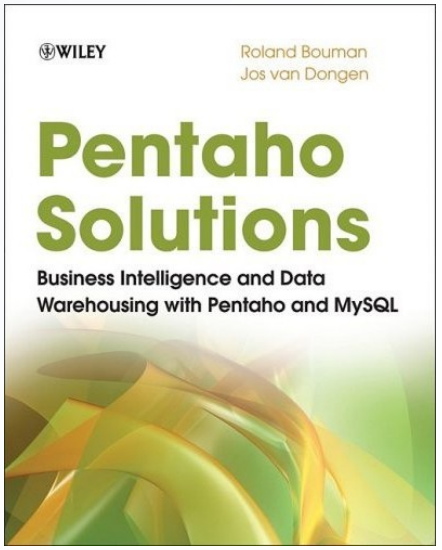
OLAP for Web applications

Roland Bouman: http://rpbouman.blogspot.com/
Xmla4js: http://code.google.com/p/xmla4js/

Welcome, thanks for attending!

- Roland Bouman; Leiden, Netherlands
- Ex MySQL AB, Sun Microsystems
- Web and BI Developer
- Co-author of “Pentaho Solutions”
- Blog: http://rpbouman.blogspot.com/
- Twitter: @rolandbouman



Program

- In a nutshell...
- XML/A overview
- Using XML/A in webpages
- Making life a little easier – Xmla4js
- Demonstration
- Questions and answers
- Links and resources

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In a nutshell...

- XML/A = XML for Analysis
- Industry standard for OLAP over HTTP
- Xmla4js = javascript API to enable XML/A
- OLAP data for your web applications

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XML/A Overview

- XML for Analysis is a communication protocol
  - SOAP Webservice: XML, HTTP
- Initiated by Microsoft
- Supported by multiple vendors and products:
  - Microsoft Analysis Services
  - Oracle Essbase
  - SAP BW
  - PALO Server (EE)

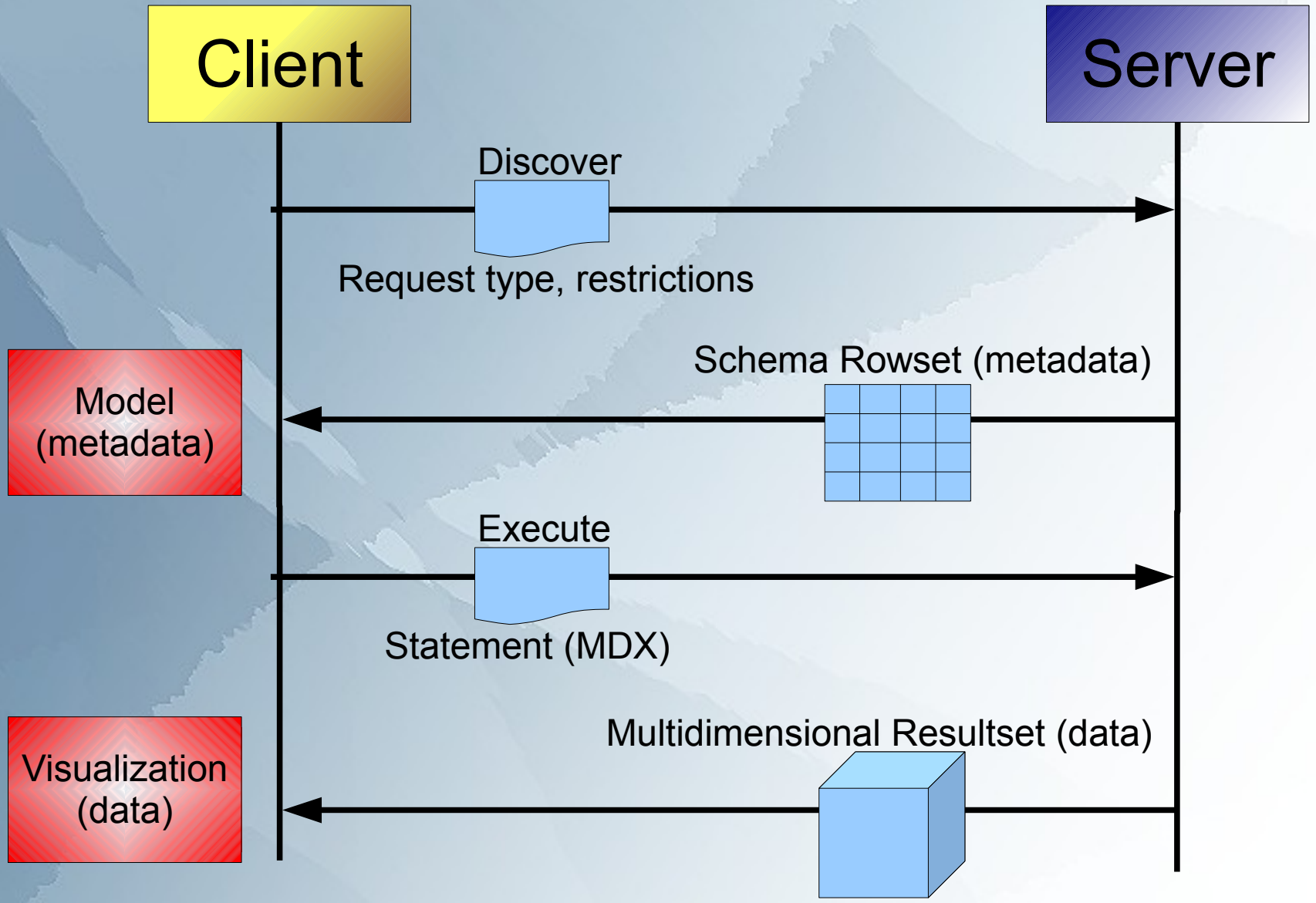
XML/A is SOAP

- Standard HTTP request/response:
  - Client sends a request using an URL
  - Server sends a response
- SOAP Webservice
  - simple object access protocol
  - request and response are XML documents
  - XML format is more or less predefined
- Method invocation analogy

XML/A Methods

- Discover:
  - Obtaining metadata
  - Request: request type, properties, restrictions
  - Response: Tabular schema rowset
- Execute:
  - Performing queries
  - Request: MDX statement, properties
  - Response: Multidimensional resultset

Typical XML/A Calling Sequence



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Using XML/A in webpages

- Webpage client-side programming:
  - Javascript
- HTTP requests: AJAX
  - XMLHttpRequest
- Working with XML:
  - Document Object Model (DOM)
  - XPath, XSLT
  - Framework like jQuery

XML/A in webpages: Example

```
SELECT  [Measures].[Profit]
        ON COLUMNS,
        [Product].[All Products].Children
        ON ROWS
FROM    [Sales]
```

	Measures
	Profit
Drink	$ 29,358.98
Food	$245,764.87
Non-Consumable	$ 64,487.05

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XML/A with raw javascript

```
<script type="text/javascript">

var url = "http://localhost:8080/pentaho/Xmla?userid=joe&password=password";
var datasource = "Pentaho Analysis Services";
var catalog = "FoodMart";
var mdx = "SELECT [Measures].[Profit] ON COLUMNS," +
          "       [Product].[All Products].Children ON ROWS " +
          "FROM   [Sales]";
var request = "<SOAP-ENV:Envelope" +
"  xmlns:SOAP-ENV=\"http://schemas.xmlsoap.org/soap/envelope/\"" +
"  SOAP-ENV:encodingStyle=\"http://schemas.xmlsoap.org/soap/encoding/\">" +
"  <SOAP-ENV:Body>" +
"    <Execute" +
"      xmlns=\"urn:schemas-microsoft-com:xml-analysis\"" +
"      SOAP-ENV:encodingStyle=\"http://schemas.xmlsoap.org/soap/encoding/\">" +
"      <Command>" +
"        <Statement>" + mdx + "</Statement>" +
"      </Command>" +
"      <Properties>" +
"        <PropertyList>" +
"          <DataSourceInfo>" + datasource + "</DataSourceInfo>" +
"          <Catalog>" + catalog + "</Catalog>" +
"          <Format>Tabular</Format>" +
"        </PropertyList>" +
"      </Properties>" +
"    </Execute>" +
"  </SOAP-ENV:Body>" +
"</SOAP-ENV:Envelope>";
var xhr = new XMLHttpRequest();
xhr.open("POST", url, false);
xhr.setRequestHeader("Content-Type", "text/xml");
xhr.send(request);
var response = xhr.responseXML;
var rows = response.getElementsByTagNameNS(
    "urn:schemas-microsoft-com:xml-analysis:rowset", "row"
);
var colHeaders = response.getElementsByTagNameNS(
    "urn:schemas-microsoft-com:xml-analysis:rowset", "row"
);
var rowArray = [];
for (var i=0; i<rows.length; i++){
    var row = rows.item(i);
    var cols = row.getElementsByTagName("*");
    var rowArrayEntry = {};
    rowArray.push(rowArrayEntry);
    for (var j=0; j<cols.length; j++){
        var col = cols.item(j);
        rowArrayEntry[col.nodeName] = col.firstChild.data
    }
}

</script>
```

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Xmla4js sample code

```
<script type="text/javascript" src="../src/Xmla.js"></script>
<script type="text/javascript">
var rowArray = new Xmla().execute({
    async: false,
    url: "http://localhost:8080/pentaho/Xmla",
    statement: "SELECT [Measures].[Profit] ON COLUMNS," +
               "       [Product].[All Products].Children ON ROWS "+
               "FROM   [Sales]",
    properties: {
        DataSourceInfo: "Pentaho Analysis Services",
        Catalog: "FoodMart",
        Format: "Tabular"
    }
}).fetchAllAsObject();
</script>
```

```
[
    {"[Product].[Product Family].[MEMBER_CAPTION]":"Drink",
     "[Measures].[Profit]":29358.9754}
,   {"[Product].[Product Family].[MEMBER_CAPTION]":"Food",
     "[Measures].[Profit]":245764.86650000003}
,   {"[Product].[Product Family].[MEMBER_CAPTION]":"Non-Consumable",
     "[Measures].[Profit]":64487.0545}
]
```

Xmla4js Library Overview

- One file (< 20 kb minified but uncompressed)
- Cross browser
- Standalone (no dependency on framework)
- LGPL

Xmla4js API Overview

- Just three “Classes”
  - Xmla
  - Xmla.Rowset
  - Xmla.Exception
- YUI Doc documentation

Xmla4js Methods:

- Xmla:
  - addListener()
  - request()
  - discover()
  - execute()

Xmla4js Methods:

- Xmla.Rowset:
  - hasMoreRecords(), curr(), next()
  - getFields()
  - fetchAsArray(), fetchAsObject()
  - fetchAllAsArray(), fetchAllAsObject()

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Links and resources

- Project: http://code.google.com/p/xmla4js/
- Specification: http://www.xmlforanalysis.com/xmla1.1.doc
- Docs: http://msdn.microsoft.com/en-us/library/ms187178(SQL.90).aspx