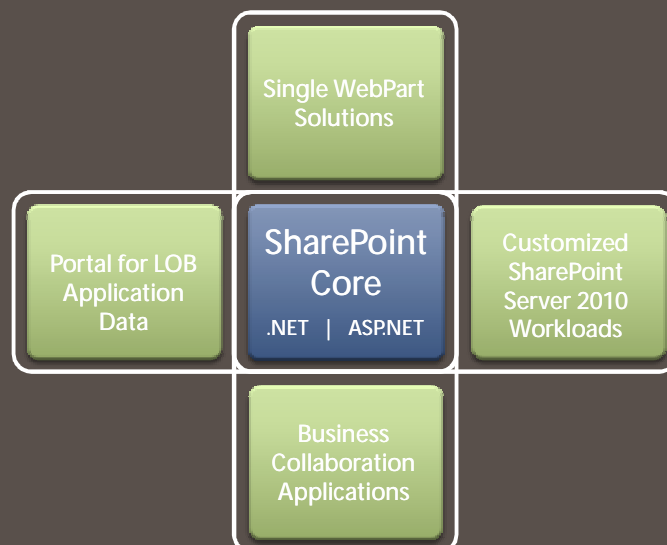


# Overview of SharePoint 2010 Programmability

Bikesh L.  
CEO  
iTrain Malaysia

## SharePoint Application Landscape



## SharePoint 2010 for Developers

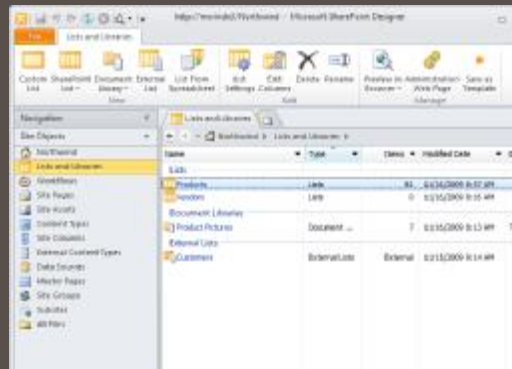
- Developer Productivity**
  - First Class SharePoint Developer Tools
  - Faster Solution Debugging & Tuning
  - Choice of Development Workstation
- Rich Platform Services**
  - Comprehensive Data Access
  - Line of Business Integration
  - Workflow Advances
- Flexible Deployment**
  - Application Lifecycle Management
  - Standardized Solution Packaging
  - Deploy with Agility and Stability

## SharePoint 2010 for Developers

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## SharePoint Designer 2010

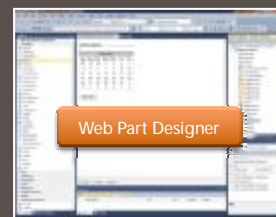
- > SharePoint Designer is for SharePoint artifacts
- > New Tools
  - > BDC Entities
  - > List Schema
  - > Custom Actions
  - > Task/Approval Designer
- > Improved Tools
  - > Workflow Designer
  - > Page Editor



## Visual Studio 2010 SharePoint Tools

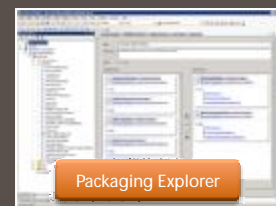
### Develop, Deploy and Debug SharePoint projects

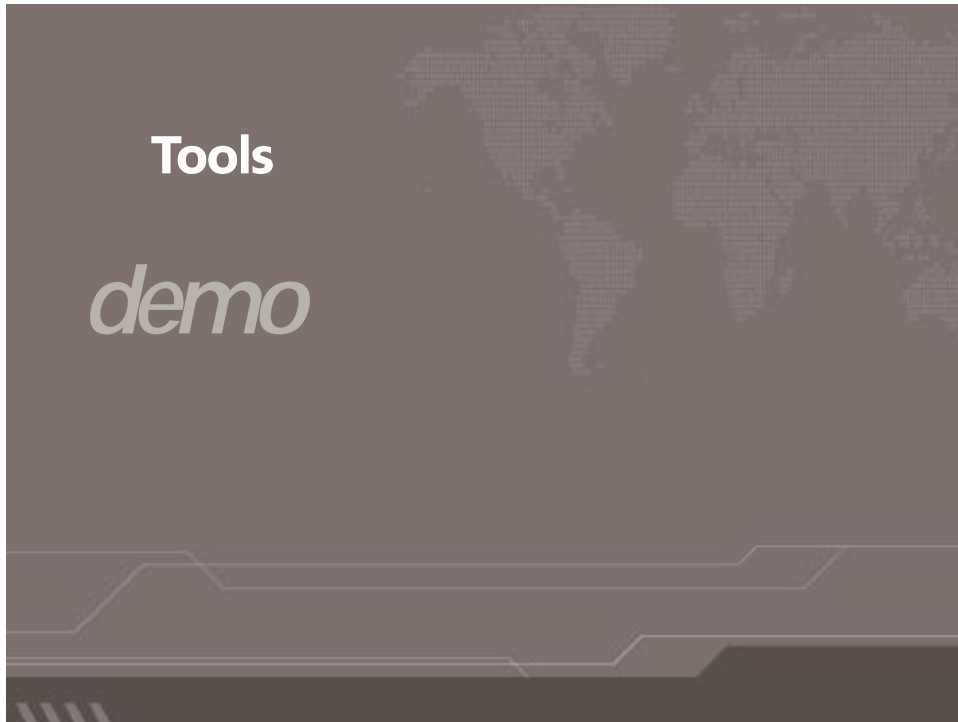
- > Web Part, BCS and Workflow designers
- > Package and Deploy SharePoint projects
- > Generate WSP for Production Deployment
- > View SharePoint site in Server Explorer
- > Team Foundation Server Integration



### Broad SharePoint Support

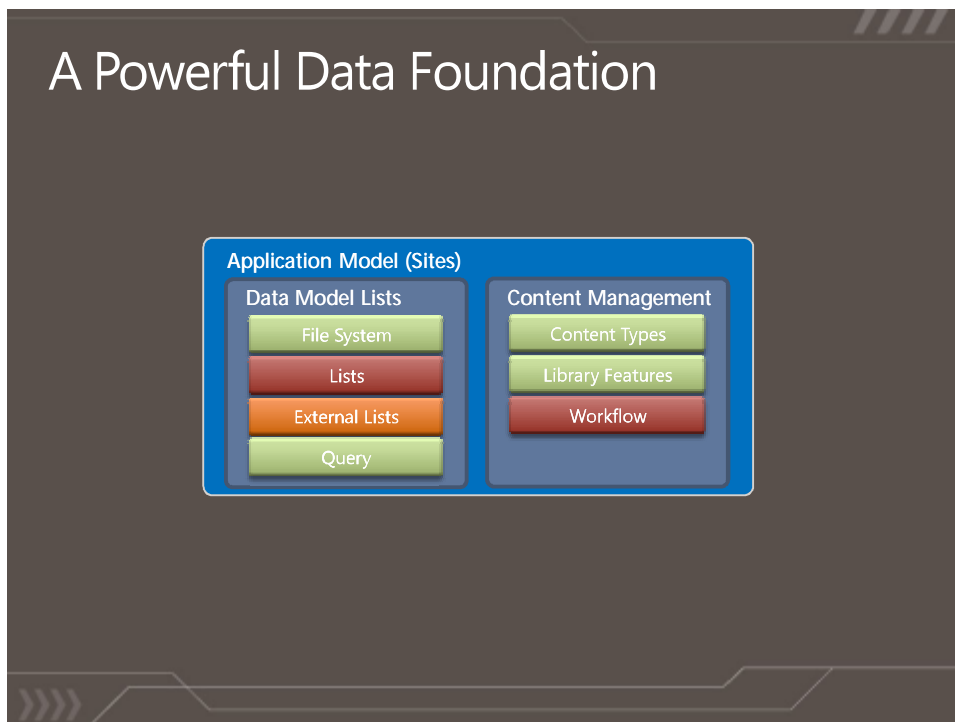
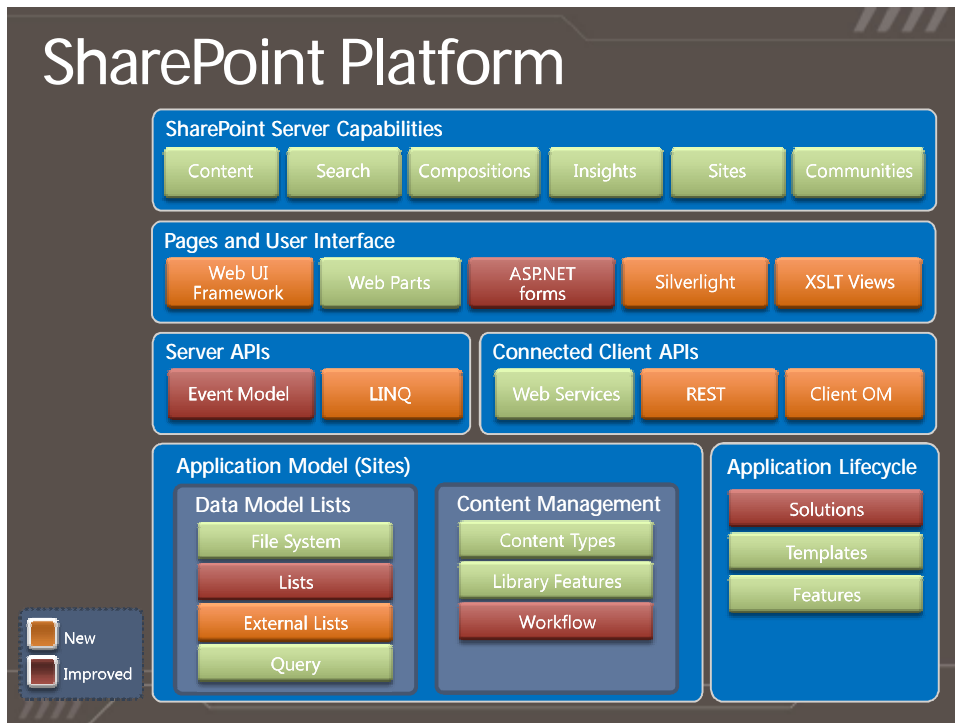
- > Support for SharePoint Sandboxed Solutions
- > Import WSP from SharePoint Designer
- > Extensibility for Development of Additional SharePoint Artifacts
- > SharePoint Business Connectivity Services support





## SharePoint 2010 for Developers

Developer Productivity	<ul style="list-style-type: none"><li>■ First Class SharePoint Developer Tools</li><li>■ Faster Solution Debugging &amp; Tuning</li><li>■ Choice of Development Workstation</li></ul>
Rich Platform Services	<ul style="list-style-type: none"><li>■ Comprehensive Data Access</li><li>■ Line of Business Integration</li><li>■ Workflow Advances</li></ul>
Flexible Deployment	<ul style="list-style-type: none"><li>■ Application Lifecycle Management</li><li>■ Standardized Solution Packaging</li><li>■ Deploy with Agility and Stability</li></ul>

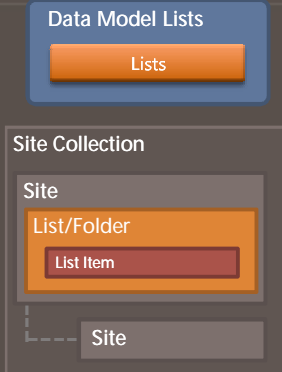


## Lists and Libraries Infrastructure

- > File System: Folders and Files
- > Sites can have Lists and Libraries
  - > Fields and List Items
  - > Lookups provide simple join semantics
  - > Queries within and across lists

**New in SharePoint 2010**

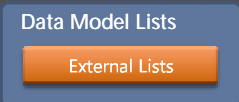
- > Lookup to multiple columns
- > Relationships
- > Validation
- > Scalability, performance and throttling



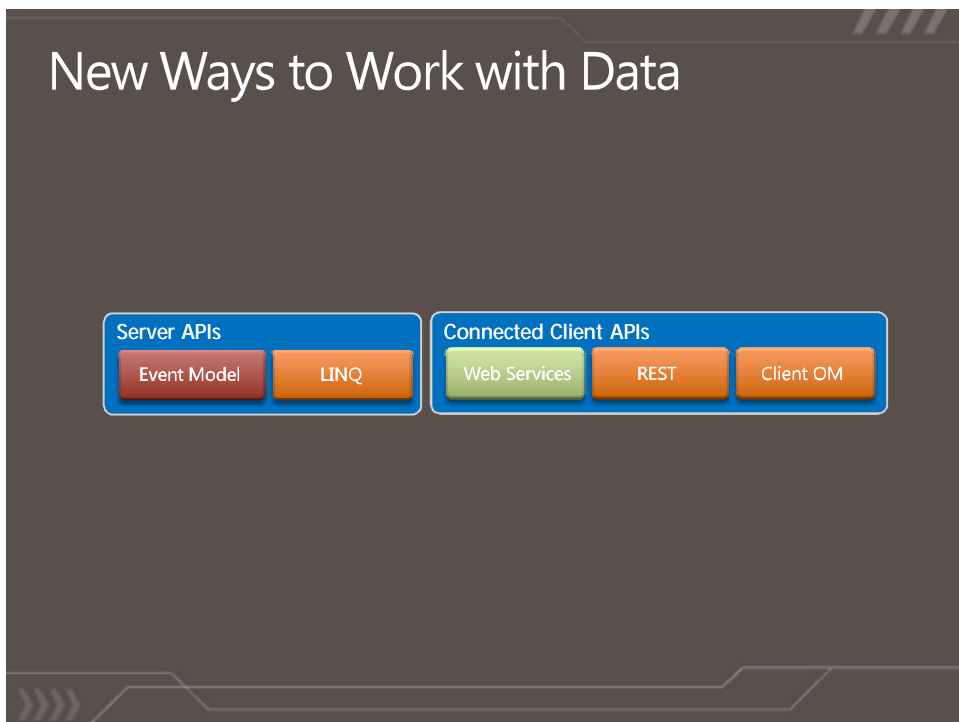
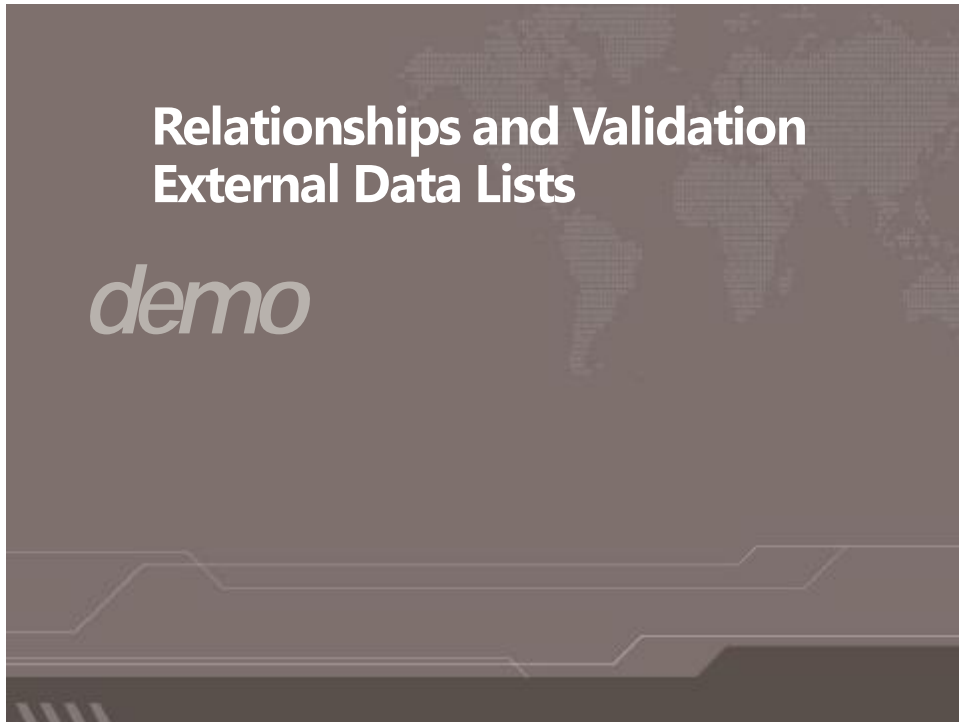
The diagram illustrates the relationship between Data Model Lists and Site Collections. A 'Data Model Lists' box contains a 'Lists' button. A 'Site Collection' box contains a 'Site' box, which in turn contains a 'List/Folder' box with a 'List Item' button. A dashed line connects the 'Site' box to another 'Site' box below it, indicating a collection of sites.

## External Data Lists (New)

- > Work with data from
  - > Databases
  - > Web services
  - > .net code
- > Works like a SharePoint List
  - > Familiar UI and navigation
  - > SPList OM
- > Out-of-Box Forms and Views
  - > Actions can point to profile or custom pages
  - > Upsize to InfoPath forms
  - > Sync to SharePoint Workspace



The diagram shows a 'Data Model Lists' box with an 'External Lists' button, indicating that external data lists are a type of data model list.



## SPLinq (New)

Server APIs

LINQ

- > Entity based programming
- > Supports List Joins and Projections
  - > Join lists on lookup field between them
  - > Join multiple lists (A->B->C)
  - > Project any field from joined list in a query without changes in list schema

### Example

```
from o in data.Orders
where o.Customer.City.Name ==
"London"
select o;
```

## Client APIs (New)

Connected Client APIs

Client OM

- > Subset of Server OM
  - > SharePoint Foundation: Webs, Lists, ListItems, etc.
- > Unified object model across all clients
  - > JavaScript
  - > .net CLR
  - > Silverlight CLR
- > Batches of commands are sent on the wire
  - > Designed for maximum consistency with server OM
  - > Inherently asynchronous
  - > Server-side proxy executes batch requests
- > Exception Handling, Conditional Logic

## REST APIs (New)

Connected Client APIs

REST

- > Work with data via REST
  - > SharePoint list data
  - > Excel spreadsheets
- > ADO.NET Services OpenData REST based integration
  - > REST Protocols
  - > Atom, JSON feeds
- > Integration with growing set of Microsoft REST Technologies
  - > ASP.NET AJAX
  - > PowerPivot ("Gemini") Integration
  - > etc.

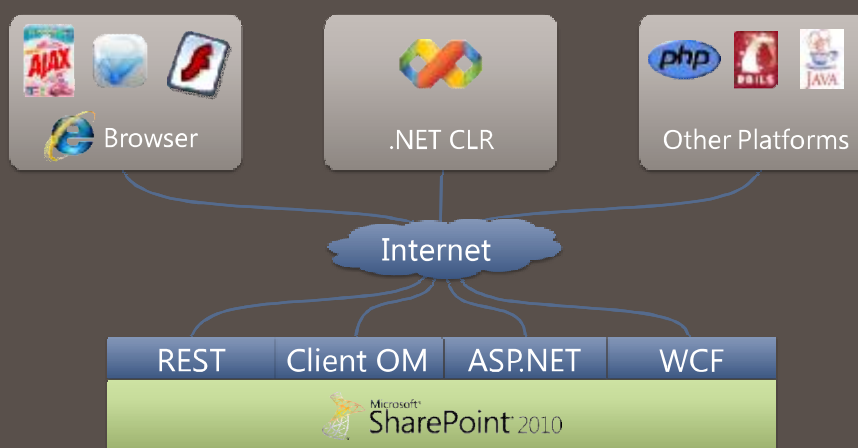
## REST

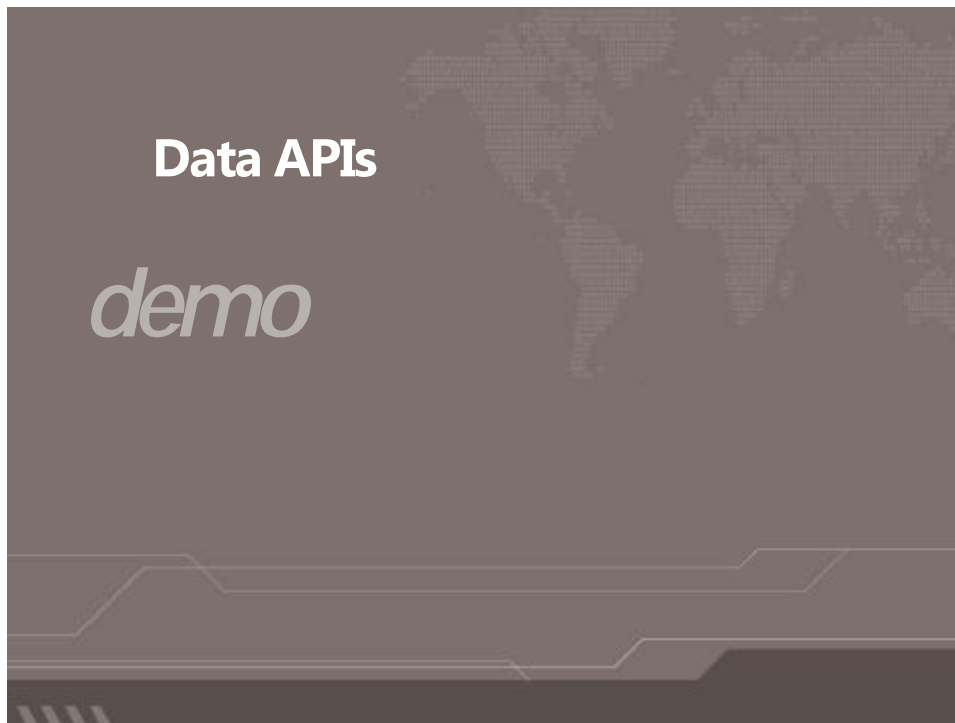
- > Access to SharePoint lists and library data
  - > .../\_vti\_bin/listdata.svc
- > Lists and List items map to resources
  - > listdata.svc/Employees(123)
- > Operations map to HTTP verbs
  - > GET, POST, PUT, DELETE

## Based on ADO.NET Data Services

- > Flexible URL conventions for querying data
  - > listdata.svc/Employees?  
    \$filter=JobTitle eq 'SDE'  
    \$orderby=Fullname
- > Multiple representations
  - > JSON and Atom (full AtomPub support)
    - > Feed readers, Excel Power Pivot (Gemini)

## SharePoint Web Services





A slide with a dark grey background. The word "Events" is written in a large, white, sans-serif font. In the top right corner, there is a blue rounded rectangle containing the text "Server APIs" in white, and below it, a red rounded rectangle containing the text "Event Model" in white. Below the title, there is a list of event types, each preceded by a white greater-than sign (>). The list includes "List events", "Item events", and a section titled "New in SharePoint 2010" followed by "After-synchronous events (simpler event behavior)", "Site-scoped events", "Web creation events", "List creation events", "Workflow events", and "More user interface control (custom error pages)". The bottom of the slide has a decorative horizontal line with a stepped, circuit-like pattern.

## Events

Server APIs  
Event Model

- > List events
- > Item events

New in SharePoint 2010

- > After-synchronous events (simpler event behavior)
- > Site-scoped events
- > Web creation events
- > List creation events
- > Workflow events
- > More user interface control (custom error pages)

# Workflow

Content Management  
Workflow

- > Item-based workflows
- > Arsenal of workflow actions

New in SharePoint 2010

- > Performance and Scale
  - > Workflow-to-machine execution targeting
- > Site-scoped workflows
- > Browser based visualization
- > Customizable out-of-box workflows
  - > Approval designer

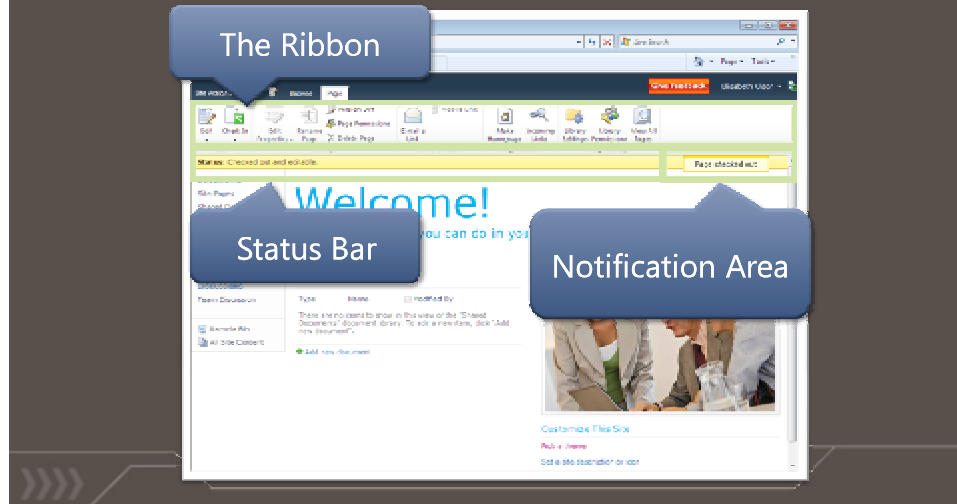
# Modern, Extensible UI

Pages and User Interface

- Web UI Framework
- Web Parts
- ASPNET forms
- Silverlight
- XSLT Views

## Ribbon and Dialog Framework

- > Client Site Custom Actions in Ribbon
- > Context Sensitive Ribbon



## Standards Adherence and Browser Compatibility

- > Well-formed XHTML 1.1 strict
- > Better standards support
- > Better browser support
  - > Full support of Safari and Mozilla Firefox
- > WCAG 2.0 AA Compliant
- > XSLT-based views
- > Multilingual user interface

## Silverlight (New)

Pages and UI  
Silverlight

- > Silverlight Web Part
  - > Simple way to upload Silverlight packages to SharePoint and use them
- > Client Object Model in Silverlight
- > Support for remotely hosted Silverlight applications
  - > Delegated authentication/application principals

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*You've created a great  
collaboration app!*

**but...**

- > 'Bad' code can cause performance, reliability headaches
- > So, deploying code requires server admin audits and blessing
- > Therefore, in large-scale hosted environments, deploying code is impossible

## Sandboxed Solutions For Developers

### The basic model

- > A Subset of existing Solution Model
  - > Web/Site Scoped Features
  - > Many XML constructs: <Modules>, <Lists>, <ContentTypes>, etc.
- > Supports code callouts:
  - > "Lightweight" Web Part
  - > Event Receivers
  - > Feature Activation Events
  - > Workflow Actions
  - > InfoPath Form Business Logic
- > API set is limited to Microsoft.SharePoint

## Unified Packaging Format

- > WSPs as unified developer format
  - > Works in both site collections and on machine
- > Includes:
  - > Site Definitions
  - > Features
  - > Content Types
  - > Lists
  - > Items and Files

## Sandboxed Solutions Architecture

### Multiple Machines

