



Esri International Developer Summit
Palm Springs, CA

Extending Esri Maps for SharePoint with the Esri Maps Extensibility API

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Microsoft SharePoint

SharePoint is

Asset Management
Infrastructure Tracking Intelligence
Planning

Drug Formulations
Records Management e-Discovery
Reporting
Regulatory Compliance
Patent Management
Drug Discovery

Field/Well Monitoring
Investor Relations
Rig Management
Finance and Accounting
Pipeline Maintenance
Contracts
Underground Scanning
Design Activities

SharePoint in Oil and Gas

A word cloud of terms related to Architecture, Engineering, and Construction (AEC) industries. The words are arranged in a cross-like shape. The largest words are 'Project Management' and 'Asset Management' on the left. 'Personnel/Sub-contractors' and 'Architecture/Engineering Services' are the largest words in the vertical column. 'Job Site Monitoring/Cams' is a large word in the vertical column. 'Supply Chain' is a large word on the right. 'Bids RFPs' and 'CAD/BIM Doc Management' are medium-sized words on the right. 'Permitting' and 'Project Finance' are smaller words at the bottom.

Project Management
Asset Management

Personnel/Sub-contractors
Architecture/Engineering Services
Job Site Monitoring/Cams

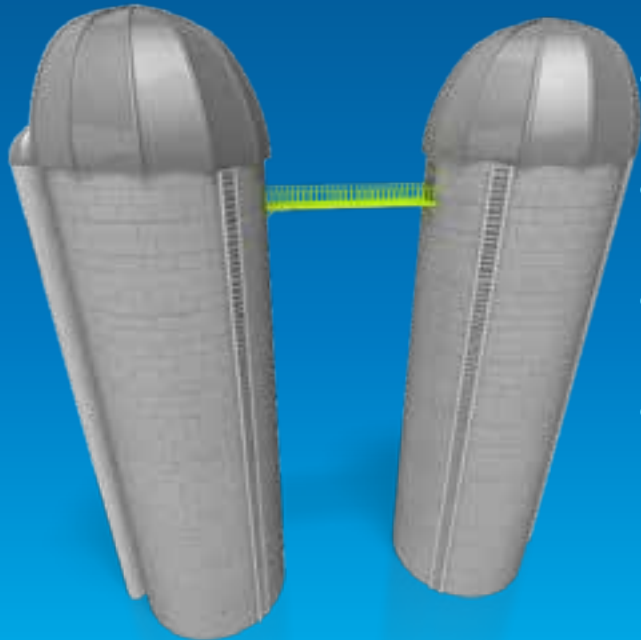
Supply Chain
Bids RFPs
CAD/BIM Doc Management

Permitting
Project Finance

SharePoint in Architecture, Engineering & Construction

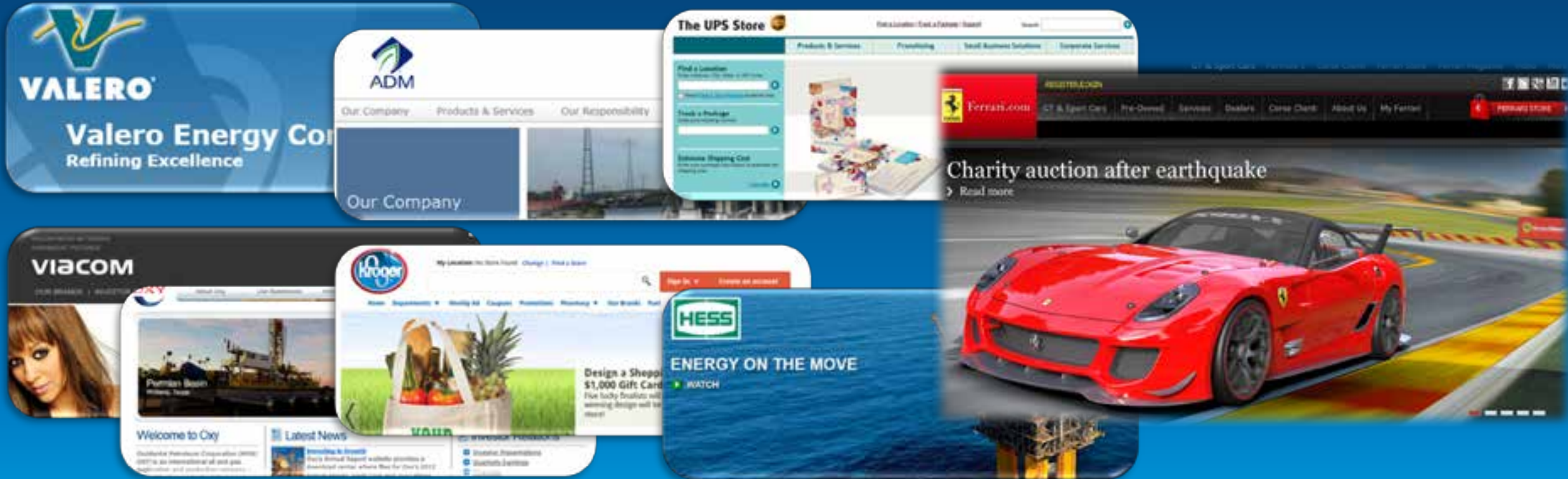
SharePoint is

A Portal to Your LOB Data



- Enterprise Resource Planning (ERP) e.g. SAP, Oracle, Lawson
- Supply Chain Management (SCM) e.g. IBM, Infor, Sage, SAP, Oracle
- Product Lifecycle Management (PLM) e.g. Siemens, PTC, SAP, Oracle
- Customer Relationship Management (CRM) e.g. Salesforce.com, Dynamics, SAP, Oracle
- Enterprise Content Management (ECM) e.g. Documentum, IBM FileNet, OpenText, SharePoint, HP, Oracle & lots of niche solutions
- Business Intelligence (BI) e.g. SAP, IBM, MicroStrategy, Oracle

A Host for Public-facing Websites





Esri Maps for SharePoint in a Nutshell

**If you can create or edit a SharePoint Site Page,
you can author, customize and publish an
interactive web map with Esri Maps for
SharePoint**

v1.0 – October 2009 (Esri Parts for Microsoft SharePoint) *Retired*
v1.1 – November 16, 2009 (Esri Parts for Microsoft SharePoint) *Retired*
v1.1.1 – February 17, 2010 (ArcGIS Mapping for SharePoint) *Retired*
v2.0 – October 8, 2010 (ArcGIS Mapping for SharePoint) *Retired*
v2.1 – January 17, 2012 (ArcGIS for SharePoint) *Retired*
v2.1.1 – January 26, 2012 (ArcGIS for SharePoint) *Mature*

Color-coded mapping

Geographic data enrichment

Publish and share web maps and feature services

JavaScript-based architecture

World geocoding and place name lookup

Geo-statistical hot spot analysis

Point-to-point routing

Map-enable data in SQL Server Tables through BCS support

Polygon and Polyline feature support

Setups in 22 languages

Create Rich Interactive Web Maps



- JavaScript-based
- Create, edit and publish with simple dialog-driven control
- Mash up your data from SharePoint Lists, SQL Server Tables, your published MXDs and the global content on Esri's platform

Spatial Analytics Out of the Box



SharePoint | Newsfeed | SkyDrive | Sites | Try it now

SHARE | FOLIO | EN

Search this site

Retail Dashboard

USA Western Region

Esri Maps

Add data | Tools

contents

USA Median Household Income (Extended Support)

Median Household Income

Block Groups

- More than \$82,000
- \$68,001 to \$82,000
- \$53,001 to \$68,000
- \$39,001 to \$53,000 (US median: \$50,157)
- \$24,001 to \$39,000
- \$24,000 or less
- No households

Locations & Competition

new item or edit this list

Esri ID	Esri STREET_ADDR	Esri CITY	Esri STATE	Esri ZIP	Esri ANNUAL_SALES_EST	Esri EMP_EST	Esri SIZE_EST
SBUCKS1	2980 MAIN ST	SUSANVILLE	CA	96130	800,000	22	2,500 - 9,999 sqft
SBUCKS2	1335 PACIFIC AVE	SANTA CRUZ	CA	95060	1,000,000	25	1 - 2,499 sqft
SBUCKS3	5600 SCOTT VALLEY DR # A	SCOTT VALLEY	CA	95066	800,000	20	2,500 - 9,999 sqft

Sales By Region

Western 38% | Central 18% | Eastern 44%

Team Docs

new document or drag files here

Name	Modified	Checked out
Current	42 minutes ago	

Market Segmentation

Crime

Demographics

Weather

Supply & Demand

Media Habits

Growth Trends

Consumer Spending

Landscape Info

Labor Force

Market Potential

Natural Hazards

Occupation

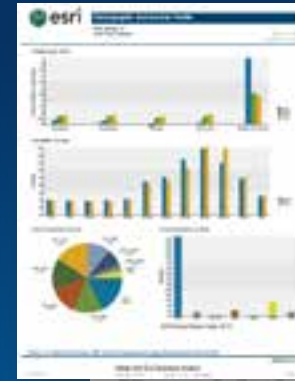
Lifestyles

Traffic

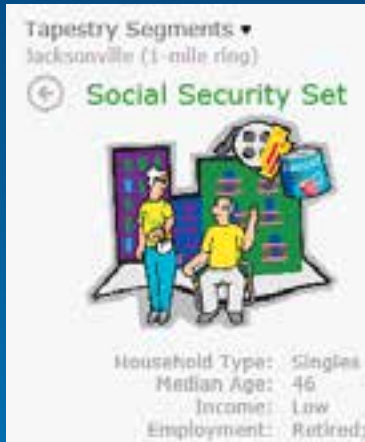
GeoEnrichment



Maps & Layers



Reports

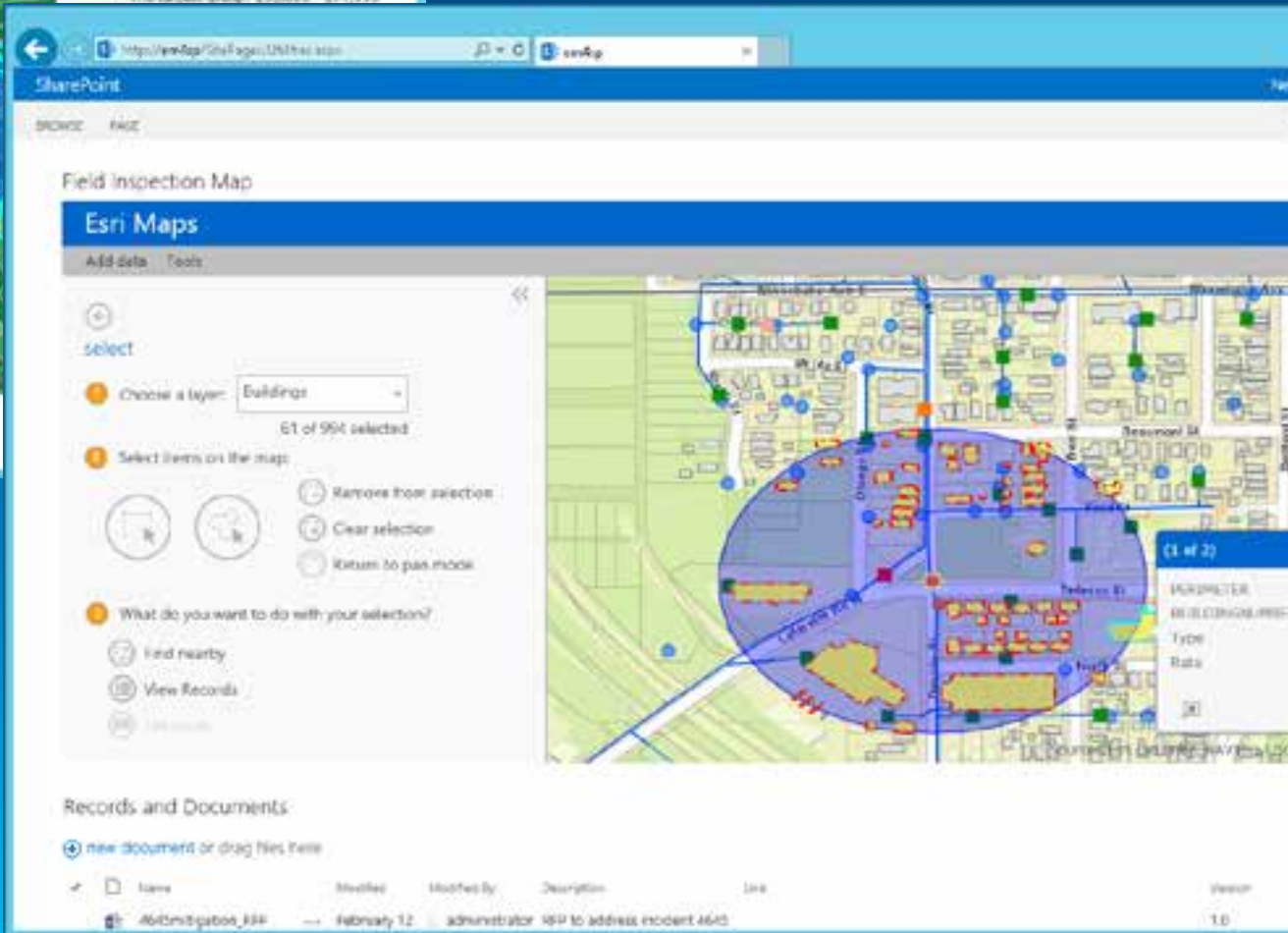
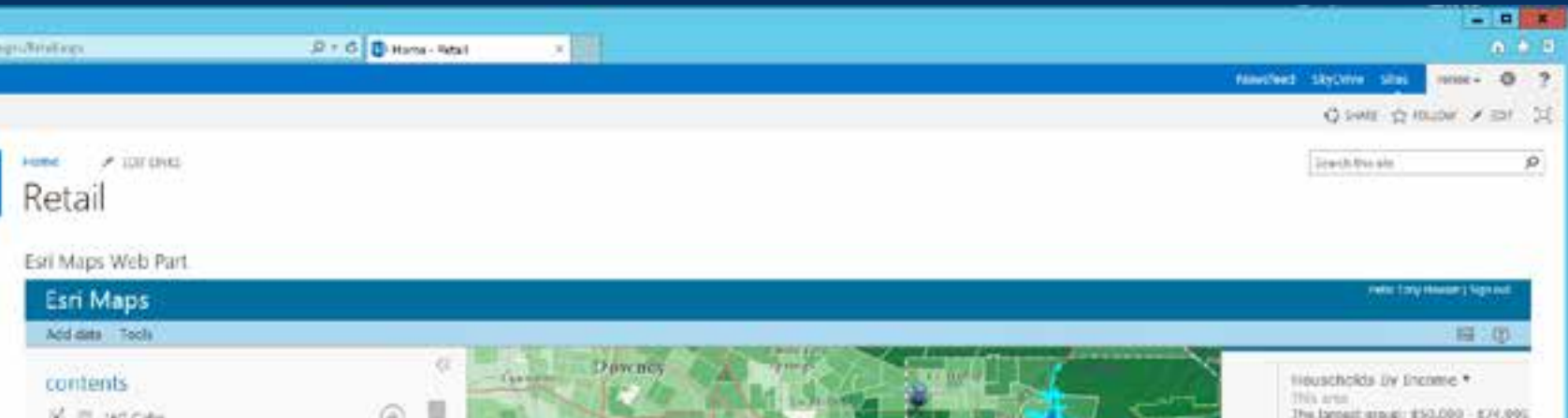


InfoGraphics



Data Enrichment

- Quickly analyze any location or area of arbitrary shape or size



Share and Collaborate with Maps
Inside and Outside of SharePoint

Announcing Esri's New SharePoint Developer Option

Implement custom tools and behaviors
beyond what's supported out of the box.

As a developer, why should you extend Esri Maps for SharePoint?

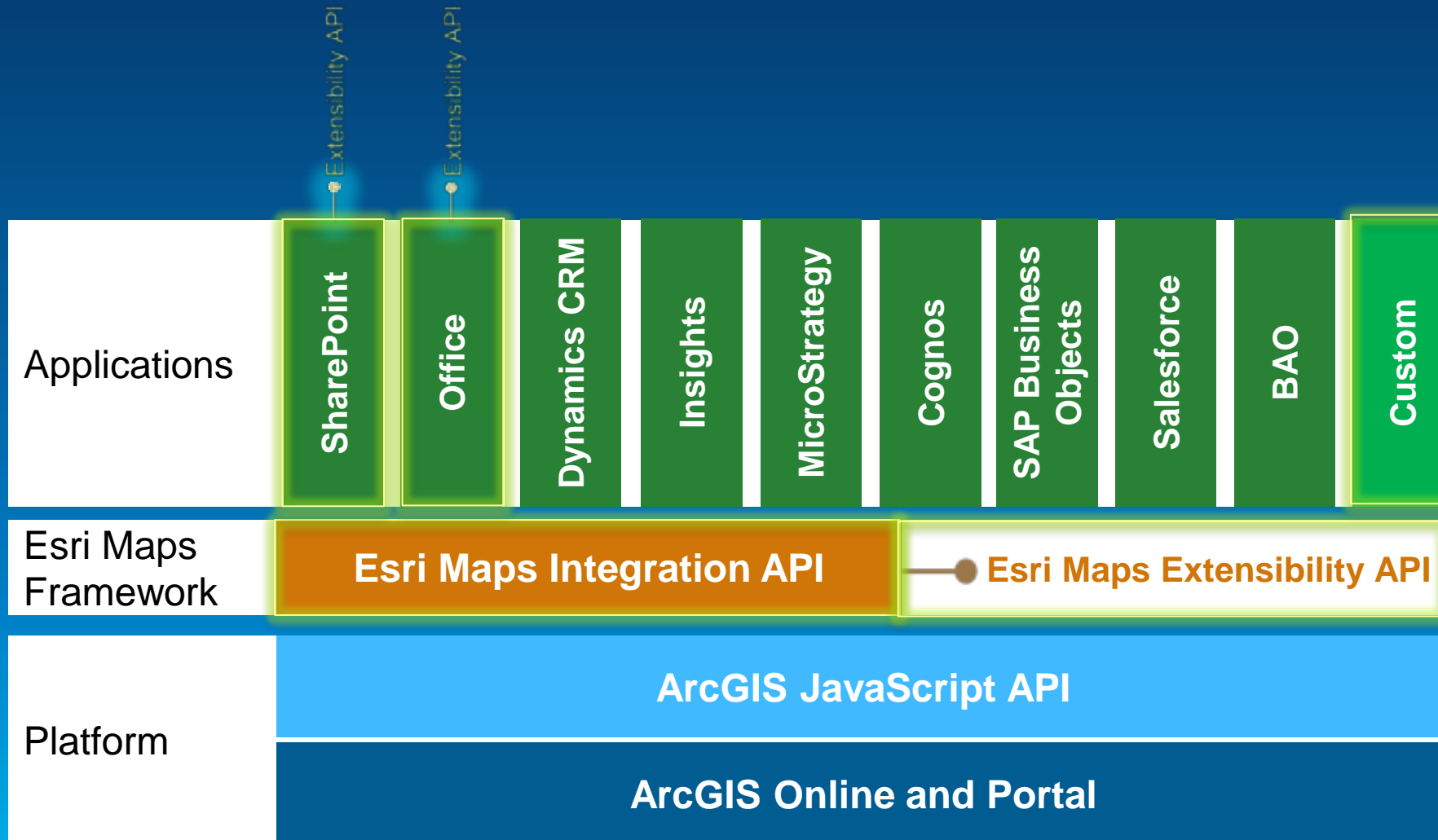
	2009	2012	
Enterprise Penetration		66% ³	
Users	100,000,000 ¹	135,000,000 ²	<ul style="list-style-type: none"> • Client Access Licenses (CALs)
Microsoft Revenue	\$1,300,000,000 ¹	\$2,000,000,000 ²	
Market		\$6,500,000,000 ³	<ul style="list-style-type: none"> • Estimate includes market for ecosystem vendors, consultants, integrators, developers • 700,000 developers⁴ • 4,000 Microsoft Partners⁴

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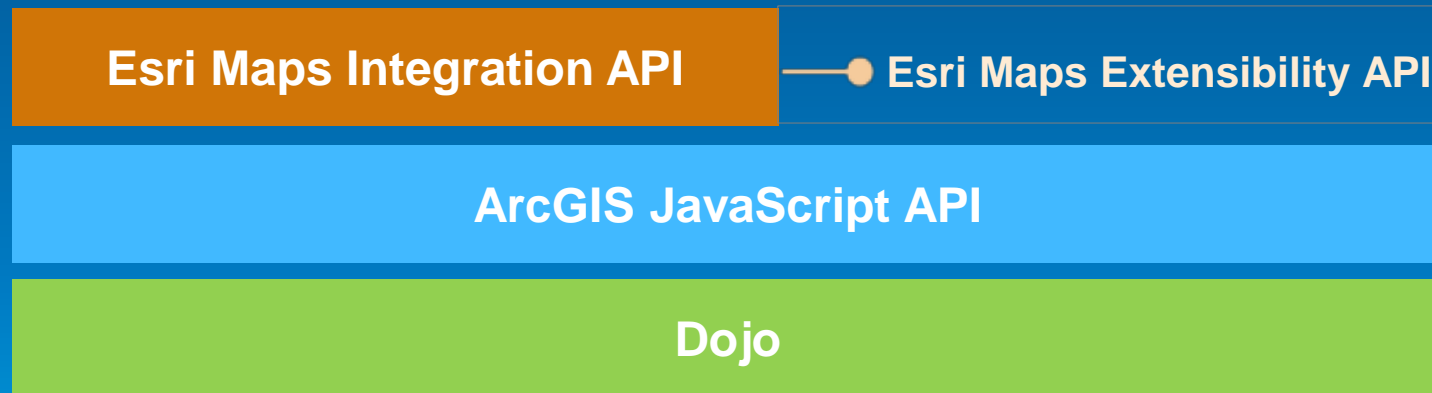
Creating Extensions with the Esri Maps Extensibility API

Esri Maps Apps: Architecture



Extensibility Technology

- Familiar & Non-Disruptive
 - Dojo
 - ArcGIS JavaScript API



Extension Points

- Tools
 - User-driven
 - Functionality initiated by user action
 - E.g. when a button on a tool bar is clicked
- Behaviors
 - Event-driven
 - Functionality triggered by events
 - E.g. when a layer is added to the map
- Packaged in an Extension Pack



What Are You Extending?

The image shows a screenshot of an ArcGIS web application interface. The main map displays the United States with red circles representing city populations. A popup window for Portland is open, showing details like 'City: Portland' and 'Class: city'. A selection menu is visible at the bottom right, with options like 'View selected records', 'Find nearby', and 'Get route'. The interface includes a 'contents' panel on the left with layers for 'Cities (Population)', 'Highways', and 'States'. The top navigation bar has 'Add data' and 'Tools' buttons. The bottom status bar shows '2 of 65 selected' and the Esri logo.

main

contents

- ✓ + Cities (Population)
- ✓ + Highways
- ✓ + States

Style

Clustering

Enrich layer

Pop-ups

Visible range

Add heat map

Transparency

popup

selection

View selected records

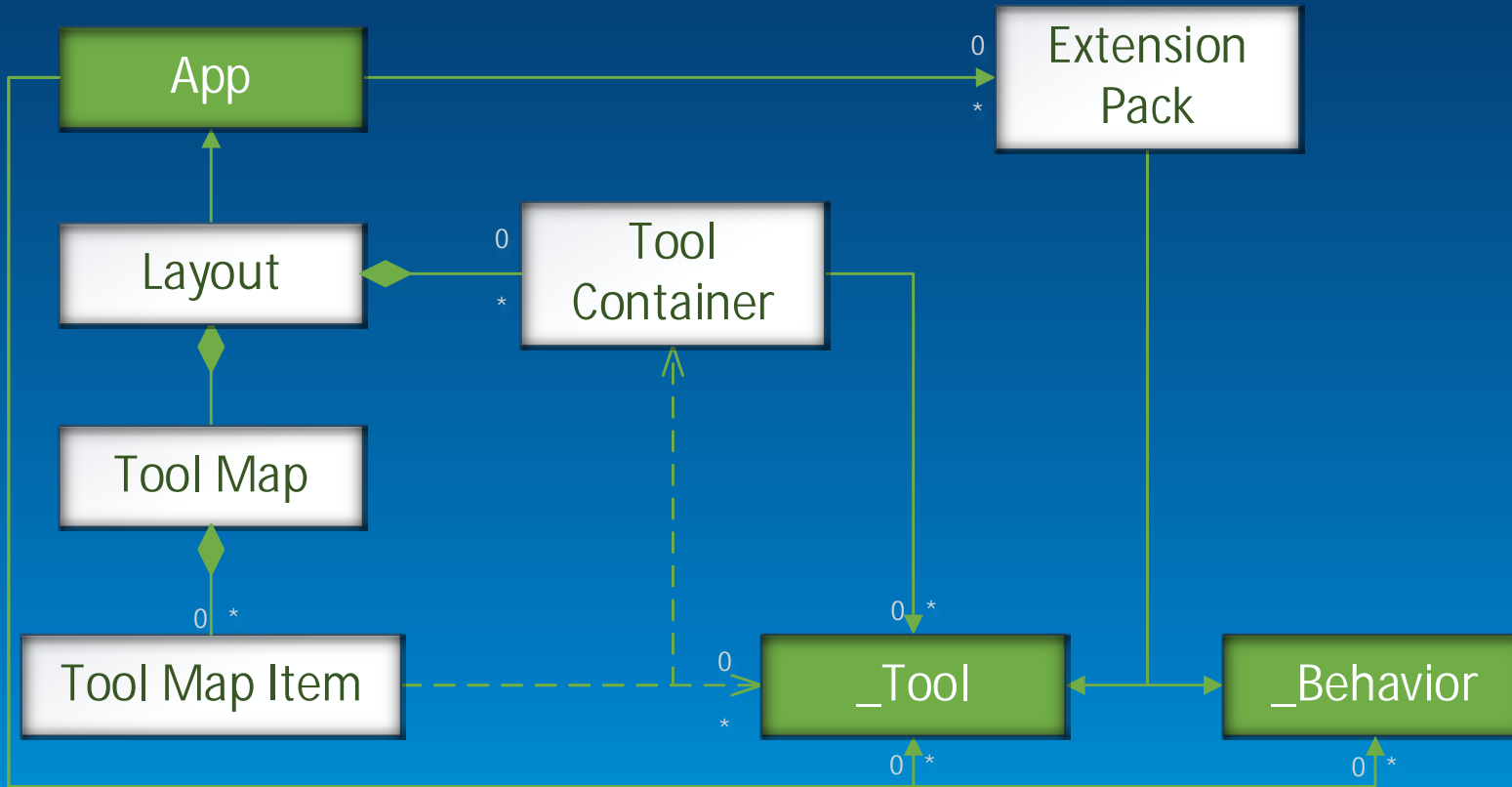
Find nearby

Get route

2 of 65 selected

POWERED BY esri

What Are You Extending?



Tools

- Functionality associated with a button on a toolbar/menu



Creating a Tool

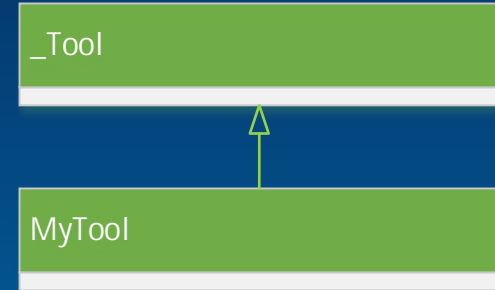
- Dojo Class Inheriting from `_Tool`

```
define([
  "dojo/_base/declare",
  "esriMaps/extensions/tools/_Tool"
], function(declare, _Tool) {

  // Create by inheriting from _Tool
  return declare(_Tool, {

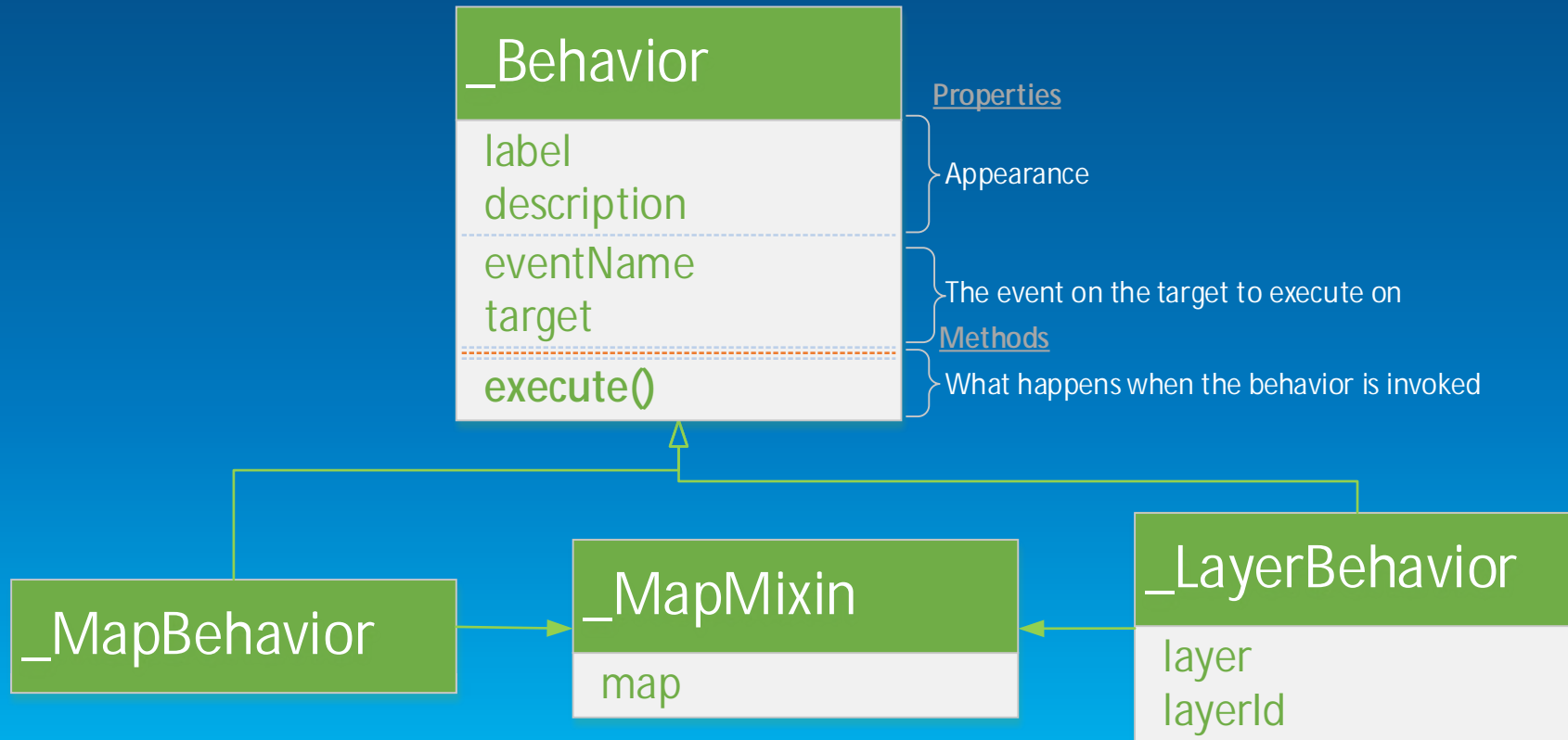
    label: "Alert Tool", //Label
    tooltip: "Alert Tool", //Tool tip

    execute: function() { //Called when the tool is clicked
      alert("Alert!");
    }
  });
});
```



Behaviors

- Functionality invoked when an event occurs



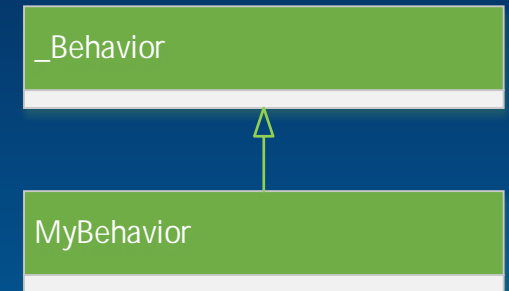
Creating a Behavior

- Dojo Class Inheriting from `_Behavior` or a Subclass

```
define([
    "dojo/_base/declare",
    "esriMaps/extensions/behaviors/_MapBehavior"
], function(declare, _MapBehavior) {
    // Create a behavior by inheriting MapBehavior class
    return declare(_MapBehavior, {

        // Since this behavior is a _MapBehavior,
        // the target is the map in the application
        // The execute() function will trigger
        // on a map 'click' event
        eventName: "click",

        execute: function() {
            // Called when someone clicks on the map
            alert("Map was clicked!");
        }
    });
});
```



Empowering Extensions with Mixins

- Mixins
 - Allow for multiple inheritance of implemented properties and methods

```
// Create a custom tool by inheriting _Tool class
return declare([_Tool, _MapMixin, _LayoutMixin], {



  label: "Measure",
  tooltip: "Measure",


  // Function that is called when the tool is clicked.
  execute: function () {
    // Call showWidget from layout to display the Measurement widget
    this.layout.showWidget(new Measurement({
      map: this.map
    }));
  },
});
```


Extensibility Mixins

- Provide Access to
 - Map
 - Selected Layer
 - Current Graphic in Popup
 - Layout
 - Popup
 - ArcGIS Portal
- Make Tools and Behaviors
 - Toggle Between
Checked/Unchecked States
 - Configurable at Design Time



Access to Map, Layer and Graphic



<code>_SelectedLayerMixin</code>	 
<code>selectedLayer</code>	

<code>_MapMixin</code>	
<code>map</code>	



<code>_GraphicMixin</code>	
<code>graphic</code>	

Access to Layout, Popup



<code>_LayoutMixin</code>	 
<code>layout</code>	



<code>_PopupMixin</code>	 
<code>popup</code>	

Access to ArcGIS Portal



<code>_PortalMixin</code>	 
<code>portal</code>	

Tool/Behavior Options

<code>_ToggleMixin</code>	 
<code>checked</code>	

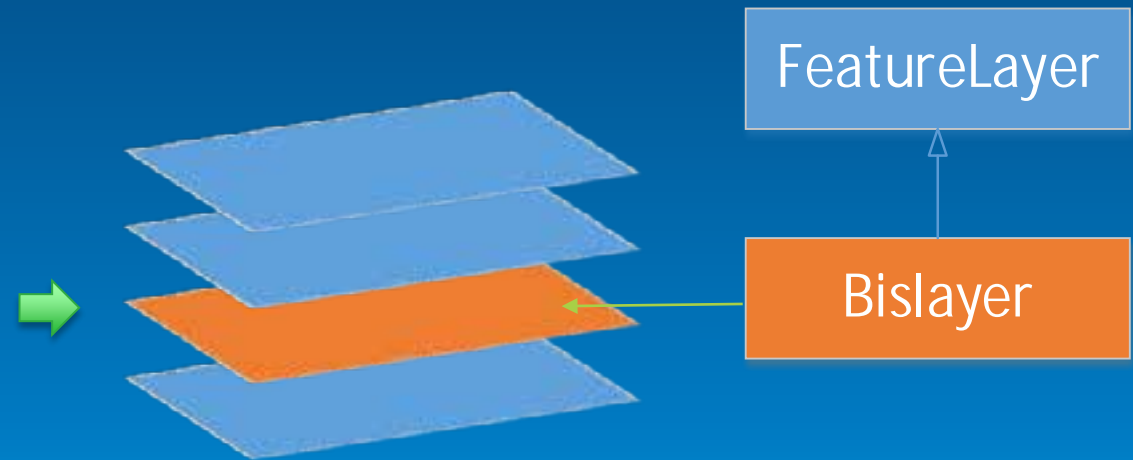
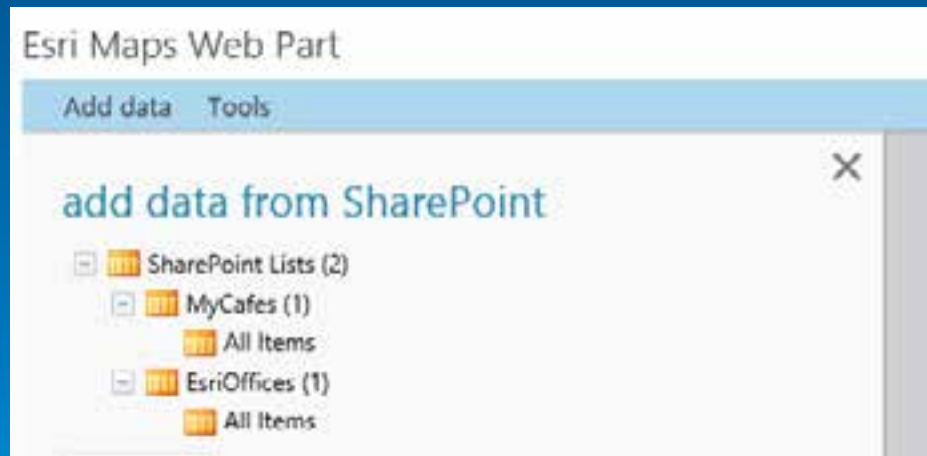
<code>_ConfigureMixin</code>	 
<code>isConfigurable</code>	
<code>configure()</code>	

Key

-  Mixin can be used in a Behavior
-  Mixin can be used in a Tool

Empowering Extensions: Working with SharePoint Data

- Bislayer
 - Data from SharePoint in the Map
 - Is a Feature Collection Based Feature Layer

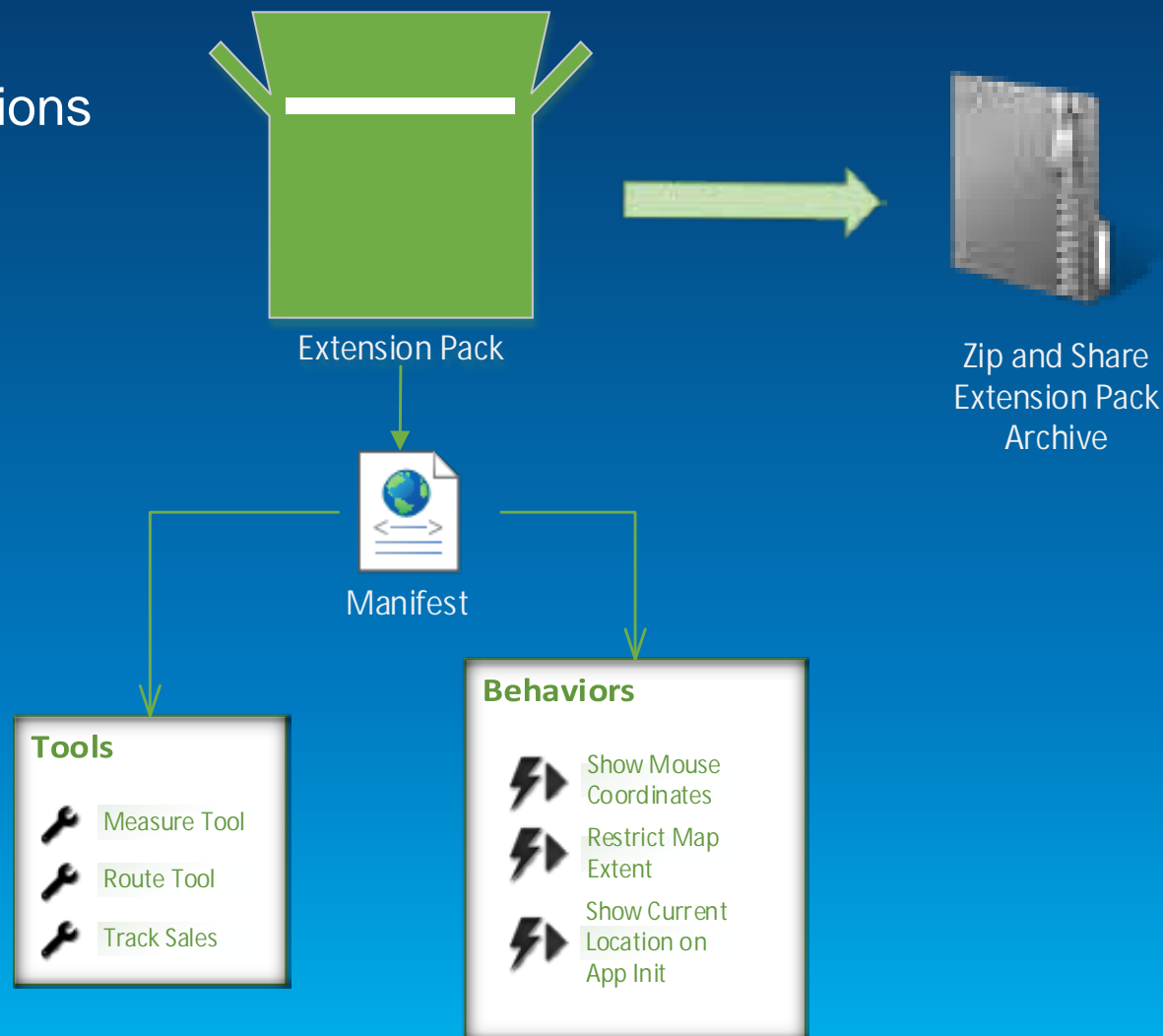




Extension Developer

Creating Extension Packs

- For Packaging Your Extensions
- Extension Packs
 - Tools
 - Behaviors
 - Manifest
 - List of tools and behaviors
- Extension Pack Archive
 - For Sharing
 - Zip of Extension Pack



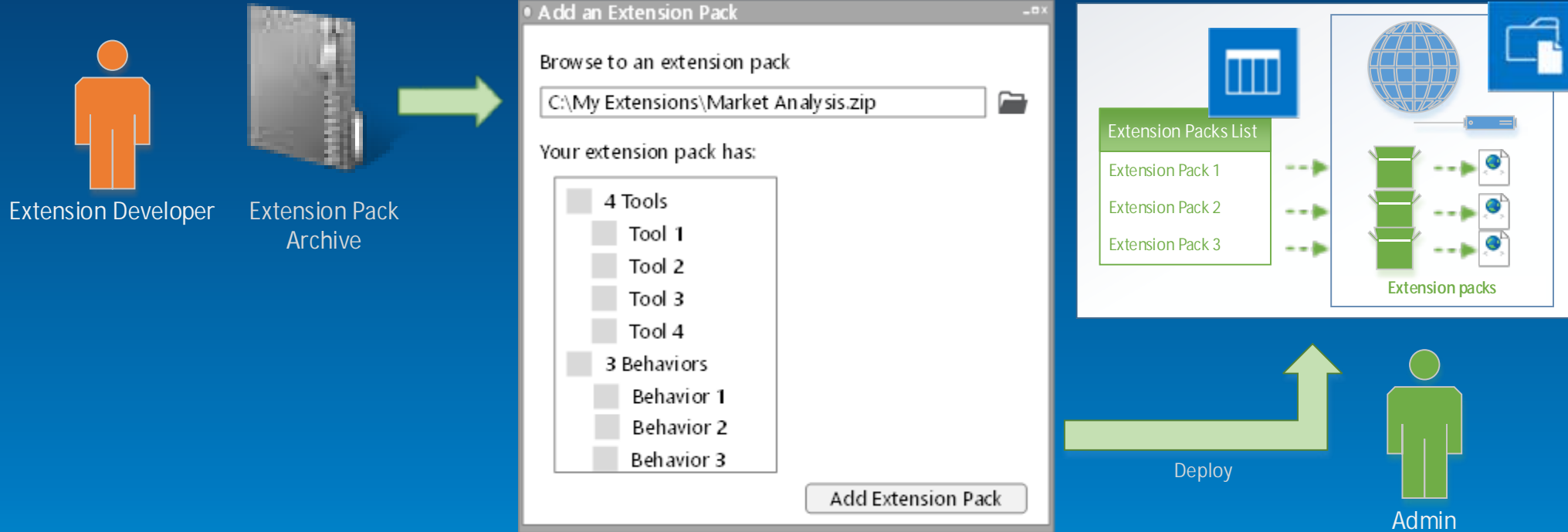
Creating the Manifest

- List of Tools and Behaviors in the Extension Pack
 - Name
 - Path to Implementation

```
{
  "tools": [{
    "name": "MyTool",
    "path": "./AlertTool" //Path to the tool's js file
  }],
  "behaviors": [{
    "name": "MyBehavior",
    "path": "./AlertBehavior" //Path to the behavior's js file
  }]
}
```

Using Extensions in SharePoint

Deploying Extension Packs



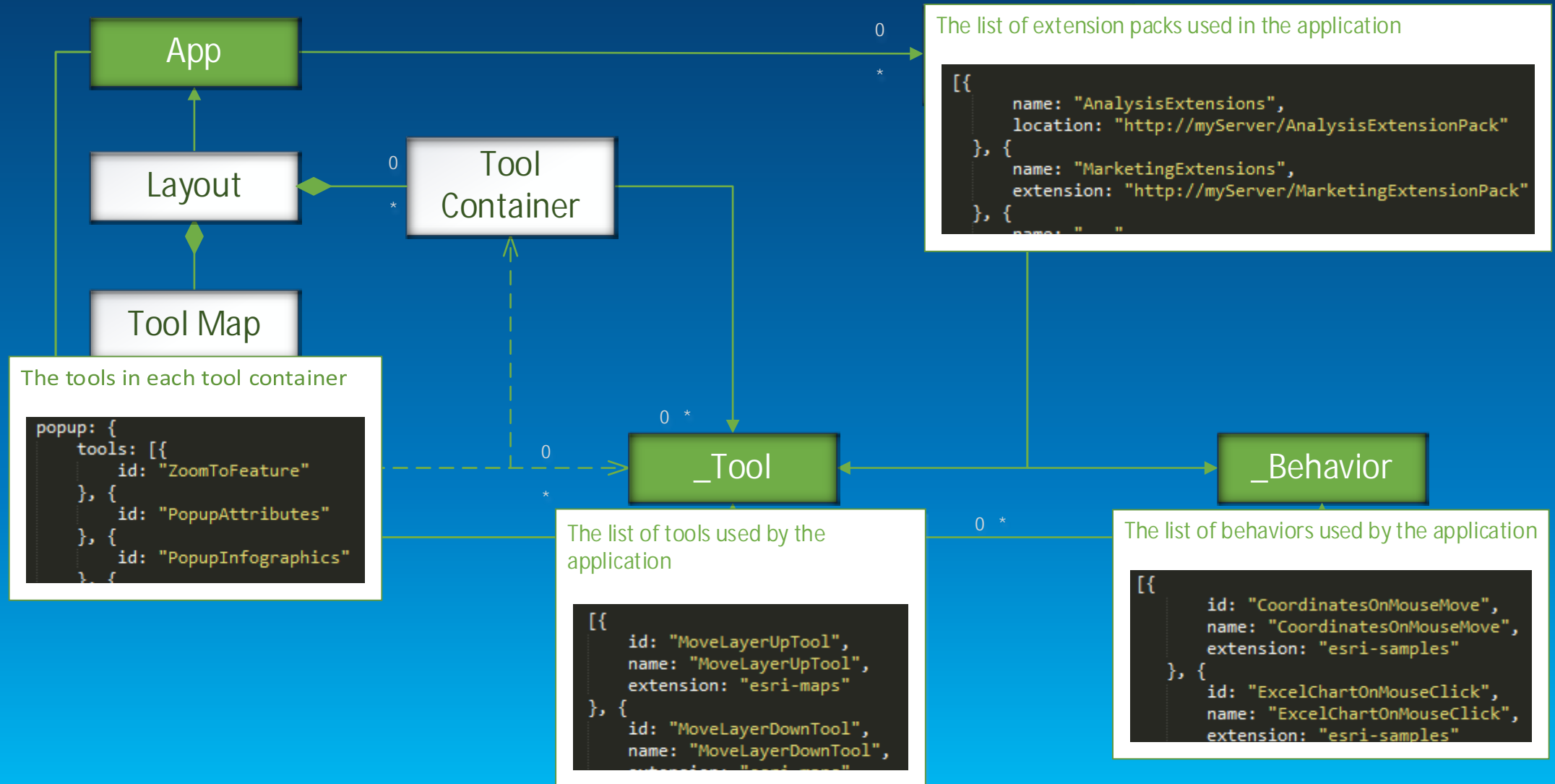


Author

Adding Extensions at Design Time

The screenshot shows the 'Add data' dialog box in ArcGIS. The 'Infographics' extension is selected, and a preview of an age pyramid is visible. The age pyramid is titled 'Age Pyramid' and 'This area'. It shows a distribution of age groups for 'Men' (blue bars on the left) and 'Women' (pink bars on the right). The bars are arranged in a pyramid shape, with the widest bars at the bottom representing the youngest age group. The 'Men' side has a wider base than the 'Women' side. The 'Infographics' panel also contains three icons: a location pin, a refresh symbol, and a bookmark symbol. The background map shows the United States with a red polygon highlighting a region in the central part of the country. The 'OK' and 'Cancel' buttons are at the bottom of the dialog.

Configuring Extensions to the Default App



Demo

Heiko Heijenga
Elitsa Baklova

Releases and Roadmap

Releases

- **3.0.1 - current release**
(download today from the list of Location Analytics apps at www.arcgis.com)
- **4.0 Beta 1 - current beta**
(join today at betacommunity.esri.com)

Coming Soon

- **4.0 Beta 2 – Spring (with Extensibility support, Beta Community)**
- **4.0 Final - Summer/Fall (Extensibility and SharePoint Online for Office 365)**

Q&A

Please fill out the session survey.
Your feedback is important to us!



Understanding our world.