Oracle Spatial User Conference

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Sheraton Seattle Hotel
Seattle, Washington  USA
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Maximizing Value Of Cuyahoga County-Wide GIS Using Oracle Spatial and Fusion 11 Middleware
Overview

- **Issues**
  - Independent agencies
  - Information stove pipes
  - Various GIS
  - New investments in spatial data

- **Solutions**
  - Federated enterprise database
  - Long development horizon
  - A magnet for independent information systems
  - Open standards
  - Oracle Enterprise Technology
Cuyahoga County, Ohio
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- The Cleveland Metropolitan Area
- Over 80 county agencies under 70 elected officials.
- 73 strongly governed municipalities
- 105 tax authorities
- Population approximately 1.4 million
- Most heavily populated county in Ohio and 22nd most populous county in the nation
What is CEGIS?

- The Cuyahoga County Enterprise GIS Office
  - Currently Under the County Engineer
  - Funded by Department of Homeland Security Grants
  - Governed by a 5–member Steering Committee
    - GIS Coordinator
    - County Engineer’s Office
    - County Auditor’s Office
    - County Information Services Center (CIO)
    - County Commissioners
  - Advised by a broader Working Group
    - Emergency Services, Planning Commission, County Board of Elections, City of Cleveland, NEORSD, etc.
Why implement CEGIS?

- The timing was right for CEGIS
- Funding sources (HLS, HB361, LBRS) etc.
- Technological advancements:
  - Geospatial data interoperability and portability
  - Linearly scalable SOA
- Cross-Jurisdictional Data Sharing Agreements
  - City of Cleveland, NEORSD
- Benefits:
  - Modernized landbase
  - Horizontally integrated geospatial applications
  - Fits current IT business model
## Technologies

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<td>Mizar  ADF Rich Faces – Spatial – MapViewer framework</td>
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Oracle 11g Database

- Federated model
  - Local control
  - Enterprise model
- Improved Spatial
  - Performance
  - 3D, Point Clouds, DTM
- SecureFiles
  - Georaster performance
  - LOB performance
Oracle 11g Application Server

- **JSF 1.2**
  - Expression Language
  - Controller model
  - User interface
- **Trinidad**
  - Oracle donated ADF Faces to Apache
- **ADF Rich Faces**
  - Foundation for Fusion 11g
  - Ajax User Interface, JavaScript API
  - Destined for open source
JDeveloper

- JDeveloper 11g Preview 3
- JSF 1.2
- ADF Rich Faces
- JavaScript
- SQL Developer
- Pool Connectors
- Hints
- JPA Wizards
- Deployment Wizards
- OC4J test environment
EJB 3 JPA

- EJB 3.0
  - JPA only for JSF applications
  - Will use Session for non-JSF purposes
- Java Persistence Architecture
  - Open Standard
  - Memory conservancy
  - Transaction management
- TopLink
  - EclipseLink
- Idiosyncrasies but consistent and reliable
@Entity
@Table(name = "SITE_TYPE")
public class SiteType extends GenericBean implements Serializable {
    @Id
    @Column(nullable = false)
    private String code;
    private String description;
    public SiteType() {
    }
    public String getCode() {
        return code;
    }
    public void setCode(String code) {
        this.code = code;
    }
    @Transient
    public String getPrimaryKeyValue() {
        return getCode();
    }
    public String getDescription() {
        return description;
    }
    public void setDescription(String description) {
        this.description = description;
    }
}
@Entity
@Table(name = "COUNTY")

public abstract class County extends GeometryBean implements JPAGeometryInterface {
    @SequenceGenerator(name = "COUNTY_PK",
            sequenceName = "SEQ_COUNTY_ID")

    @Id
    @GeneratedValue(generator = "COUNTY_PK")
    @Column(name = "COUNTY_ID", nullable = false)
    private Long countyId;

    @Convert("JGeometry")
    private JGeometry geom;

    private String name;

    ...
ADF Rich Faces

Beyond Trinidad
Trinidad is open source version of ADF Faces
Will be donated to open source
JavaScript API, AJAX
<af:form>
  <af:panelGroupLayout partialTriggers="head:lbcl head:sbcl">
    <af:panelSplitter partialTriggers="head:lbcl head:sbcl">
      <af:panelHeader id="seahead" text="#{res['cegis.Search_Header']}"
                       clientComponent="true"/>
      <af:pageTemplate id="parsea" viewId="templateDefs/ParcelSearch.jspx"/>
      <af:pageTemplate id="thmtr" viewId="templateDefs/themePanel.jspx"/>
    </af:panelGroupLayout>
    <af:panelSplitter partialTriggers="head:lbcl head:sbcl">
      <af:pageTemplate id="mapPage" viewId="templateDefs/mapComp.jspx"/>
      <af:pageTemplate id="partab" viewId="templateDefs/parcelTable.jspx"/>
    </af:panelSplitter>
  </af:panelGroupLayout>
</af:form>
<af:menu text="Towns">
    <af:forEach var="item" items="#{TownTable.townMenuList}" no="1">
        <af:menu text="#{item.title}"
            <af:forEach var="subItem" items="#{item.list}" no="1">
                <af:commandMenuItem text="#{subItem.nameMC}" no="1">
                    <af:clientAttribute name="zoomLevel" value="5"/>
                    <af:clientAttribute name="srid" value="#{subItem.srid}"/>
                    <af:clientAttribute name="location" value="#{subItem.wktLocation}"/>
                    <af:clientListener method="zoomTo" type="click"/>
                </af:commandMenuItem>
            </af:forEach>
        </af:menu>
    </af:forEach>
</af:menu>
MapViewer 11g R1

- Custom Tags
- Annotations
- Caching
- JavaScript API
- Dynamic Client Side Styles
- JDBC Theme-Based FOI
- FOI Customizations
- Tutorials
function showPortalMap()
{
    mapview = new MVMapView(document.getElementById("map"), baseURL);
    addBaseMaps();
    addLayers();
    addThemeBasedFOIs();
    mapview.setCenter(mpoint);
    mapview.setZoomLevel(mapZoom);
    mapview.setHomeMap(mpoint,mapZoom);
    mapview.addMapDecoration(navigationDecoration);
    mapview.addMapDecoration(scaleBarDecoration);
    mapview.display();
}
Mizar Framework

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• Bringing it all together
• Libraries
  • Common
  • Persistence (JPA)
  • Security
  • JSF Faces
  • ADF Rich Faces
• Metadata
• Addressing (Streets)
• Open Source
• Oracle with choice
Mizar Framework

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Challenges

- Beta software
- Limitations to JPA inheritance model
- Lack of Application Server
- Integration of *works-in-progress*
- Declarative focus of Fusion 11g
- ADF Rich Faces – Trinidad incompatibility
- Documentation
- Caching a dynamic data set
- Experience
Opportunities

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• ADF Rich Faces
  • Exciting User Interface
  • Advances in JavaScript development environment
  • Advances in JavaScript API
  • Chrome
  • Open Source future
• JPA
  • Scalability
  • Spatial Extensions
• Map Viewer
  • Much improved API
  • Much improved documentation
  • Very useful tutorials
• Much improved user experience
• A solid foundation for years of development
Special Thanks

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• Jayant Sharma
  • Oracle Spatial
• Doug Clarke
  • Oracle Toplink
• Brian Fry
  • Oracle Jdeveloper
• Xavier Lopez & Jim Steiner
  • Oracle Spatial
• Joe Seppi
  • Woolpert