

Lap Around the .NET Framework 4

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.NET Framework 4.0

User Interface

ASP.NET
(WebForms,
MVC, Dynamic
Data)

**Windows
Presentation
Foundation**

WinForms

Services

Data Services

**Windows
Communication
Foundation**

**Windows
Workflow
Foundation**

Data Access

ADO.NET

**Entity
Framework**

LINQ to SQL

Core

**Parallel
Extensions**

**Managed
Extensibility
Framework**

LINQ

Languages

**Dynamic
Language
Runtime**

**Base Class
Library**

Common Language Runtime



ASP.NET MVC 1.0 (Model View Controller)

- A new Web Application Project type
 - Simply an option
 - Not a replacement for WebForms
 - Builds on top ASP.NET
 - Manual vs. Automatic Transmission
- Supports a clear separation of concerns
- Supports testability
- Supports “close to the metal” programming experience



ASP.NET MVC 2

Visual Studio 2010

Included

Visual Studio 2008 (Service Pack 1)

Download

Both versions built against .NET 3.5



What's New in MVC 2?

- Better Separation of Concerns (Maintainability)
 - `Html.RenderAction()`
 - Areas
- Easier Validation (Maintainability/Productivity)
 - Data Annotations
 - Client Validation
- Helper Improvements (Maintainability/Productivity)
 - Strongly-Typed Helpers
 - Templated Helpers

ASP.NET 4 Web Forms?

- Support for SEO with URL Routing
- Cleaner HTML
- Client ID improvements
- ViewState improvements
- Dynamic Data Improvements
- Chart Controls
- Productivity and Extensibility
- Rich Client Ajax
 - supports both MVC & Web Forms

WPF 4

- Calendar, Data Grid, DatePicker
- Ribbon (separate download)
- VisualStateManager
- Easing Functions
- Windows 7 Enhancements
 - Multi-Touch
 - Taskbar
- Performance enhancements (cached composition)
- Text clarity enhancements
- Client Profile

Entity Framework 4

- Model-First
 - POCO
 - Lazy Loading
 - Foreign Keys
 - N-tier improvements
 - Customized code gen
 - More...
-
- [http://msdn.microsoft.com/en-us/library/ex6y04yf\(VS.100\).aspx](http://msdn.microsoft.com/en-us/library/ex6y04yf(VS.100).aspx)
 - <http://blogs.msdn.com/efdesign>



Windows Communication Foundation 4

- Simplified Configuration
- Discovery
- Routing Service
- REST Improvements
- Workflow Services
- Hosting & management via Windows Server AppFabric

<http://msdn.microsoft.com/en-us/library/ee354381.aspx>



Windows Workflow Foundation 4

- New, improved WF programming model / runtime
 - Why a new model? - <http://tinyurl.com/roadtoWF4>
 - 3.x workflow runtime ships with .NET 4.0 (side by side)
 - 3.x workflows execute against 3.x runtime
 - 3.x activities can run inside a 4.0 workflow via interop activity
 - WF 3.x to 4.0 migration guidance - <http://tinyurl.com/WF4migration>
- Increased performance
- XAML-only (declarative) workflows are the default now
 - Unified model between WF, WCF, and WPF
- Extended base activity library
- Support for arguments, variables, expressions
- Flowchart
- Major improvements to WCF integration
- Designer improvements (WPF based)
- Hosting & management via Windows Server AppFabric



WCF Data Services

- Server Enhancements
 - Entity count
 - Server-side paging
 - Query Projections
 - Custom Data Service Providers
 - Friendly feeds
 - BLOB streams
- Client Enhancements
 - Usage of server enhancements
 - WPF/SL data binding

[http://msdn.microsoft.com/en-us/library/ex6y04yf\(VS.100\).aspx](http://msdn.microsoft.com/en-us/library/ex6y04yf(VS.100).aspx)



Parallel Computing with .NET 4

1. Task Parallel Library (TPL)
2. Parallel LINQ (PLINQ)
3. Coordination Data Structures (CDS)
4. System.Threading Improvements

<http://msdn.microsoft.com/en-us/concurrency/default.aspx>



Parallel LINQ

Parallel LINQ (PLINQ) enables developers to **easily leverage** manycore with a **minimal impact** to existing LINQ programming model

```
var q = from p in people.AsParallel()  
        where p.Name == queryInfo.Name &&  
              p.State == queryInfo.State &&  
              p.Year >= yearStart &&  
              p.Year <= yearEnd  
        orderby p.Year ascending  
        select p;
```

.NET Dynamic Programming

IronPython

IronRuby

C#

VB.NET

Others...

Dynamic Language Runtime

Expression Trees

Dynamic Dispatch

Call Site Caching



.NET Framework Compatibility

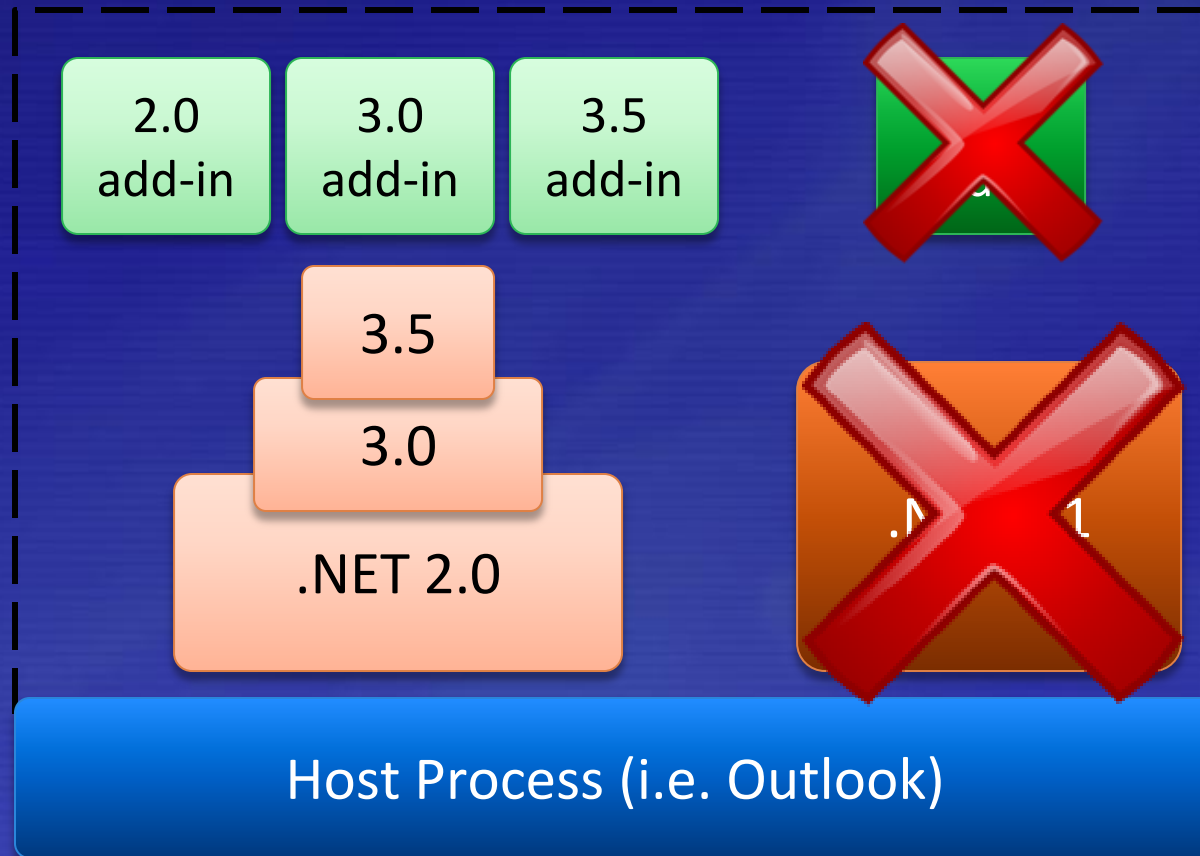
- .NET 4.0 is a highly compatible release
- .NET 4.0 does not auto-roll forward
 - You must add a configuration file with a specific switch to get 3.5 apps to run on 4.0

.NET Framework Compatibility

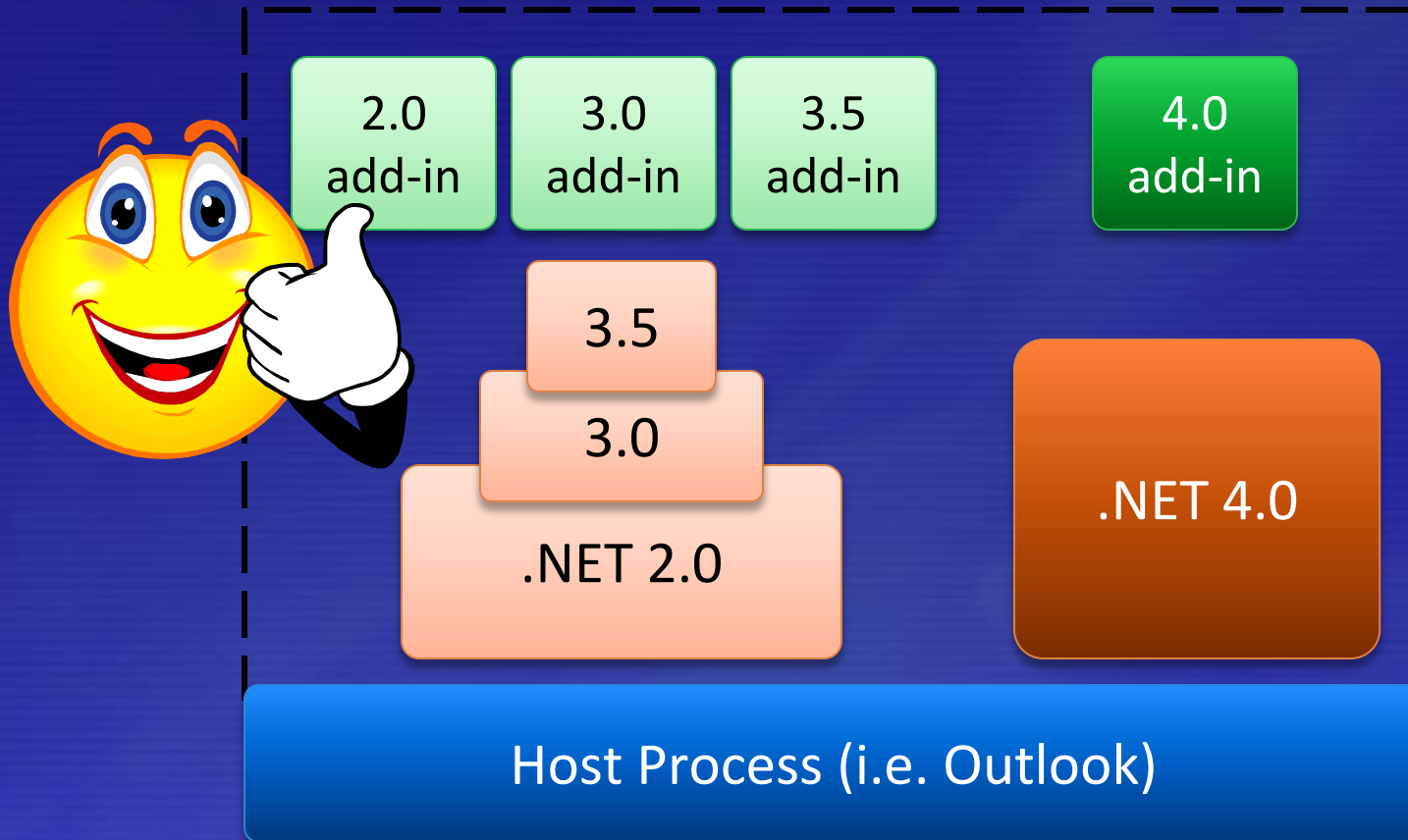
*Hang on... if 4.0 is compatible,
why not run 3.5 apps
automatically on 4.0?*

- The BEST thing is always to prefer running on the version of the framework you built against
- Contact netfxcf@microsoft.com and submit your app for testing!

CLR 2 - Existing Side-By-Side



CLR 4 - In-Process Side-By-Side



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QUESTIONS?



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