Service Programming

• Service programming has been proposed as an advancement over Object-Oriented programming.

• A Service is a program you communicate with using messages.
Tenets of Service Programming

• Boundaries are explicit.

• The service you want to access may be:
  – on a different machine
  – created by a different programmer
  – owned by a different organization
  – updated on their schedule

• "Respecting the boundaries of others."
Tenets of Service Programming

• Services are autonomous
• Client and Server may be independently deployed
Tenets of Service Programming

- Share schema not class
- Integration based on message format and exchange patterns, not classes.
- Schema describe the purely structural format
- Contracts specify behavior
Tenets of Service Programming

• Policy based compatibility.
• Service compatibility is based on policy assertions using stable global names.
A Rose by Any Other Name…

• **Longhorn** is the codename for the next version of the Microsoft Windows OS.
• **Yukon** is the codename for the next version of the Microsoft SQL server.
• **Whidbey** is the codename for the next version of Microsoft Visual Studio
• **Indigo** is the new Web message service
• **Avalon** is the new Windows presentation system.
• **WinFS** is the Longhorn File System.
Microsoft Remote Services

• Microsoft has several systems for network based programming
  – Enterprise Architect
  – .NET Remoting
  – ASMX

• Microsoft suggests ASMX for future development.
.NET Remoting

- Object Orientation
- Access through proxy objects

```
ChannelServices.RegisterChannel(new TcpChannel());

HelloObj helloObjRef =
(HelloObj)Activator.GetObject(
    typeof(HelloObj), "tcp://localhost:6789/HelloObj" );

Console.WriteLine(helloObjRef.Greet("Joe Bloggs"));
```
ASMX

- Uses WSDL to define services
- Data is transmitted with SOAP
- C# attributes are used to provide information about how the service is to be made available.
How to make a Web Service

• Use Visual Studio to create a ASP Web Service
• Use a browser to view http://wherever/myservice?wsdl
• Save the WSDL file from the browser
• Use wsdl.exe to create a C# client
• Instantiate the web service object and call the methods.
DotGNU Project

- The goal of the DotGNU project is to be a complete competitor to Microsoft's "Net initiative"
- More information about the DotGNU project can be found at http://www.gnu.org/projects/dotgnu/ or http://dotgnu.org
DotGNU Project

• DotGNU Portable.NET, which contains an implementation of the Common Language Infrastructure (CLI). This component contains a portable runtime engine, compilers for C# and C, a C# class library, and related development tools.
DotGNU Project

• The **DGEE** webservice server provides the functionality of accepting, validating and satisfying web service requests. It is implemented on top of distributed middleware called "Goldwater"

• You need this if you want to use web services with DotGNU and Portable.Net
DotGNU Project

- **phpGroupWare**, a multi-user web-based GroupWare suite, which also serves to provide a collection of web service components, all of which can be accessed through XML-RPC so that you can integrate them into web service applications of your own.