

## Participants

This course is aimed at people wishing to understand XML and to discover its components related to information systems.

## Pre-requisites

A good Web based technical knowledge is required.

## Next sessions

# XML state of Art

## OBJECTIVES

*XML has become an irreplaceable standard to exchange data over the Web. Strongly used in the industry of IT's, it's now one of the main components of Web applications, information systems, data integration, e-commerce (mainly B2B)... Through its many languages, XML can be used to define data structures and check data validity, to transform data and to expose it using different data formats (XML, CSV, SOAP). XML is also strongly used in services oriented architectures. This seminar gives you an XML overview so that you could better appreciate its use in your own information systems and web applications.*

### 1) Knowledge base

#### 2) XML data definition

#### 3) XML data manipulation

#### 4) Web Services

### 5) XML database

#### 6) XML workflow

#### 7) Web 2.0 and XML

## Presenter

### Cyril BALL

He is a Professor of Information Technologies for both professionals and students. He has provided his knowledge for more than 18 years in many organizations such as Paris Dauphine University. He was project manager and database administrator in several services companies working for large groups such as Banque Populaire, BNP or CL where he acquired a good knowledge of various business problems, especially those managing huge quantities of data.

## 1) Knowledge base

### Origins and objectives

- Markup languages. SGML, HTML and CSS. Strengths and weaknesses. Document structure, content and appearance. What's better with XML?

### XML standard

- W3C and xml.org. The markups, elements and attributes, XML namespaces, xmlns. Hyperlinks with XLink.  
- XML galaxy, XML languages.

### Applications samples

- EDI, data exchange, ETL. Data publication and exposure.

## 2) XML data definition

### DTD : document type definition

- Wellformedness and validity. Native data types. How to create elements and attributes. The weakness of DTDs.

### XML Schema and data modeling

- Simple and complex types. Creating collections. Inheritance. XSD libraries.

### Data design

- Creating, documenting and maintaining DTDs and XSD. Rules and methods to construct schemas.  
- From UML to XML. Main tools.

## 3) XML data manipulation

### XSL Transformation

- XPath to extract and aggregate data.  
- XSLT document creation. XSLT programming templates. The XSLT processor.  
- Binary transformation with XSL/FO.

### Working with XML

- From XML documents to objects graphs with DOM API.  
- Event based programming with SAX API. Use in Java environment.

### Using XSL-T on client and server side

- Client and server side transformations. XSLT processors and data exchange.  
- Content management systems (CMS). Syndication, push, RSS and ATOM feed.

### Data manipulation tools

- XML tools (XMLSpy , Oxygen...). XSLT and XSLFO tools (Stylevision).  
- XML suites: Altova Studio, Adobe Studio.

## 4) Web Services

### Web services architectures

- WS Client, WS server, WS directory. SOA.

### WSDL, UDDI et SOAP

- Web service description with WSDL. WS inscription with UDDI.
- XML-RPC. SOAP (Simple Object Access Protocol): comparison with REST.

### Web services creation

- Workflows. Long data Transactions.
- Web services standards: BPEL, WS-Transaction et WS-Coordination.

### Security

- Authentication, XML Encryption, XML signature, XKMS.
- PKI and WS-Security the raising standard.
- Use in application servers.
- .NET strategy. J2EE servers (Websphere, Weblogic, JBoss, etc.).

## 5) XML database

### XML data storage

- XML as a data model. Relational mapping or native format? Indexation, structure or content search. How to integrate with the existent.

### Query languages

- SQL/XML extends SQL. Microsoft LINQ. XQuery: W3C's standard. XUpdate to update data.

### Database tools

- SGBDR extension: IBM, Oracle, Microsoft. Natives XML SGBD: Tamino, GoXML, TextML, NeoCore, X-Hive... What's about performances ?
- Use case: PCWorldOnLine.

## 6) XML workflow

### Data integration through XML EII

- XML EII (Enterprise Information Integrators): imported schemas and integrated views.
- Extracting data guides. Query splitting. Unifying results.
- EII XML samples: BEA Liquid Data, IBM Information Integrator, Médience (BO).

### Applications integration through XML EAI

- EAI functionality: connection, transformation, data exchange, process modeling, workflows management. EAI Bus.
- EAI XML samples: MS BizTalk, BEA Weblogic Integration, IBM Websphere Business Integration, Oracle, Sun ONE, Tibco, etc.
- Application integration through Web services : the Qwest sample with UDDI.

### XML and B2B

- Why is it better to use XML in B2B solutions. Protocols and samples: cXML, xCBL, UBL, RosettaNet, OAGIS, FIX.
- ebXML to replace the old EDI: process models, activities and dictionaries.
- ebXML use case : the MTR's e-invoicing system.

## 7) Web 2.0 and XML

### Web 2.0

- For a more social and better fashioned Web.
- Development tools and rich client.

### Semantic Web

- Description and annotation of XHTML pages and resources. The RDF semantic model.