



GSDI 12 WORLD CONFERENCE
Realising Spatially Enabled Societies
SINGAPORE | 19-22 October 2010

GSDI 12 | Singapore 2010

Workshop 5
Building Geospatial Web Applications
without a GIS

Dr. Kam Tin Seong,
Practice Associate Professor
School of Information Systems,
Singapore Management University
E-mail: tskam@smu.edu.sg

School of Information Systems



Learning objectives

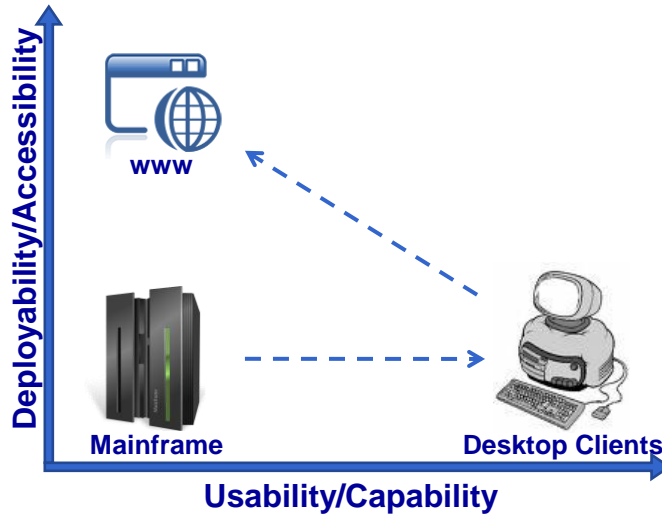
By the end of this lesson you should be able to:

- understand the differences between static internet mapping and interactive internet-based GIS
- understand the basic components and operations of an internet-based GIS
- design and deploy an internet-based GIS

School of Information Systems

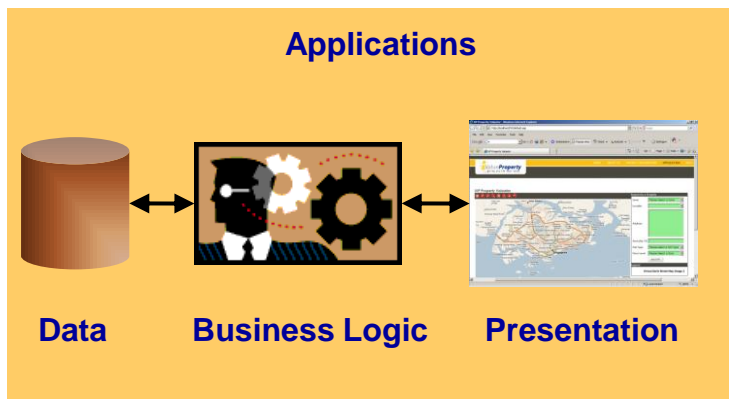


Evolution of Geospatial Technology

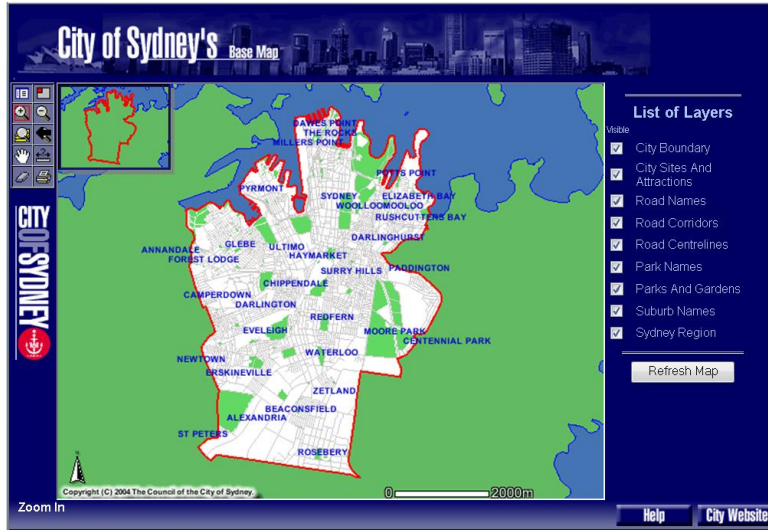


What is Internet GIS?

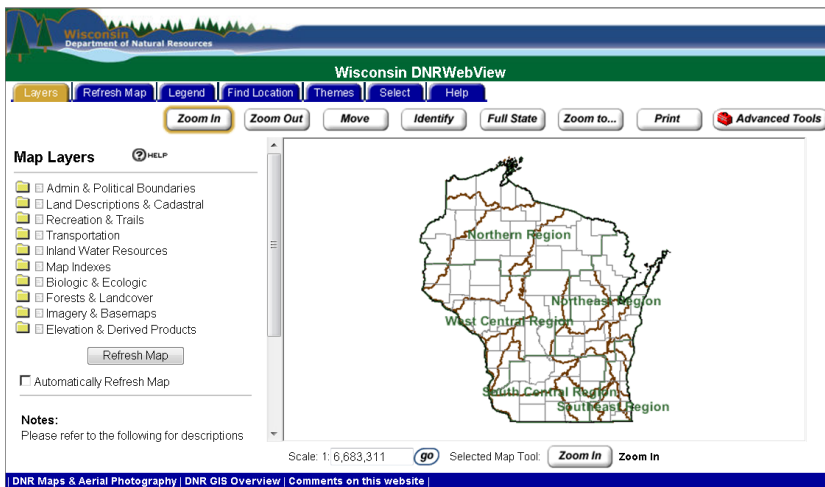
- Client/Server architecture
- Cyberspace



Internet GIS in action



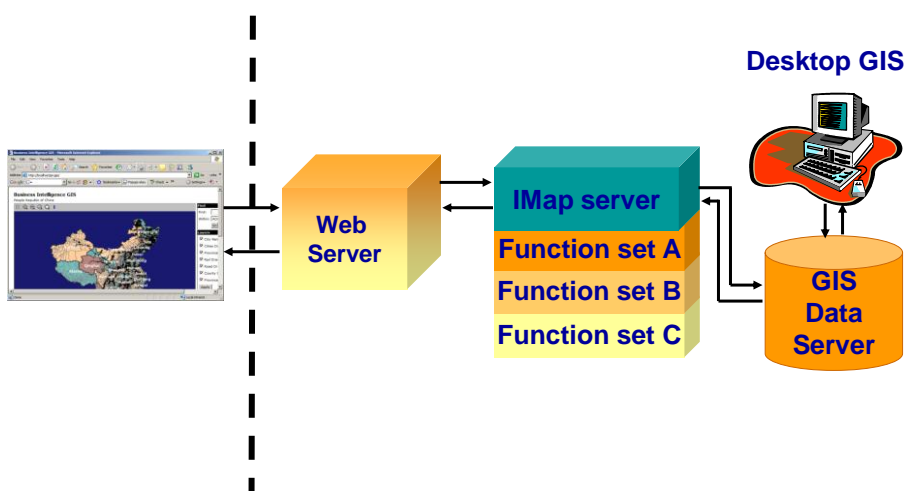
Internet in action 2



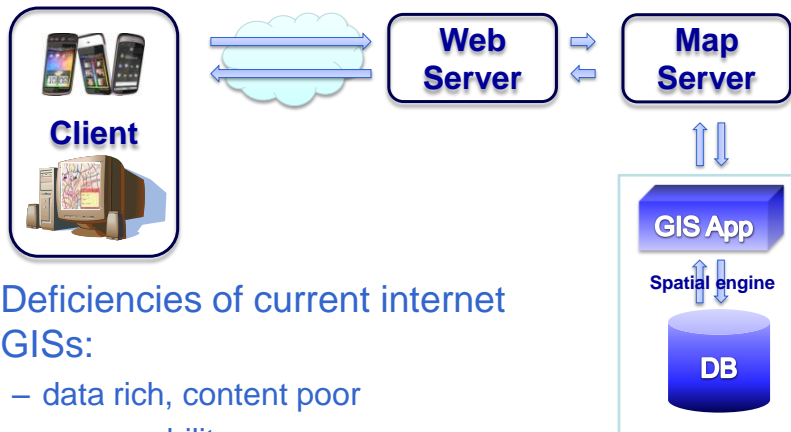
What is so special of Internet GIS?

- Internet GIS map is dynamic
- Internet GIS is interactable
- Internet GIS supports near to real time data dissemination

Loose coupling Internet GIS technology

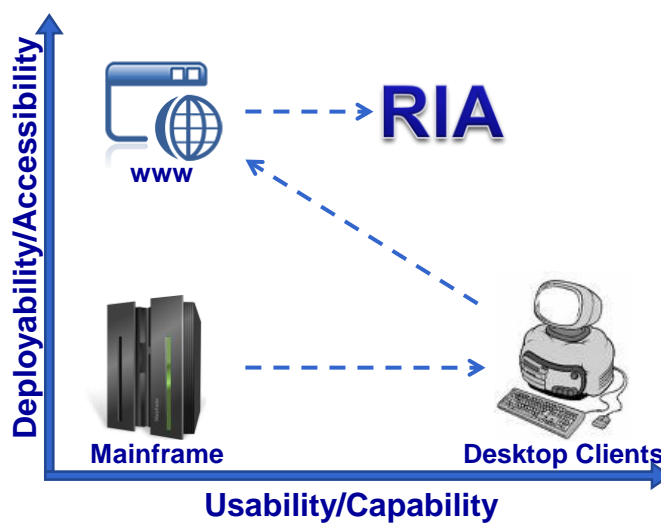


Conventional InternetGIS Architecture



- Deficiencies of current internet GISs:
 - data rich, content poor
 - poor usability
 - low client side capability
 - platform incompatibilities

Evolution...



Interactive map using ArcGIS Flash API

© 2010 OneMap | Terms of Use | Abbreviations | Legend

School of Information Systems

SMU SINGAPORE MANAGEMENT UNIVERSITY

RIA Tools

- Adobe Flash Builder
- Microsoft Silverlight
- JavaFX

School of Information Systems

SMU SINGAPORE MANAGEMENT UNIVERSITY

Adobe Flash Builder 4

FB

- [Adobe Flex SDK](#) is free
- Adobe Flex provides advanced data visualization controls
- Download at:
<http://www.adobe.com/products/flashbuilder/>



Flex Mapping API

- Modest Maps
 - Download at <http://modestmaps.com/download/>
 - Modest Maps Community
<http://getsatisfaction.com/modestmaps>
 - Modest Maps blog <http://blog.modestmaps.com/>
- OpenScales
 - Download at: <http://openscales.org/>
 - OpenScales Community
<http://groups.google.com/group/openscales-dev>

What is Modest Maps



- An interactive mapping API for Adobe Flex
- Modest Maps is a [BSD-licensed](#)
- It provides a minimal, extensible, customizable, and free display library for discriminating designers and developers who want to use interactive maps in their own projects.
- Modest Maps provides a core set of features in a tight, clean package, with plenty of hooks for additional functionality.

What Modest Maps does

- Displays tile-based maps, from sources such as OpenStreetMap, NASA Blue Marble, Google, Yahoo!, Microsoft, and others.
- Supports developer-defined tile sets in arbitrary geographical projections.
- Smoothly pans and zooms.
- Tracks the position of geographical map markers.
- ActionScript 2.0 codebase works with FlashLite.

To learn more about Modest Map

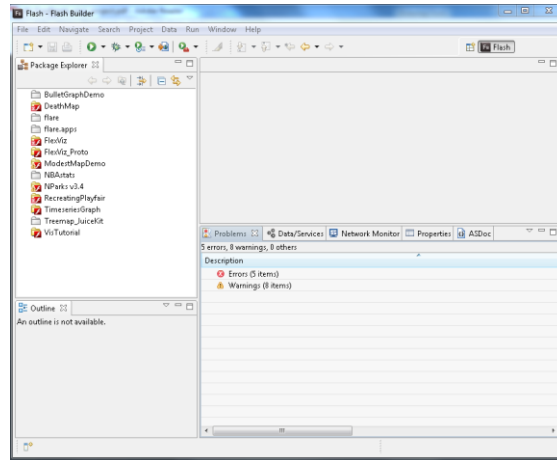
- Visit Modest Map API document at:
<http://www.flexmappers.com/mymodestmap/docs/package-summary.html>

Building Rich Internet Mapping Application

- Configure the application environment
- Building a simple map
- Adding interactive functions
- Working with advanced functions

Configure your system

- Run your Flash Builder environment
- Create a new Flex project

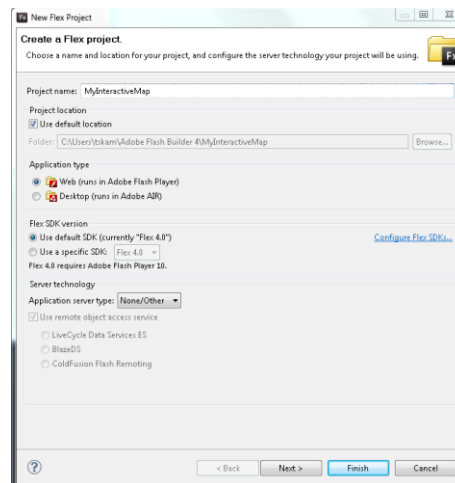


School of
Information Systems



Create a Flex project

- Give a name to your project
- Choose the application type wished (web or desktop)
- Select the SDK version (at least Flex4.0)
- Note the path where your project will be stored
- Click on the next button

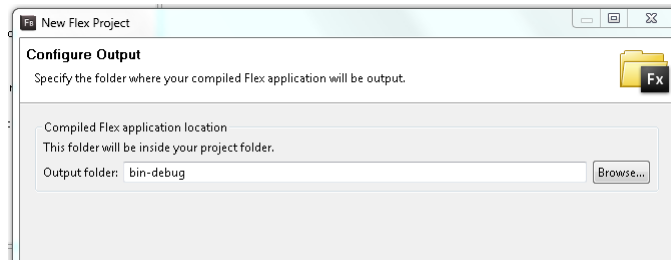


School of
Information Systems



Assign output folder

- Change the name of the output folder if needed
- Click on the next button
- Then finish the procedure



The initial MXML file

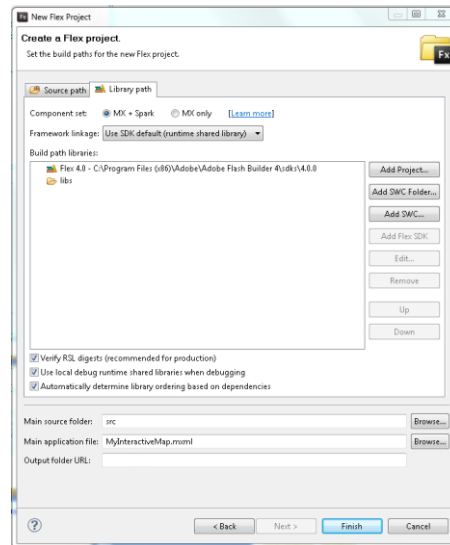
```

1 <?xml version="1.0" encoding="utf-8"?>
2 <s:Application xmlns:fx="http://ns.adobe.com/mxml/2009"
3   xmlns:s="library://ns.adobe.com/flex/spark"
4   xmlns:mx="library://ns.adobe.com/flex/mx" minWidth="955" minHeight="600">
5   <fx:Declarations>
6     <!-- Place non-visual elements (e.g., services, value objects) here -->
7   </fx:Declarations>
8 </s:Application>
9

```

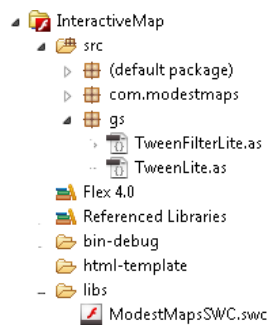
Assign library path

- Confirm library path
- Click on the Finish button



Import Modest Map API into Flex Project

- Copy the COM and gs folders from Modestmap distribution folder into src.
- Copy ModestMapsSWC.swc to libs library



Create a simple map using MapComponent

- Call the modestmap API
- Access to the map service
- Render the map

```

1 <?xml version="1.0" encoding="utf-8"?>
2 <s:Application xmlns:fx="http://ns.adobe.com/mxml/2009"
3     xmlns:s="library://ns.adobe.com/flex/spark"
4     xmlns:mx="library://ns.adobe.com/flex/mx"
5     xmlns:modest="com.modestmaps.flex.*"
6     minWidth="955" minHeight="600">
7     <fx:Declarations>
8         <!-- Place non-visual elements (e.g., services, value objects) here -->
9     </fx:Declarations>
10
11     <modest:MapComponent id="mainMap"
12         width="100%"
13         height="100%"
14         provider="MICROSOFT_ROAD" />
15
16 </s:Application>
17

```

Using multiple data providers

```

1 <?xml version="1.0" encoding="utf-8"?>
2 <s:Application xmlns:fx="http://ns.adobe.com/mxml/2009"
3     xmlns:s="library://ns.adobe.com/flex/spark"
4     xmlns:mx="library://ns.adobe.com/flex/mx"
5     xmlns:modest="com.modestmaps.flex.*"
6     minWidth="955" minHeight="600"
7     creationComplete="init()" >
8
9     <fx:Declarations>
10         <!-- Place non-visual elements (e.g., services, value objects) here -->
11         <fx:Array id="mapProviders">
12             <fx:Object label="Open Street Map" provider="OPEN_STREET_MAP" />
13             <fx:Object label="Microsoft Aerial" provider="MICROSOFT_AERIAL" />
14             <fx:Object label="Microsoft Hybrid" provider="MICROSOFT_HYBRID" />
15             <fx:Object label="Microsoft Road" provider="MICROSOFT_ROAD" />
16             <fx:Object label="Yahoo Aerial" provider="YAHOO_AERIAL" />
17             <fx:Object label="Yahoo Road" provider="YAHOO_ROAD" />
18             <fx:Object label="Yahoo Hybrid" provider="YAHOO_HYBRID" />
19         </fx:Array>
20     </fx:Declarations>
21
22     <modest:MapComponent id="mainMap"
23         provider="{mainMapProviderChooser.selectedItem.provider}"
24         width="100%"
25         height="100%" />
26
27     <mx:ComboBox id="mainMapProviderChooser" dataProvider="{mapProviders}" />
28
29 </s:Application>

```

Define map extent

- Using map extent points

```

82     <modest:MapComponent id="mainMap"
83         provider="{mainMapProviderChooser.selectedItem.provider}"
84         width="100%"
85         height="100%"
86         extent="1.480929, 1.223509, 104.057007, 103.589401"/>

```

- Using centre point

```

42     [Bindable]private var _initialLat:Number = 1.35;
43     [Bindable]private var _initialLong:Number = 103.80;
44     [Bindable]private var _initialZoom:Number = 12;

```

Working with interactive functions

- Startup extent
- Zooming
- Panning
- Home

Q & A
