

**National Wildfire
Coordinating Group
(NWCG)**

Incident Based Automation Action Plan



Version 1.1
April 3, 2006

Table of Contents

- Executive Summary 1**
 - Summary of Team Findings..... 1
- Actions to be Taken 3**
 - Data Information and Applications Technology..... 4
 - Infrastructure and Connectivity 10
 - Trained / Skilled Workforce 13
 - Business Practices..... 15
 - Recommendations Addressed through Current Projects 17

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:

- 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 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, scalable, 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.

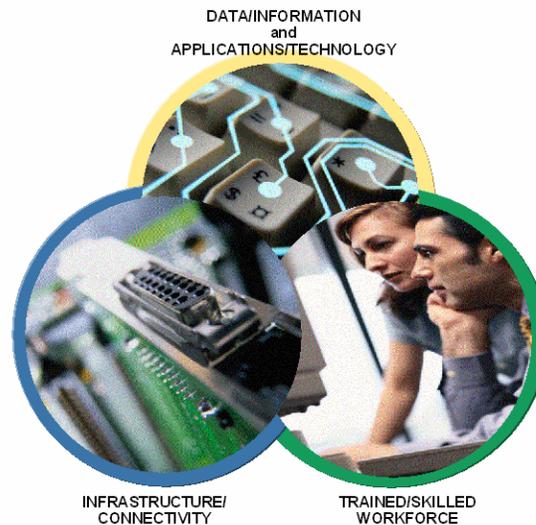


Figure 1: IBA Strategic Areas

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 public 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
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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
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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
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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
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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
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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
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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
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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
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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
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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
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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
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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
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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
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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
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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
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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.