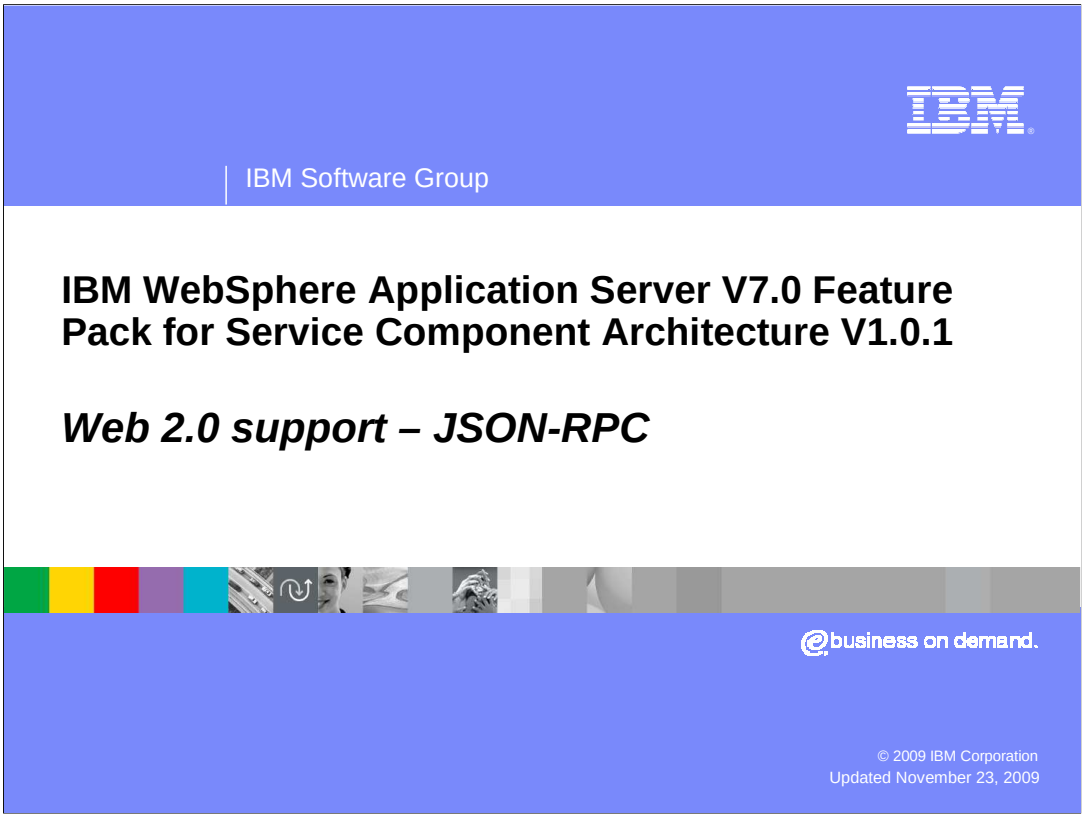
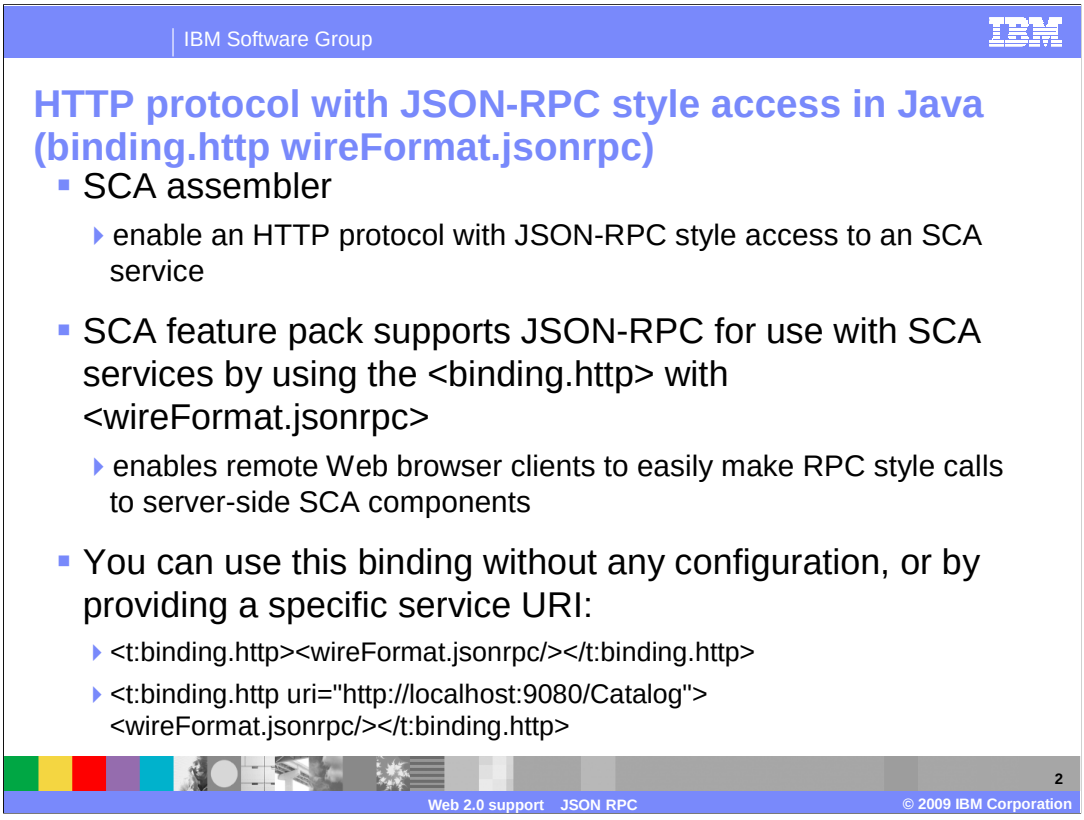


This presentation will cover SCA feature pack Web 2.0 support with JSON-RPC



Now you will look closer at the HTTP protocol with JSON-RPC style access in Java™. As an SCA Assembler, you want to have the ability to enable an HTTP protocol with JSON-RPC style access to an SCA service. This will enable a consumer to use the JSON-RPC style protocol to access your service without rewriting your service side implementations. The Feature Pack for SCA supports JSON-RPC as a protocol for use with SCA services by using the <binding.http> with <wireFormat.jsonrpc>. This enables remote Web browser clients to easily make RPC style calls to server-side SCA components.

You can use this binding without any configuration, or by providing a specific service URI.

<t:binding.http><wireFormat.jsonrpc/></t:binding.http>

<t:binding.http uri="http://localhost:9080/Catalog">
<wireFormat.jsonrpc/></t:binding.http>

The **t:** above represents the Tuscany namespace.

Consuming JSON-RPC services on the client application

- Any JSON-RPC client can be used to access the SCA services which use the <binding.http> with <wireFormat.jsonrpc>
- Ways to consume JSON-RPC services on the client application
  - Utilizing implementation.widget
  - Using SCA JSON-RPC services with Dojo

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Any JSON-RPC client can be used to access the SCA services which use the <binding.http> with <wireFormat.jsonrpc>. There are two ways to consume JSON-RPC services on the client application. One way is to use the implementation.widget which was described already. The other way is to use SCA JSON-RPC services with Dojo. The next few slides will show you in more detail the two ways to consume JSON-RPC services.

Utilizing implementation.widget for JSON-RPC

- Widget Implementation (implementation.widget), extends the SCA programming model to HTML or Web 2.0 client applications
  - For JSON-RPC allows you to model your HTML or Web 2.0 as an SCA component
  - Implementation artifact is an HTML resource where you can define a JSON-RPC reference, that can be wired to server side services

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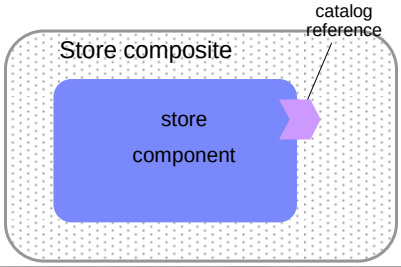
As mentioned earlier the Widget Implementation, implementation.widget, extends the SCA programming model to HTML or Web 2.0 client applications. Using this for JSON-RPC allows you to model your HTML or Web 2.0 as an SCA component. The implementation artifact is an HTML resource where you can define a JSON-RPC reference, that can be wired to server side services.

JSON-RPC style access in widget

```
<composite xmlns="http://www.osoa.org/xmlns/sca/1.0"
  xmlns:t="http://tuscany.apache.org/xmlns/sca/1.0"
  targetNamespace="http://store" name="store">
  <component name="store">
    <t:implementation.widget location="contents/store.html"/>
      <reference name="catalog" target="MyCatalog/Catalog">
        <t:binding.http><wireFormat.jsonrpc/></t:binding.http>
      </reference>
  </component> .....
</composite>
```



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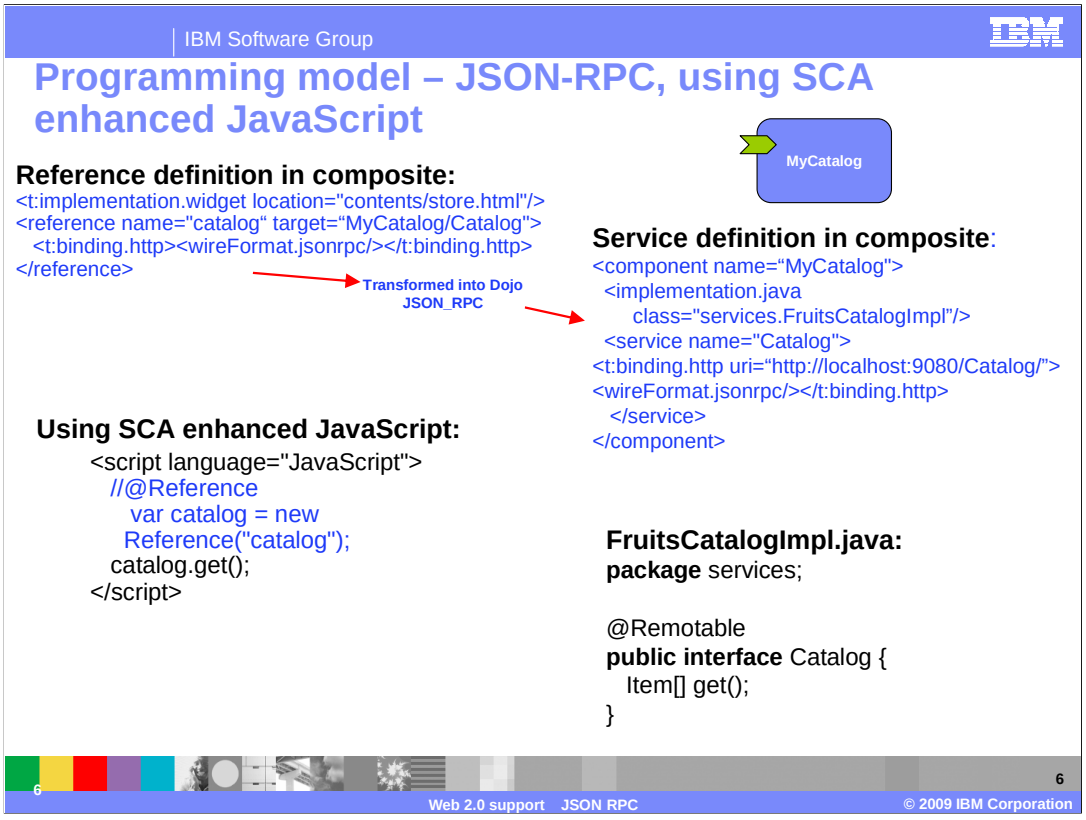
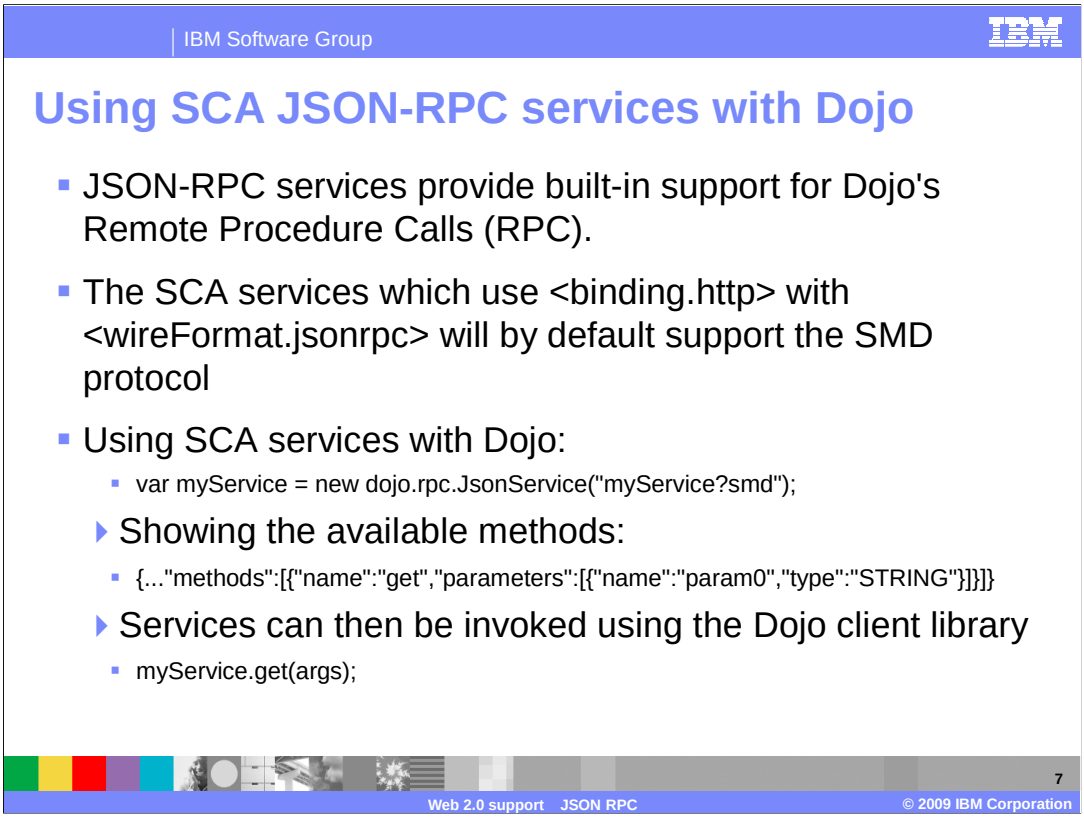
The code above shows a sample composite file. The component store contains the implementation.widget. The implementation.widget component type allows you to model your HTML as an SCA component. The implementation artifact is an HTML resource, and above you can see how you can then define SCA References that can be wired to server side services. A catalog reference is defined for the store component which contains an HTTP binding with a wire format of JSON RPC. This catalog reference can be wired through HTTP binding with wire format JSON-RPC to server side services.



The code above depicts a more complete picture of how the catalog reference can be wired through an HTTP binding with wire format JSON-RPC to server side services using implementation.widget. You have starting in the left corner, a composite file that has a component that uses the implementation widget. A reference named catalog is then defined using an HTTP binding with wire format JSON-RPC. This reference targets an existing service called Catalog. That service is defined to the top right in a composite file with a component name of MyCatalog. This component contains the service named Catalog that is defined with an HTTP binding with wire format JSON-RPC. This component defines its Java implementation to be FruitsCatalogImpl.java. Notice on the bottom right the FruitsCatalogImpl.java file contains a get() method. Now lastly, you will notice the SCA enhanced JavaScript code. Since widget implementation was used, you can now introduce SCA annotations to the JavaScript code. You can introduce the catalog reference and easily now call the get() method that was defined in FruitsCatalogImpl.java.



Dojo provides a basic RPC client class that has been extended to provide access to JSON-RPC services. It was designed so that it is easy to implement custom RPC services. Dojo's RPC clients simplify this process by taking a simple definition of the remote methods and application needs and generating client side functions to call these methods. The definition file, called a Simple Method Description (SMD) file, is a simple JSON string that defines a URL to process the RPC requests. It also processes any methods available at that URL, and the parameters those methods take. The Feature Pack for SCA provides built-in support for Dojo's RPC. It generates the SMD file. You then just have to initialize an RPC client object and then all of these remote methods are available for you to use as normal.

The SCA services which use <binding.http> with <wireFormat.jsonrpc> will by default support the SMD protocol. SMD is similar to ?wsdl for Web services, entering a service endpoint appended with ?smd will return a SMD descriptor for the service.

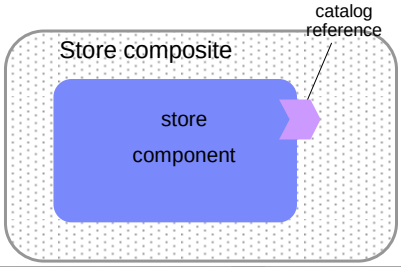
Using SCA services with Dojo can therefore be as simple as:

var myService = new dojo.rpc.JsonService("myService?smd");

The methods available can then be easily shown (for instance the get() method) and then the services can then be invoked using the Dojo client library: myService.get(args);

JSON-RPC style access

```
<composite xmlns="http://www.osoa.org/xmlns/sca/1.0"
  xmlns:t="http://tuscany.apache.org/xmlns/sca/1.0"
  targetNamespace="http://store" name="store">
  <component name="store">
    <reference name="catalog" target="MyCatalog/Catalog">
      <t:binding.http><wireFormat.jsonrpc/></t:binding.http>
    </reference>
  </component> .....
</composite>
```



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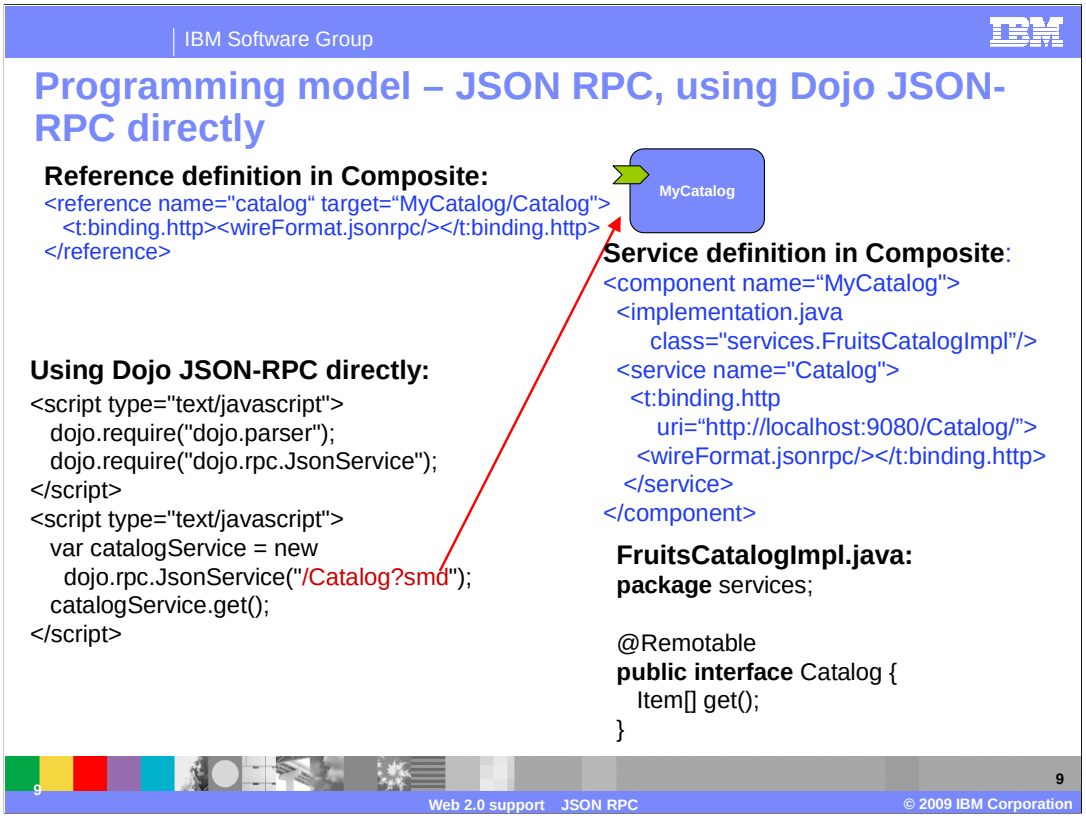
The above sample composite shows a component named store that has a reference named catalog. This reference has an HTTP binding with wire format JSON-RPC defined.



The code above depicts a more complete picture of how the catalog reference can be wired through an HTTP binding with wire format JSON-RPC to server side services using SCA JSON-RPC services with Dojo. You have starting in the left corner, a composite file that has a reference named catalog defined with an HTTP binding with wire format JSON-RPC. This reference targets an existing service called Catalog. That service is defined to the top right in a composite file with a component name of MyCatalog. This component contains the service named Catalog that is defined with an HTTP binding with wire format JSON-RPC. This component defines its Java implementation to be FruitsCatalogImpl.java. Notice on the bottom right the FruitsCatalogImpl.java file contains a get() method. Now lastly, you will notice the on the lower left side the using Dojo JSON-RPC directly code. You will first have to define the proper Dojo requires. Then you can define your catalog service using SCA services with Dojo by entering a service endpoint appended with ?smd to return a SMD descriptor for the service. You can now call the get() method that was defined in FruitsCatalogImpl.java.

JSON-RPC services – JSON data binding

- In/Out parameters are passed in JSON format
  - { string : value }
  - { "method" : "get" }
  - { "result" : "12345" }
- JSON data binding is used to transform JSON input arguments into Java types, and to transform Java results into JSON

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Now that you did the HTTP binding with wire format JSON-RPC you can use JSON formats. The parameters are passed in JSON format name/value pairs. JSON data binding is used to transform JSON input arguments into Java types, and to transform Java results into JSON.

Section

Summary and references

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Next is summary of what you have learned and some references.

Summary

- SCA feature pack supports JSON-RPC as a protocol for use with SCA services
  - using the <binding.http> with <wireFormat.jsonrpc>
  - enables remote Web browser clients to easily make RPC style calls to server-side SCA components

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The Feature Pack for SCA supports JSON-RPC as a protocol for use with SCA services by using the <binding.http> with <wireFormat.jsonrpc>. This enables remote Web browser clients to easily make RPC style calls to server-side SCA components.

References

- JSON: http://www.json.org
- Dojo Toolkit: http://dojotoolkit.org
- OpenAjax Alliance: http://openajax.org
- Ajax Technical library: http://www.ibm.com/developerworks/views/web/libraryview.jsp?search_by=Mastering+Ajax
- IBM education assistant: Feature pack for Web 2.0

http://publib.boulder.ibm.com/infocenter/ieduasst/v1r1m0/index.jsp?topic=/com.ibm.iea.wasfpweb20/plugin_coverpage.html

- The WebSphere® Application Server Feature Pack for Web 2.0 service page:

http://www-01.ibm.com/software/webservers/appserv/was/featurepacks/web20/

- WebSphere Application Server Feature Pack for SCA service page:

http://www-01.ibm.com/software/webservers/appserv/was/featurepacks/sca/

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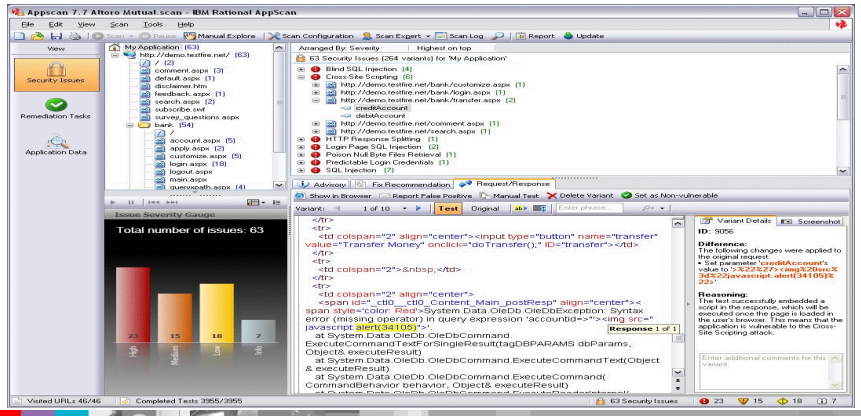
Above are some useful references.

Web 2.0 vulnerability testing

- Explicit Security vulnerability testing is critical when working with JavaScript/Web2.0
- Rational® AppScan® (www.watchfire.com) is the industry-leading security vulnerability scanning tool for Ajax



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Outside-in security testing should be part of your quality assurance plan, watchfire.com is a security vulnerability testing tool.

Dojo Toolkit support

- For help with developing Ajax application look at the General Debugging Tools section
- The best information and help is on the www.dojotoolkit.org site especially the forums. Look through the forums for issues and post non-confidential issues on the forum.
- http://www.dojotoolkit.org/support
  - Frequently Asked Questions
  - Forums
- http://www.dojotoolkit.org/docs
  - The Book of Dojo 1.0
  - Dojo API Reference
  - Dojo Porting Guides

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