

Building Composite Applications using SharePoint Designer 2010 and the BCS

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Agenda

- 09:00-10:00 Introducing Composites
- 10:10-11:00 XSLT
- 11:10-12:00 Forms and Actions

- LUNCH

- 13:00-14:00 Introducing the BCS
- 14:10-15:00 Advanced BCS
- 15:10-16:00 Beyond SPD

Presenter Info

Raymond Mitchell

- Co-organizer / presenter at the [Minnesota SharePoint User Group](#)
- 6+ years of SharePoint consulting at [Inetium](#)
- SharePointing since SharePoint Team Services
- e-book on [Building Dashboards using SPD](#)

Demo Environment

- SharePoint Server 2010*
 - Developer Build on Windows 7 Ultimate
 - 8GB RAM
 - SSD Drive
- SharePoint Designer 2010*
- Visual Studio 2010 RC
- SQL Server 2008

* internal build after the public Beta

Expectations

- **What you need to be here:**
 - General understanding of SharePoint / SharePoint Designer
 - Basic (at least) introduction to SharePoint 2010
 - Power User / Developer / Advanced Developer
- **What you should leave here with:**
 - Understanding of the building blocks for assembling Composite Applications
 - Understanding of the BCS
 - Renewed enthusiasm for building Composites on SharePoint 2010

SharePoint Versions

- SharePoint Foundation
 - SharePoint Server
-
- Will point out functionality differences throughout the day

Introducing Composites

Composites

- What are Composite Applications?
 - Applications
 - Components:
 - Data
 - View
 - Actions
 - Ideally built by Power Users or Developers
 - Composed of reusable components
 - Provided out of the box
 - Developed by Advanced Developers

Composites

- Composite Application Examples
 - Mashups
 - Display data from multiple sources (Web Service, Database, etc)
 - Custom Data Visualizations
 - Master / Detail
 - Display contacts as a map
 - SharePoint 2007 “Fab 40”
 - Bug Database
 - Inventory Tracking
 - Help Desk
 - SharePoint Search Results Page

Composites

- Why Composites?
 - Data is out there!
 - Not all applications should need a full-time Developer
 - Solutions can be built by Application Owners
 - Rapid Development

Tools

- Browser
- SharePoint Designer 2010
- InfoPath 2010
- Visual Studio 2010

- Tools I'm not talking about today:
 - Access Services
 - Excel Services
 - Visio Services

Technologies

- SharePoint Lists & Views
- SharePoint Designer Workflows
- Event Receivers
- Data View/Data Form Web Parts
- Business Connectivity Services
- Web Services
- JavaScript
- XSLT / XML / XPath
- PowerShell

Composite Solution Developers

- **Business / Power Users**
 - Primary Tool: Browser
- **Developers**
 - Primary Tool: SharePoint Designer
- **Advanced Developers**
 - Primary Tool: Visual Studio

SharePoint Designer 2010

- **SharePoint Designer 2007**
 - Manage Pages / Workflows
- **2010 is the Integrated Development Environment for SharePoint**
 - Manage Lists / Views
 - Manage Site Columns/Content Types
- **Enhanced User Experience**
 - Object based navigation (no longer folder-based)

Demo 1.1

- SharePoint Designer 2010 Overview

Basic Building Blocks

- Web Part Pages
- Web Parts
- Lists
- Web Part Connections

Web Part Pages

- Your canvas
 - Add in browser
 - Add in SPD
- At the end of the day: ASPX pages
- Different Types of Pages:
 - Web Part Pages
 - ASPX Pages
 - Wiki Pages

Demo 1.2

- 2010 Wiki Pages
- Create Web Part Pages using SharePoint Designer
- Create ASPX pages using SharePoint Designer

Web Parts

- Content Editor (source/html)
 - Not just Rich Text
 - HTML
 - CSS
 - JavaScript
- Chart Web Part
- Galleries / Export & Import

Demo 1.3

- Content Editor Web Part
 - modify style
 - iframe
- Chart Web Part
- Export / Import

Lists

- Core data structure in SharePoint
- Can create Advanced Views using the browser
- Custom List is powerful building block
- Related Lists

Demo 1.4

- Custom List View configuration
- Related List

Web Part Connections

- Send data between web parts
- Useful for filtered views, Master/Detail scenarios

Demo 1.5

- Form Web Part
- Related Record view with related lists

5-10 minute break

XSLT

XSLT

- Extensible Stylesheet Language Transformations
- Transforms XML into XML
 - HTML
 - CSS, JavaScript...

XSLT – Why's it important?

- XSLT is *everywhere* in SharePoint
- Very powerful
- Some of the most powerful customizations available in SharePoint without deploying custom code

XSLT in SharePoint

- **DFWP**
 - Data View/Form Web Part
- **XLV**
 - XSLT List View Web Part
- **CBQ / CQWP**
 - Content By Query Web Part
- **Search Results**
 - Search Results Web Part
 - Federated Search Results

Data Form Web Part

- Web Part
- Displays Data using XSLT
- “Swiss Army Knife” of Web Parts
- AKA: Data View Web Part (v2)
- Microsoft.SharePoint.WebPartPages.DataFormWebPart

Data Form Web Part

- **Data Sources in SharePoint Designer**
 - SharePoint Lists and Libraries
 - XML Files
 - Web Services
 - Database Connections
- **Can also support Linked Data Sources**

Demo 2.1

- Create a simple, list-based DFWP
- Create a Web Service based DFWP
- Create a SQL based DFWP

Data Form Web Part

- **Conditional Formatting in DFWPs**
 - Change formatting / visibility based on values
 - Uses XSLT / XPATH / CSS behind the scenes
- **Can be used to create dashboard / KPI views**

Demo 2.2

- Create a dashboard with Conditional Formatting

XSL 101

<xsl:Template> <xsl:call-template>

<xsl:value-of>

<xsl:for-each>

<xsl:if>

XPath 101

Expression	Description
/	Root
//	Match selection
.	Current Node
..	Parent Node
@	Attribute
\$	Parameter
[]	Filter

```
<?xml version="1.0" encoding="utf-8"?>
<menu>
  <items>
    <item name="burger" cost="$4.99" />
    <item name="fries" cost="$0.99" />
    <item name="shake" cost="$1.99" />
    <item name="grilled chicken" cost="$3.99" />
    <item name="bbq pork" cost="$4.25" />
  </items>
</menu>
```

XPath 101

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    <item name="bbq pork" cost="$4.25" />
  </items>
</menu>
```

Test expression: //item

XPath 101

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    <item name="grilled chicken" cost="$3.99" />
    <item name="bbq pork" cost="$4.25" />
  </items>
</menu>
```

Test expression: //item[@name = "burger"]/@cost

XPath 101

Expression	Description
/	Root
//	Match selection
.	Current Node
..	Parent Node
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\$	Parameter
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```
<?xml version="1.0" encoding="utf-8"?>
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    <item name="grilled chicken" cost="$3.99" />
    <item name="bbq pork" cost="$4.25" />
  </items>
</menu>
```

Test expression: //item/[2]/@cost

Demo 2.3

- Play with XSL

Data Form Web Part

- Parameters

- Sources:

- ASP.NET Control on the page
 - Cookie
 - Form field (POST variable)
 - Query String
 - Server Variable

- Can be used in filters to create dynamic pages

Demo 2.4

- Create Master / Detail page using Query String parameters
- Customize Conditional Formatting style with Params

XLV

- XSLT List View Web Part
- New version of the LVWP
- Extends the Data Form Web Part
- Combines best of DFWP and browser configurability of the LVWP
- List definitions contain XSLT instead of CAML

Demo 2.5

- Customize XLV in SPD (add conditional formatting)
- Customize XLV in the browser

CBQ / CQWP

- Content by Query Web Part
- Requires MOSS/SharePoint Server
- Cross-web/list roll-ups
- *Mostly* configurable through the browser

CBQ / CQWP

- Query configuration

Query Help

Source:

Show items from all sites in this site collection

Show items from the following site and all subsites:

Show items from the following list:

List Type:

Show items from this list type:

Content Type:

Show items of this content type group:

Show items of this content type:

Include child content types

Audience Targeting:

Apply audience filtering

Include items that are not targeted


Additional Filters:

Show items when:

And Or


CBQ / CQWP


- Presentation configuration

 Presentation

Grouping and Sorting:


Group items by:
<None>


 Show groups in ascending order.
(A, B, C, or 1, 2, 3).

 Show groups in descending order.
(C, B, A, or 3, 2, 1).

Number of columns:
1

Sort items by:
Created

 Show items in ascending order.
(A, B, C, or 1, 2, 3).

 Show items in descending order.
(C, B, A, or 3, 2, 1).

Limit the number of items to display
Item limit: 15

Styles:


Group style:
Default

Item style:
Image on left

Play media links in browser

CBQ / CQWP

- Presentation configuration (new in 2010)
 - In 2007 you have to export the Web Part, change the xml, then re-import the Web Part

Fields to display: 

Link
URL Path;








Image
Thumbnail URL; Rollup Image;

Title
Title;

Description
Comments;

CBQ / CQWP

- XSL Style Sheets
 - Several shared XSL files
 - ItemStyle

	ContentQueryMain
	Header
	ItemStyle
	LevelStyle
	Rss
	SummaryLinkMain
	TableOfContentsMain

Search Results

- Search Results Web Part
- Federated Search Results Web Part
 - XSLT stored with the Location (Configured in central administration)
 - Can be overridden at the Web Part

Demo 2.6

- Show full XML
- Show Federated Search customization

5-10 minute break

Forms and Actions

Forms and Actions

- Forms
- Workflow
- UI / Navigation

Data Form Web Part

- Data View Web Part was read-only
- Data Form Web Part (V3) could create/edit/save
- Can still connect to multiple data sources

Demo 3.1

- DFWP + Xml Document for simple cafeteria menu

Custom List Forms

- Two new ways to customize List Forms
 - Edit in SharePoint Designer
 - Edit in InfoPath
- Both options allow you to:
 - Customize the look & feel
 - Add additional field notes / validation

Demo 3.2

- Custom List form in SharePoint Designer
- Custom List form in InfoPath

SPD Workflows

- Add process / actions to your composites
- Quick overview of workflows / what's new

Demo 3.3

- Workflow with Initialization form

UI / Navigation

- Need to be able to get to your custom pages and forms
- Several options:
 - Out of the box nav-bars
 - Custom Actions

Custom Actions in the UI

- Make your composites interactive
- Used to be hard
 - deploy a feature with custom actions
- Now is easy
 - Build in SharePoint Designer

Demo 3.4

- Add a Custom Action to a new form

Other UX extensions

- JavaScript (part of the Client Object Model)
 - Notifications Bar
 - Status Bar
 - Dialog Framework

Demo 3.5

- Notifications Bar
- Status Bar

Look and Feel Discussion

- Master Pages
- Themes
- Custom CSS

Questions & Answers

LUNCH!

SharePointPro
2010 SUMMIT & EXPO

Introducing the BCS

What is the BCS?

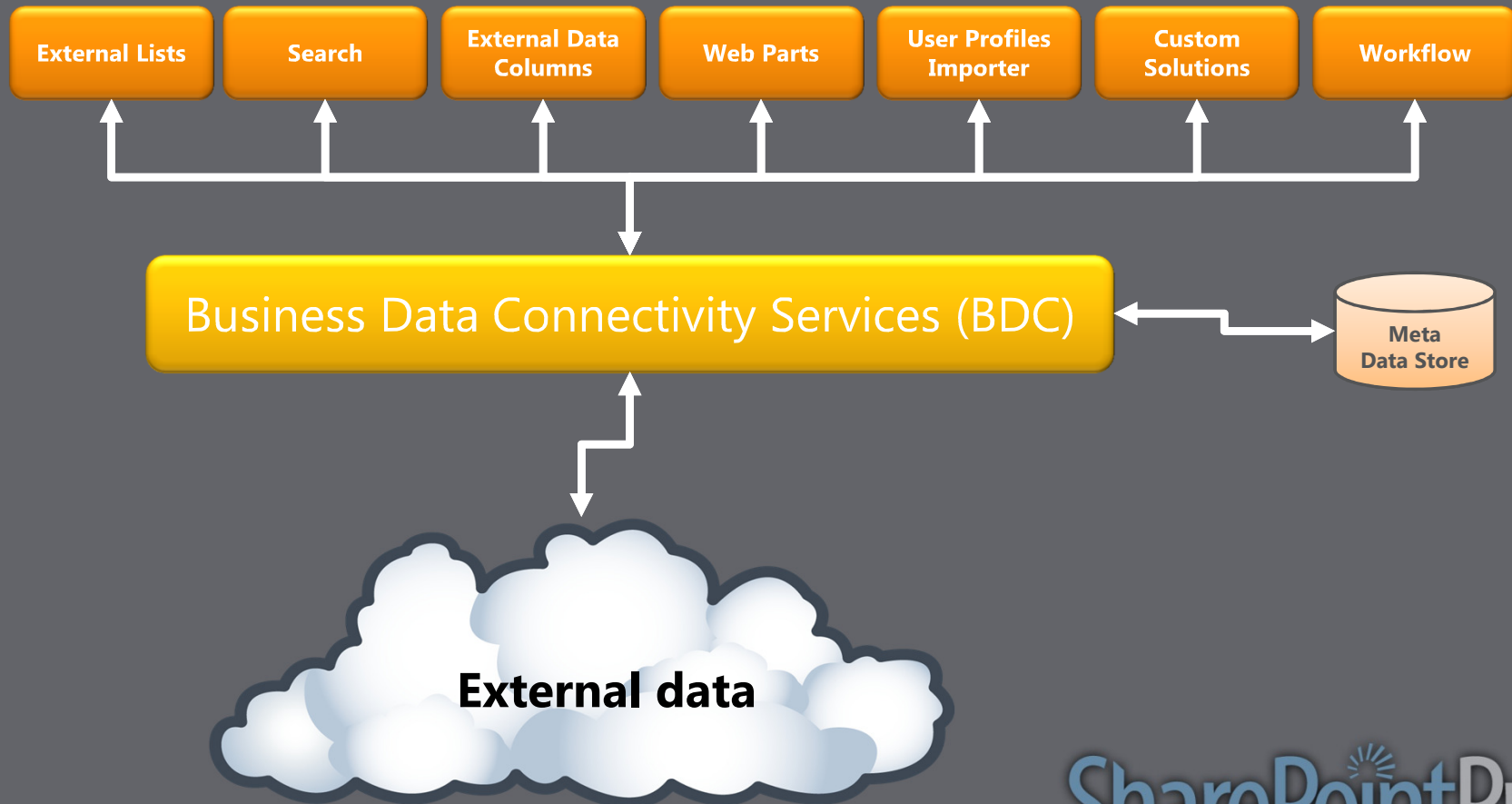
- Business Connectivity Services
- Evolution of the 2007 Business Data Catalog
- Framework for surfacing LOB data in SharePoint and Office

BCS Improvements

- Read AND Write capabilities
- Integration with office
- Offline capabilities
- Client Data Cache

- Tooling!

BCS SharePoint Integration



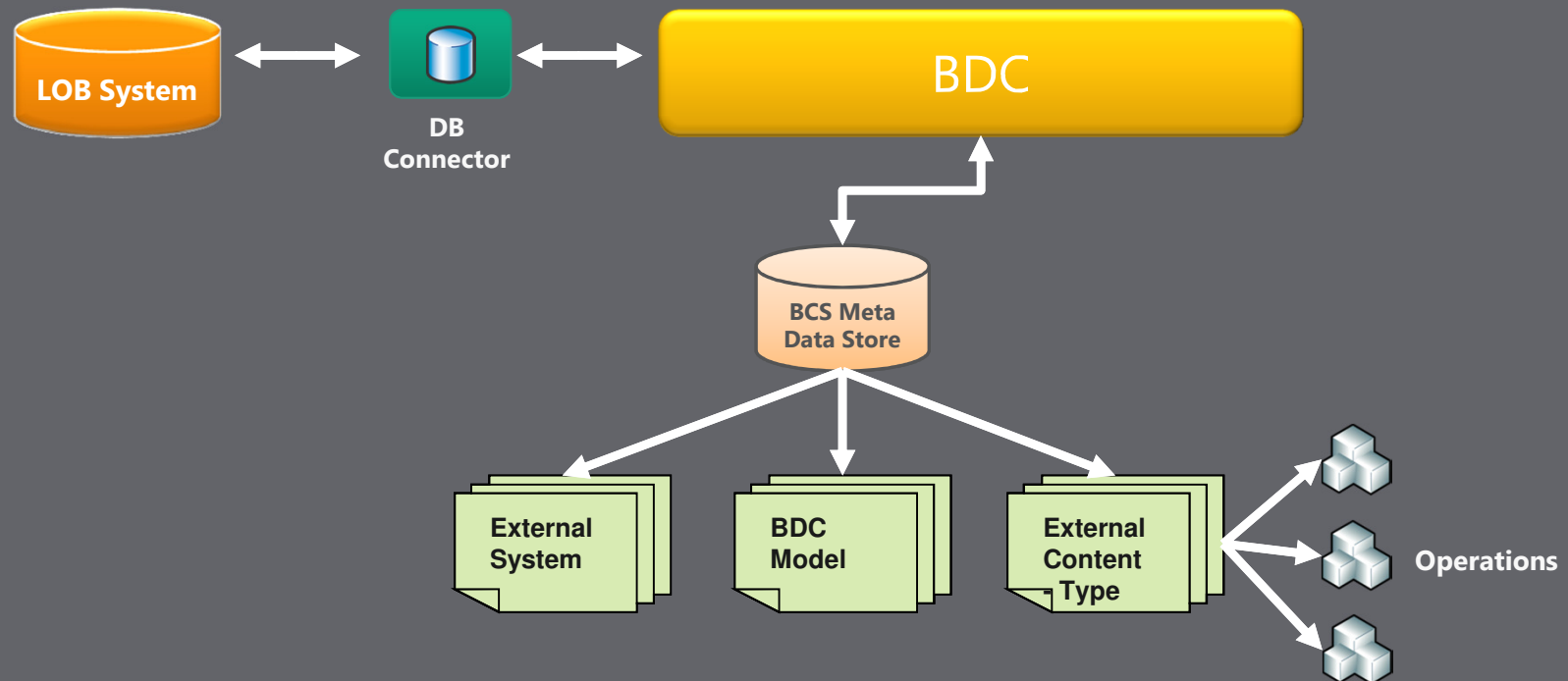
BCS Components

- **External Systems**
 - Connection to a LOB System:
 - Web Service
 - Database
 - .NET Type
- **BDC Model (big, ugly XML file)**
 - Reference to the Entities and connection properties
 - Can import into Visual Studio
- **External Content Type**
 - Entity definition

BCS Components

- **Entity Definition:**
 - Fields and mappings
 - Operations
 - *Associations*
 - *Actions*
- **ECT Operations:**
 - Create
 - Read Item
 - Read List
 - Update
 - Delete

BCS Components



Demo 4.1

- Create an ECT

BCS Components

- **External Data Columns**
 - Added via the browser (similar to lookup fields)
- **External Lists**
 - Added via SharePoint Designer

Demo 4.2

- Add an External Data Column (via browser)
- Add an External List (via SPD)

BCS Web Parts

- **Business Data Item**
 - Display a single BCS Entity
- **Business Data Item Builder**
 - Get a BCS Entity based on a parameter
- **Business Data List**
 - Get a list of BCS Entities
- **Business Data Related List**
 - Display a related list of BCS Entities
- **Business Data Connectivity Filter**
 - Provides filter data from BCS Entities
- **Business Data Actions**
 - Displays a list of related actions for a BCS Entity

Demo 4.3

- Build a UI for BDC Model using the BCS Web Parts

5-10 minute break

Advanced BCS

BCS

- Actions
- Search / Profile pages
- Office Integration
- Associations
- BCS + PowerShell
- Custom Solutions

BCS Actions

- Create parameterized URL “commands” for BCS entities
- Scenarios:
 - Link to an existing LOB application page
 - External service that takes a parameter
 - Search engine
 - Mapping application
 - Custom ASPX page deployed to create custom visualization

Demo 5.1

- Build a custom BCS Action

BCS Search / Profile Pages

- Parameterized profile page created for each entity
- Search configured to index profile page
 - Essentially indexes your LOB system
- Web Part Pages = Customizable

Demo 5.2

- Configure and customize a profile page

BCS Office Integration

- **Word**
 - Use “Quick Parts” to configure BCS Data Columns
 - Present LOB data in Word documents and templates

Demo 5.3

- Create a word template that utilizes Quick Parts & BCS Data

BCS Outlook Integration

- **Connect an External List to OUTLOOK**
 - ECT must be configured/mapped to an Office Item Type
 - Creates a ClickOnce application that is installed in Outlook
 - BCS Client Runtime and Cache
 - Configured so the client talks directly to the LOB system (doesn't proxy through SharePoint Server)
- **Create an “Outlook Declarative Solution”**
 - XML configuration for custom Task Panes in Outlook
 - Wait for RTM I guess

Demo 5.4

- Connect an external list to Outlook

BCS Associations

- Configure relationships between ECTs
- Limited with SharePoint Designer:
 - Associations must be made in the correct order
 - Advanced Associations are not supported

Demo 5.5

- Configure an Association for Orders to Customers

BCS + PowerShell

- Can use PowerShell to work with the BCS Object Model
- BCS Cmdlets
- Get-Command –noun SP*BusinessData*

Clear-SPSiteSubscriptionBusinessDataCatalogConfig
Copy-SPBusinessDataCatalogAclToChildren
Disable-SPBusinessDataCatalogEntity
Enable-SPBusinessDataCatalogEntity
Export-SPBusinessDataCatalogModel
Export-SPSiteSubscriptionBusinessDataCatalogConfig
Get-SPBusinessDataCatalogMetadataObject
Get-SPBusinessDataCatalogThrottleConfig
Grant-SPBusinessDataCatalogMetadataObject
Import-SPBusinessDataCatalogDotNetAssembly
Import-SPBusinessDataCatalogModel
Import-SPSiteSubscriptionBusinessDataCatalogConfig
New-SPBusinessDataCatalogServiceApplication
New-SPBusinessDataCatalogServiceApplicationProxy
Remove-SPBusinessDataCatalogModel
Remove-SPSiteSubscriptionBusinessDataCatalogConfig
Revoke-SPBusinessDataCatalogMetadataObject
Set-SPBusinessDataCatalogMetadataObject
Set-SPBusinessDataCatalogServiceApplication
Set-SPBusinessDataCatalogThrottleConfig

BCS Custom Solutions

- Client and Server Object Model
- Client Cache for Offline
- VSTO for custom Office Extensions
 - BCS connectivity in Excel

5-10 minute break

Beyond SharePoint Designer

Custom Development

- General idea: Creating reusable components for business users
- Sandboxed Solutions
- Visual Studio 2010
- Save site as WSP → Import into Visual Studio
- BCS in Visual Studio
- Custom Conditions and Actions in Visual Studio
- Client Object Model / REST
- New Ribbon extension

Questions & Answers

Resources

- External Data used in demos:
 - Flickr API: <http://www.flickr.com/services/api/>
 - Twitter API: <http://apiwiki.twitter.com/>
 - Bing API: <http://www.bing.com/developers>
- BCS Team Blog:
<http://blogs.msdn.com/bcs/default.aspx>
- BCCS Search:
<http://blogs.msdn.com/uksharepoint/archive/2009/12/18/configuring-business-connectivity-services-bcs-search-in-sharepoint-2010.aspx>
- Diagnostic logging in BCS:
<http://technet.microsoft.com/en-us/library/ff463778%28office.14%29.aspx>
- Adding custom buttons to the Ribbon:
<http://blogs.msdn.com/jfrost/archive/2009/11/06/adding-custom-button-to-the-sharepoint-2010-ribbon.aspx>
- Bing Maps Mashup with SPD:
<http://blogs.msdn.com/sharepointdesigner/archive/2009/12/18/visualizing-data-using-xslt-following-up-on-spc-2009-s-session-on-building-sharepoint-mashups-with-spd-bing-maps-and-rest-services.aspx>
- Great BCS Article:
<http://msdn.microsoft.com/en-us/magazine/ee819133.aspx>
- XLV Article Series:
<http://blogs.msdn.com/sharepoint/archive/2009/12/02/sharepoint-2010-list-view-blog-series-part-1-introduction-to-the-new-list-view.aspx>
- Data View XLS Blog Series:
<http://www.endusersharepoint.com/2010/01/19/unlocking-the-mysteries-of-data-view-web-part-xsl-tags-part-1-overview/>
- SharePoint Federated Search:
<http://www.thesanitypoint.com/archive/2009/06/12/search-federation-with-sharepoint-part-1.aspx>

Your Feedback is Important

Please fill out a session evaluation form
drop it off at the conference registration
desk.

Thank you!

HPRE04