



Federal Emergency Management Agency (FEMA)



FEMA

DM-OPEN Full Requirements

DRAFT FOR REVIEW

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1 Background

DM-OPEN is a non-proprietary operational interoperability backbone that acts as a “level playing field” to allow disparate third-party applications, systems, networks and devices to share information in an open standards-based format. As Federal infrastructure, DM-OPEN is designed to support the delivery of real-time data and situational awareness to public emergency responders in the field, at operation centers and across all levels of response management. DM-OPEN also serves as a test bed to facilitate the development of open non-proprietary standards to support interoperable information sharing for the emergency responder community.

2 Purpose

DM-OPEN is undergoing a thorough requirements review in preparation for moving its functionality into the FEMA Enterprise. The Initial Operating Capability (IOC) requirements identified in this document form a baseline expected to be operational in Fall 2009. All additional requirements identified are being evaluated for future functionality development to be scheduled after the Fall 2009 delivery of the IOC.

3 The DM-OPEN "in a Nutshell"

The DM-OPEN mission is to provide an open point of exchange for standards-based emergency information as a way of removing barriers to entry for systems wishing to implement messaging standards. DM-OPEN is provided as a service to the emergency responder community by the Federal Emergency Management Agency (FEMA). DM-OPEN provides non-proprietary Application Programmer Interface (API) specifications, documentation and support. DM-OPEN supports these Emergency Data Exchange Language (EDXL) standards:

- Common Alerting Protocol (CAP) – In Production with "programmability improvements" planned for IOC.
- Distribution Element (DE) – In Production in limited form. IOC will expand use of the DE's intelligent distribution capabilities.
- HazCollect Non Weather Emergency Message (NWEM)– Production Ready prior to and as part of IOC.
- Hospital Availability Exchange (HAVE) – In production as DE content.
- Resource Messaging (RM) – In Production as DE content
- SitRep - Ready for production as DE Content
- National Information Exchange Model (NIEM) Information Exchange Package Document (IEPD) – Ready for production as DE Content

4 Requirements Identified by Module

The various DM-OPEN capabilities will be implemented as separate Web Service Modules composing the larger set of web services offered through DM-OPEN. This section identifies

each Module and lists the specific requirements associated with each module. All requirements designated as IOC: True are currently being evaluated for Fall 2009 release. Requirements designated as IOC: False are recognized to be requirements, but may not be planned for implementation prior to IOC release in Fall 2009.

4.1 Provide CAP1.1 Alerting

The ability to post and receive CAP 1.1 Alerts is a fundamental capability of DM-OPEN. The DM-OPEN Web Service for CAP 1.1 Alerts offers DM COG members the ability to post alerts that validate against the OASIS Emergency Management Technical Committee CAP 1.1 specification to selected COGs in the DM network. Where one of these COGs represents a node on another network, that network may redistribute CAP 1.1 Alerts using that network's distribution paradigm, creating a network of networks. DM COGs are also able to retrieve CAP 1.1 Alerts posted to them using a variety of filtering paradigms based on the content of the alert. Projected requirements for CAP 1.1 alerting are identified in the following table:

#	Requirements
4.1.1	IOC: True DM-OPEN shall allow Interfacing Systems to Post Valid CAP Messages to multiple COGs.
4.1.2	IOC: True DM-OPEN shall allow Interfacing Systems to retrieve all Alerts posted to or from the Interfacing System's login COG with posted or sent values between the start and end times specified by an input date and time parameters.
4.1.3	IOC: True DM-OPEN shall allow retrieval by an Interfacing System of any particular Alert allowed for retrieval by the Interfacing System's login COG based upon the combination of Identifier and Sender within the Alert.
4.1.4	IOC: True DM-OPEN shall allow an Interfacing System to query the server time of the DM-OPEN server.
4.1.5	IOC: False DM-OPEN shall allow Interfacing Systems to uniquely identify an Alert by the composite key of identifier, sender and sent date and time.

4.2 Provide EDXL-DE Distribution

The OASIS Emergency Data Exchange Language (EDXL) Distribution Element (DE) capability provides DM COGs with the ability to send and receive message content wrapped in a standard XML meta-data structure. The EDXL-DE allows content to be characterized by content type, sender organization type, desired receiving organization type, and/or geographic area of interest. The current implementation of the DE in DM-OPEN allows users to build and send DE messages, but does not actually use the DE content for routing. IOC will add the ability to retrieve EDXL-DE wrapped messages according to DE characterization. Future modules will add and enhance this capability.

Projected requirements for the use of EDXL-DE messages in DM-OPEN are identified in the following table:

#	Requirements
4.2.1	IOC: True DM-OPEN shall allow an Interfacing System to query the server time of the DM-OPEN server.
4.2.2	IOC: True DM-OPEN shall provide the ability for Interfacing Systems to retrieve EDXLDistributions through DM-OPEN Interfaces.
4.2.3	IOC: True DM-OPEN shall provide the capability to directly post an EDXLDistribution to COGs selected by the posting COG.
4.2.4	IOC: True DM-OPEN shall allow Interfacing Systems to retrieve individual EDXL-DE messages by unique identifier (combined values of distributionID and SenderID)
4.2.5	IOC: True DM-OPEN shall allow Interfacing Systems, when logged in as a COG, to retrieve EDXL Distributions posted for general distribution, using interest criteria to set the scope of the retrieval.
4.2.6	IOC: True DM-OPEN shall provide the ability for Interfacing Systems to obtain a list of COGs that have retrieved a particular EDXLDistribution and the date and time that the EDXL Distribution was first retrieved by each listed COG.
4.2.7	IOC: True DM-OPEN shall provide the ability for Interfacing Systems to post EDXLDistributions through DM-OPEN Interfaces.
4.2.8	IOC: True DM-OPEN shall allow Interfacing Systems, when logged in as a COG, to retrieve EDXLDistributions posted directly to that COG.
4.2.9	IOC: True DM-OPEN shall allow Interfacing Systems, when logged in as a COG, to retrieve all allowed EDXLDistributions that contain an incident ID matching a query request.
4.2.10	IOC: True DM-OPEN shall allow retrieval of an abbreviated identification list of EDXLDistributions available for retrieval by an Interfacing System.
4.2.11	IOC: True DM-OPEN shall allow the retrieval of EDXLDistributions as a list without actual content for the purpose of determining the suitability of the content for complete retrieval.
4.2.12	IOC: True DM-OPEN shall provide a mechanism that ensures that unwanted posts, based on COG of origin, geography, or message type and characteristics are not retrieved.

#	Requirements
4.2.13	IOC: True DM-OPEN shall provide a mechanism for broadcast posting of EDXLDistributions to all COGs to retrieve
4.2.14	IOC: False DM-OPEN shall provide a mechanism to post EDXLDistributions to a list of COGs based upon the registered Message Interests of receiving COGs.

4.3 Provide NWEM Alerting

This capability provides members of individual authorized DM-OPEN COGs with the ability to post specialized CAP 1.1 Non-Weather Emergency Messages (NWEM) for delivery to the public by the NOAA family of dissemination services and broadcast by the Emergency Alert System. DM-OPEN provides interfaces to determine authorization status, determine NWEM system status, identify geographic areas where a message may be posted, and post the message itself for broadcast. Projected requirements for NWEM alerting through the National Weather Service are identified in the following table:

#	Requirements
4.3.1	IOC: True The NWEM CAP expires tag shall differ from the value of the sent tag in exactly 15 minute intervals up to 120 minutes.
4.3.2	IOC: True The NWEM CAP status tag shall be an enumeration composed of four possible values: Actual, Exercise, System, or Test.
4.3.3	IOC: True The NWEM CAP msgType tag shall contain the value Alert for all new messages.
4.3.4	IOC: True NWEM CAP messages shall reference an unexpired previous NWEM CAP if the msgType tag of the message is equal to Error, Update, or Cancel.
4.3.5	IOC: True The NWEM CAP source tag shall be formatted using the last name of the Sender followed by Initials.
4.3.6	IOC: True The NWEM CAP scope tag shall have the value Public.
4.3.7	IOC: True The NWEM CAP references tag shall be used only if the alert type equals Error, Update, or Cancel and the Referenced NWEM CAP has not yet expired.
4.3.8	IOC: True NWEM CAP messages shall have exactly one info tag block.
4.3.9	IOC: True The NWEM CAP language tag shall be a required tag.

#	Requirements
4.3.10	IOC: True The NWEM CAP language tag shall have one of two values, either en-US or sp-US.
4.3.11	IOC: True DM-OPEN shall allow Interfacing systems representing NWS authorized COGs to retrieve a list of the data needed to populate allowable Area tags within the NWEM CAP message.
4.3.12	IOC: True The NWEM CAP expires tag shall be a required tag.
4.3.13	IOC: True The NWEM CAP expires tag shall differ from the value of the sent tag in exactly 30 minute intervals between 120 and 360 inclusive.
4.3.14	IOC: True The NWEM CAP expires tag shall not exceed the value of the sent tag by more than 360 minutes.
4.3.15	IOC: True NWEM CAP senderName tag shall be specifically formatted as cogName, city, and stateCode.
4.3.16	IOC: True The NWEM CAP headline tag shall be less than 160 characters in length, including spaces.
4.3.17	IOC: True An NWEM CAP areaDesc tag within an area tag shall contain the administrative name corresponding the value tag in the geocode tag in that area tag.
4.3.18	IOC: True DM-OPEN shall allow connection to the NWEM Service for all DM COGs using WebService Definition Language
4.3.19	IOC: True DM-OPEN shall allow Interfacing Systems to Post Valid NWEM Messages to other COGs at the same time as it posts the NEWM to HazCollect.
4.3.20	IOC: True DM-OPEN shall use the time zone offset from the NWEM CAP message to build the time zone string required for the HazCollect server.
4.3.21	IOC: True The NWEM CAP event tag shall be a required tag.
4.3.22	IOC: True The NWEM CAP event tag shall be the long name of the SAME code as found in the value tag within the Event code tag of the NWEM CAP.
4.3.23	IOC: True The NWEM CAP eventCode tag shall be included once, and only once, within an NWEM CAP message.

#	Requirements
4.3.24	IOC: True The NWEM CAP valueName tag found with the eventCode tag shall contain the value SAME or the value same.
4.3.25	IOC: True The NWEM CAP value tag found with the eventCode tag shall contain a valid SAME code that corresponds to the event tag content containing the event name.
4.3.26	IOC: True The NWEM CAP effective tag shall set to exactly the same time as the sent tag.
4.3.27	IOC: True The NWEM CAP shall not contain an onset tag.
4.3.28	IOC: True The NWEM CAP identifier tag shall be globally unique.
4.3.29	IOC: True NWEM CAP messages used for input to DM-OPEN shall be a specialization of CAP 1.1 that meets the requirements of CAP 1.1 and a specific set of additional restrictions
4.3.30	IOC: True The combined size of the NWEM CAP description and instruction tags shall not exceed 160 words.
4.3.31	IOC: True DM-OPEN shall allow Interfacing Systems to retrieve the current operational mode of the HazCollect Server.
4.3.32	IOC: True The NWEM CAP instruction tag shall contain any call to action content of the message as defined in the CAP 1.1 specification.
4.3.33	IOC: True An NWEM CAP message will contain one or more area tags.
4.3.34	IOC: True An NWEM CAP area tag shall contain exactly one geocode tag.
4.3.35	IOC: True An NWEM CAP value tag within a geocode tag within an area tag shall contain the geocode corresponding to the administrative name found in the areaDesc tag for in that area tag.
4.3.36	IOC: True An NWEM CAP valueName tag within a geocode tag within an area tag shall have as values one of Zone, FIPS, or State.
4.3.37	IOC: True DM-OPEN shall allow an Interfacing System to determine if its login COG is currently allowed to post NWEM messages to the NWS.

#	Requirements
4.3.38	IOC: True DM-OPEN shall validate that all incoming NWEM CAP messages are valid according to the NWEM CAP Specialization defined by NWEM Message Structure Requirements.
4.3.39	IOC: True DM-OPEN shall allow Interfacing Systems to retrieve all Alerts posted to or from the Interfacing System's login COG with posted or sent values between the start and end times specified by an input date and time parameters.
4.3.40	IOC: True DM-OPEN shall allow retrieval by an Interfacing System of any particular Alert allowed for retrieval by the Interfacing System's login COG based upon the combination of Identifier and Sender within the Alert.
4.3.41	IOC: True DM-OPEN shall allow an Interfacing System to query the server time of the DM-OPEN server.

4.4 Retrieve Type List Access

Much of the characterization found in an EDXL-DE message uses what is known as a Value List structure to build characterization content. DM-OPEN will make a number of these lists available through a web service to DM COG members. Projected requirements for Type List Access are identified in the following table:

#	Requirements
4.4.1	IOC: True DM-OPEN Operator Role based access values shall be managed as a valuelist URN for use in EDXLDistributions.
4.4.2	IOC: True DM-COG Organizational roles shall be assigned from one or more ValueLists retrievable from DM-OPEN in valueListURN Structure.
4.4.3	IOC: True DM-OPEN shall provide Interfacing Systems with Value list content for known URN's usable in DM-OPEN Characterization tags.
4.4.4	IOC: True The DM-Framework shall provide a selectable listing of Value List URNs
4.4.5	IOC: True The DM-Framework shall provide the ability to query DM-OPEN for a list of URNs that are understood by DM-OPEN as useable in a Value list URN Structure.

4.5 Provide DM-OPEN COG and Operator Administration

The ability to view, update, and retrieve appropriate COG and user information through a web service is limited in the current DM-OPEN implementation. This capability is planned for limited expansion at IOC. Additional capabilities are expected in follow on releases. Projected requirements for DM-OPEN COG and Operator Administration are

identified in the following table:

#	Requirements
4.5.1	IOC: False DM-OPEN shall provide DM COGS the ability register defined interests in receiving EDXLDistributions that contain information matching those Registered Interests.
4.5.2	IOC: False DM-OPEN shall allow an Interfacing System to retrieve its current List of Registered Message Interests from the DM-OPEN interfaces.
4.5.3	IOC: False DM-OPEN shall allow Interfacing Systems to register interest in receiving, or not receiving, EDXL-DE messages based on message characterization as defined in the EDXL-DE specification.
4.5.4	IOC: False DM-OPEN shall allow Interfacing Systems to register interest in receiving or not receiving messages from an arbitrary set of DM COGs.
4.5.5	IOC: False DM-OPEN shall allow Interfacing Systems to register for receipt or non-receipt of specific message content as contained within an EDXL-DE message.
4.5.6	IOC: False DM-OPEN shall allow Interfacing Systems to query for COGs that are interested in particular content.
4.5.7	IOC: False DM-OPEN shall allow Interfacing System users to establish a set of Geographic Interest Areas for use in establishing either interest or non-interest in EDXL-DE message receipt.
4.5.8	IOC: True DM-OPEN and DMIS shall provide COG administrators with the ability to set COG information at the same level of specificity as DMIS applications.
4.5.9	IOC: True DM-OPEN shall allow Interfacing Systems to retrieve a COG List of all COGs by Category or combination of Categories using a valueListURN structure
4.5.10	IOC: True DM-OPEN shall provide interfacing systems with the ability to retrieve all allowed information about a COG based upon the COG Identifier.
4.5.11	IOC: True DM-OPEN shall allow Interfacing Systems to retrieve a COG List of all COGs to which they are allowed to post Messages
4.5.12	IOC: True DM-OPEN shall provide interfacing systems the ability to retrieve a Cog List containing all COGs located within or having an area of concern in the form of an area of interest and/or a particular organizational role.

#	Requirements
4.5.13	IOC: True DM COGs shall be classified by one or more organizational roles.
4.5.14	IOC: False DM-OPEN and DMIS shall provide COG administrators the ability to specify a COG Area of Concern in the form of an area of interest.
4.5.15	IOC: True DM-COG Organizational roles shall be assigned from one or more ValueLists retrievable from DM-OPEN in valueListURN Structure.
4.5.16	IOC: True DM-OPEN shall establish role based access to be attached to each COG for each provided DM-OPEN service.
4.5.17	IOC: True DM-OPEN Operator Role based access values shall be managed as a valuelist URN for use in EDXLDistributions.
4.5.18	IOC: True DM-OPEN and DMIS shall provide COG administrators the ability to set the visibility of their COG information granularly.
4.5.19	IOC: True DM-OPEN and DMIS shall provide COG administrators with the ability to add, edit, and drop users at the same level of specificity as DMIS applications.
4.5.20	IOC: True DM-OPEN and DMIS shall provide COG administrators the ability to specify a COG location as a WGS-84 Latitude Longitude pair.

4.6 Provide Core DM-OPEN System Functionality

Core System functionality represents capabilities that apply to all modules of DM-OPEN because the requirement exists regardless of which specific functionality (e.g., EDXLE, CAP1.1, NWEM, or COG Administration) is being used. Core Security functionality will be developed in accordance with the following references: The Federal Information Security Management Act (FISMA) of 2002, DHS 4300A Sensitive Systems Policy, National Institute of Standards and Technology 800-14, 800-37, and 800-53 and DHS MD 11042 Safeguarding Sensitive But Unclassified (For Official Use Only) Information. Projected requirements for Core DM-OPEN System Functionality are identified in the following table:

#	Requirements
4.6.1	IOC: True DM-OPEN shall provide specific error message for any EDXLDistribution validation error.
4.6.2	IOC: False DM-OPEN shall match Geographic Interests included in an interest query such that any overlap in Geographic Interest shall create a positive match.

#	Requirements
4.6.3	IOC: True DM-OPEN shall provide error messages that contain a clear description of all exception conditions resulting from invalid WSDL parameters.
4.6.4	IOC: False DM-OPEN shall provide specific error messages for EDXL standard content validation error.
4.6.5	IOC: False DM-OPEN shall provide specific error messages for NIEM IEPD standard content validation error.
4.6.6	IOC: True DM-OPEN shall continue to provide the current ping method to allow Interfacing Systems to know that a connection is alive and working.
4.6.7	IOC: True DM-OPEN shall provide error messages that contain a clear description of all exception conditions.
4.6.8	IOC: True DM-OPEN shall provide interfacing systems the ability to retrieve a Cog List containing all COGs located within or having an area of concern in the form of an area of interest and/or a particular organizational role.