The XML World View
– *a personal vision with challenges*

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Dreaming

An easy way to
access & query
all information
*in the world**

* or Enterprise or ...

So, what's “the world”?

- Information in units:
  - *Documents.*
  - *Databases.*
  - *Spreadsheets.*
  - *Mail and Notes.*
  - *Live feeds (“mylife”)*
  - *...*

- Organizations of the information:
  - *Global addressing.*
  - *Interdocument relationships.*
  - *Embeddings.*
  - *...*

Why is XML interesting?

- Everything with an XML data model* can make use of the XML standards:
  - *access with XPath,*
  - *manipulation and construction with XSLT (and XQuery),*
  - *full text search (in preparation),*
  - *standardized distribution (web services),*
  - *standardized encryption,*
  - *...and more!*

* Specifically the "Xpath/XQuery Data Model" (that maps to the XML Infoset).

So how do we get XML data models of everything?

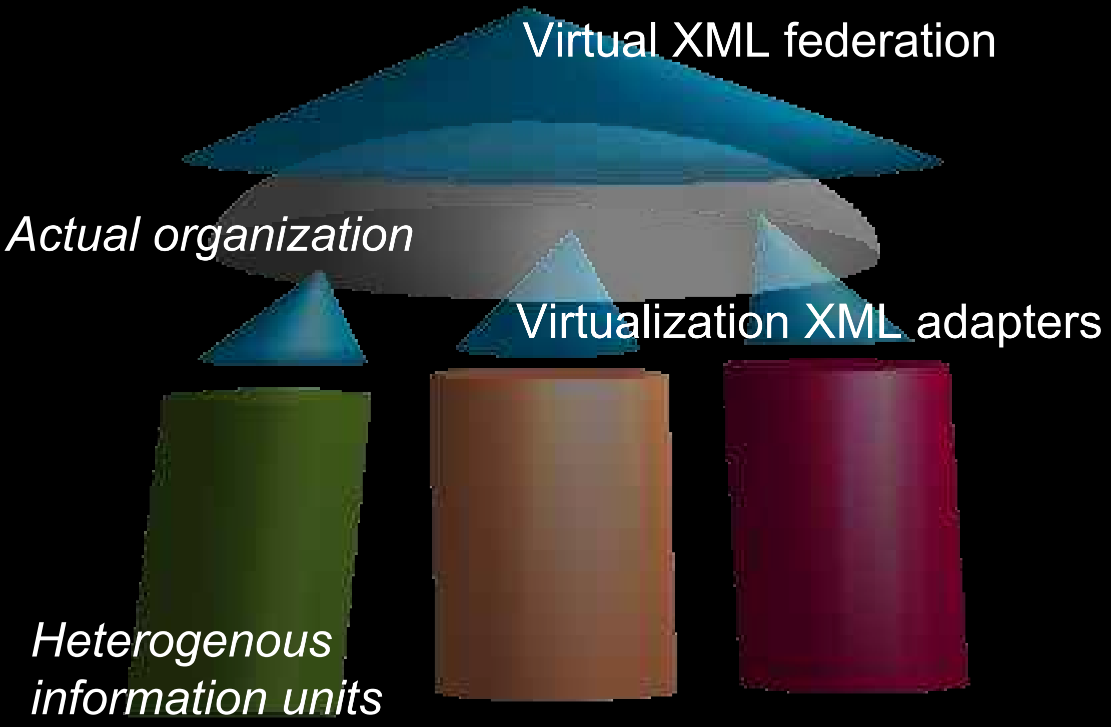
Virtualize,
Let no one else's work evade your eyes,
Remember why the good Lord made your eyes,
So don't shade your eyes,
But virtualize, virtualize, virtualize...
Only be sure always to call it please ... search.

With apologies to Tom Lehrer

It's the ***Syntactic Web !***

- “Live” virtual instances of XML Data Models for
  - → *addressing*, and
  - → *information*.
- But “Just syntax”...
  - → *Expose addressing directly in XML hierarchy.*
  - → *Expose structure of information directly in XML.*
- Make sure we can “grow” the syntax as we gradually understand what we need from it.
  - → *Make it easy to build derived virtual XML views.*

Putting it all together!



Virtual XML federation

Actual organization

Virtualization XML adapters

Heterogenous information units

Waking up

The world is a big place.*

Organization (I): file systems

- /root/dir[@name='etc']/file[@name='passwd']/@text
  - *Directories are represented as elements.*
  - *The root is the root directory.*
  - *The children of a directory are the sub-directories, files, etc. (links).*
  - *Actual file contents text is available but in general the child of a file should be the root of it's XML representation.*

Oganization (II): the web

- /www/link[@href = “http://ibm.com/developerworks”]

  /page/link[contains(@href, “watson”)]

  /file[@type = “application/pdf”]

  - *Root is virtual list of all possible links.*
  - *Children of a link is the referenced web page and/or it's representation as a file.*
  - *Children of web pages are their links (recursive).*
  - *Don't build this for real...*

Information units (I): the structured case

- Easy for native XML and structured documents (SGML).
- Relational data maps easily into XML.

Information units (II): customized

- .../mail/message[@from = "krisrose@us.ibm.com"]

  /attachment[@type = "application/pdf"]
- .../passwd/record[@uid = "krisrose"]/@full-name

→ *In each case the "surface structure" is mapped into XML (DFDL).*

Derived views

- …/file/transform[@by = “my.xsl”]/…
  - ➔ *Live transformed data!*

Monday morning...

*The world**

always

has more complexity

than we think...

Persistence

- The world changes.
  - → *We do not yet have a nice XML-level standard for updates.*
- Can we define persistent subsets (“profiles”) of the data model?
  - → *For example: order cannot be observed, children only added, etc.*
- How is it ensured that updates are well defined on virtual XML data models?
  - → *Constrains the “cleverness” of the virtual models.*

Evolution

- Data evolves.
  - *XML Schema "evolution" is still a research topic.*
  - *Other formats each have their own notion of evolution e.g., (e.g., version control).*
- Can virtual XML specifications be robust wrt. evolution?
  - *Seing "evolved" data as "derived" could help.*
  - *Constrains the "cleverness" of the virtual XML models.*

Challenges...

- Can we map all our data into useful virtual XML?
  - → *This is happening already.*
- Can we build virtual XML data models of the various ways the world* is organized?
  - → *Is execution of XPath (etc.) over such virtual data feasible?*
- Does it scale properly?
  - → *Even over multiple derivations/evolutions and mutations?*
  - → *Can multiple organizational principles coexist?*
- What is needed to seed the growth of this?

Thank you

It's Here: HTTP + *Google*™

- Just text (and URL) search.
- Results returned in their native form or as text.
- No combination of searches (join/filtering).
- No customization of result format.

Why Not Semantic Web?

- Requires full specification *at* data source.
- Hard to retrofit onto legacy data.
- Value is in shared "ontology space"…is the world ready to share?