



Effectively Using IT to Fight Wildland Fires



FAMWEB

Data Warehouse Overview

**6th Annual IBM Cognos
Government Forum**

Information Management

Cognos.
software

Biography

- Brad Harwood
- Work at the National Interagency Fire Center (NIFC) in Boise, Idaho
- Work for the United States Department of Agriculture (USDA) Forest Service (FS)
- IT Specialist for the Washington Office Fire and Aviation Management Staff (F&AM)
- Oracle Database Administrator (DBA), Systems Analyst, Project Manager, Contracting Officer Representative (COR)
- Forest Service representative for the USDA Gay and Lesbian Advisory Council (GLEAC)
- Live in Boise, Idaho with partner and two children



Charlie and Bosley



Meeting Agenda

- I would like to extend my thanks to IBM and the Performance Institute for inviting me to speak at today's event
- I would like to share how the F&AM Group is using IT to address the meeting topics



Meeting Agenda

- How does the F&AM Group utilize Cognos in its IT fire fighting efforts?
- How is the F&AM Group coping with the economic slowdown?
- How does the F&AM Group utilize IT to address the new administration's three areas of focus:
 - Transparency
 - Efficiency
 - Accountability



Fire and Aviation IT Organization Prior to 1995

- Application software was developed by individuals scattered throughout the Forest Service
- The result was redundant applications at the national, regional and local levels
- Data was stored on multiple servers with no single point of entry or extract
- There was no help desk to manage application support
- Users called the individual who developed the application
- **The Forest Service could not accommodate interagency IT concerns**



Changes that led to Improved Management of F&AM IT

- In 1995 the F&AM Group was formed in Boise, Idaho at NIFC as a detached Washington Office Unit
- The group was formed to provide development, maintenance and support for all national F&AM IT work
- The F&AM Help Desk was part of this group and provided a single point of contact for IT support
- Application programming was contracted to the private sector
- Hardware was consolidated at the National Information Technology Center (NITC) in Kansas City, Missouri





Benefits From These Changes

- No redundant applications
- Users no longer have to call the programmer for support
- Forest Service employees no longer responsible for programming applications
- Hardware, software and data consolidated in one central location
- The Forest Service was able to reduce the number of IT personnel

Fire and Aviation Management Web (FAMWEB)

- <http://fam.nwccg.gov/fam-web/>
- FAMWEB Applications:
 - EAV/ABS/ARS – aviation
 - **FPEMIS – federal excess property**
 - FIRESTAT – fire statistics
 - FPA – fire planning analysis
 - ICBS – fire equipment inventory
 - ROSS – fire resources
 - **WAREHOUSE – reporting and GIS**
 - WIMS – weather



Forest Service Excess Property

- State local and rural fire departments lack the funding to acquire fire fighting equipment
- The Federal Excess Property Program (FEPP) was developed to allow the Forest Service to acquire excess property from other government agencies then loan the equipment to the individual states
- Authorizing legislation for FEPP includes the Cooperative Forestry Assistance Act of 1978, Federal Property and Administrative Services Act of 1949, and the Organic Act
- Does **FEPP** make a difference in fighting wildland fires?



IT and FEPP

- Prior to 1998 FEPP was managed manually at the Forest Service level and individually by each State
- This required each State to either track property manually or invest in an IT system
- The Forest Service was not able to effectively manage FEPP property
- Much of the FEPP property was being misused

IT and FEPP

- In 1996 the Forest Service and States agreed that a web based application was needed to manage FEPP property
- Approval was given to develop the Federal Excess Property Management Information System (FEPMIS)
- Implemented in 1998 as a F&AM application, it is used to manage over \$2 billion worth of excess fire fighting property
- Was the first national F&AM web based application
- Drastically reduced the misuse of FEPP property
- Won the GSA Miles Romney Award



GSA Miles Romney Award

- The Miles Romney Achievement Award for Innovation in Personal Property Management was instituted in 1998 by the Office of Government wide Policy, Office of Transportation and Personal Property. This award recognizes federal agencies for:
 - Innovative personal property management practices
 - New property management practices that maximize the reuse of government assets
 - Improvements to current property disposition processes
- Past winners of the [Miles Romney Award](#)



Aviation

- Aviation costs account for more expenditures for fighting wildland fires than any other resource
- Depending on the make/model and equipment, a single helicopter can cost \$10,000 an hour to operate on a fire
- That same helicopter can cost \$32,000 a day to stay parked at a fire camp for availability



Aviation

- There are six main components for one flight leg and each one has an IT system associated with it
 - Contracting
 - Pilot and Aircraft Inspection
 - Resource Ordering
 - Flight Following
 - Flight Payment
 - Reporting (Federal Aviation Information Reporting System (FAIRS))



Fire Statistics

- Each agency has specific requirements for tracking fire statistics
- Fire statistics are used for fire planning
- Fire planning is used to determine the fire fighting budget
- Publications and reports to congress are based on agency fire statistics
- Forest Service alone has over 400 queries to extract fire statistics data
- The Fire Planning Program (FPA) hires two contractors each year to consolidate all agency fire statistics

IT, Aviation and Fire Statistics

- What was the best IT solution for solving the problems and intricacies of Aviation and Fire Statistics?



FAMWEB Data Warehouse

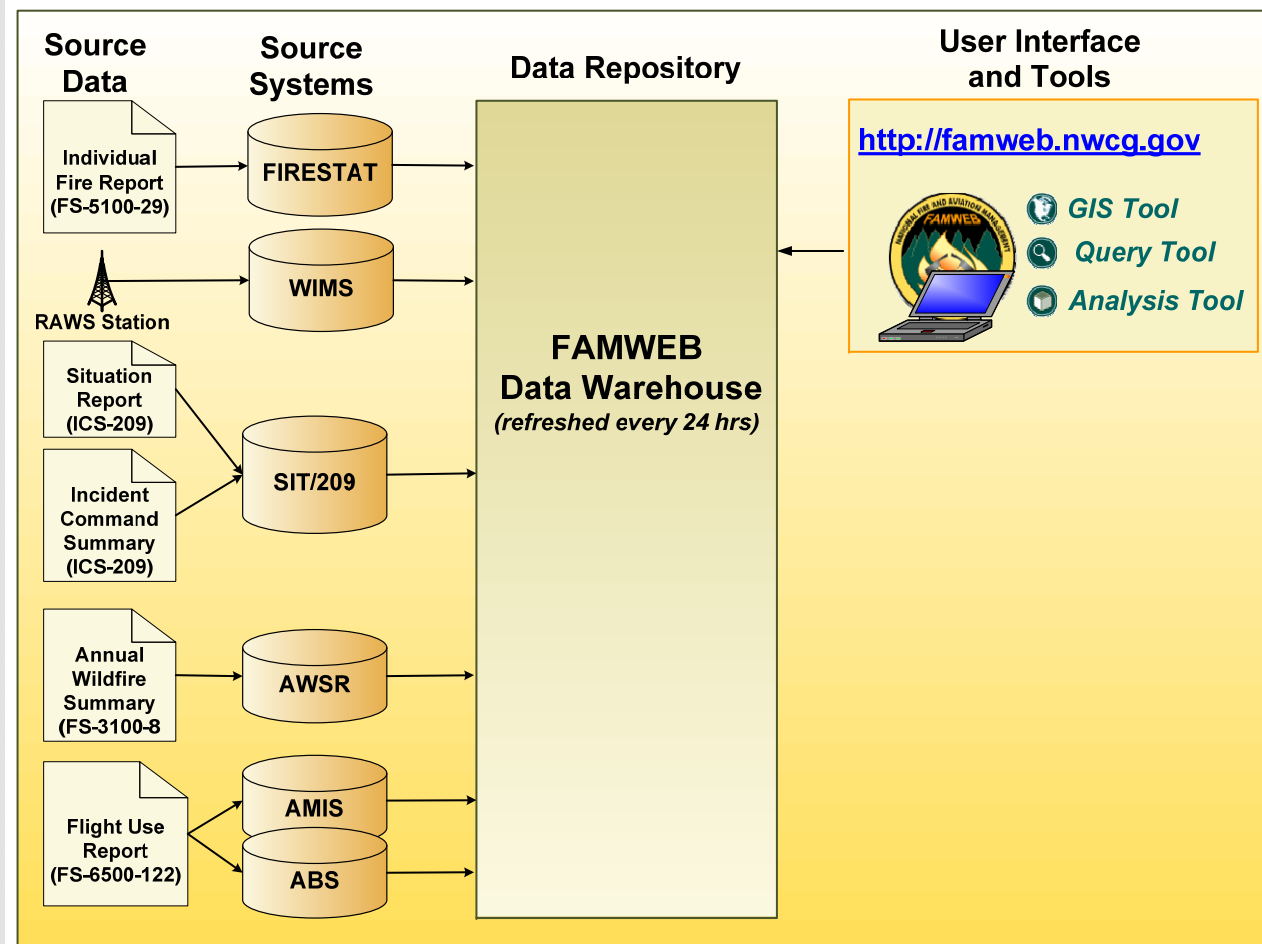
***Provide users with a
Web interface to
flexible reporting tools integrating
data from a variety of fire, weather,
and aviation databases***

Data Warehouse

- Improve access to fire, weather and aviation data currently stored in disparate applications
- Improve analytical capabilities to support research and planning
- Create a centralized data and application resource for the interagency user community
- Three components
 - Query Tool
 - Analysis Tool
 - GIS Tool



Conceptual Overview



IT Reporting Requirements

- Internet-based, browser independent tool which allows users to directly interact with the data through an easy-to-use interface
- Any user can develop queries and modify the layout of any existing query based on security roles.
- Users will not be able to add or modify data, but with minimal steps, will be able to:
 - author basic queries
 - filter, group, and sort data
 - perform trends analysis
 - download data in multiple formats



Cognos Query Tool

- Internet-based, browser independent tool which allows users to directly interact with the data through an easy-to-use interface
- Any user can develop queries and modify the layout of any existing query based on security roles.
- One of the main reasons Cognos was chosen was the fact they are a zero footprint software application

Perform a query using WIMS.

New - Query Studio - Microsoft Internet Explorer

Query Studio - New Cognos Connection Report Studio

[Return](#) [About](#) [Help](#)

Menu

- Insert Data
- Edit Data
- Change Layout
- Run Report
- Manage File

Font: [] Size: [] **B** *I* U [] [] [] [] [] []

Title

Station Identifier	Station Name	State Abbreviation	Observation Date	Relative Humidity	Observed Maximum Temperature
11202	BANKHD	AL	09/14/1993	65	87
11202	BANKHD	AL	09/19/1993	40	83
11202	BANKHD	AL	10/12/1993	49	67
11202	BANKHD	AL	10/17/1993	81	74
11202	BANKHD	AL	11/01/1993	40	48
11202	BANKHD	AL	11/05/1993	66	75
11202	BANKHD	AL	11/09/1993	48	60
11202	BANKHD	AL	11/17/1993	67	70
11202	BANKHD	AL	11/22/1993	20	64
11202	BANKHD	AL	11/29/1993	29	64
11202	BANKHD	AL	12/07/1993	40	55
11202	BANKHD	AL	12/15/1993	88	46
11202	BANKHD	AL	12/24/1993	36	40
11202	BANKHD	AL	12/25/1993	45	43
11202	BANKHD	AL	12/26/1994	24	54
11202	BANKHD	AL	12/30/1994	33	37
11202	BANKHD	AL	01/05/1994	50	44
11202	BANKHD	AL	01/22/1994	23	50
11202	BANKHD	AL	01/30/1994	46	43
11202	BANKHD	AL	02/01/1994	34	37

Information - Observed Maximum Temperature

Done

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WIMS query data list.

New - Query Studio - Microsoft Internet Explorer

Query Studio - New Cognos Connection Report Studio

[Return](#) [About](#) [Help](#)

Menu

- Insert Data
- Edit Data
- Change Layout
- Run Report
- Manage File

Font: [Font] Size: [Size] **B** *I* U [Color] [Background Color] [Align] [Grid]

Title

State Abbreviation: ID AND Observation Date: Between 2005-06-20 and 2005-06-24

Station Identifier	Station Name	State Abbreviation	Observation Date	Relative Humidity	Observed Maximum Temperature
101312	LEADORE	ID	06/20/2005	15	83
101312	LEADORE	ID	06/20/2005	22	83
101312	LEADORE	ID	06/21/2005	29	80
101312	LEADORE	ID	06/21/2005	43	80
101312	LEADORE	ID	06/21/2005	77	80
101312	LEADORE	ID	06/22/2005	20	80
101312	LEADORE	ID	06/23/2005	24	83
101312	LEADORE	ID	06/23/2005	27	78
101312	LEADORE	ID	06/23/2005	40	76
101312	LEADORE	ID	06/24/2005	17	76
101312	LEADORE	ID	06/24/2005	17	78
100307	HAYDEN	ID	06/20/2005	80	79
100307	HAYDEN	ID	06/20/2005	59	79
100307	HAYDEN	ID	06/20/2005	19	89
100307	HAYDEN	ID	06/22/2005	47	95
100307	HAYDEN	ID	06/23/2005	64	79
100307	HAYDEN	ID	06/23/2005	37	79
100307	HAYDEN	ID	06/23/2005	23	78
100307	HAYDEN	ID	06/23/2005	40	76

Information - Observed Maximum Temperature

Done

WIMS query with filters (state and date).

New - Query Studio - Microsoft Internet Explorer

Query Studio - New Cognos Connection Report Studio

Return About Help

Menu

- Insert Data
- Edit Data
- Change Layout
- Run Report
- Manage File

Font Size B I U

Title

State Abbreviation: ID AND Observation Date: Between 2005-06-20 and 2005-06-24

State Abbreviation: ID

Station Identifier	Station Name	Observation Date	Relative Humidity	Observed Maximum Temperature
100101	BONNERS	06/24/2005	89	71
		06/24/2005	91	74
		06/24/2005	92	74
100204	PRIEST LAKE	06/20/2005	16	85
		06/20/2005	18	84
		06/20/2005	19	82
		06/20/2005	19	85
		06/20/2005	20	86
		06/20/2005	21	86
		06/20/2005	25	80
		06/20/2005	31	78
		06/20/2005	45	75
		06/20/2005	46	86
06/20/2005	52	75		
06/20/2005	69	75		
06/20/2005	80	86		
06/20/2005	85	86		

Information - Observed Maximum Tem

Done

WIMS query using Group and Create Section features.

New - Query Studio - Microsoft Internet Explorer

Query Studio - New

Menu

- Insert Data
- Edit Data
- Change Layout
- Run Report
- Manage File
- Chart...
- Define Conditional Styles...
- Change Font Styles...
- Change Border Styles...
- Reset Font and Border Styles
- Apply Template...
- Edit Title Area...
- Set Web Page Size...
- Set Page Breaks
- Group
- Pivot
- Ungroup
- Create Sections
- Swap Rows and Columns
- Collapse Group
- Expand Group

Font Size [A] B I U [Color] [Background Color] [Table]

Title

State Abbreviation: ID AND Observation Date: Between 2005-06-20 and 2005-06-24

State Abbreviation: ID

Station Identifier	Station Name	Observation Date	Relative Humidity	Observed Maximum Temperature
100101	BOMMEFS	06/24/2005	80	71

Top Page up Page down Bottom

Define conditional styles

Specify one or more alphanumeric values to define ranges or select the values for which you want to define conditional styles. Then specify the style to use for each range or value. You can customize a style by clicking the Edit icon.

Selection: Observed Maximum Temperature

New value: 65

Range	Style
Highest value -	Poor (AaBbCc)
65	Average (AaBbCc)
50	Excellent (AaBbCc)
Lowest value -	

OK

WIMS query using Conditional Styles feature.

The screenshot shows the IBM Cognos Query Studio interface. The main area displays a report titled "State Abbreviation: ID" with a filter: "State Abbreviation: ID AND Observation Date: Between 2005-06-20 and 2005-06-24". The report is grouped by "State Abbreviation: ID" into two sections: "BONNERS" and "PRIEST LAKE". Each section contains a table of weather observations with columns for Station Identifier, Station Name, Observation Date, Relative Humidity, and Observed Maximum Temperature. The temperature values are color-coded: green for 71, 74, 75, and 77; yellow for 74, 84, 85, and 86; and red for 86, 86, 86, and 86. The interface includes a menu on the left with options like "Change Layout", "Run Report", and "Manage File". The top toolbar has icons for various report actions, with two icons highlighted by red boxes.

Title
 State Abbreviation: ID AND Observation Date: Between 2005-06-20 and 2005-06-24

State Abbreviation: ID

Station Identifier	Station Name	Observation Date	Relative Humidity	Observed Maximum Temperature
100101	BONNERS	06/24/2005	89	71
		06/24/2005	91	74
		06/24/2005	92	74
100204	PRIEST LAKE	06/20/2005	16	85
		06/20/2005	18	84
		06/20/2005	19	82
		06/20/2005	19	85
		06/20/2005	20	86
		06/20/2005	21	86
		06/20/2005	25	80
		06/20/2005	31	78
		06/20/2005	45	75
		06/20/2005	46	86
		06/20/2005	52	75
		06/20/2005	69	75
06/20/2005	80	86		
06/20/2005	85	86		

WIMS query using Group and Section features displayed with conditional styles.

The screenshot shows the IBM Cognos Query Studio interface within a Microsoft Internet Explorer browser window. The title bar reads "New - Query Studio - Microsoft Internet Explorer". The main window title is "Query Studio - New". The interface includes a menu on the left, a toolbar with various icons, and a central report preview area. The report is titled "Title" and displays a table of data for "State Abbreviation: ID". The table has five columns: Station Identifier, Station Name, Observation Date, Relative Humidity, and Observed Maximum Temperature. The data is filtered for "State Abbreviation: ID AND Observation Date: Between 2005-06-20 and 2005-06-24". The "Save As" icon in the toolbar is highlighted with a red box. The "View in Excel 2002 Format" option in the menu is also highlighted with a red box.

Station Identifier	Station Name	Observation Date	Relative Humidity	Observed Maximum Temperature
100101	BONNERS	06/24/2005	89	71
		06/24/2005	91	74
		06/24/2005	92	74
100204	PRIEST LAKE	06/20/2005	16	85
		06/20/2005	18	84
		06/20/2005	19	82
		06/20/2005	19	85
		06/20/2005	20	86
		06/20/2005	21	86
		06/20/2005	25	80
		06/20/2005	31	78
		06/20/2005	45	75
		06/20/2005	46	86
		06/20/2005	52	75
		06/20/2005	69	75
		06/20/2005	80	86
06/20/2005	85	86		

WIMS query showing Save As feature.

New - Query Studio - Microsoft Internet Explorer

File Edit View Insert Format Tools Data Window Help

Type a question for help

Arial 10 B I U

E2 fx

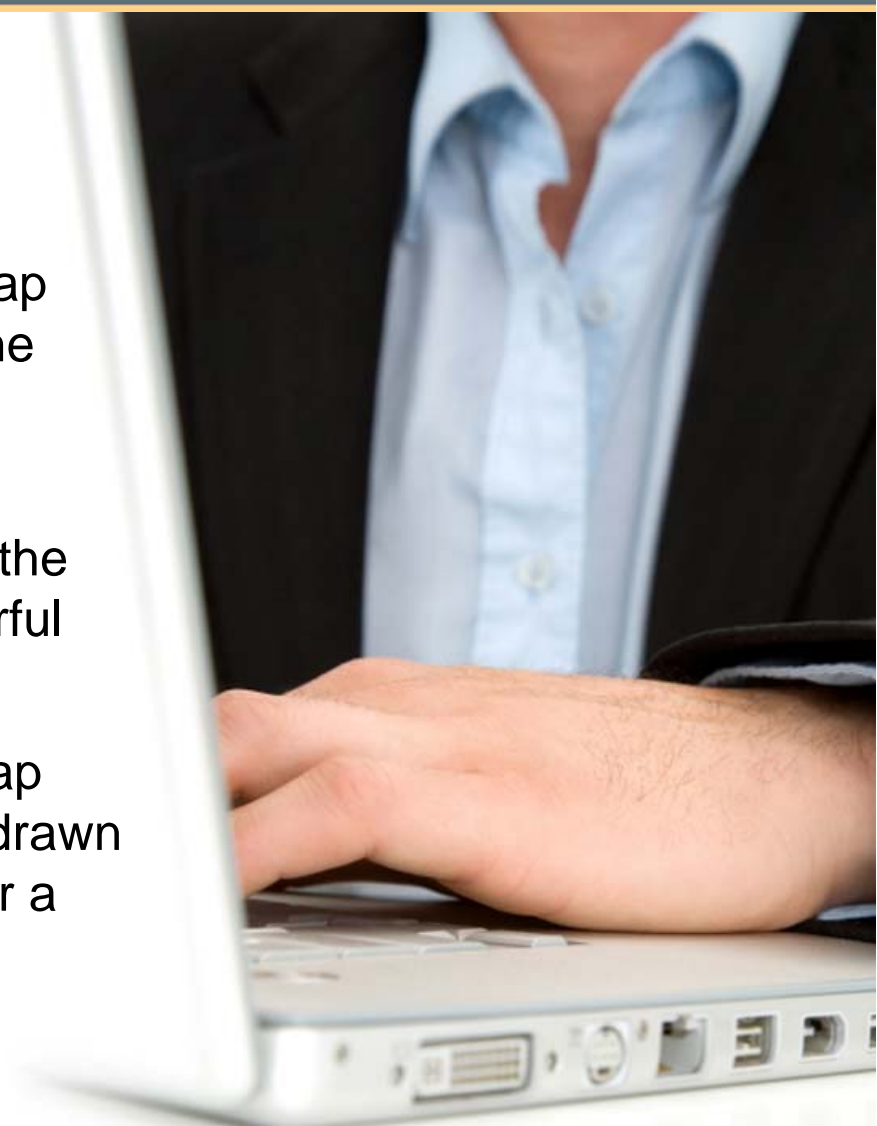
	A	B	C	D	E	F	G	H
1	Title							
2								
3	State Abbreviation: ID	AND	Observation Date: Between 2005-06-20 and 2005-06-24					
4	State Abbreviation : ID							
5	Station Identifier	Station Name	Observation Date	Relative Humidity	Observed Maximum Temperature			
6	100101	BONNERS	06/20/2005	31	84			
7			06/20/2005	37	84			
8			06/20/2005	38	82			
9			06/20/2005	39	80			
10			06/20/2005	43	77			
11			06/20/2005	45	77			
12			06/20/2005	55	77			
13			06/20/2005	56	77			
14			06/20/2005	59	84			
15			06/20/2005	60	84			
16			06/20/2005	61	77			
17			06/20/2005	63	77			
18			06/20/2005	72	84			
19			06/20/2005	75	84			
20			06/20/2005	77	84			
21			06/20/2005	86	77			
22			06/20/2005	88	77			
23			06/20/2005	90	77			
24			06/20/2005	95	77			
25			06/20/2005	96	77			
26			06/20/2005	97	77			
27			06/20/2005	98	77			
28			06/21/2005	23	88			
29			06/21/2005	31	88			
30			06/21/2005	36	84			
31								
32								
33								

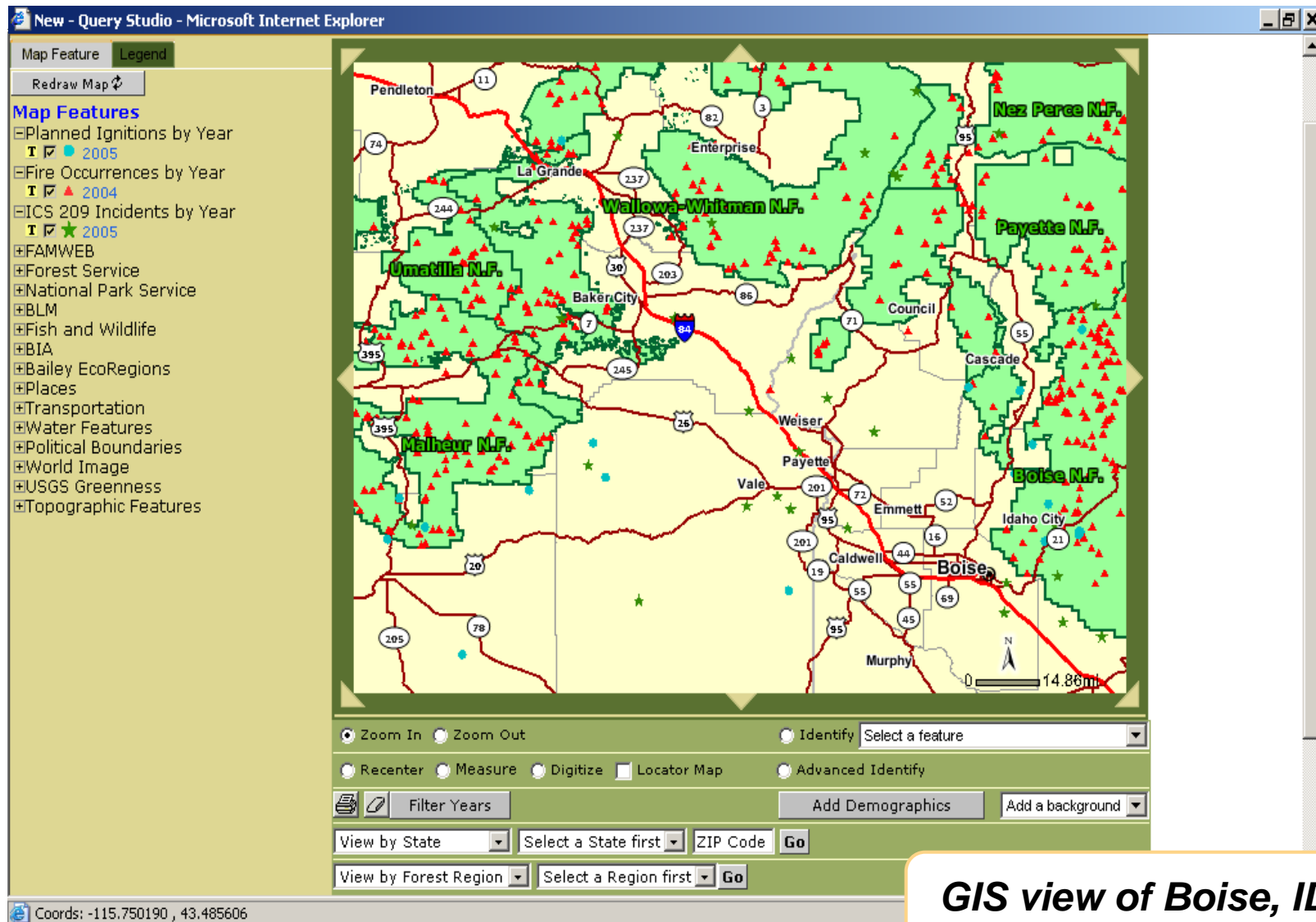
Page1-1

WIMS query using Excel view feature.

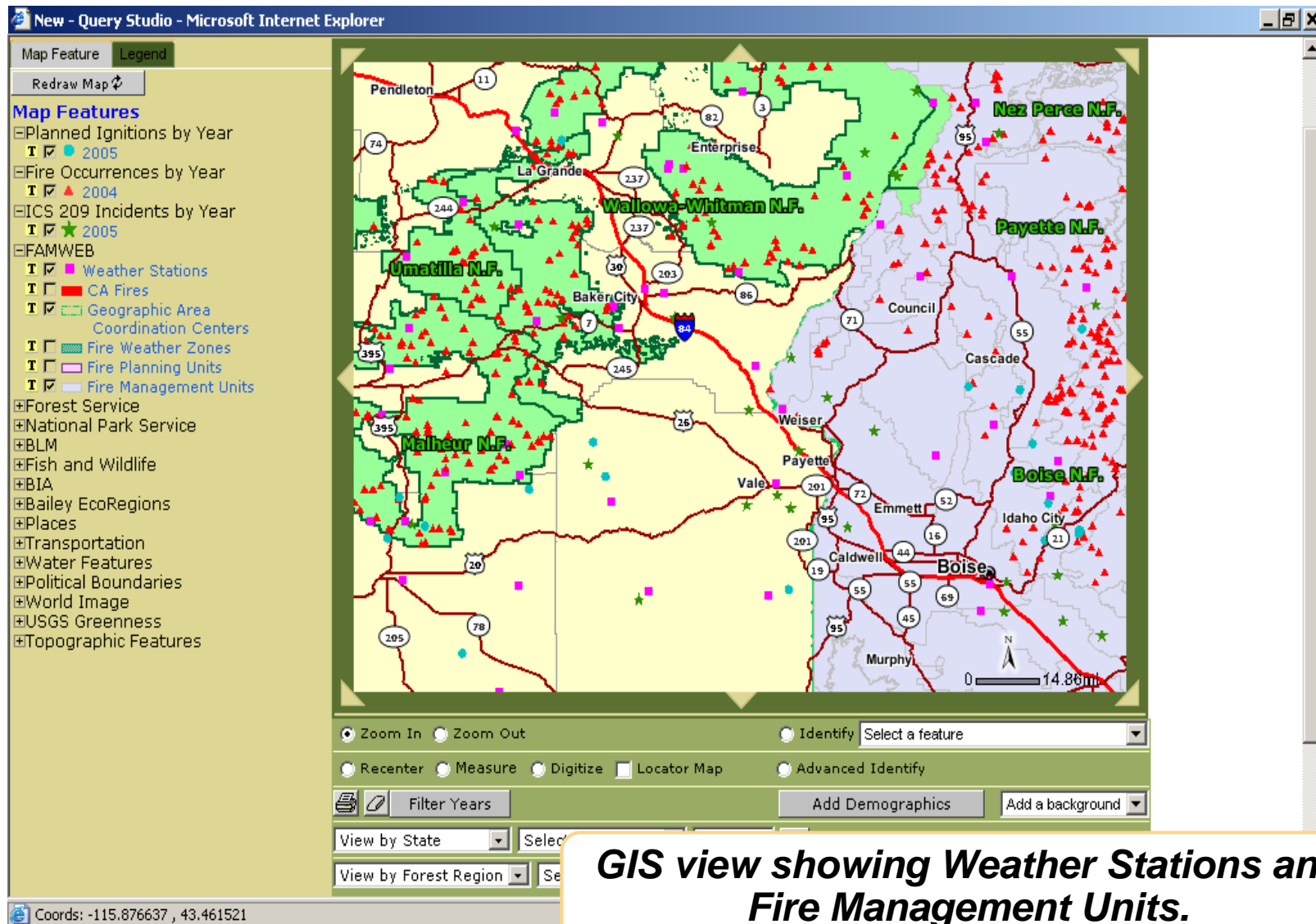
GIS Tool

- Provides users the ability to visualize FAMWEB information resources on a map and drill down to further detail through the identifying features in the map
- Users can then analyze the information through an interface which will increase the usability of the data and provide a powerful analytical tool
- Includes the ability to both select and map data geographically using a map and a drawn boundary to define an area of interest for a query, or request a map of the data as a result of a query





GIS view of Boise, ID.



GIS view showing Weather Stations and Fire Management Units.

New - Query Studio - Microsoft Internet Explorer

Map Feature Legend

Redraw Map ↻

Map Features

- Planned Ignitions by Year
 - 2005
- Fire Occurrences by Year
 - 2004
- ICS 209 Incidents by Year
 - 2005
- FAMWEB
 - Weather Stations
 - CA Fires
 - Geographic Area
 - Coordination Centers
 - Fire Weather Zones
 - Fire Planning Units
 - Fire Management Units
- Forest Service
- National Park Service
- BLM
- Fish and Wildlife
- BIA
- Bailey EcoRegions
- Places
- Transportation
- Water Features
- Political Boundaries
- World Image
- TerraServer Topomap
- USGS Greenness
- Topographic Features

Zoom In Zoom Out Identify Select a feature

Recenter Measure Digitize Locator Map Advanced Identify

Filter Years Add Demographics Image MetaInfo USGS Topo Map

View by State Select a State first ZIP Code Go

Coords: -116.891218 , 43.863838

GIS showing USGS Topo map with a zoom in on Vale.

New - Query Studio - Microsoft Internet Explorer

Map Feature Legend

Redraw Map ↻

Choose a digitizing option:

- Point
- Line
- Polygon

Coordinates:

117.383494, 44.07
6969, -
117.372177, 43.86
9497, -

Enter a radius:

Mile

Fires Occurrences
 ICS 209 Incidents

Submit Cancel

Zoom In Zoom Out Identify Select a feature

Recenter Measure Digitize Locator Map Advanced Identify

Filter Years Add Demographics Image MetaInfo USGS Topo Map

View by State Select a State first ZIP Code Go

View

Longitude=-116.842179, Latitude=43.844977

Draw box (digitize) around station outside of Vale.

Map Feature Legend

Redraw Map ↻

Choose a digitizing option:

- Point
- Line
- Polygon

Coordinates:

117.383494, 44.076969, -
117.372177, 43.869497, -

Enter a radius

Miles

Fires Occur
 ICS 209 Incident

Submit

Weather Station(s)

Records Found: 1

Check Boxes to Select:

- 101402 - DEAD INDIAN RIDGE, IDAHO

Select All View Report

Zoom In Zoom Out Identify Select a feature
Recenter Measure Digitize Locator Map Advanced Identify
Filter Years Add Demographics Image MetaInfo USGS Topo Map
View by State Select a State first ZIP Code Go
View

Longitude=-116.842179, Latitude=43.844977

Draw box (digitize) around station outside of Vale.

The screenshot shows the IBM Cognos Query Studio interface within a Microsoft Internet Explorer browser window. The browser title is "New - Query Studio - Microsoft Internet Explorer". The application title bar reads "Query Studio - New". The interface includes a menu on the left, a toolbar with various icons, and a main content area displaying a report.

Menu:

- Insert Data
- Edit Data
- Change Layout
- Run Report
- Manage File

Report Content:

Daily Observations from the GIS Tool

Station Name: DEAD INDIAN RIDGE

Station Identifier: 101402

State Name: Idaho

Relative Humidity	Observed Maximum Temperature	Wind Direction	Wind Speed
8	101	313	11
10	81	146	9
10	87	90	3
10	93	329	8
10	95	316	10
10	97	137	3
11	82	285	2
11	96	340	15
11	101	312	5
12	84	124	7
12	85	142	6
12	85	322	5
12	93	103	4
12	95	315	6
12	96	318	12
...

Navigation: Top, Page up, Page down, Bottom

Bottom status bar: Done, Local intranet

Cognos and Google Earth

- Using Cognos users can download data from the FAMWEB Data Warehouse into multiple formats, i.e. comma separated file, excel, PDF
- Users can download data into a KML file which can be loaded into Google Earth

Meeting Topics

- How does the F&AM Group utilize Cognos in its IT fire fighting efforts?
- How is the F&AM Group coping with the economic slowdown?
- How does the F&AM Group utilize IT to address the new administration's three areas of focus:
 - Transparency
 - Efficiency
 - Accountability

How does the F&AM Group utilize Cognos?

- Report Tool to create standard forms and reports
- Query Tool to allow users to run ad-hoc queries
- Analysis Tool to allow users to analyze data from a three dimensional approach
- Download data into multiple formats including Google Earth



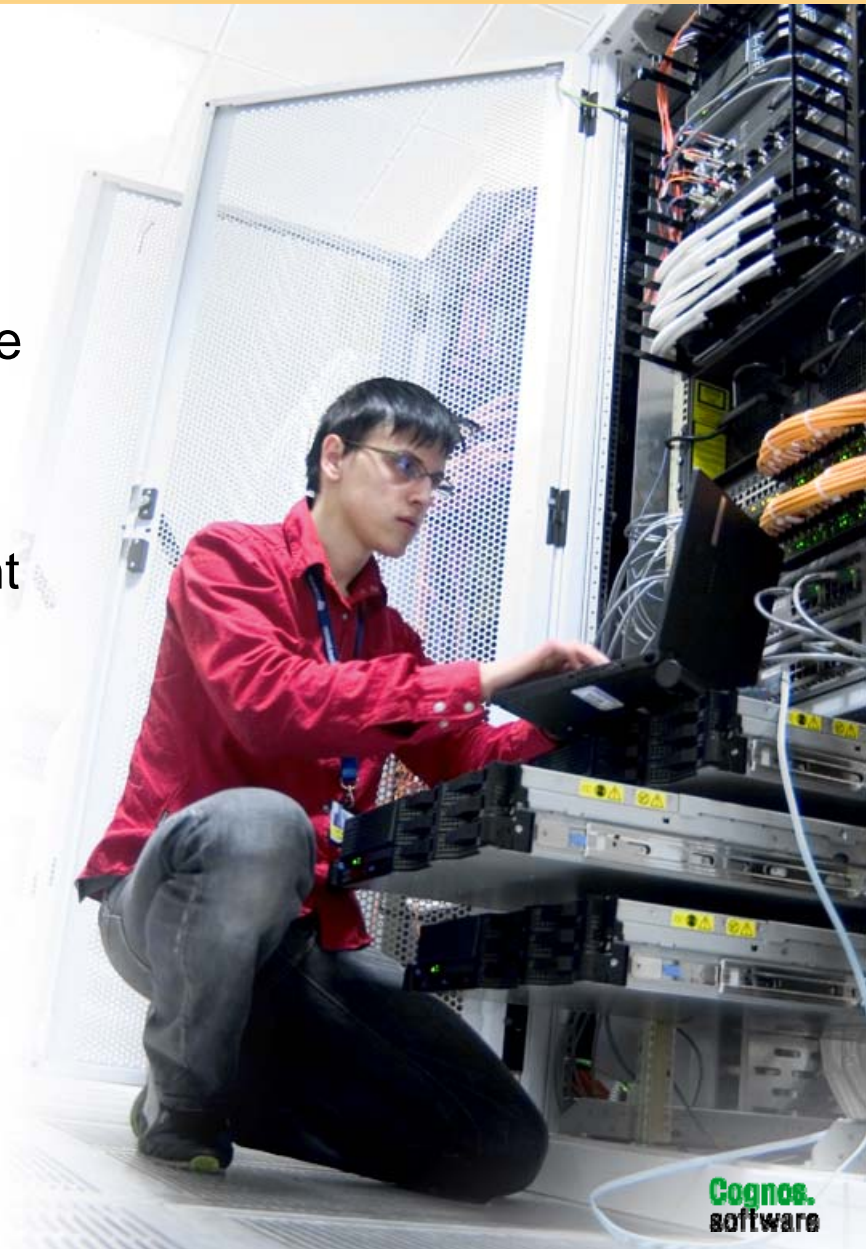
How is the F&AM Group coping with the economic slowdown?

- Consolidating hardware, software and personnel
- Telecommuting, encouraging IT employees to work from home when feasible
- Reducing the amount of “nice to have” changes in applications
- Using IT technology to reduce overhead fire fighting costs



F&AM and Transparency, Efficiency and Accountability

- Provide a single point for all IT development, support and maintenance
- Provide transparent IT support for fire fighting efforts (out of the public eye)
- Data Warehouse to provide single point of access for all fire and aviation data
- Use IT applications for accountability in the user community
- Provide accurate data to the federal, state, and local governments
- Provide accurate data to the public
- Interagency cooperation



For More Information

- **Brad Harwood, USDA Forest Service**
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 - phone: 208-387-5289







The End



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