Command, Control and Coordination in a Large-scale Emergency Response

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Rising Expectations....

"More and more, citizens will expect the same ease of service from the United States of America that they expect from America Online. When we all know how each other lives governments increasingly have to promise the same things. And when we know how each other shops, governments are going to have to *deliver* the same services with the same ease. And the only way governments will be able to do that is by operating more like good companies. To put it another way, the more people want government to become as quick and efficient as Amazon.com, the more government *has* to operate like Amazon.com."

Thomas Friedman, *The Lexus and the Olive Tree* (Newly Expanded and Updated Edition April 2000)
Page 196

Purpose

Discuss key issues that will affect GIS interface design and development for the Multi-Agency Coordination System.

Goal is to provide the tools to allow centers and entities to perform their key functions of coordination, policy management, priority setting, resource allocation and management and maintaining common situational awareness across agencies and jurisdictions to effectively respond to large-scale emergencies.

It's all about timely and effective decision-making to save lives and property.



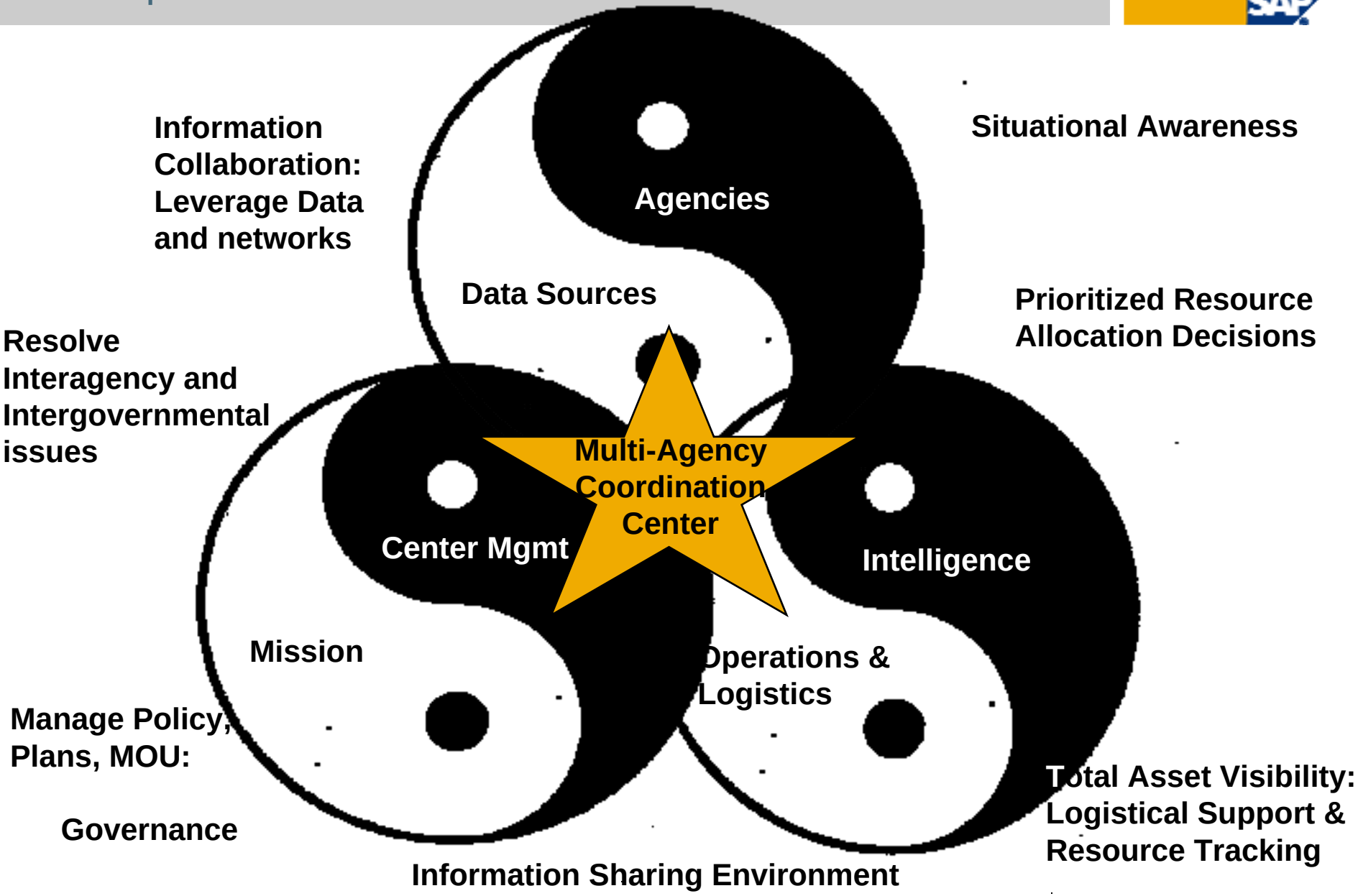




Command, Control and Coordination in a Large-scale Emergency Response

The presentation will provide insights into the key requirements to coordinate across multiple agencies and jurisdictions in order to synchronize information, resource management and coordinate policies to effectively command and control a response effort to a major crisis. It will discuss key aspects of the National Incident Management System, Incident Command System and the National Response Plan (soon to become the National Response Framework). It will then discuss techniques and technologies to apply these concepts in a coordinated command, control and coordination system that provides an integrated view of shared information and decision support tools to make effective decisions and coordinate their execution. It will discuss key command and control nodes that facilitate a coordinated, multi-agency response and the information and tools required to ensure these nodes can effectively provide vital information to decision-makers and supervise the execution of response plans, as well as prioritize and coordinate resource allocation.

Multi-Agency Coordination is About Fusion... Full Spectrum Fusion



Draft NRF Key Principles

Engaged partnership

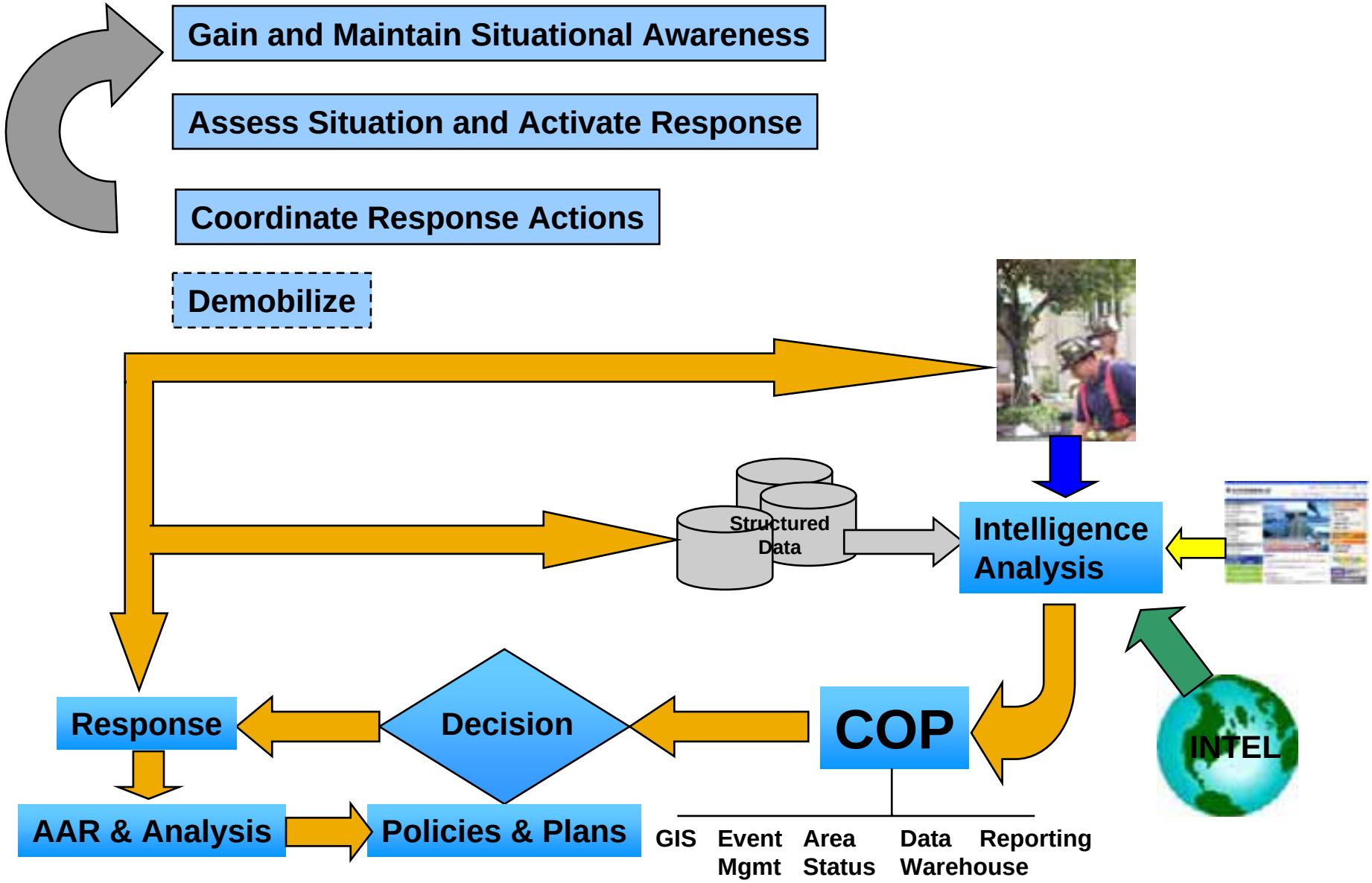
Tiered Response

Scalable, flexible and adaptable operational capabilities

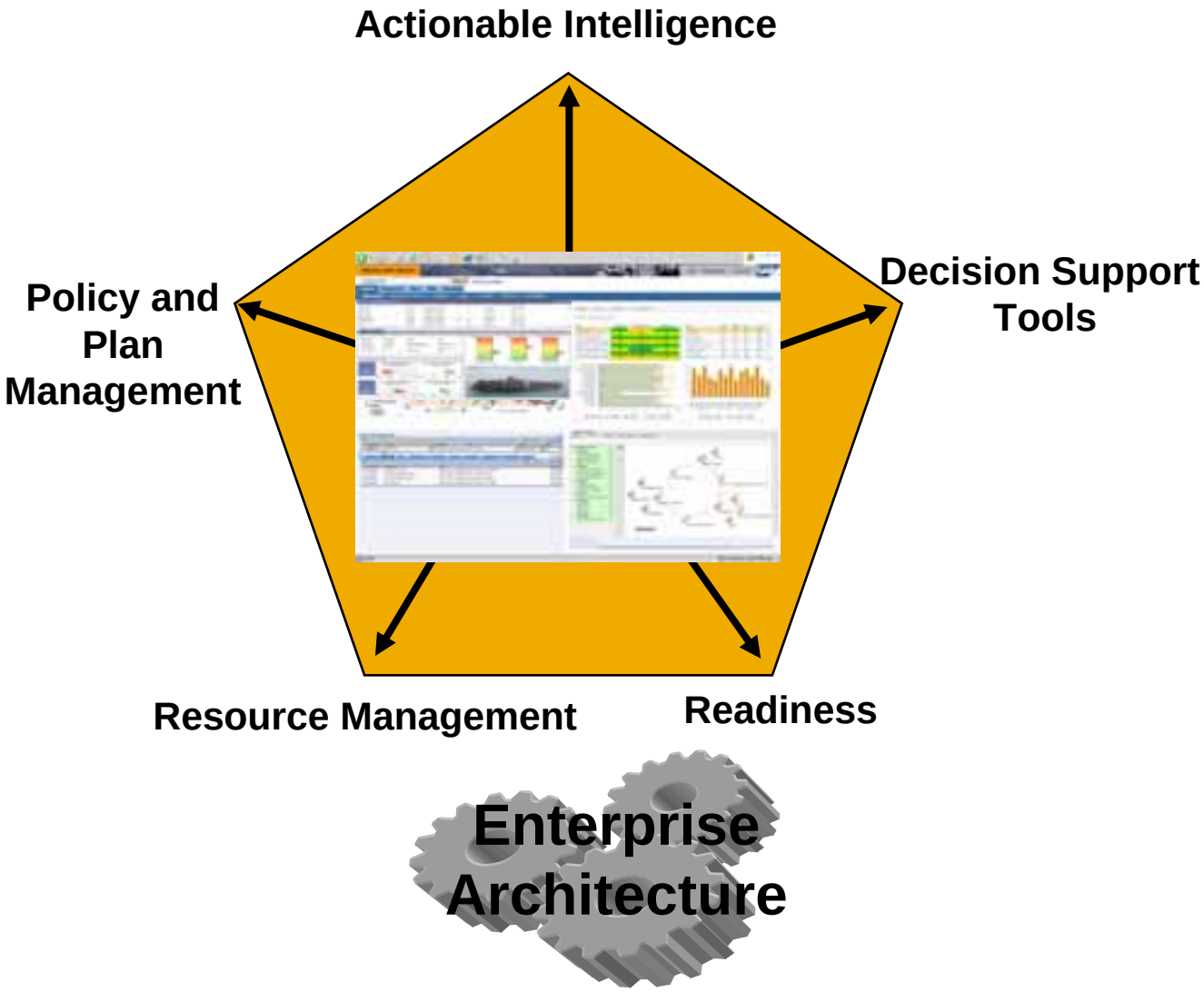
Unity of effort through unified command

Readiness to act

The NRF Response Process



Enabling the Response Process



Primary Multi-Agency Coordination Center Functions

Support incident management policies and priorities

Facilitate logistical support and resource tracking

Inform resource allocation decisions using incident management priorities

Coordinate incident-related information

Coordinate and resolve interagency and intergovernmental issues regarding incident management policies, priorities, and strategies

Multi-agency Coordination System Elements

Emergency Operations Centers

Multi-agency Coordination Entities

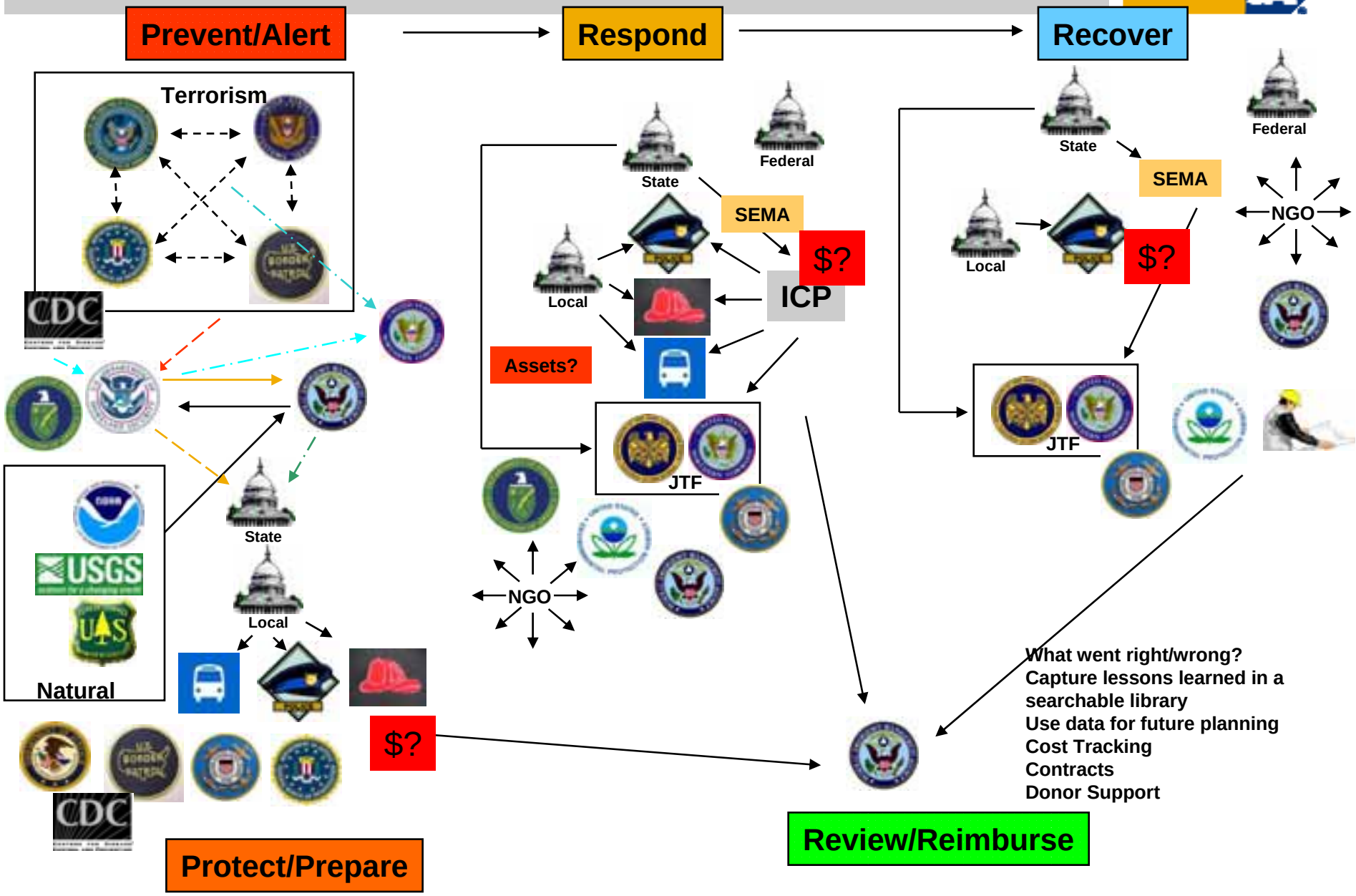
On-scene command structures

Resource centers

Dispatch centers

S1

Actors and Flows



Slide 11

S1 SAP, 11/2/2005

The Response Team

Issues

Command and control
- Local vs. State vs. Federal
- Authority to task
- Task organization
- Military/civilian
- Priority Setting
- Situational Awareness

Coordination
- Laws, regulations and policies
- Priorities
- Resource allocation

Other integration/coordination requirements
- NGO
- Private
- Volunteer

Information Sharing
- Systems Integration
- Knowledge bases
- Collaborate Information Environment
- Policy and Ownership
- Classification issues
- Intelligence vs. information

Resource Management
- What do we have?
- Where is it?
- Does someone else have what we need?
- Can we get it?
- In transit visibility/Total Asset Visibility

Public Affairs
- Timely and accurate information
- What can be released?
- Consistent messages

Contracting
- Requirements
- Bid/no bid
- Costs
- Tracking

Financial
- Funding for equipment, personnel, etc
  - Sources
  - Requirements
  - Control
- Cost reimbursement for disaster response
  - Cost tracking
  - Reimbursement request
  - Who pays?

Key Design Imperatives

Integrated Common Operating Picture

- Geospatial
- Integrated, real-time data

Shared knowledge

- Common knowledge bases
- Security

Synchronized policies and priorities

- Understand and coordinate policy requirements and compliance
- Understand and integrate the priorities between jurisdictions and agencies

Integrated resource management

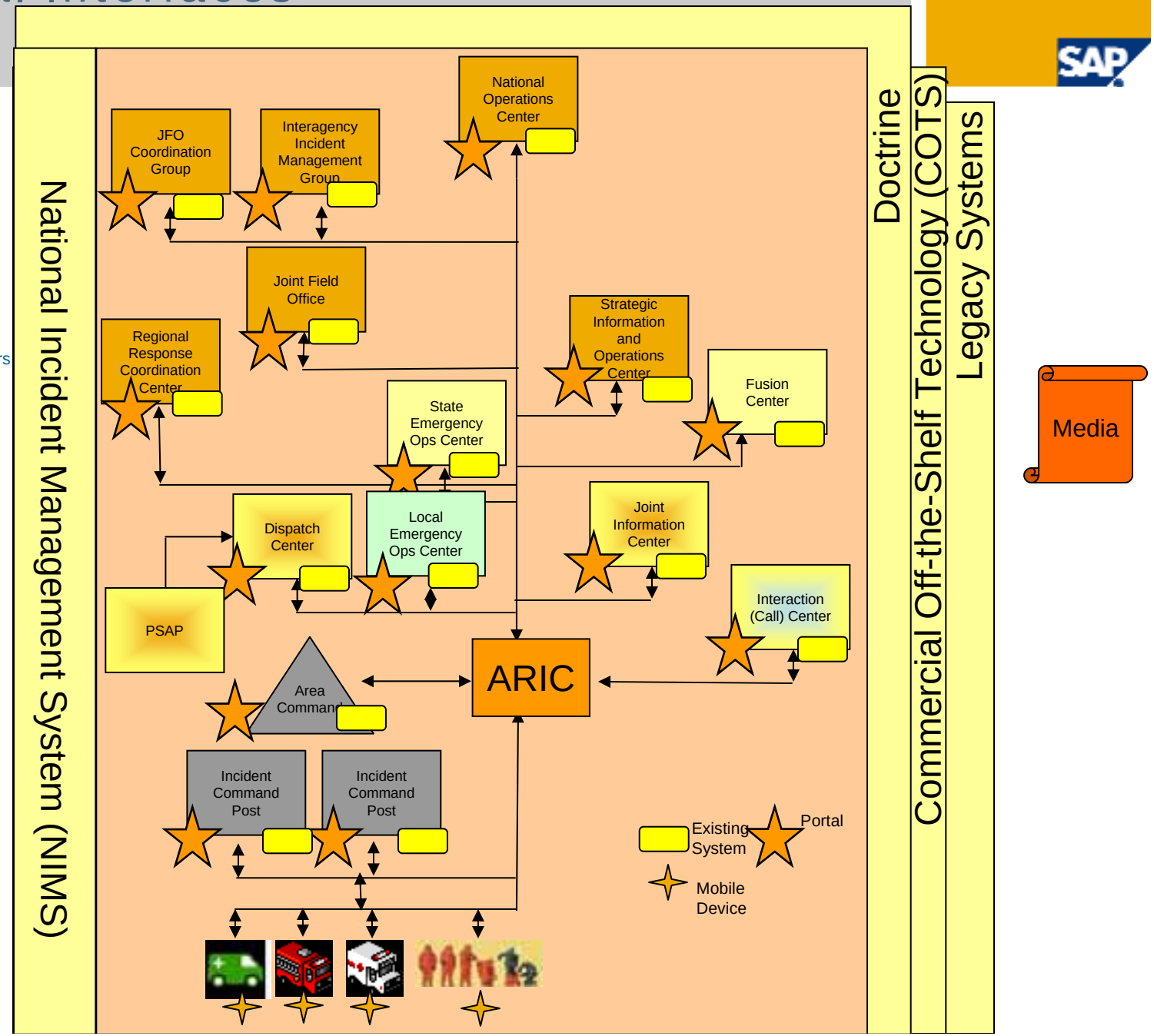
- Geospatial awareness – location and status
- Integrated dispatch

Operational Interfaces

Multi-agency Coordination Entities

EOC's/Multi-agency Coordination Centers

Incident Command



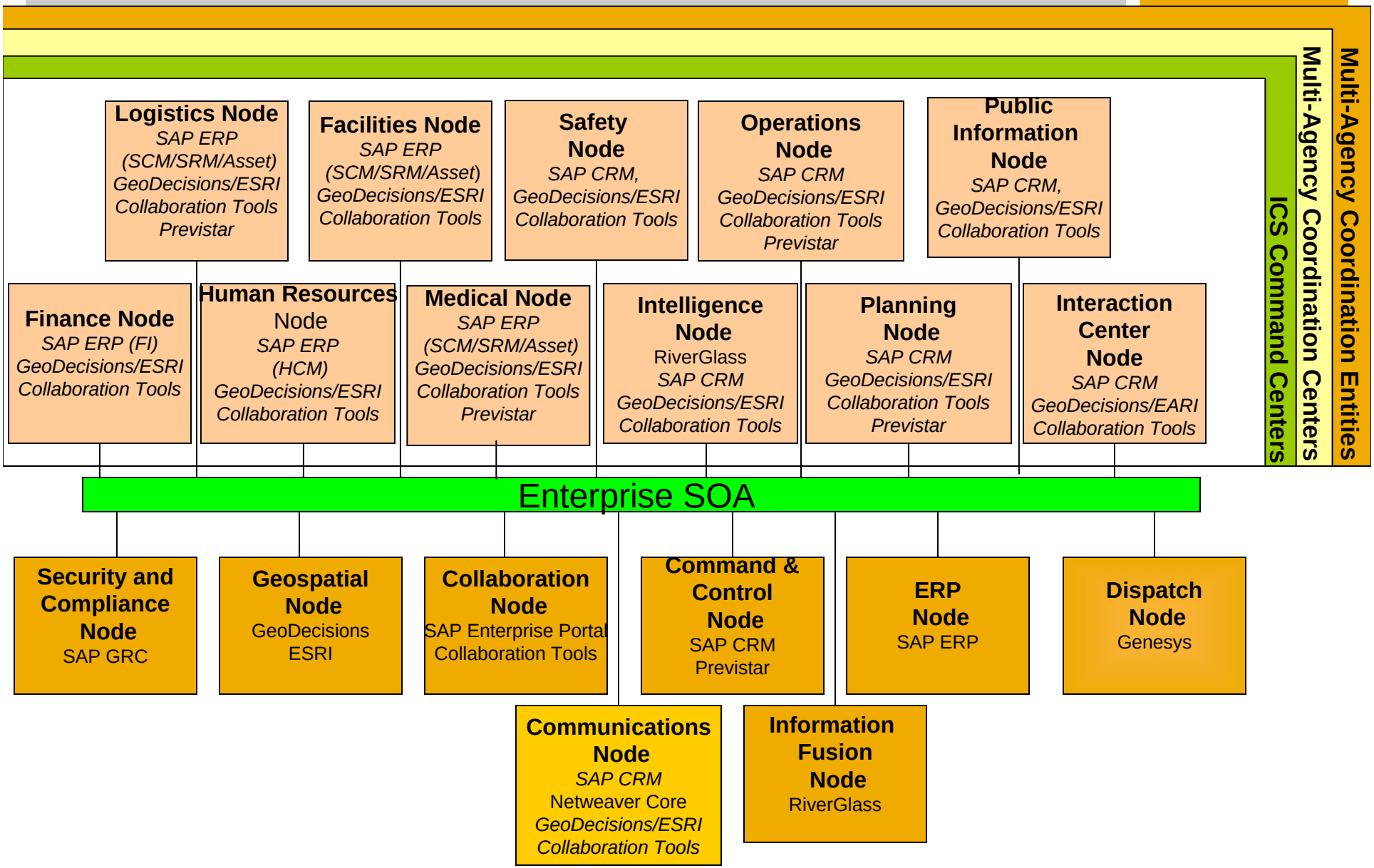
Federal

State

local

Incident Command

Systems Interfaces



Node Requirements

Logistics Node

Primary task – Anticipate material requirements and ensure that supplies and materials are on-hand, where they are needed and when they are needed. Maintain TAV

- MACE: Coordinate federal logistics efforts and large-scale commercial support
- MACC: Coordinate state-level logistics across agencies, coordinate requests from ICP(s), manage transportation and delivery, maintain overall logistics status
- ICS: Maintain incident logistics status, order and receive supplies and materials

Data Requirements:

- Warehouse status, order status and tracking, ICP status, rates of consumption, consumption drivers (people, equipment), routes, transportation assets, contracts, suppliers

Key Metrics/information:

- Status by class of supply (fuel, food, water, repair parts, consumables)-show overall current, current worst location and 12 hour projection. Be able to drill down to locations and sub-classes-show by chart and GIS as required. Should be a stoplight chart.
- Route status by route-show by GIS
- Status of equipment (on-hand, operational, down)-show overall current, current worst location and 12 hour projection. Be able to drill down to locations and sub-classes-show by chart and GIS as required.
- TAV map. Track key movements from request, through shipment to receipt at the ICP. GIS Display

Key Alerts:

- Any site that is non-operational for logistics
- Changes in core consumption rates that will change logistics flow and planning
- Route closures
- New sites
- Contract violations

Notes:

- Need to ensure BI is set up to provide the metrics and to project trends
- Manage contracts via SCM

Facilities Node

Primary task: Manage facilities used by the recovery effort, such as evacuation centers, warehouses, operations centers, repair facilities, logistics bases, helicopter landing sites (HLS). Coordinate engineering support for sites and routes

- MACE: Manage federal sites and coordinate with state officials for site location and support
- MACC: Manage state-level sites. Coordinate with the local governments. Maintain visibility over all sites and requirements
- ICS: Manage the ICS site requirements: ICS location, staging bases

Data Requirements:

- Site locations, site capabilities (beds, parking, communications, office space, storage space, power, HLS), routes

Key Metrics/information:

- (Percent capacity)—show current overall, current worst case, be able to drill down to location and sub-class. Show chart and GIS
- Facilities status (functional systems such as sanitation, communications, power), repair operations—show current overall, current worst case, 12-hour projection. Be able to drill down to location and sub-class. Show chart and GIS
- Route status (current status, repair operations), 12-hour projection—show by chart and GIS with drill down to get details

Key Alerts:

- Any site that is projected to exceed capacity within 12 hours
- Any site that is no longer functional or has a key system go down
- Any route closures

Notes:

- Need to ensure BI is set up to provide the metrics and to project trends

Safety Node

Primary task: Coordinate any safety notifications, conduct risk assessments, investigate safety incidents

- MACE: Coordinate federal safety issues. Provide assistance teams as required
- MACC: Coordinate state and local safety issues
- ICS: Manage safety on the site and conduct site-specific risk assessments

Data Requirements:

- Site locations, accident reports, traffic data, weather data, hazard data

Key Metrics/information:

- Open safety incident investigations
- Closed safety incident investigations
- Risk assessments completed-chart and GIS display. Drill down for details
- Risk assessments pending-chart and GIS display. Drill down for details
- Hazard sites

Key Alerts:

- Critical weather changes
- Accident notifications
- New hazard identifications

Notes:

- Can ICM be used for risk assessment management?
- Manage safety plans and risk assessments via document management and the portal

Operations Node

Primary task: Maintain situational awareness and manage the incident response and recovery. Provide command, coordination and control.

- MACE: Coordination center for federal activities. Coordinate with state.
- MACC: Coordination center for all state activities. Coordinate with federal and local. Coordinate across jurisdictions and agencies.
- ICS: Incident command center. Command and control all activities within the designated incident area of operations. Report to Area Command if appropriate. Coordinate activities through MACC.

Data Requirements:

- Events, response elements, assets, routes, accidents, weather, hazards

Key Metrics/information:

- Event status-current, projected 12 hour. Show overall and worst. Drill down for details. Chart and GIS view. Group to areas if appropriate.
- Number of open and number of closed events. Group to areas if appropriate
- Key decisions made. Chart and GIS view. Group to areas if appropriate.
- Response element status-current, projected 12 hour. Show overall and worst. Drill down for details. Chart and GIS view.
- Response element locations and activities. GIS view. Drill down for details.
- Location of key leaders. Chart and GIS view. Drill down for details.

Key Alerts:

- New events or changes in event status
- New decisions at lower levels
- Cross area-jurisdiction-agency events and issues
- Resource shortfalls that impact mission performance
- Underutilized assets
- Response elements that will become ineffective in 12 hours or less given operational employment time or resource consumption
- Any serious injuries
- Any new hazard that will require remediation and/or re-routing and relocation of assets
- Any significant change in operational conditions, such as significant weather changes

Notes:

- Need to ensure BI is set up to provide the metrics and to project trends
- Manage team credentials/resource typing through DFPS

Public Information Node

Primary task: Coordinate all public information and media relations requirements. Prepare talking points and media relations plan

- MACE: Primary federal contact
- MACC: Primary state and overall media coordinator. Provide media statements, escort and manage media representatives. Provide talking points and target messaging. Get media credentials.
- ICS: Provide timely information, ensure media is properly escorted and does not interrupt response and recovery efforts.

Data Requirements:

- Event data, media contacts and credentials, trained speakers,

Key Metrics/information:

- Media contacts-total, last 12 hours. Chart and GIS. Drill down for details
- Media personnel in the incident area. Chart and GIS. Drill down for details
- Location of key media relations personnel
- Location of key leaders
- Current events
- Hazard zones
- Routes

Key Alerts:

- New events
- Significant changes in events
- Media personnel showing up on the scene or at a facility
- Media event such as a key news cast/analysis
- Public comments by responders
- New hazards
- Route closures

Notes:

Finance Node

Primary task: Monitor financial requirements and status, control financial activities, pay bills as required

- MACE: Maintain federal disbursement and control
- MACC: Maintain state disbursement and financial control
- ICS: Finance and administration, lower level functions

Data Requirements:

- Financial transactions, activities that drive costs (estimate costs at standard cost, based on cost drivers)

Key Metrics:

- Number of disbursements and locations. Chart and GIS. Group as appropriate. Drill down for details
- Total cost to date. Chart and GIS. Group as appropriate. Drill down for details
- Project costs over the next 12 hours. Chart and GIS. Group as appropriate. Drill down for details
- Suspect transactions. Chart and GIS. Group as appropriate. Drill down for details

Key Alerts:

- Financial control violation
- Exceed Cost threshold

Notes:

- Need to ensure BI is set up to provide the metrics and to project trends

Human Resources Node

Primary task: Manage human resources both during the prepare phases to ensure that all required skills are current and during the response phase to properly allocate key skills.

- MACE: Manage federal individuals
- MACC: Manage state individuals
- ICS: Track the flow of people in and out of the incident site(s)

Data Requirements:

- Human capital data, skills requirements, people locations, volunteers

Key Metrics:

- Key skills shortfalls. Chart and GIS display. Drill down for details
- Total people working the response. Chart and GIS. Group as appropriate. Drill down for details
- Dispatched personnel who haven't checked into an ICP. Chart and GIS. Drill down for details. Group as appropriate
- Injuries and deaths. Chart and GIS display. Drill down for details
- Volunteers—activity, credentials, and location. Group as appropriate. Chart and GIS display. Drill down for details.

Key Alerts:

- Serious injury or death
- Personnel unaccounted for in 4 hours
- Critical skills shortfall
- Fraudulent volunteer

Notes:

- Will HCM portion of DFPS cover all personnel, such as volunteers and individuals not part of a team?

Medical Node

Primary task: Manage medical resources, medical evacuations and medical personnel and supplies.

- MACE: Manage federal assets
- MACC: Manage state assets
- ICS: Track medical assets and requirements at the incident

Data Requirements:

- Hospital data, medical team data, medical professional data, medical supply data, evacuation requirements

Key Metrics:

- Pandemic outbreaks and vectors. Chart and GIS. Drill down for details. If appropriate show projected spread.
- Hospital status (open beds, capacity). Chart and GIS. Drill down for details. Color code by capacity saturation.
- Hospitals and other medical facilities in a hazard zone. Chart and GIS. Drill down for details
- Medical team status. Group by area. Chart and GIS. Drill down for details.
- Evacuations (ambulatory, critical, life support). Group by area. Chart and GIS. Drill down for details
- Medical supply status-current all, current worst case, projected 12 hours. Group by area. Chart and GIS. Drill down for subclasses and details
    - Personnel
    - Equipment
    - Teams
    - Medicines
    - Medical supplies

Key Alerts:

- Evacuation requirements
- Route closures
- Medical shortages
- Teams that haven't checked in in over 2 hours
- Potential pandemic outbreak indicators

Notes:

- Need to ensure BI is set up to provide the metrics and to project trends
- Manage teams via DFPS
- Will DFPS be able to handle individual medical personnel, or do we need HCM for unaffiliated medical personnel?

Intelligence Node

Primary task: Monitor all data that has an impact on response and recovery efforts such as weather, traffic, criminal activity, geological activity, pandemic, hazards

- MACE: Primary conduit to federal systems and issues outside of the state
- MACC: Information fusion and develop actionable alerts based on all source data
- ICS: Part of the Plans section

Data Requirements:

- Weather, geological, terrorist, criminal, hazards, critical infrastructure, resource locations

Key Metrics:

- Hazard locations and types. GIS and geocoordinates. If appropriate show projected spread.
- Pandemic outbreaks and vectors. Chart and GIS. Drill down for details. If appropriate show projected spread.
- Critical infrastructure location. GIS and geocoordinates
- Resource location. GIS and geocoordinates
- Terrorist and Criminal activity. Chart and GIS. Group by type and area. Drill down for details
- Cases. Chart and GIS. Group by type and area. Drill down for details
  - Open cases
  - Closed cases
- Alerts issued Chart and GIS. Group by type and area. Drill down for details
  - Open alerts
  - Closed alerts

Key Alerts:

- Significant changes in weather, geological and fire data
- Terrorist activity
- Projected hazard zone impacts on critical infrastructure and resources
- STRIKEWARN

Notes:

- All hazards/ sources fusion center
- Need something like RiverGlass
- Include critical infrastructure, resources and threats in the analysis.
- Develop actionable information and manage alert status

Planning Node

Primary task: Manage response and recovery contingency plans, procedures, preparedness plans, corrective action and mitigation plans, and incident action plans and recovery plans. Manage response team credentialing (resource typing). Manage policies

- MACE: Manage federal requirements. Anticipate requirements, prepare forward looking plans. Establish and coordinate priorities. Manage policy requirements, deconflict policies.
- MACC: Manage state requirements. Anticipate requirements, prepare forward looking plans. Establish and coordinate priorities. Manage policy requirements, deconflict policies.
- ICS: Manage on-scene incident action plans, anticipate requirements that will change the plan.

Data Requirements:

- Resource typing data, planning data, response element status, routes, weather, hazards, plans, policy data

Key Metrics:

- Team credential status. Chart and GIS. Drill down for subclasses and details at the team level
- Plan status. Show by plan type and plan. Drill down for details
- Operational areas. GIS
- Hazard areas. GIS
- Key resources. Chart and GIS. Drill down for details
- Policy violations/conficts. Chart and GIS. Drill down for details
- Non-response metrics:
  - Exercise status
  - Contingency plan status
  - Resource status

Key Alerts:

- Teams that will lose credentialed status in the next 30 days
- Teams that are not properly credentialed for a hazard they've been assigned to work
- Any new hazard that will require remediation and/or re-routing and relocation of assets
- Any significant change in operational conditions, such as significant weather changes
- Policy violations

Notes:

- Document manager to manage plans
- DFPS for resource typing tracking
- xRPM for exercise planning

Interaction Center Node

Primary task: Monitor Call center activities and information

- MACE: Same
- MACC: Same
- ICS: N/A

Data Requirements:

- Call data, call center workforce data

Key Metrics:

- Number of call centers activated and their locations
- Number of operators. Show chart and GIS. Group as required. Drill down
  - Full time
  - Volunteer
- Total number of calls. Show chart and GIS. Group as required. Drill down
- Open calls. Show chart and GIS. Group as required. Drill down
- Closed calls. Show chart and GIS. Group as required. Drill down
- Emergencies. Show chart and GIS. Group as required. Drill down
- Call trends

Key Alerts:

- Spike in call volume
- Emergency assistance request

Notes:

- Can federate call centers
- Can allow volunteers to work the call center(s) virtually from different locations if they have phone and internet capability