

# Office for Interoperability and Compatibility

Command, Control and Interoperability Division

## Emergency Data Exchange Language Overview

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# The DHS Interoperability Challenge

- Responders often cannot talk within their own agencies—let alone other agencies or across cities, counties, and states. Ineffective communications risk the lives of responders in the field, and can mean the difference between life and death for those awaiting help.
- There is no one “Silver Bullet” to solve the interoperability challenge.
- The interoperability landscape consists of 60,000 state and local public safety agencies, Federal agencies and other stakeholders.
- 60,000 agencies means 60,000 different sets of procurement regulations, budgets and equipment lifecycles.
- The challenge for DHS is to provide ALL stakeholders (Federal, state and local), with the right mix of policies, tools, methodologies and guidance to enable improved communications interoperability at all levels.



# The Value of Standards

## DHS is:

- Facilitating national standards driven by practitioner-defined requirements and priorities, not federal agencies or industry
- Creating open, non-proprietary public standards available at no cost
- Ensuring an open architecture
- Creating a low cost approach to standards use and deployment
  - Build once – reuse often
  - Leverage existing efforts and protocols
  - Scalable from the local level to the federal level as needed
  - Enhances current infrastructures and systems without extensive updates, upgrades, training or costs
- Bridging the gap between the “Past and the Future” of incident response and management

# OIC Major Data Initiative Programs

- **Information exchange standards:** A public-private partnership to create information sharing capabilities between disparate incident management software applications – ***Emergency Exchange Data Language (EDXL)***
- **Commercial Mobile Alert Service (CMAS)** – The WARN Act authorizes DHS S&T to investigate and develop the next generation of mass mobile alerts and warnings technologies and standards.
- **Integrated Public Alert and Warning System (IPAWS)** – The Nations next generation public alert and warning communications capability.

# Emergency Data Exchange Language

- EDXL is a suite of messaging standards with technical rules governing how incident-related information is packaged for exchange
  - XML-based; business process-driven
  - Driven by practitioner-defined priorities and requirements
- The goal of the EDXL family of standards is to facilitate emergency information sharing and data exchange across the local, state, tribal, national and non-governmental organizations of different professions that provide emergency response and management services.
- EDXL will accomplish this goal by focusing on the standardization of specific messages (messaging interfaces) to facilitate emergency communication and coordination particularly when using disparate systems where more than one profession or governmental jurisdiction is involved.
- The EDXL family of standards is maintained by the Organization for the Advancement of Structured Information Standards (OASIS) standards body.

# EDXL Standards In Use

- **Common Alerting Protocol (CAP) Version 1.1**: CAP v1.1 was adopted as a standard on October 1, 2005. CAP provides the ability to exchange all-hazard emergency alerts, notifications, and public warnings, which can be disseminated simultaneously over many different devices and warning systems (e.g., computer systems, wireless, alarms, TV, radio)
  - CAP is being implemented in IPAWS – the Integrated Public Alert & Warning System, a DHS/FEMA effort
  - CAP was recommended for acceptance with the International Telecommunications Union (ITU) for a global alerting standard
  - May 31, 2007 - The Federal Communications Commission adopted an Order that requires Emergency Alert System (EAS) participants to accept messages using Common Alerting Protocol (CAP), the groundwork for Next Generation EAS delivery systems.

# EDXL Standards In Use

- **Distribution Element (DE)**: DE 1.0 was adopted as a standard in April 2006. DE provides a flexible message-distribution framework for data sharing in emergency information systems. Messages may be distributed by specific recipients, by a geographic area, or by other codes such as agency type (police, fire, etc.)
  - DE will be implemented in the DHS/FEMA effort IPAWS the Integrated Public Alert & Warning System
  - DHS Domestic Nuclear Detection Office (DNDO) uses CAP and the DE to share content with other federal, state and local partners
- **Hospital Availability Exchange (HAVE)**: HAVE 1.0 was adopted as an OASIS standard in November 2008. HAVE specifies a document format that allows the communication of the status of a hospital, its services, and resources, including bed capacity and availability, emergency department status, and available service coverage. This assists hospital coordination and routing of patients to the right facilities for care during emergencies



# EDXL Standards In Use

- **Resource Messaging (RM 1.0)**: RM was adopted as an OASIS standard in November 2008. EDXL-RM describes a suite of standard XML messages for data sharing among emergency and other information systems that deal in requesting and providing emergency equipment, supplies, people, and teams. RM provides a total of 16 individual standard messages providing the capability for disparate systems to perform “transactional messaging” such as a Request for Resources and Response to Request for Resources.

# EDXL Standards in Development

- **Situational Reporting**
  - Critical data about an incident
  - Reportable to on-site commanders, politicians, officials and press
  - Consistent type of information
- **Tracking Emergency Patients**
  - Patient location and tracking
  - Evacuation Status

# Sample of EDXL Implementations

- DHS S&T Integrated Chemical, Biological, Radiological and Nuclear Detection Demonstration Program
  - City of Los Angeles Fire Department deployed hand-held sensors using CAP and DE to send real-time data to mobile command centers
- DHS Domestic Nuclear Detection Office (DNDO)
  - DNDO uses CAP and DE to send and share sensor and other critical data to its national operations center and to share information with other federal, state and local partners
- National Oceanic and Atmospheric Administration (NOAA) All-Hazards Warning System (HazCollect)
  - HazCollect systems allow local emergency managers to electronically and securely submit all hazards warnings in a CAP format for broadcast over NOAA Weather Radio
  - NOAA estimates they have reduced the time it takes to send a warning from 7 minutes under the manual process to under 2 minutes utilizing CAP
- Federal Communications Commission (FCC) mandated CAP for use in the next generation Emergency Alert System (EAS)
- The State of Washington designed its state-wide alert and warning system around the CAP standard
- The International Telecommunications Union (ITU) has adopted CAP
- Over 100 commercial vendors with known EDXL implementations

# Federal Partners

- Federal Emergency Management Administration (FEMA)
- Department of Homeland Security Science & Technology Directorate (DHS S&T) Chemical and Biological Detection Research and Development
- DHS Domestic Nuclear Detection Office
- National Oceanic and Atmospheric Administration (NOAA)
- Federal Communications Commission (FCC)
- Pacific Northwest National Laboratory (PNNL)
- Argonne National Laboratory



# Homeland Security

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FEMA

# March OASIS SIG Presentation

**Your Host:**  
**Scott Shoup**  
FEMA Data Architect

March 17, 2010

UNCLAS



# FEMA Information Sharing Problems

- Information Technology autonomy and diversity
  - Nationwide & within FEMA
- Nearly limitless customer base (State and Local)
- Large suite of mission areas hard to organize
- No data management program
- No information sharing standards



FEMA

# FEMA Domain Decomposition

	Recovery	Response	Mitigation	Preparedness	Mission Support
<b>Direct</b>	Disaster Declaration Planning	Field Operations Planning	Risk Mgmt Strategy	Preparedness Policy, Planning and Analysis	Business Strategy & Policy
	Public Assistance Planning	Disaster Emergency Comm. Planning	Mitigation Planning		Business Architecture
	Individual Assistance Planning		EHP Policy	Grant Programs Coordination	IT Planning
	Hazard Mitigation Planning	Logistics Planning & Exercises	Continuity Programs Planning		HR Planning
<b>Control</b>	Disaster Assistance Reporting	Disaster Teams Management	Risk Management Oversight	National Integration Center Management	Financial Management
		National Logistics Mgmt	Continuity Program Lifecycle Management	Target Capabilities List Management	Facilities Management
	Disaster Assistance Resource Management	Disaster Emergency Comm. Monitoring		EHP Oversight	Grant Programs Management
		Urban SAR Program Management			HR Management
<b>Execute</b>	Disaster Declaration Processing	National Response Coordination	EHP Reviews	Preparedness Education & Training	Audit
	Public Assistance Processing	National Logistics Operations		Preparedness Coordination	Legal
	Individual Assistance Processing	Disaster Team Operations	Mitigation Assistance Processing	Community Preparedness	External Affairs
	Hazard Mitigation Assistance Processing	Disaster Emergency Comm. Operations	Continuity Programs Development And Testing	Preparedness Technical Assistance	Acquisitions
	Disaster Assistance Correspondence	Urban SAR Program Operations		Grant Programs Support And Training	Accounting
			Grant Programs Execution	Facilities Maintenance	
				IT Operations	
				Physical Security	
				Regional Operations	

FEMA SOA Initial Focus:	Grants	Not Grants
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FEMA

# FEMA Systems Component Diagram

**User Access Management**

- ISAAC
- NACS
- FAMS
- Org. Mgmt. (DFSC)
- Padlock
- Active Directory
- ADD
- Choice Point

**Business Support**

**DATS/ASD**

- AC SIS, AMPS, C-DB, DAD BB, HMIMS, PA-STAT
- DRTS, DARTS, DOTS, DAD EDP, FPS, SRM-AT
- DRCL, DCR, FMRC, DRWD-AT, HM-AT, S-Stats
- MDW, HAT, HP, ARTS-AT, IA-AT, THUAQT

NEFRLS, CIS, NSS

FEMA HR, MANAR, TAV, BureauNet, DMARTS, Risk Map, FEMA GIS, LIMS, Map Srv center, View Star, IPAWS

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**Grants**

- EMIS/EHP, NEMIS-IA (IAPSS), EMMIE Admin, eGrants, NEMIS-PA, AFG, ADAMS, ND Grants
- IA Support (IAPSS)**
  - Auto Determination, Business Rules, DARAC, IM Web, ASTC Web, IVR, DAIP, ACE3, JACS, JADE
- EMMIE, MT Support (FMA, HMGP, HMGP Historical)

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**Finance**

- IFMIS, ProTrac, NEMIS-ES (DFSC), NEMIS-ES Support (DFSC) (GFI, N2I, Ref. Data Mgmt), eCAPS, CCMTS

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**Reporting**

- SQA Net, EDW, ODS, NFIRS

**Emergency Coordination (EC)**

- IMCAD
- Declaration
- IAM
- PDA
- NIMS

**External To FEMA**

- OFA, SSA, DOD, SBA, OJP GMS, HHS SmartLink

- ONFA, US Banks, CLC, ISO



# FEMA Information Sharing Solutions

Collapse IT into large operations (EADIS, COMMIT, SETA) and large programs (DAIP, DM-OPEN)

Embrace NIEM and EDXL for information sharing standards, reusability

Embrace EM Domain Governance to establish strategic State and Local cooperation

Work with Executive Policy and Planning Branch to identify mission and business functions

Evangelize and integrate with FEMA Program Offices



## NIEM and EDXL Value

### Mission Response Speed and Flexibility

Reusable Service-Oriented Architecture (SOA) Services (NIEM, EDXL ready)

### Information Technology (IT) Improvements

Lower development costs

### Improve Communications (EDXL) with and between Feds, States and Locals

DM Open, DAIP

### Better FEMA Knowledge Management over time

Historical record of data exchanges

### Grants Programs will become more efficient

Enhanced information sharing, historical records

# Emergence of Data.gov



# FEMA

Public Assistance Grant Program

Declarations Summary

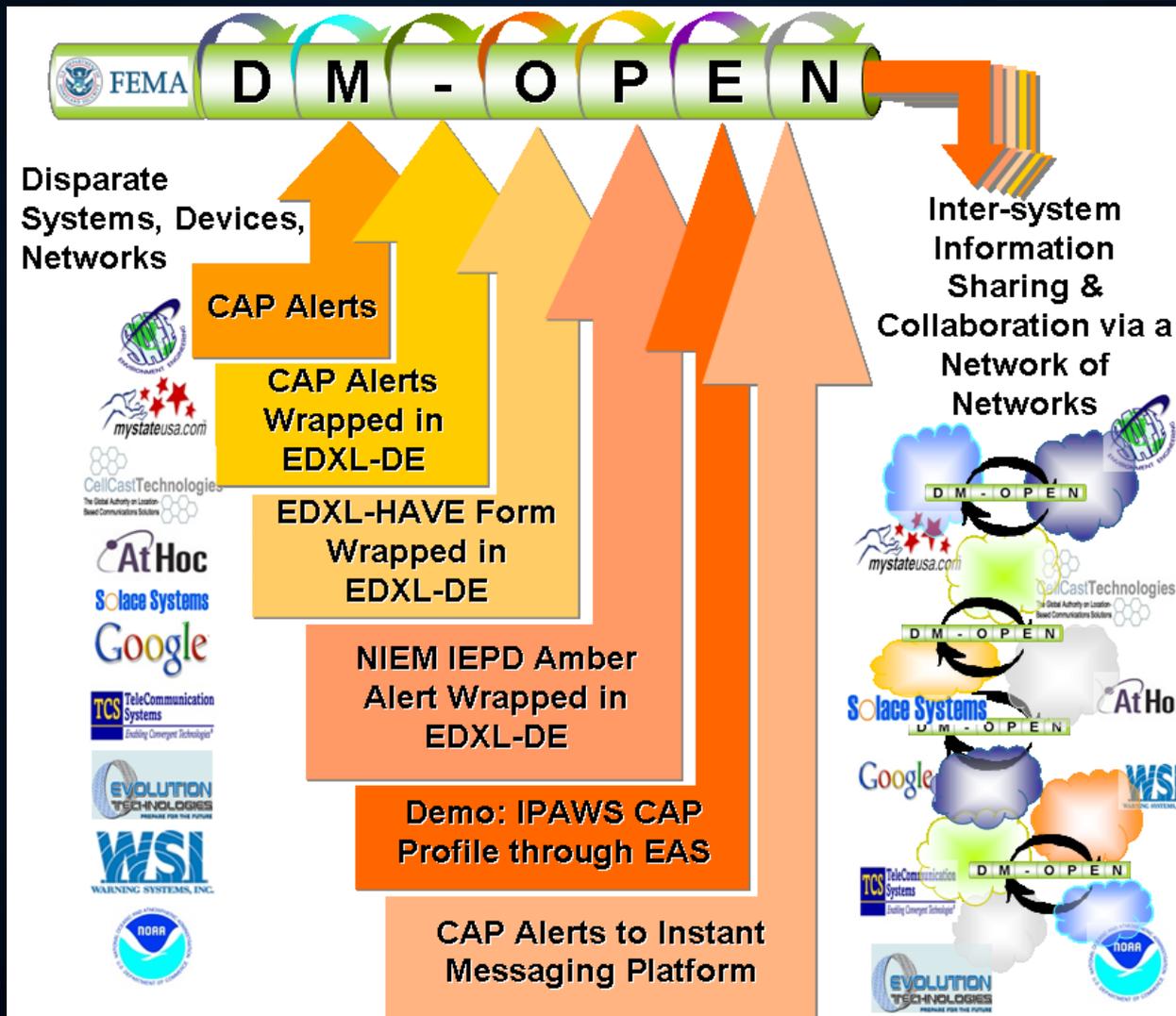
Hazard Mitigation Grant Program

Soon:

Public Assistance Grant Program Project-level Summary



# Solution # 1 DM-OPEN



# Solution # 2 Disaster Assistance Improvement Program (DAIP)



# FEMA

**Locate and Apply for Disaster Relief**



**Take Pre-Screening Questionnaire**

Take an anonymous questionnaire to obtain and apply for the most accurate list of disaster forms of assistance for which you may be eligible.

[Take Questionnaire](#)

OR



**Apply for Assistance Immediately**

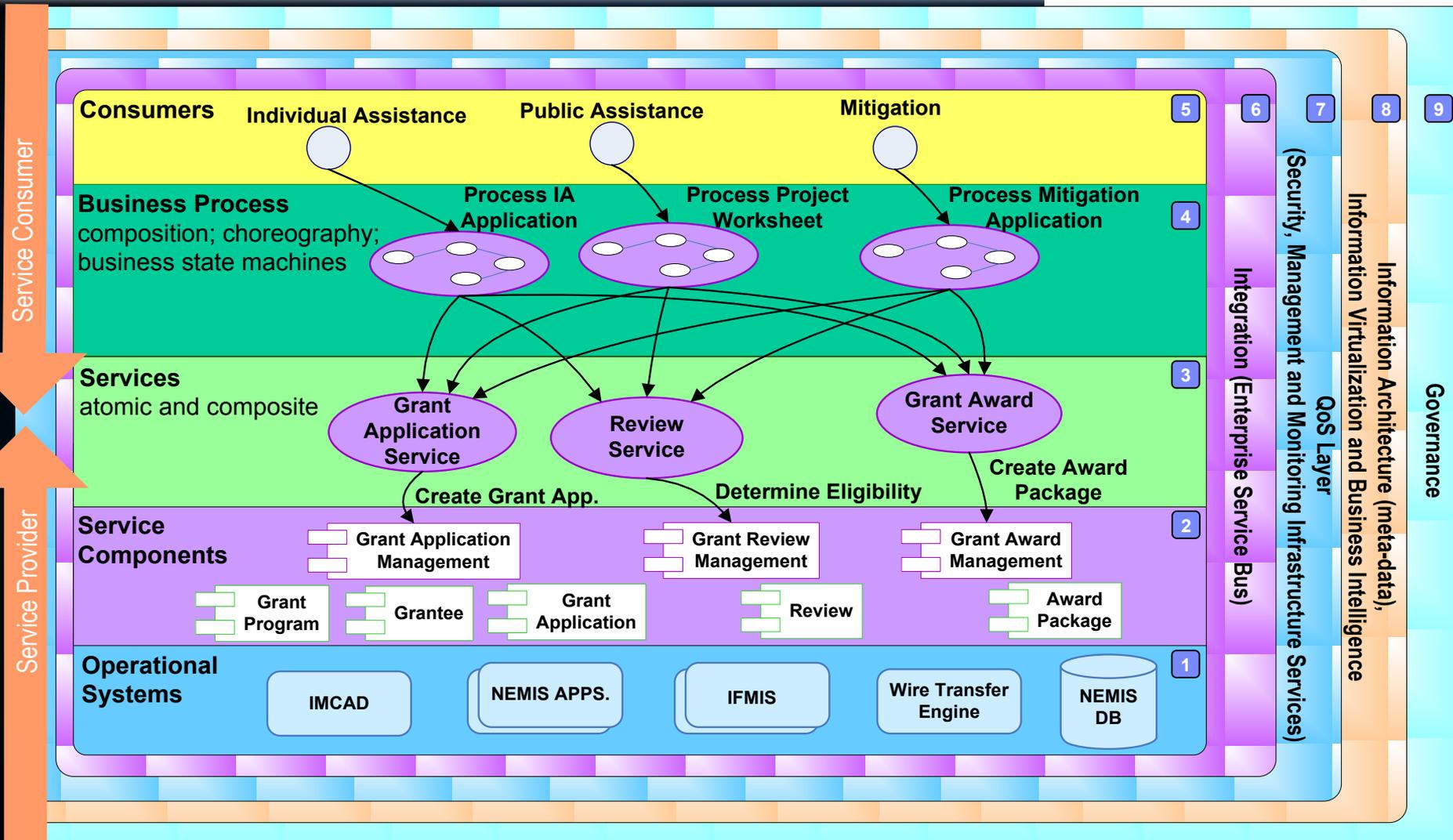
Complete an online application, create an account, and apply for disaster assistance.

[Start Registration](#)





# Solution # 3 Information Sharing Portal





## Solution # 4 FEMA Logical Data Model

<b>Pre Disaster Gross Income</b>	A data type for an amount of money.	nc:AmountType
<b>Registrant</b>	A data type for a person, organization, or thing capable of bearing legal rights and responsibilities.	nc:EntityType
<b>Registration</b>	The text describing the ENROLLMENT TYPE.	scr:Enrollment
<b>Registration Damage</b>	A property item that is registered.	nc:RegistrationItem
<b>Registration Damage List</b>	A state or appearance of an item.	nc:ItemConditionText



## Solution # 5 Grants Language

- NIEM Exchange Requirement Criteria
- Grants to Allow for NIEM Development Costs

# Contact Information



# FEMA

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