



the
POWER
of
JAVA™



Travel Web Services— Marrying Business Innovation With Java™ Technology

Narayan Chintalapati
Application Architect/
Director, eBusiness
Marriott International

David Hecksel
Senior SOA Architect
Sun Microsystems, Inc.

Brad Schneider
Director, Architecture
and Research
Hotels.com

TS-4069

Presentation Goal

Learn about Travel Industry investments in Web Services technology as we peer into the future of web commerce and distributed content possibilities, illustrated by examples from IAN.com and Yahoo.

Agenda

Travel Web Services Introduction

Business Opportunities

Yahoo Travel Web Services

IAN Travel Web Services

Affiliate Program Challenges

Industry Futures

Q&A

Agenda

Travel Web Services Introduction

Business Opportunities

Yahoo Travel Web Services

IAN Travel Web Services

Affiliate Program Challenges

Industry Futures

Q&A

Web Services Buzzwords

- Industry
 - SOAP-based Services
 - REST-based Services
 - OTA—Open Travel Alliance
 - Mashup—Seamlessly integrating content
- Yahoo
 - JSON—JavaScript Object Notation
- IAN
 - CID—Interactive Affiliate Network Client Identifier

Open Travel Alliance

- <http://opentravel.org>
- Major airlines, hoteliers, car rental companies, leisure suppliers, travel agencies, global distribution systems (GDS), technology providers
- Create and implement industry-wide, open e-business specifications to define a common e-business language
- A sampling of the membership





Online Travel Content Sharing— Survey of “As Is” Initiatives

- Link builder
 - Travelocity*
 - Orbitz*
 - Expedia*
 - **IAN.com**
- RSS feed
 - Orbitz
- Email—many (specials)
- Desktop “widgets” (specials)—Southwest Airlines
- Web Services
 - **IAN.com**
 - **Yahoo**

*3rd party managed

Web Services Concept

- Architecture
 - Decoupling of data and presentation
 - Leverage existing system investments
 -  Wrap versus rip and replace
 - Industry standards
- Business
 - Exporting content
 - Creating programmer toolkits
 - Content aggregation (Mashups)
 -  “Content Is King”



Agenda

Travel Web Services Introduction

Business Opportunities

Yahoo Travel Web Services

IAN Travel Web Services

Affiliate Program Challenges

Industry Futures

Q&A

Business Opportunities

“By 2005, corporate online booking solutions will capture **\$33 billion** in online bookings.”

—*Jupiter Media Metrix*

“Online travel sales will reach **\$64 billion** by 2007, accounting for as much as **22%** of all bookings.”

—*Jupiter Research*

Business Opportunities...

- Niche 3rd-party marketing
 - Regional expertise (Orlando)
 - Community appeal (JavaOne conference, conferences)
 - Enhanced services (weddings)
 - Special needs (pets)
- Foreign markets (i18N)
- Self-managed travel
- Co-branding, private label
- Have Java VM, will travel
 - Earn travel \$commissions\$ through IAN.com
 - XML Web Services access to a booking engine
- Mashups

Agenda

Travel Web Services Introduction

Business Opportunities

Yahoo Travel Web Services

IAN Travel Web Services

Affiliate Program Challenges

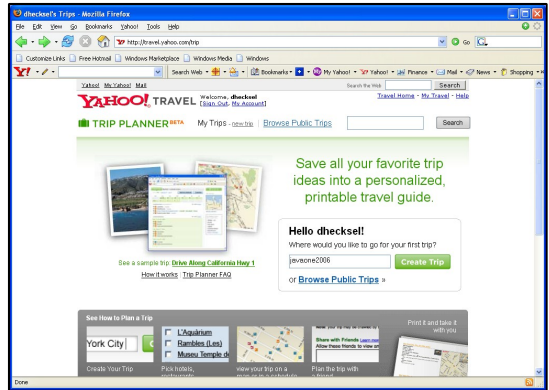
Industry Futures

Q&A

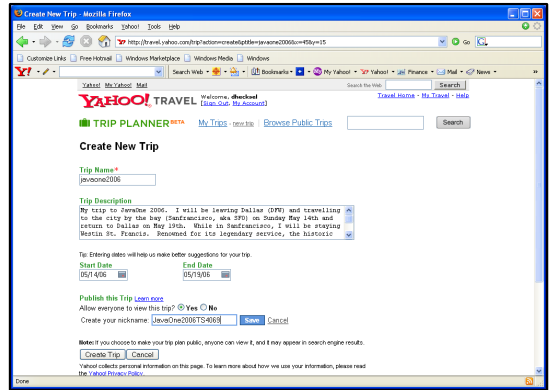
What Is Yahoo Travel Web Services?

- Travel Trip Planner
 - REST like APIs for accessing trip plans created by **Yahoo! Travel Trip Planner**
 - XML, JSON, or PHP output
 - Trip Search
 - Get Trip

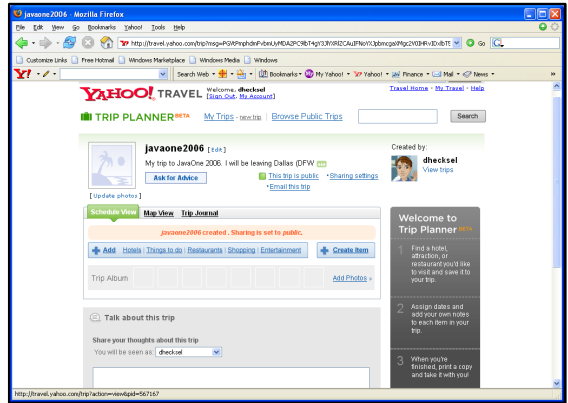
Yahoo Travel Trip Planner



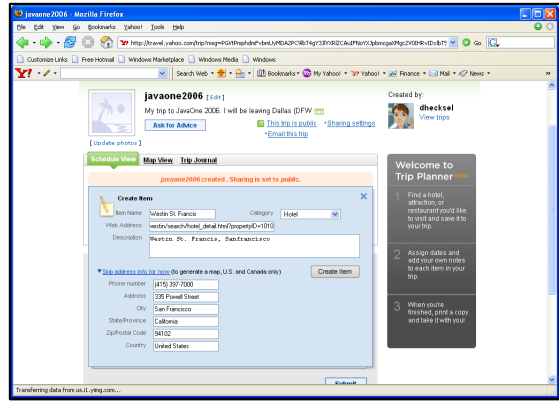
Name the Trip



Create the Trip

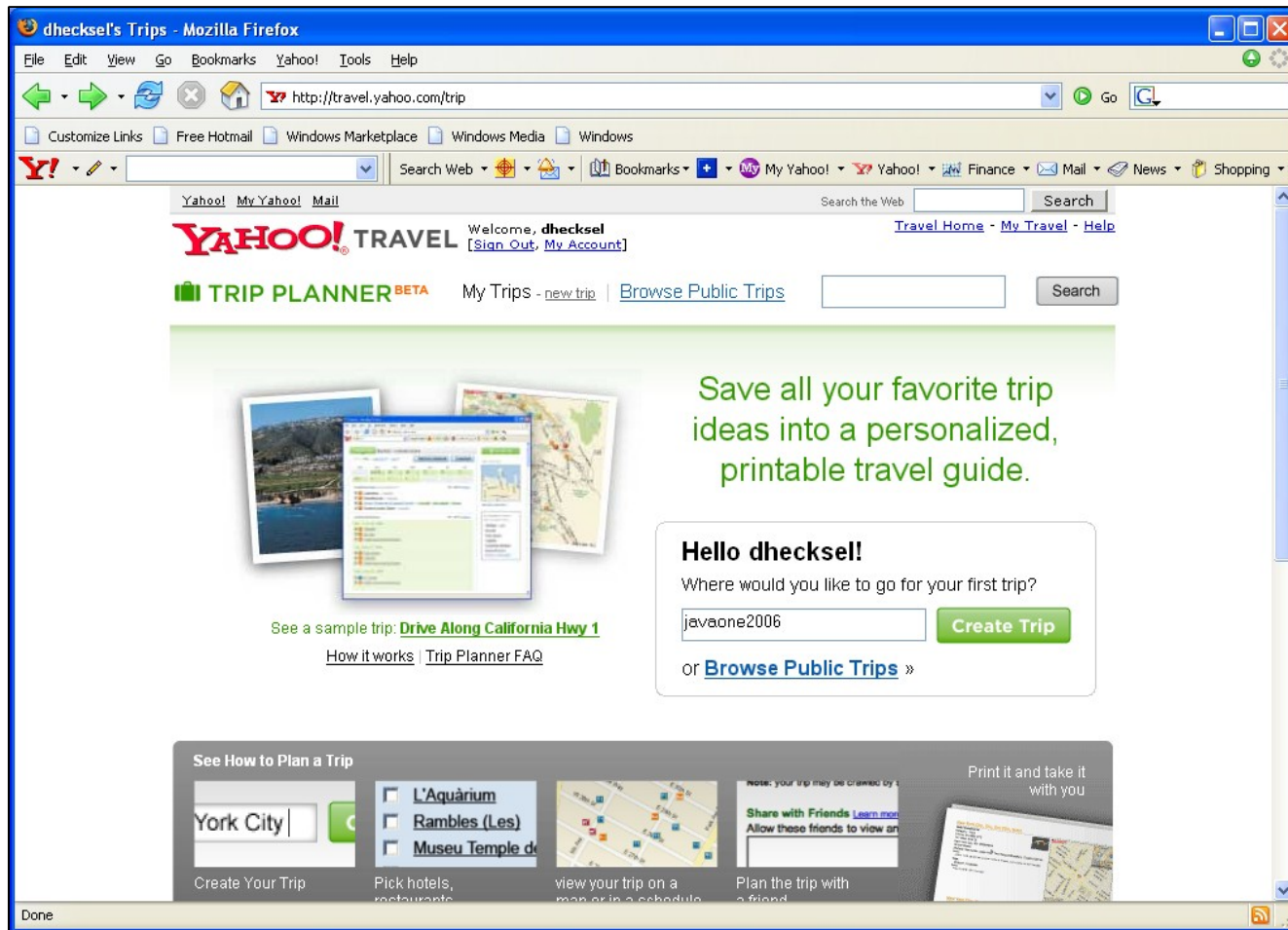


Trip Created

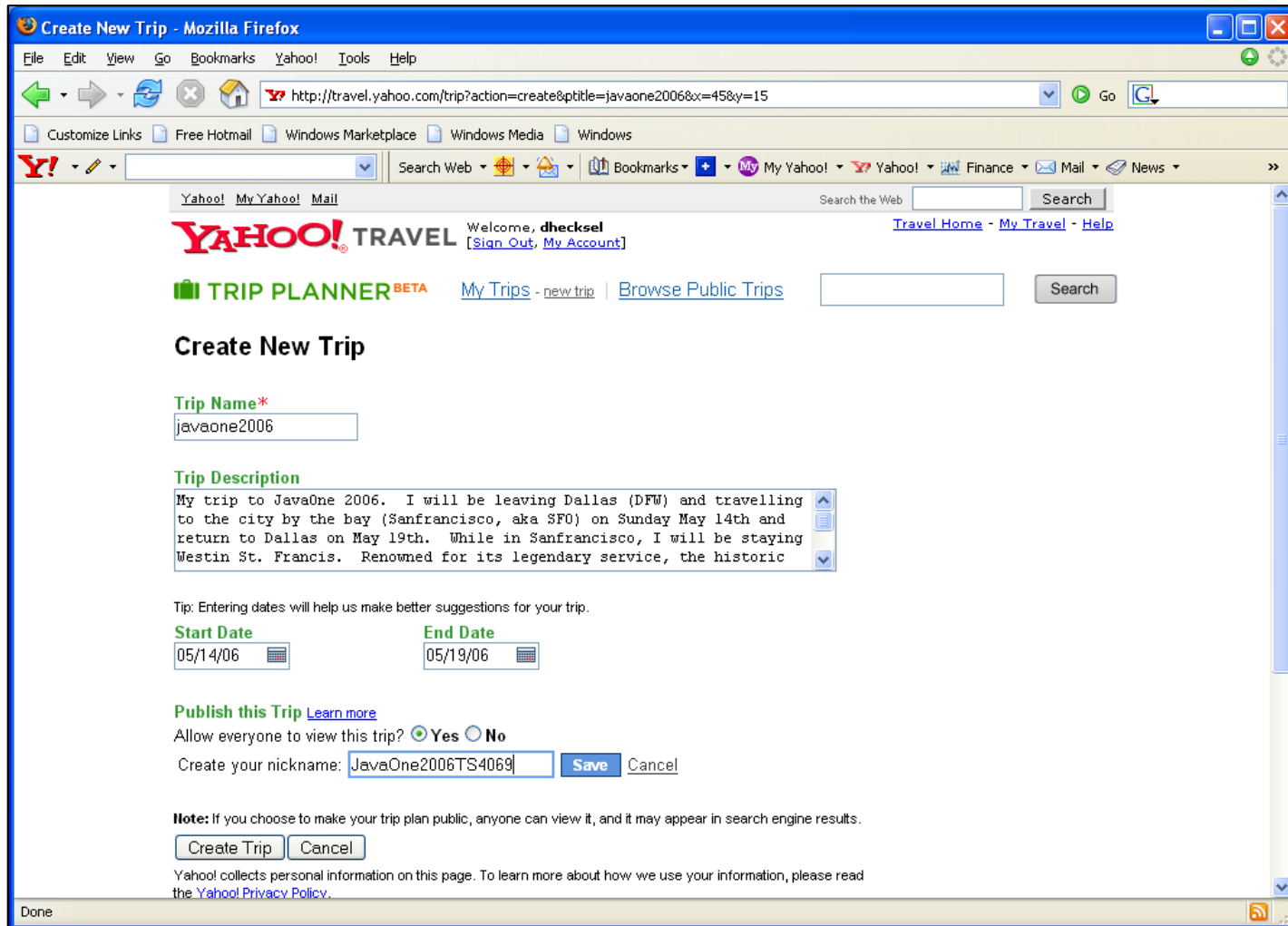


Add Items

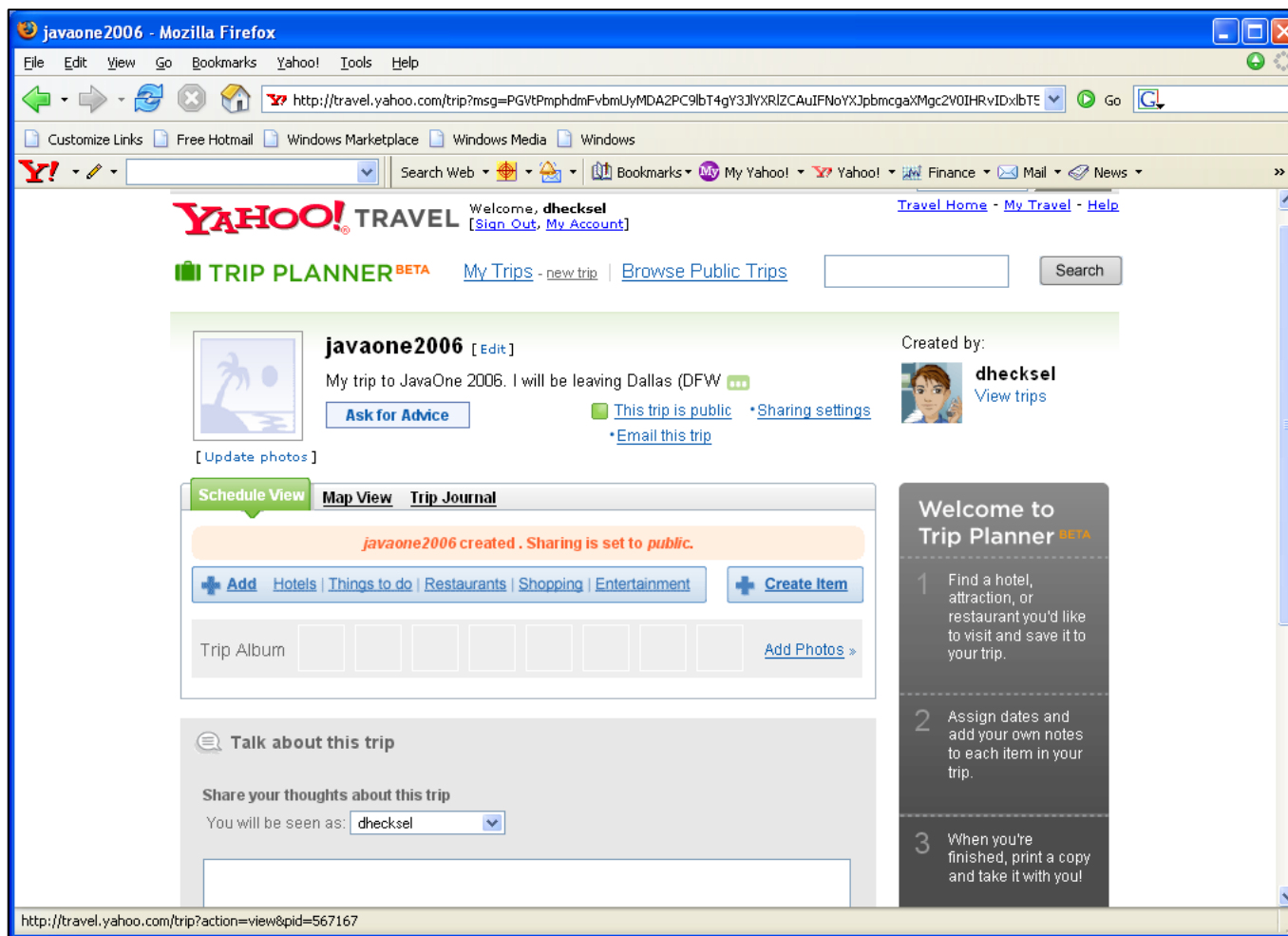
Naming the Trip... javaone2006



Creating the Trip



Trip Created



Adding Trip Items

javaone2006 - Mozilla Firefox

File Edit View Go Bookmarks Yahoo! Tools Help

http://travel.yahoo.com/trip?msg=PGvtPmphaMfVbmUyMDA2PC9lbT4gY3JlYXRlZCAuIFNoYXkxIpbmcaXMgc2V0IHRvIDxlbTE

Customize Links Free Hotmail Windows Marketplace Windows Media Windows

Search Web Bookmarks My Yahoo! Yahoo! Finance Mail News

javaone2006 [Edit]

My trip to JavaOne 2006. I will be leaving Dallas (DFW)

Ask for Advice

This trip is public • Sharing settings • Email this trip

Created by: **dhecksel** View trips

[Update photos]

Schedule View Map View Trip Journal

javaone2006 created. Sharing is set to public.

Create Item

Item Name: Westin St. Francis Category: Hotel

Web Address: westin/search/hotel_detail.html?propertyID=1010

Description: Westin St. Francis, Sanfrancisco

Skip address info for now (to generate a map, U.S. and Canada only)

Phone number: (415) 397-7000

Address: 335 Powell Street

City: San Francisco

State/Province: California

Zip/Postal Code: 94102

Country: United States

Create Item

Submit

Transferring data from us.i1.yimg.com...

Welcome to Trip Planner BETA

- 1 Find a hotel, attraction, or restaurant you'd like to visit and save it to your trip.
- 2 Assign dates and add your own notes to each item in your trip.
- 3 When you're finished, print a copy and take it with you!

Trip Map View

The screenshot shows a Mozilla Firefox browser window with the following elements:

- Browser Title Bar:** javaone2006 - Mozilla Firefox
- Address Bar:** http://travel.yahoo.com/trip?action=map&pid=567167
- Navigation Bar:** Includes search, bookmarks, and utility icons.
- Map Area:** A street map of San Francisco with a highlighted route. A pop-up window for "Loews Theatres at Metreon" is displayed, containing:
 - Phone:** +1 415 369 6200
 - Description:** The state-of-the-art auditoriums vary in size, but each has THX certification and SDDS sound, rendering them acoustically...
 - Driving directions:** [from here] [to here]
 - Buttons:** Zoom & center, save, reset
- Right Sidebar:**
 - Things To Do:** Alcatraz Island, California Academy of Sciences, Moscone Center
 - Restaurant:** (checked)
 - Hotel:** (checked)
 - Entertainment:** (checked)
 - Show nearby:**
 - Things To Do
 - Restaurant
 - Hotel
 - Entertainment
 - Shopping
 - Ski Resort
 - Airports (checked)
 - Cities in Trip:** San Francisco, CA
 - Saved maps:** Save this map
- Bottom Bar:** Get Driving Directions, javascript:void(0);

Yahoo Travel Trip Planner: Code Examples

- Affiliate Development Environment
 - NetBeans™ 5.0 IDE
 - Tomcat 5.5.9
 - Xerces 1.4.4
 - Commons-httpclient-3.0
- Dave Hecksel's 2006 JavaOneSM conference
Yahoo Trip URL
 - <http://travel.yahoo.com/trip?pid=567167&action=view>
- Yahoo Travel Trip Planner
 - <http://travel.yahoo.com/trip>
- Yahoo Developer Network
 - <http://developer.yahoo.net/travel>

Yahoo Travel Trip Planner: Code Examples (Cont.)

- Trip Search API
 - Base URL
 - <http://api.travel.yahoo.com/TripService/V1/tripSearch?>
 - Parameters

| Parameter | Value | Description |
|-----------|---------|---|
| appid | String* | Application identifier |
| yahoid | String | Search only those created by this id |
| query | String | Search keywords for title/description/tags |
| results | integer | Number of trips to return. Default = 10 |
| start | integer | Result from which to start. Default = 1 |
| output | String | The output format. XML, JSON, or PHP Default = XML |

Yahoo Trip Search: Code Examples

TripSearchAction.java

```
If (((SearchForm) form).getSubmit().equals("Submit")) {  
    if (validateParams()) {  
  
        TravelHttpClient travelHttpClient =  
            new TravelHttpClient();  
        String xmlString = travelHttpClient.getResponse(url);  
        YahooXMLParser xmlParser =  
            new YahooXMLParser(xmlString);  
        Vector results = xmlParser.parse();  
        ((SearchForm) form).setResults(results);  
        forward = mapping.findForward("output");  
  
    }  
}
```

Yahoo Trip Search: Code Examples

TravelHttpClient.java

```
public String getResponse(String url) {
    HttpClient client = new HttpClient();
    client.getHttpConnectionManager().
        getParams().setConnectionTimeout(5000);
    HttpMethod method = new GetMethod(url);
    method.setFollowRedirects(true);
    String responseBody = null;
    try {
        client.executeMethod(method);
        responseBody = method.getResponseBodyAsString();
    }
    catch (HttpException he) { } // TODO:
    catch (IOException ioe) { } // TODO:
    finally { method.releaseConnection(); }
    return responseBody;
}
```

Yahoo Trip Search: XML

Trip Search Results (xmlString)

```
<Result id="567167">
  <YahooID>dhecksel</YahooID>
  <Title>javaone2006</Title>
  <Summary>My trip to JavaOne 2006.  I will ... </Summary>
  <Destinations>San Francisco</Destinations>
  <Duration>6</Duration>
  ...
  <Geocode precision="not available">
    <Latitude>37.787735</Latitude>
    <Longitude>122.408447</Longitude>
  </Geocode>
</Result>
```


Yahoo Trip Search: Code Examples

YahooXMLParser.java

```
public Vector parse() {  
    ...  
    NodeList elements = doc.getElementsByTagName("Result");  
    ...  
    Element element = (Element)elements.item(i);  
    NodeList children = element.getChildNodes(); ...  
    Node childNode = children.item(k);  
    int type = childNode.getNodeType();  
    switch ( type ) {  
        case Node.ELEMENT_NODE: {  
            String nodeName = childNode.getNodeName();  
            NodeList elementChildren =  
                childNode.getChildNodes(); ...  
            yahooID = elementChildren.item(childCount).  
                getNodeValue();  
        }  
    }  
}
```

Yahoo Travel Trip Planner: Code Examples (Cont.)

- Get Trip API
 - Base URL
 - <http://api.travel.yahoo.com/TripService/V1/getTrip?>
 - Parameters

| Parameter | Value | Description |
|-----------|----------|---|
| appid | String* | Application identifier |
| id | integer* | The ID of the trip plan to retrieve |
| output | String | The output format. XML, JSON, or PHP Default = XML |

Yahoo Get Trip: XML

Get Trip Results (xmlString)

```

<Result id="567167">
  <YahooID>dhecksel</YahooID>
  ...
  <!-- one to many Destinations -->
  <Destination>
    ...
    <Geocode precision="city">
      <Latitude>37.787735</Latitude>
      <Longitude>122.408447</Longitude>
    </Geocode>
    <!-- one to many Items -->
    <Item id=1535387>
      ...
    </Item>
  </Destination>
</Result>
  
```

Yahoo Get Trip: XML (Cont.)

Get Trip Results (xmlString)

```

<Item id="1535387">
  <Title>Moscone Center</Title>
  <Summary>
    Nearly 17 million visitors arrive in ...
    In any given year Moscone Center plays host to
    likes of Linux World, CTIA, Oracle, and Mac World
    ...
  </Summary>
  <Geocode precision="address">
    <Latitude>37.784088</Latitude>
    <Longitude>122.401428</Longitude>
  </Geocode>
  <Category>Things to do</Category>
  <Phone>+1 415 974 4000</Phone>
  ...
</Item>
  
```

Agenda

Travel Web Services Introduction

Business Opportunities

Yahoo Travel Web Services

IAN Travel Web Services

Affiliate Program Challenges

Industry Futures

Q&A

What Are IAN Travel Web Services?

Affiliate Program Overview

- Commission-based affiliate program
- Lodging, air, car, and package products
- “Deep partnership” affiliate model
 - Beyond linksharing
 - Private label or co-branded options available
 - XML web services
 - Affiliate and customer support
- Approximately 1/3 of Hotels.com business
 - 40,000+ affiliates
 - 100,000+ web sites
 - <http://ian.com> for program and commission detail

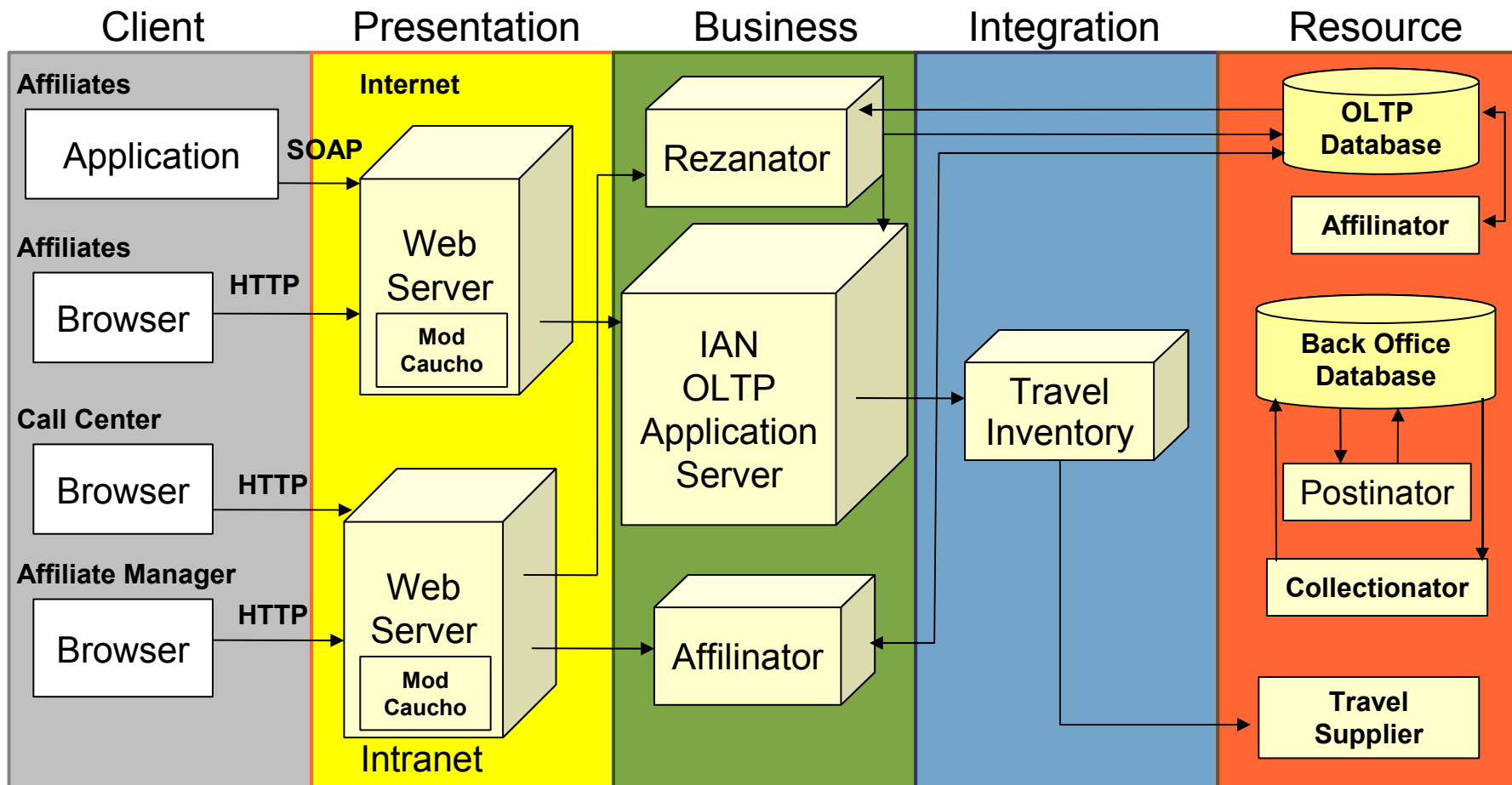
What Are IAN Travel Web Services? (Cont.)

Platform Overview

- Web server tier
 - Apache
 - Linux
- Application tier
 - Servlet Container—Caucho Resin
 - EJB™ beans Container—JBoss
 - Web Services—Apache Axis
- Database tier
 - Microsoft SQL Server

What Are IAN.com Travel Services?

Current Architecture



What Are IAN Travel Web Services? (Cont.)

Functionality Highlighted This Afternoon

- SOAP-based programmatic access
- Travel item list Request
- View travel item Results
- **Book travel item**

What Are IAN Travel Web Services? (Cont.)

- Development environment
 - NetBeans 5.0 IDE (JDK™ 1.4 software)
 - Tomcat 5.5.9
 - Xerces 1.4.4
 - Axis 1.4
- Platforms of IAN affiliates
 - PHP (50%)
 - Java™ technology (25%)
 - .NET (25%)
- <http://www.ian.com>

SOAP-based Programmatic Access

Generating Java Language

- Input
 - <http://www.ian.com/xmldocs/download/WSDL/HotelWebServices200616.zip>
 - Hotelservices200616.wsdl
- WSDLToJava tool
 1. Download the .zip file, unpack
 2. Run tool providing above wsdl as input
 3. The following Java code class categories are auto generated
 - Set Travel Item data
 - Get Travel Item data
 - Make Service requests
 4. Import/access the code using NetBeans IDE or IDE of choice

IAN Travel Item List Request

IANTravelAction.java

```
if (form.getSubmit().equals("Submit")) {
try {
    IanRequestHandler requestHandler =
        new IanRequestHandler();
    CityAvailabilityResult results =
        requestHandler.makeRequest(form.getArrivalDate(),
                                   form.getDepartureDate(),
                                   form.getCity(),
                                   form.getState(),
                                   form.getCountry(),
                                   form.getNumberOfAdults(),
                                   form.getNumberOfChildren(),
                                   form.getNumberOfResults());

    form.setResults(results);
    forward=mapping.findFoward("output");
}
```

IAN View Travel Item List Results

IANRequestHandler.java

```

CityAvailabilityRequest listRequest =
    new HotelFunctions_ServiceLocator();
// set listRequest with params
// set listRequest with IAN Affiliate CID
CityAvailabilityResult listResponse = null;
try {
    listResponse = listService.getHotelServices200616().
        getCityAvailability(listRequest);
}
catch (Exception se) {
    System.out.println("Verbose Message:" + se.getMessage());
}
return listResponse;
  
```

IAN Book Reservation

IANRequestHandler.java

```
Public PropertyReservationResult makeReservation() {
    HotelFunctions_Service resService =
        new HotelFunctions_ServiceLocator();
    PropertyReservationRequest resRequest =
        new PropertyReservationRequest();
    resRequest.setHotelId(124587);
    resRequest.setArrivalDate("7/9/2006");
    resRequest.setDepartureDate("7/12/2006");
    // set Room, Rate, reservation, address, CID
    try {
        PropertyReservationResult resResponse =
            resService.getHotelServices200616().
                getPropertyReservation(resRequest);
    }
    catch (Exception se) { } //TODO
```

Agenda

Travel Web Services Introduction

Business Opportunities

Yahoo Travel Web Services

IAN Travel Web Services

Affiliate Program Challenges

Industry Futures

Q&A

Affiliate Program Challenges

- Supplier conflict
- Cannibalization
- Legacy support and release strategy
 - Migration and versioning
- Search engine optimization
- Architecture
 - Affiliate aware
 - Application versus service
 - Platform evolution

Agenda

Travel Web Services Introduction

Business Opportunities

Yahoo Travel Web Services


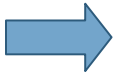
IAN Travel Web Services

Affiliate Program Challenges

Industry Futures

Q&A

Industry Futures

- Airlines/Hotels/Car rental companies continue to push customers to purchase direct online (cost savings)
- GDS companies
 - Travel aggregators  IT factories
 - Tools for travel industry content applications
 - Mainframe to SOA
- Managed travel
 - Call center  self-serve online bookings
- Content aggregation/extension will be King

Industry Futures (Cont.)

IAN.com Futures

- Functional requirements
 - Broader product offerings (organic or acquisition)
 - Syndication via RSS
 - Enhanced localization capabilities
 - Affiliate developer community
 - Retain distinct brands and functionality

Industry Futures (Cont.)

IAN.com Futures

- Non-functional requirements
 - Better transactional capability
 - Production calibre starter sites

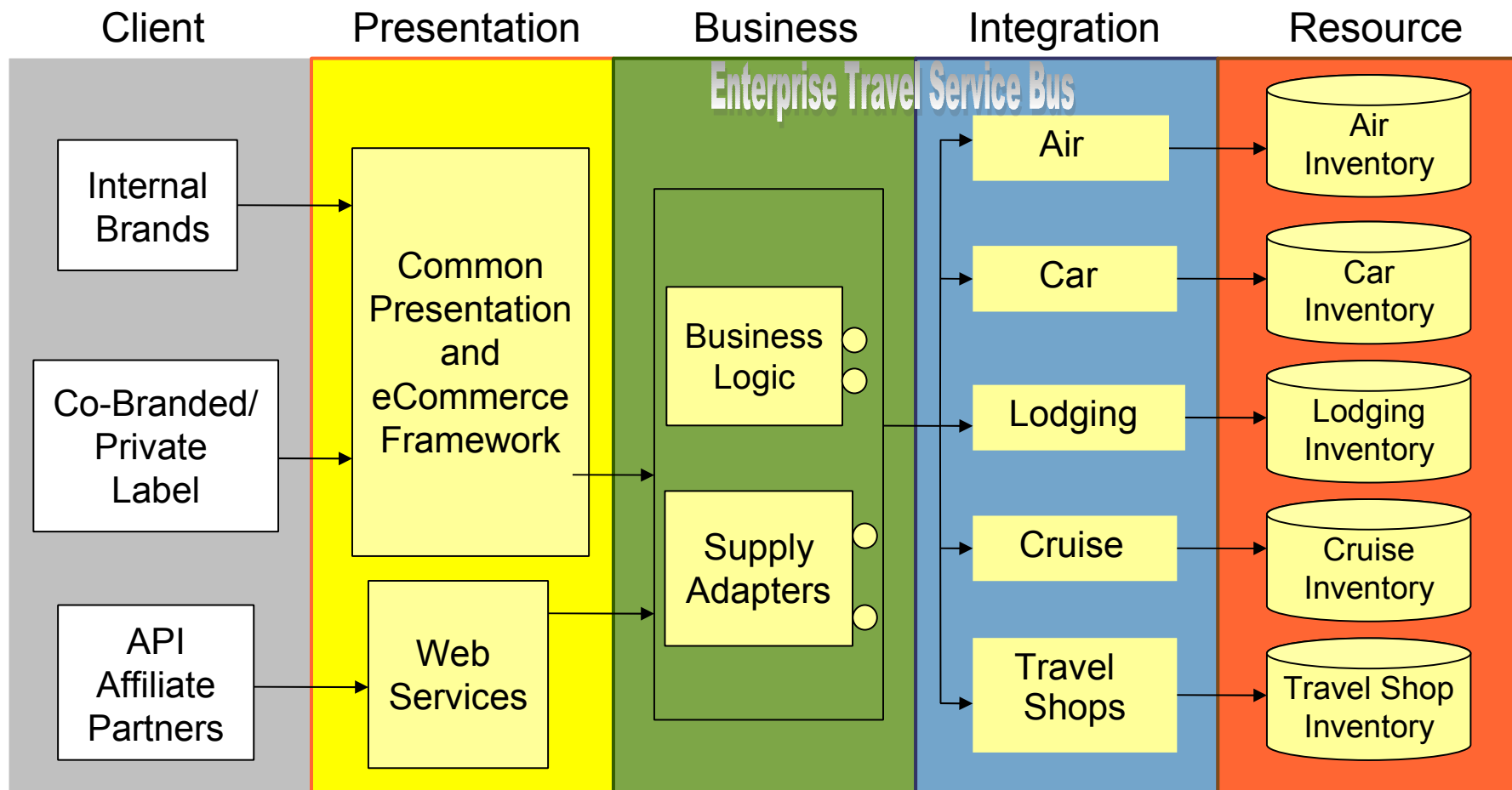
Industry Futures (Cont.)

IAN.com Futures



- Operational requirements
 - Reporting, reporting, reporting
 - Consolidation of supplier interaction and functionality
 - More capable affiliate test environment
 - Retain distinct brands while increasing operational effectiveness

Industry Futures (Cont.)

Future Integration Architecture



Summary

- Travel Web Services
 - B2B leading the pack, substantial investment/savings
 - IAN.com—leader in exposing a booking engine to the masses
- Yahoo experimenting with marrying travel content with search engine and upsell advertising opportunities. Google?
- Have Java VM, will travel
 - Add context-relevant travel content to your niche content sites
 - Web container + IAN.com  **travel commission \$\$\$**
 - **Start experimenting today!**
- Travel industry web service trends representative of other industry trends
 - Self-serve B2C
 - Content providers  content aggregators

For More Information

- URLs
 - JSON in Java—<http://json.org/java>
 - Open Travel Alliance—<http://opentravel.org>
 - IAN.com travel affiliate program—<http://ian.com>
 - Yahoo Travel Trip Planner—<http://travel.yahoo.com/trip>
 - JavaOne Trip—<http://travel.yahoo.com/trip?pid=567167>
- Sessions
 - TS-1194: Java API for XML Web Services (JAX-WS) 2.0
Wednesday, 11am–Noon
 - TS-3608: The SOA Programming Model
Wednesday, 11am–Noon
 - TS-1607: Deep Dive Into JAXB 2.0
Thursday, 11am–Noon

Q&A

Narayan Chintalapati

David Hecksel

Brad Schneider



the
POWER
of
JAVA™



JavaOne
Part of the Oracle and Sun Companies

Travel Web Services— Marrying Business Innovation With Java™ Technology

Narayan Chintalapati
Application Architect/
Director, eBusiness
Marriott International

David Hecksel
Senior SOA Architect
Sun Microsystems, Inc.

Brad Schneider
Director, Architecture
and Research
Hotels.com

TS-4069