolving technology has provided the capability for more, better, and faster information flow; however, the use of technology to achieve this is hampered by a slower pace of application development, a lack of data standards, insufficient user training, and business processes that are entrenched in paper-based systems and culture. Easily available and adaptable technologies have also resulted in an increased demand for information from outside an incident's operational boundaries. More maps, use of geographical information systems (GIS) and global positioning systems (GPS), rapid exchange of information (often over the Internet), and supporting details is not just requested of the Incident Command staff, it is *expected*. It was clear during the IBA2 Strategic Planning Team's site visits that Incident Commanders (ICs) often felt overwhelmed by the quantity and quality of information expected from them and their teams.

Many interviewees commented on applications-related topics; in fact, this was the most frequently commented on topic. There appears to be a general consensus among interviewees that, as one Situation Unit Leader put it, "We have the technology, so we ought to be using it," and using it to:

- Increase situational awareness
- Provide information for external needs
- Improve decision support
- Enhance accountability

Adapting technology to address these areas will require an incident support system that reaches across all incident functional areas and provides comprehensive support, not only for the *business* of incident management, but for safe and effective incident *operations* and better information dissemination outside the incident's boundaries.

Recommendation 1.1: Develop a comprehensive incident support system that allows information sharing and efficient data management throughout the lifetime of the incident, increases situational awareness, and provides for better decision support.

Supports Strategic Area(s)	1
Timeframe	Long-term
Expected Relative Effort	Large
Related Recommendation(s)/ Dependencies	1.2, 1.3, 1.4, 1.5, 2.1, 3.1, 3.2, 3.3

Analysis/Discussion:

Three significant challenges were consistently reported: (1) The need for more efficient and effective incident operations; (2) The un-met needs of external entities for incident data in near-real-time; and (3) Difficulties associated with transfer of command.

As a result of these challenges, the IBA2 Strategic Planning Team recommends that a comprehensive incident-based automation system be developed. This recommendation is timely, much warranted, and supported by a large portion of the interviewees including representatives of IMTs and external entities.

Challenge 1: The Need for More Efficient and Effective Incident Operations

Incident operations could be much more efficient and effective. One of the primary examples of inefficiencies and ineffectiveness of incident operations is the heavy reliance on paper-based activities. These paper-based manual processes resulted in inefficiencies such as the following:

- Repeated and inefficient data entry, leading to inefficiencies in the use of IMT members' time and introducing the risk of data entry errors.
- Delays in processing data due to the inability to share it effectively with other entities that need it.
- Manual customization of forms, leading to significant variances in the way information is defined and collected. For example, Incident Command System (ICS) forms, used for check-in and demobilization, and ICS-211 and ICS-215/215a were nearly always customized by the incident team. While the differences in forms are not the primary concern, the implication is that the processes supported by these forms have evolved from their original requirements into a process with different requirements not sufficiently represented by the original forms.

Examples of inefficiencies and ineffective incident operations include (but are not limited to) the Incident Status Summary, Unit Log and General Message Form, resource ordering and supply distribution, and I-Suite.

Incident Status Summary

Another issue with current incident business processes is that from the perspective of the person tasked to use the paper-based manual form, it is not always clear to what use a form and its information is put. This holds true from the unit logs all the way to the ICS-209 (Incident Status Summary). Potentially significant "parcels" of information may have little perceived significance to the person collecting the data. A specific example was a Food Unit Leader who inspected caterers on their arrival at the incident and occasionally during it. Although the Leader was required to verify that the caterers were operating safely (by monitoring and logging temperature of food, etc.) and was required to keep records for three years, the Leader had never been asked for this information and never handed over the records for the documentation unit.

At the other end of the incident information spectrum, the ICS 209 (Incident Status Summary) was especially vulnerable to incomplete, inconsistent, or incorrect data reporting. Issues in incident status reporting using the ICS 209 were divided into three areas:

1) An incident with little or no connectivity to the outside world.
2) All-risk incidents (i.e., hurricane) where connectivity was limited, and the ICS 209 was so specific to wildland fire that much of the information requested was either not applicable or not relevant.
3) Incomplete or outdated incident status information.

In the first case, the IBA2 Strategic Planning Team interviewed IMT members who admitted that, on occasion, they simply didn't submit the ICS 209 at all. Understanding that the ICS 209 was used primarily for resource allocation and public information, the interviewees perceived that neither of those reasons warranted reporting their incident information for a remote wildland fire where these issues were not applicable.

In the second case, the process of submitting Incident Status Summaries was a "black box." The reporters could not provide certain information (e.g., total acres), and they did not know to whom the information was sent or why the information was being collected. Those involved were focused primarily on simply getting something together that could be submitted by the deadline and were unaware whether the information provided was of any use to receiving agencies.

In other cases, connectivity problems so limited the ability of the incident to transmit information that if it was present at all, it was riddled with errors or too outdated to give a current status.

Unit Log and General Message Form

Similarly, interviewees reported challenges associated with other forms. For example, the ICS 214 (Unit Log) and General Message Form both support the important process of documenting and justifying actions taken, decisions made, and critical events that occurred during daily operations; however, there is little automated support for these processes. Reasons to consider automating this process as part of the approach to a comprehensive incident support system are:

- For Unit Logs: Improve documentation of critical events as they occur. During the interviews, the IBA2 Strategic Planning Team was told that Unit Logs were often completed after the fact, when there was time available to transcribe hand-written notes into a more formal and complete electronic account (either in a spreadsheet or word processing document).

- For General Messages: Improve creation, transmission, and completion of orders conveyed by the General Message Form. On one all-risk incident, the IBA2 Strategic Planning Team observed a team resource whose only job was as a "runner" – hand carrying General Message Forms back and forth between the ICP and the base camp, which were located a short distance apart.

In general, using manual tools usually results in transferring the workload to someone else later; this should not be the standard procedure in cases where the member may not have access to appropriate technology or may not have sufficient training to use it. In other cases, paper and pencil is an expedient method that has been adopted because it is perceived to be "simpler" than adopting technology or has a face-to-face component missing in electronic communications. However, technology exists that could be deployed in a manner that preserves the face-to-face nature of communications, is easy to learn and use, and could overcome the inherent inefficiencies and error-prone nature of manual processing.

Resource Ordering and Supply Distribution

Receiving resources when and where needed is critical to the success of incidents' daily missions. In the sometimes chaotic atmosphere of an emerging incident, it is crucial to be able to know what resources are assigned, what resources are en route, as well as an estimated time of arrival (ETA) for orders, how to promptly order additional resources, and how to track resources once they have arrived. A complete incident-based automation solution must address incident-level ordering and supply tracking. This includes 1) streamlining the process for ordering, receiving, and distribution, 2) reducing the use of phone and fax for placing orders and checking order status, and 3) providing increased ability to track equipment and supplies.

Despite huge advances in the ordering process for the dispatch community through the Resource Ordering and Status System (ROSS) in the recent past, current methods used at the ICP have remained largely unchanged over the past 20 years.[1] Ordering, receiving, distributing, and tracking supplies at an incident are primarily paper, phone, and fax systems. The process is complex involving many steps among several separate entities external to the incident. A standard automated inventory system for incidents does not currently exist. At the majority of incidents visited, the receiving and distribution manager used a paper system for tracking their supply inventory. This was further challenged by a lack of standardization in the pre-order process. Interviewees especially felt this was true for medical supplies, where the buying team must go to local stores to purchase the IMT-desired supplies.

Several systems are in place, or are being developed, that can address parts of the ordering and inventory problems at an incident. ROSS and Interagency Cache Business System (ICBS) are the main external applications currently tracking resources and supplies. ROSS is accessible by Dispatch and Expanded Dispatch. ICBS is the caches' inventory system and is being re-engineered to provide the caches a more modern application. A supply module is currently being developed for I-Suite to automate inventory processes at an incident.

However, there is still a need to take a holistic view of incident ordering and supply tracking processes to achieve a more streamlined system. Too often, redundant processes result in unnecessary duplication, inaccurate data, and breakdowns in accounting and acquisition. During demobilization, the inability to reconcile such things as property, equipment transfers to other

[1] Specific suggestions regarding ROSS were identified by a number of interviewees. All of these comments were referred to the ROSS team for their review and action.

incidents within a complex, and personnel results in increased costs due to missing or misplaced items, from fire-fighting equipment to rental cars. There also is a lack of capability for efficiently tracking resources "inside" the incident.

The use of phone and fax for ordering and checking order status should be essentially eliminated by giving the incident access to automated systems for ordering and checking order status. The use of Automated Input Technology (AIT), such as barcoding or smart cards, could be utilized to streamline receipt and distribution of supplies.

I-Suite

IMTs reported significant strides as a result of the I-Suite implementation.[2] The IBA Phase 1 project, the I-Suite Stabilization and Support Project, was focused on ensuring that I-Suite functioned well; however, this project was not designed to meet future or evolving needs for incident management. Throughout the interviews, I-Suite was widely recognized as a boost to the efficiency and effectiveness of IMTs. Many I-Suite users had "grown up" with the software through the years and had seen continuous improvement and satisfaction with each new release. However, limitations of I-Suite's capabilities have left a number of un-met needs.

For example, although many Finance Section I-Suite users reported high levels of satisfaction, throughout the interviews, significant issues with management codes during incident and billing/payments after the incident were identified. Some of these needs are expected to be addressed within the Forest Service by a significant re-engineering project occurring outside the purview of IBA, the Financial Management Improvement Project (FMIP). However, the benefits of the FMIP will not be shared across the interagency community and further, the FMIP will not solve all the problems.

Perhaps more significantly, within the Planning, Operations, and Logistics Sections, it was more evident that the current state of incident automation was less effective for supporting the day-to-day business of incident management. This was not due to deficiencies in I-Suite; rather it was due to 1) lack of availability or access to I-Suite data, and 2) business processes that existed outside the functions I-Suite was designed to support. In most cases, unsupported business processes either were not automated or automated in an ad-hoc manner through everything from custom-built personal digital assistant (PDA) applications to spreadsheets and Microsoft® Word documents.

As a result of these and other similar needs, there is a strong desire to go beyond the current capabilities of I-Suite.

Challenge 2: Un-met Needs of External Entities

External entity interviewees repeatedly reported a desire for information from the ICP. A number of data needs were identified and articulated both by external entities as well as parts of the IMT that were separated from the ICP (e.g., airtanker base). Challenges related to data needs included:

- Slow speed with which data from the ICP was shared with others needing that data.
- Age of incident data – often external entities have data that is out-of-date and inaccurate.
- Lack of standards for data originating at an incident.

[2] Interviewees identified suggestions for improvements and changes to I-Suite. All of these ideas were referred to the I-Suite team.

- Transparency of incident data – interviewees noted that data provided from the incident are often neither user-friendly nor transparent.
- Lack of clarity regarding what data are really needed (versus data collected because they have always been collected).
- Challenges associated with obtaining data from the ICP in a form that is useable by external entities for decision-making.

IMT personnel reported that they recognized that external entities needed data from them. The same data is often needed multiple times by different external entities. However, they did not have time to meet all the demands for information. In addition, IMT personnel reported that faxing documents (e.g., timesheets, ICS 209) from the ICP to external entities was a very common practice. This practice was reported by many interviewees as both time-consuming and inefficient.

External entities noted that they did not want to burden the IMTs with data requests. One interviewee stated that external entities should to be able to query the IMT "subtly," with minimal impact to the IMT.

A good example of the un-met needs of external entities is the ICS 209, which is an important source of information for stakeholders outside the incident operational boundary. Those who rely on ICS 209 information include personnel tasked to allocate scarce resources and personnel who monitor and publish the daily state of wildland fire incidents across the United States. For these individuals, the ICS 209 may be their only view into the incident.

Staff were interviewed at several Geographical Area Coordinating Centers (GACCs) and MACs; it was discovered that allocation of scarce resources to incidents is determined using a number of factors. Usually, these factors are fed into a prioritization scheme used to support the decision-making process. Although many of these factors are directly obtained from information on the ICS 209, other factors must be obtained, using a variety of means, to build a more complete picture of the incident status and to ensure that an optimal decision is made.

According to ICS 209 information consumers, the ICS 209 form has evolved over the years to add new fields when business needs changed. Interviewees felt that this method of accommodating changing business requirements had reached a point of diminishing returns, and subsequent changes to the ICS 209 would yield marginal value. What is needed is a wider study of the business processes that the ICS 209 is intended to support, with a re-engineered, more complete, and more useful view of incident status.

Once ICS 209 information has been collected, summarized, and published, it becomes available to a far wider audience and can be used in a number of important ways for reporting and decision-making. Although this study did not attempt to catalog all external entities and stakeholders that use ICS 209 information, it is clear that there are many beyond the obvious decision makers within the coordination centers. It is also clear that a comprehensive study of the ICS 209 Report, and the people who use, collect, distribute, and consolidate the information contained on it is of far greater benefit than "adding a few more fields" to the existing ICS 209.

Challenge 3: Transfer of Command

History demonstrates that the highest risk for an incident is transfer of command. Interviewees repeatedly reported significant challenges associated with transfer of command and a wide variability in the degree of satisfaction with it. The smoothness of transfers of command seems

to depend upon how data and information is collected, processed, and preserved. A related challenge is that the infrastructure established by the outgoing team is often uprooted; the incoming team must reestablish the infrastructure (see Recommendation 2.1.)

In the ideal case, a new team assumes the functions of the previous team, and there is no lapse in service or operations. In the worst case, one team leaves, uprooting all information collected and processed during their tenure at the incident, leaving the incoming team without the information needed to efficiently execute a plan. In the IBA2 Strategic Planning Team site visits, examples of both were observed. One of the IMTs interviewed reported that they arrived at the fire and could not get a comprehensive understanding of what resources had been ordered. During the first few days on the fire, resources were arriving in accordance with orders placed by the original team. Unfortunately, several of the resources were not needed, and this resulted in both considerable cost and unnecessary deployments of personnel.

In the best cases, incident data and information was organized and prepared for hand-off to the new team; a transition plan helped ensure no gaps remained; and all resources (both incoming and on-incident) were accounted for and optimally assigned. IMT members stated that transitions are easiest when:

- Protocols for transition are already in place and, more importantly, followed.
- Information is available when coming into a situation. During transition, arrivals are often at night. A central repository of information about the fire situation would be useful and could help eliminate lengthy briefings. The travel period can be an opportunity to learn the status. However, the information must be accessible and complete, which is rarely the case.
- Data on resources that were ordered, but that had not yet arrived, are readily available. A common problem on many transitions was with resources that were not needed but that had been ordered by the prior team and that showed up. Interviewees reported that in these situations, the incoming team would like the ability to cancel an order when the resource was not really needed.
- Data is standardized and more easily shared between different systems. It can take up to 24 hours to share data between systems before the IC can get information.
- Better information is available when coming into situations (e.g., three dimensional maps, better intelligence on fuels, better intelligence on resources of value; handouts of what to pay attention to when suppressing fire; a printout of phones numbers, cell phone lines, etc.; pictures of fire behavior).
- Transition is treated as a business process, and the process is standardized.
- A standard process is used for tracking. During initial attack, the need for expediency and quick response to get the job done often outweighs following *the process* of getting the job done. Resources (e.g., engines) show up without E-numbers, and they are told not to worry about an E-number. Later, someone has to locate the resource and account for it. One Ground Support Unit Leader stated that there should be a good inventory when taking over an incident.
- The infrastructure is seamlessly transferred to the in-coming team (see Recommendation 2.1).

However, more often than not, these conditions for optimal transition were non-existent. As a result, it is widely acknowledged that transfer of command was a challenging area.

Recommendation 1.2: Enable better information flow within an incident's operational boundaries and to external entities. Provide teams with an interagency portal for dissemination of and access to current fire information.

Supports Strategic Area(s)	1, 2
Timeframe	Medium-term
Expected Relative Effort	Medium
Related Recommendation(s)/ Dependencies	1.1, 1.4, 2.1

Analysis/Discussion:

There is an overwhelming need to share incident information within the incident, to external entities, to incoming teams, and to the public. A number of challenges associated with information sharing were identified by both incident management personnel and information "consumers" inside and outside the incident. For example: the following issues exist:

The need for information from the incident is sometimes met by circumventing official channels and searching for the first available or most expedient information source. The result is often inconsistent or conflicting information or information that has not been appropriately reviewed and verified by responsible authorities.

The lack of relevant or timely information sometimes results in "filling in the blanks" on the fly so that reports can be filed before deadlines. This was specifically noted in preparing the ICS 209.

Reports alone give only one view of incident operations, and that is frequently a summary view. Often, there is a benefit in expanding, or drilling down, to a detailed view.

Incident management personnel are often hampered by inability to access information that could be made available to them. Information may be collected many times, and the potential for error increases each time the information is re-collected. During site visits, resources were observed lining up for long waits while information was collected and compiled, even when the information being collected was already available through other sources (e.g., agency databases). Resources were also observed being turned away because they presented outdated paper information, even though they may have been correctly registered electronically with their "home" agencies.

Existing contracts for vendors, Emergency Equipment Rental Agreement (EERAs), were another area of concern. In 2006, the Forest Service will begin utilizing the Equipment and Training Inventory System (EaTIS) to develop, solicit, and maintain EERAs. It is planned to be completely functional and utilized by other wildland agencies by 2007. It is expected that this effort will result in a system than not only maintains, but can sort, contractor and resource information including equipment number, location, price, vendor status and training records, past

performance information, and equipment quality data, thus alleviating a source of considerable frustration to incident personnel who must use this information.

In addition to these challenges, two specific items seemed to warrant additional discussion:

(1) Difficulty obtaining consistent and useful data from external information sources, and

(2) Transitioning electronic files and data.

External Information Sources

GIS layers, weather data, and land management plans are often available electronically; however there is little consistency across IMTs in sources that are used to obtain this information, and there is no comparison of the relative quality of information from different sources. Connectivity problems can inhibit the use of good, broad-scale information repositories such as LandFire, forcing IMTs to reconstruct the information locally (if at all).

A variety of methods are used to post data and information generated at the incident for use by GACCs, National Interagency Fire Center (NIFC), transitioning teams, and the host agency. The type of information posted includes GIS files, resource information, Incident Action Plans, etc., and the successful distribution of this information is often problematic. For example, at one incident site visited, GIS personnel were supposed to post perimeter files to a File Transfer Protocol (FTP) site at NIFC. They could not post the files because the login protocol had been changed, and they didn't know who to call for support. At another incident, the Situation Unit Leader had to travel a considerable distance to town to the host unit office in order to transfer infrared (IR) data to and from an FTP site. Although fast internet access was available at the ICP (which was housed in a school), technical difficulties, most likely due to internet protocol configurations, made it impossible to complete a file transfer initiated at the ICP.

Assuming connectivity needs are met, then an interagency-sponsored compilation of repositories and information sources could be maintained and kept current, and access protocols could be established and supported. With appropriate consideration to security and privacy, this could include agency sources for relevant data that must now be repeatedly recollected with each new incident. A single web interface that provides personalized access to information and applications (such as a "portal" or similar technology) can lower development and deployment costs and significantly increase productivity. Information can be aggregated and integrated within a particular working environment, application, or service, and has the potential to enable collaborative work and manage large amounts of disparate content.

Information generated and used by incident management personnel is important beyond interagency needs such as the GACC, NIFC, and the host agency. Information generated about an incident is also required for external communication to stakeholders that include the general public, news media, etc. Transitioning teams should also be considered as vital incident information customers.

In recent years, the public has become accustomed to using the internet as a resource for wildfire activity and status. Since there is no standard process for disseminating web-based incident information, the public and other external users are confronted with inconsistent and conflicting information on a myriad of sites. In addition, the hosting of sites is not centralized. Often, the incident is dependent on the host agency's web server. This can be a problem if that web server is down or if support cannot be obtained, especially on the weekend. Many IMTs create and maintain their own web sites. Some of these are primarily for use among individual team members, and others are also used to provide incident information to the public. It was noted in

an interview that a more uniform approach to IMT web sites could address the problem that sites are not kept or maintained after the incident when the team moves on. It was also noted during the interviews that the use of web sites for disseminating information takes a tremendous burden off the phones.

Although there have been some grass-roots efforts to create standard templates for IMT web sites, these efforts have met with only partial success in providing a one-stop information source for the public. Further, although a central site and standard protocols may be a part of the solution, content control and review should remain at the local level.

Transition of Electronic Data and Files

Some attempts have been made to adopt a standard directory structure for filing electronic data collected over the lifetime of an incident. Where used, this practice has met with positive results, especially during team transition, since electronic files are kept in a logical and easy-to-understand manner and can quickly be accessed by incoming IMT members. Ideally, the filing structure should support current National Archives and Records Administration (NARA) recommendations for paper document retention and also supplement these recommendations by providing for the storage of electronic data associated with an incident.

When used in combination with current NARA guidelines for document retention and storage, there is greater likelihood that incident records can be retrieved after an incident no longer exists, and the information can subsequently be used for future decision-making.

In an ideal case, data and information is current, accurate, and available. Until more progress is made towards the ideal state, a standard method for storing and retrieving electronic data associated with an incident will facilitate smoother transitions for teams.

Recommendation 1.3: Actively participate in enterprise architecture and data standardization activities across the interagency incident management community to ensure that incident management activities are well-supported by these efforts.

Supports Strategic Area(s)	1
Timeframe	Long-term
Expected Relative Effort	Large
Related Recommendation(s)/ Dependencies	1.1

Analysis/Discussion:

It is important that data and information for incident operations be compatible with an interagency enterprise architecture vision. Efforts to develop enterprise architecture, such as the Wildland Fire Management Modernization Blueprint undertaken by the DOI Enterprise Architecture group, are ongoing and continue to mature. An important outcome of these efforts is to ensure that data and information can be easily integrated, shared, and applied to management planning and decision- making. Therefore, it will be critical to the success of any incident based automation efforts that they are consistent with enterprise architecture efforts.

Groups such as the NWCG Data Administration Working Group (DAWG) work to enable a standard for data usage across wildland fire information systems. It is worthwhile for IMT members to provide input to these efforts, thereby ensuring that standards are determined based on accurate, timely, and relevant input. Changes induced by new technology and changing policies take place most rapidly at the ICP, which serves as a starting point for their implementation. Without continuous and active representation from the incident management community, important initiatives run the risk of "losing touch" with the rapid changes to which incident management must adapt. As a result, it is critical to future IBA projects that they actively participate in data standards efforts.

Recommendation 1.4: Formalize and standardize the process for implementing current and emerging technologies for incident management. Integrate the technologies with the comprehensive incident support system described in Recommendation 1.1.

Supports Strategic Area(s)	1
Timeframe	Medium-term
Expected Relative Effort	Large
Related Recommendation(s)/ Dependencies	1.1, 1.2

Analysis/Discussion:

The use of current and emerging technology was a prominent discussion topic in the interviews. Examples include geographical information systems (GIS) satellite phone, wireless GPS devices, remotely operated vehicles, PDAs, night vision goggles, and 3D imaging software. Technology like this can provide:

- Decision-making and communication aided by spatial analysis and displays
    - Integration of all aerial and ground assets against GIS information
    - Increased quality of communications
    - Reduced reporting time
    - Enhanced ability to order resources and prioritize resource requests
    - Improved accuracy of resources deliveries
    - Reduced radio traffic
    - Improved operational effectiveness

This recommendation addresses the need to create a formal transition process to move technologies from R&D into operation and maintenance mode. The same holds true for technology that has become widely used by IMTs, but is not yet standardized (e.g., GIS).

From the interviews, it appears there are three areas to begin focusing efforts:

1. **Geographical information systems:** Standardize automated GIS software, hardware, and baseline products.
2. **3D spatial coverage**: Commercially available, relatively inexpensive, seamless, 3D spatial coverage of the world to be used in a variety of applications as a spatial base layer.
3. **Real-time resource tracking:** Display resources' location (aviation, personnel) in spatial form using real-time status.

4. **Personal Digital Technology:** Hand-held communication solutions, such as PDAs and even cell phones, have the potential for many applications such as streamlining recordkeeping, instant messaging, digital transmission of images, rule/regulation repository.

Geographical Information Systems

As found during the interviews, geographical systems are widely used but not standardized. Spatial analysis is essential to strategic and tactical decision making at the incident by many functional areas. The GIS systems and expertise at incidents was most often a component of the resource unit where map products were produced to serve the needs of all functional areas. However, other functional units such as aviation and planning also use a variety of GIS applications to do their job. In all cases, the use of automated tools to support spatial analysis and display heavily depended on the technical expertise of individual team members and the availability to the specialized hardware and software to them. Many different standards and approaches to the use of spatial tools and data have created an inconsistent and inefficient environment to use this sort of technology as effectively as it could be. Geographical information system technology has evolved to a point where the tools could be relatively easy to use for non-GIS experts given the appropriate strategy for standardizing and implementing them. Many of the problems observed throughout the interviews will be addressed through other recommendations in the strategic plan.

3D Spatial Coverage

Interviewees reported that 3D technologies were extremely useful and exciting to IMTs. Tools such as Google Earth, National Aeronautics and Space Administration (NASA) World Wind, U.S. Geological Survey (USGS) National Map Viewer, Microsoft Network (MSN) Virtual Earth, and National Geographic Map Machine were all being used throughout 2005. These tools were seen propagating throughout the incidents for a variety of purposes. In one instance, the IMT and MAC group were using Google Earth for their briefings and meetings. They purchased a commercial version that gave them the ability to overlay fire perimeter and other pertinent information for communication purposes. In the case of the MAC group, they were able to view a wider geographic area depicting all active incidents. The Automated Flight Following (AFF) project began using Google Earth 3D spatial coverage as a backdrop to aircraft positions.

All groups found these tools to be very effective because of the ability to look at a 3D world fused with live data, such as aircraft or other resources, in addition to selected features such as nearby structures, roads, and streams. Interviewees reported that some tools were very user-friendly – users could begin navigating within a matter of minutes. Features, such as the ability to quickly navigate over the landscape tilting in various directions, zooming in and out, were reported as particularly valuable. For example, these features allow viewers to immediately understand implications of a wildland fire's current situation and future potential.

Real-time Resource Tracking

A critical requirement when managing aircraft is the ability to communicate with an aircraft in flight and to track its location at all times. Aircraft operating in support of incident operations are required to check in with a ground-based dispatcher while in flight. To date, radio communications have been the usual means of establishing contact. This method has served well, but has its limitations. Ground-based radio communications are not always reliable due to great distances or topographic relief that may block the signal. In addition, safety issues may arise when pilots are disrupted and need to respond to radio transmissions.

At one helibase, the IBA2 Strategic Planning Team interviewed two Air Base Radio Operators (ABROs) who were tasked with monitoring and responding to helicopter communications from air-to-ground and air-to-air. Their monitoring equipment consisted of five radios on different frequencies and a paper map supplemented with a number of small helicopter models (representing the helicopters that were supporting fire-fighting efforts). During take-off, landing, and air travel, the helicopter models were physically moved around on the paper map by one of the ABROs. In this way, they coordinated take-off and landing and were partially able to monitor helicopter whereabouts in the air. Both of these ABROs stressed that their jobs would be much more efficient and air operations would be safer if AFF software was implemented for incident operations.

DOI has partnered with the U.S. Forest Service (USFS) to create a developmental AFF system. Providing aviation managers and dispatchers with information regarding specific locations of all government-owned and contracted aircraft is the expressed goal of this partnership. While the primary purpose of such a system is for timely search and rescue of injured persons, the transmission of data and voice between the aircraft and the ground dispatcher can realize significant improvements in efficiency and safety. In addition, this system provides invaluable data for accident investigators and may mitigate some homeland security concerns regarding location and control of firefighting aircraft. Commercially available products perform similar functions.

Personal Digital Technology

In many instances, incident personnel were using their own devices or team-specific technology. For example, PDAs were commonly used as were GPS units. One PDA user reported that he felt he knew how to use only a small portion of the PDA's capabilities and also felt that PDA-designed applications could make his job significantly easier. This interviewee further pointed out that a laptop would be too clunky to support their position – something more portable and lightweight was needed.

The many ways incident personnel were using their personally-owned electronic tools demonstrates their adaptability to a variety of uses; however, non-standard approaches often present technical difficulty in transferring data captured from one device to another or to the GIS being used on the incident. In addition, there appears to be capability that is tested through research on a few incidents but never formally institutionalized by the NWCG to standardize the technology for interagency use nation-wide.

Recommendation 1.5: Apply the use of Automated Identification Technology (AIT) to incident business processes identified as potential candidates. Integrate AIT into the incident support system described in Recommendation 1.1.

Supports Strategic Area(s)	1
Timeframe	Medium-term
Expected Relative Effort	Medium
Related Recommendation(s)/ Dependencies	1.1

Analysis/Discussion:

A significant number of interviewees suggested that AIT could be used to make IMTs more efficient and effective. For the purposes of this Strategic Plan, AIT includes technologies such as barcodes, radio frequency identifiers (RFIDs), satellite tracking systems, smart cards, optical memory cards, and contact memory buttons. Examples of the perceived benefits of AIT heard from interviewees included:

- Improve tracking, documentation, and control of the deployment of personnel, equipment, and supplies
- Efficiently capture, aggregate, and transfer data and information
- Significantly reduce data entry time and duplication
- Increase accuracy and reduce errors
- Provide compatibility and enhanced functionality with I-Suite
- Reduce time to receive and distribute supplies

Support for use of AIT for various processes was strong throughout the interviews. In the incident setting, there are two broad areas where interviewees suggested that AIT can be utilized: (1) Incident processes where information about incident personnel is captured, and (2) Incident processes involving the tracking of equipment and supplies.

Under each of these areas below are examples of potential business processes for applying AIT.

Incident Processes Where Information About Incident Personnel is Captured

Examples include:

1) **Check-in and Demobilization**
   For example, develop a "redcard smart card" that would contain information, such as a resource's name, home office, qualifications, and other information, embedded in it. This would simplify check-in and check-out as well as significantly reduce, if not eliminate, the need for paper forms. In addition, this would allow IMT personnel to know the

qualifications of all individuals on an incident, potentially allowing the IMT to fill resource needs with personnel already on the incident rather than ordering new resources. This would be especially helpful for positions that are difficult to fill. For example, if a person is on an incident in a position that is relatively easy to fill, but also had qualifications in a harder-to-fill position, the IMT can change the person's assignment and find another person who meets the easier-to-fill qualification requirements.

2) **Commissary**
In commissaries, use AIT to facilitate tracking inventory, collecting data about items purchased (e.g., frequency), and providing automatic payroll deductions for firefighters who purchase items in the commissary.

3) **Food Unit**
In the food unit, use AIT to facilitate tracking of meals distributed and for better estimation of the number of meals required for the next day.

Incident Processes Involving the Tracking of Equipment and Supplies

Examples include:

1) **Supply Unit**
In the supply unit, AIT could be used to receive, distribute, and return equipment and supplies. Implement bar codes and scanners to improve tracking, eliminate the need for paper forms, and reduce the time required to conduct necessary inventory activities.

2) **Ground Support**
In the ground support unit, AIT could be used to track vehicle maintenance as well as gas and oil issuance.

The I-Suite team is exploring the development and use of an incident-specific smart card. This would be used only once and would contain no personal information for privacy reasons. To expand upon the I-Suite team's plans and meet the requirements articulated by the interviewees, security and privacy issues would need to be recognized and addressed.

It is important to understand that AIT is a mechanism for efficient transport of data from one data source to another. Any effort to analyze AIT must be done within the broader context of what applications are supplying and using the information. There are two external systems, IQCS and ICBS-R, with which any implementation of AIT would need to be closely coordinated. IQCS is the Federal data source for information for persons dispatched to an incident. ICBS-R is the interagency cache inventory system that tracks supplies issued to the incident from the caches.

Strategic Area 2: Infrastructure/Connectivity

Infrastructure and connectivity is the foundation of this strategic plan. Absent robust infrastructure and connectivity, the centerpiece of the strategic plan – data/information and applications/technology – have no foothold.

This strategic area focuses on the infrastructure available to IMTs as well as connectivity to the internet. Another critical focus of this strategic area is the availability of infrastructure and connectivity quickly after the IMT arrives on an incident.

To provide context and help ensure a common understanding of the intention of this strategic area, the terms *infrastructure*, *connectivity*, and the *first operational period* are defined below.

- *Infrastructure* is defined as the equipment from which automation is performed and connectivity is achieved. Examples of infrastructure include (but are not limited to): computers, satellite dishes, servers, power cords, surge protectors, generators, routers, switches, hubs, phones, hardware, software, networks, modems, and shared hard drives.
- *Connectivity* is focused on data connectivity. Data connectivity is defined as the ability for a computer to communicate with other computers and information sources (like the internet). Examples of data connectivity include broadband service, DSL service, wireless service, and Bluetooth service. Infrastructure enables connectivity. In other words, the infrastructure must be in place to ensure that adequate connectivity is established.
- The *first operational period* starts when the Type I, Type II (including WFU Team), or Area Command IMT assumes command and ends at the shift break, normally 12 hours. This readiness during the first operational period is critical for incidents regardless of whether they are in a remote, rural, or urban setting. These settings are defined as follows:
    - "Remote settings" have no connectivity to the Public Service Telephone Network (PSTN) and no power.
    - "Rural settings" have existing capabilities for power and connectivity to the PSTN (e.g., the phone company could install telephone lines for the IMT), but likely do not have broadband connectivity. Examples of rural settings include hayfields, fairgrounds, and schools.
    - "Urban settings" have sufficient power, existing connectivity to the PSTN, and broadband connectivity.

Also critical to this strategic area is a need to recognize that many IT barriers exist. These barriers are largely a result of policies and requirements set forth by the wildland agencies. The impact of such policies cannot be underestimated – they can have a dramatic effect on incident business.

Recommendation 2.1: Standardize and provide the computing and communications infrastructure for incident management for: use in a variety of incident settings, availability within the "first operational period" (defined as within 12 hours of the IMT's arrival), and ability to scale to the incident environment.

Supports Strategic Area(s)	2, 3
Timeframe	Medium-term
Expected Relative Effort	Large
Related Recommendation(s)/ Dependencies	1.1, 1.2, 2.2

Analysis/Discussion:

Currently, the computing and communications infrastructure used on incidents is not standardized and all too often not available. In addition, ICPs are located in a variety of settings ranging from remote to more urban locations. These two factors, the lack of a standard infrastructure and the geographical challenge of ICP locations, contributed to a number of challenges articulated by interviewees. A brief summary of some of the challenges reported by interviewees are below.

Challenge 1: ICP Location

Interviewees reported that often an IMT will choose a location based on access to electricity and connectivity. However, this can lead to a significant distance between the base camp and the incident itself. This results in the need for spike camps, which may introduce safety, cost, and other issues.

Availability of connectivity at an ICP varies. It has taken several days to get telephone lines to an incident in a remote location because the telephone company may have to run lines to the ICP. In remote locations, telephone dial-up may be the only option for getting internet access resulting in a very slow connection to the internet. Similar problems can occur in rural locations especially regarding obtaining high-speed internet connectivity.

Even when teams use the same location to support different incidents in different years, they often find that in remote settings, telephone lines that were installed to support the earlier incident are no longer working. As a result, the IMT must wait several days for telephone lines to be re-installed. Teams also reported that even though they might locate in a building where connectivity is available, they cannot access the internet backbone and/or it may be disconnected for the season.

Challenge 2: Infrastructure

Interviewees reported that a combination of team kits, computer rentals, equipment from multiple agencies, and personally owned computers are used to support incident business. Each of these methods and their associated strengths and weaknesses are summarized briefly below.

Kits

Kits are used extensively by a number of teams and some states. Team kits can be quickly set up, providing computers to IMT members quickly and during a critical time (i.e., build-up) of an incident. Team kits are often supported and maintained by the CTSP for the team. As a result, there are differing levels of support for the teams and no standardization across kits.

Due to travel times, the kits are often unavailable during the first operational period. Teams that travel with their own kits may find themselves waiting a day or more for the kits to be driven in if the incident location is far from the location where kits or other computer equipment is housed. Commercial delivery services were also identified as problematic; one interviewee reported a commercial delivery service was unable to deliver their equipment to the ICP due to a storm that rendered the delivery company's offices unusable.

Another challenge with team kits is that they are often removed by the outgoing team when the team's assignment is complete. This can cause down-time and confusion regarding transitioning data from team to team, as the incoming team must reestablish their own infrastructure. Several interviewees reported frustration with this.

Computer Rentals

Computer rentals are provided by external vendors and are often used because they are convenient and require limited configuration. To use a vendor, the IMTs provide their specifications (e.g., hardware and software requirements) to the vendor, and the vendor then provides the requested computers. There are several potential problems associated with computer rentals including high cost, timeliness of delivery (e.g., delivery may not be possible in the time frame desired by the IMT; delivery may be delayed due to problems with the shipment), and exposure to viruses.

Multiple Agencies

Equipment from multiple agencies is found in IMTs because IMT personnel often bring their own computers to incidents. The computers range from agency-owned laptops or desktops that are used to perform their full-time jobs to personally-owned computers. Due to security and other agency policies, team members often encounter challenges associated with trying to use a computer at the incident. For example, they may find that they cannot connect to the network provided at the incident because the incident is being managed by an agency that prohibits the use of non-agency computers. Another example is that team members who use their agency computers at the incident must have it re-imaged when they return to their home office (a time consuming process).

Personally-Owned Computers

Interviewees also reported using personally-owned computers to support their roles on IMTs. Personally-owned computer users encounter many of the same problems as users who bring their agency-owned computers to incidents. In addition, people who bring

personally-owned computers to incidents reported that the computers have been damaged or destroyed while supporting an incident.

Scalability

Another concern frequently expressed was scalability of the computing infrastructure. IMTs reported that during team-to-team transitions, or when incidents and their supporting team infrastructure expand, the infrastructure is not sufficiently scaleable. Interviewees stated that the infrastructure needs to be able to expand and contract with a team as the team and incident change size. Interviewees also expressed concerns that during transition, the out-bound team took their kits with them, leaving the in-bound team with the need to develop what essentially amounted to a new infrastructure. Downtime associated with getting an incoming team the equipment it needs was cited as cause for concern.

One critical note of caution is that these infrastructure requirements must be flexible. One interviewee eloquently pointed out that bringing their agency-issued laptop to an incident was critical to their ability to do their job because they needed access to a number of specific software programs to do their job. Even bringing the software on a CD or other media to the incident would be challenging to the interviewee, due to the extensive time required to load the necessary software and data. As a result, the interviewee cautioned against a standard "one size fits all" approach.

Recommendation 2.2: The interagency community should remove information technology (IT) barriers that inhibit incident management teams.

Supports Strategic Area(s)	2
Timeframe	Short-term
Expected Relative Effort	Medium
Related Recommendation(s)/ Dependencies	1.1, 2.1

Analysis/Discussion:

IMT members frequently commented that agency IT policies and requirements seemed to prevent them from successfully doing their jobs. Several examples of IT policies that seem barriers to success are summarized below.

- Security policies within the Forest Service prevented the use of high-speed wireless internet access on incidents. IMT members used high-speed wireless internet access once and found it very helpful and useful. However, the IMT was subsequently told that high-speed wireless access was prohibited and had not used it since that first time.
- Security policies within the DOI challenged DOI employees' ability to bring their agency-issued laptops to an incident. DOI employees reported that if they went to an incident and used their DOI laptops, the computers had to be re-imaged upon returning to the home office. This can be time consuming and inconvenient for the employee.
- Getting office e-mail was often very difficult while on an incident. Interviewees expressed a desire to maintain a connection with their offices and the "outside world." Some jobs almost require that IMT members stay in touch with their home office (e.g., contracting). Absent the ability to stay in touch with their home office, employees are reluctant to participate in IMTs. This reduces the overall number of potential IMT members.
- Difficulty obtaining basic and necessary IT supplies (e.g., a memory stick, mouse) was also a challenge on an incident. Technical approval processes were complex, and the time to obtain approval for purchasing a relatively inexpensive item was too long. Interviewees reported that they often purchased this equipment on their own, without reimbursement.

These barriers to success should be removed.

Strategic Area 3: Trained/Skilled Workforce

Without a trained and skilled workforce, the data/information and applications/technology available to IMTs will be of little value. Therefore, this area is critical to the overall success of the strategic plan.

Throughout the IBA2 Strategic Planning Team interviews, training emerged as an important topic. This area was not a primary focus of the questions during the interviews; however, training frequently emerged due to its importance.

Many IMT members are often not regular users of the tools and technologies needed to support IMTs. As a result, they do not have a good understanding of how to use the tools that were available. Interviewees commented that they thought tools they were currently using could be more helpful to them, but they did not fully understand the tools' capabilities. In addition, interviewees reported that assigned personnel are often "rusty" and have not been exposed to the latest changes in software. With one or more releases of new software tools annually, it is very important that team members keep their knowledge current.

Interviewees also reported that people who received training in the off-season were difficult to locate when the teams needed them (e.g., during fire season). As a result, teams often felt they were short on staff trained in the necessary technologies.

The success of many of the recommendations included in this Strategic Plan is closely linked to an effectively trained and skilled workforce that is capable of using the available tools and technologies. The importance of this strategic area is further compounded by the fact that the government-employee-available workforce will likely be reduced in the future, and many agencies will soon be faced with a large number of retirements.

This strategic area is focused on: 1) modernizing training methods, 2) integrating technology training into existing position qualification requirements, and 3) making training more accessible to IMT members and making trained people accessible to IMTs.

Recommendation 3.1: Expand and modernize training methods to more effectively and efficiently teach emerging technologies, applications, and automation for business practices that will touch virtually all incident management positions.

Supports Strategic Area(s)	3
Timeframe	Medium-term
Expected Relative Effort	Large
Related Recommendation(s)/ Dependencies	1.1, 3.3

Analysis/Discussion:

Staying current on technologies is critical for many to perform their job effectively. Current tools and technologies (e.g., I-Suite, ROSS) are updated one or more times a year. Training users in the newest features is a critical component of ensuring that these tools are used effectively. Many interviewees reported that existing training methods do not take advantage of new training methods or leverage new technologies. Two specific methods were encouraged by interviewees: (1) e-Learning and (2) Expert information sharing.

e-Learning

Computer- or web-based training (also referred to as e-Learning) should be used to train people in new technologies. This is especially true for people in positions who need to rely on tools (e.g., I-Suite) to do their job.

Interviewees stated that current IMT members, who are Federal employees, are familiar already with e-Learning. This is due in part to Federal requirements for agency personnel to take annual web-based IT security training. In addition, interviewees noted that many of the new IMT members are much more familiar with computer technology. Therefore, e-Learning would be more intuitive to such individuals.

Expert Information Sharing

Interviewees reported that the pressure of a short-term assignment with rapid build-up and then demobilization means that the assigned IMT must be fully functional and well-trained immediately upon arrival. However, there are also longer-term assignments. Interviewees suggested that during these longer-term assignments, ICP locations could provide excellent opportunities for technology transfer during mid-season, reducing the reliance on training during non-fire-season months. This would also offer trainees on-the-job, or hands-on, training.

Interviewees reported that on-the-job training of team members was a successful method of rapidly training IMT members who were not familiar with the newest technology.

Recommendation 3.2: Review all NWCG positions to more appropriately reflect "qualified" and "current" and to recognize the increasingly rapid change in automation, technologies, and applications.

Supports Strategic Area(s)	3
Timeframe	Medium-term
Expected Relative Effort	Medium
Related Recommendation(s)/ Dependencies	1.1

Analysis/Discussion:

Interviewees pointed out that "qualified" personnel are often assigned to an incident despite limited understanding of current applications and technology. These individuals may be able to produce a "paper" output, but their lack of familiarity with technology can place huge demands on subordinates or other functional areas that are proficient in the latest technology. In addition, if this same "qualified" person is assigned a trainee, issues can be passed on to another generation, particularly if the Position Task Book (PTB) does not emphasize proficiency in current applications and technology.

NWCG standards require three-year currency for Aviation and Dispatch positions versus five years for all others. The likely reasons have been frequent changes in technology for many of the tasks associated with these jobs. This same reasoning will be present in many, if not all, positions because of the spread of automated business practices, reliance on software applications instead of paper outputs, and advances in technology. As technology advances into virtually all aspects of incident management, the need to consider "automation and application currency" as part of an individual's qualifications will grow.

A foundation for NWCG training has been the use of PTBs to document proficiency as a system that is "performance based." Yet, most of the PTBs are either silent or vaguely describe expectations relative to using current software applications and technology. It will become more important in the future to link skills and abilities to operate and produce outputs from current applications to being fully "qualified." Conversely, in remote settings or prior to the infrastructure being established, a basic understanding of core business practices is essential. And knowing how to fulfill the "paper method" may still be needed during transition from/to the local unit. One area of the country currently uses a position designator to identify when a person is both functional at the foundation of the position and also qualified in the appropriate application. Expanding this idea more broadly and adopting it for use might be beneficial to the interagency community.

Interviewees noted that many of the PTBs are outdated and do not adequately address use of any technology or software applications. This reduces the need for updates to the qualifications of individuals serving in positions where technologies/applications are a critical part of doing the job.

Recommendation 3.3: Develop, design, and implement a streamlined method for training (which includes current technology and applications), that is focused on non-agency personnel with previous incident-related experience.

Supports Strategic Area(s)	3
Timeframe	Medium-term
Expected Relative Effort	Medium
Related Recommendation(s)/ Dependencies	1.1, 3.1

Analysis/Discussion:

A frequently discussed concern was the lack of available personnel for an IMT and the aging of the current IMT workforce. As a result, non-Agency employees are important members of IMTs.

Non-Agency employees were qualified to perform a job on an IMT, but often are not familiar with the latest technology that was part of performing the job. On remote wildland fires, for example, local non-agency Administratively Determineds (ADs) may be available, and even experienced in the "paper process;" however, they may not be familiar with recent technology. One interviewee reported that a resource had to be ordered from several thousand miles away because there were no local resources trained in the new technologies.

One potential solution is to send non-Agency employees to classroom-based training; however, many training courses were limited to Agency employees only. To address this, the prohibition of non-Agency employees in training courses should be removed. In addition, the mechanisms available for training non-Agency employees in new technologies must be expanded.

As a result of these challenges, methods should be developed to allow experienced, and otherwise qualified, non-Agency personnel to be brought up-to-speed in a timely manner.

Conclusions and Next Steps

The recommendations in this Strategic Plan represent many changes that could result in significant evolution in incident management. The wildland fire community was very forthcoming with ideas and suggestions for improvement. Failure to respond to the recommendations in this plan would be a disappointment. It is the advice and counsel of the IBA2 Strategic Planning Team that these recommendations are given an appropriate evaluation by management and decisions made regarding implementation. Two additional items of importance for management to consider are (1) unique considerations for all-risk incidents and (2) continuous improvement. These items are elaborated upon below.

Unique Considerations for All-Risk Incidents

The IBA Phase 2 Project Charter specified that the Incident Based Automation study was to include "all-risk" incidents, not just wildland fire. All-risk incidents include situations where IMTs are deployed in response to natural disasters, such as hurricanes or earthquakes, and human-caused disasters, such as the World Trade Center attack on September 11, 2001.

During the IBA2 strategic planning interviews, many people were interviewed who had been involved in all-risk incidents including the World Trade Center attacks, the Columbia Shuttle recovery effort, Avian Bird Flu response, and hurricane response. As a result of the interviewees' experiences, the IBA2 Strategic Planning Team was able to gather a significant amount of information regarding incident management for all-risk incidents. In addition, direct interviews were conducted with three teams deployed in the aftermath of Hurricane Katrina: (1) an IMT at Meridian Naval Air Station in Meridian, MS; (2) a Logistics Management Team (LMT) at Maxwell Air Force Base in Tuscaloosa, Alabama; and (3) an Area Command in Atlanta, GA.

It became clear during our interviews that all-risk incidents have a far broader range of issues than wildfire incidents. Many of these issues result from the fact that the Federal Emergency Management Agency (FEMA) provides significant direction to the teams, and FEMA imposes another layer of requirements for the way all-risk incident business is conducted and managed. Not all of the issues are directly related to incident based automation; however, future policy and decision-making about these issues are likely to have a significant impact on how incident based automation can be applied to all-risk. Some issues specific to all-risk incidents include:

- There is no delegation of authority to the IC in a FEMA-directed response. This has led to some confusion on the teams as to who is in charge of an incident, especially when IMTs are operating in close proximity to teams from other agencies or when someone external to the incident requires information. As one Finance Section Chief put it, "On "All-Risk," we need the big picture...what to gather, who to contact, and what do they need?"
- Team composition varies significantly from wildland fire incidents. An all-risk team may have little need for a GIS Tech (GIST) or Fire Behavior Analyst (FBAN); however, it may have significant need for many Status Check-in Recorders (SCKNs). This reality was addressed during Summer 2005 by deploying Logistics Management Teams (LMTs) rather than a traditional IMT.
- Many of the automated systems and processes used in support of wildland fire have limited applicability to all-risk situations. An example is the ICS 209. Although all-risk teams must submit the ICS 209 during an all-risk incident, much of the information requested on the ICS 209 is specifically relevant to wildland fire and is not applicable to all-risk.
- In some cases, FEMA has taken an independent approach to information management on an incident resulting in duplicate systems performing functions similar to systems already in use by IMTs. A specific example is tracking of tractor trailers loaded with relief supplies. IMT members used I-Suite to accomplish this, but the IBA2 Strategic Planning Team observed at least two different systems being used, one of which was a system being developed specifically for FEMA.
- According to the interviewees, the Incident Cost Accounting and Reporting System (ICARS) could track most all-risk costs; however, FEMA has a bigger picture, and they are not sure how to be effective in supporting their requirements. As one IBA put it, "How do we make All-Risk (FEMA) and wildland fire business workable for both and not put states in the

middle of a disagreement that will cost them money?" That question may be out-of-scope for incident based automation; however, the answer will certainly impact any proposed approach to automating all-risk incidents.

The recommendations proposed in this plan have been made with full understanding of their implications for all-risk teams as well as wildland fire IMTs, and as such, should benefit all. However, all-risk incident based automation may involve issues that will require more treatment and study than can be accomplished within the scope and time frame of IBA2. Additional analysis may be desired to facilitate greater definition of all-risk incident requirements.

Continuous Improvement

Given the dynamic and rapidly changing world of both incident management and technology, it is important to have a mechanism for periodically re-evaluating the IT needs of incidents. The final recommendation of this plan is to embrace a continuous improvement process so that additional opportunities for improvement can be identified and addressed. It is important to note that the process envisioned here is separate from the change management process that is traditionally included in systems development activities (e.g., the system described in Recommendation 1.1). Rather, the continuous improvement process envisioned here is focused more broadly.

This process should be implemented conducted throughout each year on an on-going basis. The IBA2 Strategic Planning Team understands that a project of the same magnitude as this one cannot be repeated each year. However, embarking on a similar process on a smaller scale annually would enable identification of opportunities for improvement for IMTs and external entities. For example, a mixture of interviews during incidents, as well as of incident personnel off-incident and external entity personnel, could be conducted annually. The same methodology and the same data collection tools could be used. In addition, technologies (e.g., a web site with a mechanism for capturing feedback) could help collect data for this new process.

Once opportunities for improvement are identified, the continuous improvement process must include a mechanism for analyzing the opportunities. The purpose of this analysis would be to determine what (if any) actions could be taken to respond to the opportunity identified. Pending the outcome of this analysis, a decision-making body would need to be formed. This body must have sufficient authority to make final decisions regarding implementation of the actions that could be taken.

Implementing a continuous improvement process will help minimize the chance that this Strategic Plan becomes "just another study." It is the hope of the IBA2 Strategic Planning Team that this project initiates a critical shift in the culture of incident management that not only creates significant changes for IMT personnel and external entities, but also embraces continuous improvement thereby facilitating on-going identification and implementation of necessary changes.

Appendix A: Acronym List

3D	Three dimensional
ABRO	Air Base Radio Operator
AD	Administratively Determined
AFF	Automated Flight Following
AFS	Alaska Fire Service
AIT	Automated Input Technology
BLM	Bureau of Land Management
CTSP	Computer Technical Specialist
DAWG	Data Administration Working Group
DHS	Department of Homeland Security
DOI	Department of Interior
EaTIS	Equipment and Training Inventory System
EDXL	Emergency Data Exchange Language
EERA	Emergency Equipment Rental Agreement
ETA	Estimated Time of Arrival
FBAN	Fire Behavior Analyst
FEMA	Federal Emergency Management Agency
FMIP	Financial Management Improvement Project
FTP	File Transfer Protocol
GACC	Geographical Area Coordinating Centers
GIS	Geographical Information Systems
GIST	GIS Tech
GPS	Global Positioning System
IBA	Incident Based Automation
IBA2	Incident Based Automation Phase 2 Project
IC	Incident Commander
ICARS	Incident Cost Accounting and Reporting System
ICBS	Interagency Cache Business System
ICBS-R	Interagency Cache Business System Re-engineering
ICECAP	Incident Command Easy Computer Application
ICP	Incident Command Post

ICS	Incident Command System
IIBMH	Interagency Incident Business Management Handbook
IMT	Incident Management Team
IQCS	Incident Qualification and Certification System
IQS	Incident Qualification System
IR	Infrared
I-Suite	An application consisting of the Incident Resource Status System (IRSS), Incident Cost Accounting and Reporting System (ICARS), Incident Time System (ITS), and the Incident Action Plan (IAP). Together, these applications are called I-Suite (**I**RSS, **I**CARS, **I**TS, **I**AP = **I**-Suite).
IT	Information Technology
LMT	Logistics Management Team
MAC	Multi-Agency Coordination
NARA	National Archives and Records Administration
NASA	National Aeronautics and Space Administration
NIFC	National Interagency Fire Center
NPS	National Park Service
NWCG	National Wildfire Coordinating Group
OPSC	Operations Section Chief
PDA	Personal Digital Assistant (e.g., Palm Pilot, Blackberry)
PSTN	Public Service Telephone Network
PTB	Position Task Book
R&D	Research and Development
RESL	Resources Unit Leader
RFID	Radio frequency identifier
ROSS	Resource Ordering and Status System
SCKN	Status Check-in Recorders
TNSP	Training Specialist
USDA	United States Department of Agriculture
USFS	United States Forest Service
USGS	United Status Geological Survey
WFIP	Wildland Fire Implementation Plan
WFSA	Wildland Fire Situation Analysis
WFU	Wildland Fire Use

Incident Based Automation Phase II Strategic Planning

Project Charter

May 7, 2004

1. Background

This project, the Interagency Incident Based Automation Strategic Planning Project, is the second phase in a series of multiple projects that are intended to put in place an Interagency Incident Based Automation System.. The focus of this phase is to identify key business areas, conduct business area analyses, conduct strategic planning, and to provide a prioritized list of automation recommendations.

The following graphic displays the conceptual layout of the projects.

NWCG Incident Based Automation Project Phases

Phase 1 - Project 1	Phase 2 - Project 2	Phase 3 - Multiple Component Projects (Modules)
I-Suite Stabilization and Support Project (IRSS, ICARS, ITS, IAP)	Incident Based Automation Strategic Planning Project	Incident Based Automation Component Projects
– Stabilize Application – Initiate Change Management – Provide User Support – Provide Application Maintenance	– Identify Key Business Areas – Conduct Business Area Analysis – Conduct Strategic Project Planning – Prioritize and Recommend Phase 3 Projects	– Infrastructure Components – Business Area Components

This project is chartered by of the National Wildfire Coordinating Group (NWCG). The NWCG was formed to expand operational cooperation and coordination of federal and state wildland fire agencies.

The expected duration of this project is 18 months from the date of charter signature. The current estimated costs for this project at the time of chartering range from $1,000,000 to $1,500,000. The cost does not include participating agency contributed salaries and travel.

2. Project Name

The name of this project is the Incident Based Automation Strategic Planning Project hereinafter referred to as the IBA – Phase 2 Project.

The name of the project team is the IBA – Phase 2 Project Team.

3. Authority

The IBA – Phase 2 Project Team is established by direction of the National Wildfire Coordinating Group. .

4. Objectives and Goals

The objectives of this study are to:

1) Identify and obtain agreement from NWCG Agencies on key incident business areas to be included in the strategic analysis and resulting planning documents.
2) Conduct business area analyses for the business areas identified by the IBA – Phase 2 Project Team and agreed upon by NWCG Agencies.

3) Develop a strategic plan that identifies recommended priorities for incident business area automation.

4) Utilize cost efficiencies by coordinating and sharing information with groups that are already formed for working on issues relating to incident processes.

5. Organization

The IBA – Phase 2 Project Team is under the direction of the Incident Business Practices Working Team (IBPWT) of the NWCG. The IRMWT will provide technical advice and guidance to the project. The IOSWT will be kept appraised of the actions and findings of the project, and will provide advice or guidance as appropriate. A business lead representing the interests of the business stakeholder community and operating under the authority of these groups will provide business direction and support to the Project Manager. The Project Manager has overall responsibility for the project.

The Forest Service is the Managing Partner Agency for the project. The Forest Service will fund the project; advertise, award and manage associated contracts; and accept financial and/or personnel contributions from other participating agencies.

6. Organizational Staffing

The IBA – Phase 2 Project Team will consist of representatives from the incident business and operations community. The Team will provide direction and support to a contractor that is conducting the study.

Team members from the incident business and operations community will be recruited through general interagency informal announcements. Team Members will complete project work as a supplement to their normal work. Team Member commitments include weeklong meetings, fieldwork in an incident setting, and follow-up work tasks related to each meeting. During the project, this equates up to 40% of a team member's work time.

The Project Manager is Jon Skeels; the Business Lead is Mary Ann Szymoniak.

The US Forest Service Information Systems Project Office on a fee-for-service basis will provide all project administrative support.

7. Authority and Responsibilities

The IBA – Phase 2 Project Team has the following authority and responsibilities:

- To travel, hold meetings, and develop materials pursuant to the completion of the IBA – Phase 2 Project.
- To award contracts in support of the project.
- To spend appropriated dollars to complete the project.

8. Deliverables

The deliverables for this strategic planning project include:

1) **Project Plan.** The Project Plan will be used to:
    a. Guide project execution
    b. Document assumptions
    c. Facilitate communication among stakeholders
    d. Define key management reviews as to content, extent and timing
    e. Provide a baseline for progress measurements and project control
2) **Listing of Key Business Areas to be analyzed**. The Project team will develop a list of recommended business areas to be analyzed based on historical documents that lead to the chartering of the team and input from the business community. The Team will also utilize and/or enhance the Wildland Fire Enterprise Architecture (WFEA) analysis through close coordination with the WFEA Steering Group.
3) **Document that provides NWCG approval of the business areas to be analyzed**. The NWCG parent group will approve the scope of the analysis.
4) **Strategic Plan** - a holistic review and high level analysis of the business areas will result in a strategic plan that will identify the needs for changes to current incident practices that may or may not be currently automated, as well as the interconnectivity requirements of the various incident management functions. The plan will display the "as is" and the "to be" functionality and will identify the strategies that are part of the Government Business Modernization Plan. and overall agency strategic goals. This plan will describe a modular approach to future development, providing management with the "big picture" of the interrelated incident management business requirements.
5) **Prioritized recommendations of opportunities for future process change and/or incident base automation**. By providing management with a prioritized list, decisions can be made based on available funding or resources; ability to contribute to efficiency and cost containment goals; and other influences that affect decisions.
6) **Prepare CPIC pre-select documentation as appropriate to facilitate decisions by management**.

8. Reports and Evaluation

The IBA – Phase 2 – Project Team shall provide on a quarterly basis to the NWCG, a Project Status Report using the approved NWCG Status Report format.

The Project Manager will receive a written performance evaluation from the Business Lead with input from the NWCG IRM Program Manager that will be forwarded to the Project Manager's supervisor of record. The Project Manager will provide a written performance evaluation of each team member that will be forwarded to his or her supervisor of record.

9. Approvals

This charter is effective as of the date of approval by the NWCG membership. This charter may be amended upon recommendations of the IBA – Phase 2 Project Manager with the concurrence of the NWCG.

Prepared & Submitted By:

/s/ M.A. Szymoniak	5/7/2004	*/s/ Jon C. Skeels*	5/22/2004
Mary Ann Szymoniak, Business Lead	Date	Jon Skeels PMP, Project Manager	Date

Recommended By:

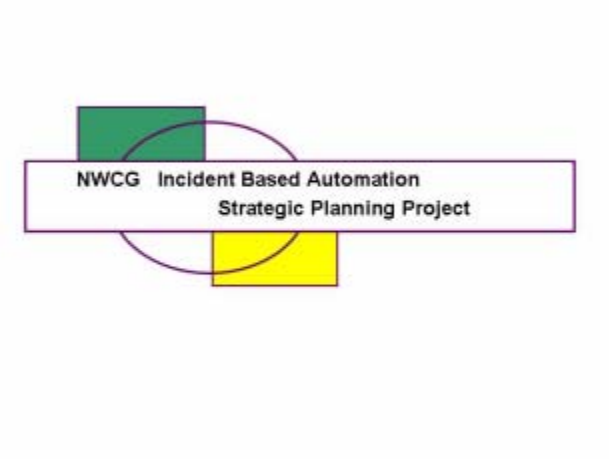
	6/8/2004		
/s/ Hallie Locklear			
Hallie Locklear, Chair Incident Business Practices Working Team	Date	Shari Shetler, Chair Information Resource Management Working Team	Date
Mike Long National Association of State Foresters; Eastern States	Date	Alice Forbes, AD, Operations Fire & Aviation Management, USDA Forest Service	Date
Larry Hamilton, Director Office of Fire & Aviation, Bureau of Land Management	Date	Edy Williams Rhodes, AD Park Operations & Education National Park Service	Date

Recommended By (Continued):

Phillip Street, Director Fire Management Fish & Wildlife Service	Date	Lyle Carlile, Director Fire & Aviation Bureau of Indian Affairs	Date

Approved By:

Kirk Rowdabaugh, Chair, NWCG National Association of State Foresters; Western States	Date



National Wildfire Coordinating Group (NWCG)

Incident Based Automation Action Plan

Version 1.0
April 10, 2006

Executive Summary

Each year, National Wildfire Coordinating Group (NWCG) agencies support a number of wildland fire and all-risk incidents. Incident management personnel are limited in their ability to use and share information. This is due, in part, to insufficient infrastructure and connectivity at the Incident Command Post, a lack of standardization of tools and data, and a lack of automated support for some work practices critical to the successful management of the incident.

Incident Management Teams (IMTs) have attempted to address these limitations in a variety of resourceful and creative ways. However, the Incident Based Automation Strategic Planning project is recognized as a new approach to addressing these challenges.

The National Wildfire Coordinating Group (NWCG) chartered the Incident Based Automation Strategic Planning project (IBA Phase 2 or IBA2) in 2004 to:

7) Identify and obtain agreement from NWCG agencies on key incident business areas to be included in strategic analysis and resulting planning documents.
8) Conduct business area analyses for the business areas identified by the IBA2 Team and agreed upon by NWCG agencies.
9) Develop a strategic plan that identifies recommended priorities for incident business area automation.
10) Utilize cost efficiencies by coordinating and sharing information with existing groups for working on issues relating to incident processes.

The IBA2 Strategic Planning Team was formed in October 2004 to meet these objectives by conducting site visits and interviews during the 2005 fire and hurricane season, and creating a Strategic Plan and recommendations to be presented to the NWCG early in 2006.

Summary of Team Findings

The IBA2 Strategic Planning Team used the results of their interviews and analysis to group their recommendations into three strategic areas:

- ***Data/information and applications/technology*** – this area centers on developing the information architecture necessary to facilitate data sharing through appropriate technologies and applications.
- ***Infrastructure/connectivity*** – this area focuses on ensuring that hardware, software, and connectivity to utilize applications and technology for incident management are standard, scaleable, agency-independent, and capable of being set up quickly.
- ***Trained/skilled workforce*** – this area focuses on ensuring that the incident management workforce is appropriately sized, as well as trained and skilled, to utilize and support an automated environment.

Achieving an appropriate balance, or synergy, among these three strategic areas will lead to significant improvements in situational awareness, decision support, information sharing, and accountability. Figure 1 graphically depicts the synergy among these three strategic areas.

Figure 3: IBA Strategic Areas

Below is a listing of the recommendations documented as a result of the Incident Based Automation Strategy Project. Each item is addressed by one or more actions which are described in the "Action Items" section below.

Data Information and Applications Technology	
Recommendation ID	Recommendation Description
1.1	Develop a comprehensive incident support system that allows information sharing and efficient data management throughout the lifetime of the incident, increases situational awareness, and provides for better decision support.
1.2	Enable better information flow within an incident's operational boundaries and to external entities. Provide teams with an interagency portal for dissemination of and access to current fire information.
1.3	Actively participate in enterprise architecture and data standardization activities across the interagency incident management community to ensure that incident management activities are well-supported by these efforts.
1.4	Formalize the process for implementing current and emerging technologies for incident management. Explore and adopt the use of 3-dimensional (3D) spatial coverage for many uses to enhance firefighter safety, improve situational awareness, and decision support.
1.5	Apply the use of Automated Identification Technology (AIT) to incident business processes identified as potential candidates.

Infrastructure / Connectivity	
Recommendation ID	Recommendation Description
2.1	Standardize and provide the computing and communications infrastructure for incident management for: use in a variety of incident settings, availability within the "first operational period" (defined as within 12 hours of the IMT's arrival), and the ability to scale to the incident environment.
2.2	The interagency community should remove information technology (IT) barriers that inhibit incident management teams.

Trained / Skilled Workforce	
Recommendation ID	Recommendation Description
3.1	Expand and modernize training methods to more effectively and efficiently teach emerging technologies, applications, and automation for business practices that will touch virtually all Incident Management positions.
3.2	Review all NWCG positions to more appropriately reflect "qualified" and "current" and to recognize the increasingly rapid change in automation, technologies, and applications.
3.3	Develop, design, and implement a streamlined method for training (which includes current technology and applications), that is focused on non-agency personnel with previous incident-related experience, so they can more quickly be "modernized" to supplement a declining workforce that may soon have more strict currency requirements.

Actions to be Taken

The action items stated below address each of the recommendations of the Incident Based Automation Strategic Plan. Some recommendations are addressed through a series of actions and not by a single action. It is important for the reader to reference the Strategic Plan for each of the recommendations as the recommendation text in itself may not provide enough detail to describe why various actions are taken.

An additional section titled "Business Practices" has been included which documents those actions which address recommendations from a business practice perspective and not directly from an information technology perspective. These actions will affect the successful use of information technology and the products (e.g. data) it delivers.

Data Information and Applications Technology

Action Item #1: I-Suite Web – Reengineer the I-Suite Application so that the application user interface is through browser based technology and can connect to client, local area network, or enterprise network (agency or pubic internet) to access local and enterprise scale databases.

In addition to being browser based, I-Suite shall:

1. Incorporate a supply module which provides services for checking supplies in / out to incident personnel
2. Incorporate the same Automated Identification Technology (AIT) used by the reengineered ICBS.
3. Incorporate a Health and Safety Module for tracking of accidents and medical events at the incident level.
4. Permit the entry of Resource Request information which can be exchanged with ROSS.
5. Permit the reading / import of Resource Request Status Information from ROSS which provides high level information to assist Incident Management Teams with planning efforts.
6. Implement Smart Card Technology for employee identification and qualifications authentication which meets the FIPS 201 standard.
7. Permit the export all data in a variety of formats including XML / DHS EDXL.

Supported Recommendations:	1.1, 1.2, 1.4, 1.5

Deliverables:	Browser Based I-Suite Application which incorporates: a supply module which provides services for checking supplies in / out to incident personnel, the same Automated Identification Technology (AIT) used by the reengineered ICBS, and a Health and Safety Module for tracking of accidents and medical events at the incident level.
Proposed Implementation Date:	June 1 2008
Responsibility:	IBA Interagency Incident Suite Support Team NWCG IBP working Team NWCG IOS Working Team NWCG IRM Working Team

Action Item #2: Internal and Public Web Based Information Portal – Develop a web based information portal to permit active information sharing both internally to the incident and with the public.

Supported Recommendations:	1.1, 1.2, 1.4

Deliverables:	Web-Based Portal which is configured so that information can be shared: both internally to the incident, Externally with other incidents, and with the public.
Proposed Implementation Date:	January 1, 2008
Responsibility:	IBA Phase 3 Team NWCG IBP working Team NWCG IOS Working Team NWCG IRM Working Team

Action Item #3:. Revise Incident Management Team operational procedures and business practices to incorporate the use of Enterprise Systems such as ROSS for resource ordering and tracking external to the incident.

Supported Recommendations:	1.1

Deliverables:	Revised and implemented Incident Management Team operational procedures and business practices which incorporate ROSS and other support systems into the incident base setting. This should include: 1. Locating terminal(s) at the ICP. The following positions could all benefit from this action: Resource Unit Leader, Supply Unit Leader, and Ordering Manager. 2. Locate a single point of origination for ROSS ordering at the ICP, utilizing the Ordering Manager position. Locate multiple read-only terminals at other needed locations around the ICP.
Proposed Implementation Date:	June 1, 2008
Responsibility:	CTSP Task Group DEW Group NWCG IOS Working Team

Action Item #4:. Conduct a comprehensive analysis of the incident organization to develop enterprise models which will assist management with determining the need for new systems, improvements to existing systems, or replacement systems which support all aspects of incident operations. The analysis shall consider:

1. The identified needs documented in the "Analysis / Discussion" within the text of the Strategy Plan for Recommendation 1.1.
2. The incorporation of Automated Identification Technology.
3. The incorporation of requirements to meet government regulations for personnel identification technology as described in FIPS 201 and associated documents.

Utilize the analysis as a basis to develop a replacement system(s) for the current suite of incident automation products.

This action includes

a) Validating the scope and functionality of current systems which support all aspects of an incident both internally and externally to the incident. This analysis is not limited to current automated systems, but also includes manual (hardcopy) systems (e.g. ICS Forms).

b) Documentation and need analysis of data (and supporting meta-data) for current systems.

c) Performing development life-cycle tasks (Business Requirements Analysis, Design, Construct, Test, Train, Deploy, Support, and Maintain) which result in a replacement system(s) which addresses the current and future needs of the incident management and support community.

Design new / reengineer current business processes / practices to support adaptability for ever-changing information requirements, and integrate these processes / practices with the new incident support system. To facilitate identification and implementation of process changes, develop and implement a change management process for business processes.

Supported Recommendations:	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 3.1, 3.2, 3.3

Deliverables:

1. The incident enterprise models shall include:

    a. Organization Chart - Computerized version of the incident organization chart including all organizational entities which support and/or benefit from incident information. This product assures that every organizational entity that supports an incident is documented. This chart is detailed to specific organization positions (e.g. Contracting Officer).

    b. Geographic Locations – A detailed listing and definition of all locations which serve an incident.

c. Business Function Area Listing – A chart which lists all of the major business functions which support an incident (ie: Planning, Finance). A business function is defined as a group of similar activities which together support the incident.

d. Business Function Listing - A detailed document which further decomposes the *Business Function Area Listing*. A business function that support one aspect or another of a business functional area (e.g. Time Keeping is a business function which belongs to the Finance Section).

e. Business Process Listing – A detailed document which further decomposes the *Business Function Listing*. A business process defines what is done and not how, relates to a specific act that has definable beginning and ending points, is executed repeatedly, can be described in terms of inputs and outputs, and typically starts with an action verb (e.g. Create Time Sheet is a business process which belongs to the Time Keeping business function).

f. Organizational Unit to Business Function Area Matrix – This matrix documents which organizational unit performs work in which business functional area. More then one organizational unit may work in a single business functional area. This matrix is high level and not detailed. Work is generally defined as Creating, Reading, Updating, or Deleting (CRUD) information. This matrix is high level and does not display data to the Organization Position level.

g. Organizational Unit to Geographic Location Matrix – This matrix documents the geographic location where work is performed. This assists with determining the most efficient location where work should be performed. This matrix is high level and does not display data to the Organization Position level.

h. Organization Position to Business Function Matrix - The matrix displays the role each position has in relationship to a Business Function. The following roles are documented: Creates Information, Reads Information, Updates Information, Deletes Information.

i. Organization Position to Business Process Matrix - The matrix displays the role each position has in relationship to a Business Process. The following roles are documented: Creates Information, Reads Information, Updates Information, and Deletes Information. This matrix will document where in the organization various business processes are duplicated, and which business processes are potentially reusable.

j. Listing of Proposed Data Focus Areas (subjects) which is further decomposed into entity types (e.g. an data focus area may be “Organizations” with entity types of “Organization Name”, “Address”, “Contact”).

k. Entity Metadata – Metadata is data about data. This information includes: data definition, data type (e.g. alphanumeric), data size (e.g. upto 30

characters), data format, and data purpose (e.g. attribute of an ORGANIZATION).

l. Business Process Model.

m. Matrix which cross reference all current systems (soft and hardcopy) with business processes.

n. Detailed Data Model which is fully normalized (3rd normal form). This is an extension of the Business Process Model.

o. Matrix documenting dependencies between Business Processes Data.

p. Matrix documenting opportunities for data sharing between Organizational Units..

q. Data Standard Proposal Documentation.

r. Data Dictionary which includes data metadata and further information such as: data domain lists, optionality rules, check constraints, data business rules, and established business practices.

2. Utilize the deliverables from #1 above to:

a. Perform detailed validation of all existing systems (hard and soft copy) to identify current and future automation focus areas. For each focus area define the scope and functionality.

b. Develop a matrix which cross references each existing system (hard and soft copy) to automation focus areas.

c. Recommend and prioritize new systems and/or changes to existing systems (hard and soft copy) to address the focus areas.

i. For new systems, this task will include the documentation of system scope and high level system business requirements.

ii. For existing systems, this task will identify specific changes that must be completed and include documentation of revised system scope and high level system business requirements.

iii. Recommend system interconnection opportunities.

iv. Recommendations shall include estimates for schedule, cost, and resources, inclusive of administrative support. Cost estimates must consider both internal and outsourced labor.

3. Perform development life-cycle tasks (Business Requirements Analysis, Design, Construct, Test, Train, Deploy, Support, Maintain) which result in a replacement system(s) using the deliverables from #1 and #2 above.

4. New / reengineered current business processes / practices to support adaptability for ever-changing information requirements, and integration of these processes / practices with the new incident support system.

Proposed Implementation Date: This project should begin immediately with previously allocated FY-2006 funding. The anticipated duration of this action is 3-5 years.

Responsibility: NWCG IBP Working Team, NWCG IOS Working Team, NWCG IRM Working Team

Infrastructure and Connectivity

Action Item #5: Develop and award national level performance based contracts which deliver computer infrastructure and support to incident bases during the first operational period (defined as within the first 8-12 hours of the IMTs arrival) and for each operational period after the first that an incident is in place. The infrastructure shall include operational office space, computers (client machines, servers (application, network, web), printers, plotters, and other peripherals), sanitized power, standard commercially available software (e.g. automated office, GIS), internal use software (e.g. I-Suite) and internet connectivity.

Systems deployed shall be capable (and secured) of connecting to data sources for GIS, Resource Information, File Transfer Protocol (FTP), Weather Information, Incident Records, and for electronic office access (e.g. email).

The amount and kind of infrastructure shall be scalable (up and down) so that it can be sized to fit the needs of the incident as it evolves through the incident life-cycle.

Incident Management Teams shall be able to order optional items such as display monitors which can be installed in incident personnel common areas, additional peripheral devices (e.g. printers, barcode readers, LCD Projectors).

Supported Recommendations:	1.2, 2.1

Deliverables:	Performance Based Contract for Information Technology Infrastructure delivery and support.
Proposed Implementation Date:	April 1, 2007
Responsibility:	IBA Phase 3 Project Team Managing Partner Acquisition Management Staff

Action Item #6: Pre-identify several small teams of rapidly deployable experts to help IMTs with technologies and applications. Initially, these experts' roles would be to assist in set-up, then supplement knowledge deficiencies on the IMT when needed. These teams would be quickly demobilized, so they could be available to another IMT. This process will help ensure that applications and infrastructure can be utilized within the first operational period. It would also help ensure that users understand and can better utilize technology and applications.

Supported Recommendations:	3.1

Deliverables:	Pre-identified teams which are rapidly deployable to help IMTs with technologies and applications.
Proposed Implementation Date:	June 1, 2007
Responsibility:	IBA Phase 3 Project Team CTSP Task Group

Action Item #7: Develop information sharing forums with Agency Information Technology Staffs to document issues, and seek solutions related to the use of Information Technology at Incident locations. The objectives of this forum shall be to:

1. Remove barriers which limit the use of Information Technology at the incident site and at locations which support the incident.
2. Identify policies and requirements that constrain the ability of non-Agency personnel to participate on Incident management Teams (e.g., prohibition on non-Agency personnel from participating in training).
3. Identify agency IT rules/policies/procedures that interagency incidents must now comply with that constrain their ability to effectively complete their mission.
4. Gain commitment from agency leadership to evaluate new and current IT agency rules/policies/procedures for impacts in Incident Management operations, and if necessary develop waivers / exceptions to meet incident requirements.

Supported Recommendations:	2.2

Deliverables:	Detailed descriptions and proposed solutions to issues and barriers which are inhibiting to use of Information Technology by Incident Management Personnel. Action plans which describe the issues / barriers, proposed solutions, actions for mitigation, responsible party's, deadlines, and monitoring processes to assure long term support.
Proposed Implementation Date:	October 1, 2006
Responsibility:	1. NWCG – Information Resources Management Working Team 2. Agency Information Technology Staffs 3. CTSP Task Group

Action Item #8: Develop a comprehensive policy which is supported by current government regulations for the use of Wireless Communication Devices at the incident base and in locations where it is not advantageous to use a hardwired traditional network. It is assumed that respective agency IT Staffs will be involved in the effort.

Supported Recommendations:	2.2

Deliverables:	A Comprehensive policy which is supported by current government regulations for the use of Wireless Communication Devices at the incident base and in locations where it is not advantageous to use a hardwired traditional network
Proposed Implementation Date:	May 1, 2008
Responsibility:	1. NWCG – Information Resources Management Working Team 2. Agency Information Technology Staffs 3. CTSP Task Group

Trained / Skilled Workforce

Action Item #9: Change the training course and curriculum review/update process so that it can be done in an expeditious manner. This work includes:

1. The review and modification of all position curriculums and training requirements to ensure that current technology and proficiency in standardized software applications are included.
2. Implementation of a process to regularly review and update curriculums and training requirements to ensure that current technology and proficiency in standardized software applications are included.

Supported Recommendations:	3.2

Deliverables:	Revised course revision process
Proposed Implementation Date:	TBD by the NWCG Training Working Team
Responsibility:	NWCG Training Working Team

Action Item #10: Develop computer and/or web-based training courses. This includes:

1. Ensuring that courses are frequently updated to reflect changes in applications and technology.
2. Developing a plan to supplement a large percentage of classroom training with a computer- or web-based technology system.

Supported Recommendations:	3.1

Deliverables:	Computer and/or Web Based Training Courses
Proposed Implementation Date:	TBD by the NWCG Training Working Team
Responsibility:	NWCG Training Working Team

Action Item #11: Expand the role and the effectiveness of the Training Specialist (TNSP) position. This TNSP responsibilities should include promoting and administration of web-based training on IMTs and facilitate cross-training. In addition, this role could include a link to the check-in process that allows the TNSP to update qualifications from the ICP.

Supported Recommendations:	3.1

Deliverables:	Revised Training Specialist responsibilities
Proposed Implementation Date:	TBD by the NWCG Training Working Team
Responsibility:	NWCG Training Working Team

Action Item #12: Provide annual technology refresher training for all positions to maintain a more current workforce (Agency, Non-Agency, AD/EFF, and Contract). This action includes:

1. Consider using web-based training technologies to maximize availability of courses while minimizing travel.
2. Encouraging "cross training" for positions (e.g., train the Operations Section Chief in Resources Unit Leader skills using I-Suite).

Supported Recommendations:	3.1

Deliverables:	Annual Technology Refresher Training
Proposed Implementation Date:	TBD by the NWCG Training Working Team
Responsibility:	NWCG Training Working Team

Business Practices

Action Item #13:. Business Practice – Resource Pre-Orders

Establish resource pre-ordering practices and standards which assure that critical need resources (Aircraft, Crews, Equipment, Overhead, Supply, Services) arrive within the first operational period that an incident team is managing an incident.

Supported Recommendations:	1.1

Deliverables:	Standards and established business practices for the use of Resource Request Pre-Orders which are published in the National and Geographic Mobilization Guides.
Proposed Implementation Date:	TBD
Responsibility:	NWCG IOS Working Team, National Incident Commanders, Dispatch Efficiency Workgroup

Action Item #14:. Business Practice – Incident Management Team Transition

Document standard methods and business practices for incident management transition. Standard methods and business practices shall be established to assure the smooth and timely transition (e.g. minimal impact to incident operations and other activities within the host unit) of the management of incidents from the host unit to an incident management team, from incident management team to incident management team, and from incident management team to host unit. This shall include the following functional areas (minimum) administration, dispatch (resource status, mobilization, and demobilization), operations, logistics, finance, safety, communications, and public affairs.

Supported Recommendations:	1.1, 1.2

Deliverables:	Documented standards and business practices for incident management transition.
Proposed Implementation Date:	TBD
Responsibility:	NWCG IOS Working Team National Incident Commanders

Action Item #15: Business Practice – Electronic Filing

Develop standards and business practices the electronic filing of incident data.

Supported Recommendations:	1.1

Deliverables:	Published standards and business practices for electronic filing of incident data.
Proposed Implementation Date:	TBD
Responsibility:	NWCG IOS Working Team National Incident Commanders CTSP Task Force

Recommendations Addressed through Current Projects

Actions that address all or portions of some recommendations have already been taken through existing system capability, agency policy, or business practice. Below are listings by recommendation where actions have been taken. It should be noted that recommendations list here may also be addressed by additional actions in the "Actions to be Taken" section of this document.

Recommendation 1.1: Develop a comprehensive incident support system that allows information sharing and efficient data management throughout the lifetime of the incident, increases situational awareness, and provides for better decision support.

Current Actions:

1. The Strategic Plan section for Recommendation 1.1 through sub-section "Resource Ordering and Supply Distribution" discusses the need to use ROSS and ICBS at the incident level. ROSS currently can be used at the Incident Level through the use of the "Incident Team" role. Changes in Incident Management Team business practices and processes to incorporate systems such as ROSS are necessary to realize the full benefit of these systems.

   The current ICBS Reengineering Project will provide an interconnection between ROSS and ICBS so that resource requests can be created in ROSS and transmitted directly to the Incident Cache.

2. The implementation of the Automated Flight Following System (AFF) has provided a vastly improved ability for the tracking of aircraft. The use of this system at the dispatch and incident level is available.

Recommendation 1.3: Actively participate in enterprise architecture and data standardization activities across the interagency incident management community to ensure that incident management activities are well-supported by these efforts.

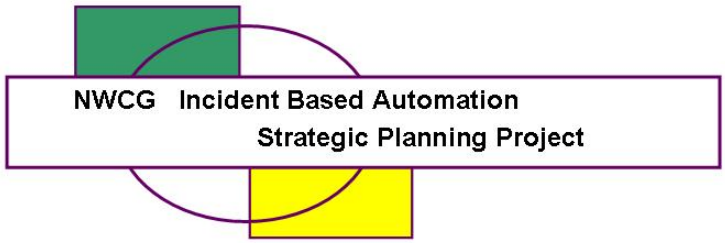
Current Actions:

1. The NWCG has chartered the National Wildfire Enterprise Architecture (NWFEA) project which has active participation from both technical and business community members.
2. The NWCG has established the Data Administration Working Group (DAWG) which focuses on the establishment, validation, and approval of interagency data standards. The membership of the DAWG is comprised of both technical and business community representatives.
3. The NWCG IRM Working Team has delegated representatives to the Department of Homeland Security (DHS) Emergency Data Exchange Language (EDXL) Working Group.
4. Business Community Members have been actively involved with the review and potential implementation of the Common Alter Protocol (CAP).

The Charters for both these groups require representation from the incident management community.

NWCG Incident Based Automation Strategic Planning Project IBA – Phase 2

Site Visit Plan



Draft v1.4.2

June 1, 2005

Approvals

Submitted by

_____ _____

Dorothy Albright - Project Manager Date

Reviewed by

_____ _____

Jon C. Skeels, PMP - Project Management Advisor Date

Approved by

_____ _____

Mary Ann Szymoniak - Business Lead Date

Table of Contents

1 Introduction

1.1 IBA - Phase 2 Project Background

The Interagency Incident Based Automation Strategic Planning Project (IBA Phase 2 or IBA2) is the second phase in a series of multiple projects which are intended to put in place an Interagency Incident Based Automation System. The IBA2 project is chartered by the National Wildfire Coordinating Group (NWCG). The focus of this phase is to identify key business areas, conduct business area analyses, conduct strategic planning, and to provide a prioritized list of automation recommendations. Figure 1 below displays the conceptual layout of the projects.

IBA Phase 1 Stabilization	IBA Phase 2 Strategic Planning	IBA Phase 3 Component Projects
I-Suite Stabilization and Support Project (IRSS, ICARS,ITS,IAP)	**Incident Based Automation Strategic Planning Project**	**Incident Based Automation Component Projects**
• Stabilize I-Suite Applications • Initiate Change Management • Provide User Support • Provide Application Maintenance	• Identify Key Business Areas • Conduct Business Area Analysis • Conduct Strategic Planning • Prioritize and Recommend Projects for Phase 3	• Develop Business Area Components • Develop Infrastructure Components

Figure 1 - NWCG Incident Based Automation Project Phases

The NWCG chartered the IBA2 Team with studying the workflow during an incident to identify the need for changes to current incident practices that may or may not be currently automated, as well as the interconnectivity and data sharing requirements of the various incident management functions. The NWCG approved the following business areas for analysis:

- Operations
- Plans
- Finance
- Logistics
- Safety
- Information
- Dispatch
- Cache
- General

1.2 Purpose

The purpose of this Site Visit Plan is to provide an overall framework for coordinating a series of approximately sixteen site visits between May and September 2005. Specifically the plan will describe:

- Why the site visits are taking place

- Where will the site visits occur
- How long will each site visit take, how the team will be deployed
- When the site visits will start
- Who will perform the site visits, including roles and responsibilities
- What is the interview process entails

1.3 References

- NWCG Project Charter
- Project Plan
- Statement of Work

2 Site Visit Strategy

2.1 Site Visit Objectives

Two types of site visits will be conducted – incident site visits, where the IBA2 team visits an Incident Command Post (ICP), and external entity site visits, where the IBA2 team visits a non-ICP entity where incident business is conducted.

The objectives of the site visits will be to complete the following by October 2005:

1. Visit 8 to10 different incident sites representing a variety of agencies, geographic areas, phases, and types. At each incident site, the group will try to interview at least one person within each of the incident business areas (e.g., Planning, Operations). However, this may not be possible on every incident.
2. Visit 4 to 6 external entities conducting incident business at places other than the ICP. At each external entity, interview at least two people that interact with the various incident business areas.
3. Through the interview process:
   - Review business processes, validate, and refine the "as-is" process models and identify requirements;
   - Identify opportunities for improving the way business is currently done (e.g., automating business processes), including identifying creative solutions and innovative ideas; and
   - Collaboratively work to develop an appropriate "to be" process model.
4. Document the interview findings for use in later strategic planning activities. **Sites To Be Visited**

The IBA2 site visits will include both visits at actual incidents and interviews with external entities that directly support an incident (see Figure 2). Previous efforts revealed that conducting incident interviews on-site produces good feedback as interviewees are focused on the task at hand. The IBA2 teams will plan to conduct interviews at 8 to10 different incident sites and 4 to 6 external support entities. Each site visit is expected to be approximately 3-5 days in duration.

2.2.1 Incident Site Visits

The incident site visits shall represent a broad spectrum in terms of host agency, geographic area, and incident scenarios. Opportunity will play a role in the ability to sample various scenarios. As incident sites are selected to visit, the goal shall be to maximize the variety of scenarios using the factors identified below:

- Incident Management Team (IMT) Type – the organizational structure of the team: Type I, or Type II, Area Command, or Wildland Fire Use.
- Incident Management Team (IMT) Home Geographic Area – ensure that IMTs are interviewed representing a diversity of geographic areas and avoid following the same team to different incidents.
- Management Phase – experiences from the different stages of an incident such as; local transition to IMT, buildup, steady-state, transition from IMT to IMT, demobilization, transition from IMT to local unit.
- Host Agency – for the incident, be it the US Department of Agriculture (USDA), US Department of Interior (USDOI), or a state.
- Incident Geographic Area – ensure that a wide range of host locations and state/regions are visited.
- Incident Setting/Type – experience different locations where incidents are managed, including; urban interface, remote forest or rangelands, common wildland access settings, Wilderness, non-fire emergencies.
- Other Unique Features – especially as it could impact business and information communication functions.

These factors are summarized and displayed in Table 1.

Table 1 – Factors for Incident Site Visit Selection

IMT Type	IMT Home Geographic Area	Management Phase	Host Agency	Incident Geographic Area	Incident Setting/ Type	Other Unique Features
Area Command	Alaska	Build-up	USDA	Alaska	Wildfire/Urban Interface	Complex (multiple incidents)
Type I	Northwest	Steady State	USDOI	Northwest	Wildfire/Remote	Incident with Zone structure.
Type II	Northern California	Demobilization	States	Northern California	Wildfire/General	
Wildland Fire Use	Southern California	Transitions		Southern California	Wildland Fire Use	
	Northern Rockies			Northern Rockies	Non-Fire	
	Eastern Great Basin			Eastern Great Basin		
	Western Great Basin			Western Great Basin		
	Southwest			Southwest		
	Rocky Mountain			Rocky Mountain		

IMT Type	IMT Home Geographic Area	Management Phase	Host Agency	Incident Geographic Area	Incident Setting/ Type	Other Unique Features
	Eastern Area			Eastern Area		
	Southern Area			Southern Area		

2.2.2 External Entity Site Visits

The IBA2 team will visit external support entities where incident business is conducted, other than the Incident Command Post (ICP). For example, the team will visit Dispatch Centers, Buying Teams, Administrative Units, and Aviation Facilities that directly support aviation operations at an incident. If there is an opportunity, the team plans to visit Area Command(s), Geographic Area Multi Agency Commands, Cost Containment Groups, and Payment Centers. Figure 2 depicts many examples of these groups:

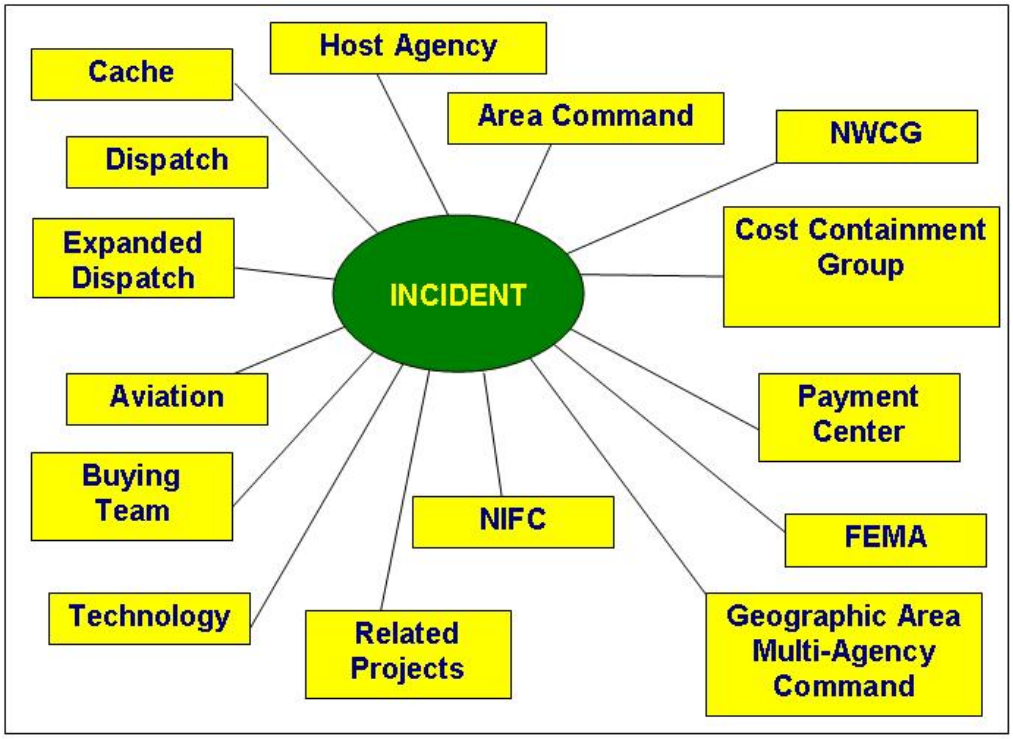


Figure 2 – External entities that directly support an incident

2.3 Site Visit Team Members and Functions

There are three types of team members – a Government Escort, a Subject Matter Expert (SME), and a Business Analyst. A team member may serve multiple roles (see Table 2).

Table 2 – Team Members and Roles

Team Member	Role		
	Government Escort	SME	Business Analyst
Dorothy Albright	X	X	
Mary Ann Szymoniak	X	X	
Michael Morgan	X	X	
Valerie Frankel			X
Tani Converse			X
Steve Pedigo		X	
Dave Lukens		X	
Government Employee Pool	X		

There are two primary functions for the team members – interviewing and note taking. Interviewers will be responsible for asking questions and follow-up or clarifying questions to statements made by the interviewee. The note taker will have primary responsibility for ensuring that interviewee comments on business process changes, opportunities for improvement, etc. are recorded accurately. The note taker may ask clarifying questions to ensure that the interviewee's comments are understood; however, these questions should be limited to minimize confusion for the interviewee. The interviewer plays a critical role in verifying the information recorded by the note taker and ensuring that information from the interviewee is captured in the IBA2 Team's site visit data collection tool.

Any additional participants will be welcome to ask limited questions and expected to take notes to supplement the note taker. For example, the third participant may take primary responsibility for recording comments and subsequently updating the process model.

2.4 Site Visit Logistics

2.4.1 Preparations

- All team members will provide an availability list to the Government Project Manager and Business Lead that includes a beginning date and through date. This list should be updated monthly and circulated throughout the team.
- Resources team members should have ready to go:
  - Back Pack or suitcase with
    - Cotton clothing for up to 5 days
    - Non-slip boots, gloves, (Team T-shirt if available)
    - Nomex clothing (to be provided by the government)
    - Medicines and emergency food
    - Note: sleeping bag, tent, etc will be obtained at the incident cache if needed
  - Project materials and information packs include the following:
    - Letter Signed by Chair of NWCG IRM Working Team
    - Interviewee Packets

  - Briefing Paper
  - Summary Form (describing use of interview notes and recordings, as well as authorizing the IBA2 project team to contact the interviewee after the interview for clarification/additional information)
- Checklists
- Contact info
- Website info
- Workbooks (see Section 3.1)
  - Interview Questions
  - "As Is" Business Model
- Laptops, cell phones, digital camera, and digital recorder
- Government ID's for government representatives
- Government contractor ID's for SAIC contractors

2.4.2 Mobilization

2.4.2.1 Incident Site Visit

The Government Project Manager, Dorothy Albright, and the Business Lead, Mary Ann Szymoniak, will be responsible for identifying locations for incident site visits. SAIC may suggest incident site visits to the government; however, the Government Project Manager and Business Lead will have final decision authority. The Government Project and Business Lead will:

1. Monitor the situation report daily beginning on March 1 to determine what team to visit based on site visit selection factors listed above
2. Obtain permission from the unit's line officer
3. Contact the Incident Commander (IC) to set up the visit
4. Contact the IBA (if applicable) to brief the visit
5. Obtain local contact numbers (dispatch, local unit, incident base camp)

Once a site is selected, the government will notify the IBA2 Team of the selection. IBA2 Team notification procedures are as follows:

1. The Government Project Manager will identify a Government Escort to accompany the team.
    a. The Government Project Manager will contact the government team members to identify a Government Escort using the following mechanisms in the following order: office telephone, cell phone, home phone, as well as by email.
    b. If a team member is unable to confirm participation within six (6) hours, another team member may be asked to participate.
    c. If no Government Escort can be found on the immediate IBA2 Team, the Government Project Manager will contact other government personnel to identify a Government Escort.

d. It is assumed that an IBA2 Team cannot be deployed without a Government Escort; therefore, if a Government Escort cannot be found, the notification procedure will terminate.

2. Once a Government Escort is identified, the Government Project Manager will contact the SAIC Project Manager, Karen Beck using the following mechanisms in the following order: office telephone, cell phone, home phone, as well as by email.

    a. If the Government Project Manager does not receive a response within three (3) hours from the SAIC Project Manager, the Government Project Manager will contact the Business Analyst, Tani Converse to act as the SAIC Project Manager.

    b. The Government Project Manager will provide information on the selected incident visit – including the incident location, airport, and desired arrival time for team members.

    c. If possible, the Government Project Manager will also identify the preferred hotel.

3. The SAIC Project Manager will contact the SAIC Business Analysts and Subject Matter Experts (SMEs) to identify participants for the incident visit. The protocol will be to contact them via office phone, cell phone, and home phone, as well as via email.

    a. If a team member is unable to confirm participation within six (6) hours, another member may be asked to participate.

    b. If a Business Analyst or SME cannot be confirmed to participate, the SAIC Project Manager will contact the Government Project Manager via office phone, cell phone, and home phone, as well as via email, to convey information regarding the scheduling challenge.

    c. The SAIC Project Manager will also notify the other SAIC team members who were available for the visit of the scheduling challenge.

    d. The Government Project Manager then will make a decision as to whether the site visit can proceed. (For example, if a SME cannot be located, the Government Escort may be able to perform a dual function as a SME and an Escort; therefore, the Government Project Manager may decide to proceed with the incident site visit.)

    e. The Government Project Manager will notify the SAIC Project Manager of the decision regarding the visit. If the visit is cancelled, the Government Project Manager will notify government team members. The SAIC Project Manager will notify SAIC personnel of the cancellation of the visit.

4. Official confirmation of the incident site visit will be made by the Government Project Manager. The Government Project Manager will confirm the site visit with the government team members as well as the SAIC Project Manager. If the hotel has not been designated, the Government Project Manager will designate a hotel in the official confirmation.

5. Once the Government Escort, Business Analyst, and SME receive confirmation of the visit, they are responsible for making their own travel arrangements. They will email their flight arrival information to the other team members so everyone is informed of the airlines, flight numbers, and arrival times.

    a. Prior to official confirmation, team members may make tentative travel arrangements.

    b. To minimize change fees associated with air travel, official confirmation is required before finalizing travel arrangements.

6. The Government Escort will obtain a vehicle for all transportation needs and will coordinate a liaison location with the team members.

On site

- Prior to the site visit, the Government Project Manager will designate an individual on the team to interact with and brief the incident leadership.
- Once on site, the Designee will contact and brief appropriate line officer / IBA
- The Designee will initiate contact with and brief the IC/Deputy IC and:
    - Share briefing papers
    - Verify dress code for camp (have nomex available)
    - Identify an arrival time on site (he IBA2 Team will try to arrive at approximately noon).
- Based on discussions with the IC/Deputy IC, the team will schedule appointments with different business areas. If the team is referred to Section Chief(s), the Designee will contact them and ask for appropriate individuals to interview.
- All interviews will be targeted to last one hour, with flexibility to go longer if the session is productive and the interviewee is available to do so.
- The Team will attend at least one briefing (e.g., planning meeting, strategic meeting, evening briefing).
- The Team will attend IMT transitions (if the opportunity presents itself).

Demobilization

- The Designee may be asked to debrief the IMT and/or Agency Administrator (e.g., prepare a brief summary of the visit). The team will assist the Designee in preparing materials for a debrief.
- The Designee will leave contact information in case IMT staff has questions about procedures or if issues arise.
- If possible, the Designee will check out with the Incident Commander.
- The Government Project Manager and Business Lead will follow-up with a thank you note to the Incident Commander

2.4.2.2 External Entity Site Visit

The Government Project Manager, Dorothy Albright, and the Business Lead, Mary Ann Szymoniak, will be responsible for identifying locations for external entity site visits.

If desired, the Government Project Manager may ask the SAIC Project Manager for assistance identifying specific individuals to talk with at the external entity. The SAIC Project Manager will contact other SAIC team members to develop a list of potential interview candidates. This list will include the position and specific names (if available). If requested by the Government Project Manager, the SAIC team may also initiate preliminary contacts with the potential interview candidates to determine availability and ability to participate in an interview.

The Government Project Manager and Business Lead will have final decision authority regarding scheduling interviewees at an external site visit. In addition, unless otherwise specified, the Government Project Manager and Business Lead will contact the interviewee candidates, formally request an interview, and schedule a specific time for a meeting.

Once an external entity site is selected, the Government Project Manger will initiate notification procedures for the team. These procedures are as follows:

1. The Government Project Manager will identify a Government Escort to accompany the team.
    a. The Government Project Manager will contact the government team members to identify a Government Escort using the following mechanisms in the following order: office telephone, cell phone, home phone, as well as by email.
    b. If a team member is unable to confirm participation within six (6) hours, another team member may be asked to participate.
    c. If no Government Escort can be found on the immediate IBA2 Team, the Government Project Manager will contact other government personnel to identify a Government Escort.
    d. It is assumed that an IBA2 Team cannot be deployed without a Government Escort; therefore, if a Government Escort cannot be found, the notification procedure will terminate.

2. The Government Project Manager will contact the SAIC Project Manager, Karen Beck using the following mechanisms in the following order: office telephone, cell phone, home phone, as well as by email.
    a. If the Government Project Manager does not receive a response within three (3) hours from the SAIC Project Manager, the Government Project Manager will contact the Business Analyst, Tani Converse to act as the SAIC Project Manager.
    b. The Government Project Manager will provide information on the selected external entity visit – including the location, airport, and desired arrival time for team members.
    c. If possible, the Government Project Manager will also identify the preferred hotel.
3. The SAIC Project Manager will contact the SAIC Business Analysts and SMEs to identify participants for the external entity visit. The protocol will be to contact them via office phone, cell phone, and home phone, as well as via email.
    a. If a team member is unable to confirm participation within six (6) hours, another member may be asked to participate.
    b. If a Business Analyst or SME cannot be confirmed to participate, the SAIC Project Manager will contact the Government Project Manager via office phone, cell phone, and home phone, as well as via email, to convey information regarding the scheduling challenge.
    c. The SAIC Project Manager will also notify the other SAIC team members who were available for the visit of the scheduling challenge.
    d. The Government Project Manager then will make a decision as to whether the external entity visit can proceed. (For example, if a SME cannot be located, the Government Escort may be able to perform a dual function as a SME and an Escort; therefore, the Government Project Manager may decide to proceed with the incident site visit.)
    e. The Government Project Manager will notify the SAIC Project Manager of the decision regarding the visit. If the visit is cancelled, the Government Project Manager will notify government team members. The SAIC Project Manager will notify SAIC personnel of the cancellation of the visit.
    f. Official confirmation of the external entity site visit will be made by the Government Project Manager. The Government Project Manager will confirm the site visit with the SAIC Project Manager. If the hotel has not been designated, the Government Project Manager will designate a hotel in the official confirmation.
4. Once the Government Escort, Business Analyst, and SME receive their confirmation, they are responsible for making their own travel arrangements. They will email their flight arrival information to the other team members so everyone is informed of the airlines, flight numbers, and arrival times.

a. Prior to official confirmation, the team members may make tentative travel arrangements.

b. To minimize change fees associated with air travel, official confirmation is required before finalizing travel arrangements.

5. The Government Escort will obtain a vehicle for all transportation needs and will coordinate a liaison location with the team members.

On site

- Prior to the site visit, the Government Project Manager will designate an individual on the team to lead the introductions and provide a project overview.
- All interviews will be targeted to last one hour, with flexibility to go longer if the session is productive and the interviewee is available to do so.

Demobilization

- The Designee will leave contact information in case the interviewee has questions about procedures or if issues arise
- The Government Project Manager and Business Lead will follow-up with a thank you note to the interviewee.

3 Interview Strategy

The interviewee will be asked up front if they are comfortable with having their conversation recorded. All recordings will be destroyed at the end of the project; this will be conveyed to the interviewee. If a recorder is used, the interviewer should ask the interviewee not to identify themselves to ensure confidentiality, explain that the recording of the session will be used for verification only, and provide the opportunity for the interviewee to ask that the recorder be turned off at any time. A digital camera may be used to document visits and provide interesting photos for final document.

The format for the interview will be questions and answers. The interviewer will use a set of general questions as a framework for discussions as well as follow-up questions for additional clarity. To maximize consistency across interviews, the interviewer will try to cover as many of the general questions as possible. The order of the questions will vary from interview to interview; however, to ensure consistency across interviews, the interviewer should try to ask as many questions identified as possible. The interviewer should recognize the need for flexibility and allow the interviewee to focus on specific areas of interest to them as long as the discussion is relevant to the overall IBA2 project. The interviewer should paraphrase to ensure mutual understanding of the interviewees comments and also provide an opportunity for free-flowing dialog.

Simple and easily understandable graphics will be used to initiate discussions of the business process. Updates to the process model will be recorded after the interview. During the business process model validation exercise, ideas regarding opportunities for improvements may emerge. These should be recorded outside the modeling exercise to ensure that the ideas are not lost.

All feedback on the business process model will be captured in an updated version of the model in the modeling tool. All other feedback will be captured in the IBA2 Documentation Tool, which will serve as the repository for all non-model related information. Raw materials (e.g., hand drawn updates to the model, hard copy notes, recorded conversations) will be clearly marked with information about the interview (e.g., date, name of incident) and will be saved for use if needed.

Where possible, the interview team will also observe operations to further understand how business is currently conducted. The interview team should also provide interviewees with an opportunity to demonstrate their work processes and work improvements that they have developed. This will enable the IBA2 Team to identify additional potential improvements, as well as gather information from incident personnel whom the interview team may not be scheduled to interview.

The interview team will provide an incentive (trinket) to thank those who participate.

3.1 Interview Topics

The following items provide a high-level overview of the interview topics and some sample questions associated with each topic.

1. Business Area(s) in which person performs work
   - 1.1 In 60 seconds, how would you describe your job?
   - 1.2 What is your primary focus (e.g., finance, logistics)?
2. Interconnections between their primary Business Areas and other Business Areas

3. Business Process Validation

   3.1 Here is a high-level business process model for the <*insert business area name*> business area. Let's review and discuss improvements you would make to this model.

4. Understanding the two perspectives during a team transition (e.g., Type II, Type I, Complex)

   4.1 Are there differences in team to team protocols?

   4.2 What challenges do you see associated with transition?

5. Automated Tools Used

   5.1 Do you use any hardware or software to do your job?

   5.2 You mentioned that you use X tool. Can you describe how you use it and what it does to help you do your job?

6. Manual Tools/Forms Used

   6.1 What paper forms or reports do you have to complete? (Specifically try to determine non-ICS forms used.)

7. Opportunities for Business Process Changes

   7.1 Could anything be improved in the way you are required to do your work?

   7.2 What is the most difficult or time consuming part of your job?

8. Opportunities for Automation

   8.1 Are their business processes that you could see automating?

9. Opportunities for Standardization

10. Validate issues/action items produced from other efforts

    10.1 Is there anything we haven't asked that you would like to share with us?

Interviewer "Workbooks" will be developed that include items such as the draft "as is" business process model and general questions that are meant to be used across business areas. This workbook will be used as guide by the interviewers to help ensure consistency across the interviews. In addition, throughout the project, these workbooks will be updated based on the findings at site visits.

3.2 Interview Template

The following types of data elements from the site visits will be collected in the IBA2 Documentation Tool.

Site Visit Name	
Incident Type	
Wildland Urban Interface (WUI)	
Wildland Fire Remote	
Fire Use	
Team Name	
Interviewee Name(s)/Position	
Agency	
Interview Team (Names, Roles)	
Date	
Location	
Transition (Yes or No) If yes, Details of Transition	
60-Second Job Description	
Business Area Reviewed	
Business Area Requirements	
Incident Business Areas that They Interact With	
Business Process Validation Notes	
Automated Tools Used/Notes	
Automation Opportunities Identified	
Manual Tools/Forms Used	
Business Process Change Opportunities	
Standardization Opportunities	
Answers to Specific Questions	

4 Post Site Visit

4.1 Communications

- A team conference call will be scheduled at the end of every visit. Site Visit team members should be prepared to talk about findings, experience, and any suggested changes to the roles and interview questions.
- A feedback mechanism using a generic email on the IBA2 website will be available for people to send questions, suggestions, comments, etc.

4.2 Documentation

- All feedback will be captured in IBA2 Documentation Tool.
- Business process models will be updated (if appropriate) based on the interviews.
- Site Visit Reports will be produced by SAIC. These Reports shall include items such as: identification of the person/people interviewed, geographic area, host agency, business area reviewed, and a summary of findings. The summary shall describe manual and automated tools used, as well as automation, standardization, and business process change opportunities.
- The SAIC Site Visit Reports will be submitted five business days after completion of the site visit. This deadline may change if multiple site visits are held back to back. If this does happen, the Government and SAIC Project Managers will agree to a new deadline for the Site Visit Reports.

4.3 Confidentiality

- The IBA2 team agrees to hold all data obtained through the interview process in strict confidence. Data collected will be used solely to conduct a Business Process Analysis. Any requests for data by other government employees, consultants, or contractors will have to document a specific need to know in the performance of their work for NWCG. Upon approval, data will be shared without reference or inference to any specific individual or team.
- Any direct quotes and/or photos shall have permission of the interviewee and the team.

5 Budget

- The table below summarizes the estimated hours, labor costs and travel expenses to complete the site visit interviews, compile site visit documentation, and review findings with the IBA2 team.

	Hours	Labor Costs	Travel Expenses	Total
Government	1,025	$51,500.00	$28,831.00	$80,331.00
SAIC	1,930	$203,109.00	$38,752.00	$241,861.00
Totals	**2,955**	**$254,609.00**	**$67,583.00**	**$322,192.00**

6 Document Revision History

Version Number	Date	Description
V1.0	February 4, 2005	Initial draft of proposed plan
V1.1	March 16, 2005	Revised draft of proposed plan, including comments from Jon Skeels, Mary Ann Szymoniak, and the team.
V1.2	March 21, 2005	Final site plan per approval of Jon Skeels
V1.3	March 25, 2005	Added summary budget numbers
V1.4	May 16, 2005	Updated the Site Visit Plan to reflect additional clarifications regarding external entity/incident site visits, the process for notification of a site visit, and other information.
V1.4.1	May 18, 2005	Made additional modifications to the updated Site Visit Plan
V1.4.2	June 1, 2005	Modified external entities diagram

Appendix E: List of Automation Products

IBA Business Area	Acronym	Title	Description
All	ISUITE	ISUITE	The I-Suite application consists of the Incident Resource Status System (IRSS), Incident Cost Accounting and Reporting System (ICARS), Incident Time System (ITS) and the Incident Action Plan (IAP). Together, these applications are called the "I-Suite" (IRSS, ICARS, ITS, IAP = I-Suite). These applications are integrated, which means that they have a similar user interface, and share a common database. Data need only be entered once to be available to all the applications. Each application will still work independently, when necessary.
Aviation	AIMS	Aircraft Information Management System	The AIMS program provides information on CDF's utilization of air assets. AIMS tracks aircraft flight time, retardant costs, pilot times, per diem and other associated incident costs. This data is used by CDF Finance to recover aircraft costs from other Agencies. The data is also used to provide aircraft status and maintenance information for AMU.
Aviation	AIRS	Aircraft Incident Reporting System	Database of aircraft incidents and accidents.
Aviation	AMIS	Aviation Management Information System	An ORACLE relational database management system that handles aircraft use information for both contract and Forest Service owned aircraft. The information is summarized and reported to USDA and GSA on a regular basis. The system is designed to allow units to share data and reports between units.
Aviation	APPROVE	APPROVE	U.S. Forest Service Region 6 only. Database of all aircraft, pilots, and operators. Helps determine which aircraft and pilots can be used for specific assignments.
Aviation	AUS	Aircraft Utilization	USDA Forest Service Region 6 only. Improves utilization of chartered aircraft. Stores flight schedules. Provides access to schedules based on planned travel routes to determine if a scheduled flight can be used.

IBA Business Area	Acronym	Title	Description
Aviation	CAHIS	Computer Aided Hazard Information System	In 1988, representatives from several Federal agencies began to study how the benefits of the USFS Computer Aided Navigation (CAN) program could be applied to BLM Initial Attack Management System (IAMS). IAMS is a computerized system designed to provide intelligence that helps managers more effectively dispatch initial forces to incident sites. The system built was originally called CAHIS. It was officially recognized as a part of IAMS (within the MAPS program) in 1991.
Aviation	FARS	Federal Aviation Resource System	On-line database tracking aviation resources.
Aviation	IAMS	Aviation	Stand Alone IAMS provides the Aviation users access to military training routes, FAA Airports, Agency Airbases, VOR's, Dispatch Mission Planning and contacts for Aviation Wildland Firefighting resources. It provides a tool to define a Temporary Flight Restriction (TFR) (91.137A). It is part of the Wildland Fire Management Information web site (see WFMI).
Cache	ICBS	Interagency Cache Business System	ICBS is the automated cache inventory system designed to assist in inventory control and cost accounting for all items stocked in the National Fire Equipment System (NFES). The application is intended for use by the USDA, Forest Service (FS) and USDOI, Bureau of Land Management (BLM) National Interagency Support Caches.
Dispatch	ALMS	Automated Lightning Mapping System	This application allows the user to download near real time lightning location information from the BLM lightning data server via the Internet. Users must have a valid User ID and Password on the BLM lightning data server. (See documentation for further details.)
Dispatch	APPROVE	APPROVE	U.S. Forest Service Region 6 only. Database of all aircraft, pilots, and operators. Helps determine which aircraft and pilots can be used for specific assignments.
Dispatch	AUS	Aircraft Utilization	USDA Forest Service Region 6 only. Improves utilization of chartered aircraft. Stores flight schedules. Provides access to schedules based on planned travel routes to determine if a scheduled flight can be used.

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Dispatch	CAHIS	Computer Aided Hazard Information System	In 1988, representatives from several Federal agencies began to study how the benefits of the USFS Computer Aided Navigation (CAN) program could be applied to BLM Initial Attack Management System (IAMS). IAMS is a computerized system designed to provide intelligence that helps managers more effectively dispatch initial forces to incident sites. The system built was originally called CAHIS. It was officially recognized as a part of IAMS (within the MAPS program) in 1991.
Dispatch	CALCAD	Computer-Aided Dispatch - California Version	Facilitates automated initial attack dispatching based upon pre-planned response levels. Maintains resource status information that can be shared with other applications.
Dispatch	DMS	Dispatch Messaging System	DMS is an alternative e-mail system for transmission of mission critical information supporting the needs of the emergency dispatch community. DMS can be used by any wildland dispatch office and is a web-based application.
Dispatch	EERA	Emergency Equipment Rental Agreement	The Emergency Equipment Rental Agreement (EERA) software program has been developed for the primary use of Contracting Officers to create EERA's and to generate informational reports for their benefit and others involved in emergency incident support such as fire dispatchers. The application is installed on unit servers. The program contains a remote access capability which enables users to view EERA's at other database locations. EERA does not interface with any other applications or systems at this time. The EERA program is offered as two software application packages, a full database application and a remote site application.
Dispatch	IAMS	Aviation	Stand Alone IAMS provides the Aviation users access to military training routes, FAA Airports, Agency Airbases, VOR´s, Dispatch Mission Planning and contacts for Aviation Wildland Firefighting resources. It provides a tool to define a Temporary Flight Restriction (TFR) (91.137A). It is part of the Wildland Fire Management Information web site (see WFMI).
Dispatch	INCINET	Interagency Incident Administrative Support System	Automates administrative tasks performed on emergency response incidents including the tracking of assigned resources; incorporates most of the standardized Incident Command System (ICS) forms to collect and report data, which are stored in a locally shared database

IBA Business Area	Acronym	Title	Description
Dispatch	IQCS	Incident Qualifications and Certification System	Provides fire managers with detailed qualifications, certification, and training information to certify employees in fire or other technically skilled jobs; housed on the DOI VAX (SACS) at the National Interagency Fire Center (NIFC)
Dispatch	IQS	Incident Qualifications System	State All-Risk training and workforce analysis application.
Dispatch	IRSS	Incident Resource Status System	The Incident Resource Status System (IRSS) is one application contained within the Incident Suite of applications (I-Suite). IRSS is an automated resource tracking system that provides information about resources assigned to incidents. It is a tool intended to make record keeping and status assessment easy. IRSS provides a convenient, standardized approach to managing incident resource data, allowing you to quickly enter, check, sort and report on any resource or group of resources at a fire. By using IRSS, time and effort can be saved by reducing paperwork and limiting confusion caused by data entry errors. IRSS can be used at an individual incident, for a group of incidents, or at the dispatch level. IRSS can be used as a standalone database or can be shared among networked PCs.
Dispatch	Lightning	Lightning	Lightning is one of the primary ignition sources of wildland fire. As such Fire Management needed a way to monitor lightning activity. Lightning is a web based application that displays lightning activity. It is part of the Wildland Fire Management Information web site (see WFMI). Registered users can generate maps showing lightning activity for specific geospatial and temporal windows. Lightning data may be downloaded for use on local GIS systems.

IBA Business Area	Acronym	Title	Description
Dispatch	MIRPS	Multi-Agency Incident Resource Processing System	The Multi-agency Incident Resource Processing System (MIRPS) is an existing software package developed by the U.S. Forest Service (USFS) with the assistance of CDF. MIRPS automates the MACS 420 Resource Ordering Process, which was originally developed by the California FIRESCOPE Project in the early 1970's. The resource ordering process has been adopted nationally as a component of the Incident Command System (ICS) incident management business process. Standardized terms and order formats ensure accurate tracking of the movement of resources between agencies and jurisdictions. In California, it provides CDF with an efficient utilization of all resources operated and/or controlled by the Department, access to those controlled by local and federal agencies, and also access to those resources available from the private sector. Agency autonomy is maintained, while the availability of scarce and expensive resources is maximized. The MIRPS Project continues this interagency cooperation through a project to improve the speed and efficiency of the resource ordering process.
Dispatch	ROSS	Resource Ordering and Status System	ROSS automates the business processes related to resource status and resource ordering.
Dispatch	SIT	National Interagency Situation Report	The Interagency Situation Report (SIT) captures incident activity and resource status information in a brief summary intended for use by managers. Once the information has been submitted via the web site, it is used at the local Dispatch Offices, Geographic Area Coordination Centers (GACCs) and the National Interagency Coordination Center (NICC) to produce summary reports, which are then distributed to agency managers for their use as a decision making tool.
Dispatch	WILDCAD	Wildland Computer-Aided Dispatch	Wildland fire dispatch system for small and medium-sized centers; locates incidents, prints response card, tracks availability, maintains database for reports

IBA Business Area	Acronym	Title	Description
Finance	AMIS	Aviation Management Information System	An ORACLE relational database management system that handles aircraft use information for both contract and Forest Service owned aircraft. The information is summarized and reported to USDA and GSA on a regular basis. The system is designed to allow units to share data and reports between units.
Finance	EERA	Emergency Equipment Rental Agreement	The Emergency Equipment Rental Agreement (EERA) software program has been developed for the primary use of Contracting Officers to create EERA's and to generate informational reports for their benefit and others involved in emergency incident support such as fire dispatchers. The application is installed on unit servers. The program contains a remote access capability which enables users to view EERA's at other database locations. EERA does not interface with any other applications or systems at this time. The EERA program is offered as two software application packages, a full database application and a remote site application.
Finance	EFF-PAY	Emergency Fire Firefighter Pay System	The Emergency Firefighters System, EFF-Pay is an automated system which supports payment to the casual firefighters and provides payments to vendors in association with emergency firefighting.
Finance	ICARS	Incident Command Accounting and Reporting System	The Incident Cost Accounting and Reporting System (ICARS) is designed to allow you to easily track individual resources in a database format. The system creates a line for every resource for every day. The ICARS user can then analyze, manipulate, and create outputs of this information in a variety of report formats. ICARS has been integrated into the I-Suite of applications and is now capable of running networked to many PC's all working from the same database.
Finance	INCINET	Interagency Incident Administrative Support System	Automates administrative tasks performed on emergency response incidents including the tracking of assigned resources; incorporates most of the standardized Incident Command System (ICS) forms to collect and report data, which are stored in a locally shared database

IBA Business Area	Acronym	Title	Description
Finance	ITS	Incident Time System	The Incident Time System (ITS) is a product component of the I-Suite Incident System. The functions of the ITS are related to the collection and tracking of incident time for Federal, Casual (AD), miscellaneous personnel, also for Emergency Contracted Equipment.
GIS Support	Atlas GIS	Atlas GIS	Geographic Information System (GIS) mapping software.
Information	ASCADS	Automated Storage Conversion and Distribution System	Downlinks, processes, forwards, and stores data from Remote Automated Weather Stations (RAWS), and is the system of record for the metadata about these stations.
Information	FFP	FireFamily Plus	FireFamily Plus is software for summarizing and analyzing daily weather observations and computing fire danger indices based on the National Fire Danger Rating System (NFDRS). While the software and packaging are new, many of the reports are not. FireFamily Plus addressed the year 2000 issues that confronted a litany of DOS programs that operated against fire weather files and combined the critical functionality of many of those programs into one 32-bit Windows program.
Information	FireBeans	Geospatial Multi-Agency Coordination	The Geospatial Multi-Agency Coordination Group (GeoMAC) is an internet - based mapping tool originally designed for fire managers to access online maps of current fire locations and perimeters in the contiguous 48 states and Alaska.
Information	GeoMAC	National Interagency Situation Report	The Interagency Situation Report (SIT) captures incident activity and resource status information in a brief summary intended for use by managers. Once the information has been submitted via the web site, it is used at the local Dispatch Offices, Geographic Area Coordination Centers (GACCs) and the National Interagency Coordination Center (NICC) to produce summary reports, which are then distributed to agency managers for their use as a decision making tool.
Information	SIT	Ventura_Tools	Ventura_Tools is a complete set of ArcView 3.2 extensions to create and edit critical incident data. After the data has been developed a quick map layout tool is employed to create IAP, Planning and Public Display Maps.
Information	VENTURATOOLS	Incident Systems and Telecommunications	Includes all efforts involved in providing computer support to incidents, coordination with other regions, training, hardware maintenance, and development of programs

IBA Business Area	Acronym	Title	Description
Information	INSYST	Automated Real-Time Mapping System	Records the track of a moving vehicle, equipped with a Global Positioning System (GPS) around a fire. Translates track onto a UTM map grid (AMG in Australia). Displays in real time on screen as vehicle moves. Prints track on clear film a few seconds after track is completed to overlay a standard topographic map.
Logistics	ARMS	Automated Storage Conversion and Distribution System	Downlinks, processes, forwards, and stores data from Remote Automated Weather Stations (RAWS), and is the system of record for the metadata about these stations.
Logistics	ASCADS	FireDirect	FireDirect from RedZone Software is mapping software providing innovative GIS capabilities for agencies fighting fires in the Wildland/Urban Interface.
Logistics	FIREDIRECT	Interagency Cache Business System	ICBS is the automated cache inventory system designed to assist in inventory control and cost accounting for all items stocked in the National Fire Equipment System (NFES). The application is intended for use by the USDA, Forest Service (FS) and USDOI, Bureau of Land Management (BLM) National Interagency Support Caches.
Logistics	ICBS	Incident Qualifications System	State All-Risk training and workforce analysis application.
Logistics	IQS	Automated Storage Conversion and Distribution System	Downlinks, processes, forwards, and stores data from Remote Automated Weather Stations (RAWS), and is the system of record for the metadata about these stations.
Operations	AFF	Crew Needs Analysis	Calculate the optimal number of fire crews needed for an incident given certain pre-described conditions
Operations	ASCADS	FireDirect	FireDirect from RedZone Software is mapping software providing innovative GIS capabilities for agencies fighting fires in the Wildland/Urban Interface.
Operations	CREW NEEDS	Automated Lightning Mapping System	This application allows the user to download near real time lightning location information from the BLM lightning data server via the Internet. Users must have a valid User ID and Password on the BLM lightning data server. (See documentation for further details.)

IBA Business Area	Acronym	Title	Description
Operations	FIREDIRECT	Automated Fire Situation Report	Allows automated data entry into Incident Command System Form ICS-209, Incident Status Summary. Transmits summaries from reporting units to regional and national databases. Improves timely and complete reporting for use in strategic decision-making. Generates automated ICS-209 form by calculating and tabulating the resources allocated to a particular incident.
Planning	ALMS	BehavePlus fire modeling system	BehavePlus is a Windows application to predict wildfire behavior for fire management purposes. It is designed for use by wildfire managers who are familiar with fuels, weather, topography, wildfire situations and the associated terminology. BehavePlus uses a minimum amount of site-specific input data to predict fire behavior for a single point in time and space. Results are displayed in tables, graphs, and diagrams. Replaces the former BEHAVE fire behavior prediction and fuel modeling system.
Planning	AUTO209	BlueSky	BlueSky is a modeling framework designed to predict cumulative impacts of smoke from forest, agricultural, and range fires. The BlueSky smoke modeling framework combines state of the art emissions, meteorology, and dispersion models to generate the best possible predictions of smoke impacts across the landscape.
Planning	BehavePlus	FARSITE	FARSITE is a fire growth simulation model. It uses spatial information on topography and fuels along with weather and wind files. FARSITE incorporates the existing models for surface fire, crown fire, spotting, post-frontal combustion, and fire acceleration into a 2-dimensional fire growth model. users must have the support of a geographic information system (GIS) to use FARSITE because it requires spatial landscape information to run.
Planning	BlueSky	Canadian Forest Fire Behavior Prediction System	The Canadian Forest Fire Behavior Prediction (FBP) System is a sub system of the Canadian Forest Fire Danger Rating System CFFDRS). The FBP System provides a systematic method of assessing fire behavior. The FBP System has 14 primary inputs that can be divided into five general categories: fuels, weather, topography, foliar moisture content, and type and duration of prediction. In the FBP System these inputs are used to mathematically develop 4 primary and 11 secondary outputs. Primary outputs are generally based on a fire intensity equation, and secondary outputs are calculated using a simple elliptical fire growth model.

IBA Business Area	Acronym	Title	Description
Planning	FARSITE	FireDirect	FireDirect from RedZone Software is mapping software providing innovative GIS capabilities for agencies fighting fires in the Wildland/Urban Interface.
Planning	FBP	FIREFLY - Airborne Infrared Mapping	Remote sensing application used to record and plot fire hot-spots from an aircraft. Data can be downlinked to the incident to be plotted and analyzed
Planning	FIREDIRECT	Fire Management Analysis Process	Predicts fire behavior in "on-site" situations when time effects have to be analyzed; simulates the consequences of hypothesized changes in vegetation, composition, and density on the fire characteristics (area burned and fire intensity) in well-known ecosystems; estimates fire characteristics, taking spatial and temporal variability into account; simulates fire spread in discrete time steps; integrates a fire behavior prediction system (BEHAVE) and a Geographic Information System (MAP Analysis Package) into a framework that allows simulation of the actual spread of a fire over a digital elevation model.
Planning	FIREFLY	FIRESCAN	Infra-red linescanner-based fire mapping system; linescan-equipped aircraft flies over a fire; on-board computing equipment records an infra-red image, which is processed to identify the fire area; fire area is then transferred to a map base and printed, Faxed, or digitally sent to the ground; approximately 10 minutes is required for the mapping process; relative accuracy of less than the width of a road or track is achievable on the final map
Planning	FIREMAP	Fire Statistics System	FireStat is a mandatory, PC Client/Server software application for electronically capturing the information from the FS-5100-29, Individual Fire Report. As described in FSH 5109.14, fire statistics data derived from individual fire reports will be loaded into the National Interagency Fire Management Integrated Database (NIFMID), the database for fire occurrence data, at the National Interagency Technology Center.
Planning	FIRESCAN	FireTower	FireTower is a computer program for simulating the movement of fire through landscapes. Fire Tower allows users to simulate the spread of fires through the landscape from digital earth images including, aerial photographs or satellite imagery, on color-enabled Macintosh and Power Macintosh computers. Fire Tower lets land managers and foresters simulate how fires spread through the land allowing managers to conduct scenarios useful in predicting the behavior of wild fires".

IBA Business Area	Acronym	Title	Description
Planning	FIRESTAT	Fire Behavior Mapping and Analysis	FlamMap is a PC based program designed for use by local fire managers for fire behavior mapping and analysis.
Planning	FIRETOWER	First Order Fire Effects Model	FOFEM is an easy-to-use computer program for predicting effects of prescribed fire and wildfire. FOFEM predicts fuel consumption, smoke production, tree mortality, soil heating and burnout. FOFEM contains data and prediction equations that apply throughout the contiguous U.S. for forest and rangeland vegetation type that experience fire. The program uses four geographic regions and SAF/FRES vegetation types. Potential uses include wildfire impact assessments, developing of salvage specifications, design of fire prescriptions, environmental assessments and fire management planning. FOFEM can also be used in a real-time mode to help make predictions for ongoing wildfires. FOFEM 5.0 development is a Joint Fire Sciences funded project.
Planning	FlamMap	Canadian Forest Fire Weather Index System	The Canadian Forest Fire Weather Index (FWI) System consists of six components that account for the effects of fuel moisture and wind on fire behavior. The first three components are fuel moisture codes and are numerical ratings of the moisture content of litter and other fine fuels, the average moisture content of loosely compacted organic layers of moderate depth, and the average moisture content of deep, compact organic layers. The remaining three components are fire behavior indexes which represent the rate of fire spread, the fuel available for combustion, and the frontal fire intensity; their values rise as the fire danger increases.
Planning	FOFEM	FX-Net	FX-Net is a software system designed to display integrated weather data. The integrated weather data consists of radar, satellite, surface observation and forecast weather model imagery. The system utilizes existing internet capabilities and is linked to a specific server farm in Boulder, Colorado. FX-Net is intended for and utilized by Predictive Services and Incident Meteorologists for briefings, incident support and assessment/forecast products.
Planning	FWI	Incident Action Plan	The IAP enables a user to utilize the data in the I-Suite database to produce the Incident Action Plans for the incident.

IBA Business Area	Acronym	Title	Description
Planning	FX-Net	Incident Qualifications and Certification System	Provides fire managers with detailed qualifications, certification, and training information to certify employees in fire or other technically skilled jobs; housed on the DOI VAX (SACS) at the National Interagency Fire Center (NIFC)
Planning	IAP	Incident Resource Status System	The Incident Resource Status System (IRSS) is one application contained within the Incident Suite of applications (I-Suite). IRSS is an automated resource tracking system that provides information about resources assigned to incidents. It is a tool intended to make record keeping and status assessment easy. IRSS provides a convenient, standardized approach to managing incident resource data, allowing you to quickly enter, check, sort and report on any resource or group of resources at a fire. By using IRSS, time and effort can be saved by reducing paperwork and limiting confusion caused by data entry errors. IRSS can be used at an individual incident, for a group of incidents, or at the dispatch level. IRSS can be used as a standalone database or can be shared among networked PCs.
Planning	ICECAP	Fire Weather Plus 2000	Fire Weather Plus 2000 software is PC based Management and Presentation software that collects weather data, makes calculations, and runs reports. Built-in support for data collection from FTS weather stations, Campbell Scientific, and all stations transmitting with GOES. I Manual weather data input and automated import tools for other computer-based data sources.
Planning	IQCS	Rare Event Risk Assessment Process	RERAP is a Windows based program that helps calculate the information needed to manage prescribed fire and wildfires.
Planning	IRSS	Simple Approach Smoke Estimation Model	SASEM is a screening and planning model designed to predict ground level dispersion of particulate matter and visibility impacts from single sources in relative flat terrain in the western United States. SASEM utilizes internally calculated plume rise and emission rates based on specified fuel types and configurations.

IBA Business Area	Acronym	Title	Description
Planning	N/A	National Interagency Situation Report	The Interagency Situation Report (SIT) captures incident activity and resource status information in a brief summary intended for use by managers. Once the information has been submitted via the web site, it is used at the local Dispatch Offices, Geographic Area Coordination Centers (GACCs) and the National Interagency Coordination Center (NICC) to produce summary reports, which are then distributed to agency managers for their use as a decision making tool.
Planning	RERAP	Ventura_Tools	Ventura_Tools is a complete set of ArcView 3.2 extensions to create and edit critical incident data. After the data has been developed a quick map layout tool is employed to create IAP, Planning and Public Display Maps.
Planning	SASEM	Wildland Fire Assessment System	WFAS, the Wildland Fire Assessment System, is an internet-based information system. The current implementation provides a national view of weather and fire potential, including national fire danger and weather maps and satellite-derived "Greenness" maps. Development is continuing. It also provides a real time, on-line archive of its map products.
Planning	SIT	Wildfire Fire Situation Analysis	WFSA Plus is an automated tool designed to facilitate and improve decision making for wildland fire management. The software helps you organize, analyze and present data used in Wildland Fire Assessment (WFA), preparing a Wildland Fire Implementation Plan (WFIP), and Wildland Fire Situation Analysis (WFSA). Throughout WFSA Plus, you use a series of screens to gather and organize information about a wildland fire and possible responses. The results are presented in text, graphic and tabular formats. The final product is one or more printed reports.
Planning	VENTURATOOLS	Weather Information Management System	WIMS is a comprehensive system that helps users manage weather information. WIMS is an Oracle-based Internet application that accesses the National Interagency Fire Management Integrated Database (NIFMID) that contains historic fire weather and historic fire record information. WIMS allows users to retrieve weather information by providing access to many weather information sources, tools for managing data, data manipulation and display functions, and an interactive communications environment.

IBA Business Area	Acronym	Title	Description
Planning	WFAS	Aviation	Stand Alone IAMS provides the Aviation users access to military training routes, FAA Airports, Agency Airbases, VOR's, Dispatch Mission Planning and contacts for Aviation Wildland Firefighting resources. It provides a tool to define a Temporary Flight Restriction (TFR) (91.137A). It is part of the Wildland Fire Management Information web site (see WFMI).
Planning	WFSA Plus	SafeNet	SAFENET is a database that provides a forum for firefighters to voice their safety concerns, facilitate problem solving, and to aid in identifying trends as they relate to firefighter safety. SafeNet data may be submitted in hardcopy or electronic form via web-based interface.
Planning	WIMS	Safety Management Information System	SMIS is an automated system for reporting accidents which involve DOI employees, volunteers, contractors or visitors to DOI facilities.
Safety	IAMS	FireBeans	Oracle based system that has helped standardize the making of perimeter maps. Add coordinates and edit graphic and AFS perimeter site;**ll** linked together digitizing.(afs.gov/maps/graphics/imt fire information and lightning information. Custom software - John Palmer.)
Safety	SAFENET	Automated Flight Following	Spatially displayed real-time aircraft tracking system
Safety	SHIPS	SHIPS	Forest Service injury reporting system
Safety	SMIS	ICECAP	ICECAP helps users manage wildfire and all-risk incident resources and produce Incident Action Plans.

Appendix F: List of Interviewees

Rob Allen
Bob Anderson
Pat Andrews
Steve Arasum
Janette Archibeque
Keith Barton
Bob Beckwith
Steve Beightler
Veronica Belton
Larry Benham
Ray Bergquist
Meda Betamodic
Bobbe Bilyeu
John Bliven
Len Bollman
Barb Bonefeld
Al Borup
Debbie Bozarth
Larry Bradshaw
Ginger Brudevold-Black
Irene Burkholder
Bob Butler
David Carter
Judie Casanova
Dave Caulkins
Ernylee Chamlee
Judy Cline
Ken Coe
Mike Cole
Wayne Cook
Jim Crawford
Bonnie Crush
Dave Curry
James Dahlberg
John Daugherty
Gerry Day
Matt Dean
Charline Deese
Steve Dickenson
Gary Dietz
Randy Dohrman
Paul Dore
Tony Doty
Mike Dougherty
Myrna Duke
Mike Edrington
Chris English
Kristy Felty
Mark Finney
Mike Fitzpatrick
Roy Fluhart
Joe Frost
James Furlong
Bill Gabbert
Krista Gebert
Karen Gordon
John Gould
Janelle Grabowski
Nick Greear
John Griffen
Dick Gormley
Tyler Hackney
Jeanie Harris
Mark Hayes
Linda Heatherly
Marsha Henderson
Randy Herrin
Liz Higgins
Jeffrey Higgins
Carolyn Higgins
Kurt Hinz
Neal Hitchcock
Darrel Hoadley
Nancy Hollencamp
Ed Hollenshead
Pat Houghton
Lee Hughes
Robert Hurd
Sue Husari
Marge Hutchinson
Doug Hyde-Sato
Emmy Ibison
Randi Jandt
Dave Jandt
Mike Justus
Tim Khosrovi
Al King
Jennifer Kinsey
Ruth Kohler
Lori Koubeck
Jim Krugman
Brian Lamb
Connie Lane
Susan Lee
Louis Leezer
Madonna Lengerich
Jim Lewandoski
Ruth Lewis
Lindsey Lien
Hallie Locklear
Steve Loehrke
D. J. Lopez
Chris Lyle
Kelly Lynch
RC Martin
Al Martinez
Lex McKenzie
Rex McKnight
Mark Michelsen
Victor Montoya
William Moody
Art Morrison
Berta lee Mottern
Phil Musgrove
Eric Neitzel
Jessica Nelson
Mark Nelson
Matt Nilsen
Shannon O'Brien
Dan Ochocki
Bill Oppelt
Jane Ottenheimer
John Palmer
Alex Park
Doug Parker
John Philbin
Jeff Prevey
Mike Quisenberry
Joe Read
Joe Ribar
Armando Rios
John Robertson
Tim Roide
Will Romero
Mark Roper
Bob Roth
Gavin Rush
Kevin Ryan
Michelle Ryerson
Teresa Sage

Scott Sargent
Keith Satterfield
Dave Schmidt
Chris Schulte
John See
Rob Seli
Tim Sexton
Tom Sherman
JoLyne Sherra
Sue Shirts
Deena Shots
Rose Silva
Steve Simon
Ken Snell
Charlene SpottedEagle
Jonathan Sprague
Lynn Standley Coe
Elizabeth Stiller
Roger Stilipec
Steve Stone
Mike Sugaski
Barb Sylte
Mary Ann Szymoniak
Patty Tanori
Donna Tate
Jeanne Thompson
Denise Tomlin
Pete Villareal
Doug Wagner
Jeff Wallace
Bill Wallis
Shanea Ward
Rodger Waters
Harry Wheeler
Roberta Whitlock
Rowdy Wood
Casey Woodward
Tom Wordell
Jennifer Zeltwanger
Robert Ziel