Web Technologies
Present and Future of XML

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- Ph.D. Student: **Multimedia Object Manipulation Techniques on Internet** coordinated by Prof. D. Todoroi (since 1998)
- 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

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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

Concrete Syntax
- XML 1.0 + Namespaces in XML

Abstract Model
- XML Information Set (Infoset)

Programmatic Access
- SAX2
- DOML2
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)


- 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:
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Questions?

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