



XML Standards Details

Micro Learning Module

MLM-022-B

Industry	– All
Principal Role	– All
Professional Role	– All
Enterprise Phase	– All

eXtended Markup Language



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START

This module is intended for authors of MLMs, course materials, and standards.

It provides details about the XML standards used in PERA

What is eXtended Markup Language ?



XML is a foundational information technology with numerous associated standards that extend its capabilities and define specific uses.

These standards can be broadly categorized into several areas:

- 1) CORE XML Standards
- 2) XML Query and Transformation
- 3) XML Linking and Referencing
- 4) XML Security
- 5) Special Purpose XML-based Standards

These are each discussed below.



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- XML Linking and Referencing
- XML Security
- Special Purpose XML-based Standards

These are each discussed below.

1) Core XML Standards



- a) **SOAP** (Simple Object Access Protocol)
- b) **SVG** (Scalable Vector Graphics)
- c) **Xforms** (for Web Forms)
- d) **UBL** (Universal Business Language)
- e) **GraphML** (Graphics Markup Language)
- f) **BPMN** (Business Process Model and Notation)



Core XML Standards include:

- a) SOAP (Simple Object Access Protocol): An XML-based messaging protocol for exchanging structured information in web services.
- b) SVG (Scalable Vector Graphics): An XML-based vector image format.
- c) XForms: An XML application for creating web forms.
- d) UBL (Universal Business Language): A library of standard XML business documents.
- e) GraphML: A Graphic Standard for vector diagrams.
- f) BPMN: (Business Process Model and Notation) is the global standard for mapping and visualizing business workflows.

2) XML Query and Transformation Standards



- a) **Xpath** (for navigating and selecting XML nodes).
- b) **XSLT** (Extensible Stylesheet Language Transformations)
- c) **Xquery** (for querying XML data)



XML Query and Transformation Standards include:

- XPath: A language for navigating and selecting nodes within an XML document.
- XSLT (Extensible Stylesheet Language Transformations): A language for transforming XML documents into other XML documents, HTML, or other formats.
- XQuery: A powerful language designed for querying XML data, similar to SQL for relational databases.

3) XML Linking and Referencing Standards



- a) **XLink** (to create XML hyperlinks)
- b) **XPointer** (to reference specific parts of an XML document)
- c) **XInclude** (for merging XML documents)



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XML Linking and Referencing standards include:

- XLink: Defines a standard way to create hyperlinks within XML documents.
- XPointer: A language for addressing and referencing specific parts of an XML document, often used in conjunction with XLink.
- XInclude: A standard for merging XML documents by including one document within another.

4) XML Security Standards



- a) **XML Signature** (for signing XML documents)
- b) **XML Encryption** (for encrypting XML documents)
- c) **XKMS** (XML Key Management Specification)



XML Security Standards Include:

- XML Signature is a standard for digitally signing XML documents to ensure authenticity and integrity.
- XML Encryption: A standard for encrypting XML data to protect its confidentiality.
- XML Key Management Specification (XKMS): A protocol for managing cryptographic keys within XML applications.

5) Special Purpose XML Standards



- a) **B2MML** (Business to Manufacturing Markup Language)

- b) **The EXCEL** (.XLS spreadsheet format)



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PERA uses several special-purpose XML standards, including:

- B2MML (Business to Manufacturing Markup Language) is a special-purpose XML standard used in ISA95 data transfers from Manufacturing to Business systems

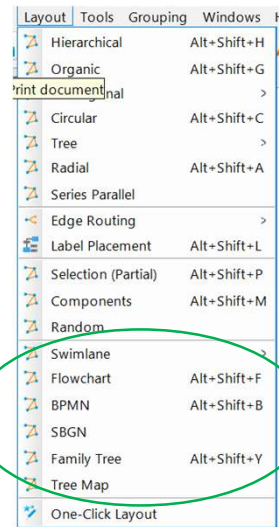
- The EXCEL (.XLS) spreadsheet format is actually a Zip file containing XML information.

Many Standard XML Templates Are Provided in yEd GraphML



- Logic Flowchart Diagrams
- Swim Lane Diagrams
- BPMN Workflow Diagrams
- UML Class Diagrams
- Fishbone Diagrams
- Entity Relationship Diagrams
- Network Topology Diagrams
- Failure Mode and Effects Analysis
- Mind Mapping

- Custom Diagrams can also be saved in yEd



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Many templates are available that are used in PERA, including:

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Custom Diagrams can also be defined and saved in yEd, and a Library of User-defined Diagrams is available.

Key “Take-away” Messages



Why Use XML Standards ?

- Saves time and improves the quality and consistency of data transfers and reports
- Imports and exports information in many formats
- Many generic and application-specific packages are available
- UML documents are easier to import into AI applications (compared to Relational Database information.



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Why Use XML Standards in PERA ?

- XML saves time to produce diagrams, while improving quality and consistency.
- Diagrams may be configured from a “Drag & Drop” menu, or auto-generated directly from data.
- Many standard and custom diagram templates are available.
- yEd may be downloaded for free, including by commercial users.

More Reading



Related MLMs

- MLM-021-B How yEd is used in PERA
- MLM-021-C Creating yEd Swimlane Diagrams
- MLM-021-D Creating Organization Charts and other Hierarchy Diagrams

References:

- See "[Basic XML](#)" on YouTube

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Thank you for taking the time to view this Micro Learning Module.

You may wish to follow this link to watch a video introduction to Basic XML

The last link asks for your feedback on this MLM.

Author



Bill Bosler, P.E., is an Oil & Gas Business Development leader and enterprise-integration SME with 40+ years across upstream, pipelines, refining, petrochemicals, and major capital projects. He combines PERA master planning with ISA-95/IEC-62264 data models to help operators and EPCs turn strategy into measurable value and resilient supply chains.



Bill founded and led Texas Consultants, delivering programs in 30+ countries and partnering with national/international oil companies, pipeline consortia, and global integrators. His work includes the CPC pipeline Customer Management System, refinery and petrochemical optimization programs, and upstream collaboration centers. He has also negotiated greenfield/expansion projects and contributed to standards at API and ISA.

Notable outcomes include reducing an Arctic LNG concept's capital needs by ~\$5B with a 12% ROI lift; accelerating a client's automation benefits by \$4M/year; and saving ~\$0.20/bbl on gasoline blending through multi-vendor integration.

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