

Web Technologies

Present and Future of XML

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Sabin Corneliu Buraga

- ◆ Ph.D. Student: **Multimedia Object Manipulation Techniques on Internet** coordinated by Prof.D.Todoroi (since 1998)
- ◆ M.Sc. Thesis: **Markup Languages** (1998)
- ◆ B.Sc. Thesis: **LEDA - an extensible visual object-oriented preprocessor** (1997)
- ◆ Co-founder & co-supervisor of **Web-Group** (since March 2000)



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- ◆ **Experience and points of interest:**
 - Annotation languages and applications (SGML, XML)
 - Web technologies (SOAP, CGI, PHP, DOM, SMIL, robots & agents)
 - Information retrieval and representation on Web (metadata - RDF, query-languages, hypertext theory)
 - Graphical environments and hypermedia interfaces



What is XML

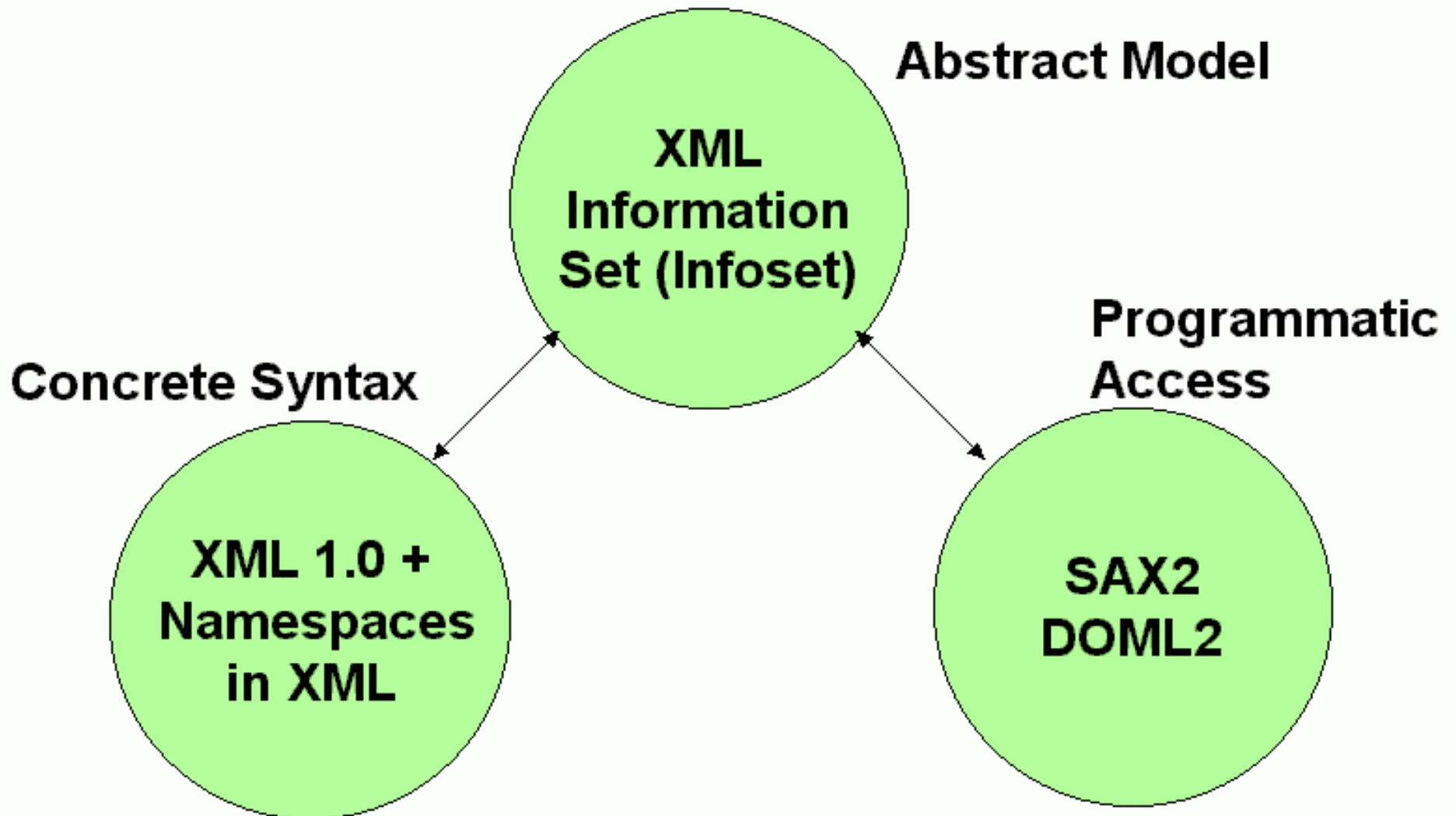
- ◆ Web Consortium's standard and future direction of research (since 1998)
- ◆ Publicly, freely available specifications at **www.w3.org**
- ◆ Subset of SGML (Standard Generalized Markup Language) - **meta-language**
- ◆ Simple, flexible, and suitable for Web applications
- ◆ XML adds **type** and **structure** to **information**
- ◆ Universal industry support



XML family

- ◆ Syntax: XML (Extensible Markup Language)
- ◆ Validation: DTD, namespaces, XML Schema
- ◆ Hyper linking: XLink, XPointer
- ◆ Transformations and semantics: XSL (Extensible Stylesheet Language) - uses XPointer and XSLT languages
 - Rules-based, event-driven declarative programming language
- ◆ Interface: XUL (Extensible User Interface Language)

Concrete & abstract XML





Programming XML

- ◆ Easy to parse and manipulate
 - DOM** - Document Object Model
 - SAX** - Simple API for XML
- Implements standard programming (language & platform independent) interfaces
- Provides a standard set of objects
- Defines logic structure of XML data
- Interoperates with other XML standards
- Advantages: dynamic XML documents on Web, easy parsing and modification



XML: Applications

- ◆ Science: MathML, SGF (Structured Graph Format), ChemML, MoDL (Molecular Dynamics Language)
- ◆ Knowledge Representation: VHG (Virtual Hyper-Glossary), XMI (XML Metadata Interchange Format), OIL (Ontology Inference Layer), RDF (Resource Description Framework) formal representation of Web resources ⇒ **semantic Web** (Tim Berners-Lee)
- ◆ Hypermedia: SMIL (Synchronized Multimedia Integration Language), SVG (Scalable Vector Graphics), WebSchematics, PGML (Precision Graphics Markup Language)



XML: Applications (2)

- ◆ Human Language Technology: VoiceXML, SpeechML, TalkML, Open e-Book, XML/EDI (Electronic Data Exchange), TEI (Text Encoding Initiative), SABLE
- ◆ Business: OTP (Open Trading Protocol), BizTalk, OFX (Open Financial Exchange), BIPS (Bank Internet Payment Systems), BRML (Business Rules Markup Language)
- ◆ Industry: PDX (Product Definition Exchange), NITF (News Industry Text Format), WML (Wireless Markup Language)



XML - our research

- An XML-based representation of Lindenmayer systems:
LSML (L-Systems Modeling Language)
- An XML-based query language to be used in (semi)structural search activity on Web:
WQFL (Web Query Formulating Language)

- ...to be continued!



Conclusions

- Platform-neutral and open standard
- Adaptive solution for interoperability and intelligent description of Web information
- XML as a component technology (via SOAP - Simple Object Access Protocol)
- XML is not completely standardized
- Anyone can contribute, comment and implement XML applications



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Thank you for attention!
More specific information
on my home page:

<http://www.infoiasi.ro/~busaco>

Questions?

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