UICDS Compliance Overview for V1.1

An Overview of Adapting your Application to Conform to UICDS Web Services and UICDS Data Exchange Formats

1. Purpose

The purpose of this document is to describe what it means to "comply" with UICDS. At this time there is no formal compliance testing program for UICDS. However, this document can be used by Technology Providers to plan their integration efforts to achieve maximum match between their applications and the many forms of UICDS information sharing. The document also can be used by a potential purchaser of incident management technology to specify what UICDS compliance means to a specific Request for Proposal.

2. Overview

This document identifies three areas of integration with UICDS. These include the required and optional UICDS Web Services, the required and optional data elements for each of the UICDS Work Products, and the channel-based UICDS feeds that are a source of minimal "receive only" data interface with UICDS.

Section 3 of this document identifies (a) the basic UICDS services that must be utilized to perform the UICDS compliant exchanges and (b) the UICDS services that are dependent on the functions performed by the Technology Provider application.

Section 4 describes the data elements that are contained in each UICDS Work Product which is the atomic unit of data exchange for each UICDS Web Service. Many of the UICDS Work Products are composed of data exchange standards and the document provides references to the original source specifications provided by standards-setting organizations.

Section 5 describes the limited "receive only" mode of consuming UICDS data which is useful for visualizing data on the UICDS Core but does not constitute true "one-to-many, two-way" integration that is the hallmark of UICDS.

3. UICDS Web Services

The following is a list of UICDS Web Services divided into two categories. The basic list includes those services that enable an adapter to perform the basic functions of registering itself and consuming and providing incidents upon which all the other UICDS Web Services and data exchanges are built.

Basic UICDS Services:

- Resource Profile Service
- Resource Instance Service
- Notification Service
- Incident Management Service

The additional UICDS Web Services listed below are dependent upon the actual functionality of the application that will be interfaced with UICDS. For example, if there is no geospatial data contained in the application, then the Map Service will not be used. If the application does not create sensor data, then the Sensor Service will not be used. The functionality of the application leads to the functionality of the UICDS adapter and the Web Services that will be engaged.

UICDS Services Specific to Application Functionality:

- Alert Service
- Map Service
- Incident Command Service
- Tasking Service
- Resource Management Service
- Sensor Service
- Incident Action Plan Service
- Work Product Service
    - Binary Content
    - Link Content
    - XML Content

4. UICDS Work Product Standards and Data Elements

This section provides a summary of each of the UICDS Web Services and the data elements that are contained in the UICDS Work Products that may be accessed by adapters developed by commercial, government, academic, and volunteer Technology Providers.

The data elements described here are for the purpose of understanding what data contained in an application will be required to compose a UICDS Work Product and what data may be optionally included in the work product. The data field names are not the technical names employed in the UICDS schemas. Rather, the data fields are common names often found in field labels in applications themselves so that this document can be understood by operational personnel as well as technical personnel. The technical descriptions of the data in the work products can be found in the UICDS Architecture Description Document and the UICDS Interface Description Document which can be found on www.UICDS.us.

Incident Management Service

Allows client applications to create an incident, update information about an incident, close the incident, and share the incident with other UICDS cores. Three different standards are currently employed by UICDS to consume incidents from application adapters. NIEM is the National Information Exchange Model and the UICDS Incident Work Product is constructed using the NIEM incident description. An application adapter can send that format to UICDS. Because there are other standards that create data about an incident, UICDS includes the capacity to receive two of those other formats. The Common Alerting Protocol (CAP) is one such standard and from the law enforcement community, the Law Enforcement Information Technology Standards Committee has a standard for computer-aided dispatch incident data exchange. In both cases, UICDS takes the CAP and the LEITSC formats and converts them into NIEM incidents for distribution through UICDS. The required and optional data elements for the Work Product associated with the Incident Management Service are described below.

Work Product	Incident Work Product Data
Standard	NIEM 2.0 CAP version 1.1 specification LEITSC IEPD 1.1
Reference	http://www.niem.gov/niem/NIEM-2.0-schema-index.html http://www.oasis-open.org/committees/download.php/15135/emergency-CAPv1.1-Corrected_DOM.pdf http://www.theiacp.org/LinkClick.aspx?fileticket=mJIUTWMDVp4%3d&tabid=831
Required Data	Incident Type Incident Date/Time Name

	Location Description
Optional Data	Status Reason (e.g., planned event) Disposition Sub-Incident (constituent incidents) Organization (lead) Observation (e.g., log entries date/time stamped)

Alert Service

Allows UICDS compatible client applications to create, retrieve, and cancel UICDS Alerts Work Products that conform to the Common Alerting Protocol (CAP) version 1.1 specification. The required and optional data elements for the Work Product associated with the Alert Service are described below.

Work Product	Alert Work Product Data
Standard	EDXL Common Alerting Protocol (CAP 1.1)
Reference	http://www.oasis-open.org/committees/download.php/15135/emergency-CAPv1.1-Corrected_DOM.pdf
Required Data	Identifier Sender Sent Date/Time Status Message Type Scope Category Event Urgency Severity Certainty
Optional Data	Source Restriction Addresses Code Note References Incidents Language Response Type Event Code Effective Onset Expires Sender Name Headline

	Description Instruction Web Contact Parameter Resource Area

Map Service

Allows UICDS compatible client applications to associate GIS information with a UICDS incident and to view GIS information that has been provided by other UICDS clients. This allows clients to obtain geospatial data in standard formats from the originating source application in order to create map visualizations using the clients own geospatial application. There are two UICDS Work Products associated with the Incident Management Service. The Layer Work Product uses the Layer element from an OGC Web Map Context to direct the client application to a layer of geospatial data from a specific standards-based service. The Map Work uses the OGC Web Map Context to direct the client application to a set of layer data. The required and optional data elements for the Map Work Products are described below.

Work Product	Layer Work Product Data
Standard	WMS 1.3.0, WFS 1.1, GML, OGC Web Map Context 1.1.0
Reference	http://schemas.opengis.net/wms/ http://portal.opengeospatial.org/files/?artifact_id=8339 http://portal.opengeospatial.org/files/?artifact_id=20555 http://schemas.opengis.net/gml/
Required Data	OGC Web Map Service or OGC Web Feature Service URL Name Title Incident
Optional Data	Incident Name

Work Product	Map Work Product Data (Geospatial Data)
Standard	WMS 1.3.0, WFS 1.1, GML, OGC Web Map Context 1.1.0
Reference	http://portal.opengeospatial.org/files/?artifact_id=8618
Required Data	OGC Map Context (composed of Layer Data WMS and/or WFS URL) Title Bounding Box Incident
Optional Data	Abstract Description Incident Name

Incident Command Service

Allows UICDS compatible client applications to create and modify Incident Command System (ICS) structures and Multiagency Coordination System (MACS) structures for incidents and associate people with organizational roles. The required and optional data elements for the Work Product associated with the Incident Command Service are described below.

Work Product	Incident Command System Work Product Data
Standard	NIEM 2.0 (derived from NIEM ComplexObjectType; v1.1 does not use NIEM data elements)
Reference	http://www.niem.gov/niem/NIEM-2.0-schema-index.html
Required Data	Organization Name (e.g., Emergency Management Agency or Public Works Department) Organization Type (e.g., ICS structure for this incident or ESF-1 or Backhoe) Role/Position (e.g., Branch Chief or Transportation Officer or Dikes) Person in Charge (name) Incident
Optional Data	Staff (name)

Tasking Service

Allows UICDS compatible clients to create and update a list of Standard Operating Procedure tasks for a resource. The required and optional data elements for the Work Product associated with the Tasking Service are described below.

Work Product	Tasking Work Product Data
Standard	NIEM 2.0 (derived from NIEM ComplexObjectType; v1.1 does not use NIEM data elements)
Reference	http://www.niem.gov/niem/NIEM-2.0-schema-index.html
Required Data	Task List (e.g., procedure consisting of Component Tasks to be performed) Responsible Person (e.g., for the procedure) Component Task Name (a unique identifier) Description Priority Person Assigned Assignor Accepted Due Date/Time Incident
Optional Data	Status

Resource Management Service

Allows UICDS compatible clients with resource management services to communicate with other Resource Management Applications using EDXL-RM messages. UICDS enables the exchange of all EDXL-RM messages between UICDS-enabled client applications based on routing information in EDXL-DE. UICDS creates Work Products for two specific EDXL-RM messages that are important to sharing of resource status among applications: Resource Request and Resource Commit. Each of the Request Work Products and Commit Work Products consist of two components, the requestor/committer data and the resource data. The required and optional data elements for the Work Products associated with the Resource Management Service are described below.

Work Product	Request Resource Work Product Data
Standard	Resource Messaging (EDXL-RM) 1.0 Distribution Element (EDXL-DE) 1.0
Reference	http://docs.oasis-open.org/emergency/edxl-rm/v1.0/errata/EDXL-RM-v1.0-OS-errata-os.pdf http://docs.oasis-open.org/emergency/edxl-de/v1.0/EDXL-DE_Spec_v1.0.pdf
Required Data	Sent Date/Time Contact Description (freeform text) or Contact Role (in request process) Contact Location Incident
Optional Data	Contact Radio Additional Contact Information (name, address, etc.)
Multiple Component Resources Required Data	Resource Name Resource Type (e.g., NIMS Resource Typing Element) • Resource • Category • Kind • Minimum Capabilities Quantity Schedule Type (e.g., send, receive, date/time) Scheduled Location
Multiple Component Resources Optional Data	Keywords Description Credentials Certifications Special Requirements Restrictions Anticipated Function

Work Product	Commit Resource Work Product Data
Standard	Resource Messaging (EDXL-RM) 1.0
Reference	http://docs.oasis-open.org/emergency/edxl-rm/v1.0/errata/EDXL-RM-v1.0-OS-errata-os.pdf

Required Data	Sent Date/Time Contact Description (freeform text) or Contact Role (in request process) Contact Location Incident
Optional Data	Contact Radio Additional Contact Information (name, address, etc.)
Multiple Component Resources Required Data	Response Type (Accept or Decline) Resource Name Resource Type (e.g., NIMS Resource Typing Element) • Resource • Category • Kind • Minimum Capabilities Quantity Schedule Type (e.g., send, receive, date/time) Scheduled Location
Multiple Component Resources Optional Data	Keywords Description Credentials Certifications Special Requirements Restrictions Anticipated Function Responsible Party Ownership Resource Status Accept/Decline Reason

Sensor Service

Allows UICDS compatible clients to create, update, and delete a Sensor Observation Information (SOI) Work Product for a given incident. The discovery process to identify sensors that are relevant to a particular UICDS incident involves interactions between UICDS clients and the sensor systems at several SOS levels. To reduce the need to repeat these steps, the information required to retrieve sensor observations is stored as UICDS Work Products that are associated with the incident. UICDS clients who are interested in retrieving the sensor observations for a given incident request these work products either from the Sensor Service or the Work Product Service and use the retrieved information to request observations directly from the sensor system via the SOS interface. The required and optional data elements for the Work Products associated with the Sensor Service are described below.

Work Product	Sensor Work Product Data
Standard	OGC Sensor Observation Service (SOS) 1.0.0 OGC Observations and Measurements 1.0

Reference	http://schemas.opengis.net/sos/ http://schemas.opengis.net/om/1.0.0/
Required Data	OGC Sensor Observation Service URL Name Description Location OGC Get Observation (Measurement Request from Sensor) Incident
Optional Data	OGC Observation and Measurement Result

Incident Action Plan Service

Allows UICDS compatible client applications to create or retrieve an Incident Action Plan, create Incident Command System Forms, and tag a version of an IAP Work Product as approved. The IAP consists of an aggregation of data from several ICS Forms which are treated as "component documents" in the IAP Work Product. Those component documents consist of the several ICS forms, each of which consists of the data contained on the ICS Forms. The required and optional data elements for the Work Products associated with the Incident Action Plan Service are described below by making reference to the required ICS Forms.

Work Product	Incident Action Plan Work Product Data
Standard	ICS Forms NIEM 2.0 (derived from NIEM ComplexObjectType; v1.1 does not use NIEM data elements)
Reference	http://www.theiacp.org/LinkClick.aspx?fileticket=mJIUTWMDVp4%3d&tabid=831 http://www.niem.gov/niem/NIEM-2.0-schema-index.html
Required Data	Name Description Effective Date/Time Expiration Date/Time List of Component Documents (ICS Form Work Products or other UICDS Work Products) Incident
Optional Data	None

Work Product	Component ICS Form 201 Work Product Data
Standard	ICS Forms NIEM 2.0
Reference	http://training.fema.gov/EMIWeb/IS/ICSResource/assets/ics201.pdf http://www.niem.gov/niem/NIEM-2.0-schema-index.html
Required Data	Person Assigned Description Status

	ICS Form 201 Content Incident
Optional Data	None

Work Product	Component ICS Form 202
Standard	ICS Forms NIEM 2.0
Reference	http://training.fema.gov/EMIWeb/IS/ICSResource/assets/ics202.pdf http://www.niem.gov/niem/NIEM-2.0-schema-index.html
Required Data	Person Assigned Description Status ICS Form 202 Content Incident
Optional Data	None

Work Product	Component ICS Form 203
Standard	ICS Forms NIEM 2.0
Reference	http://training.fema.gov/EMIWeb/IS/ICSResource/assets/ics203.pdf http://www.niem.gov/niem/NIEM-2.0-schema-index.html
Required Data	Person Assigned Description Status ICS Form 203 Content Incident
Optional Data	None

Work Product	Component ICS Form 204
Standard	ICS Forms NIEM 2.0
Reference	http://training.fema.gov/EMIWeb/IS/ICSResource/assets/ics204.pdf http://www.niem.gov/niem/NIEM-2.0-schema-index.html
Required Data	Person Assigned Description Status ICS Form 204 Content Incident
Optional Data	None

Work Product	Component ICS Form 205
Standard	ICS Forms NIEM 2.0
Reference	http://training.fema.gov/EMIWeb/IS/ICSResource/assets/ics205.pdf http://www.niem.gov/niem/NIEM-2.0-schema-index.html

Required Data	Person Assigned Description Status ICS Form 205 Content Incident
Optional Data	None

Work Product	Component ICS Form 206
Standard	ICS Forms NIEM 2.0
Reference	http://training.fema.gov/EMIWeb/IS/ICSResource/assets/ics206.pdf http://www.niem.gov/niem/NIEM-2.0-schema-index.html
Required Data	Person Assigned Description Status ICS Form 206 Content Incident
Optional Data	None

Work Product	Component ICS Form 207
Standard	ICS Forms NIEM 2.0
Reference	http://training.fema.gov/EMIWeb/IS/ICSResource/assets/ics207.pdf http://www.niem.gov/niem/NIEM-2.0-schema-index.html
Required Data	Person Assigned Description Status ICS Form 207 Content Incident
Optional Data	None

Work Product	Component ICS Form 209
Standard	ICS Forms NIEM 2.0
Reference	http://training.fema.gov/EMIWeb/IS/ICSResource/assets/ics209.pdf http://www.niem.gov/niem/NIEM-2.0-schema-index.html
Required Data	Person Assigned Description Status ICS Form 209 Content Incident
Optional Data	None

Work Product	Component ICS Form 210
Standard	ICS Forms NIEM 2.0
Reference	http://training.fema.gov/EMIWeb/IS/ICSResource/assets/ics210.pdf http://www.niem.gov/niem/NIEM-2.0-schema-index.html
Required Data	Person Assigned Description Status ICS Form 210 Content Incident
Optional Data	None

Work Product	Component ICS Form 211
Standard	ICS Forms NIEM 2.0
Reference	http://training.fema.gov/EMIWeb/IS/ICSResource/assets/ics211.pdf http://www.niem.gov/niem/NIEM-2.0-schema-index.html
Required Data	Person Assigned Description Status ICS Form 211 Content Incident
Optional Data	None

Work Product Service

Allows UICDS compatible client applications to create, update, and retrieve Work Products of multiple types. The required and optional data elements for the Binary Content Work Product, the Link Content Work Product, and the XML Content Work Product are described below.

Binary Content Work Product

The Binary Content Work Product allows clients to share binary files.

Work Product	Binary Content Work Product Data
Required Data	MIME Type Content (Base 64 encoded binary) Incident
Optional Data	Label Digest (Who, What, Where, When)

Link Content Work Product

The Link Content Work Product allows clients to share URLs to Web-enabled resources.

Work Product	Linked Content Work Product Data
Required Data	Protocol (e.g. HTTP) Address (e.g. www.) Incident
Optional Data	Label Digest (Who, What, Where, When)

XML Content Work Product

The XML work product allows clients to share specific XML data.

Work Product	XML Content Work Product Data
Required Data	Universal Resource Identifier (URI) for the Schema of the Content Content Incident
Optional Data	Digest (Who, What, Where, When)

5. UICDS Feed Outputs as a "Receive Only" Means to Consume UICDS Data

UICDS provides two channel formats for "receive only" consumption of data contained on a UICDS Core: KML and GeoRSS. Each of these feeds requires username and password authentication to the UICDS Core to enable consumption. The data provided by each of these feeds is summarized below.

Channel	KML
Standard	OpenGIS® KML Encoding Standard (OGC KML)
Reference	http://www.opengeospatial.org/standards/kml/
Provided Data	Type Description Submitted By Submitted At Last Updated By Last Updated At Location

Channel	RSS/GeoRSS
Standard	RSS version 2.0.11 of the RSS 2.0 specification GeoRSS W3C
Reference	http://www.rssboard.org/rss-specification http://www.georss.org/Main_Page
Provided Data	Type Name Description Time Date Location

Consumption of these feeds is not considered to be a significant integration with UICDS. The essence of UICDS is a two-way, one-to-many information collaboration capability. These feeds provide only an information viewing capability that does not enable true collaboration. The UICDS feeds are tools to be employed in conjunction with more meaningful integration through the UICDS Web Services and Work Product exchanges as described throughout this document.