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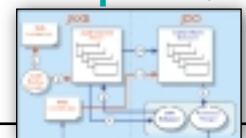
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Let's Get Together

WRITTEN BY HITESH SETH



2003 has been an exciting year so far for XML and Web services technologies and standardization. Most of the focus has been on stabilization of existing initiatives and making XML-based communications more robust, secure, and manageable. We have also seen key standards developments such as XQuery and XForms.

Of course, we're not finished with the year yet, and I would like to take this opportunity to invite you to celebrate the continued success and challenges in the world of XML and Web services at the Web Services Edge 2003 West Conference & Expo.

Building on the runaway success of the spring show in Boston, the fall show brings together the best of the best in XML. For the XML Track in particular, we have Jon Bosak, considered by many to be the "father of XML," giving a talk on the large-scale UBL initiative. Andy Astor, who has recently been nominated to the board of the WS-I organization, will focus on the standards-based integration mantra, discussing how the EAI space is now "officially" open standards-based rather than based on proprietary technologies. Phil Steitz from American Express gives a word of caution and suggestions on how to architect XML applications and services with security in mind. His session was an absolute delight at the spring show and I am looking forward to his session in Santa Clara.

An exciting addition to the XML Track is the "XML at Johnson & Johnson" session to be presented by Ajay Anand. Ajay will take us through the steps taken to transform XML from a cool technology to a corporate standard at J&J, highlighting the benefits that XML brought to this Fortune 500 company. David Connelly from the Open Applications Group will discuss canonical documents, a key to the success of hub and spoke-based integration strategy. Dr. T.V. Raman, who has been deeply involved with the development of XForms, is no stranger to XML-J readers. He'll provide a much-needed introduction to XForms, which is a huge step forward from the existing XHTML Web forms technology. By now you've probably noticed

the increasing focus on XQuery, another developing standard, in the last few issues of XML-J. Paul Cotton, who has been instrumental in the development of the standard, will address XQuery as a fundamental technology for enterprise information integration. The increasing popularity of XML Schemas should be no surprise – Chris Peltz will present some tips on using XML Schemas for effective WSDL, and Ayesha Malik will guide us through a set of best practices for XML Schema development. And of course, I'm very excited about my own session.

Building on the various "Technology Trends" articles that I've presented over the course of this year, I will highlight the trends of XML in various arenas including enterprise applications, integration and application servers, development tools, enterprise portals, and content management. I'm also compelled to mention the exciting lineup of keynotes for the fall show. We have Allan Vermeulen (CTO and VP of Amazon.com), John Magee (VP of Oracle9i), David Litwack (VP, Novell), John Schmidt (chair of EAI Industry Consortium Committee and leader of system integrations at Best Buy), and Marc Fleury (president of the JBoss project).

As you can see, Web Services Edge 2003 West is packed with insight on technologies and their real-world business applications. A key ingredient in the success of the conference is the fact that it brings about the unique combination of standards (XML, Web services) and their implementation platforms (J2EE, Microsoft .NET, Mac OS X), and you can pick and choose from sessions on standards, real-world business applications, and how to get started implementing both. This combination is what I think makes this show stand out among the rest. So get packing and head out to sunny California, and I'll see you there! ☺

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XBRL and Web Services

WRITTEN BY MARK ISRAEL



extensible Business Reporting Language (XBRL) and Web services have evolved somewhat separately from a common core of XML. XBRL has gained support because it simplifies the electronic distribution of financial statements, performance reports, accounting records, and other financial information.

Web services hold the promise of automating, in a standardized manner, the exchange of data and functionality between different software applications. When used together, XBRL and Web services have the potential to enable a new class of sophisticated financial applications that were previously difficult or impossible to build.

XBRL is an XML-based markup language for financial and business reporting; it provides advantages at each step in the financial reporting supply chain. XBRL focuses entirely on the content of a business report and is completely neutral with respect to the technical means by which e-reporting is accomplished.

Until recently there were few, if any, well-accepted standards that would allow the contents of financial reports to be automatically communicated between different applications. As a result, the cost of consuming and analyzing company reports is often very high. Essentially, financial professionals had "access" to a wide range of financial data on a given company, but using it effectively required extensive manual effort to glean relevant information – as well as time to transfer the information from various formats into an application for processing or comparison with other company or industry data. For example, an analyst who wanted to compare a financial data point, such as cost of sales, from one company to others in the same industry (or to all other public companies) would have to find and consolidate the same line item from all the other companies manually.

With XBRL and Web services, this picture is changing. Organizations can automate data-gathering processes, significantly lowering the costs associated with consuming company reports while increasing speed and accuracy.

Additionally, XBRL defines a consistent format for business reporting that streamlines how financial data is prepared and disseminated, as well as how analysts, regulators, and investors review and interpret it. In the previous example, the analyst would have a Web service query and a well-chosen data source with XBRL, extracting just the information required (cost of sales) from all relevant companies to complete the analysis.

Beneficiaries of XBRL and Web Services

Companies that choose to take advantage of XBRL will save time and money when information consumers, both within and outside of a company, analyze complex data. Specific beneficiaries of XBRL are the producers and consumers of business reports: accountants, auditors, financial analysts, investors, creditors, business and technology decision makers, and senior executives of finance, investor relations, financial research, software, and information technology organizations.

For example, CPAs who use XBRL are able to focus on the value-added work of analyzing business information, not the mundane and error-prone tasks of manually collecting data from various sources. Additionally, companies that prepare business reports and financial statements

can increase efficiency and accuracy in the preparation of these documents because they are created one time and published as printed reports or on Web sites, exchanged in internal corporate reports, or submitted as regulatory filings.

One of the key drivers of XBRL and Web services is government regulations, such as the Public Company Accounting Reform and Investor Protection Act, Sarbanes-Oxley. As businesses work to regain the confidence of investors and comply with new regulatory requirements, many are making efforts to provide financial information more quickly and in formats that are easier to interpret. Further, XBRL will enable companies to manage information more effectively and react more quickly to changing business conditions. As corporate transparency continues to be at the forefront of discussion in the business world, it

~continued on page 28~



Managing and Documenting Your Project XML Style

Some potentially powerful uses for XML technology

WRITTEN BY
TIMOTHY FISHER

XML seems to be popping up everywhere. In this article, I'm going to touch on an often overlooked but potentially very powerful use for XML technology: XML for project management and documentation. Thanks to the open source community, there are some marvelous tools available for incorporating XML into your software development processes.

Throughout this article I refer to a project's infrastructure. I use the term infrastructure to refer to things such as a project's directory structure, developer mailing lists, build processes, deployment sites, source code configuration management, and documentation repositories. These are items that all projects deal with, but usually little thought is put into how these things are set up, structured, and communicated. This area is also overlooked when it comes to standardization. Lack of a common approach to these infrastructure items makes it difficult for developers and managers to move across projects. With each project you join, you have to get acquainted with a completely new project infrastructure. This adds an initial project learning curve for even the brightest developers and managers. Even within an organization, a common infrastructure across projects is often missing. Creating lower-level standards, such as coding standards and document templates, tends to be as much cross-project standardization as most organizations accomplish.

Fortunately, with the advent of XML technology and some creative work being accomplished in the open source community, a better way of managing your project's infrastructure is on the horizon. The base concept is the introduction of XML throughout a project's documentation. This can bring some powerful benefits. With XML-style documentation, you can utilize XML processing tools to automatically create Web sites and documents that bring all of your documentation together in an easy-to-access portal with very little manual effort. Plac-

ing your project documents in XML format also allows for maximum reusability. For example, an XML-formatted requirements document can be transformed into a PDF for distribution to management, transformed into HTML for quick access by all interested parties, and parsed into individual requirements for input to a test plan generator. The use of XML should eliminate the need to document anything project related more than once. The XML documents become a single source for all future uses of the information.

Taking this a step further, you could create a native XML database (using an open source XML DB such as Xindice) that would be the central repository for all of your project's knowledge. Another scenario that becomes an exciting possibility is the creation of a DTD or schema that represents all of the required documentation for projects within your organization. A process could then scan your documentation to determine missing or incomplete documents. Status reports could be automatically generated and e-mailed with the current status of all documentation. All this can be automated into some pretty slick project management tools.

DocBook

Now that you can envision the power of XML, let's take a look at what's available today to get you started down this path. A good starting point is to take a look at the DocBook standard, a set of XML DTDs describing how to create documents in XML format. The standard is targeted at the production of technical documents. You can see a simple example of a DocBook document in Listing 1. (All of the code referenced in this article is available for download from www.sys-con.com/xml/sourcec.cfm.) The example contains the XML for a book composed of multiple chapters, sections, and an appendix. There are many additional DocBook defined tags that aren't included in the example. DocBook also defines a DTD for articles and documents. Many open source projects

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use the DocBook standard for their documentation. The Unix community seems to be the leader in its adoption. DocBook is a good starting point for creating your own organization-specific document types, such as your organization's requirements document, development plan, design document, and other documents. Once in XML, these documents can easily be transformed (with other freely available tools) into whatever format you prefer, including PDF, Word-compatible RTF, HTML, or just plain text. Besides multiformat publishing capability, you can also perform a great deal of processing against your documents that are in an XML format. For example, you could parse use cases out of a design document, and individual requirements out of a requirements document to build your test plan.

Several commercially available XML editors allow you to create DocBook-compliant documents. I've used XMLSPY from Altova, which supports DocBook and even includes the DocBook stylesheets with the product. A less-expensive commercial XML editor that offers a nice XML editing interface is Oxygen XML. Oxygen XML is written in Java and is available on a wide range of platforms, including Windows, Macintosh, and many flavors of Unix. Unfortunately, I haven't found a good open source editor for easily creating DocBook documents. One open source candidate, OpenOffice, will give you partial DocBook support, but does not yet support all of the DocBook tags. I anticipate OpenOffice becoming a very viable solution in future releases. OpenOffice does use XML as its native document format, so at least you can have XML documents by standardizing on OpenOffice as your document editor.

Open Source Projects

The open source community seems to be well ahead of the commercial development industry in their use of XML as a project management and documentation technology. There are several open source projects dedicated to advancing the use of XML in these areas.

Maven

Maven is an Apache project that defines itself as a project

management and project comprehension tool. Through the use of XML technology, Maven attempts to create a well-defined project structure, making it easier to disseminate information about a project and to share a common project structure across projects.

Maven is based on the concept of a project object model (POM), which is stored as an XML file. The POM defines things such as the build process, configuration management, unit testing reports, change log documentation, directory layout, source metrics, mailing lists, developer list with role information, project dependency list, article collection, project distribution, and project Web site creation. Listing 2 is a sample POM represented in XML format. This POM contains general project information, a link to a project issue tracking system, links to site and distribution directories, source repository information, project version info, project mailing list details, developer list, project dependency list, and finally, build and unit testing details. Having an XML source for all this information allows it to be published easily and reported in many formats. Figures 1 and 2 show Web site content that was generated by Maven.

In addition to what Maven provides for a single project, it also allows for a great deal of commonality across projects. This is a significant advantage for organizations with more than a single project. Developers can easily transition across projects and instantly be familiar with the project's infrastructure. Common tools can be used to process all of an organization's projects. Project-wide sites and reports can be automatically generated.

Maven goes beyond just processing your documentation. Maven is also a project processing tool. It can perform all of your build tasks such as compiling your source files, generating javadoc, building your distributable components, and deploying your project. It will also run your unit tests, check the format of your source code against a defined standard, and create XML-based reports for all of its actions. These reports then become a part of your project Web site that Maven creates. Maven has a plug-in based architecture, which allows you to extend Maven in all sorts of ways. There is a good repository of Maven plug-ins available on the Sourceforge open source portal. The best way to get started is to look at an existing project that uses Maven, and tailor the XML files to your project. I would suggest looking at the Apache projects as models for what Maven can accomplish.

Forrest

Another Apache project that fits into the XML project documentation and processing tool set is the Forrest project. Forrest is defined as an XML standards-oriented project documentation framework. Forrest uses XSLT stylesheets, schemas, images, and other resources you define to render a project's XML source content into an HTML-based project Web site. The project Web site can be generated by Forrest through a user-initiated process, or by using the Forrest Robot, which allows for automatic regeneration of the project site any time the XML source documents are changed. The project Web site created by Forrest provides access to project documentation, source code repositories, mailing lists, contact info, FAQs, how-tos, change logs, and more. Figures 3 and 4 show Web sites that were generated by Forrest. The content of these sites is stored as XML documents that are processed by Forrest. With this approach your project Web site is always current. The HTML content for the Web site does not become another document your team has to write.

Forrest uses the popular Apache Cocoon XML publishing

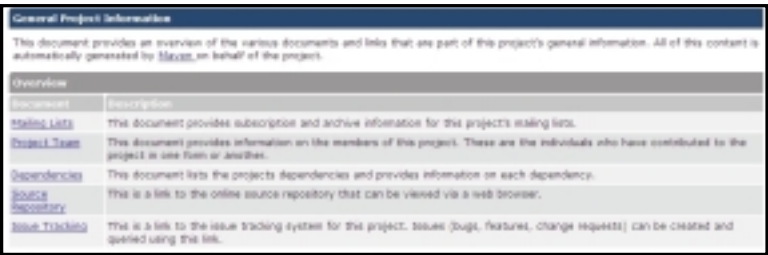


Figure 1 • Project information generated by Maven



Figure 2 • Reports generated by Maven

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Figure 3 • Community Web site generated by Forrest



Figure 4 • Forrest Web site

framework to accomplish much of its work. In addition to the HTML Web site, Forrest can also render the project site contents into PDF format. You'll notice the PDF links shown on the sample Web sites. Any Web page that has been generated by Forrest can easily be retrieved as a PDF using these links. To use Forrest, your underlying project documentation and infrastructure need to be in XML format. As with Maven, there is also great benefit in using Forrest across multiple projects. Using Forrest across multiple projects will ensure a consistent look-and-feel for the project sites. You can customize the look-and-feel of the project sites for your organization through the use of skins. As I write this, there is an effort under way to create a Forrest plug-in for Maven. Presumably, this would allow Forrest to parse the Maven project object model and build the project Web site based on that, which would seem to be the ideal use of Forrest and Maven. Maven manages the project structure and performs project build processing, while Forrest renders the project Web site and documentation.

Implementing the Approach

In addition to the tools they are creating, Apache is also on the forefront in implementing this XML approach for managing and documenting their projects. As you browse the Apache projects, you will notice a common look-and-feel to many of the Web sites. This is a result of the application of the Forrest and Maven technologies. Using this approach within open source communities also has the particularly strong benefit of allowing developers to contribute to multiple projects without having to learn a new infrastructure for each project.

Another interesting use of XML technology at the project level within Apache is the Jakarta Gump project. Gump reads XML project descriptor files for each of the Jakarta subprojects, analyzes their dependencies, and performs a nightly build of all the Jakarta projects. All Apache projects are built using the most up-to-date builds from other Apache projects they may depend on. XML-based reports are created based on this nightly process. On the Gump Web site there is a page that gives you the results of these nightly builds. You can also view reports on all the project dependencies, which allows you to find the dependencies of any particular Jakarta project. This capability goes beyond Apache to include other open source projects that the Jakarta projects depend upon. This process allows each of the Jakarta projects to view the impact of their changes on other projects and quickly make the necessary fixes.

Those with the time and desire to create their own project tools of this sort should take a hard look at the Apache Cocoon project as a base to build from. Cocoon is a mature XML publishing framework. Cocoon can interact with file systems, relational or native XML databases, LDAP, and network-based data sources and publish your data in many different formats, including HTML, WML, PDF, SVG, RTE, and more. Another very good tool to get you started is the AurigaDoc tool. This is also an open source tool that can be used to process your XML documents into many different formats, including HTML, DHTML, RTE, PDF, PostScript, Java Help, and HTML Help.

Conclusion

A reason why the open source community has led the way in this area is the lack of commercial tool support. I have not come across a commercial tool that comprehensively supports this type of project management and documentation approach. Those interested in pursuing this today must be willing to piece together the various tools necessary to make this all work. In the future, ideally the fact that you are using Maven, DocBook, or Forrest becomes transparent to the end user, who simply gains the benefits of an XML project infrastructure. In the spirit of practicing what I preach, you can find this article in DocBook format on the **XML-J** Web site (www.sys-con.com/xml/sourcec.cfm) and on my personal Web site (www.timothyfisher.com). Having created this article in XML, I've been able to generate a PDF for publication and download, and HTML for presentation on the Web from a single source document. ☺

References

- *Apache Maven*: <http://maven.apache.org>
- *Maven Plug-ins*: <http://maven-plugins.sourceforge.net>
- *Apache Forrest*: <http://xml.apache.org/forrest>
- *Jakarta Gump*: <http://jakarta.apache.org/gump>
- *DocBook*: www.docbook.org
- *Apache Cocoon*: <http://cocoon.apache.org>
- *AurigaDoc*: <http://aurigadoc.sourceforge.net>
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Web Ontology Language

Making your Web search easier

The Web is like a huge library whose contents we can search and edit. In order to search quickly and efficiently, the contents must be organized. There are already several methodologies and techniques for searching – for example RDF (Resource Description Framework) and XML – but none fulfills all the requirements. Web Ontology Language, or OWL, is designed for applications in which content processing (content authoring) is important, rather than just presenting the content to humans. It can make searching the Web much easier, and is machine-readable as well.

Why OWL?

The future of Web languages seems to be the Semantic Web, and OWL is one of its activities. Now a question arises: What does OWL provide that XML and XML Schema don't? The answer is outlined below.

1. XML provides a syntax for structured documents, but doesn't define semantic constraints on the meaning of the documents.
2. XML Schema is a language for restricting the structure of XML documents.
3. RDF is a data model for objects ("resources") and relations between them; it provides simple semantics for this data model, and these data models can be represented in an XML syntax.
4. RDF Schema is a vocabulary for describing properties and classes of RDF resources, with semantics for generalization hierarchies of such properties and classes.
5. OWL is nothing but enhanced RDF, and has more vocabulary for describing

properties and classes, including relations between classes (e.g., disjointness), cardinality (e.g., "exactly one"), equality, richer typing of properties, characteristics of properties (e.g., symmetry), and enumerated classes.

6. An ontology is a knowledge representation of data, rather than a message format only like XML Schema. For example, if your purchase order for any product is fulfilled, this can be presented in XML Schema as well as in OWL. But what about the context external to this transaction's consensus?

What Is RDF?

RDF represents the first attempt to define relationships in XML documents. The basic RDF model comprises the following three components:



lowing three components:

1. **Resource:** Anything described in RDF expressions is called a resource; this can be a Web page, an XML document, an entire Web site, and even any external resource for the site.
2. **Property:** A property is a specific characteristic, attribute, or relation used to describe a resource. Each

property has a specific meaning that defines its permitted values, the types of resources it can describe, and its relationship with other properties.

3. **Statement:** A specific resource together with a named property plus the value of that property for that resource is an RDF statement. These three individual parts of a statement are called, respectively, the subject, the predicate, and the object.

Example

Consider as a simple example the sentence:

Ijaz Ahmed is the administrator of the resource <http://www.emalangs.com>.

This sentence has the following parts:

Subject (Resource)	http://www.emalangs.com
Predicate (Property)	Administrator
Object (literal)	"Ijaz Ahmed"

The complete XML document representing this information would look like the following:

```
<?xml version="1.0"?>
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:s="http://description.org/schema/">
  <rdf:Description about="http://www.emalangs.com/">
    <s:Administrator>Ijaz Ahmed</s:Administrator>
  </rdf:Description>
</rdf:RDF>
```

But in this example we're restricted with the RDF container model, which has the characteristics described next.

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RDF container model

The RDF container model also has three components: Bags, Sequence, and Alternative.

1. **Bags:** An unordered list of resources or literals. Bags are used to declare that a property has unordered multiple values. Bags might be used to give a list of part numbers where the order of processing the parts does not matter and duplicate values are permitted.
2. **Sequence:** An ordered list of resources or literals. Sequence is used to declare

restricted to three different relationships in RDF, but what if we have three different administrators, e.g., System, Database, and Network, for the above mentioned resource. The statement would be: There are three administrators of the resource <http://www.emalang.com/>. Network Administrator, System Administrator, and Database Administrator, each having distinct roles and responsibilities.

Using the RDF model and container, the information would be: using Bags (see Listing 1), using Alternative (see

```
Type="Collection">
<admin:Administrator
rdf:about="#Network Administrator" />
<admin:Administrator
rdf:about="#System Administrator" />
<admin:Administrator
rdf:about="#Database Administrator" />
</owl:distinctMembers>
</owl:AllDifferent>
```

From the above information you can at least conclude that the three administrators have distinct roles/types; such a solution can't be explained using RDFS, XML, or XML Schema.

OWL also has many flexibilities in its model to present different sorts of relationships among the elements. For details, visit www.w3.org/TR/2003/WD-owl-guide-20030331. For details on the RDF parser, visit www.redland.open-source.ac.uk/demo.

Conclusion

OWL is the part of the W3C stack for the Semantic Web; its model is inferred from the RDF model but has more flexibility, so that any sort of relationship among the elements can be presented (see www.w3.org/TR/owl-ref/ - appendix A for details). You can design more complex relationships using OWL, and your search will be much easier since the contents are in their best form. ☯

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“The Web is like a huge library whose contents we can search and edit”

- that a property has ordered multiple values. The resources are listed in order so that they can be found easily.
3. **Alternative:** A list of resources or literals that represent alternatives for the (single) value of a property. Alternative might be used to provide an alternative language Web page for the site. An application using a property whose value is an Alternative collection is aware that it can choose any one of the items in the list.

It's clear from the model that we're

Listing 2), and using Sequence (see Listing 3).

But in this case RDF is capable only of explaining the information about the resources; it can't explain the second part of the statement (each having distinct roles and responsibilities) in which the roles are defined. Using OWL we can present the knowledge information as shown in Listing 4, which presents the RDF resources.

```
<owl:AllDifferent>
<owl:distinctMembers rdf:parse
```

LISTING 1.

```
<rdf:RDF>
  <rdf:Description about="http://www.emalang.com/">
    <s:Administrators>
      <rdf:Bag>
        <rdf:li resource="Network Administrator"/>
        <rdf:li resource="System Administrator"/>
        <rdf:li resource="Database Administrator"/>
      </rdf:Bag>
    </s:Administrators>
  </rdf:Description>
</rdf:RDF>
```

LISTING 2.

```
<rdf:RDF>
  <rdf:Description about="http://www.emalang.com/">
    <s:Administrators>
      <rdf:Alt>
        <rdf:li resource="Network Administrator"/>
        <rdf:li resource="System Administrator"/>
        <rdf:li resource="Database Administrator"/>
      </rdf:Alt>
    </s:Administrators>
  </rdf:Description>
</rdf:RDF>
```

LISTING 3.

```
<rdf:RDF>
  <rdf:Description about="http://www.emalang.com/">
    <s:Administrators>
      <Seq ID="AdminByRole">
        <rdf:li resource="Network Administrator"/>
        <rdf:li resource="System Administrator"/>
        <rdf:li resource="Database Administrator"/>
      </Seq>
    </s:Administrators>
  </rdf:Description>
</rdf:RDF>
```

LISTING 4.

```
<Administrator rdf:ID="Network Administrator"/>
<Administrator rdf:ID="System Administrator">
  <owl:differentFrom rdf:resource="#Network
Administrator"/>
</Administrator>
<Administrator rdf:ID="Database Administrator">
  <owl:differentFrom rdf:resource="#Network
Administrator"/>
  <owl:differentFrom rdf:resource="#System
Administrator"/>
</Administrator>
```

Download the Code
www.sys-con.com/xml



WRITTEN BY WILLIAM COWAN

XML and Oracle9i Release 2

Oracle has a strong contender in the XML database market

With Oracle9i RDBMS Release 2, Oracle has moved further along on the road to a more complete implementation of XML in its database. This release also marks, I believe, one of Oracle's most significant uses of the object-relational capabilities of the database. By combining these capabilities with XML and adhering to W3C standards, Oracle has in the current release a strong contender in the XML-enabled database market... and without losing the relational capabilities of the database.

Oracle9i Release 2 marks several other unique features for the Oracle database. One of these features is that you can create objects in the database without using DDL (Data Definition Language) and, consequently, without the intervention of database architects and/or administrators. With the current release an XML Schema can be used to create database objects needed to hold XML documents. The part of the Oracle database that holds the schema definition and XML documents is called the XDB. When an XML Schema is saved in the Oracle XDB and then registered with the database, the structures necessary to support XML documents that conform to that XML Schema are created in the database as relational objects. As XML documents are loaded into the database, the contents are automatically distributed among the objects in the database. They can then be retrieved with standard XPath expressions, or through PL/SQL and Java.

Another unique feature is that the loading of XML documents into the XDB has been greatly simplified. In the past, XML documents would have been loaded through Java or PL/SQL code,

calling various APIs to parse, validate, and load the documents into the database. With the current release, Oracle has added capabilities to the standard out-of-the-box database listener. In the past this listener would listen on one or more ports for any connection requests, data requests, etc., from the SQL*Net interface; relay those requests to the database for action; and then return the results. The new listener also listens on additional ports for FTP requests and HTTP requests. When it receives these FTP or HTTP requests, the listener loads or retrieves the data from the Oracle XDB. If the document being FTP'd is an XML document associated with an XML Schema that has already been registered with the XDB, then the contents of the document are automatically "shredded"

"Oracle has made its RDBMS a strong contender in the XML database market"

into the object-relational structures created by registering the XML Schema.

Finally, through FTP clients or HTTP-enabled applications, such as Windows File Explorer, the Oracle XDB looks like a file system. Structures within the XDB are represented as folders or directories with files. These files, even if they are XML documents that have been shredded to various objects in the database, can be retrieved and viewed with any HTTP-enabled application, such as Microsoft Word, XMLSPY, or a browser. When XML documents are stored in the XDB, Oracle is aware of the sequence within the XML document. When

retrieved, the document is restored to its original structure.

Access to the Oracle XDB

The easiest way to get to the Oracle XDB is through the Windows XP File Explorer, using the "Add a New Network Place" wizard. From the File Explorer choose "My Network Places," then from Network Tasks, choose "Add a network place." The wizard will eventually ask for a network address. For the Oracle XDB the listener by default listens on port 8080. So to direct the File Explorer to the XDB use `http://server:8080` as the network address. If the server's name were "frida," for example, the network address would be `http://frida:8080/`. When attempting to access this network place, a connection to the Oracle XDB is required, so a login prompt appears asking for a database user name and password.

To create new directories or folders in the XDB, you can just add them in the File Explorer as you would add any directory, or you can use Java or PL/SQL to add directories programmatically with a call to the system-provided stored procedure `dbms_xdb.createfolder()`.

```
declare
    result boolean;
begin
    result :=
        dbms_xdb.createFolder('/home/' ||
        USER || '/xsd');
    result :=
        dbms_xdb.createFolder('/home/' ||
        USER || '/xsl');
end;
```

Using XMLSPY with Schemas

Within XMLSPY there are several ways to create a schema. You can load an already defined schema, an XSD docu-

AUTHOR BIO

William Cowan has been working with Oracle for more than 15 years. When he first saw a presentation on XML in 1998, he knew that XML was going to be a significant technology and began showing it to everyone, putting together presentations and training classes. William currently works at Indiana University as technical lead on the Ethnomusicological Video for Instruction and Analysis Digital Archive.

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ment. You can use existing XML documents as samples that XMLSPY uses to generate a schema. Or you can use the tools to define the schema directly in XMLSPY. For the examples I use below, I downloaded some references to articles about XML that I discovered through an online search. The references were structured with a name-value pair on each line such as:

Author: William Cowan
Title: Oracle9i and XML

I converted this to a simple XML document by making the name into a tag, and the value was the value for that tag. I then added the directory that contained these documents to my project in XMLSPY and used these documents as samples to create a new schema. Samples of the documents are available at www.sys-con.com/xml/sourcec.cfm.

Preparing the Schema for the Oracle XDB

Now that a schema has been defined, we'll need to make certain modifications to make that schema's registration in the Oracle XDB easier to use. First, we need to make the Oracle namespace xdb part of the schema by adding the line:

```
xmlns:xdb="http://xmlns.oracle.com/xdb"
```

as an attribute of the xs:schema tag. In addition, if you used XMLSPY to generate the schema, there will be a root element, in this case called "Firstsearch," which is a complex type that consists of all the complex types and elements that make up the XML documents. If this root element does not exist, you will need to add it. You then need to add the attribute to this element of:

```
xdb:SQLName="Firstsearch"
```

xdb:SQLName is the name that will be given to the base object-relational table in the Oracle XDB for all the XML documents that conform to this schema.

In addition, each complex type in the schema will need an additional attribute of:

```
xdb:SQLType="ArticleInfoType_XDB"
```

where the value for xdb:SQLType defines the name of an object-relational object in the database that will contain the elements and values from the XML document for that part of the document represented by the complex type. The

xdb:SQLType value must be unique within the Oracle user in which this schema is being registered. If you do not define the xdb:SQLType attribute for a complex type in the schema, when you register that schema with the Oracle XDB Oracle will create its own internal identifier, which won't be as easy to remember as the one you define yourself.

Once you've added these attributes to the elements in the schema, you can register your schema with the Oracle XDB.

Registering the Schema with the Oracle XDB

There are two ways to register the schema with the Oracle database. One is to use the APIs provided by Oracle. First, using an FTP client, you connect to the Oracle database using the TNS Listener port 2100. Pick the folder in the Oracle XDB that you want to use to store schemas and then FTP the file to the Oracle database. Once the file is stored in Oracle you can register using the following code:

```
begin
dbms_xmlschema.registerSchema
(
'http://frida:8080/home/XMLPRES/xsd/FIRSTSEARCH.xsd',
xdbURIType('/home/XMLPRES/xsd/FIRSTSEARCH.xsd').getClob(),
True,True,False,True
);
End;
/
```

Remember, the schema must be stored in the XDB first before you can register it. The package module registerSchema expects a folder path in the XDB.

XMLSPY allows you to register the schema directly from within XMLSPY. Choose "Convert/Oracle XML DB/Add Schema..." from the menu and XMLSPY will first ask you to save the schema to the XDB, and then ask if you want to register it.

Loading XML Documents into the Database

Now that you have a registered schema, you can load XML documents associated with the schema into the database. First, make sure that each document is associated with the registered schema by adding the following attribute to the root element:

```
xmlns:noNamespaceSchemaLocation=http://frida:8080/home/XMLPRES/xsd/FIRSTSEARCH.xsd
```

Once you have added this line to all the documents you want to load, you can load documents into the Oracle database through any FTP client by connecting to the TNS Listener port 2100 and the server with the Oracle XDB. When the FIRSTSEARCH schema was registered with the database, it created a base table named "firstsearch," the value from the xdb:SQLName attribute. Then, for each element in the FIRSTSEARCH schema, Oracle creates a column in this table. For each complex type in the schema, Oracle creates an object-relational table using the value from the xdb:SQLType attribute to name the object, associated with the base table. As an XML document associated with the registered schema is loaded, the content is "shredded" among these objects in the database.

Now that you have loaded XML documents into the Oracle XDB you can retrieve information from those documents using XPath expressions, SQL, or Java. In addition, you can create views in Oracle that reference XDB objects so you are able to use any SQL code in Oracle that functions with views. And since these XDB objects exist in the Oracle database, you can associate them with existing relational tables to put further constraints on the loading of XML documents.

For instance, you might have an XML document based on a customer invoice, and you might want to make sure you load the invoice only if the customer exists in your customer table. You can add a constraint to the database that will ensure that the customer name or number in the XML document exists in the customer table before it will allow the document to be loaded into the XDB. In fact, the Oracle database will report this as an error to your FTP client so you can see why this document didn't load.

Conclusion

With Oracle9i Release 2, Oracle has taken a major step forward – the Oracle XDB provides many of the functions of a dedicated XML database while still keeping the relational capabilities that have made Oracle the leading RDBMS in the market. By more closely following the W3C XML standards, Oracle has made its RDBMS a strong contender in the XML database market. ☛

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WRITTEN BY ANDRZEJ ZYDRON

Translating XML-Based Documents

Using XML technology to reduce the cost of authoring and translation

Xml:tm is an XML namespace-based technology designed to substantially reduce the costs of translating XML documents while at the same time providing the architecture to build consistent authoring systems. xml:tm is an open standard maintained by XML-Intl for the benefit of those involved in the translation of XML documents.

The advent of text in electronic format posed a number of problems for translators. These problems were:

1. How to manage the differing encoding standards and their corresponding font support and availability
2. How to present the text to translators without having to purchase additional copies of the original creation program
3. How to translate the text while preserving the formatting
4. How to build translation memories for these documents to reduce the cost of translation and improve consistency

AUTHOR BIO

Andrzej Zydron has been working in IT since 1976. Highlights of his career include the design and architecture of the European Patent Office patent data capture system for Xerox Business Services, and assisting the Oxford University Press, the British Council, and Oxford University in work on the New Dictionary of the National Biography. Andrzej is technical and research director of XML-Intl Ltd. and sits on the OASIS technical committee for translation Web services.

The problem was exacerbated by the veritable "Tower of Babel" of differing authoring and composition environments, from Interleaf to PageMaker. The typical approach was to write filters that would "lift" the text to be translated from its proprietary embedded environment and to present it to translators in a uniform but equally proprietary translation environment. After translation the text would then be merged with the original document, replacing the source language text.

ISO 8879:1986 SGML

A serious attempt to tackle the plethora of competing formats and their embedded nature was made in 1986

with the advent of ISO 8879 Standard Generalized Markup Language (SGML). The aim of ISO 8879 was to separate the content of documents from their form. SGML arose at a time of great and rapid change in the IT industry. The architects attempted to make the standard as flexible and open to change as possible. This laudable aim unfortunately produced something that was very difficult and expensive to implement. In addition, SGML tackled only the aspect of content. Form was tackled by ISO/IEC 10179:1996 Document Style Semantics and Specification Language (DSSSL), but this proved equally difficult to implement.

HTML

The efforts of the ISO 8879 committee were not in vain. SGML allowed for the creation of HTML, which enabled the World Wide Web to catapult the Internet from a vehicle used by academics and computer scientists to what we know today. HTML was initially based on strict adherence to the SGML standard, but soon diverged as the limitations of ISO 8879 became apparent.

XML

By 1996 the W3C began to look for a solution that was better than HTML. What was required was something that would allow for the semantic exchange of information. It needed to be able to propel the Internet from displaying only static pages to a core semantic Web, allowing for the exchange of data. The efforts of the W3C resulted in XML 1.0. This addressed many of the architectural limitations of SGML, allowing for easier manipulation and parsing of the semantics. In addition to many very good features, the architects of XML

introduced a powerful new concept called "namespace." XML namespace allows for the mapping of more than one representation of meaning onto a given document. This feature is now used extensively in supporting standards such as XSL, XSLT, XML Schema, and FOP.

The Future

The success of XML has been phenomenal, although much of it has yet to become visible to end users. XML has spawned much feverish activity in the developer community and has created

"xml:tm radically changes the approach to the translation of XML-based documents"

some excellent open source tools and libraries such as those provided by the Apache Foundation and SourceForge. Even strongly proprietary companies have had to accept the importance of XML. Much excellent work is also being conducted by standards organizations, such as OASIS and the W3C, on XML-based standards like XLIFF for the translation of documents. XML is driving the future of the World Wide Web. It's providing the foundation for important future Web standards such as XML Web services, electronic data exchange, and so on.

Our premise is that the case for XML is so compelling that all leading vendors of word processing and composition systems will have to support it in the near future. In terms of translation, the

arguments are even more convincing. It can be up to five times more expensive to translate and correct the layout of documents written in proprietary systems than in XML. Sun Microsystems and the OpenOffice organization already supply an excellent XML-based alternative to proprietary systems, which can also read proprietary systems such as Word and convert them to XML. Microsoft has also announced support for XML in the next version of Office.

With this view of the future in mind we've concentrated our efforts on how best to exploit the very rich syntax and capabilities of XML.

xml:tm

xml:tm radically changes the approach to the translation of XML-based documents. It is an open standard created and maintained by XML-Intl, for the benefit of those involved in the translation of XML documents.

At the core of xml:tm is the concept of "text memory." Text memory is made up of two components:

1. Author memory
2. Translation memory

Author memory

XML namespace is used to map a text memory view onto a document. This process is called segmentation. The text memory view works at the sentence level of granularity – the text unit. Each individual xml:tm text unit is allocated a unique identifier. This unique identifier is immutable for the life of the document. As a document goes through its life cycle, the unique identifiers are maintained and new ones are allocated as required. This aspect of text memory is called author memory. It can be used to build author memory systems that can be used to simplify and improve the consistency of authoring.

Figure 1 shows how the tm namespace maps onto an existing XML document.

In Figure 1 "te" stands for "text element" (an XML element that contains text) and "tu" stands for "text unit" (a single sentence or stand-alone piece of text).

Listing 1 is an example of part of an xml:tm document. The xml:tm elements are in bold type to show how xml:tm maps onto an existing XML document (listings can be found at www.sys-con.com/xml/sourcec.cfm).

Translation memory

When an xml:tm namespace document is ready for translation, the name-

space specifies the text that is to be translated. The tm namespace can be used to create an XLIFF document for translation.

XLIFF

XLIFF (XML Localization Interchange File Format) is an OASIS standard. XLIFF is another XML format that's optimized for translation. Using XLIFF you can protect the original document syntax from accidental corruption during the translation process. In addition, you can supply other relevant information to the translator such as translation memory and preferred terminology.

Listing 2 is an example of an XLIFF document based on the previous example. The magenta colored text signifies where the translated text will replace the source language text.

When the translation has been completed, the target language text can be merged with the original document to create a new target language version of that document. The net result is a perfectly aligned source and target language document.

Listing 3 is an example of a translated xml:tm document. Figure 2 is an example of the text for the source.

The source and target text is linked at the sentence level by the unique xml:tm identifiers. When the document is revised, new identifiers are allocated to modified or new text units. When extracting text for translation of the updated source document, the text units that have not changed can be automatically replaced with the target language text. The resultant XLIFF file will look like Listing 4.

Different Types of Matching

The matching described in the previous section is called "perfect" matching. xml:tm offers unique translation memory matching possibilities to reduce the quantity of text for translation and provide the human translator with suggested alternative translations.

Figure 3 shows how perfect matching is achieved.

The following types of matching are available:

1. **Perfect matching:** Author memory provides exact details of any changes to a document. Where text units have not been changed for a previously translated document we can say that we have a "perfect match." The concept of perfect matching is an important one. With traditional translation memory systems a translator still has

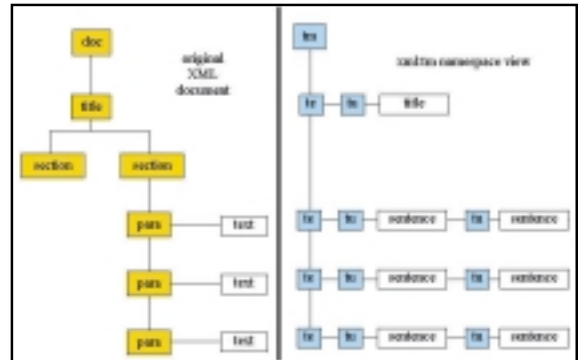


Figure 1 • tm namespace mapping

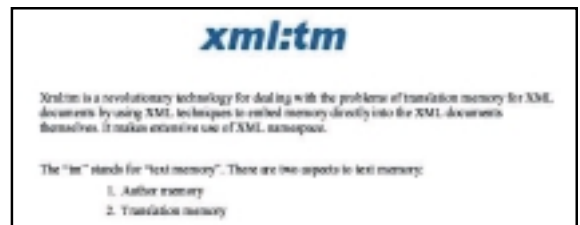


Figure 2 • Text for source

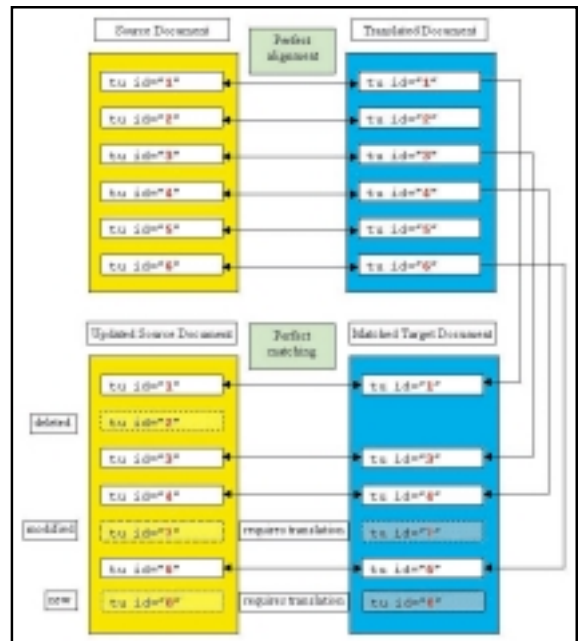


Figure 3 • Achieving perfect matching

to proof each match, as there is no way to ascertain the appropriateness of the match. Proofing has to be paid for – typically at 60% of the standard translation cost. With perfect matching there is no need to proofread, thereby saving on the cost of translation.

2. **Leveraged matching:** When an xml:tm document is translated, the translation process provides perfectly aligned source and target language text units. These can be used to create traditional translation memories, but in a consistent and automatic fashion.

Some new text with examples of text that does not require translation
 10 mm
 10.50 m
 10,000
 9.956
 ABC104/EF

Figure 4 • Composed text

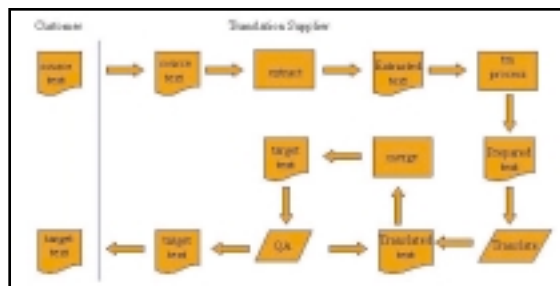


Figure 5 • Traditional translation scenario



Figure 6 • xml:tm translation scenario

3. **In-document leveraged matching:** xml:tm can also be used to find in-document leveraged matches, which will be more appropriate to a given document than normal translation memory leveraged matches.
4. **In-document fuzzy matching:** During the maintenance of author memory a note can be made of text units that have changed only slightly. If a corresponding translation exists for the previous version of the source text unit, then the previous source and target versions can be offered to the translator as a type of close fuzzy match.
5. **Non-translatable text:** In technical documents you can often find a large number of text units that are made up solely of numeric, alphanumeric, punctuation, or measurement items. With xml:tm these can be identified during authoring and flagged as non-translatable, thus reducing the word counts. For numeric and measurement-only text units it is also possible to automatically convert the decimal and thousands designators as

required by the target language.

Listing 5 is an example of non-translatable text in xml:tm. An example of the composed text is shown in Figure 4

Word Counts

The output from the text extraction process can be used to generate automatic word and match counts by the customer. This puts the customer in control of the word counts.

XLIFF and Online Translation

XLIFF is an OASIS standard for the interchange of translatable text in XML format. xml:tm translatable files can be created in XLIFF format. The XLIFF format can then be used to create dynamic Web pages for translation. A translator can access these pages via a browser and undertake the whole of the translation process over the Internet. This has many potential benefits. The problems of running filters and the delays inherent in sending data out for translation, such as inadvertent corruption of character encoding or document syntax, or simple human workflow problems, can be totally avoided. Using XML technology it's now possible to reduce and control the cost of translation as well as reduce the time it takes for translation and improve reliability.

An example of a Web-based translator environment can be seen at www.xml-intl.com/demo/trans.html.

Benefits of Using xml:tm

The following is a list of the main benefits of using the xml:tm approach to authoring and translation:

1. The ability to build consistent authoring systems
2. Automatic production of authoring statistics
3. Automatic alignment of source and target text
4. Perfect translation matching for unchanged text units
5. In-document leveraged and modified text unit matching
6. Automatic production of word count statistics
7. Automatic generation of perfect, leveraged, previously modified, or fuzzy matching
8. Automatic generation of XLIFF files
9. Protection of the original document structure
10. The ability to provide online access for translators

11. Can be used transparently for relay translation

Figure 5 shows a traditional translation scenario, and Figure 6 shows an xml:tm translation scenario.

Summary

xml:tm is an open standard created and maintained by XML-Intl based on XML and XLIFF. Full details of the xml:tm definitions (XML Data Type Definition and XML Schema) are available from the XML-Intl Web site (www.xml-intl.com). XML-Intl also supplies an implementation of xml:tm using Java and Oracle.

xml:tm is best suited for enterprise-level implementation for corporations with a large annual translation requirement and a content management system. During the implementation process xml:tm is integrated with the customer's content management system.

xml:tm reduces translation costs in the following ways:

1. Translation memory is held by the customer within the documents.
2. Perfect matching reduces translation costs by eliminating the need for translators to proof these matches.
3. Translation memory matching is much more focused than is the case with traditional TM systems, providing better results.
4. It allows for relay translation memory processing via an intermediate language.
5. All TM, extractions, and merge processing is automatic; there is no need for manual intervention.
6. Translation can take place directly via the customer's Web site.
7. All word counts are controlled by the customer.
8. The original XML documents are protected from accidental damage.
9. The system is totally integrated into the XML framework, making maximum use of the capabilities of XML to address authoring and translation. ☑

References

- The Apache Foundation: <http://xml.apache.org>
- SourceForge: www.sourceforge.net
- OASIS: www.oasis-open.org
- W3C: www.w3c.org
- Sun Microsystems: www.sun.com
- OpenOffice: www.openoffice.org

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where the schemas tend to change require minimal programming effort to keep up with the changes.

JDO Architecture

The two main goals of the JDO architecture are to provide developers with a transparent, Java-centric view of persistent information, such as enterprise data and locally stored data, and to enable pluggable implementations of data stores in application servers. The data stored in data stores is presented as instances of the persistence-capable classes. Such data objects are generally represented with getter and setter methods, although JDO doesn't enforce the existence of such methods in the data objects, and the properties defined in the data objects can be declared as private. I found an excellent read on JDO – *Java Data Objects* by David Jordan and Craig Russell (www.oreilly.com/catalog/jvadataobj). I recommend that you go through at least the first three chapters of this book before deploying JDO. There are various other techniques, such as direct file I/O, serialization, JDBC, and Enterprise JavaBeans (EJB), to persist data but benefits such as portability (JDO is as portable as Java), database independence, ease of use (no need to worry about field-by-field storage of objects), and high performance make a compelling case for JDO.

Figure 1 shows specific components of JAXB and JDO used in building the example.

The process of transforming XML data into content object trees and persisting content objects in the database can be divided into roughly four steps:

1. Compile schema to generate Java classes (JAXB task)
2. Enhance classes (JDO task)
3. Build content objects (JAXB task)
4. Persist content objects (JDO task)

Compile schema

When a schema is compiled to generate Java classes, JAXB generates interfaces for global elements and complex types. For details on how JAXB generates interfaces for complex types and complex types that use other complex types, see the user guide included with the JAXB distribution package. JAXB also generates concrete implementation of the interfaces it generates for the complex types. JAXB does not promote direct instantiation of such classes; rather, it provides an *ObjectFactory* to get instances of these classes.

Enhance classes

Before a JDO persistence manager can process any of the content classes, the classes must be enhanced. Enhancement of a class is a unique step required by the JDO. It processes the class files (overwrites) and adds JDO-specific code to them (you can explore what is modified by the enhancer by reading the log included in *readme.txt*). The JDO reference implementation comes with the Enhancer *com.sun.jdori.enhancer.Main*, which reads JDO metadata for each class that must be run within the JDO environment. In our architecture, this step is a main connection between JAXB and JDO.

Build content objects

Generally, when JAXB is used independently, content objects can be built using JAXB-generated implementations of interfaces. This step is also called “unmarshalling.” When you need to process these classes using JDO, you use the class files that are enhanced in the previous step. To build the content tree, first create a new instance of *JAXBContext* by providing a *contextPath* parameter that contains a list of Java package names that contain schema-derived interfaces,

specifically the interfaces generated by the *JAXBbinding* compiler (in this case it is just the “customer”), then create an unmarshaller using *JAXBContext*; finally, you get a root content object (based on the XML tree) using the unmarshaller by passing it an input instance XML document. After that, you can simply navigate the content object tree using various accessor methods.

Persist content objects

There are various architectures proposed by JDO to persist content objects in the data store (please refer to the previously mentioned book on JDO). The example presented here uses the simplest model for using single *PersistenceManager*. To be able to persist content objects, you also need to build the JDO-aware classes that make direct use of the JDO API, generally called transient classes. In our example, *DBManager*, *CreateCustomer*, and *PrintCustomer* are JDO-aware classes. On the other hand, *CustomerTypeImpl* is a JDO-transparent class that makes no direct references to the JDO API. That's where JDO is much more powerful than other technologies such as JDBC.

This discussion can be a bit overwhelming initially, but once you work through the example code it should be much easier to comprehend. The example will show you that most of the code is generated using JAXB and JDO and not much is being built manually.

Example

Let's take a look at a very simple application based on the above architecture. We start with customer information presented in an XML file. An associated schema is also built for the XML data file to be able to generate the class files. From this point on we really don't have to build any Java code to represent the data in a Java content object tree. The only code we'll build will process these objects to store them in the database and fetch them from the database. JDO-aware classes will be used to perform these operations.

The example comprises the following files (code listings can be found at www.sys-con.com/xml/sourcec.cfm):

- Customer schema (see Listing 1)
- Customer XML data file (see Listing 2)
- JDO properties file – database definition (see Listing 3)
- JDO metadata file – class and package definition (see Listing 4)
- JDO-aware classes (see Listings 5 and 6)

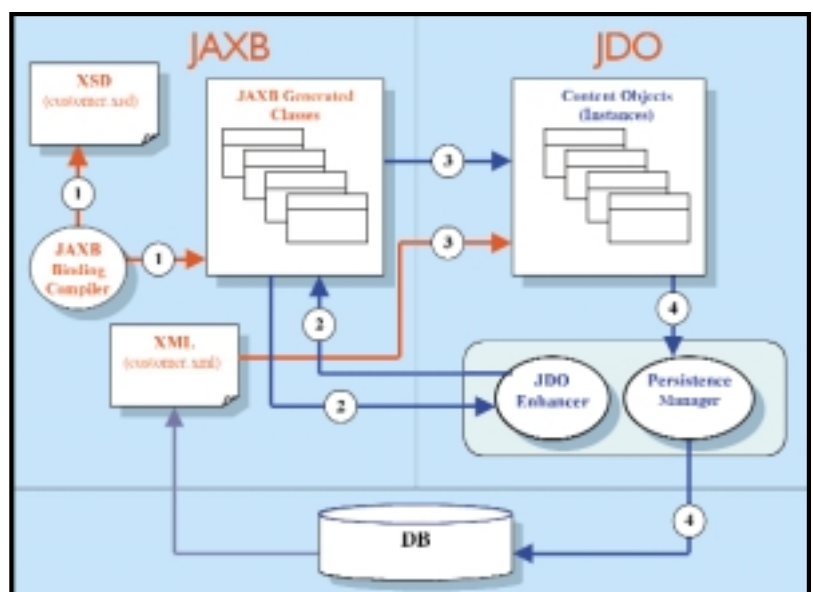


Figure 1 • JAXB and JDO components



- Main class (see Listing 7)

Using the schema as described in Listing 1, the JAXB compiler generates the packages “customer” and “customer.impl.” The root package name can be different than “customer” as it can be passed to the XJC compiler. Please see the “build.xml” Ant build file for details. Among all the generated interfaces and classes, we’re most interested in CustomerTypeImpl class, not the CustomerType class. This is very important! We must not include the class generated based on the document root element. Only the classes generated based on the data types must be included when enhancing classes using JDO enhancer.

The example makes use of the file-based data store included in the reference implementation (JDORI). The directory “database” must exist before you try to initialize the database using the InitDatabase class.

The metadata in Listing 4 has a definition for just one class to be enhanced. The metadata can be defined on a class or package basis and in one or more XML files. These files must have a .jdo suffix. For more efficient mapping declare the element type for each collection in the model.

The first four lines in the Main class (see Listing 7) are JAXB-related. We create the JAXBContext and then obtain an unmarshaller. Using the unmarshaller, we create an instance of root element Customer, which is used to navigate the tree to display the customer information. The rest of the lines in this class are JDO-related. The objects obtained by navigating the root class tree cannot be used to pass to the JDO-aware classes for persistence since they’re not the enhanced classes. The only class we enhanced is the CustomerTypeImpl class. JAXB does not recommend creating a direct instance of the generated *Impl classes; instead, it provides an ObjectFactory class to create instances of these classes. Once we create an instance of CustomerTypeImpl class, we can copy data from the content tree to the instance of CustomerTypeImpl and then pass it to the CreateCustomer class, where we invoke a makePersistent() method to save it in the database. This example also includes a utility class, PrintCustomer, that fetches customer information from the database and prints it.

Running the Application

The example includes a simple Ant build file to run the complete application. Please run it in the following order:

- **ant compileSchema:** Generates Java interfaces and classes from the schema.
- **ant compileSource:** Compiles all Java classes, including the above classes.

- **ant genDocs:** Generates Javadocs for all the classes.
- **ant enhance:** Enhances specific Java classes as defined in the JDO metadata file.
- **ant initDb:** Creates a sample database.
- **ant run:** Runs the Main class. Prints XML info, saves it in the database, and then fetches the same information from the database and prints it again.

Please follow the instructions in the readme.txt before building and running the application.

As you can see, the only programming effort needed for building the application is creating the JDO-aware classes. Moreover, those classes do not contain any SQL- or JDBC-specific code. The only language you need to know is Java! This example is tested using only the JDO reference implementation. A very simplistic persistence capability has been achieved and more complex data elements must be tested before you decide to deploy such an architecture in your project. Nonetheless, the idea of combining JAXB and JDO technologies is quite promising.

Conclusion

Although JAXB and JDO technologies are relatively new, they solve a great deal of problems in a uniform programming model confined to just one programming language – Java. These two technologies complement each other and reduce the amount of programming effort needed. ☺

Resources

- Code for this article: www.sys-con.com/xml/sourcec.cfm
- JAXB: <http://java.sun.com/xml/jaxb/>
- JWSRP-1.2: <http://java.sun.com/webservices/webservices/pack.html>
- JDO 1.0.0: <http://java.sun.com/products/jdo/>
- JDO 1.0.1: <http://access1.sun.com/jdo/private/index.html>
- JTA (Java Transaction API): <http://java.sun.com/products/jta/>
- Antlr for JDOQL: wwwantlr.org
- Xerces Parser: <http://xml.apache.org/xerces-j>
- Java Data Objects (O'Reilly): www.oreilly.com/catalog/jvadtobj/

AUTHOR BIO

Rajesh Zade has written several articles on XML and Web services. He has more than 14 years of experience in the computing field and has been working in various Java and eCommerce technologies since 1996. Currently, he works as a chief technical architect for NetCliff, Inc.

RAJESH.ZADE@NETCLIFF.COM

LISTING 1

```
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <xsd:element name="customer" type="CustomerType"/>
  <xsd:complexType name="CustomerType">
    <xsd:sequence>
      <xsd:element name="Title" type="xsd:string"/>
      <xsd:element name="FirstName" type="xsd:string"/>
      <xsd:element name="LastName" type="xsd:string"/>
      . . .
      <xsd:element name="ExpDate" type="xsd:gYearMonth"/>
      <xsd:element name="Name" type="xsd:string"/>
    </xsd:sequence>
    <xsd:attribute name="type">
      <xsd:simpleType>
        <xsd:restriction base="xsd:string">
          <xsd:enumeration value="new"/>
          <xsd:enumeration value="regular"/>
          <xsd:enumeration value="power"/>
        </xsd:restriction>
      </xsd:simpleType>
    </xsd:attribute>
  </xsd:complexType>
</xsd:schema>
```

```
</xsd:attribute>
</xsd:complexType>
</xsd:schema>
```

LISTING 2

```
<?xml version="1.0" encoding="UTF-8"?>
<customer xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xsi:noNamespaceSchemaLocation="D:\Rajesh\Arti-
cles\JAXB-JDO\code\customer.xsd" type="new">
  <Title>Mr.</Title>
  <FirstName>Robert</FirstName>
  <LastName>Dolin</LastName>
  <MiddleName>C</MiddleName>
  <street>111 NW 1000th Ave</street>
  <city>Westchester</city>
  <state>MN</state>
  <zip>12456</zip>
  <Number>1234567812345678</Number>
  <ExpDate>2004-12</ExpDate>
  <Name>Master</Name>
</customer>
```

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Creating Reusable Visual Components

A consistent look and feel throughout your application

Creating Web pages with HTML can be time consuming, so it's critical to create generic visual components that can easily be reused. This will give you a consistent look and feel throughout your application. You'll be able to add new functionality at one location and make it available across multiple Web pages, which can save you a lot of time.

Creating Reusable Visual Components

In order to create reusable visual components, it's important to create generic stylesheets and JavaScript routines. The stylesheets can be used to display tabular data in a grid format, or menus to navigate your Web application (e.g., WebGrid.xml, WebMenu.xml). Even though these examples will show you how to build reusable tabular pages and menus, the same ideas can be used to generate any common type of Web page.

The reusable stylesheet to display tabular (grid) data, WebGrid.xml, should:

1. Read instructions on how to build the view, defined between `<VIEW>` `</VIEW>` tags
2. Read the XML data, defined between `<DATA>` `</DATA>` tags, and transform it to HTML using XSL

The instructions on how to build the view are represented as XML. These build instructions, along with the XML data, are used by the generic stylesheet, WebGrid.xml, to develop the HTML page. An example of the build instructions to generate a Web page with tabular data is shown in Listing 1.

In this example we have one visual component, a grid, defined. It will display two columns, Name and Phone,

which are mapped to the XML data that we read, and shown between the start and end DATA tags. The end user will be able to add, delete, or refresh data by clicking on buttons (see Figure 1).

A portion of the XML data that is transformed by the build instructions and grid stylesheet processor is shown in Listing 2.

Creating a Reusable Grid

WebGrid.xml, the generic stylesheet that builds the grid, can read all the configuration values from the Visual XML information as defined between the VIEW tags. Since a grid is an HTML table structure, it will dynamically read all the table attributes, such as the grid style, and dynamically assign them to our table. It will also read which columns we should display and show their values by calling the DefineFieldNames template shown in Listing 3.

The DefineFieldNames template is executed as the HTML Web page is being generated. Its main purpose is to see which fields should be displayed on the grid. Dynamically figuring out which columns should be displayed allows WebGrid.xml to be used for different Web pages with different result sets as long as the columns are defined in the view XML.

```
<!--DYNAMICALLY SEE WHICH FIELDS TO
DISPLAY -->
```

```
<xsl:template
match="//VIEW/GRID/COLUMNS/COLUMN"
mode="DefineFieldNames">
  <td><xsl:value-of select="@field-
name" /></td>
</xsl:template>
```

Many other grid characteristics can be set dynamically as well. Each characteristic should be defined as an attribute, and then the generic stylesheet will read this attribute at runtime and decide what to set. Some other characteristics you can set for each column/cell in your grid are shown below:

```
<COLUMN
alignment="left" visible="T"
editable="T" objecttype="0"
onclickfunc="" onblurfunc="" on
changefunc="ClientOnChangeData()"
maxlength="" size="145px"
/>
```

You can then process these attributes in templates in your XSL file as shown. This will set the alignment of the text in the cell as defined for the specific column in the view XML.

```
<!--DYNAMICALLY SET ALIGNMENT of EACH
GRID CELL -->
```

```
<xsl:template
match="//VIEW/GRID/COLUMNS/COLUMN"
mode="CreateDataRows">
  <td>
    <xsl:attribute
      name="align">
      <xsl:value-of select
        ="@alignment"/>
    </xsl:attribute>
    .
  </td>
</xsl:template>
```

Advantages of visual XML

Representing your grid with visual XML has many advantages. It enables you to add a new column and within minutes have it automatically show up on the grid. No longer do you have to modify the HTML and then make sure

AUTHOR BIO

George M. Pieri is a senior system architect and developer and has worked at IBM. He has been doing Web and object-oriented development for the last seven years. George can be reached at gmpweb@hotmail.com.

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Francisco Chang	(5) 555-3392
Guillermo Fernández	(5) 552-3745
Miguel Angel Pasino	(5) 555-2833

Add Delete Refresh

Figure 1 • HTML page generated by using visual XML to display a grid

that everything lines up correctly. The entire color of the grid, along with fonts and many other attributes, can be changed by simply modifying the view XML. It's also easy to identify what columns are used for which screens, and it makes modifications quick.

Creating a Reusable Menu

The instructions on how to build the menu are defined using XML, just like with the grid. These build instructions are processed by the generic stylesheet, WebMenu.xml, to develop the Web page



Figure 2 • HTML page generated with view XML for a menu

with the menu. A sample of the build instructions to generate the menu is shown in Listing 4.

In this sample we have one visual component, a menu, defined. It will display a pulldown menu for your Web pages. Each menu item can have a custom dropdown submenu. For the Reports menu item there are two dropdown choices, Show Customers and Show Countries, which will each display a different report. The PROCESSOR tag and ACTION tag can be used to direct the client-side request to a server-side servlet to process it. The ACTION represents the specific item that the end user wants done.

Generating the Menu

WebMenu.xml, which builds the menu, can read all the configuration values from the visual XML information just like we did with the grid control. A template can be used to read through the view XML and process the information to build the menu. The XSL code snippet shown in Listing 5 illustrates how to examine the XML.

Advantages of view XML

Representing your menu with view XML has advantages. It enables you to add a new dropdown menu item without modifying any HTML code. You can also quickly change the menu structure. This method provides one central location that all developers can look at to see which back-end processors are being used by the front-end interface, without having to examine HTML.

Conclusion

Using XML you can describe what kind of visual components you would like to have on your Web pages. This allows your stylesheets to be reusable since no hard-coded XML column names or attributes appear within them. This allows you to change your view without having to directly modify your HTML or JavaScript code. This approach can greatly reduce your development time and allow you to become more efficient at making modifications for the ever-changing world of user requirements. ☛

GMPWEB@HOTMAIL.COM

LISTING 1.

```
<VIEW>
<GRID name="Customers"
  gridstyle="font-family:arial;font-size:9pt;
  background-color:lightgrey">
  <ACTIONS>
  <ACTION id="1" name="Add"
  onclickfunc="ClientAddData()" />
  <ACTION id="2" name="Delete"
  onclickfunc="ClientSaveData()" />
  <ACTION id="3" name="Refresh" onclickfunc="ClientRefresh()" />
  </ACTIONS>
  <COLUMNS>
  <COLUMN id="0" columnname="Name"
  fieldname="ContactName" />
  <COLUMN id="1" columnname="Phone"
  fieldname="Phone" />
  </COLUMNS>
</GRID>
</VIEW>
```

LISTING 2.

```
<DATA>
<Customers>
  <ROW ID="0" CHANGETYPE="N" >
  <CONTACTNAME>Ana Trujillo</CONTACTNAME>
  <PHONE>(5) 555-4729</PHONE>
  </ROW>
  <ROW ID="1" CHANGETYPE="N" >
  <CONTACTNAME>Antonio Moreno</CONTACTNAME>
  <PHONE>(5) 555-3932</PHONE>
  </ROW>
  <ROW ID="2" CHANGETYPE="N" >
  <CONTACTNAME>Francisco Chang</CONTACTNAME>
  <PHONE>(5) 555-3392</PHONE>
  </ROW>
```

```
</ROW>
<METADATA>
  <CURRENTROW>0</CURRENTROW>
  <ROWCOUNT>3</ROWCOUNT>
  <STATUS>0</STATUS>
  <DESCRIPTION>SUCCESS</DESCRIPTION>
</METADATA>
</Customers>
</DATA>
```

LISTING 3.

```
<xsl:template match="/" mode="DisplayData">
  <HTML><BODY>
  <table border="0" cellpadding="0" cellspacing="0" width="100%">
  <tr>
  <td align="left" colspan="3">
  <table border="0" cellpadding="0" cellspacing="0">
  <tr>
  <td align="left" colspan="3">
  <xsl:attribute name="style">
  <xsl:value-of
  select="//VIEW/GRID/@gridstyle"/>
  <table style="display:none">
  <tr>
  <td align="left" colspan="3">
  <xsl:apply-templates
  select="//VIEW/GRID/COLUMNS/COLUMN"
  mode="DefineFieldNames" />
  </td>
  </tr>
  </table>
  </tr>
  </table>
  </td>
  </tr>
  </table>
  </BODY></HTML>
</xsl:template>
```

LISTING 4.

```
<VIEW>
  <MENU>
  <MENUITEM ID="0" >
```

```
<MENU_DESC>Reports</MENU_DESC>
<SUBMENU>
  <SUBMENU_DESC> Show Customers</SUBMENU_DESC>
  <PROCESSOR>ReportsServlet</PROCESSOR>
  <ACTION>ShowCustomers</ACTION>
  <SUBMENU_DESC>Show Countries</SUBMENU_DESC>
  <PROCESSOR>ReportsServlet</PROCESSOR>
  <ACTION>ShowCountries</ACTION>
</SUBMENU>
</MENUITEM>
<MENUITEM ID="1" >
  <MENU_DESC>Logout</MENU_DESC>
  </MENUITEM>
</MENU>
</VIEW>
```

LISTING 5.

```
<xsl:template match="//VIEW/MENU/MENUITEM"
  mode="CreateMenuXMLData">
  .....
  <xsl:apply-templates
  select="SUBMENU" mode="CreateSubMenuXMLData">
  <xsl:with-param
  name="rowNum" select="position()" />
  </xsl:apply-templates>
  .....
</xsl:template>
>
```

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provides an important incentive for businesses to make use of these capabilities.

Looking Ahead


In the next three to five years, XBRL will move from the early adopter phase to become the generally accepted way to report business information electronically. As a result, businesses will achieve benefits by simplifying their processes for producing business reports, and their stakeholders and regulators will find it easier to get the information they need to make informed decisions.

Eventually, XBRL and Web services will augment the current model of the Web – people looking at Web pages – with automated communication between software programs, allowing information to be accessed and processed without human intervention. An auditor might use a familiar tool, Microsoft Excel, with a Web services back end that will search for and retrieve specific financial data about a client and others in the same industry in XBRL format. The auditor's Excel-based model would then be used to determine which line items on the report need greater scrutiny.

By allowing for rapid integration of external information into existing business systems, XBRL and Web services will make it extremely easy to present financial data that is most relevant to an individual functional group or business operation, in context with internal data. By presenting financial

data in a consistent and familiar format, an organization will be able to minimize unnecessary research while improving productivity and allowing end users to rely routinely on a single application with consistent field placement for critical pieces of data. Further, since XBRL is based on the XML standard, it is device independent, which will enable information to appear on any platform, including a desktop PC, wireless phone, or PDA.

Maximizing XBRL and Web Services

Of course, as companies begin to put technologies in place that will enable them to capitalize on XBRL and Web services, it's crucial that they still be cognizant that they are receiving the data from a reliable information source – since the quality of the data provided is most important. In doing this, they will need to evaluate several factors, including the range of information, the expertise of the information vendor and, most important, the vendor's business information framework for classifying, organizing, and integrating a wide range of business information. Once the company conducts its due diligence to ensure that it is working with a trusted and proven data provider, it will be able to truly maximize the power of XBRL and Web services – and benefit from what will ultimately be a revolutionary change in business reporting. 

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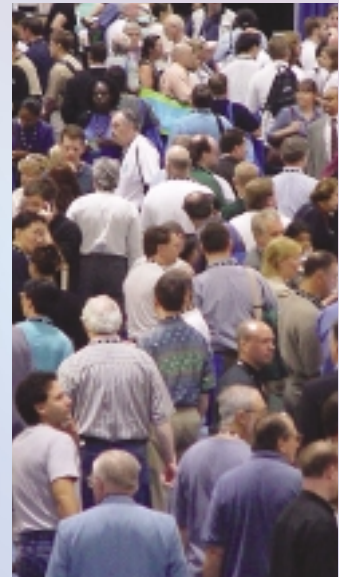
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KEYNOTES & HIGHLIGHTED SPEAKERS



Allan Vermeulen

CTO, Amazon.com

Sept. 30 10:00 a.m.

"Web Services Foundations"

Allan Vermeulen, CTO and vice president at Amazon.com, directly oversees the Platform Technologies group. This group is responsible for guiding Amazon.com's technology architecture, including building and acquiring foundational components. Prior to his move to Amazon.com, Vermeulen was CTO and vice president of development at Rogue Wave Software. He holds a PhD in systems design engineering from the University of Waterloo.



John Magee

Vice President,

Oracle9i Application Server, Oracle

Oct. 1 10:00 a.m.

"J2EE Development on the Grid"

John Magee is vice president of Oracle9i Application Server and Oracle9i Developer Suite at Oracle. Mr. Magee has over 14 years of experience in the enterprise software industry and has held positions in product development, product management, and product marketing. In his current role, he manages technical product marketing for Oracle's application server and development tools products, and is responsible for evangelizing Oracle technology initiatives around J2EE, XML, and Web services.



David Litwack

Senior Vice President, Web Application Development Products, Novell

Sept. 30 2:00 p.m.

"Business Integration and IT" Keynote Panel

David A. Litwack is senior vice president of Web Application Development Products, responsible for the development and advancement of Novell's secure Web services strategy. Mr. Litwack assumed his current position in July 2002 following Novell's acquisition of SilverStream Software, a company for which Litwack had served as president and CEO since 1997.



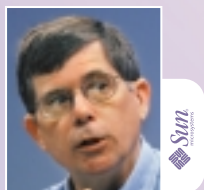
John Schmidt

Leader of Systems Integration and Middleware, Best Buy Co.

Sept. 30 2:00 p.m.

"Business Integration and IT" Keynote Panel

John Schmidt is the chairman of the Methodology Committee for the EAI Industry Consortium and leader of systems integration and middleware at Best Buy Co., a leading specialty retailer of consumer electronics, personal computers, entertainment software, and appliances.



Jon Bosak

Distinguished Engineer, Sun Microsystems

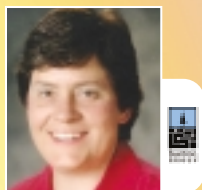
Jon Bosak organized and led the W3C working group that created the XML specification and then served for two years as chair of the W3C XML Coordination Group. At Sun, where he holds the title of Distinguished Engineer, Mr. Bosak sponsors projects intended to advance XML technology. He is currently chair of the Universal Business Language (UBL) Technical Committee of OASIS.



Dave Chappell

VP, Chief Technology Evangelist, Sonic Software

Dave Chappell is the vice president and chief technology evangelist for Sonic Software. He has more than 18 years of industry experience building software tools and infrastructure for application developers, spanning all aspects of R&D, sales, marketing, and support services. Dave has also been published in numerous technical journals, and is currently writing a series of contributed articles for *Java Developer's Journal*.



Anne Thomas Manes

Research Director, Burton Group

Anne Thomas Manes is a research director at Burton Group, a research, consulting, and advisory firm. Anne leads research for the Application Platform Strategies service. Named one of NetworkWorld's "50 Most Powerful People in Networking" in 2002, and one of Enterprise Systems Journal's "Power 100 IT Leaders" in 2001, Anne is a renowned technologist in the Web services space. Anne participates in standards development at W3C and OASIS.



Marc Fleury

President, JBoss

Marc Fleury, PhD, is chief technical officer for Telkel, Inc. He is the leader of the JBoss project (www.jboss.org), which is an open source EJB server. Marc is based out of Silicon Valley and founded the project upon leaving Sun Microsystems. He was one of the main developers behind JBoss 1.0 and 2.0. Marc is the "keeper" of the project. He founded the JBoss Group, a company regrouping the elite developers of JBoss to consult around JBoss.

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SPECIAL INSERT:
Web Services Edge West Conference & Expo Sept. 30 - Oct. 2, 2003

Conference at-a-Glance

TUESDAY, SEPTEMBER 30

JAVA		.NET		WEB SERVICES	
8:00AM – 4:00PM	REGISTRATION				
9:00AM – 9:50AM	The Next Phase in Evolution of J2EE	Using WSE 2.0	Web Services Management		
10:00AM – 10:50AM	Keynote - "Web Services Foundations" - Allen Vermeulen, CTO and Vice President, Amazon.com				
11:00AM – 6:00PM	EXPO OPEN				
2:00PM – 2:50PM	Keynote Panel Discussion - Business Integration and i-Technology				
3:00PM – 3:50PM	Ant Applied in "Real World" Web Services	Smart Devices in the Enterprise	Building Interoperable Web Services Using WS-I Basic Profile		
4:00PM – 4:50PM	Developing Applications with SWT	Using the Mobile Internet Toolkit	Web Services Orchestration		
5:00PM	OPENING NIGHT RECEPTION				

WEDNESDAY, OCTOBER 1

8:00AM – 4:00PM	REGISTRATION				
9:00AM – 9:50AM	Empowering Java and RSS for Blogging	Introduction to ROTOR	ID, Please. The Case for Giving Web Services an Identity		
10:00AM – 10:50AM	Morning Keynote - "J2EE Development on the Grid" - John Magee, Vice President, Oracle9i, Oracle				
11:00AM – 4:00PM	EXPO OPEN				
2:00PM – 2:50PM	Keynote Panel Discussion - Interoperability: Is Web Services Delivering?				
3:00PM – 3:50PM	JUnit: Testing Your Java with JUnit	Using Portable .NET	WS-BPEL		
4:00PM – 4:50PM	JDK1.5: The Tiger	ASP.NET with Mono	UDDI: Dead or Alive?		
5:00PM – 6:00PM	Squeezing Java	Using WSE with IBM's Web Services Tool Kit	Web Services Choreography, Management, and Security - Can They Dance Together?		

THURSDAY, OCTOBER 2

8:00AM – 4:00PM	REGISTRATION				
9:00AM – 9:50AM	Leveraging AOP in JBoss	Success Story: Eiffel, .NET, and Design by Contract for the Financial Industry	Strategies for Securing Web Services		
10:00AM – 10:50AM	Technical Keynote				
11:00AM – 11:50AM	Apache Axis	.NET IDE's	Web Services Progress Report		
12:00PM	LUNCH				
1:00PM – 1:50PM	Meeting the Challenges of J2ME Development	Windows SharePoint Services	The Seven Habits of Highly Effective Enterprise Service Buses (ESBs)		
2:00PM – 2:50PM	Keynote Panel Discussion - Summit on Web Services Standards				
3:00PM – 3:50PM	Simplifying J2EE Applications	BizTalk 2004	See www.sys-con.com for more information		
4:00PM – 5:00PM	Integrating Java + .NET	See www.sys-con.com for more information	See www.sys-con.com for more information		

XML	MAC OS X
Introduction to Xforms	Introducing OS X (Panther) What's New?
Securing Your XML and Web Services Infrastructure	Programming Rich User Interfaces Using Cocoa
UBL - The Universal Business Language	Quick Applications Using AppleScript
Standards-Based Enterprise Middleware Using XML/Web Services	Java and OS X: A Perfect Marriage
XML and Enterprise Architecture: Technology Trends	Enterprise Java and OS X
Using XML Schemas Effectively in WSDL Design	Developing Web Services Using WebObjects
Canonical Documents for Your Business: Design Strategies	Cocoa, Carbon, Java: Application Frameworks for OS X (When to Use What)
XML and the Fortune 500	Securing OS X Applications
XML at Work in 'Fortune 500' Companies	Xserve: Ease of OS X and Power of Unix
XML Schema Best Practices	OS X for the Unix Developer
See www.sys-con.com for more information	Introducing Quartz: 2D Graphics for Apple
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Oracle's workshop is specifically designed to get you started with your first Web service project, with a combination of presentations and hands-on labs that take you deep into the technology and let you put in action what you've learned. Oracle's experts will be available throughout the workshop to answer all your questions and assist you while you are going through the labs.

The workshop gives tips and techniques on how best to develop and deploy Web services and addresses topics such as RPC and Document Style Web services, static and dynamic invocation, stateless Web services and more. The second part of the workshop is dedicated to the new J2EE API for Web services available as part of J2EE 1.4.

Going through the hands-on labs at your own pace, you will learn how to publish a Java class as a J2EE stateless or stateful Web service, publish a session EJB as a J2EE Web service, and publish a J2EE Web service using JAX-RPC.

Space is LIMITED to the first 100 attendees. Register now for this FREE workshop. Computers will be provided by the Oracle Developer Days team with all the necessary software, so there's no need to bring your own computer.

AGENDA

7:30-8:00 am – Registration
 8:00-9:00 am – Session #1 – Best Practices for Web Services Development & Deployment
 9:00-10:00 am – Lab #1 – Publish a Java Class as a J2EE Stateless or Stateful Web Service
 10:00-10:50 am – John Magee, VP, Oracle – Keynote (BREAK)
 11:00 am-12:00 pm – Expo Floor Time
 12:00-1:00 pm – Session #2 (WORKING LUNCH) – J2EE APIs for Web Services
 1:00-2:00 pm – Lab #2- Publish a Session EJB as a J2EE Web Service
 2:00-2:30 pm – Expo Floor Time (BREAK)
 2:30-3:00 pm – Lab #3- Publish a J2EE Web Service Using JAX-RPC

PRESENTERS

Arun Srinivasan, Director of Product Management, Java Tools, Oracle
Rob Clark, Director of Product Management, J2EE, Oracle
Mike Lehmann, Product Manager, Web Services, Oracle9iAS and Oracle9i JDeveloper, Oracle

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SPECIAL INSERT:

Web Services Edge West Conference & Expo Sept. 30 - Oct. 2, 2003

XML Track

XML Technology Track



Presentations will focus on the various facets of XML technologies as they are

applied to solving business computing problems. Sessions will include emerging standards in XML Schemas, XML repositories, industry applications of XML, applying XML for building Web services applications, XML/XSLT/ XQuery-based programming using Java/.NET, XML databases, XML tools and servers, XML-based messaging, and the issues related to applying XML in B2B/EAI applications. The XML Track is geared for audiences ranging from beginners to system architects and advanced developers.

Sessions will focus on:

- XML Standards and Vocabularies
- Introduction to XForms
- Securing Your XML and Web Services Infrastructure
- XQuery Fundamentals: Key Ingredients to Enterprise Information Integration
- XML and Enterprise Architecture: Technology Trends
- Standards-Based Enterprise Middleware Using XML/Web Services
- XML and Financial Services
- Canonical Documents for Your Business: Design Strategies
- XPath/XSLT 2.0: What's New?
- XML Schema Best Practices
- XML in EAI, Enterprise Portals, Content Management

(XM1) Introduction to XForms

T.V. RAMAN, IBM RESEARCH

Tuesday, September 30, 9:00 a.m. - 9:50 a.m.

This presentation will introduce W3C XForms, including details about how XForms enables the last mile of connecting the end user to Web services. XForms user agents provide an easy-to-use, browser-based interface that enables the end user to interact with information technologies that have been published as Web services. As the Web moves from being a desktop-only phenomenon to a means of ubiquitous electronic access, Web transactions need to be available from a variety of end-user access devices ranging from desktop computers to smart phones. The XForms authored interface is well suited for delivery to a variety of interaction modalities and end-user devices, thus assuring content developers of the widest audience for their transaction-based applications. From the user's perspective, XForms revolutionizes the way business-critical information is collected and published on the Web, enabling information technologists to

continue to model business data using abstract structures that are amenable to machine processing. XForms binds a user-friendly Web browser interface to such abstract XML models, thereby empowering the end user to edit and update these abstract structures. In this sense, XForms enables a standard Web browser to associate editable views to the underlying XML models. This ability to view and edit XML documents from within a standard Web browser is likely to prove a key empowering technology.



BIO: T.V. Raman works in IBM Research on multimodal user interfaces and is the author of *Auditory User Interfaces*. He is the editor of the user interface chapter of the XForms 1.0 specification and is an active participant in a number of W3C working groups including XForms, voice browser, and XHTML. His research interests are primarily auditory user interfaces and structured electronic documents, and his previous work includes AsTeR - Audio System For Technical Readings, Aural CSS, and Emacspeak - the complete audio desktop.

(XM2) Securing XML and Web Services Applications

PHIL STEITZ, AMERICAN EXPRESS

Tuesday, September 30, 3:00 p.m. - 3:50 p.m.

Securing Web services is a big challenge for companies moving toward service-oriented architectures. We will discuss some practical strategies for meeting this challenge using standards and technologies available today. Key technical tradeoffs in the areas of performance, scalability, manageability, availability, and integration cost will be considered as we work through the details of a typical integration use case. We will also discuss business and organizational issues related to trust and identity management. The session will conclude with a brief survey of the standards and technology landscape and some strategies for ensuring that investments made today will continue to pay benefits into the future.

BIO: Phil Steitz is vice president of e-commerce applications development at American Express. Phil has more than 20 years of experience as a developer, architect, and technology leader involved in distributed systems development. Before joining American Express, Phil served as a middleware architecture consultant, designing large-scale distributed systems for enterprise customers. Phil holds a PhD in mathematics from the University of Maryland.

(XM3) UBL: The Universal Business Language

JON BOSAK, SUN MICROSYSTEMS

Tuesday, September 30, 4:00 p.m. - 4:50 p.m.

Web services technologies promise to revolutionize electronic business, but global interoperability of business processes cannot occur without the semantic standardization of the messages exchanged in business transactions. This presentation will describe the OASIS UBL project to create standard XML Schemas for basic business documents, explore the relationship of UBL-based business to traditional EDI, and note the explosive potential of standard markup combined with reliable XML messaging.



BIO: Jon Bosak organized and led the W3C working group that created the XML specification and then served for two years as chair of the W3C XML Coordination Group. At Sun, where he holds the title of distinguished engineer, Jon sponsors projects intended to advance XML technology. He is currently chair of the Universal Business Language (UBL) Technical Committee of the Organization for the Advancement of Structured Information Standards (OASIS).



(XM4) Standards-Based Enterprise Middleware Using XML/Web Services

ANDY ASTOR, WEBMETHODS

Wednesday, October 1, 9:00 a.m. - 9:50 a.m.

Some say that standards-based enterprise middleware is not yet mature enough for industrial-strength usage, and that proprietary vendor products are the only practical alternative. Others insist that standards-based middleware is "ready for prime-time," and that proprietary vendors will be out of business within a year. The truth is that each of these extremes contain dubious hype, and the truth falls somewhere between these schools of thought. This session seeks to separate fact from fiction, and to offer a model for understanding both the current and future states of standards-based middleware.



BIO: Andy Astor joined webMethods in 2002 as vice president of enterprise Web services. In this role, he is responsible for driving the company's Web services strategy and execution. Prior to joining webMethods, Andy was a vice president at D&B, where he led worldwide customer-facing products, including all Web- and Internet-based applications. His work at D&B also included the development and launch of one of the earliest commercial Web services. Prior to his tenure at D&B, Andy held leadership positions at American Management Systems and Ernst & Young, both large systems integration and consulting firms.

(XM5) XML and Enterprise Architecture: Technology Trends

HITESH SETH, IKIGO

Wednesday, October 1, 3:00 p.m. - 3:50 p.m.

XML is a key ingredient of a number of technology solutions. Whether it's serving up enterprise portals, integrating diverse systems (EAI), serving Web services, or driving content management, support for XML has been a key trend in major off-the-shelf packaged applications. With Web services, XML support has been extended to mission-critical ERP and CRM systems. This presentation takes a look at some of the key trends in using XML in these applications.



BIO: Hitesh Seth, editor-in-chief of *XML Journal*, is the chief technology officer of ikigo, Inc., a provider of XML-based Web services monitoring and management software. A freelance author and known speaker, he regularly writes for technology publications on VoiceXML, Web services, J2EE and Microsoft .NET, wireless computing, and enterprise/B2B integration.

(XM6) Using XML Schema Effectively in WSDL Design

CHRIS PELTZ, HP

Wednesday, October 1, 4:00 p.m. - 4:50 p.m.

Developers building Web services today are beginning to see the value of using the document-style approach over RPC. Recent experience shows that taking full advantage of document-style Web services requires a strong knowledge of XML Schemas and related XML standards. This session will present a number of important tips and techniques for properly using XML Schemas in the design of a Web services interface, including the importance of XML-based development tools, considerations for binding between XML and underlying objects, WSDL reusability through XML Schemas, and XML Schema naming best practices.



BIO: Chris Peltz is a senior software consultant within HP's Developer Resources Organization. He provides technical and architectural consulting to enterprise customers in the areas of J2EE, Web services, and mobile development. Chris has more than 10 years of software experience in object-oriented technologies, 4GL development, GIS, and Web application design.

(XM7) Canonical Documents for Your Business: Design Strategies

DAVID CONNELLY, OPEN APPLICATIONS GROUP, INC.

Wednesday, October 1, 5:00 p.m. - 6:00 p.m.

The ability to change rapidly when business processes change is key for successful enterprises in today's world. A factor critical to enabling this change is the integration of all of an organization's business software applications in a way that is much faster and less expensive than current methods. Many organizations are taking advantage of the open standards-based protocols underlying Web services to integrate systems quickly and inexpensively. But before Web services can achieve its full potential, it needs a rich and mature business language that can be used for both e-business and application integration. The OAGIS XML language is the technology-neutral, horizontal business language that enables enterprises to fully leverage Web services protocols. This presenta-



tion will discuss the OAGIS CANONICAL Model, why and how it can make a difference, and strategies for using the OAGIS XML documents within the CANONICAL Model in your business environment.



BIO: David Connelly is president and CEO of the Open Applications Group, Inc. Before joining the OAGI, David worked in various capacities at customer organizations and software vendors. He graduated from George Tech in 1975 with a BS in industrial engineering.

(XM8) XQuery Fundamentals: Key Ingredients of Enterprise Information

PAUL COTTON, MICROSOFT

Thursday, October 2, 9:00 a.m. - 9:50 a.m.

The W3C XML Query Working Group was chartered in September 1999 to develop a query language for XML documents. The goal of the XML Query Working Group is to produce a formal data model for XML documents with namespaces based on the XML Infoset and XML Schemas, a set of query operators on that data model, and then an XQuery language with a concrete canonical syntax based on the proposed operators. In May 2002 the XML Query WG and XSL WGs published a complete new set of XQuery 1.0/XPath 2.0/XSLT 2.0 documents. This presentation will provide an overview of the XQuery and XPath languages and their current status. It will also outline the relationship of the work of the XML Query WG to other W3C XML standards, especially XML Schema. The status of the WG's efforts to add support to XQuery for full-text retrieval and an update language will also be discussed.



BIO: Paul Cotton is program manager of XML standards with Microsoft Canada. Paul has been active within the W3C XML activity since 1998 and has been the chairman of the W3C XML Query WG since it was formed in 1999. Paul was elected to the first W3C Technical Architecture Group (TAG) in December 2001 and re-elected in December 2002. The W3C TAG is responsible for defining the W3C's view of the architecture for the Web. Paul is also a member of the WS-I Board of Directors and chair of the WS-I Basic Security Profile Working Group. Paul has more than 30 years of experience in the IT industry.

(XM9) XML at Work in the Fortune 500

Thursday, October 2, 11:00 p.m. - 11:50 p.m.

The objective of this session is to understand how XML has been a strategic investment with a Fortune 500 company. This session highlights the process of how support for XML was cultivated within the company and its partners and how XML was transformed from a cool technology trend to a necessity and a corporate standard. See www.sys-con.com/edge for further details on this session.

(XM10) Designing XML Schema Best Practices

AYESHA MALIK, OBJECT MACHINES

Thursday, October 2, 1:00 p.m. - 1:50 p.m.

XML Schemas constrain and formalize the vocabulary and grammar of XML documents. As XML is fast becoming the data transport format of the future, organizing the structure of the XML, as outlined by schemas, is becoming key to successful interoperability and implementation. Developers experienced in object-oriented design know that a flexible architecture ensures consistency throughout the system and helps to accommodate growth and change. This presentation uses an object-oriented framework to show you how to design XML Schemas that are extensible, flexible, and modular. Three principles of object-oriented design – encapsulation, inheritance, and polymorphism – are discussed in light of XML Schemas.



BIO: Ayesha Malik is a senior consultant at Object Machines, a software engineering firm providing Java technology and XML solutions to businesses. Ayesha has worked extensively on large XML and messaging systems for companies such as Deutsche Bank and American International Group (AIG). Most recently, she has been researching new ways to make schemas extensible and object-oriented.

Web Services Track

Web Services Track



Presentations will include discussions of security, interoperability, the role of UDDI, progress of the standards-making bodies, SOAP, and BPM. Case studies cover the design and deployment of Web services in the marketplace.

Sessions will focus on:

- Interoperability
- Enterprise Networks
- Web Services Management
- Web Services Standards
- Web Services Orchestration
- Security (WS-Security, SAML)
- BPTEL4WS
- UDDI: Dead or Alive?
- ebXML & Web Services
- EAI & Web Services
- RPC vs Documents: Uses and Differences
- User Interfaces for Web Services
- Web Services Best Practices
- Service-Oriented Architecture

(WS1) Web Services Management: Managing the Impact of Change

JAMES PHILLIPS, ACTIONAL

Tuesday, September 30, 9:00 a.m. - 9:50 a.m.

Adoption of Web services technology is well underway in the Global 2000. It is impossible to ignore the numerous articles and speeches from CIOs declaring their adoption of Web services as high-priority strategic IT initiatives. Whereas the service-oriented approach to application architecture was meant to accelerate the responsiveness of the IT organization, the impact of the changes to the service network and the ripple effects that ensue can lead to precisely the opposite result. Change is easy and affordable, but the impact of change can be unmanageable and expensive. To truly reap the benefits of the service-oriented approach to application architecture, customers must have a way to manage the impact of change in their enterprise service network.



BIO: James Phillips has worldwide responsibility for Actional's product and market strategy and market execution. Prior to joining Actional, James served as chief strategy officer and vice president of product marketing and business development with Ensim Corporation, and has held senior marketing management, software engineering, and business development roles with Intel, Intuit, Synopsys, and Central Point Software.

(WS2) Building Interoperable Web Services Using WS-I Basic Profile

KEVIN LIU, SAP LABS, LLC

Tuesday, September 30, 3:00 p.m. - 3:50 p.m.

The promise of Web services interoperability is based on a set of standards, including XSD, SOAP, WSDL, and UDDI. However, early interoperability experiments such as the SOAP Builder activity have proven that making these technologies seamlessly work together, inter- or intra-enterprises, is a bigger challenge than most of us expected. Most of the Web services technologies are still in the standardization process, and Web services platforms have to be based on prestandard draft specifications. The inconsistencies and ambiguities left in these initial drafts can easily lead to different interpretations for the same feature and substantially compromise the promised interoperability.

The presentation explains how WS-I Basic Profile addresses these challenges, and what the key techniques are that you can get from the profile that can make your Web services interoperable. It explains why the profile disallows SOAP encoding and why RPC style should give way to document style.

BIO: Kevin Liu is an architect of XML Web services technologies at SAP Labs in California. Kevin helps drive the adoption of Web services technologies in SAP's strategic products, and represents SAP in various standard bodies. Kevin has over 10 years of experience in software engineering and the financial industry. He holds multiple master's degrees in information management, finance, and economics.

(WS3) Web Services Orchestration

CHRIS PELTZ, HP

Tuesday, September 30, 4:00 p.m. - 4:50 p.m.

The real value of Web services will come as we start finding standard ways to connect these distributed components in a more reliable fashion. One of the key enablers to this will be web services orchestration. This session introduces web services explains some of the requirements for connecting web services together. A history of key standards will be provided, including XLANG, and WSFL. A comparison will be drawn between WSCI and BPTEL4WS, and where each might be appropriate in an architecture. The presentation will conclude with a case study demonstrating the use of orchestration technologies to connect web services together.



BIO: Chris Peltz is a senior software consultant within HP's Developer Resources Organization. He provides technical and architectural consulting to enterprise customers in the areas of J2EE, web services, and mobile development. Chris has over 10 years of software experience in object-oriented technologies, 4GL development, GIS, and web applications design.

(WS4) ID, Please. The Case for Giving Web Services an Identity

ASHISH LARIVEE, NOVELL

Wednesday, October 1, 9:00 a.m. - 9:50 a.m.

Without identity management, Web services can be consumed by anyone. The challenge for Web services developers is to provide appropriate access based on the user's identity. As identity management moves into the forefront of technology, directory services will evolve from simple LDAP repositories used for authentication and storage to robust engines that provide identity integration, access management, and policy enforcement. This presentation will discuss how identity management and directory services provide a robust solution for Web services authentication, authorization, and single sign-on.

BIO: With more than nine years of experience in the software industry, Ashish Larivee has designed and developed many enterprise applications across a variety of platforms including Microsoft, Lotus Notes/Domino, and the J2EE platform. In 1999, Ashish joined SilverStream Software, acquired by Novell in July 2002, and has served in various roles in consulting, development, and technical marketing. In her current role, she helps define the strategy and product direction across Novell's Web application development products.

(WS5) WS-BPEL

JOHN EVDEMON, MICROSOFT

Wednesday, October 1, 3:00 p.m. - 3:50 p.m.



BIO: John Evdemon is program manager, industry standards, industry solutions enablement, for Microsoft, and is cochair of OASIS' Business Process Execution Language TC. He is an XML and e-business expert, having served as CTO/director of XML-related products for both a large integration platform vendor and a small XML-centric start-up, and has been designing and deploying enterprise systems on a wide variety of platforms for over 15 years. He is an invited expert with the W3C XML Core Syntax Working Group and has chaired several industry-specific XML initiatives. An associate editor of *XML Journal*, John is also a regular contributor to journals, books, and online forums and is writing a book on XML. See www.sys-con.com/edge for further details on this session.

(WS6) UDDI: Dead or Alive?

ANNE THOMAS MANES, THE BURTON GROUP

Wednesday, October 1, 4:00 p.m. - 4:50 p.m.

When UDDI was first announced in September 2000, IBM and Microsoft predicted that it would be a fundamental component of the Web services infrastructure. Three years later, UDDI has still seen only very modest adoption. So what is the future of UDDI? Will it ever live up to the early predictions? Will it enable dynamic discovery and utilization of Web services? Why should you even consider using it? Although it's had a slow start, UDDI is, in fact, a core component of the Web services infrastructure. This session explores the Web services registry specification and examines user guidelines and best practices.



BIO: Anne Thomas Manes is a research director at Burton Group, a research, consulting, and advisory firm. Anne leads research for the Application Platform Strategies service. Named one of NetworkWorld's "50 Most Powerful People in Networking," in 2002 and one of *Enterprise Systems Journal's* "Power 100 IT Leaders," in 2001, Anne is a renowned technologist in the Web services space. Anne participates in standards development at W3C and OASIS. She is a frequent speaker at trade shows and author of numerous articles and the book *Web Services: A Manager's Guide*.

(WS7) Web Services Choreography, Management, and Security – Can They Dance Together?

PAUL LIPTON, COMPUTER ASSOCIATES

Wednesday, October 1, 5:00 p.m. - 6:00 p.m.

Web services choreography, management, and security are among the principal challenges implementers of service-oriented architectures face in their efforts to create a more cost-effective and agile IT infrastructure, despite the fact that significant progress has been made in various standards organizations such as the W3C and OASIS. There is still much confusion in the IT community about the standards, which are at various stages of maturity. Also, their relevance to enterprise IT and how they might work together is often unclear.

This session begins with a useful overview of standards in these three critical areas of Web services: choreography, management, and security. We will then discuss the role of each in the enterprise, and conclude with an examination of how these three areas might work together to solve the real challenges facing IT in its efforts to bring greater utility, flexibility, and agility to the enterprise.



BIO: Paul Lipton is Computer Associates' Web services technology leader for the field services organization and a technology strategist in the office of the CTO. He has been an architect and developer of enterprise systems for more than 20 years, and has worked closely with key CA customers to architect distributed solutions using J2EE, .NET, wireless, and Web services technology. Paul has represented CA in various standards organizations, and has participated in the Java Community Process. He has published magazine articles on many technologies including Web services, Java, .NET, EAI, wireless technology, and distributed systems.

(WS8) Strategies for Securing Web Services

MARCK SECRIST, HP

Thursday, October 2, 9:00 a.m. - 9:50 a.m.

Web services standards for security are just beginning to emerge and stabilize, yet lack of security standards is listed as the top barrier to Web services adoption. Many project teams are reluctant to adopt Web services due to the risk associated with immature and changing standards. This session will look at the issues associated with securing Web services, and cover the important standards for Web services security. It will conclude by exploring strategies for securing Web services in ways that allow developers to get started with Web services while isolating themselves from standards that are still in a state of flux.



BIO: Mark Secrist is a senior consultant for the HP Developer Resource Organization with more than 10+ years of experience involving distributed object technologies and building N-tier, Web-based applications. He currently consults with enterprise customers on J2EE and Web services development. Mark has also published technical white papers on J2EE, mobile, and Web services development.

(WS9) Web Services Progress Report

MICHAEL CHAMPION, SOFTWARE AG

Thursday, October 2, 11:00 a.m. - 11:50 a.m.

Web services have been the buzz for the last couple of years, but the concept remains confusing to many. New "standards" are proposed on a regular basis, but they overlap and seem to form the same fault lines as previous industry politico-strategic controversies. Now analysts and writers are talking about "service-oriented architectures," further bewildering most nonspecialists. Throughout all this, a small but passionate group has been arguing that many of the ideas coming from the Web services community are antithetical to the principles of the Web and are unlikely to ever work on an Internet scale. The W3C Web Services Architecture Working Group is trying to determine a consensus position on key architectural issues concerning Web services and their relationship to XML and the Web. This presentation provides a progress report after an approximately 18-month effort to distinguish the Web services architectural principles from the marketing agenda of individual companies.

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How to Develop, Deploy, and Manage Web Services USING IBM TOOLS

Are you a developer, product manager, or software architect interested in learning how to develop, deploy, and manage Web services? If so, this technical seminar – where IBM experts will review the standards initiatives behind some of these technologies, the latest developments, and their future roadmap – is for you!

What you will discover by attending this technical seminar

- How to develop and deploy Web services using IBM tools
- How to use IBM WebSphere Studio Application Developer to extend Java components as Web services using WSDL
- How to implement Web Services Hosting Technology to provision and meter Web services without changing code or the actual service implementation
- Each attendee will receive IBM software products that support Web services, development tools, helpful tutorials, and insightful articles.

Course highlights

- Real-world implementation
- Developing and deploying SOAP-enabled Web services
- Registry operations and programming with UDDI4J Version 2
- IBM WebSphere Studio Application Developer
- RAS and Web services
- Web services stack and WebSphere Application Server Version 5.0
- Emerging Web services technologies – WSFL, WSIL, WSUI, etc.
- Developer support – IBM Web Services Toolkit Version 3.0, resources, tools, products, Web sites, Business Partner support, education, etc.

SEPTEMBER 30

Presenter

Willy Farrell, Sr. Software Engineer, IBM

Willy Farrell is a senior software engineer in the IBM Developer Skills Program. As part of the developerWorks team, he provides relevant technical information and insight to developers on the latest e-business and industry trends through Web content, articles, speaking engagements and consulting to faculty at IBM Scholars Program member universities.

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BIO: Michael Champion is a research and development specialist at Software AG, working out of Ann Arbor, Michigan. He has been a software developer for 20 years, working primarily in the area of middleware for client/server document and image management systems. He has been active in the World Wide Web Consortium's Document Object Model (DOM) Working Group for more than three years and was an editor of the core XML portion of the DOM Level 1 Recommendation. Michael is now cochair of the Web Services Architecture Working Group.

(WS10) The Seven Habits of Highly Effective Enterprise Service Buses (ESBs)

DAVE CHAPPELL, SONIC SOFTWARE

Thursday, October 2, 1:00 p.m. - 1:50 p.m.

Gartner, Inc., has defined a new class of application integration infrastructure called an enterprise service bus (ESB). An ESB is a standards-based integration product that reliably connects and orchestrates the interaction of hundreds of application endpoints spanning a global organization. Because of their significant differences from application server products and proprietary integration brokers, ESBs represent a compelling third option for businesses in the market for integration technology.

What is an ESB? How can you properly distinguish this new product category and compare it with other offerings on the market? Dave Chappell, chief technology evangelist for Sonic Software, will examine the seven key characteristics of an ESB in depth.



BIO: Dave Chappell is vice president and chief technology evangelist for Sonic Software, the leading provider of integration products and services for the real-time enterprise. Dave is coauthor of *Java Web Services, Professional ebXML Foundations*, and *The Java Message Service*, and a frequent contributor to *Web Services Journal*.

Java Technology Track

Java Technology Track



The Java Track features presentations aimed at the beginner, as well as the seasoned Java developer.

Sessions will explore the whole spectrum of Java, focusing on J2EE, application architecture, EJB, and J2ME. In addition the track will cover the latest in SWT, Ant, JUnit, open source frameworks, as well as an in-depth look into the vital role that Java is playing in building and deploying Web services.

Sessions will focus on:

- Enterprise Java 1.4
- Ant Applied in "Real World" Web Services
- Developing Application Frameworks with SWT
- Empowering Java and RSS for Blogging
- JUnit: Testing Your Java with JUnit
- JDK1.5: The Tiger
- Simplifying J2EE Applications
- Using IBM's Emerging Technologies Toolkit (ETTK)
- Apache Axis
- Meeting the Challenges of J2ME Development
- Integrating Java + .NET
- Squeezing Java

(JV1) The Next Phase in the Evolution of J2EE

BILL ROTH, SUN MICROSYSTEMS

Tuesday, September 30, 9:00 a.m. - 9:50 a.m.

Did you know that J2EE has developed to the point where companies can bring in millions of dollars a year selling J2EE-based application systems? This session will discuss the original plans for the evolution of the J2EE marketplace, and the companies that are capitalizing on completing one of the final stages of this process.



BIO: Bill Roth is currently technology evangelist for E.piphany. He previously was group marketing manager for J2EE at Sun Microsystems, and is a member of the *Java Developer's Journal* editorial board.

(JV2) Ant Applied in "Real World" Web Services

KYLE GABHART, GABHART CONSULTING

Tuesday, September 30, 3:00 p.m. - 3:50 p.m.

A defined and easily repeatable process is one of the most necessary but often least used aspects of good software development. A defined build process ensures that your project's software is built, deployed, and tested identically every time. Without this type of control and predictability, valuable time is often lost chasing down bugs that don't exist or rejecting solutions that were only partially implemented.

Apache's Ant is a powerful scripting tool that enables developers to define and execute routine software development tasks using the simplicity and extensibility of XML. Ant provides a comprehensive mechanism for managing software development projects, including compilation, deployment, testing, and execution. In addition, it is compatible with any IDE or operating system.



BIO: Kyle Gabhart is an independent consultant, mentor, and published author, specializing in J2EE, XML, and Web services technologies. He is a prolific writer, with his most recent work displayed on IBM's developerWorks Web site in the "J2EE Pathfinder" column. Kyle is highly regarded as a dynamic and enthusiastic public speaker with an innovative perspective on technology.

(JV3) Developing Applications with SWT

Tuesday, September 30, 4:00 p.m. - 4:50 p.m.

The Standard Widget Toolkit (SWT) provides a common, OS-independent, Java-based API for widgets and graphics implemented in a way that allows tight integration with the

underlying native window system. The Eclipse project and the various tools that plug in to it use SWT for presenting information to the user. This session will provide a general overview of SWT and introduce its basic concepts and classes. See www.sys-con.com/edge for further details on this session.

(JV4) Empowering Java and RSS for Blogging

JASON BELL, IT DEVELOPMENT MANAGER

Wednesday, October 1, 9:00 a.m. - 9:50 a.m.

One of the fastest growing areas over the last few years is the blogging community. The ease with which you can post and publish information has enabled everyone to become his or her own publisher. One of the powers of blogs has been the syndication of data via the RSS (XML) protocol. Discover how you can easily produce and consume RSS feeds within your Java applications for wider appeal and hook into JavaBlogs.



BIO: Jason Bell is Java developer and IT development manager for a B2B portal in the UK. He also contributed to a number of open source projects and is an advocate of everyone reading the API docs.

(JV5) JUnit: Testing Your Java with JUnit

Wednesday, October 1, 3:00 p.m. - 3:50 p.m.

A critical measure of the success of software can be found in whether or not it executes successfully. Equally important, however, is whether or not that software does what it was intended to do. JUnit is an open source testing framework that provides a simple means for developers to define their intentions for how their software should work. JUnit then provides test runners that process your intentions and verify that your code performs as intended. The result is software that not only works, but works in the correct way. See www.sys-con.com/edge for further details on this session.

(JV6) JDK 1.5: The Tiger

CALVIN AUSTIN, SUN MICROSYSTEMS

Wednesday, October 1, 4:00 p.m. - 4:50 p.m.

Java 1.5 is the next major release of Java and with it comes a whole host of new enhancements and additions to the language. 1.5 promises a lot. Attend this session and discover the wonders that await the Java community.

BIO: Calvin Austin is the lead engineer on Sun Microsystems' port of the Java 2 Platform, Standard Edition (J2SE) to the Linux OS. He has been with Java Software since its inception six years ago. Calvin is the specification lead for JSR-176, which defines the J2SE 1.5 ("Tiger") release contents.

(JV7) Squeezing Java

ALAN WILLIAMSON, JAVA DEVELOPER'S JOURNAL

Wednesday, October 1, 5:00 p.m. - 6:00 p.m.

Java is a very powerful language, and while it offers the developer a rich array of tools, the fundamentals mustn't be overlooked. Improving your code at the core layer will result in great improvements in efficiency and produce (hopefully) fewer bugs. We'll look at the "do's and don'ts" of programming and learn lots of hints and tips that will accelerate your Java coding.



BIO: Alan Williamson is editor-in-chief of *Java Developer's Journal*. In his spare time he holds the post of chief technical officer @ n-ary (consulting) Ltd, one of the first companies in the UK to specialize in Java at the server side. Reach him at alan@n-ary.com (www.n-ary.com) and rumor has it he welcomes all suggestions and comments!

(JV8) Leveraging AOP in JBoss

MARC FLEURY, PH.D., JBOSSE

Wednesday, October 1, 5:00 p.m. - 6:00 p.m.

This session will explore the JBoss Aspect Oriented Programming (AOP) framework. It will define AOP and discuss its implementation in the JBoss application server, showing



how a microkernel combined with simple AOP technology can enable the creation of generalized containers. From small single purpose embedded controls to large enterprise systems, JBoss middleware enables easy system assembly by AOP and aspects. This session will focus on the aspects themselves, moving beyond the logging examples to cover all the standard aspect technology that has been present in JBoss for the past 3 years, including persistence, caching, invocations, transactions and acidity as aspectized components that can be reused in applications.



BIO: Marc Fleury, PhD, is chief technical officer for Telkel, Inc. He is the leader of the JBoss project (www.jboss.org/), which is an open source EJB server. Marc is based out of Silicon Valley and founded the project upon leaving Sun Microsystems. He was one of the main developers behind JBoss 1.0 and 2.0., and is the "keeper" of the project. Marc is a graduate of the French Ecole Polytechnique with a degree in mathematics and holds a PhD in physics for work done at MIT as a visiting scientist.

(JV9) Apache Axis

CHRIS HADDAD, COBIA COMMUNICATIONS

Thursday, October 2, 11:00 a.m. - 11:50 a.m.
Apache Axis is the very popular SOAP engine that includes everything you need to start producing Web services. Discover just what Axis is, and how you can utilize the power of this free engine to kick start your Web services.

(JV10) Meeting the Challenges of J2ME Development

Thursday, October 2, 1:00 p.m. - 1:50 p.m.

Synchronization is an important component in building mobile applications that can operate offline to review, capture, or change data that will later be reconciled with enterprise data on a central server. Today, distributed clients with limited memory and intermittent connectivity, such as cellular phones and PDAs, are increasingly used to access multiple server-side enterprise applications and data. This presentation will demonstrate a flexible yet powerful framework for managing data and synchronization in the Java environment (J2EE, J2ME/pljava). See www.sys-con.com/edge for further details on this session.

(JV11) Integrating Java + .NET

DEREK FERGUSON, .NET DEVELOPER'S JOURNAL

Thursday, October 2, 3:00 p.m. - 3:50 p.m.
Contrary to popular belief, you can still use Java (J#) on Microsoft's .NET platform. While the flavor may not be the latest JDK we know and love, J# offers other goodies and trinkets to accelerate your .NET solution. Find out what they are.



BIO: Derek Ferguson is chief technology evangelist for Expand Beyond Corporation (www.xb.com), the worldwide leader in mobile software for enterprise management. He is also editor-in-chief of *.NET Developer's Journal* and author of the book *Mobile .NET* (Apress).

(JV12) Simplifying J2EE Applications

Thursday, October 2, 4:00 p.m. - 4:50 p.m.

TODD LAUINGER, BEST BUY CO., INC.

J2EE is a large, complex specification for server-side, Web-enabled application development. Over the past few years, I have led many teams through the J2EE jungle, trying to steer them away from the hype and keep them focused on delivering rock-solid end user applications. The purpose of this tutorial is to discuss a variety of tips, tricks, and lessons I have learned so you and your teams can develop J2EE applications better, faster, and simpler than before.



BIO: Todd Lauinger is currently employed as a software construction fellow at Best Buy Co., Inc. He has over 10 years of experience developing large, mission-critical software systems for engineering and business organizations. Todd is also an experienced instructor, mentor, conference speaker, and published author, and has a master's degree in software engineering.

Java University Program



Sun
microsystems

October 1

October 2

SUN MICROSYSTEMS

Architecting Web Services with Java 2 Platform, Enterprise Edition (J2EE)

Wednesday, October 1, 2003

Who Should Attend

Developers and software architects with experience using the Java programming language, and some knowledge of XML who are interested in discovering how Java technology can deliver Web services for multi-tier applications.

Overview

Web services provide an excellent mechanism to create integrated architectures for B2B solutions. The Java 2 Platform, Enterprise Edition (J2EE) is an excellent API for creating and deploying Web services. When used in conjunction with the Java technology APIs for XML (JAX family of APIs), powerful and adaptable architectures can be created that offer all the advantages of J2EE technology including portability, scalability and interoperability. The core of this seminar deals with investigating the JAX family of APIs and how they can be used to create Web services.

Benefits

- Understand Web services and their use in the enterprise
- Identify how servlets and JavaServer Pages (JSP) can be used with Web services
- Recognize the use of the Simple Object Access Protocol (SOAP)
- Be able to utilize the Java technology API for XML Messaging (JAXM) with SOAP
- Recognize the Java technology API for XML Binding (JAXB) and its use in the middle tier
- Learn about the Java technology API for XML Registries (JAXR)
- Investigate the Java technology API for XML-based Remote Procedure Calls (JAX-RPC)

Java 2 Platform: Architect Certification Fast Path

Thursday, October 2, 2003

Who Should Attend

This session is designed for enterprise application architects, system analysts, experienced technologists and developers using Java technology seeking certification as an architect for the Java 2 Platform, Enterprise Edition (J2EE).

Overview

Many of the solutions in today's "Net economy" are, or soon will be, developed using the Java 2 Platform, Enterprise Edition (J2EE) architecture. Gaining recognized competency architecting J2EE platform-based solutions is vital to your success as an architect, reaffirms your value and increases your career opportunities.

Benefits

- Receive an intensive review of the topics covered on the Sun Certified Enterprise Architect for the Java 2 Platform, Enterprise Edition Exam.
- Increase your understanding and knowledge of successfully architecting solutions using J2EE technology.
- Understand the system qualities: scalability, availability, extensibility, performance and security.
- Understand trade-offs of different architectural choices as they pertain to system qualities.
- Describe the benefits and weaknesses of potential J2EE technology-based architectures.
- State benefits and costs of persistence management strategies.
- Review real-world case studies of J2EE technology-based architecture.
- Prepare for the exam by reviewing practice tests and questions.

Go to www.sys-con.com/edge for more details about the Java University Program

Register Online at WWW.sys-con.com/edge

SPECIAL INSERT:
Web Services Edge West Conference & Expo Sept. 30 - Oct. 2, 2003

.NET Track

.NET Track



Presentations will explore the Microsoft .NET platform for Web services. To the

average developer, it represents an entirely new approach to creating software for the Microsoft platform. What's more, .NET development products – such as Visual Studio .NET – now bring the power of drag-and-drop, GUI-based programming to such diverse platforms as the Web and mobile devices.

Sessions will focus on:

- ASP.NET
- Security
- VB.NET
- .NET and XML
- Smart Device Extensions for VS.NET
- Best Practices
- Shared Source CLI
- .NET Remoting
- Smart Devices in Health Care Settings
- Mobile Internet Toolkit
- ROTOR
- Portable .NET
- ASP.NET Using Mono
- Using WSE with IBM's WSTK
- GUI Applications Using Mono
- Portals – Windows SharePoint Services/SharePoint Portal Server
- Windows Server 2003 and IIS 6
- .NET and Java Interoperability
- Distributed .NET for Financial Applications
- Developing C# with Eclipse

(NT1) Using WSE 2.0

JOHN BRISTOWE, EMPOWERED SOFTWARE SOLUTIONS

Tuesday, September 30, 9:00 a.m. - 9:50 a.m.

Web Services Enhancements for Microsoft .NET (WSE) v2.0 is a class library that augments the .NET Framework to provide an implementation of advanced Web service specifications such as WS-Addressing, WS-Policy, WS-Security, WS-SecurityPolicy, WS-SecureConversation, and WS-Trust. This session highlights support for these specifications while examining many new features, which include an extensible framework for policy enforcement and SOAP messaging. Take advantage of the future by learning how to incorporate WSE v2.0 in your applications quickly and easily.



BIO: John Bristowe is a senior solution developer architect with Empowered Software Solutions (ESS), a .NET consulting firm based in Burr Ridge, Illinois. An active speaker and author of several .NET and XML Web service-related articles, John is also a volunteer for the International .NET Association (INETA) Infrastructure Committee and various GotDotNet workspaces. John is presently focused on the .NET Framework and XML Web service plumbing and protocols.

(NT2) Smart Devices in Health Care Settings

BRAD MCCABE, INFRAAGISTICS

Tuesday, September 30, 3:00 p.m. - 3:50 p.m.

Mobile devices are gaining popularity and functionality every day in the enterprise. When you combine this with .NET's unparalleled support for mobile computing, via Tablets, PDAs, and phones, you know that this is a topic not to be missed. In this ses-

sion, Infragistics' Brad McCabe will discuss all of these .NET mobility technologies and how they are being used in organizations around the globe today and how you can apply these technologies to your enterprise.



BIO: Prior to joining Infragistics, Brad McCabe served as systems architect for the network solutions development team at Verizon Communications. Concurrently, Brad held the position of lead .NET evangelist within Ajilon Consulting responsible for content and delivery of material for the national Inside .NET tour. Brad has been working as a senior developer and a software engineer, and his current responsibilities include developing reference applications and working with enterprise customers on project implementation.

(NT3) Using the Mobile Internet Toolkit

JON BOX, QUILGY

Tuesday, September 30, 4:00 p.m. - 4:50 p.m.

The Microsoft Mobile Internet Controls Runtime (previously known as the Microsoft Mobile Internet Toolkit) is one of the most exciting technologies in mobile computing today. By adapting to the unique characteristics of a mobile Web client at runtime, this tool provides unparalleled flexibility for the creation of mobile Web applications. In this session, Quilgy's Jon Box will guide you through the fundamentals of using this technology to create your own .NET applications.



BIO: Jon Box, a solutions architect at Quilgy (www.quilgy.com), has advanced experience in multiple technologies with a solid background in infrastructure, application development, data access, and a host of other technologies. He has served in diverse roles as an architect, trainer, author project manager and general manager at Quilgy, where he is currently a part of Quilgy's Atomic team. His current activities include authoring and developing advanced .NET training courses and technical content for the Atomic Web site. Jon is a Microsoft regional director for Memphis and serves on the MSDN Customer Council. He is a noted speaker on Microsoft emerging technologies, an active participant in the Memphis technology community, and founded the Memphis .NET User Group (www.memphisdot.net). In addition, Box has served as a technical editor on several books, including *An Introduction to Object-Oriented Programming with Visual Basic .NET*.

(NT4) Introduction to ROTOR

TED NEWARD, DEVELOPMENTOR

Wednesday, October 1, 9:00 a.m. - 9:50 a.m.

Microsoft's Shared Source CLI (also known as ROTOR) is the only officially supported CLI from Microsoft that will run on non-Windows platforms. For those interested in truly understanding the inner workings of the .NET platform, DevelopMentor's Ted Neward will present this introduction to the technology that lets you "look under the hood."



BIO: Ted Neward is an independent software development architect and mentor in the Sacramento, California area. He is the author of a number of books, including *Server-Based Java Programming* and the forthcoming *Effective Enterprise Java and SSCLI Essentials*, and coauthor of *C# In a Nutshell* with Peter Drayton and Ben Albahari. He is also an instructor with DevelopMentor, where he teaches and authors both the Java and .NET curriculum. He speaks frequently for technology user groups, and is the writer of technical papers for www.java4geeks.com and www.dlgeeks.com. He currently labors on behalf of the University of California, Davis, architecting a rebuild of the Davis Accounting and Financial Information Services software system.

(NT5) Using Portable.NET

ADAM BALLAI, DOTGNU DEVELOPER

Wednesday, October 1, 3:00 p.m. - 3:50 p.m.

DotGNU Portable.NET forms the basic .NET compatibility support in the DotGNU framework. The goal of the project is to allow existing .NET developers to smoothly migrate to DotGNU and still remain compatible. The platform includes compilers, a runtime engine, and class libraries. Portable.NET has a number of extras to offer, like TreeCC, Web services support, generic unrollers, and so on. The compiler suite currently supports C#, C, Java, and VB.NET. A JScript interpreter, portable WinForms, system. Drawing, and ADO.NET are in usable stages. And all this is portable to a variety of hardware and operating systems.

(NT6) ASP.NET with Mono

DEREK FERGUSON, EXPAND BEYOND

Wednesday, October 1, 4:00 p.m. - 4:50 p.m.

One of Mono's most compelling features is its ability to run ASP.NET Web sites on platforms other than Windows and IIS. In this session, you'll learn how to create and host such sites, as well as the unique advantages that Mono offers in this space.



BIO: Derek Ferguson is chief technology evangelist for Expand Beyond Corporation (www.xb.com), the worldwide leader in mobile software for enterprise management. He is also editor-in-chief of *.NET Developer's Journal* and author of the book *Mobile .NET* (Apress).

(NT7) Using WSE with IBM's WSTK

DAVID WHITE, MICROSOFT

Wednesday, October 1, 5:00 p.m. - 6:00 p.m.

Achieving WS-I style interoperability between Java and .NET is not yet as easy as it should be. Standards that have only recently been ratified have not been completely implemented and documented by all vendors. In this session, you will learn how to create .NET clients that can communicate securely with Java Web services and vice versa.

BIO: David White is the architectural evangelist for the Great Lakes District for the Automotive Vertical. He has more than 13 years' enterprise experience across many disparate platforms. After spending time working on enterprise mainframe applications on MVS he moved to the Unix/VAX arena and then on to the Microsoft arena. He has used almost all the major development paradigms over time (J2EE, DNA, CORBA, etc.) and because of this advises customers on technology decisions related to development and architecture with regards to Microsoft products and how they fit into the customers overall architecture. He has been with Microsoft now for over 5 years.

(NT8) Success Story: Eiffel, .NET, and Design by Contract for the Financial Industry

BERTRAND MEYER, EIFFEL SOFTWARE & ETH ZURICH

Thursday, October 2, 9:00 a.m. - 9:50 a.m.

The financial industry requires ever higher guarantees of quality and productivity to produce the applications that the business demands, and deliver them on time. Using a combination of leading-edge technologies, AXA Rosenberg was able to capitalize on the best of software engineering to satisfy demanding market needs. A combination of .NET, the Eiffel language and method, and the techniques of Design by Contract enables the company to stay ahead of its user needs. This presentation discusses the challenges encountered and how the retained technical solutions enable the company to meet them; it concludes with an outlook of the most promising avenues for future development.



BIO: Bertrand Meyer is founder and CTO of Eiffel Software (Santa Barbara), professor of software engineering at the Swiss Federal Institute of Technology (ETH), and an adjunct professor at Monash University in Australia. He is one of the pioneers of object technology and author of several award-winning books, including *Object-Oriented Software Construction*, one of the best sellers in the field.

(NT9) .NET IDEs

Thursday, October 2, 11:00 a.m. - 11:50 a.m.

Visual Studio .NET is, by far, the best-known IDE for creating .NET-based software. There are, however, several alternatives out there for .NET developers looking to keep their options open. In this session, *.NET Developer's Journal* editor-in-chief Derek Ferguson will guide you through the many choices you can make. See www.sys-con.com/edge for further details on this session.

(NT10) Windows SharePoint Services

Thursday, October 2, 1:00 p.m. - 1:50 p.m.

SharePoint services allow a new level of collaboration for workers in information-focused pursuits. The newest version of the SharePoint Portal server is, in fact, actually built 100% in managed .NET code. In this session, you will learn how to create sites using SharePoint Services and C#. See www.sys-con.com/edge for further details on this session.

(NT11) BizTalk 2004

Thursday, October 2, 3:00 p.m. - 3:50 p.m.

BizTalk 2004 is the key Microsoft solution for business orchestration. If your organization has a multitude of processes that must be coordinated, and/or if you have many automated processes that you share with your business partners, then you must attend this session to learn what BizTalk can do for you! See www.sys-con.com/edge for further details on this session.



September 30, 2003

Join Russ as he shows you
how to use Visual Studio .NET

INTRO TO WEB SERVICES USING VS.NET

One of the key ideas behind the .NET strategy is the concept of software as a service, or in short, Web services. This session will explain what a Web service is and provide an overview of its related technologies like XML, SOAP, and UDDI. We will demonstrate how the .NET Framework makes it easy to implement them for new and existing applications. This session will also provide concrete best practices for building XML Web services using Visual Studio .NET. We'll answer many common questions like: How will my Web service scale? How can my XML Web services enable interoperability with Web services from other vendors as well as within my own organization? We'll delve into building highly reliable and secure Web services. Also, we will discuss issues such as dealing with complex data types using WSDL (Web Services Description Language), as well as securing SOAP messages using encryption. We'll see how developers can use enterprise-level XML Web services to simplify customer solutions.



ADVANCED WEB SERVICES USING ASP.NET

This session will explore some of the more advanced areas of SOAP in ASP.NET's support for Web services. ASP.NET Web services are the preferred way for Web developers to expose Web services on the Internet. The goal is quick, easy, and high-performing SOAP services. We will look at how to use the SOAP extension classes to create some very interesting applications on top of the core SOAP architecture found within the .NET Framework. For instance, you can implement an encryption algorithm or screen scraping on top of the Web service call. We'll dig into more advanced topics, explore the SOAP headers, and see ways to ensure security in our Web services.

.NET REMOTING ESSENTIALS

Microsoft .NET Remoting is the .NET technology that allows you to easily and quickly build distributed applications. All of the application components can be on one computer, or they can be on multiple computers around the world. .NET Remoting allows client applications to use objects in other processes on the same computer or on any other computer to which it can connect over its network. During this presentation we will discuss what you need to know to get started with .NET Remoting. We will talk about how .NET Remoting compares with DCOM, how to host remoted objects in a variety of applications, how to call remoted objects from a client application, how to control the lifetime of remoted objects, and how to secure remoting applications.

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OS X Track

OS X Track

Mac OS X

OS X represents a new wave of operating systems. It combines the ease of use of a Mac with the power of Unix. Sessions in this track will highlight the use of the Mac OS X platform in applications and Web services development, deployment, and management.

Sessions will focus on:

- Introducing OS X Panther: What's New?
- Quick Applications Using AppleScript
- Enterprise Java and OS X
- Developing Web Services Using WebObjects
- Xserve: Ease of OS X and Power of Unix
- Introducing Quartz: 2D Graphics for Apple
- OS X for the Unix Developer
- Securing OS X Applications
- Java and OS X: A Perfect Marriage
- Programming Rich User Interfaces Using Cocoa



(OS1) Introducing OS X Panther: What's New?

Tuesday, September 30, 9:00 a.m. - 9:50 a.m.
The recently announced Mac OS X version 10.3, commonly known as Panther, boasts a number of key enhancements to the features and technologies introduced by OS X. This presentation looks at some of these new and exciting features and how they can benefit individuals and businesses considering deploying OS X.

(OS2) Programming Rich User Interfaces Using Cocoa

Tuesday, September 30, 3:00 p.m. - 3:50 p.m.
An evolution from NeXTStep APIs, Cocoa is a collection of advanced, object-oriented APIs for the development of OS X applications using Objective C and Java. Included in OS X is a set of Java classes that allows Java developers to build enriched multimedia applications based on the Cocoa framework. This presentation highlights the key benefits of the Cocoa application development model w.r.t. It also points out some areas where the Cocoa framework can provide the much-needed edge.

(OS3) Quick Applications Using AppleScript

Tuesday, September 30, 4:00 p.m. - 4:50 p.m.
A peer to the Aqua GUI, AppleScript is the language interface for Mac OS X. It can control and communicate between applications, databases, networks, and even remote Web services. AppleScript provides the technology needed for applications to automate workflow processes and extend the life of off-the-shelf products. Learn to build cross-applications using AppleScript Studio in this fast-paced introduction to AppleScript... scripting like you've never seen before.

(OS4) Java and OS X: A Perfect Marriage

Wednesday, October 1, 9:00 a.m. - 9:50 a.m.
Mac OS X sports a new look - not just a new look-and-feel on the outside, but also a new look on the inside. Mac OS is built on top of a BSD Unix-based core. An exciting aspect of the Mac OS X release is the integration of the Java 2 Platform with OS X. This presentation introduces OS X to users, focusing on Apple's Java implementation, platform support, Web browser support, and the tools that are available to help developers build great-looking Java applications for OS X.

(OS5) Enterprise Java and OS X

Wednesday, October 1, 3:00 p.m. - 3:50 p.m.
With built-in support for the Java 2 Platform in OS X operating systems and the evolution of the OS X Server platform, OS X will be considered a platform for not only developing and deploying rich-client applications but also for server-side applications. A number of options exist in this area. First and foremost is Apple's own WebObjects platform. In addition, OS X Server introduced bundling Apache Tomcat Server with the OS X

Server and it was recently announced that Apple will bundle the JBoss Application Server with the new version of OS X Server. In addition to these "bundled" choices, a number of third parties have announced support for their own application servers for the OS X platform. This session previews some of the supported enterprise Java-based server-side technologies for the OS X platform.

(OS6) Developing Web Services Using WebObjects

Wednesday, October 1, 4:00 p.m. - 4:50 p.m.
WebObjects is Apple's framework and tools for rapid application development and deployment of server-side Java applications. Version 5.2 brings support for standards-based Web services. It allows developers to build or use standards-based Web services without getting into the details of writing low-level SOAP, XML, or WSDL. The environment includes a set of tools that enable code-free generation, configuration, and testing of Web services from existing data assets. This session previews some of these changes and walks attendees through the "really rapid" Web services development environment - WebObjects.

(OS7) Cocoa, Carbon, Java: Application Frameworks for OS X

Wednesday, October 1, 5:00 p.m. - 6:00 p.m.
From a development perspective, OS X provides multiple application frameworks. Choice is good, but it's important to know when to choose what. This presentation will provide guidelines on when to use which framework. Carbon is the traditional Mac OS API and emphasizes complete backward compatibility. Cocoa is a development environment for OS X "native" applications and represents a new framework for the development of OS X applications. Another key consideration is Apple's support for the latest version of the Java platform. Java is treated as a first-class citizen in OS X, and developers are expected to build and deploy cross-platform applications on this key framework.

(OS8) Securing OS X Applications

Thursday, October 2, 9:00 a.m. - 9:50 a.m.
Whether you're developing a banking application or just a graphics-based engineering application, security is an integral aspect of design and development. When applications are available beyond the firewalls, you must consider the additional challenges of securing your enterprise and customer data. Internally, you have to worry about potential misuse of rights. When it comes to OS X development, securing applications is no different. The operating system provides built-in support for LDAP directory services, making it easier to maintain consistent user profiles, and provides security APIs to a broad set of applications. This presentation provides a technology overview and a security checklist.

(OS9) Xserve: Ease of OS X and Power of Unix

Thursday, October 2, 11:00 a.m. - 11:50 a.m.
Xserve combines the ease of Mac OS X, the power of Unix, and the reliability of a server-grade solution. A one-of-a-kind deployment environment, Xserve promises to do for the production server's landscape what iBooks, iMacs, Power Macs, and PowerBooks have done for the desktop landscape - make it simple to use and easier to deploy. This presentation highlights the various platform-level capabilities of Xserve, including OS X Server.

(OS10) OS X for the Unix Developer

Thursday, October 2, 1:00 p.m. - 1:50 p.m.
The heart of a great-looking OS X operating system is a Unix Core. Unix developers should find themselves at home with the OS X platform. The same command-line utilities still work; however, you get ease-of-use as well. While you'll always have the flexibility of reverting to scripts and command-line tools, in a number of cases you won't need to. And even if you do, you can then make it simple for others by making the script available as a tool to others. This session looks at OS X from a Unix developer's perspective, highlighting key similarities and differences between the two environments.

(OS11) Introducing Quartz: 2D for Apple

Thursday, October 2, 3:00 p.m. - 3:50 p.m.
A key highlight of OS X architecture is Quartz, the lightweight window server and PDF-based 2D graphics-rendering library. Quartz provides crisp graphics, and anti-aliased fonts, and blends 2D, 3D, and QuickTime content together with transparency and drop shadows. Quartz Extreme boosts the performance of the Quartz rendering system with hardware-accelerated graphics. Developers get access to the rich functionalities available in Quartz through the Quartz 2D Core Graphics API for the Carbon framework and NSView, NSImage, and NSBezierPath classes for Cocoa developers. This session provides a technical introduction to Quartz and highlights application scenarios in which developers can utilize these rich capabilities.

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4

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☐ Database Administrator/Programmer
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☐ Financial Services ☐ Architecture/Construction/Real Estate
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☐ Transportation ☐ Other (please specify) _____
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C. Total number of employees at your location and entire organization (check all that apply):

	Location	Company
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500 – 999	04 <input type="checkbox"/>	04 <input type="checkbox"/>
100 – 499	05 <input type="checkbox"/>	05 <input type="checkbox"/>
100 or less	06 <input type="checkbox"/>	06 <input type="checkbox"/>

D. Please indicate the value of communications and computer products and services that you recommend, buy, specify, or approve over the course of one year:

- ☐ \$10 million or more ☐ \$10,000 – \$99,999
☐ \$1 million – \$9.9 million ☐ Less than \$10,000
☐ \$500,000 – \$999,999 ☐ Don't know
☐ \$100,000 – \$499,999

E. What is your company's gross annual revenue?

- ☐ \$10 billion or more ☐ \$1 million – \$9.9 million
☐ \$1 billion – \$9.9 billion ☐ Less than \$1 million
☐ \$100 million – \$999 million ☐ Don't know
☐ \$10 million – \$99.9 million

F. Do you recommend, specify, evaluate, approve or purchase wireless products or services for your organization? 01 ☐ Yes 02 ☐ No

G. Which of the following products, services, and/or technologies do you currently approve, specify or recommend the purchase of?

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☐ Client Side Hardware
☐ Wireless Device Hardware
☐ Databases
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☐ Web Testing Tools
☐ Modeling Tools
☐ Team Development Tools
☐ Installation Tools
☐ Frameworks
☐ Database Access Tools / JDBC Devices
☐ Application Integration Tools
☐ Enterprise Development Tool Suites
☐ Messaging Tools
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Question 1 (Information Modeling)

Which of the following is the *best* method for preventing any derivation-by-restriction from being used in place of the Message type?

- A.

```
<xsd:complexType name="Message" abstract="true">
  <xsd:sequence>
    <xsd:element name="Date" type="xsd:string"/>
    <xsd:element name="Title" type="xsd:string"/>
    <xsd:element name="GenericName" type="xsd:string"/>
    <xsd:element name="Manufacturer" type="xsd:string"/>
    <xsd:element name="Link" type="xsd:anyURI"/>
  </xsd:sequence>
</xsd:complexType>
```
- B.

```
<xsd:complexType name="Message" final="restriction">
  <xsd:sequence>
```

```
<xsd:element name="Date" type="xsd:string"/>
<xsd:element name="Title" type="xsd:string"/>
<xsd:element name="GenericName" type="xsd:string"/>
<xsd:element name="Manufacturer" type="xsd:string"/>
<xsd:element name="Link" type="xsd:anyURI"/>
</xsd:sequence>
</xsd:complexType>
```

C.

```
<xsd:complexType name="Message" block="restriction">
  <xsd:sequence>
    <xsd:element name="Date" type="xsd:string"/>
    <xsd:element name="Title" type="xsd:string"/>
    <xsd:element name="GenericName" type="xsd:string"/>
    <xsd:element name="Manufacturer" type="xsd:string"/>
    <xsd:element name="Link" type="xsd:anyURI"/>
  </xsd:sequence>
</xsd:complexType>
```

Select one answer.

Explanation: Choice C is the correct answer. A schema author can control which derivation and substitution groups may be used in documents that comply with the schema. Replacement by derived types is controlled with the block attribute in the type definition.

In this case, `block="restriction"` is used to block any derivation-by-restriction from being used in place of the Message type.

`block="extension"` is used to block derivations-by-extensions from being used in place of a type. `block="all"` is used to block both derivation-by-restriction and derivations-by-extensions from

being used in place of a type.

A `blockDefault` attribute (whose value can be one of the values allowed for the block attribute) can be attached to the schema element to define substitution rules for all type definitions contained in the schema.

The difference between final and block is that the final attribute controls derivations only, not substitution. A `finalDefault` attribute on the schema element can be used to define derivations rules for all type definitions contained in the schema.

Question 2 (XML Processing)

A purchase order contains multiple line items. Which of the following is the correct method for displaying the string "Supervisor Approval Required!" on purchase orders that contain 10 or more items?

- A.

```
<xsl:template match="PurchaseOrder">
  <xsl:if test="LineItem[number() > 10]">
    <xsl:text>Supervisor Approval Required! </xsl:text>
  </xsl:if>
  <xsl:apply-templates/>
</xsl:template>
```
- B.

```
<xsl:template match="Purchase Order">
  <xsl:if test="count(LineItem) > 9">
    <xsl:text>Supervisor Approval Required! </xsl:text>
  </xsl:if>
  <xsl:apply-templates/>
</xsl:template>
```
- C.

```
<xsl:template match="Purchase-Order">
  <xsl:if test="LineItem[position() > 10]">
    <xsl:text>Supervisor Approval Required! </xsl:text>
```

AUTHOR BIO

Joel Amoussou is founder and chief learning architect of XMLMentor.Net, where he develops blended learning solutions for building and assessing XML skills. Joel is the author of an XML exam simulator and teaches live e-learning courses on XML certification.

```
</xsl:if>
<xsl:apply-templates/>
</xsl:template>
```

Select one answer.

Explanation: Choice B is the correct answer. The count function returns the number of nodes in the argument node set. The position function returns a number equal to the context position from the expression evaluation context.

Question 3 (Architecture)

Two business partners agree to exchange business documents with SOAP1.2 using an XML Schema.

A SOAP1.2-compliant node used by one of the companies generates a fault with a Value of Code set to "env:VersionMismatch".

Which of the following statements correctly explains why the fault was generated?

- A. The local name did not match the SOAPMessage element information item.
- B. The SOAP node received a message that failed to validate against the latest version of the XML Schema.
- C. The root element information item of the message did not match the Envelope element information item.
- D. The Envelope element information contained a SOAP version attribute information item with a value of "1.1".

Select one answer.

Explanation: C is correct. The SOAP1.2 Envelope element information item has a local name of Envelope and a namespace name of "http://www.w3.org/2003/05/soap-envelope".

If the namespace, local name, or both do not match the Envelope element information item, a VersionMismatch fault code is generated.

Question 4 (XML Rendering)

An airline is implementing an XML-based publishing system for the technical documentation used to maintain and operate its aircrafts.

Aircraft technicians and pilots will access the technical documentation in e-book format using portable devices. The e-books will be in an XML format defined by the Open E-Book Forum. The engineering department will access the documentation in HTML format on the airline's intranet with Web browsers.

In overseas airports without online access, a printed version of the technical documentation will be used.

Which of the following is *least* likely to be required by this architecture?

- A. XSLT and CSS will be used together to

render the XML documents in Web browsers.

B. CSS will be used to transform the XML documents into HTML.

C. XSL Formatting Objects will be used to produce an output format suitable for presentation in print.

D. CSS will be used to format the XML documents for presentation in print.

Select one answer.

Explanation: Choice B is the correct answer. The requirement for print can be satisfied by using XSL formatting objects to transform the XML data into a print-ready format like PDF. CSS is not transformational and only adds formatting properties to the source tree. CSS supports the formatting of XML documents for paged media like print. In CSS2.0, an @page rule is used to specify the dimensions, orientation, and margins of a page box.

The following example sets the width to be 8.5in and the height to 11in:

```
@page {
    size: 8.5in 11in;
}
```

Margins for left, right, and first pages, respectively:

```
@page :left {
    margin-left: 3cm;
    margin-right: 2cm;
}
```

```
@page :right {
    margin-left: 2cm;
    margin-right: 3cm;
}
```

```
@page :first {
    margin-top: 8cm
}
```

Question 5 (Testing & Tuning)

Consider the following stylesheet in a part.xml file:

```
<!--part.xml -->
<xsl:template match="Part">
    Part Number: <xsl:value-of
select="@PartNumber" />
</xsl:template>
```

A description.xml file also contains a template for the "Part" element and imports the part.xml file as follows:

```
<!--description.xml -->
<xsl:import href="part.xml" />
<xsl:template match="Part">
    Description: <xsl:value-of
select="Description" />
```

```
</xsl:template>
```

Which of the following XSLT elements provide a way to display part numbers before their corresponding description?

```
A. <!--description.xml -->
<xsl:import href="part.xml" />
<xsl:template match="Part">
<xsl:apply-imports/>
Description: <xsl:value-of
select="Description" />
</xsl:template>
```

```
B. <!--description.xml -->
<xsl:import href="part.xml" />
<xsl:template match="Part">
<xsl:apply-templates/>
Description: <xsl:value-of
select="Description" />
</xsl:template>
```

```
C. <!--description.xml -->
<xsl:import href="part.xml" />
<xsl:template match="Part">
<xsl:call-templates/>
Description: <xsl:value-of
select="Description" />
</xsl:template>
```

```
D. <!--description.xml -->
<xsl:import href="part.xml" />
<xsl:template match="Part">
<xsl:value-of select="apply-
imports"/>
Description: <xsl:value-of
select="Description" />
</xsl:template>
```

Select one answer.

Explanation: A is correct. According to XSLT precedence rules, template rules in the importing stylesheet take precedence over template rules in the imported stylesheet.

Therefore, the template rule in the description.xml file overrides the template rule in the part.xml file. However, the xsl:apply-imports element can be used to invoke the overridden template rule.

When a template rule matches a pattern, the template rule becomes the current template rule for the instantiation of the rule's template. When invoked with the xsl:apply-templates element, a template becomes the current template rule. This does not apply to the xsl:for-each element; the current template rule for the instantiation of the content of the xsl:for-each element is null.

The xsl:apply-imports processes the current node by invoking only template rules that have the same mode as the current template rule and are defined in an imported stylesheet.

~continued on page 50~



Using XML Schemas Effectively in WSDL Design

WRITTEN BY

CHRIS PELTZ &
MARK SECRIST

Achieve a higher degree of portability with these best practices

Developers are beginning to develop more sophisticated Web services, exchanging complex XML documents rather than simple parameter types. As this shift takes place, development teams begin to grapple with different approaches to designing these Web services interfaces through the use of WSDL. As we've worked with a number of these teams, we've begun to discover some important best practices that can be applied, particularly in the use of XML Schemas in a Web services design.

In this article, we will focus on four specific areas: XML Schema style, namespaces, XML and WSDL import for modularity, and use of schema types for platform interoperability. Through the use of these techniques, you will be able to achieve a higher degree of portability of your WSDL and XML Schemas and will realize improved reusability and interoperability between a broader collection of Web services platforms.

Design Style for Reusability and Portability

There are many ways to define an XML Schema that could be used to validate the same XML document instance. As you'll see, the design style used can impact the WSDL design and the resulting implementation classes. To better illustrate this point, consider the simple XML document in Listing 1. This might represent the kind of document submitted to a Web service for the purpose of obtaining a price quote on a list of computer parts.

As Listing 2 illustrates, a schema could be defined as one monolithic structure that closely resembles the actual XML document instance itself. While this schema will validate the document as desired, there are several potential issues in taking this approach. First, there are ambiguities in this schema that may impact the generation of helper classes on some platforms. For example, due to the fact that the complex types are unnamed, some platforms will generate the implementation helper class names as anonymous types. This can make it difficult for developers to make use of these helper classes during development.

Second, the elements of this schema are not very reusable. For example, what would happen if you wanted to define a similar schema to reflect the resulting quote response from the supplier? In this case, the "PartList" in the return document may be exactly the same. You could simply define a second document structure with "PartList" structures. However, due to the way most platforms generate helper classes, it's highly likely that unless you name these elements differently, there will be a clash between the two. One way to resolve this is to use two different namespaces, which we'll talk about shortly. Another way to resolve this is to refactor the schema structure so that

the "PartList" and "PartItem" elements can be used by both the request and the response documents. This is done by defining a separate complexType with a name such as "PartListType". In the definition for the document, you can then define an element of type "PartListType" with a name of "PartList".

In this example, we might also choose to refactor the CustomerDetails structure so that its components can be leveraged. A response document might have a corresponding element called "SupplierDetails". In this case, the common type could be called "OwnerDetailsType". The schema definition in Listing 3 shows our elements refactored for reuse and the types clearly named so that the resulting helper classes more closely reflect the element types they represent. This design style has the benefit of maximizing the potential for reuse by using type definitions. Another benefit of this technique is that you can selectively choose to expose the namespace of the elements in the resulting XML document. You'll see the value of this in the next section.

Using Namespaces Effectively

Notice in Listing 3 that we've also added the use of a namespace qualifier to the schema definition. XML Namespaces provide a scoping mechanism for a collection of elements or type definitions much like the package keyword works with Java. We've discussed the potential problem of defining two distinct document structures that each contained a PartList structure. If namespaces weren't used, attempting to reference either document's PartList would result in some confusion about which definition you meant. One strategy for resolving this is to define each document in a different schema, using a different namespace for each. The targetNamespace attribute of the opening schema definition allows us to specify what namespace the elements and types defined in the current schema will be bound to. We also defined a short reference name for this targetNamespace called supReq. Now, when we want to talk about the PartList representing the request, we can reference it with this prefix.

Another use for namespaces is to enable application of version control. This can be particularly important if you want to maintain multiple versions of the documents being exchanged by your Web service. While there are many different ways to manage versioning in schemas and WSDL documents, one advantage of using the namespace is that the XML Schema itself is enforcing the version control because a different version appears as a completely different namespace. Here are a few examples of how this could be done:

```
<schema targetNamespace="http://acme.com/supplier/
```

```
requestTypes_v1" ...
<schema targetNamespace="http://acme.com/supplier/
versions/1.0/requestTypes"
```

Until now, we've been talking about a schema that is defined in a single file. However, it may be the case that a schema is built from a set of common types shared among several schemas. For example, if we wanted to leverage the common types defined in the schema in Listing 3 between both the quote request and the response, we might define these common types in a separate schema as shown in Listing 4. The schema for the quote request can then import and reference these elements as shown in Listing 5. Note that in order to tie everything together, we have to define an additional namespace reference, which we called "common". While we refer to the common types with the newly defined name "common", we still refer to the types defined in the current schema using "supReq", which is the name associated with the targetNamespace for this schema.

One final thing to consider is whether you want your common types to have their own namespace or share the namespace of the schema they are imported into. This is controlled with the "elementFormDefault" attribute in the common types schema file. In our example schema in Listing 4, we assigned a value of "qualified", which means that any references to these definitions must be qualified by the namespace. If we assign this a value of "unqualified", the definitions will be imported without any namespace associated with the types. As a result, the types will inherit the namespace defined by the importing schema.

Extending Import to Enhance WSDL Reusability

WSDL also includes a robust import mechanism to enable Web services interfaces to be built in a modular fashion. We recommend defining the XML Schemas independently from the WSDL, using import to connect them together. This approach is usually easier to manage, especially if the schemas and WSDL are created by different development groups. In some cases, the XML Schemas might exist prior to the development of the Web services. Use of import can also increase the reusability of your schemas across various development projects.

First we need to address how to properly import a schema into a WSDL. This can be confusing because WSDL currently supports two mechanisms for doing this: `xsd:import` and `wsdl:import`. The WS-I Basic Profile recommends that `wsdl:import` only be used to import WSDL documents, while `xsd:import` should be used to import schemas. According to WS-I, here is an incorrect way to import our schema defined in Listing 5:

```
<definitions targetNamespace="http://acme.com/supplier/
definitions"...>
<wsdl:import namespace="http://acme.com/supplier/types"
location="http://acme.com/supplier/types.xsd"/>
...
</definitions>
```

The correct way:

```
<definitions
targetNamespace="http://acme.com/supplier/definitions"...>
```

```
<types>
<xsd:schema targetNamespace="http://acme.com/
supplier/types" ...>
<xsd:import namespace="http://acme.com/supplier/types"
schemaLocation="http://acme.com/supplier/types.xsd"/>
</xsd:schema>
</types>
...
</definitions>
```

You can use `wsdl:import` to separate your WSDL into modular components. As Figure 1 illustrates, you could put your XML Schemas in one file, the WSDL message abstractions in a second, and the service bindings in a third. The service bindings would import the message definitions using `wsdl:import` and the message definitions would import the schemas using `xsd:import`. This approach can greatly improve reusability of your components. For example, you could provide multiple service bindings for the same message types.

The next important issue to address is how to properly reference the schema types within the WSDL. The most common approach is to reference these types in the WSDL input and output message parts. In our example, the XML Schema might define a request for a quote for a supplier. This definition (identified by `types:QuoteRequest`) would then be referenced within the WSDL message part as follows:

```
<definitions targetNameSpace="http://acme.com/supplier/
definitions"
xmlns:types="http://acme.com/supplier/types">
<types>
<!-- import goes here -->
</types>
<message name="GetQuoteRequest">
<part name="QuoteRequest" element="types:QuoteRequest"/>
</message>
</definitions>
```

Notice in the above code that we specify a namespace of "http://acme.com/supplier/types" for the imported schema. When using the import statement, remember that the namespace of the imported file must be different than the file doing the importing. This is usually a good practice to follow, especially if you have broken your WSDL into multiple components. However, there may be times when you want the imported file to have the same namespace. WSDL 1.2 introduces a `wsdl:include` tag, which works similar to `xsd:include` allowing a single namespace to be shared across components.

The final piece of advice we wish to leave you with is about the importance of tools in this design process. A good tool can help in creating both the XML Schema types and the WSDL. We have found that a combination of tools is sometimes necessary to fulfill these requirements. For example, we use XMLSPY to design our schemas and CapeClear's WSDL Editor to import the schema and create the necessary WSDL message and service definitions. These tools can provide great value in the design and development of Web services.



Figure 1 • Separating WSDL into modular components

Platform Compatibility of Schema Types and Structures

If you're leveraging a Web services tool or platform in your development, you'll need to pay special attention to potential interoperability issues in the use of certain schema types and structures. What if a language doesn't support a specific data type or if multiple platforms have different meanings for the same data type? We will now turn our attention to how these differences can present challenges to Web services developers.

One of the first recommendations is to stick with simple types in your WSDL. However, even these types can pose potential interoperability problems. For example, while Java defines a char type, there is no mechanism to map a char to XML. Another example is the use of unsigned numerical types (e.g., xs:unsignedInteger). Languages such as C++ are able to handle these types, but Java does not currently include support for them. You should also avoid the use of data type restrictions in your schemas, because most languages do not support this capability. Finally, if you are working with decimal or float values, be sure to test for loss of precision across implementations.

Obviously, complexity increases as you move from simple to complex types. Use of arrays can pose a challenge, especially if you're using nested or multidimensional arrays. We also discovered interoperability issues in using a Java ArrayList or Vector to represent data collections. Instead, you should use literal arrays (e.g., String[]) to avoid any potential portability problems. Another example is the use of hashtables, which is supported by both .NET and Java. However, there is no guarantee that a java.util.HashMap will be properly unmarshalled to a Systems.Collections.Hashtable in the .NET platform.

Dates can also present some interoperability challenges, even between J2EE-based platforms. When designing an XML Schema, you would most likely use xsd:datetime to represent a date. In Java, you might be using either java.util.Date or java.util.Calendar for dates. Both of these Java types will map to xsd:datetime, but JAX-RPC maps xsd:datetime to java.util.Calendar. If you develop a Web service that uses java.util.Date, a JAX-RPC-based client would automatically map to java.util.Calendar, causing a potential compatibility problem with your Web service. The general guideline is to use java.util.Calendar when possible.

You may also encounter problems mapping certain XML Schema constructs to the language. For example, the CHOICE keyword is not directly supported in JAX-RPC. There are also no Java constructs to represent schema annotations, default values, or optional attributes. If these are used in a WSDL, they will not be represented in the server-side bindings that are generated by the platform. These constructs will then be lost if your platform dynamically generates the WSDL from the bindings. You may want to force the platform to use the static WSDL file so that clients can see these additional annotations in the WSDL.

So, what more can you do to improve Web services interoperability? First, don't abandon the use of XML Schemas.

While there are clearly pitfalls to avoid, there is also much to be gained in reusability and portability. Second, pay close attention to WS-I, which has come out with a number of recommendations to encourage the use of XML Schemas. Finally, if you really want to know how your Web service will work with other platforms, design a comprehensive suite of tests to minimize potential interoperability issues across platforms.

Conclusion

In this article, we covered a number of important best practices for leveraging XML Schemas in a Web services design. Using a more modular schema design can maximize the potential for reuse in your organization. The proper refactoring and naming techniques can also simplify the generation of implementation classes for your platform.

A modular design approach will also require an effective use of namespaces in your XML Schemas. Namespaces provide a mechanism to scope different elements or type definitions in your design. They can simplify how you reference or import types that might exist in external schema files. They can also be used to enforce versioning of your Web services.

The techniques that were discussed to modularize XML Schemas can also apply to the design of the WSDL interfaces. If used properly, the import mechanism can provide a great amount of reusability of both the XML Schema types and the WSDL message types. This design can be further enhanced through the use of development and design tools. It's important to remember that each Web services platform might manage XML differently. Use of certain XML data types or schema structures may not be supported on certain platforms. In the design, you should pay close attention to these interoperability issues, adding testing where appropriate.

Proper use of XML Schemas can improve the reusability, flexibility, and maintainability of your Web services components. ☺

References

- Ballinger, K.; Ehnebuske, D.; et al. (2003). Basis Profile Version 1.0. WS-I, March.
- Mitre Corporation. (2003). "XML Schemas: Best Practices." www.xfront.com/BestPracticesHomepage.html, February.
- Peeters, Johan. (2003). "WSDL Tales from the Trenches," Part 2. webservices.xml.com, June.
- Seely, Scott. (2002). "Splitting up WSDL: The Importance of targetNamespace." MSDN, August.
- Siddiqui, Bilal. (2002). "Developing Web Services, Part 3: SOAP Interoperability." IBM DeveloperWorks, September.

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CERTIFICATION

~continued from page 47~

It is an error if `xml:apply-imports` is instantiated when the current template rule is null.

Conclusion

During your next technical interview, answer questions by offering details and concrete examples of scenarios where XML concepts are applied in the real world. At the exam,

answer all questions that you find easy first. Mark all questions that you find difficult for later review. Review the marked questions at the end, going through them several times if necessary. Following these tips can put you on the path to your next XML job! ☺

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