E-Sponder Implementation at Wisconsin Emergency Management

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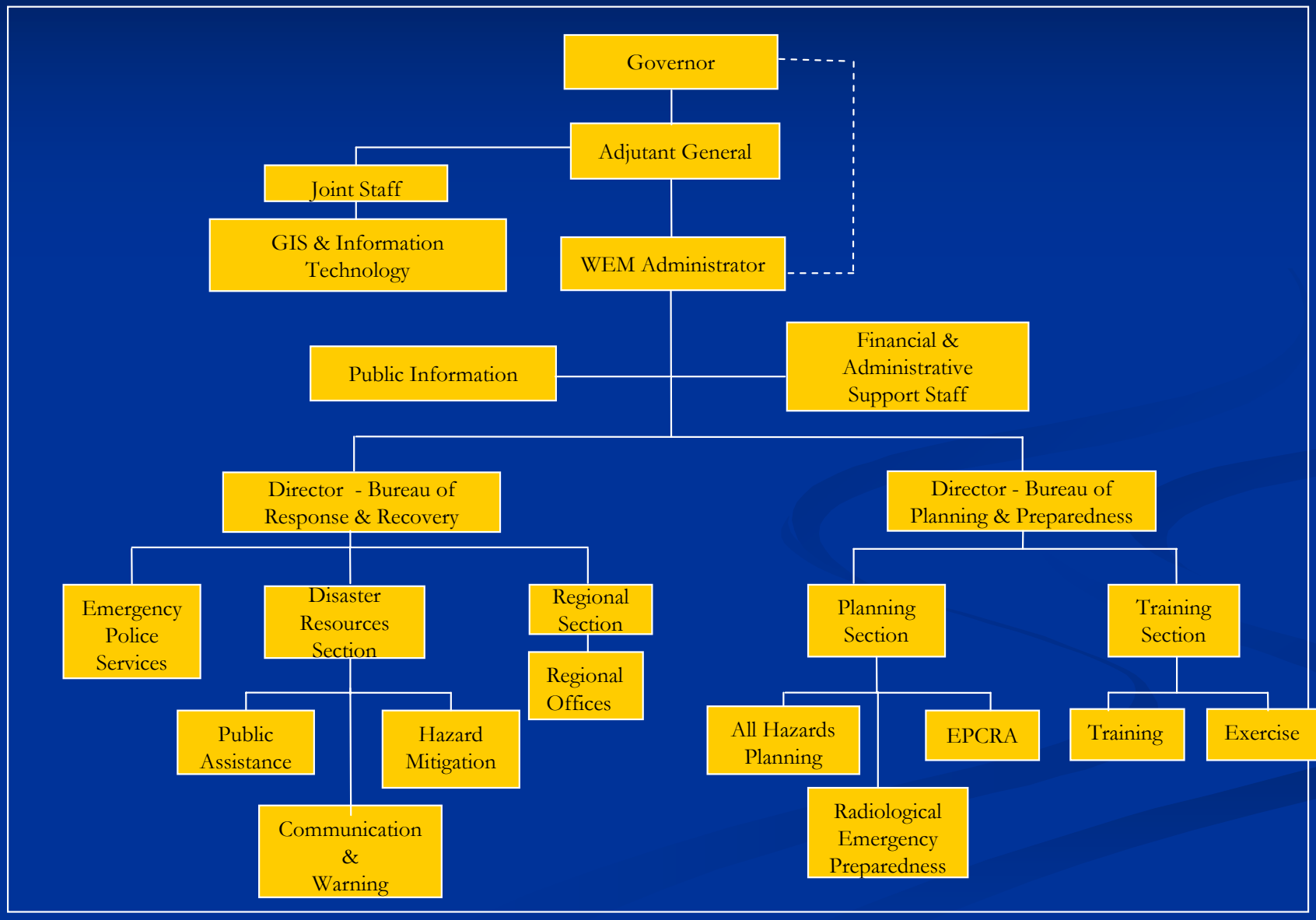
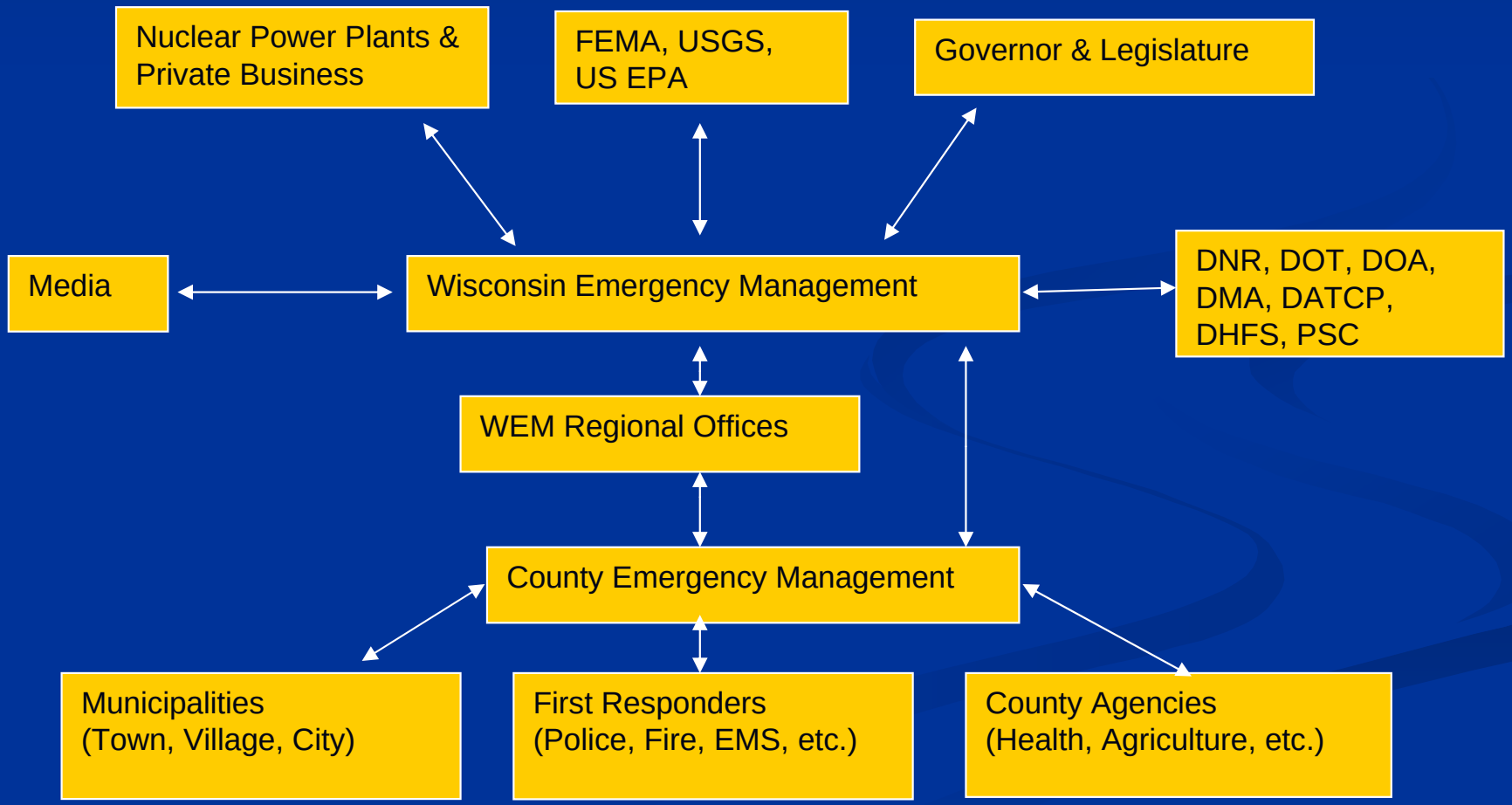


GIS Needs in Emergency Management

- Business Needs are driven by organizational structure for state-level coordination of emergency management
  - 12 programs within WEM plus the EOC
  - 3 Federal agencies involved
  - 7 state agencies involved
  - 5 categories of local agencies
  - Utilities, Non-profits, Insurance industry

Interagency Resources

WEM Interagency Organizational Relationships



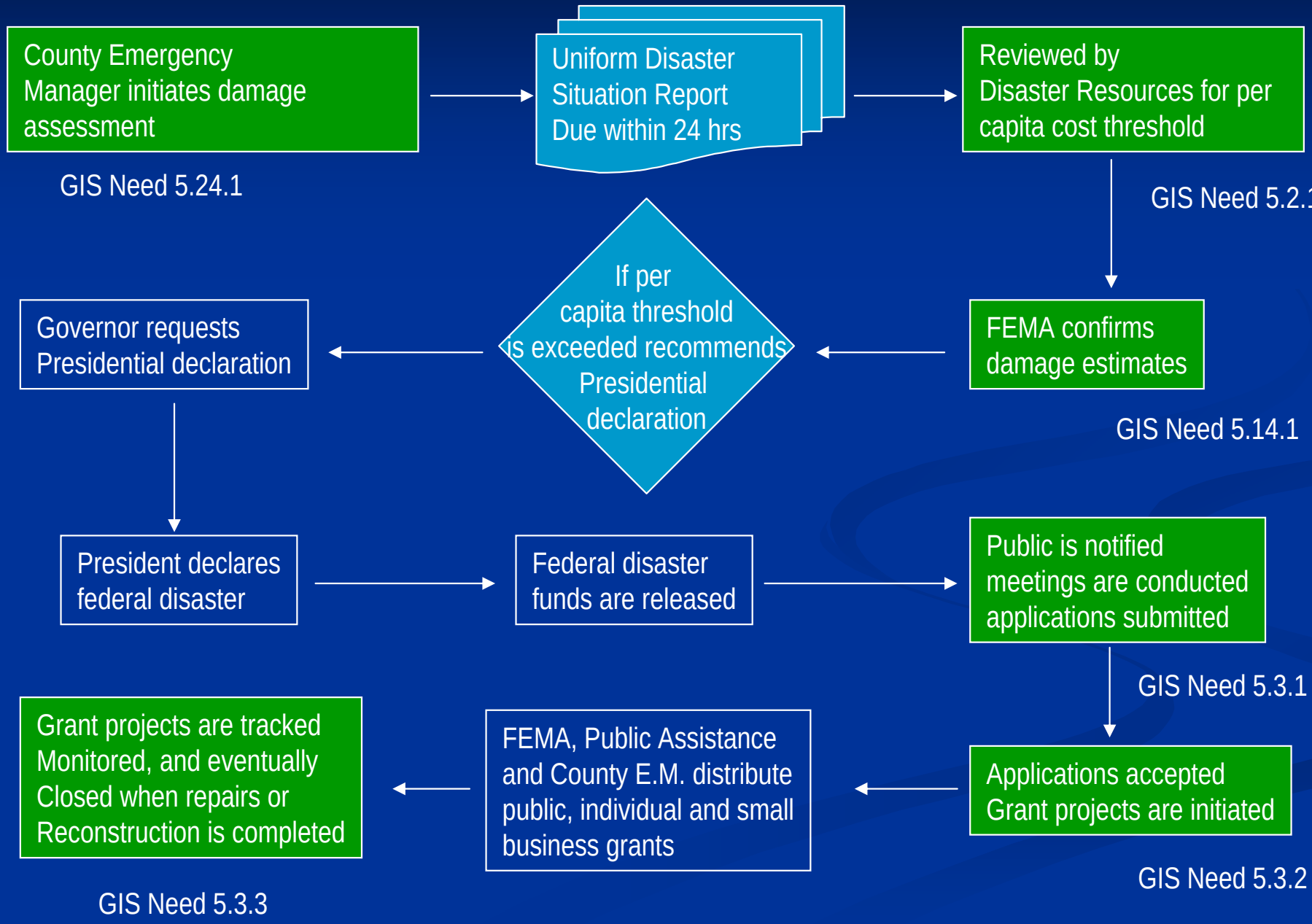
Inter-Agency Workflows

- Several workflows cross agency jurisdiction for mitigation, planning, response and recovery functions
  - Disaster Assessment
    (Local – State – Federal)
  - Hazardous Chemical Facilities Reporting
    (Emergency Planning and Community Right to Know Act, County EM, Regional Directors)
  - Public and Individual Assistance Grants for disaster recovery
  - Unified Command Structure for Incident Response
  - Many others

External Agency Roles

- Federal, State, Local, Non-Profit and Private agencies participate with WEM
- Many of these agencies currently have GIS capabilities and data that can contribute to the role of emergency management for each of their respective disciplines
- These agencies should develop or maintain existing GIS capabilities and data sets to support emergency management
  - Some of these agencies have non-spatial or tabular databases that could be spatially enabled
  - Addresses or other locational information could be mapped and be mutually beneficial to all the partner agencies

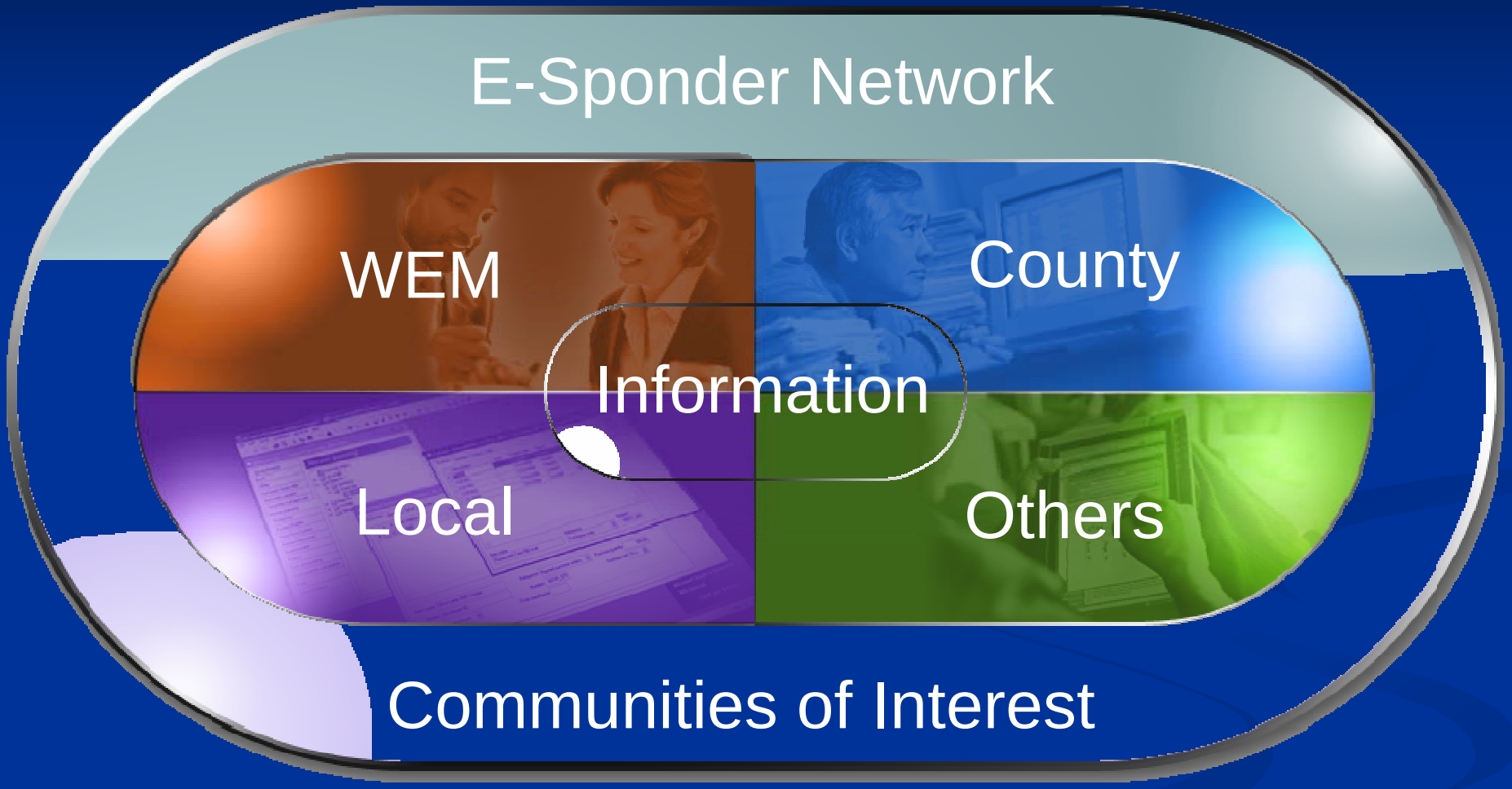
Disaster Assessment Workflow



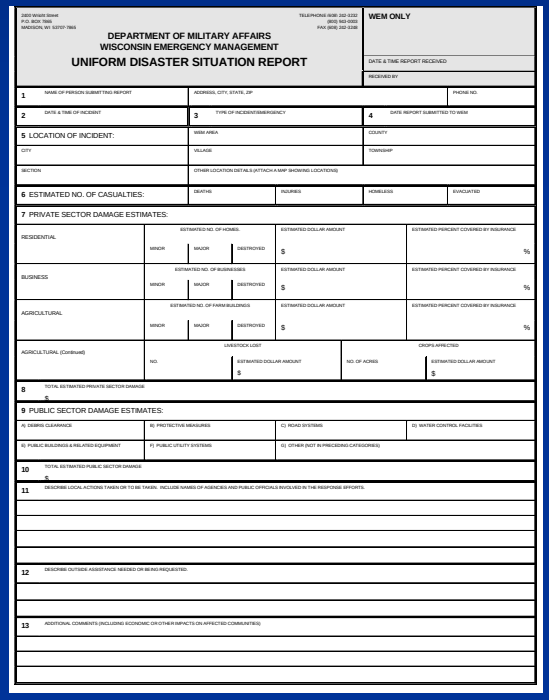
GIS Integration

- Utilize available GIS Data on demand
- Utilize publicly available GIS map services
- Create lists & enable mapping as needed – on the fly
- COMBINE user-created lists with GIS data for complete GIS view

What is E-Sponder?



Submission vs. Collaboration



DEPARTMENT OF MILITARY AFFAIRS
WISCONSIN EMERGENCY MANAGEMENT
UNIFORM DISASTER SITUATION REPORT

WEM ONLY

DATE & TIME REPORT RECEIVED

RECEIVED BY

1 NAME OF PERSON SUBMITTING REPORT | ADDRESS, CITY, STATE, ZIP | PHONE NO.

2 DATE & TIME OF INCIDENT | 3 TYPE OF INCIDENT/EMERGENCY | 4 DATE REPORT SUBMITTED TO WEM

5 LOCATION OF INCIDENT: | WEM AREA | COUNTY

CITY | VILLAGE | TOWNSHIP

SECTION | OTHER LOCATION DETAILS (ATTACH A MAP SHOWING LOCATIONS)

6 ESTIMATED NO. OF CASUALTIES: | DEATHS | INJURIES | HOMELESS | EVACUATED

7 PRIVATE SECTOR DAMAGE ESTIMATES:

	ESTIMATED NO. OF HOMES / BUSINESSES / FARM BUILDINGS	ESTIMATED DOLLAR AMOUNT	ESTIMATED PERCENT COVERED BY INSURANCE
RESIDENTIAL	MINOR / MAJOR / DESTROYED	$	%
BUSINESS	MINOR / MAJOR / DESTROYED	$	%
AGRICULTURAL	MINOR / MAJOR / DESTROYED	$	%
AGRICULTURAL (Continued)	LIVESTOCK LOST: NO. / ESTIMATED DOLLAR AMOUNT	CROPS AFFECTED: NO. OF ACRES / ESTIMATED DOLLAR AMOUNT	

8 TOTAL ESTIMATED PRIVATE SECTOR DAMAGE $

9 PUBLIC SECTOR DAMAGE ESTIMATES:

A) DEBRIS CLEARANCE | B) PROTECTIVE MEASURES | C) ROAD SYSTEMS | D) WATER CONTROL FACILITIES

E) PUBLIC BUILDINGS & RELATED EQUIPMENT | F) PUBLIC UTILITY SYSTEMS | G) OTHER (NOT IN PRECEDING CATEGORIES)

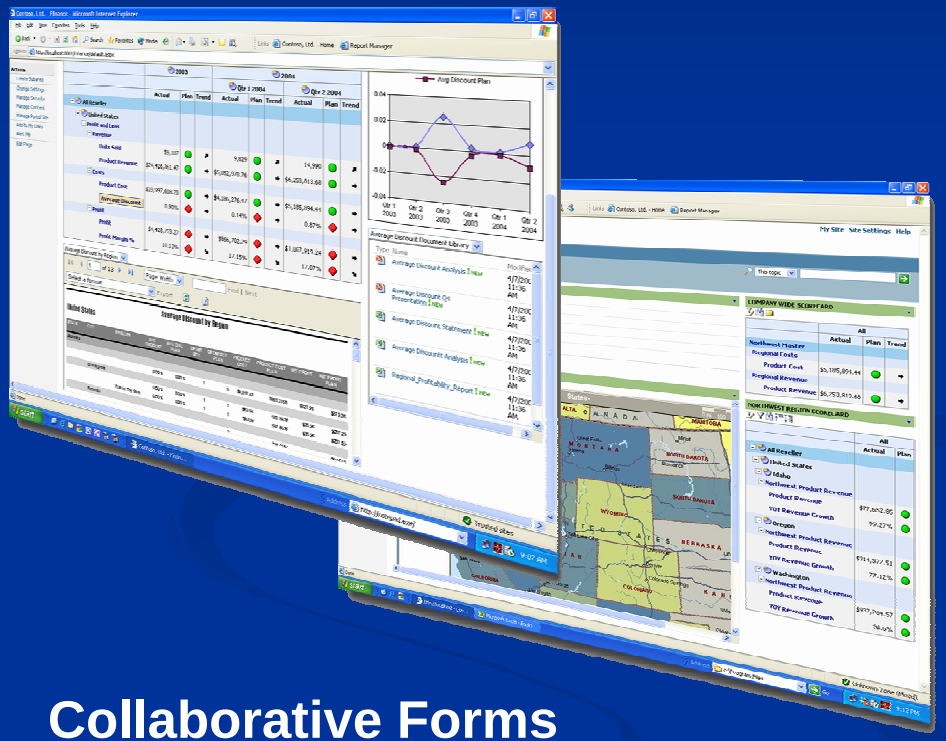
10 TOTAL ESTIMATED PUBLIC SECTOR DAMAGE $

11 DESCRIBE LOCAL ACTIONS TAKEN OR TO BE TAKEN. INCLUDE NAMES OF AGENCIES AND PUBLIC OFFICIALS INVOLVED IN THE RESPONSE EFFORTS.

12 DESCRIBE OUTSIDE ASSISTANCE NEEDED OR BEING REQUESTED.

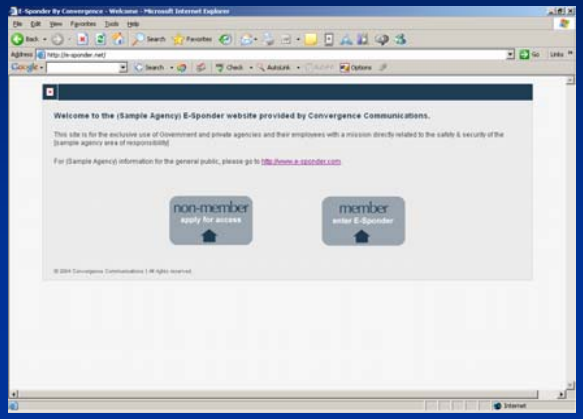
13 ADDITIONAL COMMENTS (INCLUDING ECONOMIC OR OTHER IMPACTS ON AFFECTED COMMUNITIES)

Faxed Form

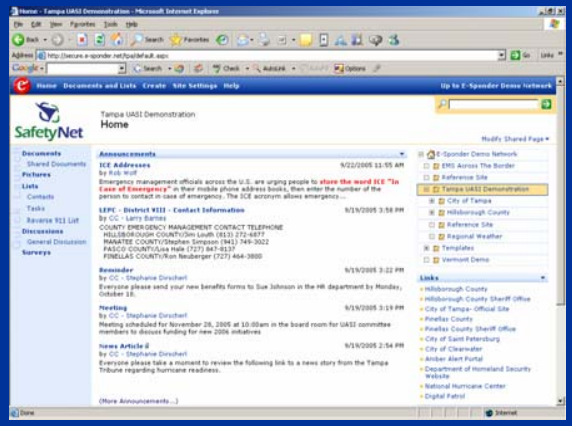


Collaborative Forms

Examples



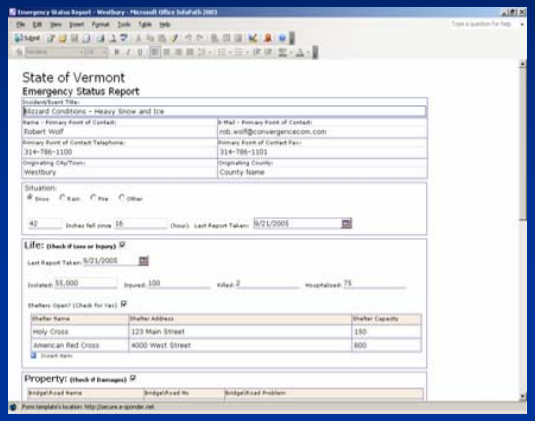
Easy Registration – No IT involvement



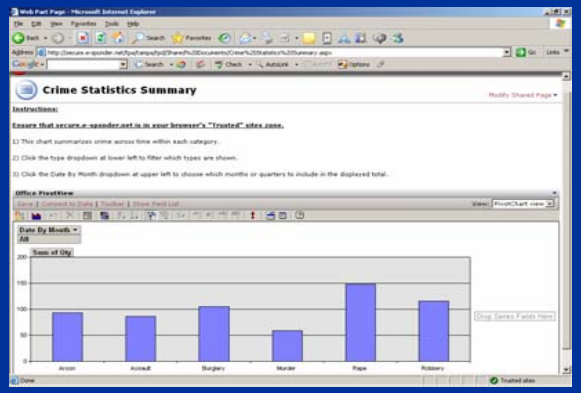
Common Operations Platform

- Extends Capabilities
  - Allows registration of the entire community of interest
  - Fast, Effective & Controlled
- Usability
  - Common Platform
  - No Conflicts
  - Lower Costs

Examples



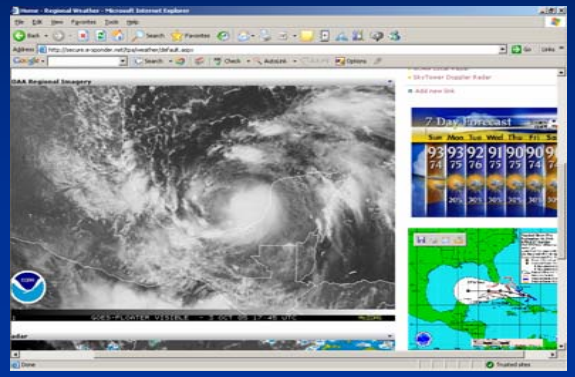
Automated Forms



Integrated Real Time Data

- Increased Productivity
  - Change Control is Automated
  - Intelligent Forms – One entry
  - Automated action
- Dashboards
  - Critical Info at a Glance
  - Reporting

Examples



Ability to Consume Others Content

On-the-Fly Data Gathering

- Centralized Data Location
  - Automated Consumption
  - Complete View
- On Demand Data Gathering
  - Quickly Adapt and Change
  - Gather critical information
  - Automate Information
    - Mapping

E-Sponder Demo

GIS-EOC Integration

GIS-EOC Integration

- Inherent data linkage between EOC & GIS
  - No need to massage data amongst systems
- Must accommodate adding new data & layers
- Must accommodate new functions without retrofitting existing functions

COP Viewer Requirements

- Credential management
  - Support both GIS and E-Sponder access
  - Compliant with DET standards
- E-Sponder-GIS linkage:
  - Click on map event: display E-Sponder records
  - Click E-Sponder event: zoom to event in viewer
  - Status of E-Sponder events displayed thematically on a map
  - NIMS- and ICS-compliant symbology
- E-Sponder event changes reflected on map
- E-Sponder events available to desktop GIS

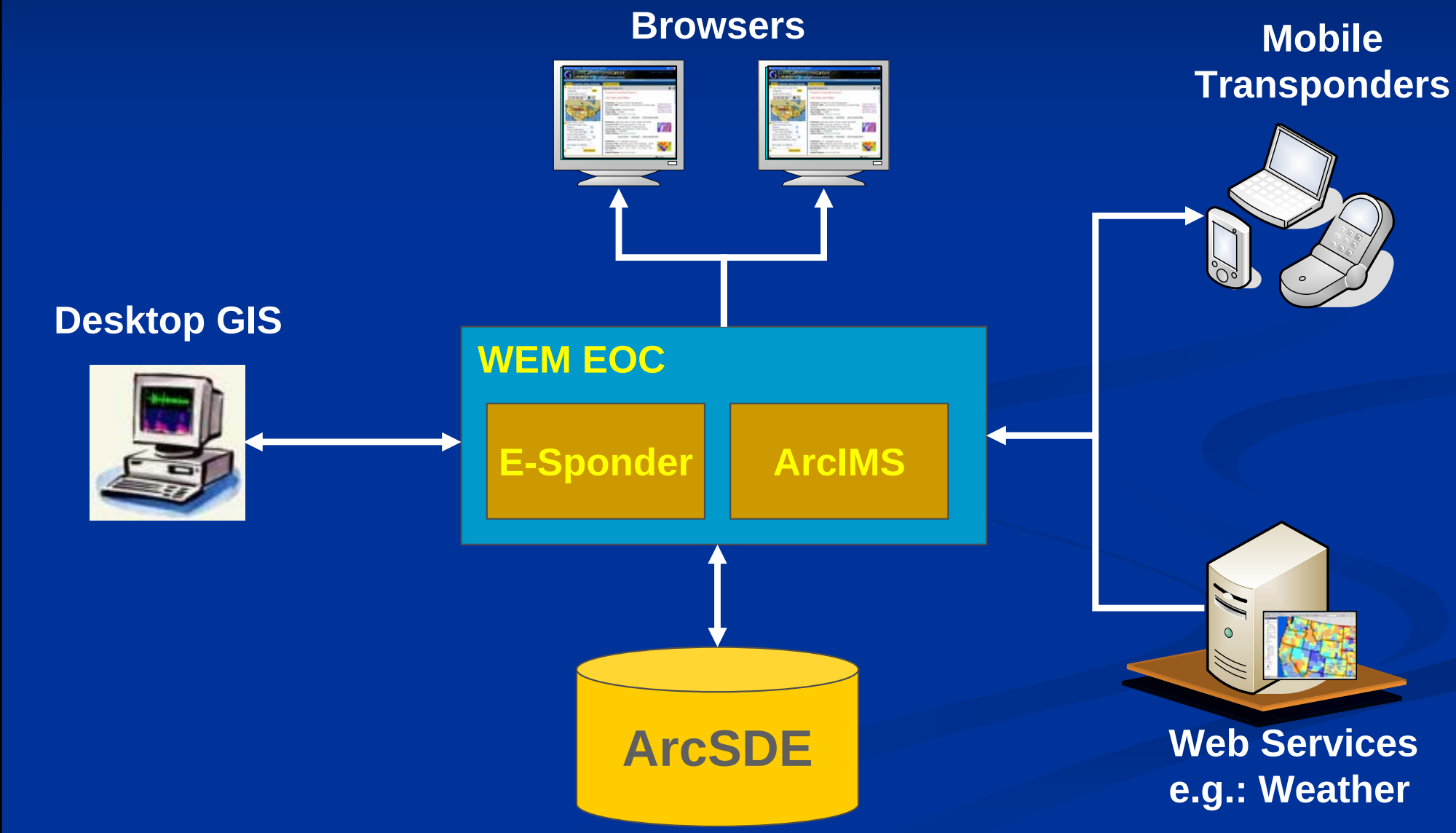
Common Operating Picture GIS Viewer

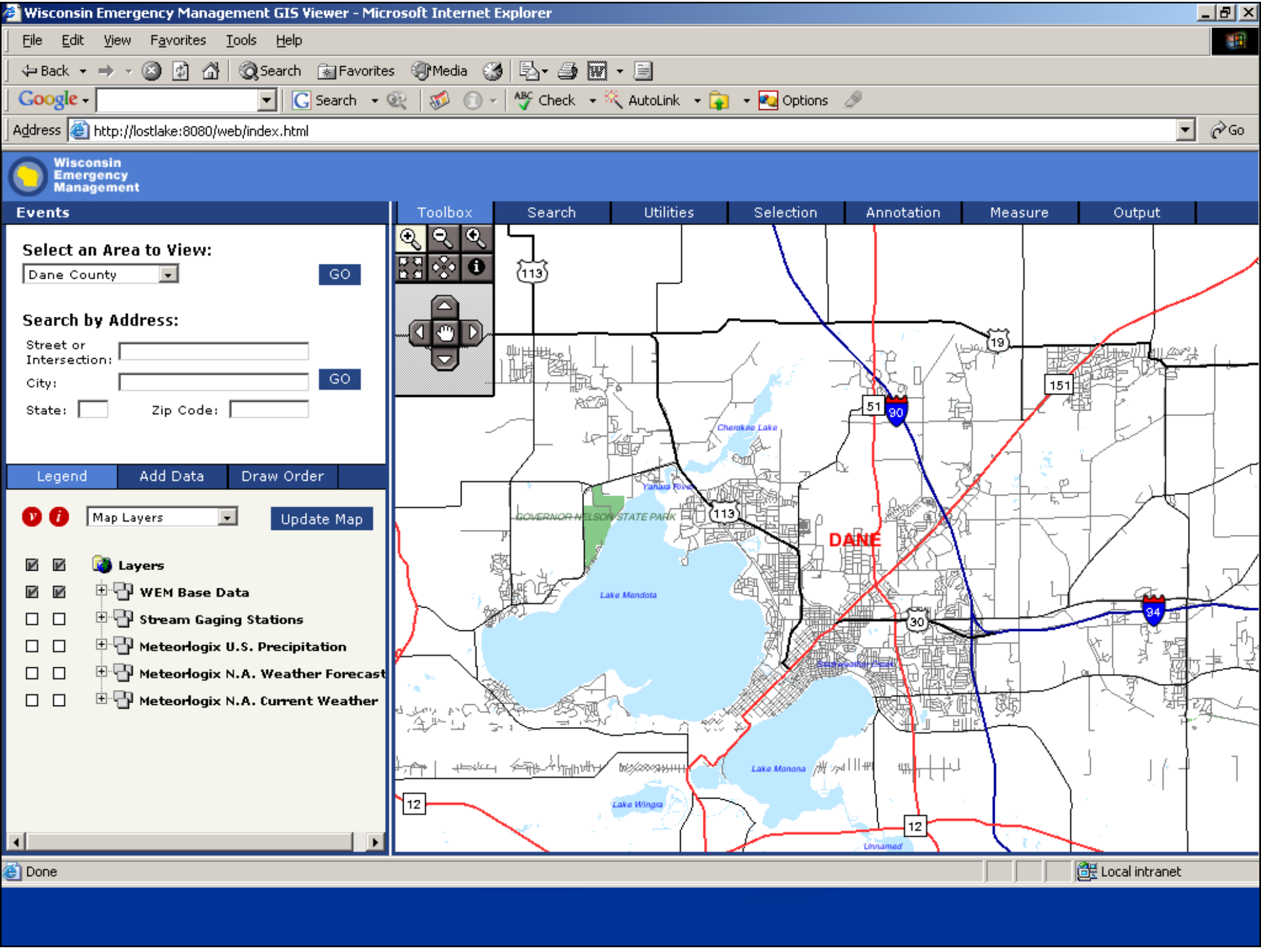
- Support for multiple map services
- Configurable “Windows Explorer-like" TOCs
- Spatially enabled query builder with saved queries
- On-the-fly user defined symbology
- Advanced buffer, proximity, and selection tools
- Multi-layer query results:
  - Sort result records
  - Record-based zooming/selecting
  - Exporting result records

Common Operating Picture GIS Viewer Tools

- Configurable backend query engine with XML interface that support JDBC, ArcSDE, and ArcIMS queries allows for easy creation of custom forms and queries
- Map service profiles with multiple TOC and AOI configurations
- Comprehensive administration tools

EOC GIS Architecture



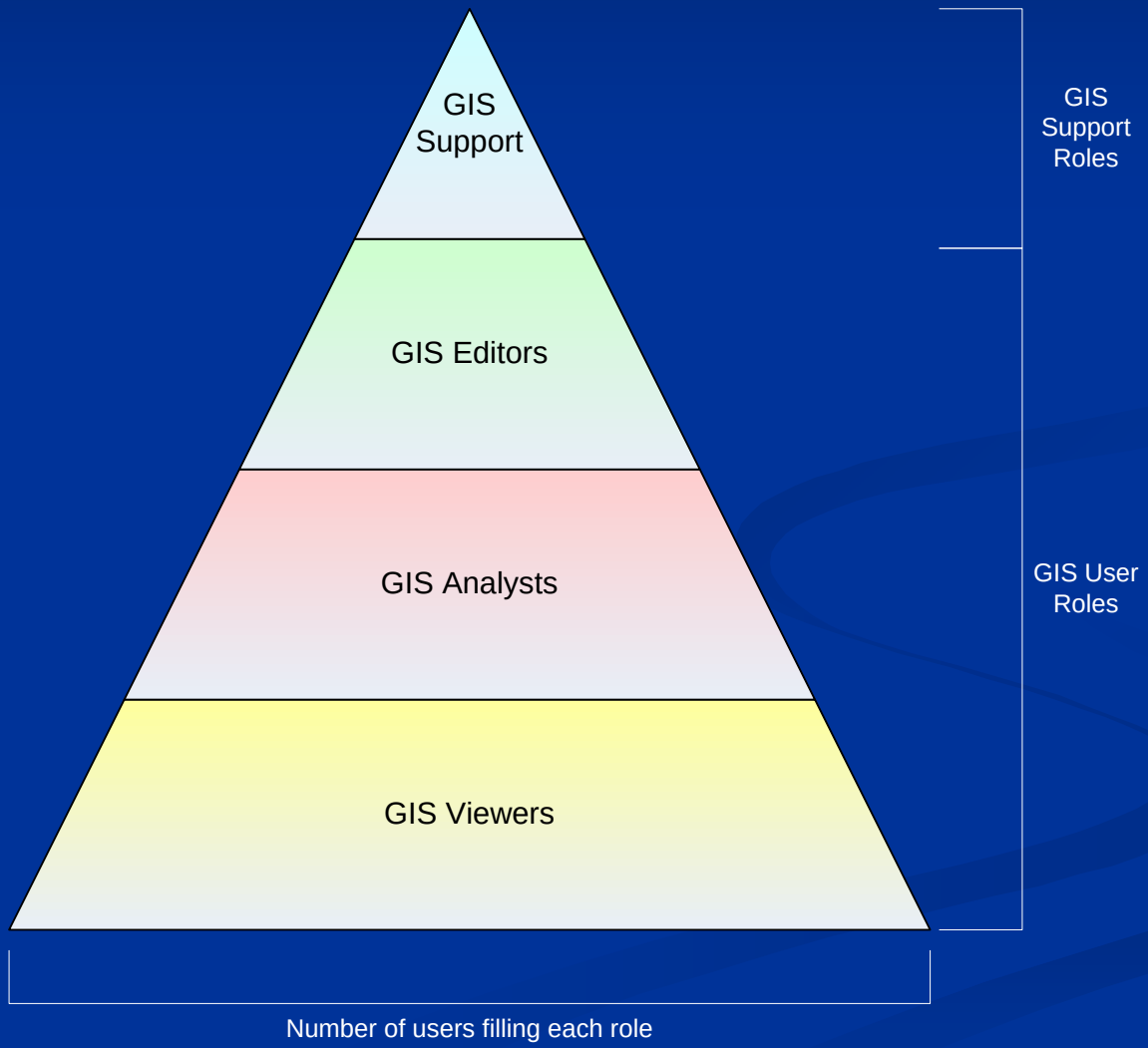

Wisconsin Emergency Management GIS Viewer - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Google Search Check AutoLink Options
Address http://lostlake:8080/web/index.html
Go
Wisconsin Emergency Management
Events
Select an Area to View:
Dane County
GO
Search by Address:
Street or Intersection:
City:
GO
State:
Zip Code:
Legend
Add Data
Draw Order
Map Layers
Update Map
Layers
WEM Base Data
Stream Gaging Stations
Meteorlogix U.S. Precipitation
Meteorlogix N.A. Weather Forecast
Meteorlogix N.A. Current Weather
Toolbox
Search
Utilities
Selection
Annotation
Measure
Output
DANE
GOVERNOR NELSON STATE PARK
Lake Mendota
Lake Monona
Lake Wingra
Cherokee Lake
Yahara River
Unnamed
113
19
151
51
90
30
94
12
Done
Local intranet

GIS Implementation

GIS Implementation

- Application rollout
  - Phase I
  - Phase II
- Data interation
  - DOT, DNR, PSC, DHFS, DATCP, DMA
  - Local Data (pilot project)
  - Privately-owned data (e.g.: utilities)
- Data standards

GIS Roles in Emergency Management



Training for GIS Users

- A need for a GIS user was identified in each of the program areas within WEM
  - Viewers
  - Editors
  - Analysts
- These users will be viewing, editing or analyzing data from the centralized emergency management database and will need to be trained according to the skill level requirements
- WEM should provide training to all of the GIS users by the end of the first year of implementation
- External agencies involved in emergency management will have similar training needs

Assuring System Availability

- Production GIS Environment – designed for maximum user demand
- Test GIS Environment - staging environment for new hardware, software, data or applications
- Backup or Redundant GIS Environment - activated in the event the main EOC facility in Madison is not operational

Inter-Agency GIS Workgroup for Emergency Management

- Support Wisconsin in its efforts to utilize GIS in emergency management
- Cross-section of individuals that represent both Emergency Management business related functions and GIS knowledge
- Work cooperatively with the state GIO to develop emergency management related policy issues
- Develop data sharing agreements, GIS staff support for emergency response, and other activities as necessary

Data Sharing Agreements

- WEM is extremely dependent on information from other agencies to operate, especially with regard to spatial data.
- Data sharing agreements and data standards are critical to the integration of GIS at WEM.
- Should contain the following parameters
  - Data content standards
  - Metadata standards
  - Data sharing formats
  - Symbology standards
  - Naming conventions
  - Data update procedures and stewardship responsibilities
  - Data privacy and security issues