



ArcGIS Server 9.2:

An Overview for Developers

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Goals

- **Give you an overview of development with ArcGIS Server**
- **Give you a roadmap to other sessions**
- **Cover the breadth of the software**
 - **Not a deep dive session**

Presentation Outline

- **Brief Product Overview**
- **Overview of Development with ArcGIS Server**
 - **Developing Web Applications**
 - **Developing Web Services**
 - **Developing Enterprise Components**
 - **Developing Mobile Applications**

What is ArcGIS Server 9.2

- **A complete, out of the box Web based GIS with ready to use applications and GIS services for spatial data management, visualization, and analysis**
- **A platform for developing web and enterprise applications and services**
 - **Full Software Developer Kit**
 - **Available for the .Net and Java platforms**

Complete Out of the Box Web based GIS

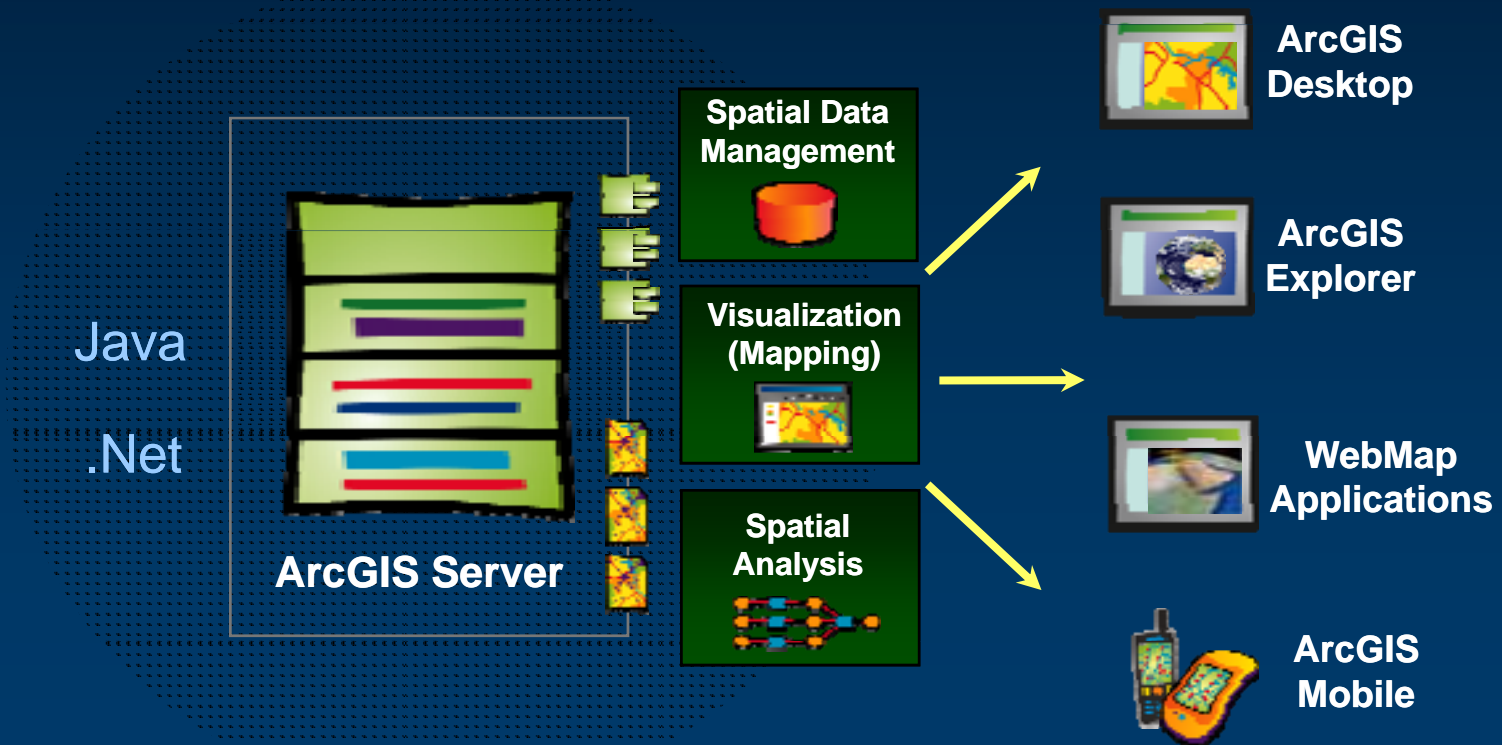
- **Allows GIS Analysts to easily configure Web Applications**
 - No programming required
- **Includes out of the box Desktop Clients**
 - ArcGIS Explorer
 - ArcGIS Desktop
- **Allows analysts to publish rich GIS Services**
 - 2D and 3D Mapping services
 - Geocoding, Geodata, Network Analysis and Geoprocessing services
 - SOAP, WMS, and KML based services

Development Platform for Server Applications

- **Support for multiple platforms**
 - .Net
 - Java
- **Cross-platform development**
 - Available on Windows, Linux, and Solaris
- **Comprehensive SDKs for Application Development**
 - *Web ADF* – for Web Applications and Web Services
 - *Mobile ADF* – for Mobile Applications (.Net only)
 - *Enterprise ADF* - for Enterprise JavaBeans (EJB) (Java only)

ArcGIS Server 9.2

- Complete & Integrated server-based GIS
- Out-of-the-box applications and services
- Rich developer opportunities



Product Platforms

- **ArcGIS Server for the Microsoft .Net Framework**
 - Windows
- **ArcGIS Server for the Java Platform**
 - Windows, Linux, Solaris
- **Platform specific install, documentation, SDK and IDE integration**
- **Both platforms have the same GIS functionality**
 - Rich GIS Services
 - Management Applications
 - Web Mapping Applications
 - ArcGIS Explorer and Desktop clients
- **ArcGIS Server product purchase includes both platforms**

ArcGIS Server for the Microsoft .Net Framework

Engineered for .Net and Windows



Internet Information Services



ArcGIS Server for the Java Platform

Certified Application Servers :



Certified Operating Systems :



IDE Plugins :



Developing with ArcGIS Server

What can developers do with ArcGIS Server ?

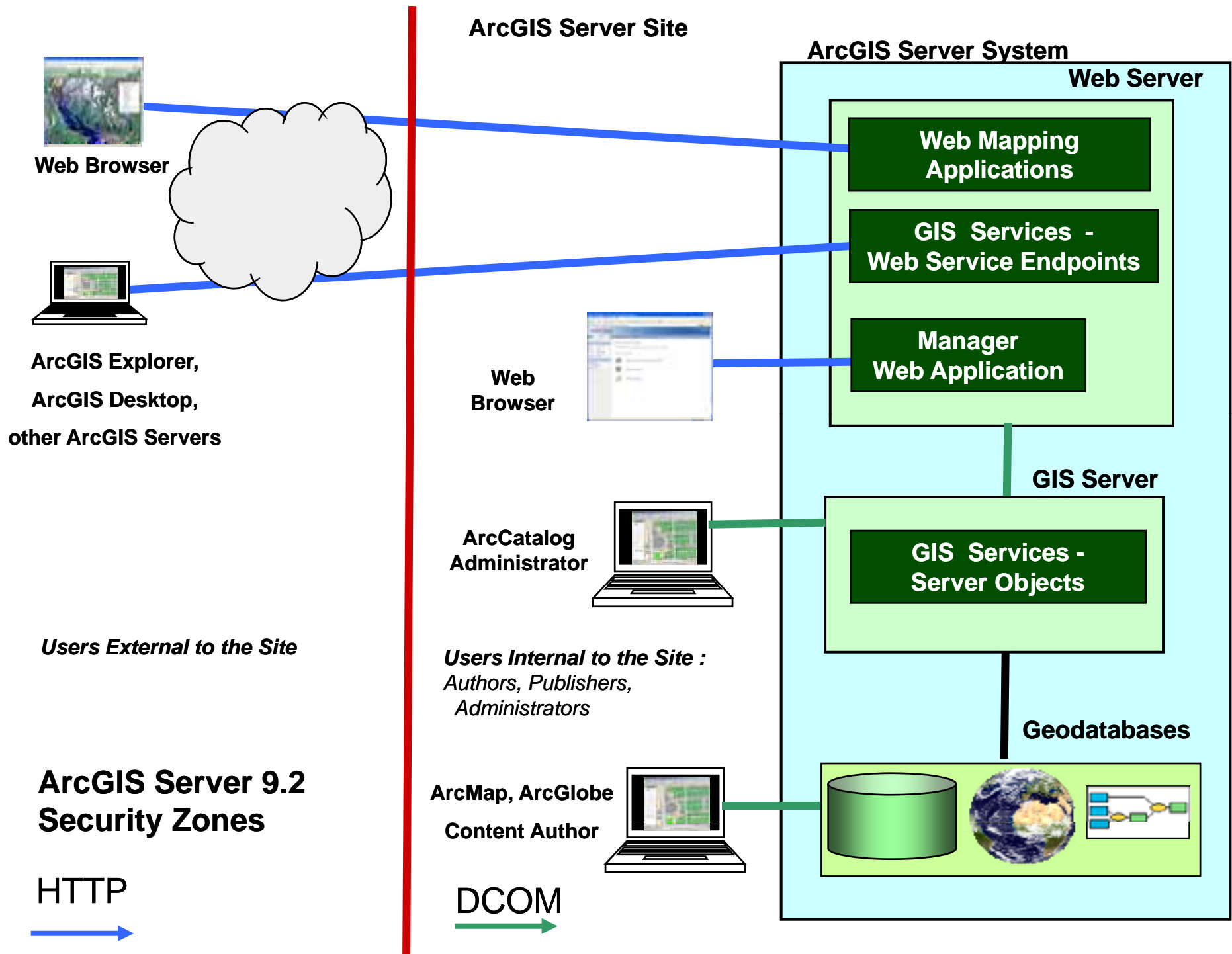
- **You can build the following kinds of applications and services with ArcGIS Server**
 - **Web Applications**
 - **Mobile Applications**
 - **Desktop Applications**
 - **(Application) Web Services**
 - **(Application) EJBs**

How do you build your application ?

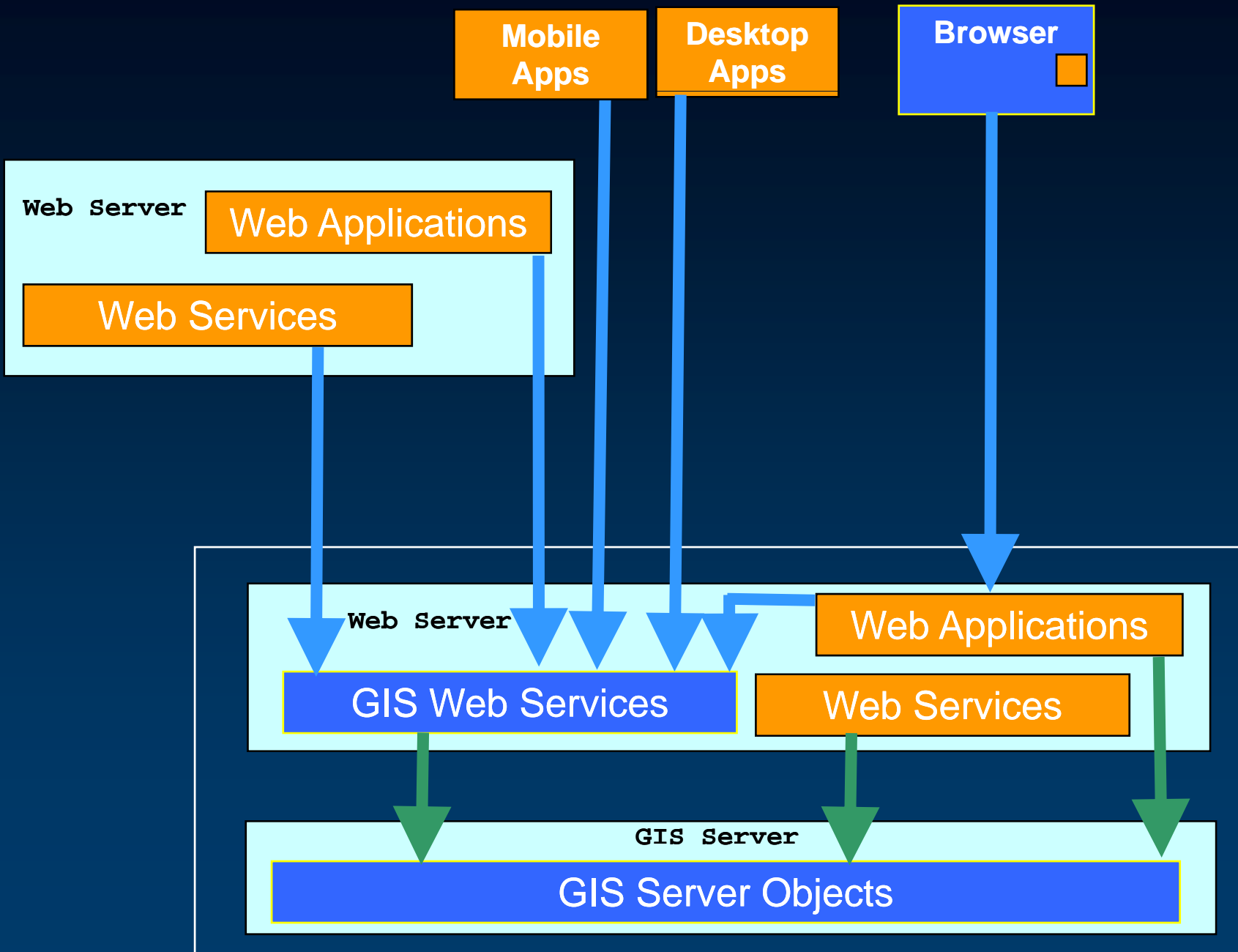
- **You build your applications using Application Development Frameworks**
 - **Web ADF [.Net, Java]**
 - for Web Apps and Web Services
 - **Mobile ADF [.Net]**
 - for Mobile Apps
 - **Enterprise ADF [Java]**
 - for EJBs
 - **ArcGIS Engine, ArcGIS Desktop SDK, ArcGIS Explorer SDK [.Net, Java]**
 - for Desktop Apps
- **Your applications work against GIS Services running in ArcGIS Server**
 - via the ADFs or Directly or in Combination

GIS Services – The Application Developers View

- **GIS Services represent *network accessible* resources that your application works with :**
 - Map Service, Geocode Service, Network Analysis Service, .Geoprocessing Service, ...
- **A GIS Service supports multiple network accessible programming interfaces**
 - SOAP
 - ArcObjects
- **GIS Services can be accessed via**
 - **Internet Connections**
 - Applications use SOAP / HTTP
 - “GIS Web Service”
 - **Local Connections**
 - Applications use SOAP / LAN or ArcObjects / LAN
 - “ GIS Server Object”
- **The ADFs expose GIS Services as Resources or Tasks to your application**



ArcGIS Server Applications



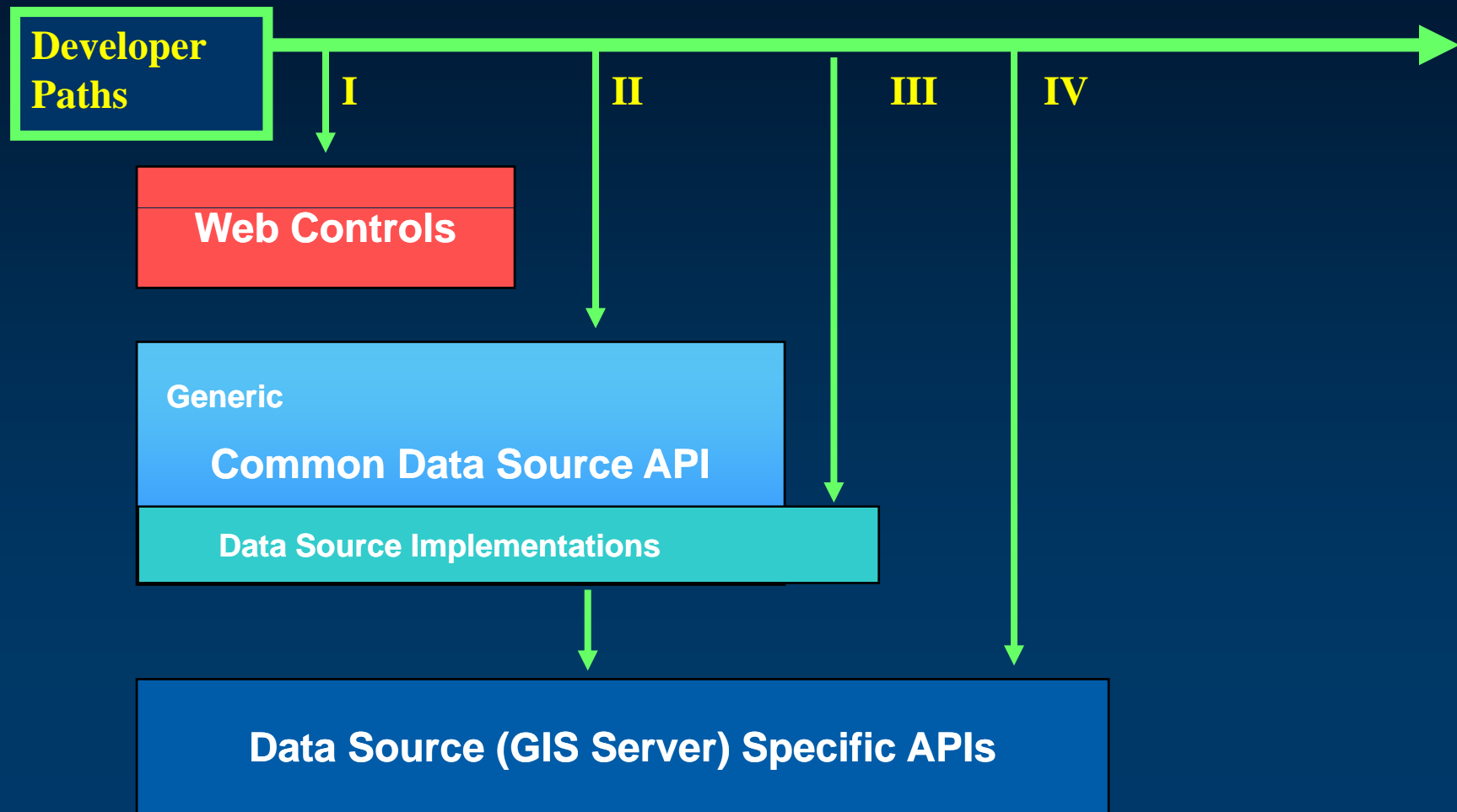
Building Web Applications

Building Web Applications

- **Use the Web ADF**
 - ArcGIS Server for .Net - Web ADF
 - ArcGIS Server for Java – Web ADF
- **Leverage AJAX Enabled ASP.Net or JSF Web Controls**
- **Work with GIS Web Services using the SOAP API**
- **Work with GIS Server Objects using either**
 - The SOAP API
 - Finer Grained ArcObjects API

Web ADF Development Paths

- Increasing complexity and functionality



Web ADF – Key Features

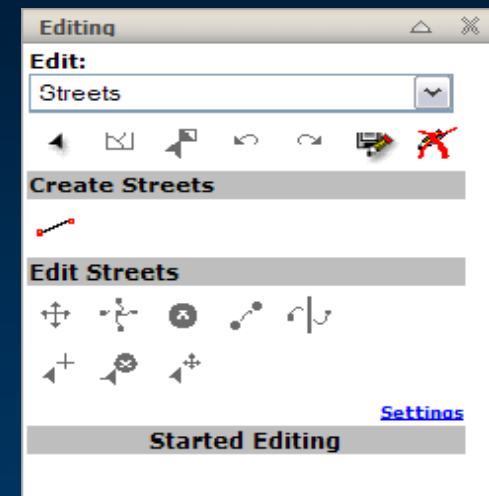
- **Ability to work with multiple data sources**
- **Ability to overlay multiple map services within the web application**
- **Web Mapping Controls**
 - Rich Web User Experience – AJAX enabled
 - Enhanced Design Time Experience
- **Web Graphics Layers for results and selections**
- **Task framework**
- **Web Mapping Application Template**
- **Integrated into the key IDEs**

Web ADF – Support for multiple data sources

- **ArcGIS Server Local (over LAN)**
 - using the SOAP API
 - using the ArcObjects Server API
- **ArcGIS Server Internet (over HTTP)**
 - using the SOAP / Web Services API
- **ArcIMS Server (over HTTP or LAN)**
- **ArcWeb Services (over HTTP)**
- **WMS Servers (over HTTP)**
- **Custom Data Sources that you can develop**

Web ADF – Tasks

- Allow the end user to perform useful work
- Visual components designed to perform a set of related actions and generate a result
- Configurable from Manager
- Product ships with out of the box tasks
 - Search by attributes
 - Query Attributes
 - Find Place
 - Find Address
 - Editing
 - Geoprocessing
- Developers can extend the system with Custom tasks



Web Graphics

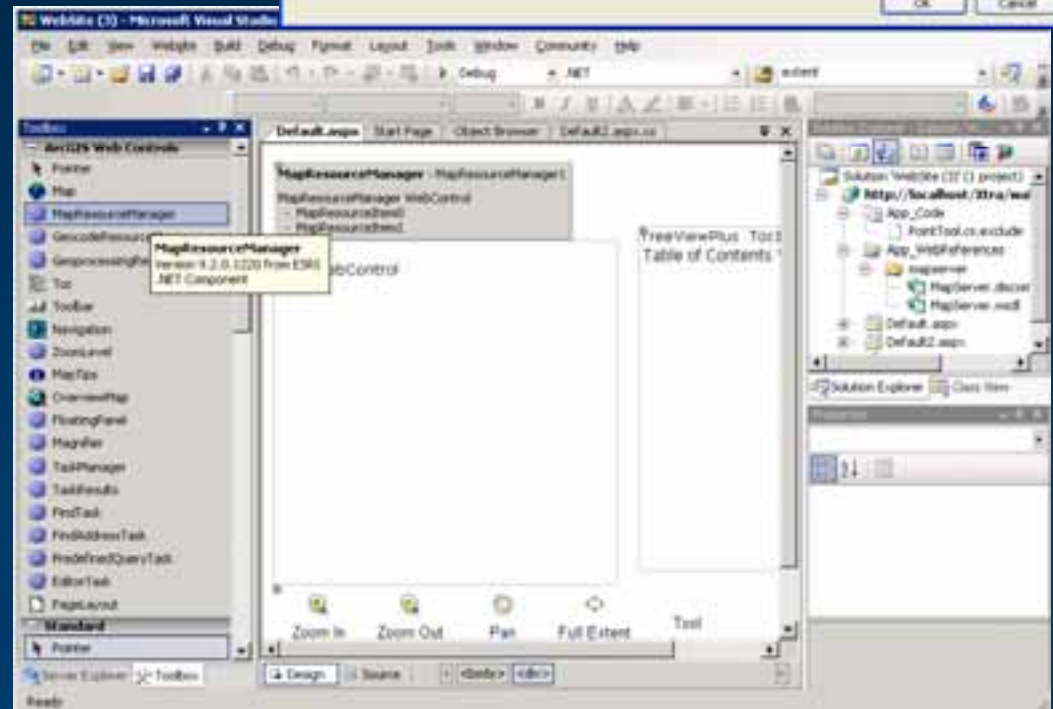
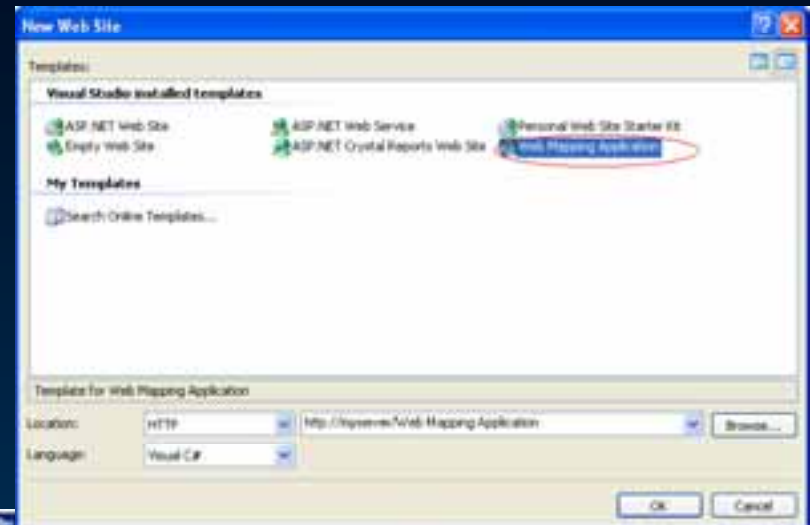
- **Allow developers to add simple graphics to the map**
- **Supported symbols**
 - Line
 - Marker
 - Polygon
 - True type marker
- **Supported renderers**
 - Unique value
 - Class break
 - Simple
- **Integrated into Web and Browser tiers**

ArcGIS Server for .Net – Developing Web Applications

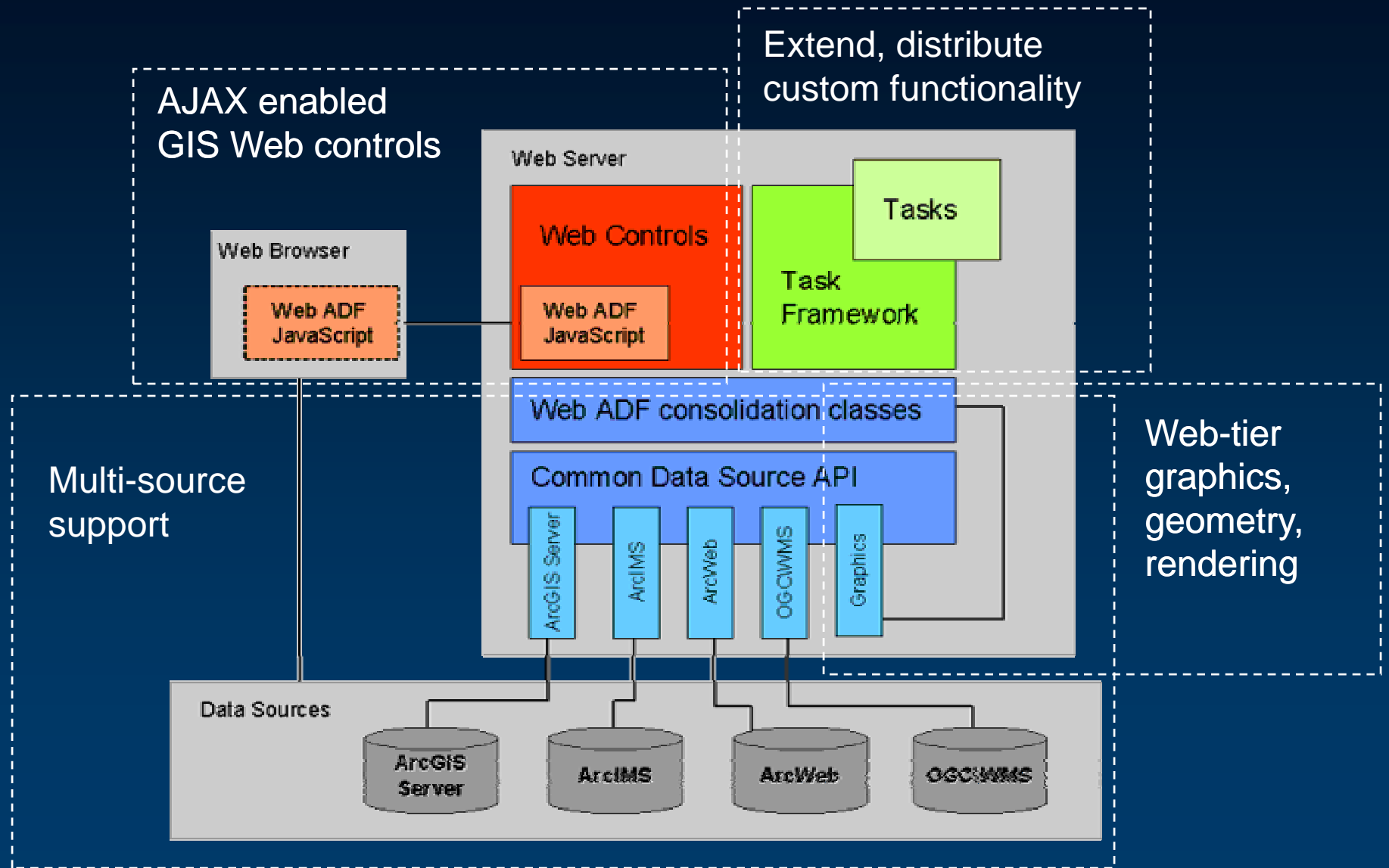
- **You work with**
 - ASP.Net Pages, ASP.Net Web Controls, WebParts,
 - JavaScript, AJAX, HTML, XML, XSLT
- **ESRI provides you with**
 - ASP.Net Web Controls
 - Web ADF GIS Business Objects
 - SOAP API to GIS Services
 - ArcObjects API to GIS Components

ArcGIS Server for .Net - Web ADF

- Designed for ASP.Net
- Integrated with VS 2005
- Rich design-time experience
- Drag and drop web controls
- Configure tools, resources and tasks
- Start with Web Project templates
- Integrated samples and documentation

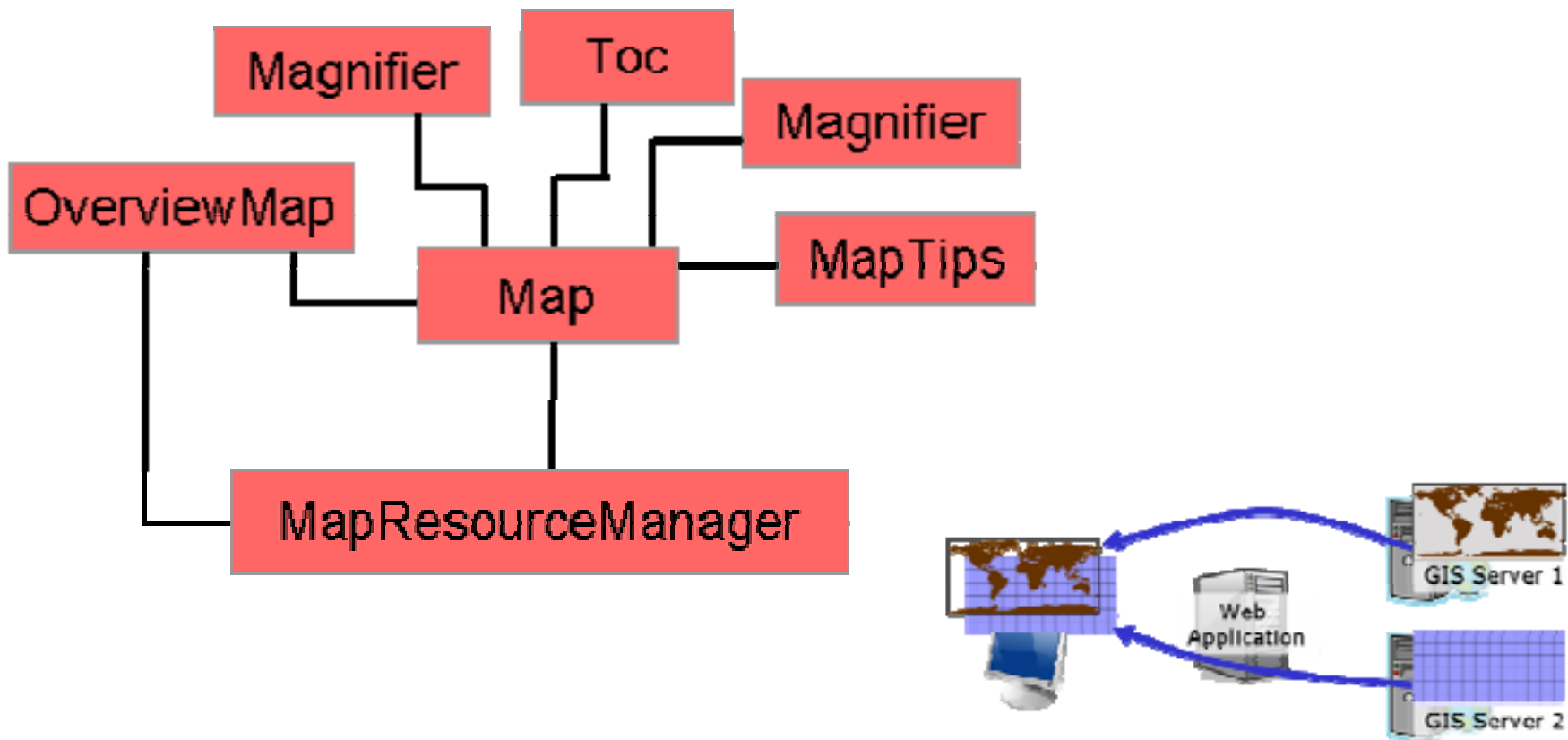


ArcGIS Server for .Net - Web ADF architecture



ArcGIS Server for .Net - Web ADF Controls

- **AJAX enabled**

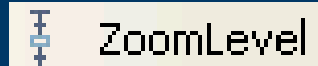
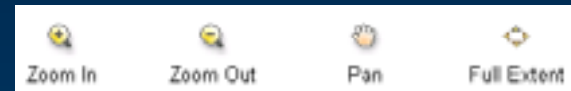


- **Map control supports multi source blending**

. ArcGIS Server for .Net - Web ADF Controls



- Volcanoes and Faults
 - VOLCANO
 - ▲ Less than -3503
 - ▲ -3503 - -906
 - ▲ -906 - 1691
 - ▲ 1691 - 4288
 - ▲ 4288 - 6886
 - FAULTS
- Background
 - Populated Places
 - Railroads
 - Highways

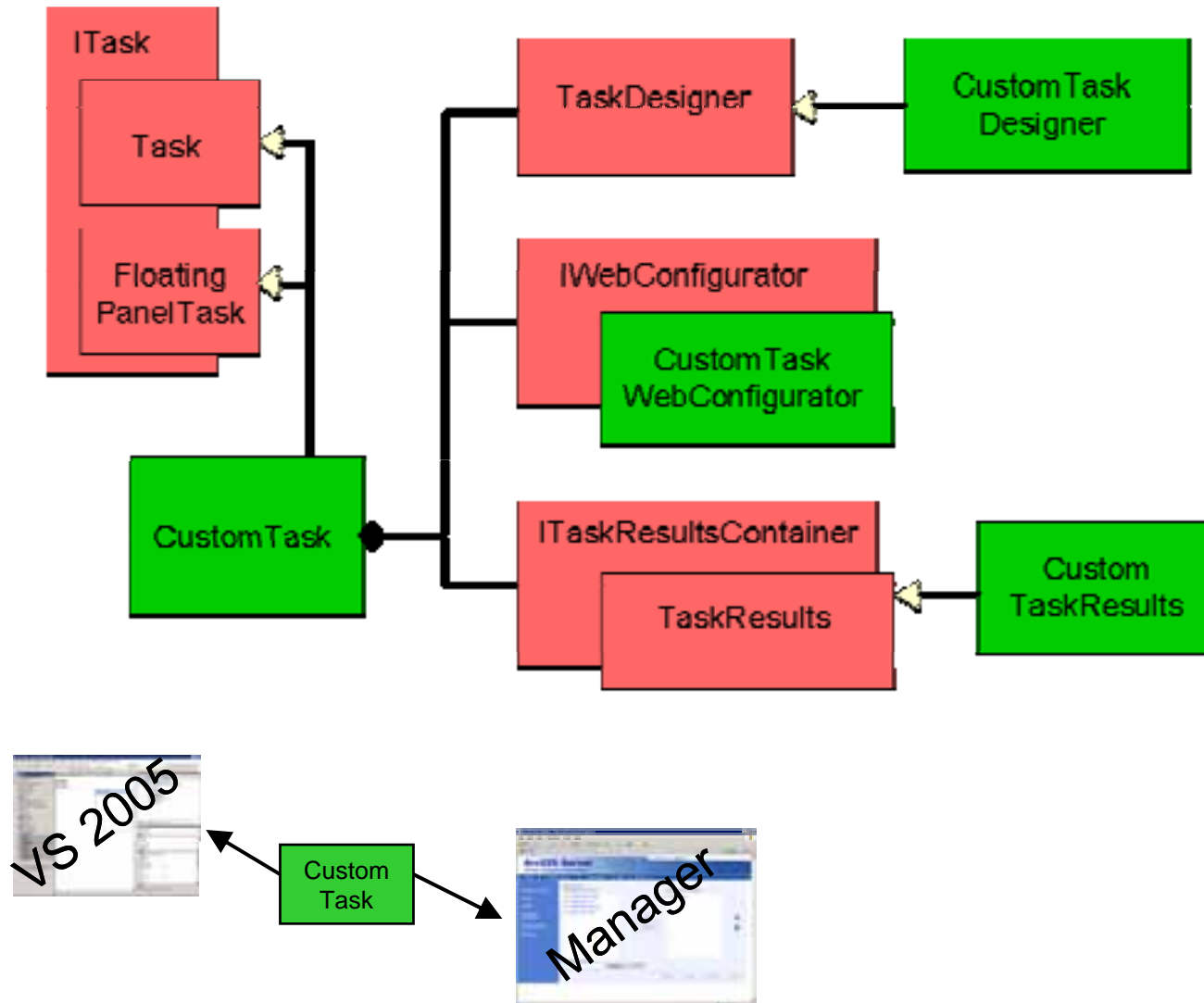


- SearchAttributesTask
- FindAddressTask
- FindPlaceTask
- QueryAttributesTask
- GeoprocessingTask
- EditorTask

- TaskManager
- TaskResults

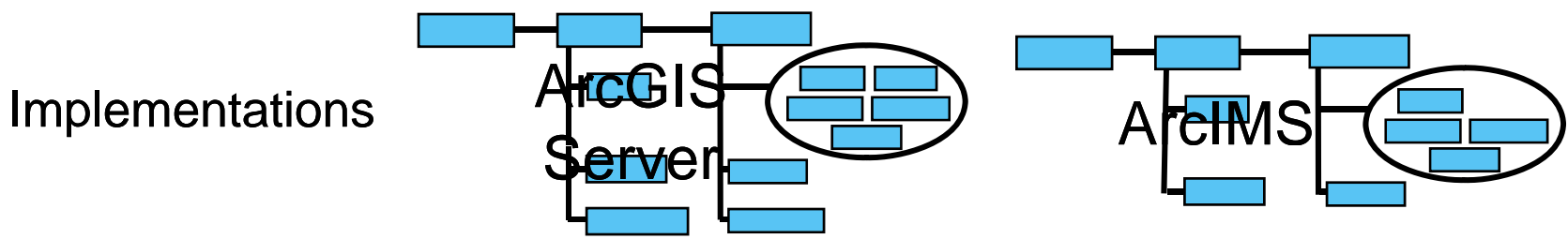
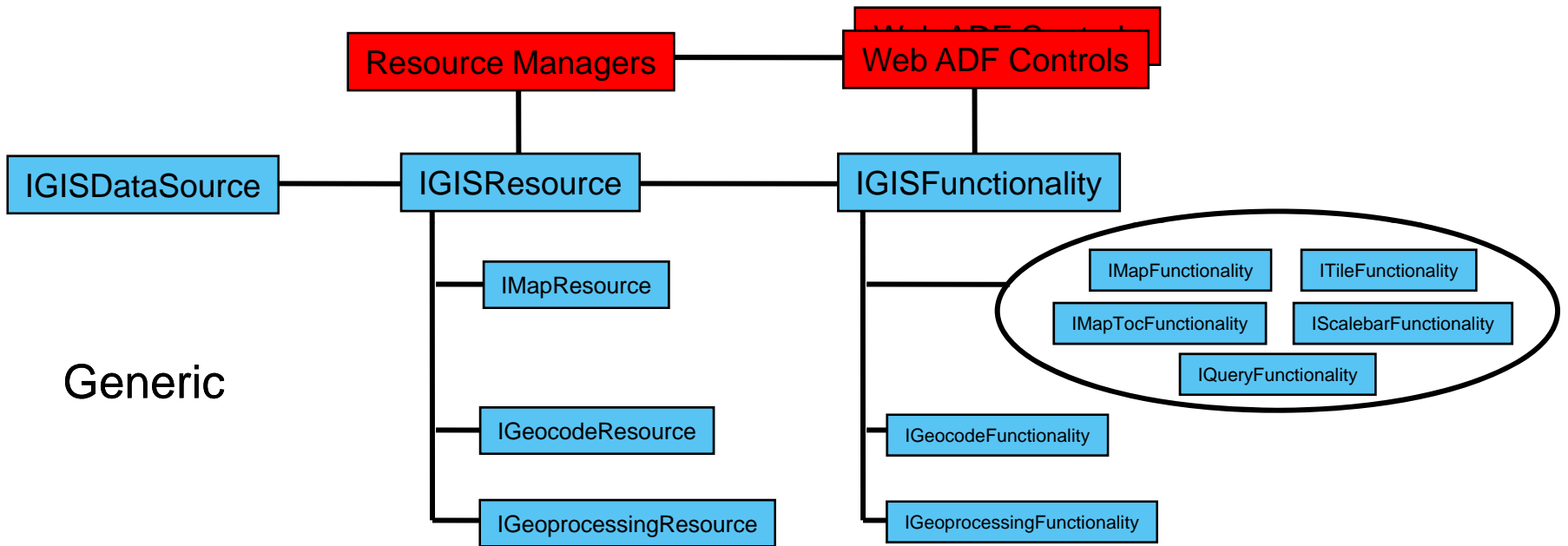
ArcGIS Server for .Net - Web ADF Task Framework

Extensible framework to support creating and deploying custom tasks



ArcGIS Server for .Net :

Web ADF – Data Source Object Model & Common API



Demo – Developing Web Applications

ArcGIS Server for .Net

Sessions - .Net Web ADF

- **Building AJAX Based Web Applications with ArcGIS Server and .Net**
 - Art Haddad and Rex Hansen
 - Tue 2:45 – 4 PM
 - Thu 8:30 AM – 9:45 AM
- **Developing Custom Web Tasks using the .Net Web ADF**
 - Sentha Sivabalan and Rex Hansen
 - Wed 2:45 – 4:00 PM

ArcGIS Server for Java – Developing Web Applications

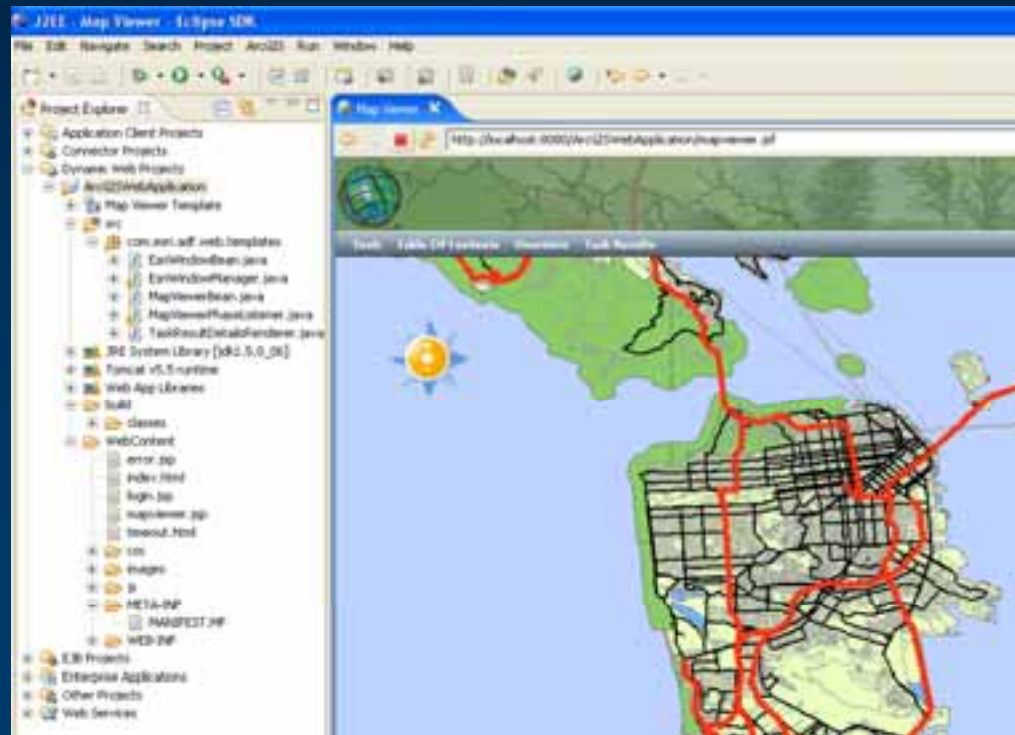
- **You work with**
 - Java Server Pages (JSP), Java Server Faces (JSF), Portlets
 - AJAX, JavaScript, HTML, XML, XSLT
- **ESRI provides you with**
 - JSF-based Web Controls (Web ADF)
 - Web ADF GIS Business Objects
 - SOAP API to GIS Services
 - ArcObjects API to GIS Components

ArcGIS Server for Java - Web ADF

- **Java Server Faces (JSF) based web controls for rapid application development**
- **Integrated into Eclipse and Sun Creator IDEs**
- **Runs on standard J2EE Application Servers**
- **Allows you to work with**
 - **Java Server Pages (JSP), Java Server Faces (JSF), Portlets**
 - **Javascript, HTML, XML and XSLT**

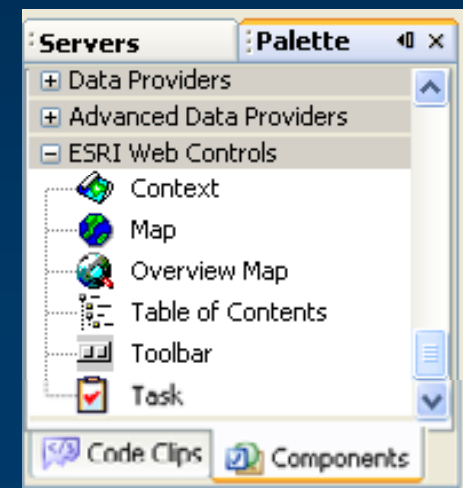
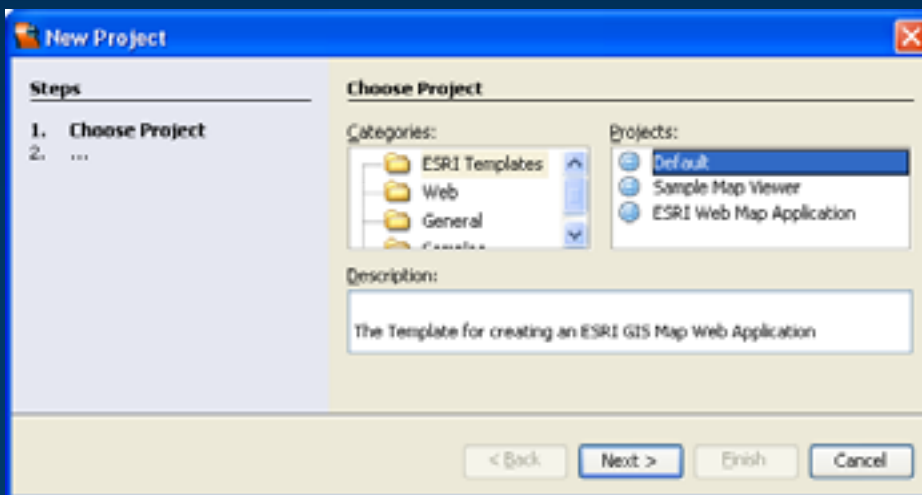
IDE integration - Eclipse

- Eclipse plug-in
 - Template applications
 - Reusable code available as snippets
 - Integrated documentation
 - Samples are integrated to run from within the IDE

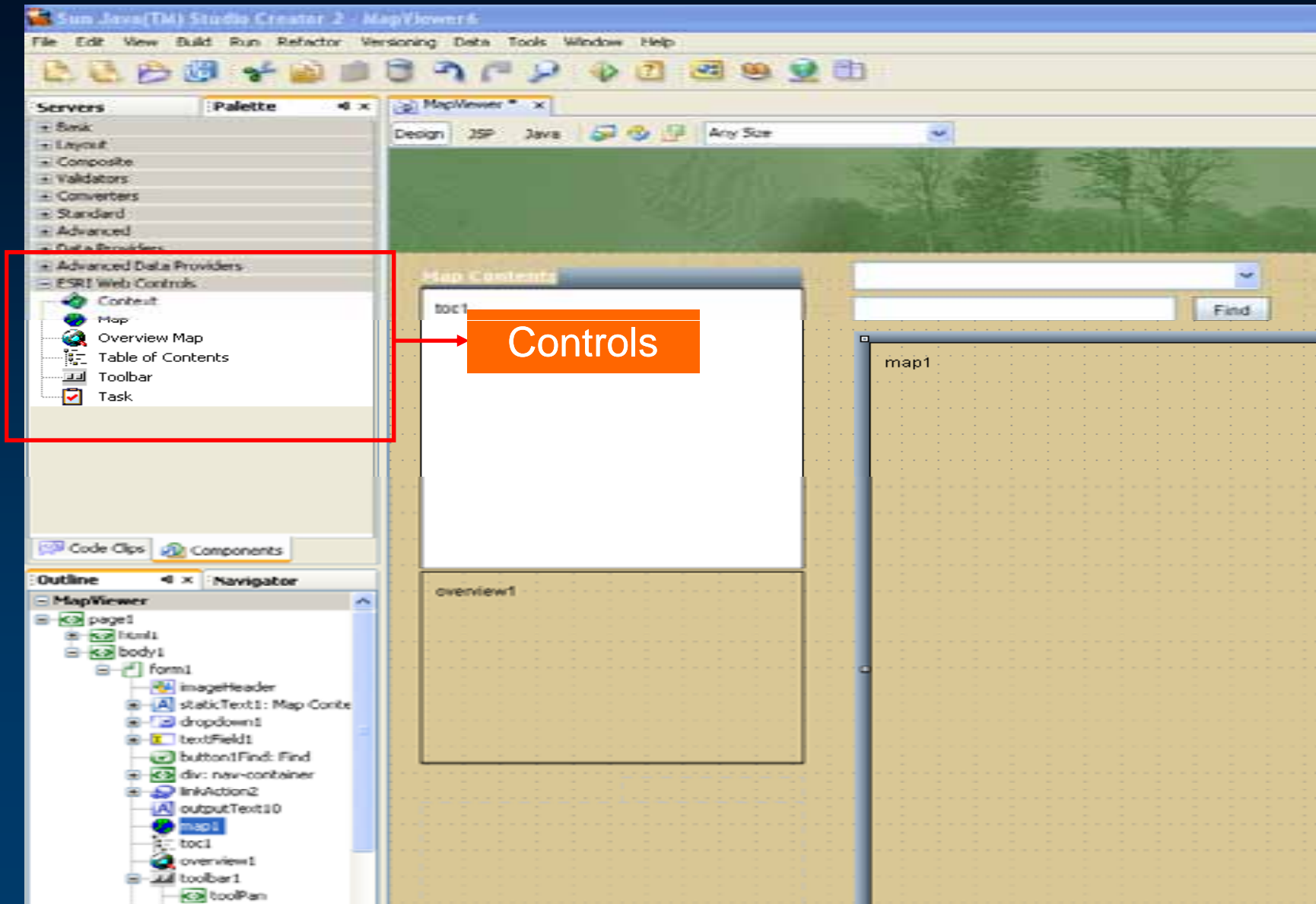


Creator IDE Integration

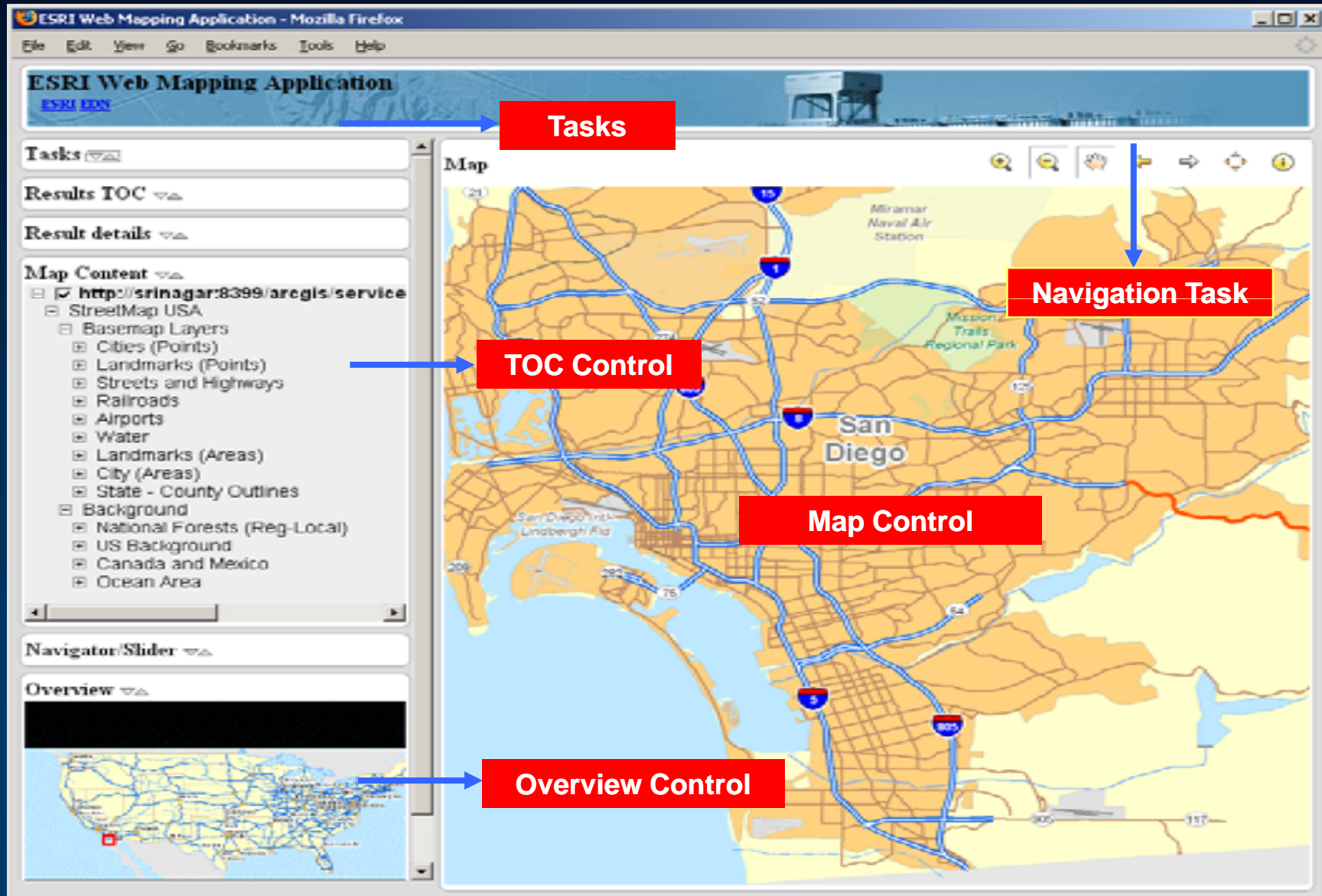
- Rich visual design-time experience for web application development
- Drag and drop web controls
- Configure tools, resources and tasks
- Start with Web Project templates
- Integrated samples and documentation



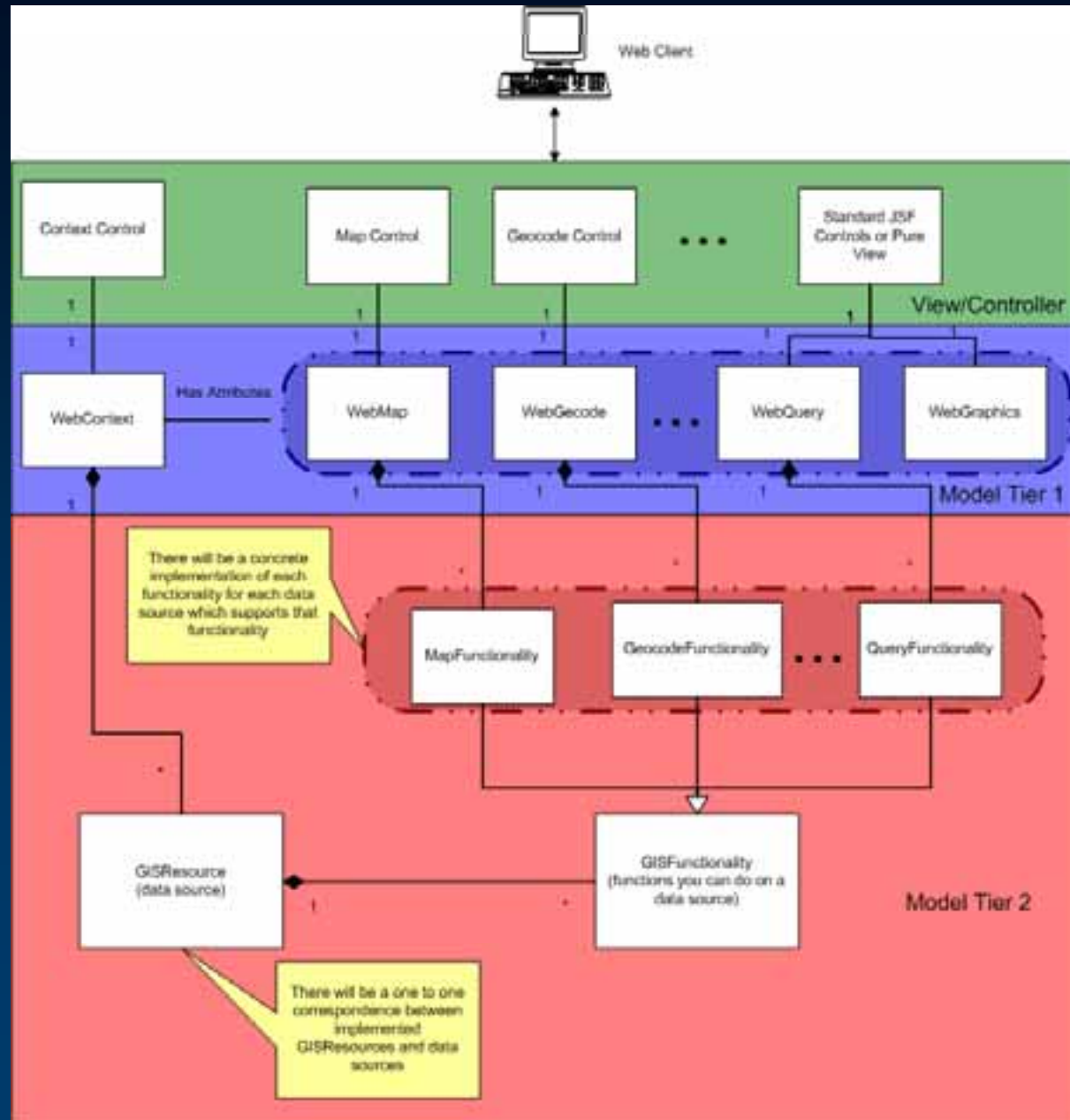
IDE integration – SUN Java Studio Creator



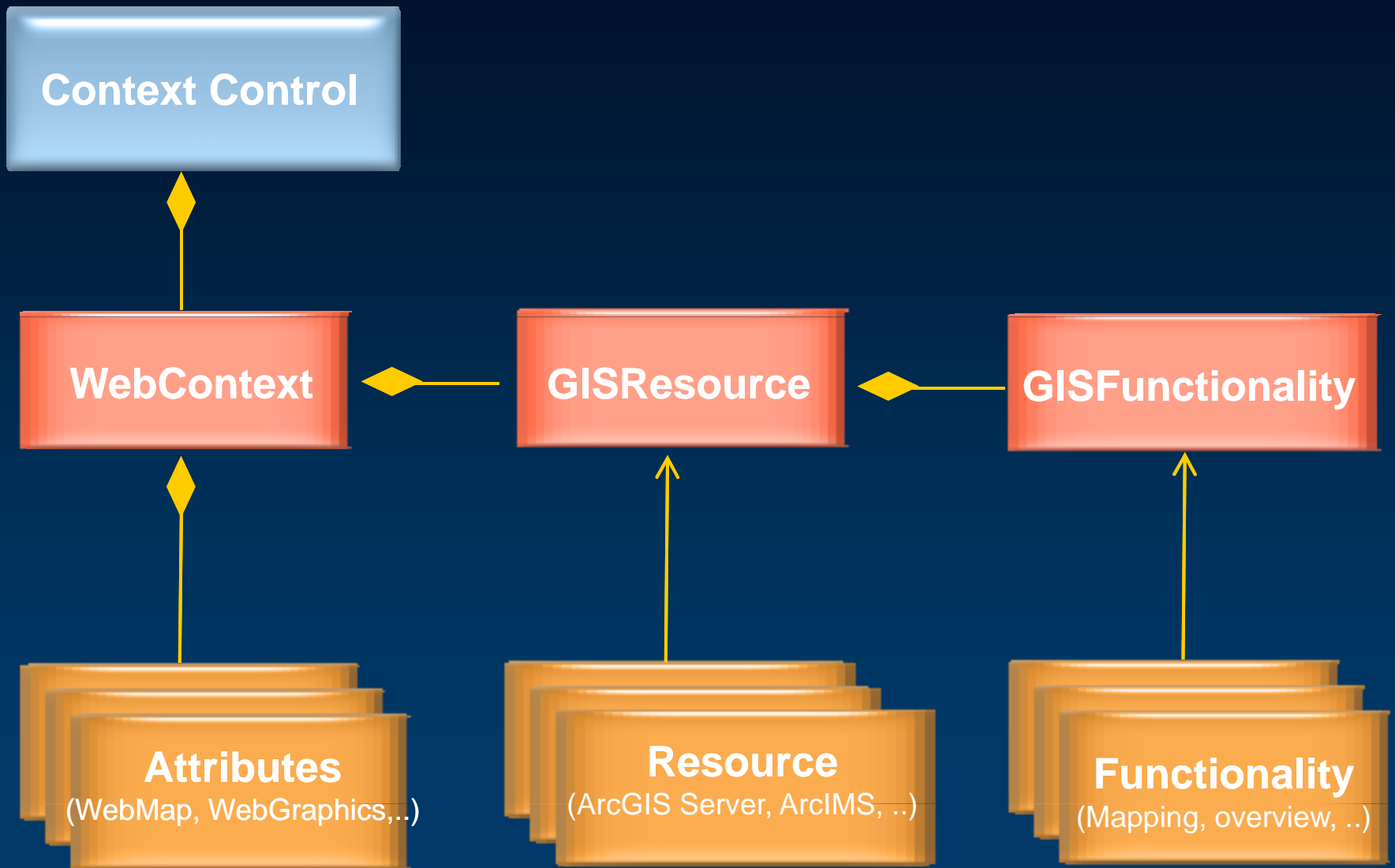
ArcGIS Server for Java – Web Mapping Application and Controls



ArcGIS Server for Java : Web ADF Architecture – follows the MVC pattern



ArcGIS Server for Java - Web ADF Objects



Demo – Developing Web Applications

ArcGIS Server for Java

Sessions - Java Web ADF

- **Building AJAX Based Web Applications with ArcGIS Server and Java (Deep Dive)**
 - Jayant Sai and Antony Jayaprakash
 - Tue 4:30 – 5:45 PM
- **Developing Custom Web Tasks using the Java Web ADF**
 - Keyur Shah and David Cardella
 - Wed 1:00 – 2:15 PM

Working with GIS Web Services

Service Oriented Architectures

- **A method of building business applications that utilize common services to support business functions**
- **Resources on a Network are made available as Services that can be accessed without awareness of their underlying implementation**
- **Services have a well defined contract and are interoperable**
- **GIS Web Services are available for integration into your SOA**
- **You can build spatially enabled business web services**

SOAs helps integrate Diverse Enterprise Systems

- Enterprise GIS System Integration
 - Improves Geo-Centric Workflow
 - Utilize GIS data from all GIS Systems



- Enterprise Application Integration
 - Improves GeoSpatially Enabled Workflows
 - Utilize GIS data within CRM & ERM Systems

- Service Oriented Architecture
 - Facilitates GIS System and Enterprise Application Integration

GIS Web Services

- ArcGIS Server includes a rich set of out of the box GIS Web Services
- SOAP
 - 2D Map Service
 - 3D Map / Globe Service
 - Geocoding Service
 - Network Analysis Service
 - Geoprocessing Service
 - Geodata Service
 - Mobile Data Service
- OGC
 - WMS Service
- KML
 - KML Service
- Publish and Deploy using Manager
 - no programming required
- .Net and Java ArcGIS Servers have identical web service capabilities

Consuming GIS Web Services

- ArcGIS Explorer and ArcGIS Desktop are out of the box Clients
- You can build Web Mapping Applications that consume GIS Services using Manager
- The Web ADFs have built in support for working with GIS Web Services via the ArcGIS Server Internet Data Source
- Application Developers can also consume GIS Web Services using the standard SOAP/WSDL interfaces
 - No need to install any ESRI software on client machine
 - Can be consumed from both .Net and Java

Building Spatially Enabled Business Web Services

- You Implement your business Web Service using a standard framework
 - ASP.Net asmx, WCF
 - Java Axis
 - ...
- You Implement your geo-spatial logic using :
 - The Business Objects in the Web ADF
 - Eg IQueryFunctionality
 - The ArcGIS Server SOAP API
 - The ArcObjects fine grained APIs

Sessions – GIS Web Services

- **Working with the ArcGIS Server Web Services API (Deep Dive)**
 - Sud Menon and Julio Andrade
 - Wed 2:45 – 4:00 PM

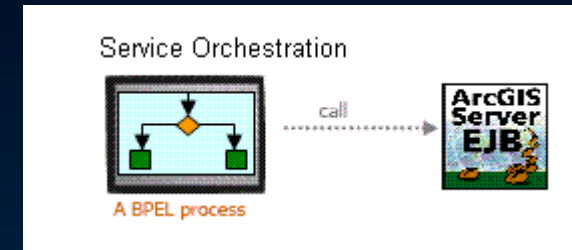
ArcGIS Server for Java - Enterprise Development

- You work with

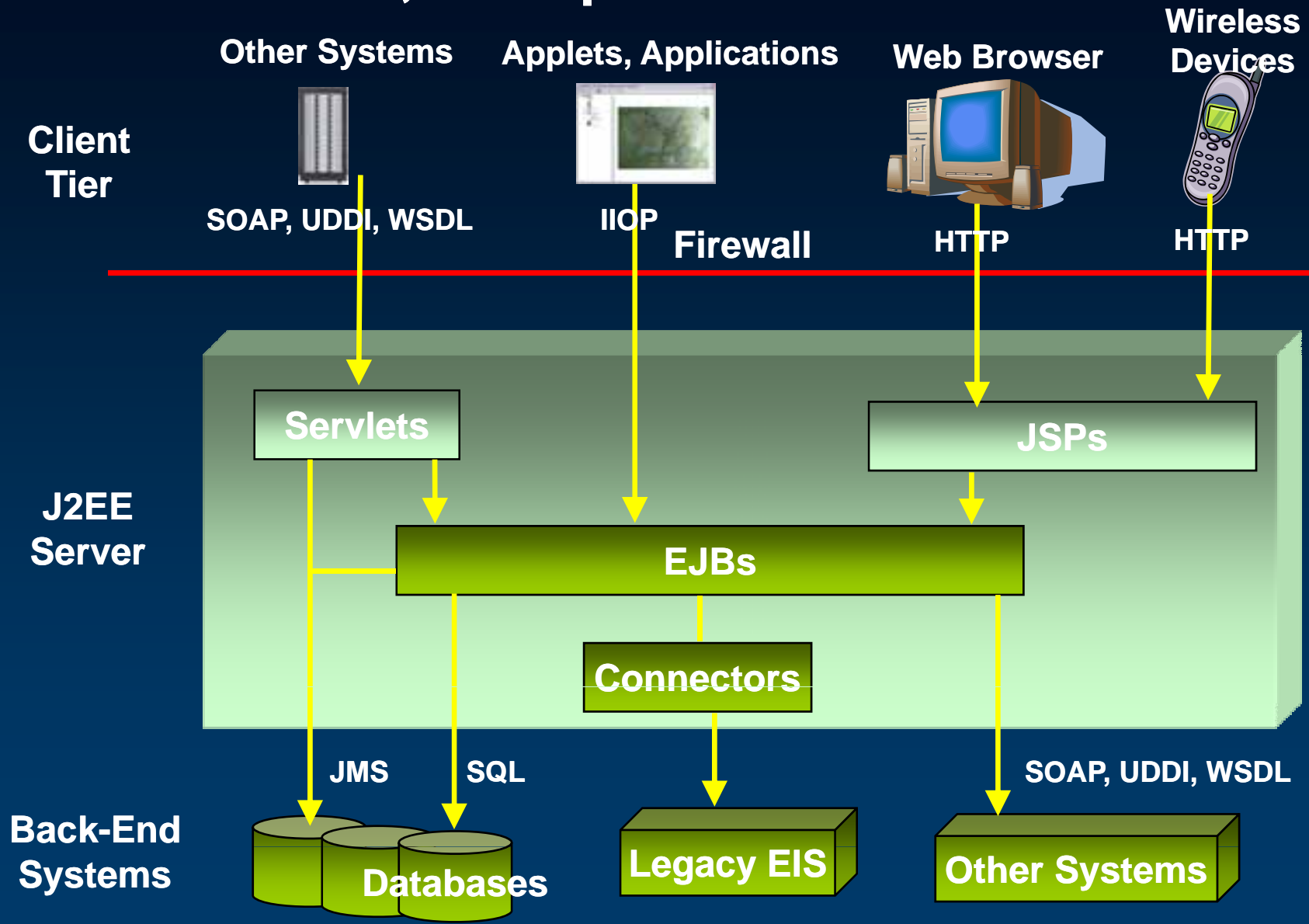
- Enterprise Java Beans (EJB), Servlets
- Enterprise Service Bus (ESB), Java Business Integration (JBI), BPEL
- Java Message Service (JMS)
- Enterprise Information Systems (EIS) integration

- ESRI provides you with

- Geospatial Enterprise Java Bean (EJB) components (Enterprise ADF)
- SOAP API to the Server
- ArcObjects API to the Server [optionally, via J2EE Connector Architecture (JCA)]



Java 2 Platform, Enterprise Edition



ArcGIS Server for Java – Geospatial EJBs

- **9.2 ships with out-of-the-box Geospatial EJBs that are ready to use and ready to deploy**
 - **Mapping, Geocoding, Network Analysis, Geodata Querying and Geoprocessing**
- **Integrated with the Web ADF**
 - Use geospatial EJBs as data sources in web applications
- **Integrated into Manager for simple point click ease**
 - Package, configure and deploy
 - Configure logging, security and high availability for clustering
- **Supports J2EE 1.4 compliant application servers**
- **Integrated with the Eclipse IDE**
- **You can also build your own business specific spatially enabled EJBs**

Sessions – Java Enterprise ADF

- **How to build Enterprise Applications using the Geospatial EJBs (Deep Dive)**
 - Eric Bader and Divesh Goyal
 - Tue 2:45 – 4 PM

ArcGIS 9.2: Mobile GIS Products

Platform Support	Laptop PC	Tablet PC	Pocket PC	Smart Phone	J2ME Phone
Developer Toolkits					
ArcWeb Services					✓
ArcGIS Engine	✓	✓			
ArcGIS Server mobile technology	✓	✓	✓	✓	
Applications					
ArcPad	✓	✓	✓		
ArcGIS Desktop	✓	✓			
Solutions					
GeoCollector			✓		

ArcGIS Server for .Net - Building Mobile Applications

- **Use the ArcGIS Server Mobile ADF**
- **Leverage Mobile Map Controls**
- **Leverage the .Net Compact Framework**
- **Work with GIS Web Services using the SOAP API**

ArcGIS Mobile SDK



- **An ArcGIS Server developer solution** for mobile applications
- **An SDK that ships with ArcGIS Server for building Mobile applications.**
- **A Suite of .Net Components for developing custom server-centric lightweight mobile applications**
- **Supports field workflows**
 - Data viewing
 - Feature inspection
 - Basic data collection
- **Direct synchronization with ArcGIS Server**
- **Connected and disconnected environments**
- **Windows Mobile and Desktop platforms**

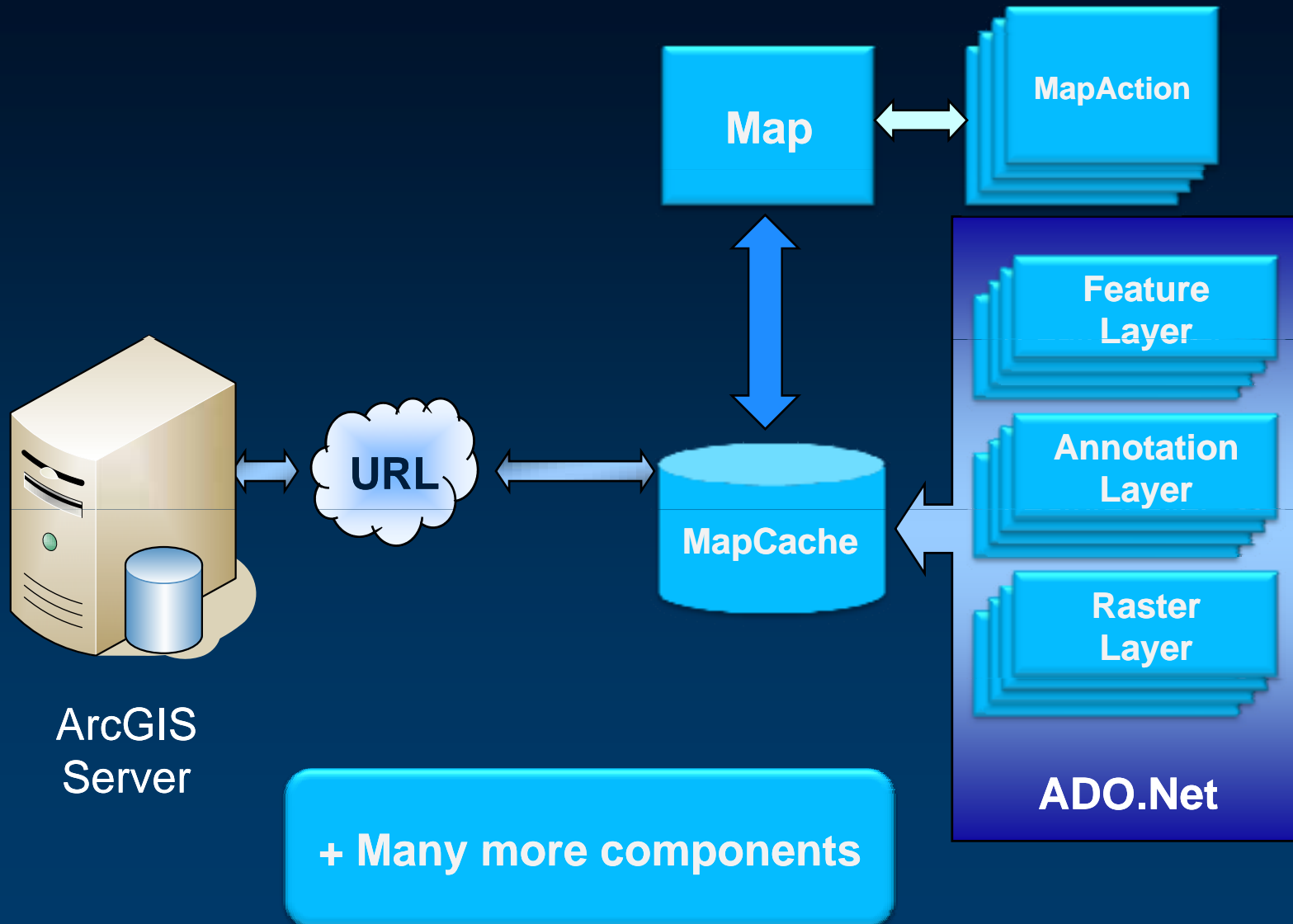
ArcGIS Mobile SDK : Features Overview

- Suite of .Net Mobile GIS components
- Support multiple connectivity scenarios
- Long and Short Transactions, Versioned editing
- Leverage Visual Studio 2005
- Small footprint and high performance
- Comprehensive developer help
 - Visual Studio integration
 - Walkthrough, Samples
 - Online documentation

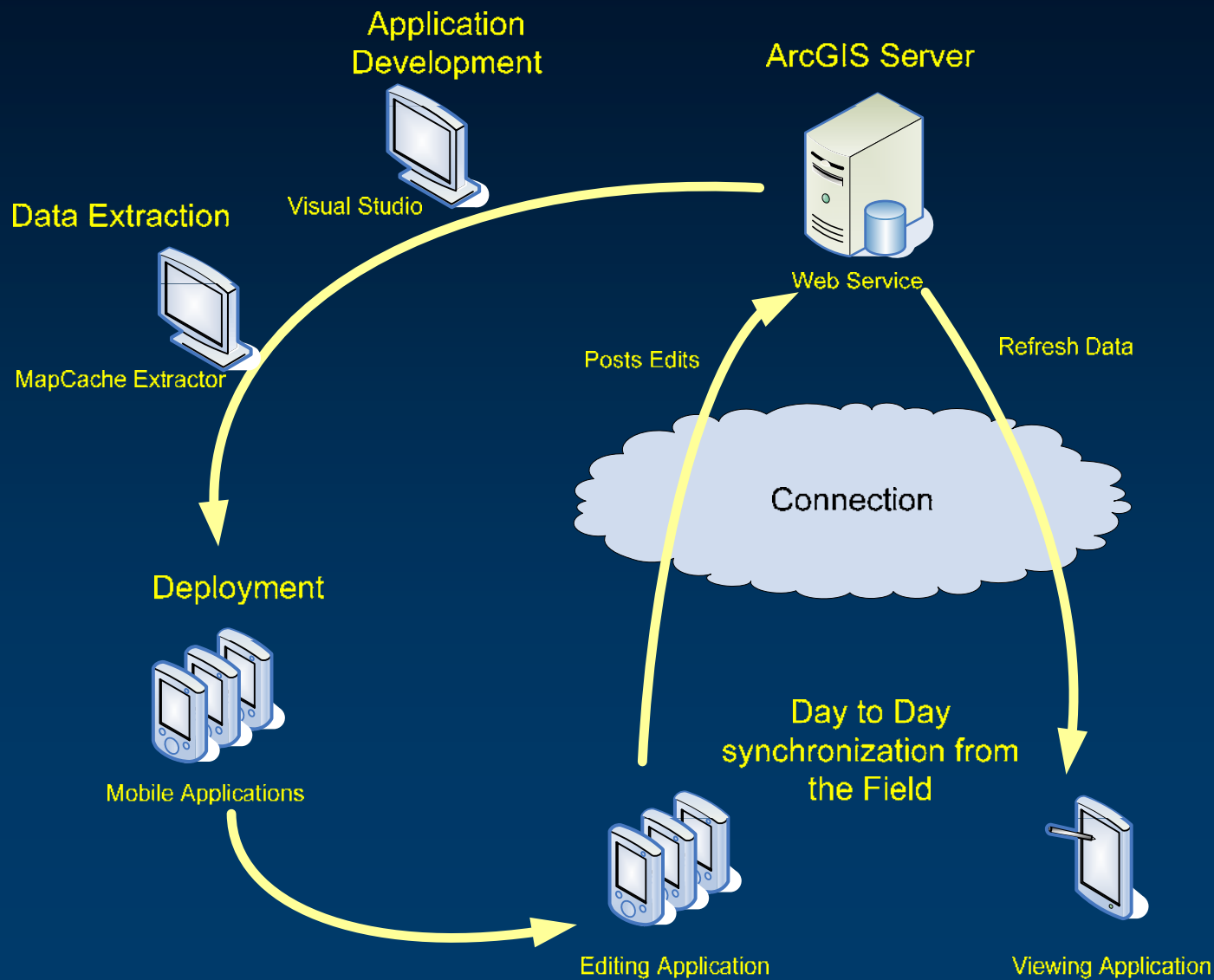
Mobile SDK: Target Platforms

- **Microsoft .NET/.NET Compact Framework 2.0**
- **Windows Mobile 5.0**
 - PocketPC
 - SmartPhone
- **Windows Mobile for Pocket PC 2003, 2003 SE**
- **Windows CE 5.0**
- **Windows XP**

Mobile SDK: Core components



Mobile SDK: Application and Data Deployment



Demo – Developing Mobile Applications

ArcGIS Server for .Net

Sessions – Mobile Development

- **ArcGIS Mobile SDK – Best Practices**
 - Jeff Shaner and Mike Shaw
 - Tue 2:45 – 4:00 PM
 - Wed 4:30 – 5:45 PM

Building Desktop Applications- using ArcGIS Engine

- **Use ArcGIS Engine for .Net or Java**
 - **Leverage the Engine Map and Globe Controls**
 - **Work with GIS Services using ArcObjects**
 - **Use the GISClient ArcObjects library to create connections to the server to browse the server and to obtain proxies to gis services**
- **Program directly against wsdl proxies if needed**
 - **.Net or Java clients**

Building Desktop Applications – Extending ArcGIS Explorer

- **Use ArcGIS Explorer SDK to build custom tasks that work with ArcGIS Server**
- **Programming Custom Tasks for ArcGIS Explorer (Deep Dive)**
 - Shelly Gill, Robert Dunfey and Euan Cameron
 - Wed 10:30 – 11:45 AM
 - Wed 4:30 – 5:45 PM

Presentation materials

- PowerPoint presentation and code will be posted on the conference web site
 - <http://www.esri.com/events/devsummit/index.html>
- EDN – downloads and videos

Further questions?

- **TECH-TALK AREAS** after the different detailed presentations
- **ESRI Showcase**
- **Meet the teams**
 - **ArcGIS Server for Java – Tue 4 – 5 PM**
 - **ArcGIS Server for .Net – Tue 5 – 6 PM**
 - **ArcGIS Mobile – Wed 11:30 AM**
 - **ArcGIS Explorer – Thu 10:30 AM**
- **ESRI Developers Network (EDN) website**
 - **<http://edn.esri.com>**