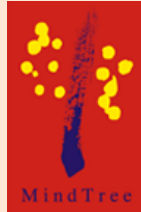


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Wictor Wilén
SharePoint Server MVP
Connecta AB, Sweden
<http://www.wictorwilen.se>

PLAYING IN THE SANDBOX



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WHO AM I?

- Wictor Wilén
- SharePoint Server MVP, Author, Solutions Architect
- Connecta AB, Sweden
- Been in the game since "Tahoe" (SharePoint 2001)



Microsoft
CERTIFIED
Trainer

Microsoft
CERTIFIED
Technology Specialist

Microsoft
CERTIFIED
Professional

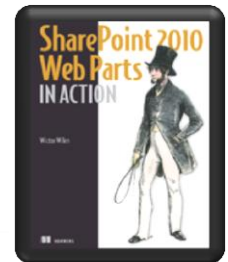
Microsoft
CERTIFIED
Professional Developer

SharePoint 2010, Configuration
SharePoint 2010, Application Development
Microsoft Windows SharePoint Services 3.0, Configuration
Microsoft Windows SharePoint Services 3.0, Application Development
Microsoft Office SharePoint Server 2007, Configuration
Microsoft Office SharePoint Server 2007, Application Development

SharePoint Developer 2010

Microsoft
CERTIFIED
IT Professional

SharePoint Administrator 2010



<http://www.connecta.se/> | <http://www.wictorwilen.se/> |
<http://twitter.com/wictor> | <http://www.sharepointwebpartsinaction.com>

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THIS SESSION

- Everyone should know when, where and how to use the SharePoint 2010 Sandbox!
- I will provide you with a bunch of tips and best practices during this session



AGENDA

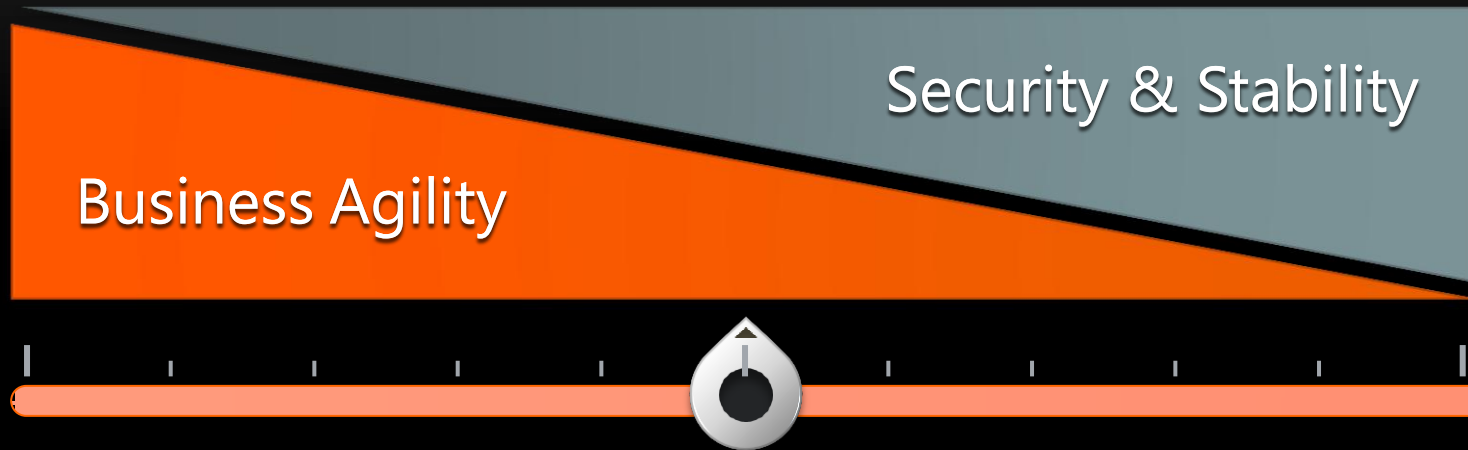
- What is a Sandbox?
- Why use a Sandbox?
- The Sandbox in SharePoint 2010
- Sandbox administration
- Development of Sandboxed solutions
- Limitations and Possibilities of the Sandbox
- And a bunch of demos...

WHAT IS A SANDBOX?

- Runtime that is:
 - Isolated
 - Site Collection
 - User managed
 - /_catalogs/solutions
 - Monitored
 - Quota, blocking and Solution Validators



WHY USING A SANDBOX?



- Simple installation
- Avoid long control processes
- Agile and iterative development
- Monitoring
- Office 365!
- Limited possibilities

SANDBOX ADMINISTRATION

User

- Exists in the Site Collection
- Managed by the Site Collection Administrators
- Can be blocked by Farm Administrators (Central Administration)



Farm Management

[Configure alternate access mappings](#) | [Manage farm features](#) | [Manage farm solutions](#) | [Manage user solutions](#)
[Configure privacy options](#) | [Configure cross-firewall access zone](#)



Administrator

- Load balancing
 - Execution on servers with Sandboxed Code Service running (Affinity routing)
 - Execution on servers which receive the request
- Solution Validators
 - Only approved solutions can be activated and executed

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SANDBOX MONITORING

- Consumes *Resource points*
- 15 different Resource Measures
- Quota (standard 300 points)
- Calculated every 15:th minute (timer job)
- Shuts down for 24h if Quota is reached

```
Administrator: Windows PowerShell
rePoint, Version=14.0.0.0, Culture=neutral, PublicKeyToken=71e9bce11e9429c">
GAC    Version    Location
True  v2.0.50727  C:\Windows\assembly\GAC_MSIL\Microsoft.SharePoint\14.0.0.0_71e9bce11e9429c\Microsoft.SharePo...

PS C:\Users\wictor.wilen\Documents\Conferences\SEF 2010\Sandbox demos> $s=[Microsoft.SharePoint.Administration.SPUserCodeService]::Local
PS C:\Users\wictor.wilen\Documents\Conferences\SEF 2010\Sandbox demos> $s.ResourceMeasures | ft Name, ResourcesPerPoint, AbsoluteLimit

Name                                     ResourcesPerPoint  AbsoluteLimit
-----
AbnormalProcessTerminationCount         1                  1
CPUExecutionTime                         200                60
CriticalExceptionCount                   10                 3
IdlePercentProcessorTime                 100                10
InvocationCount                          100                100
PercentProcessorTime                      85                 100
ProcessCPUcycles                         10000000000        10000000000
ProcessHandleCount                       10000              5000
ProcessIOBytes                            100000000          1000000000
ProcessThreadCount                       10000              200
ProcessVirtualBytes                       1000000000         4000000000
SharePointDatabaseQueryCount             400                100
SharePointDatabaseQueryTime              20                 60
UnhandledExceptionCount                  50                 3
UnresponsiveProcessCount                  2                  1

PS C:\Users\wictor.wilen\Documents\Conferences\SEF 2010\Sandbox demos>
```

Demo

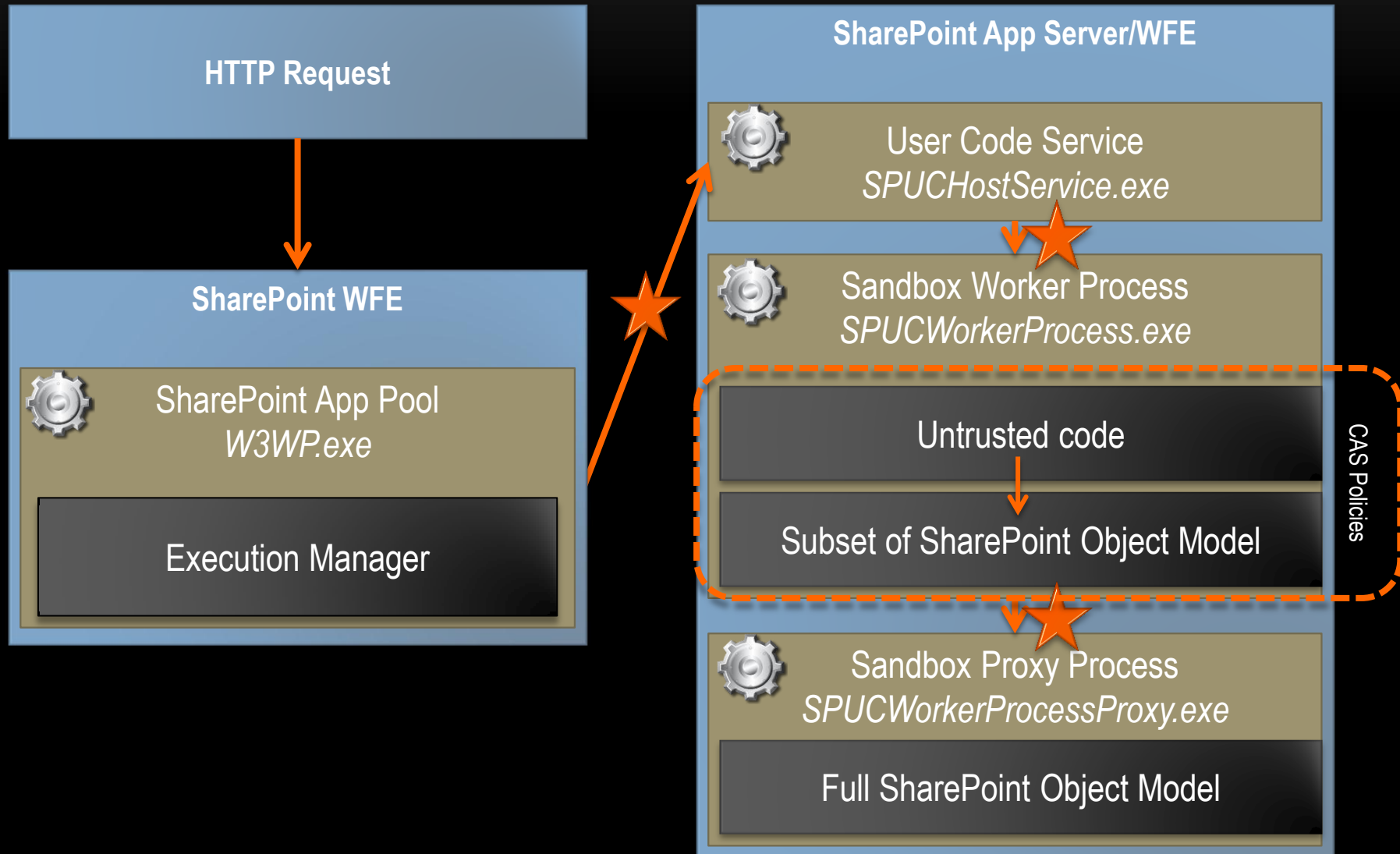
ADMINISTRATION AND
MONITORING



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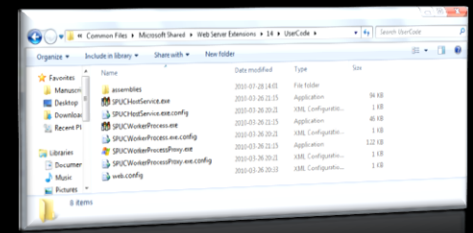
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SANDBOX ARCHITECTURE



SANDBOX INTERNALS

- The Sandbox Worker Process uses a separate DLL
 - Microsoft.SharePoint.dll
 - C:\Program Files\Common Files\Microsoft Shared\Web Server Extensions\14\UserCode\assemblies
 - Subset of the original Microsoft.SharePoint.dll
 - Differs from original by version number
 - 14.900.762.1000 vs 14.0.5114.5000
 - `<bindingRedirect oldVersion="0.0.0.0-14.900.0.0" newVersion="14.900.0.0" />`



Playing in the Sandbox

WHAT'S IN IT FOR DEVS?



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THE SANDBOX FOR DEVELOPERS

- **Yup:**
 - We're limited!
- **But:**
 - We can get our applications and functions out faster
 - We cannot crash the server
 - We can be a part of the cloud offering – a new market/Office 365 (AppStore?)
 - We will have more fun!

WHAT CAN BE DONE

- List definitions
- List instances
- Web Templates
- Content Types and Fields
- Modules and Files
- Features (Scope: Web & Site)
- Web Parts
- Event Receivers (Item, List, Web)
- Custom Actions
- Declarative Workflows* and Custom Activities

WHAT CAN **NOT** BE DONE 1/2

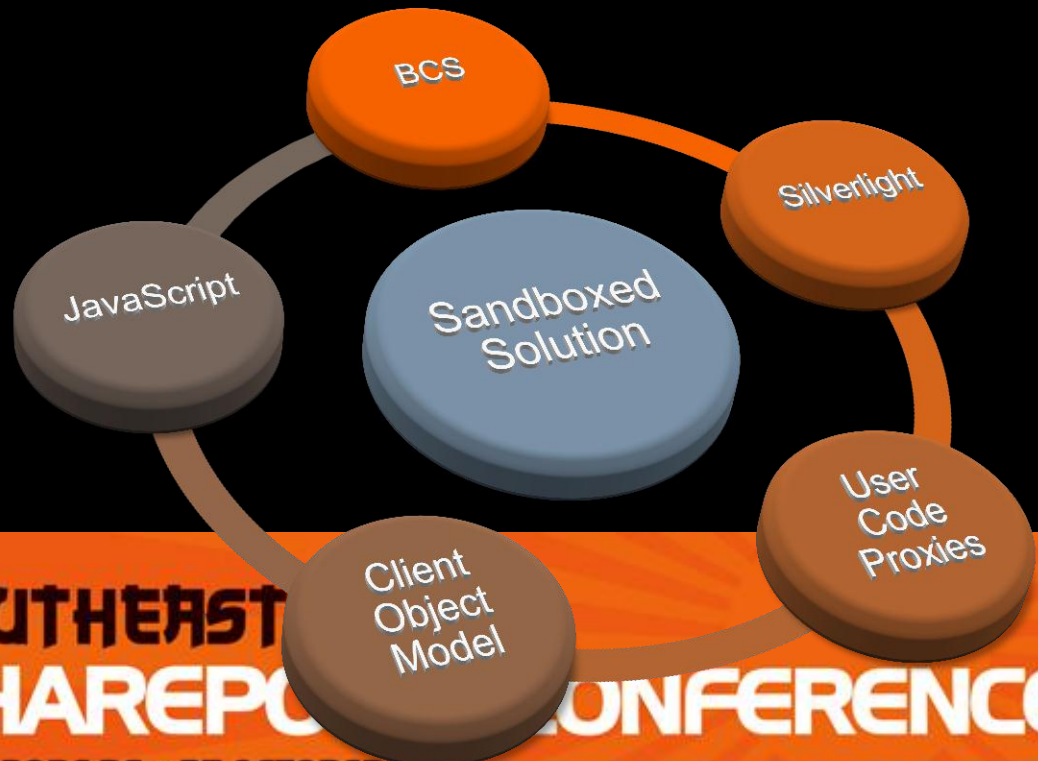
- Hide Custom Action elements
- Content Type bindings
- Features (Scope: WebApplication & Farm)
- Programmatic Workflows
- Timer jobs
- Changes to files in the SharePoint Root
- (Visual Web Parts)

WHAT CAN **NOT** BE DONE 2/2

- Anything outside of the Site Collection
 - Database calls
 - Web Services
 - File System access
 - Send e-mail
- Security and permissions
 - Impersonation
- System.Web
 - ClientScriptManager
 - Upload files (HttpRequest.Files)

WORKAROUNDS

- Business Connectivity Services
- Silverlight
- Client Object Model / JavaScript
- User Code Proxies



SHAREPOINT PATTERNS & PRACTICES GROUP



<http://spg.codeplex.com/>

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BUILDING SANDBOXED SOLUTIONS



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A WEB PART PROJECT

- Visual Studio 2010 SharePoint Developer Tools
- Local SharePoint
- Sandbox is the default deployment type

Demo

SANDBOXED WEB PART PROJECT



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CUSTOM ACTIVITY

- Create custom workflow activity
- Can be used in SharePoint Designer 2010
- Declarative Workflows

Demo

SANDBOXED CUSTOM ACTIVITY



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USER CODE PROXIES

- Farm solution
- Allows developers to use code running in full trust

Demo

USER CODE PROXY



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WEB TEMPLATE

- WebTemplate, partly replaces Site Template (STP)
- Light version of Site Definition
- WSP packages (export)
- <http://blogs.msdn.com/b/vesku/archive/2010/10/14/sharepoint-2010-and-web-templates.aspx>

Demo
EXPORT SITE



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SOLUTION VALIDATION

- Farm solution
- Validation of all Sandboxed solutions
- Multiple allowed
 - OOB approves all solutions
- Validation is performed during activation
 - When validators are updated all solutions are validated at first request

Demo

SOLUTION VALIDATOR



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Thank You!

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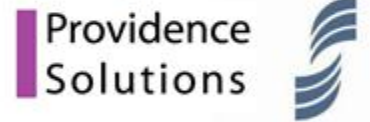
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