**.NET Framework (25min incl demo)**

**Slide 2 – Agenda (1min)**

* Background – “What is the .NET Framework?”
* History
* Features
* .NET FW vs .NET Compact FW
* Development tools
* Demo

**Slide 3 - What is the .NET Framework? (**

* Started out as a more user friendly ”COM/ActiveX”.
* A development platform that has...
  + A consistent programming model
  + Simplified programming model
  + Run once, run always (no more “DLL hell”)
  + Wide platform reach
  + Language interoperability (C++, C#, VB, ASP…)
  + Code reuse
  + Automatic memory management (garbage collection)
  + Type-safety
  + Rich debugging support

**Slide 4 - Alternative implementations**

* Shared Source Common Language Infrastructure
* Mono (Linux, Solaris,BSD, HP-UX & Mac OS X)
* DotGNU
* CrossNet (Generates pure C++)
* .NET for Symbian (S60)

**Slide 5 - The different parts…**  
(Common Language infrastructure)

* Common Type System (CTS)
* Common Language Specification (CLS)
* Common Intermediate Language (CIL)
* Common Language Runtime (CLR)
* Just-In-Time Compiler (JIT)
* Virtual Executions System (VES)

**Slide 6 – History**

* .NET Framework 1.0 2002 (20MB)
* .NET Framework 1.1 2003 (23MB)
  + Bug fixes + API changes
  + .NET Compact framework
* . Net Framework 2.0 2005 (22MB)
  + Bug fixes + API changes
  + Full 64 bit support
  + Generics
  + New controls

**Slide 7 – History cont…**

* .NET Framework 3.0 2006 (50MB(x86)-90MB(x64))
  + Windows Presentation Foundation (WPF) – Formerly known as Avalon
  + Windows Workflow Foundation (WF)
  + Windows Communication Foundation (WCF) – Formerly known as Indigo
  + Cardspaces
    - InfoCard
    - Digital Identity
    - Identity Provider

**Slide 8 – History cont…**

* .NET Framework 3.5 2007 (197MB)
  + Asynchronous network I/O API
  + Lambda methods
  + Extension methods
  + Language Integrated Query (LINQ)
  + Peer-to-peer networking stack
  + Enhanced WCF and WF runtimes
  + ASP.NET AJAX support

**Slide 9 – History cont…**

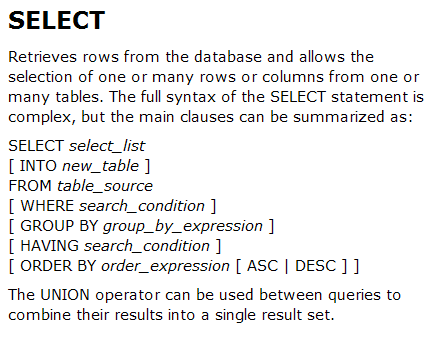
* **NET Framework 3.5SP1 2008 (26 – 200MB)**
  + Client Profile (26MB vs. 200MB)
  + WPF Performance improved (20-45%)
  + The Entity Framework (extends ADO.NET)
  + Improved LINQ to SQL
* **.NET Framework 4.0 ~late2009 – mid2010**
  + Support for parallel computing (PLINQ)
  + Task Parallel Library
  + Server Core (subset of .NET Framework and ASP.NET)

**Slide 10 – Versioning fun**

**Slide 11 - Features – a tiny bite…  
Language extensions**

1. Auto-Implemented Properties get,set
2. Implicitly Typed Local Variables var
3. Extension Methods static…this
4. Object and Collection Initializers {...}
5. Anonymous Types new
6. Implicitly Typed Arrays new[]
7. Query Expressions [LINQ] from…select
8. Lambda Expressions =>
9. Expressions Trees (not supported in CF 3.5)

**Slide 12 - Features  
LINQ - Borrowing from Transact-SQL**

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**Slide 13 – LINQ**

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| --- | --- |
| * **Microsoft .NET CF 3.5**   + Objects   + XML   + LINQ to Data Sets | * **Third-Party LINQ Providers**   + Parallel to LINQ   + LINQ to WebQueries   + LINQ to Amazon   + LINQ to RDF Files   + LINQ to MySQL   + LINQ to Nhibernate   + LINQ to LDAP   + LINQ to Flickr   + LINQ to Google Desktop   + LINQ to SharePoint   + LINQ to Streams   + LINQ to Expressions |
| * **Mic**rosoft .NET Framework   + Objects   + XML   + LINQ to Data Sets   + LINQ to SQL |
|  |

**Slide 14 – WCF**

**Slide 15 – WCF vision**

**Slide 16 – WCF (Supported transports)**

|  |  |
| --- | --- |
| * **Microsoft .NET Framework 3.5**   + HTTP   + HTTPS   + Microsoft .NET Remoting   + COM+   + Named Pipes   + MSMQ | * **Microsoft .NET Compact Framework 3.5**   + HTTP |

**Slide 17 - .NET FW vs. Compact FW**

|  |  |
| --- | --- |
| * **No...**   + ASP.NET server   + Runtime hosting   + Code access security   + Binary serialization   + Reflection.Emit   + Codedom   + Configuration | * **Also No...**   + WPF   + WF   + LINQ to SQL/Entities |

**Slide 18 – Classes Specific to NETCF v2.0**

* **Microsoft.WindowsCE.Forms** 
  + HardwareButton
  + MobileDevice.Hibernate
  + SystemSettings.ScreenOrientation
  + DocumentList *.WinCEPlatform in v3.5*
  + Notification
  + LogFont
* **Microsoft.WindowsMobile.DirectX** 
  + .Direct3D
* **SqlCeResultSet**

**Slide 19 – Microsoft Windows Mobile 5.0 / 6**

|  |  |
| --- | --- |
| * **Has its own additional classes**   + Part of the platform   + Not part of .NET Compact Framework   + Usable from all versions of the .NET CF | * **Microsoft.WindowsMobile**    + .PocketOutlook   + .Configuration   + .Status   + .Telephony   + .Forms |

**Slide 20 – Compact CLR**

* **Garbage Collector**
  + Mark and sweep (not generational)
  + Three phases: Simple, Compact, Full
  + Triggered by:
    - Allocation failure
    - App goes to background
    - 1 MB allocation in current versions (750 KB in v1.0)
* **JIT**
  + Pitching
  + No ngen

**Slide 21 - Visual Studio for Devices**

* **Visual Studio 2005 Standard Edition**
  + Nothing additional in “higher” editions
  + Relevant enhancements
    - ResX format, Form factors, Emulator, Debugging, Remote tools, Change Target Platform, Targets both v1 and v2
* **Visual Studio 2008 Professional Edition**
  + Unit Testing
  + Targets versions 2 and 3

**Slide 22 – Demo**

**Demo 1: SampleLinqToObject**

*Demo 2: Sample (XML, winforms, speed (compare C#-app and C++ app) -* ***NOT DONE!!!***

**Slide 23 - Resources**