

GJXDM Information Exchange Package Documentation Guidelines

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Global XML Structure Task Force

GJXDM Training and Technical Assistance Committee

IJIS Institute XML Advisory Committee

Introduction

Many justice and public safety organizations have been working to define information exchanges, conformant with the Global Justice XML Data Model (GJXDM), to be used within their information sharing enterprise. Recently, a number of justice practitioner and industry organizations¹ have been working to define “reference” information exchanges, intended as models for information exchanges that meet specific business needs. The Global XML Structure Task Force (XSTF) recognized the need to identify and describe a common set of artifacts to document the structure and content of a GJXDM-conformant XML instance used in an information exchange to meet a specific business purpose. This set of artifacts is referred to as “GJXDM Information Exchange Package Documentation.”

The products of these efforts have also been known as “Exchange Documents” and “Reference Exchange Documents” (or simply “Reference Documents”). This paper uses new terminology² described in the *Definitions* section.

The purpose of this paper is to present guidelines for the content of Information Exchange Package Documentation.

Definitions

Information Exchange Package (IEP) – An “Information Exchange Package” represents a set of data that is transmitted for a specific business purpose. It is the actual XML instance that delivers the payload or information. (The word “package” as used herein refers to a package of the actual data, not a package of artifacts documenting the structure and content of the data.) An Information Exchange Package can be prefixed with “GJXDM” to indicate or highlight that the IEP is GJXDM-conformant, as in “GJXDM Information Exchange Package.” The fact that an IEP is GJXDM-conformant may be readily apparent from the context, so it is not absolutely necessary to use the word “GJXDM” even if the IEP is GJXDM-conformant.

Information Exchange Package Documentation (IEPD or IEP Documentation) – “Information Exchange Package Documentation” is a collection of artifacts that describe the structure and content of an Information Exchange Package. It does not specify other interface layers (such as web services). It can optionally be prefixed with “GJXDM” to indicate or highlight that a resulting IEP is GJXDM-conformant. This term replaces “Exchange Document.”

Reference – Information Exchange Package Documentation may have the word “Reference” in its title if it has been mandated, approved, endorsed, recommended, or acknowledged by a cognizant organization, e.g., “GJXDM Information Exchange Package Documentation for a Reference Incident Report.” Reference IEP Documentation often may be used as the basis for IEP Documentation meeting the specific business needs of an information sharing enterprise. This term replaces “Reference Exchange Document” and “Reference Document.”

¹ SEARCH, National Center for State Courts (NCSC), OASIS LegalXML Integrated Justice Technical Committee, IJIS Institute, and other national, state, regional, and local justice organizations.

² The terminology used herein is that jointly agreed to by the XSTF, the GJXDM Training and Technical Assistance Committee, and the IJIS Institute XML Advisory Committee.

Information Exchange Package Documentation Guidelines – Guidelines for what is included in Information Exchange Package Documentation. You are reading those guidelines right now.

Business Need

Why develop Information Exchange Package Documentation? It is necessary to define the data that is to be exchanged (and the structure of that data) for a particular business purpose, thereby providing interoperability at the Information Exchange Package level.

The GJXDD provides a set of defined data in the justice domain; the GJXDM provides an object structure for that data. However, the GJXDM does not define sets of data for particular business information exchanges.

Without the IEP Documentation, there would be no agreement on which GJXDM properties (and extended properties) are used or how they are structured within the IEP. Given the same set of business data requirements, each implementing organization would likely come up with a different IEP to represent that same set of business data. It would be difficult for organizations receiving an IEP to understand it, since the organization wouldn't necessarily know which properties or what structure to expect. Even if the IEP from a particular sending organization could be interpreted, it would be expensive for organizations to handle the IEP variations from the different senders.

By developing and reaching agreement on the IEP Documentation for an information exchange within a particular justice enterprise, participants can send an IEP that can be understood by those receiving the IEP.

Developing *Reference* Information Exchange Package Documentation further reduces the arbitrary variations in IEP Documentation and the corresponding effort to implement multiple IEP Documentation instances for a similar business purpose. If one (or more) justice practitioner and/or industry organizations agree on the Reference IEP Documentation for a particular business purpose, that Reference IEP Documentation can be used as a model for a more specific IEP Documentation that meets the specific business needs of a particular justice enterprise.

For example, if we consider each state to be a justice enterprise, each state may develop the IEP Documentation for an Incident Report. There could then be 50 or more instances of Incident Report IEP Documentation, each potentially having legitimate differences due to the unique requirements of each state. However, these 50 or more Incident Report IEP Documentation instances would likely have arbitrary and unnecessary differences (in addition to the legitimate differences). If *Reference* IEP Documentation for an Incident Report is developed and recognized by a nationally respected organization, states are more likely to use that Reference Incident Report IEP Documentation as a model for developing their state-specific Incident Report IEP Documentation. This minimizes unnecessary differences from state to state while still enabling each state to tailor the Incident Report IEP Documentation to meet state-specific business needs. It may be that the Reference Incident Report IEP Documentation is inclusive enough that it can be used as-is for a particular state. The state-specific Incident Report IEP Documentation would be used to exchange incident information between different jurisdictions within the state or between a jurisdiction and the state repository.

Carrying this concept further down, a county-wide justice enterprise could use the state Incident Report IEP Documentation as a reference model to develop the IEP Documentation for an Incident Report meeting the specific business needs of the county. This county-specific Incident Report IEP Documentation would be used to exchange incident information between different organizations within the county.

Continuing with this concept going up, the Reference IEP Documentation for an Incident Report could be used as-is at the national justice enterprise level for exchanging incident information between states or between states and the federal government.

The benefit of this consistency is that organizations implementing information exchanges can more quickly and cost-effectively deploy them across multiple jurisdictions at all levels. IEP Documentation (and Reference IEP Documentation) takes the benefits of using the GJXDM to a higher level. Ultimately, organizations implement information exchanges based on IEP Documentation, not on the GJXDM.

Scope

The scope of this paper is to provide guidelines for the content of Information Exchange Package Documentation. Although certain aspects may be unique to use of the GJXDM, the guidelines could be used for any XML-based Information Exchange Package Documentation. Note that developing IEP Documentation to these guidelines has no bearing on whether or not a resulting IEP is actually GJXDM-conformant.

This paper does NOT address:

- Information Exchange Specifications and other artifacts that may be included in them. An **Information Exchange Specification** builds on IEP Documentation but completely specifies *how* the IEP is exchanged within a justice enterprise. It addresses such things as message constructs, message handling, and transport.
- Mandated processes for developing the IEP Documentation artifacts. Recommended development processes and methodologies are documented elsewhere and are ultimately up to the organization(s) developing the IEP Documentation. Note that the IEP Documentation does include a description of the process actually used.
- Governance issues associated with responsibility or ownership of the IEP Documentation. Note that the IEP Documentation does include a description of the organizations and persons responsible for the development.
- Certification of the IEP Documentation as supporting GJXDM-conformance, in the sense that applying the IEP Documentation will result in a GJXDM-conformant IEP. Note that the IEP Documentation does include a description of any testing and conformance verification activities that were actually performed.

The IEP Documentation should be published in a common human readable format such as Adobe Acrobat or Microsoft Word. Artifacts that are structured, such as XML Schemas, XML Instances, XSL Style Sheets, UML diagrams, etc. should be provided in their native file format and should be referenced in the IEP Documentation rather than just pasted into it.

Outline for Information Exchange Package Documentation

1 Purpose and Scope

This mandatory section provides details on the purpose and scope of the IEP Documentation. It answers such questions as:

- What is the business purpose of the IEP?
- For which justice enterprises and/or organizations was the IEP Documentation developed or targeted?
- Is the IEP Documentation for a particular justice enterprise (e.g., a specific statewide integrated justice system) or is the IEP Documentation to be used as a reference?

This section can include business scenarios that help define where and when the IEP is used. Business scenario artifacts can be included in section 6.3.

2 List of Artifacts

This mandatory section lists the various artifacts included or referenced in the IEP Documentation. It includes both “deliverable” artifacts and those used during development (which could be reused for extending or modifying the IEP Documentation).

3 XML Schemas

This mandatory section provides or references the XML Schemas used to define the information exchange. Generally, but not always, the IEP Documentation will provide all four XML Schemas described in the subsections that follow.

3.1 GJXDM Subset Schema

This section provides or references the GJXDM Subset Schema. Because of the size and complexity of the full GJXDM schema, it is generally a good practice to create a “subset schema” that removes unused GJXDM components. The Subset Schema must be included if such a schema was developed or used.

3.2 Constraint Schema

This section provides or references the GJXDM Constraint Schema. The Constraint Schema embeds local constraints into GJXDM definitions. The Constraint Schema must be included if such a schema was developed or used.

3.3 Extension XML Schema

This section provides or references the Extension Schema. The Extension Schema defines local extensions. The Extension Schema must be included if such a schema was developed or used.

3.4 Document XML Schema

This section provides or references the Document Schema. The Document Schema defines the contents and content structure of the instance and specifies which parts of the GJXDM (and extensions) are expected. The Document Schema must be included since there would be no IEP Documentation without it.

4 Additional Provisions

This section provides additional definitions, business rules, and other information required to implement the IEP over and above that specified in the XML Schemas. It may reference the information if it is contained in another artifact or separate document. This section is optional if the XML Schemas completely and unambiguously define the information exchange; otherwise, it is mandatory.

4.1 Additional Property Definitions

This section provides additional XML property definition and usage information that may be required by or helpful to the implementer. It may elaborate or clarify existing GJXDM definitions in the context of this IEP Documentation, or provide additional information on extended properties. The information should be provided as annotations in the XML schemas listed in Section 3. Ideally, this section (4.1) is generated from the annotations through some automated means to ensure consistency with the annotations.

4.2 Minimal Property Set

This section provides the minimum set of properties required for a meaningful information exchange. The information should be provided as property cardinality in the XML schemas listed in Section 3. Ideally, this section (4.2) is generated from the XML schema property cardinality through some automated means to ensure consistency with the XML schema property cardinality.

4.3 Additional Business Rules

This section provides any additional business rules required for a valid IEP. It only specifies business rules associated with the IEP, not business rules internal to a sending or receiving system. Some examples are:

- Cross-field validation – e.g., if optional property A is provided, optional property B must also be provided.
- Type substitution – if type substitution is to be used in XML Instances, what type is substituted and under what circumstances.

4.4 Other Information

This section provides any other information not covered by the other subsections of this section.

5 Samples

This section provides samples that may be useful to an implementer to facilitate understanding of the IEP. Samples are optional, but are strongly recommended as they reduce the likelihood of misinterpretation and aid testing.

5.1 Sample XML Instances

This section provides or references sample XML Instances (xml files) for the IEP. It should include samples of both simple and complex information exchanges. Realistic data should be used (although data should be “sanitized” to omit actual identifying information that would violate privacy). Sample XML Instances are optional but are strongly recommended and should be provided if such samples were developed and determined to be valid.

5.2 Sample XSL Style Sheets

This section provides or references sample Style Sheets (xsl files) that could be used in conjunction with the IEP. These style sheets could be used to transform the xml instance into human readable format such as HTML or text; to transform the xml instance into a different xml instance (such as a different GJXDM version or another XML standard); or to transform the xml instance into a different structured format, such as a legacy “dot-slash” delimited format. The section should also include sample transform output. Sample XSL Style Sheets are optional but should be included where it would be appropriate to do so – for example, if the information in the XML instance (such as a RAP sheet) is likely to be presented to a user, or there is a widely used corresponding legacy format.

6 Development

This section describes the people, process, and artifacts used in the development of the IEP Documentation. It is optional but strongly recommended, as it may aid understanding of the IEP Documentation and can greatly facilitate reuse. For these reasons it is mandatory for IEP Documentation intended to be used as a reference.

6.1 Participants

This section lists the organizations and persons who supported and/or participated in the development of the IEP Documentation. It should include contact information (when permission to release that information has been given); authoritative organizations that supported the development; and organizations that funded the development. Key roles of individuals and organizations should be noted.

6.2 Process

This section describes or references the process actually used to develop the IEP Documentation. It should include meeting dates and locations.

6.3 Development Artifacts

This section provides or references artifacts (other than the XML schemas and samples) created during the development process. These artifacts can help an implementer better understand the IEP, and can be re-used if the IEP Documentation is later modified, extended, or re-purposed. Organizations (or groups of organizations) developing IEP Documentation

using established processes or methodologies may identify specific development artifacts to be included in this section, some of which may be mandatory.

Development artifacts can include:

- Business scenarios
- High-level model of business data and relationships
- Detailed models of business data and relationships; UML Class Diagrams are strongly recommended as a consistent method for graphically depicting the domain model
- Spreadsheet of business data requirements
- Source paper documents or requirements specifications (e.g., paper Incident Report)
- Spreadsheet of business data to GJXDM component mapping
- Subset Schema Generation Tool (SSGT) Want Lists

7 Testing and Conformance

This section provides information on any testing or conformance activities. It is highly recommended when such testing or conformance activities were actually performed, especially for IEP Documentations intended to be used as a reference. The information in this section will provide additional assurance to potential users that the IEP Documentation is likely to be free from defects, meets the business requirements, and results in GJXDM-conformant Information Exchange Packages.

7.1 Testing

This section provides information on any testing that was performed to verify that the IEP Documentation has no technical defects and that it meets the business requirements for the information exchange. An example would be a report from two organizations that developed or prototyped the information exchange and successfully tested it with a number of XML instances, including normal data, boundary conditions, exceptions, and invalid data.

7.2 Conformance

This section provides information on any activities performed to verify that Information Exchange Packages (including the sample XML Instances) resulting from application of the IEP Documentation conform to the GJXDM. An example would be an independent review by a knowledgeable and respected person or organization making a determination of GJXDM conformance.

8 Feedback

This section includes any lessons learned, suggestions, or recommendations that resulted from the development of the IEP Documentation. It should also include any recommended additions or changes to the GJXDM. It is strongly recommended as the experiences and feedback from development of this IEP Documentation could significantly benefit future IEP Documentation development.