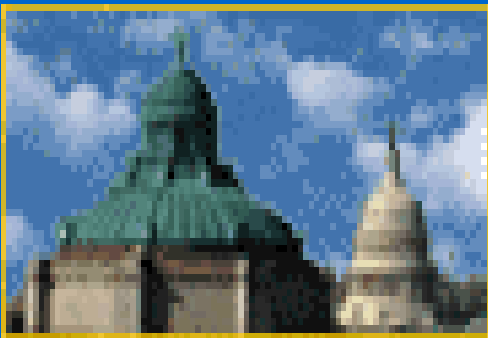# W3C XP Activity

Ray Denenberg,
Library of Congress
December 2000 ZIG Meeting

The goal of XML Protocol

- Develop technologies allowing peers to communicate….

- ...in a distributed environment...

- ...using XML as encapsulation language.

- Extensible and simple messaging format.

- Layered architecture.

Layering

- "XP supports applications layered on top

- as well as the capability of XP to be layered on top of (or bound to) a variety of underlying protocols."

Application Protocols over XP….

| P3P | CIRC | Dienst/OAI | Z39.50 |

XP

…and XP over lower layer protocols

Application Protocol

XP

HTTP

TCP

Without HTTP

Application Protocol

XP

TCP

Over SMTP instead of TCP

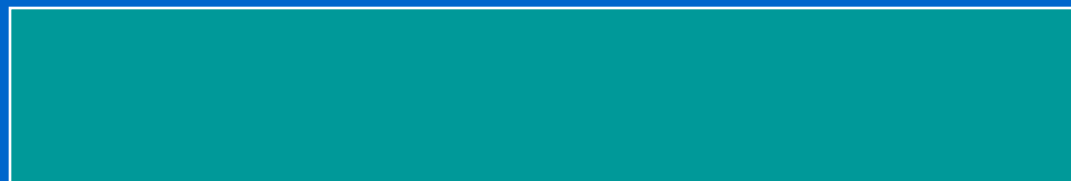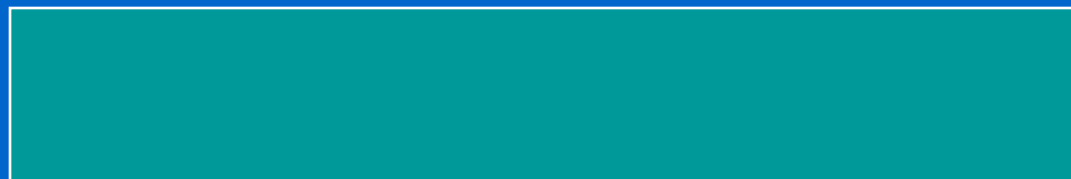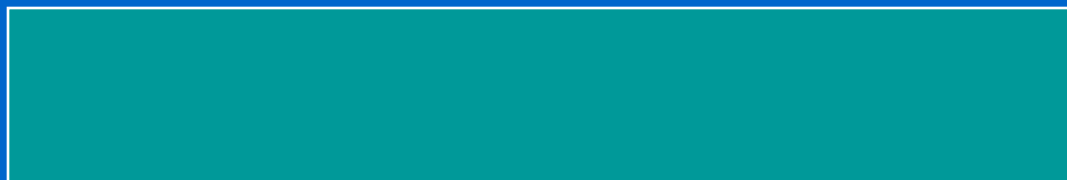Application Protocol

XP

SMTP

XP Alternatives

XP   SOAP   XML-RPC   XMI   Eb XML

Components of XP

- Envelope
- Serialization
- RPC
- Binding

Envelope

- Outermost syntactical construct within which all other syntactical elements of the message are enclosed.

- Described via XML Schema.

- Processing Model.

Processing Model

- Defines what it means to properly process an XP envelope or produce a fault.

- Independent of any extensions carried within the envelope.

- Applies both to intermediaries as well as ultimate destinations of an XP envelope.

- Extensible.

Extensibility

- Application specific payloads inside the XP envelope.
- Reference to application specific payloads outside the XP envelope.
- Nested XP envelopes as application specific data within the XP envelope.
- Reference to XP envelopes as application specific data outside the XP envelope.
- Semantics to indicate to an XP processor which extensions are optional and which are mandatory.

RPC

- A convention for the content of the envelope when used for RPC (Remote Procedure Call) applications.

- RPC is explicitly supported, but arbitrary messaging patterns and scenarios are implicitly supported.
  - (e.g one way)

RPC Conventions

- Unique specification of the program or object and procedure or method to be called based on URI

- Provisions for matching response messages to request messages for cases in which matching is not provided by the underlying transport protocol

RPC Conventions (continued)

- The ability to specify the parameters to a call in a request message and the results of a call in a reply messages

- Provisions for specifying errors in a reply message

Messaging patterns

- RPC

- One way

- Publish-subscribe

- multicast

- permanently and intermittently connected scenarios

Serialization

- mechanism for serializing data based on data models not directly representable by XML Schema types.
  - object graphs and directed labeled graphs
  - subordinate relationships known from attachments and manifests.

HTTP Binding

"A mechanism for using HTTP transport in the context of an XML Protocol. This does not mean that HTTP is the only transport mechanism ..., nor that support for HTTP transport is mandatory. … merely addresses the fact that HTTP transport is expected to be widely used, ….."

Intermediaries

- proxies,

- caches,

- store-and-forward hops,

- gateways

Not Supported

- Binary

- compression

- transport

- application semantics

- metadata

XP *should* provide facilities (e.g. optional header elements) to encourage a common approach to:

- authentication,

- encryption,

- reliable delivery,

- sessions,

- transactions

Caution: Fictitious Example

OST /StockQuote HTTP/1.1
    Host: www.stockquoteserver.com
    Content-Type: text/xml; charset="utf-8"
    Content-Length: nnnn
    XPAction: "Some-URI"

```
 <XP-ENV:Envelope
     <XP-ENV:Body>
         <m:GetLastTradePrice xmlns:m="Some-URI">
             <symbol>DIS</symbol>
         </m:GetLastTradePrice>
     </XP-ENV:Body>
</XP-ENV:Envelope>
```

Schedule

- *September 2000*: Working Group formed
- *October 2000*: requirements Working Draft
- *January 2001*: Initial Working Draft for XP
- *April 2001*: Candidate Recommendation
- *August 2001*: Proposed Recommendation
  September 2001: Recommendation