

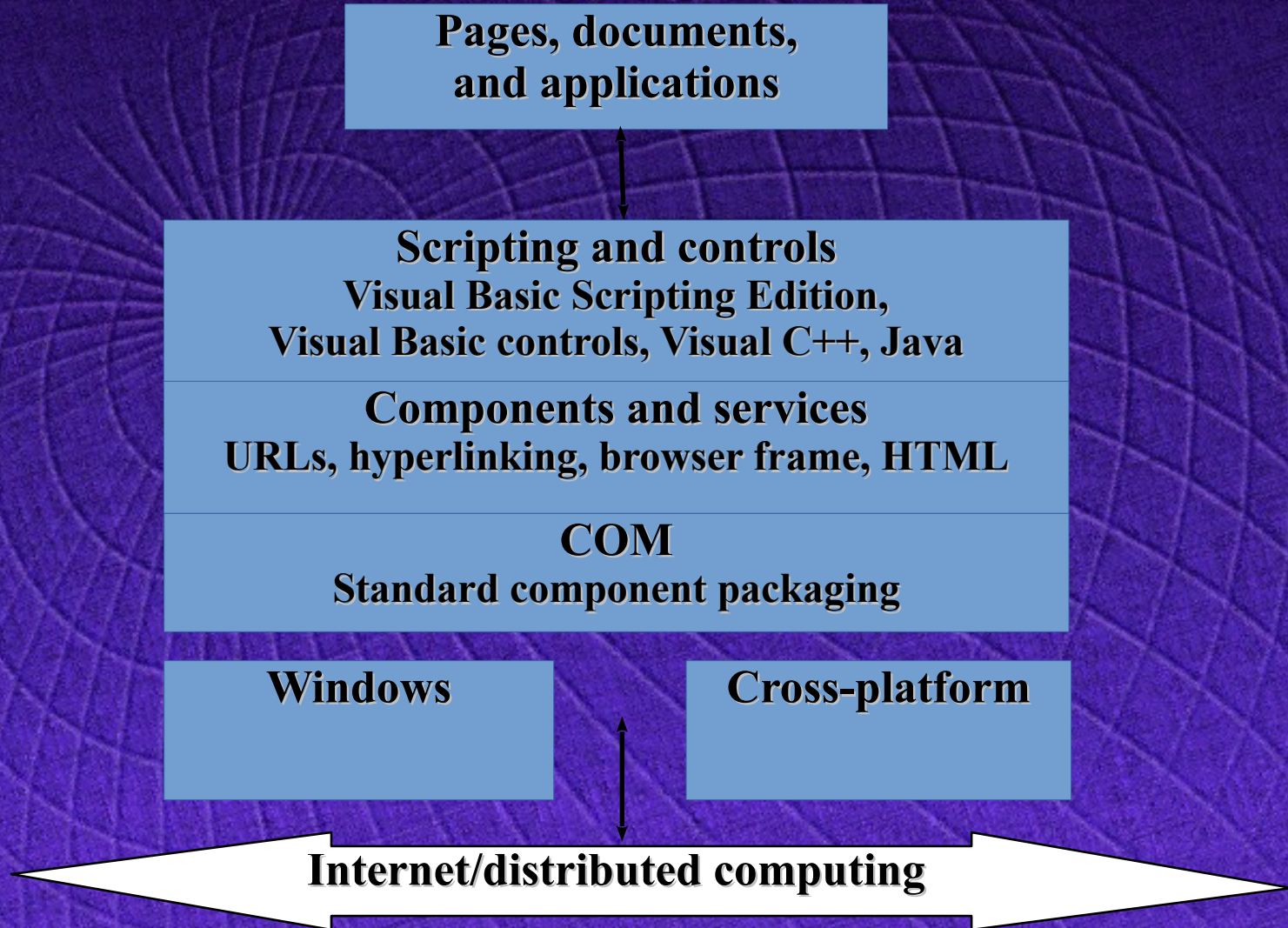
ActiveX™ On The Client

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ActiveX Client Vision

A common framework



Demos

 Integration

 Active content

 Active media

Our Approach

Make the Web interactive!

- Refactor OLE based on feedback**
 - Start with COM and build up
 - Define and extend standards
- Support leading-edge Web standards**
 - Working as part of W3C
- Deliver new components and services**
 - Frame, HTML, Visual Basic[®] Scripting Edition
- Use services in Internet Explorer**

Architecture Overview



Containers

Active documents

ActiveX controls

VRML

HTML

RealAudio

MPEG

Shockwave

ODBC

ActiveX scripting

Visual Basic

REXX

PERL

Services

URL resolution
HTTP, FTP

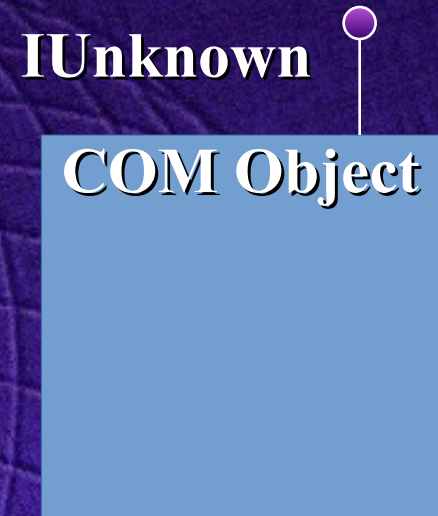
Hyperlinking
History
Favorites

Code download
and security

COM

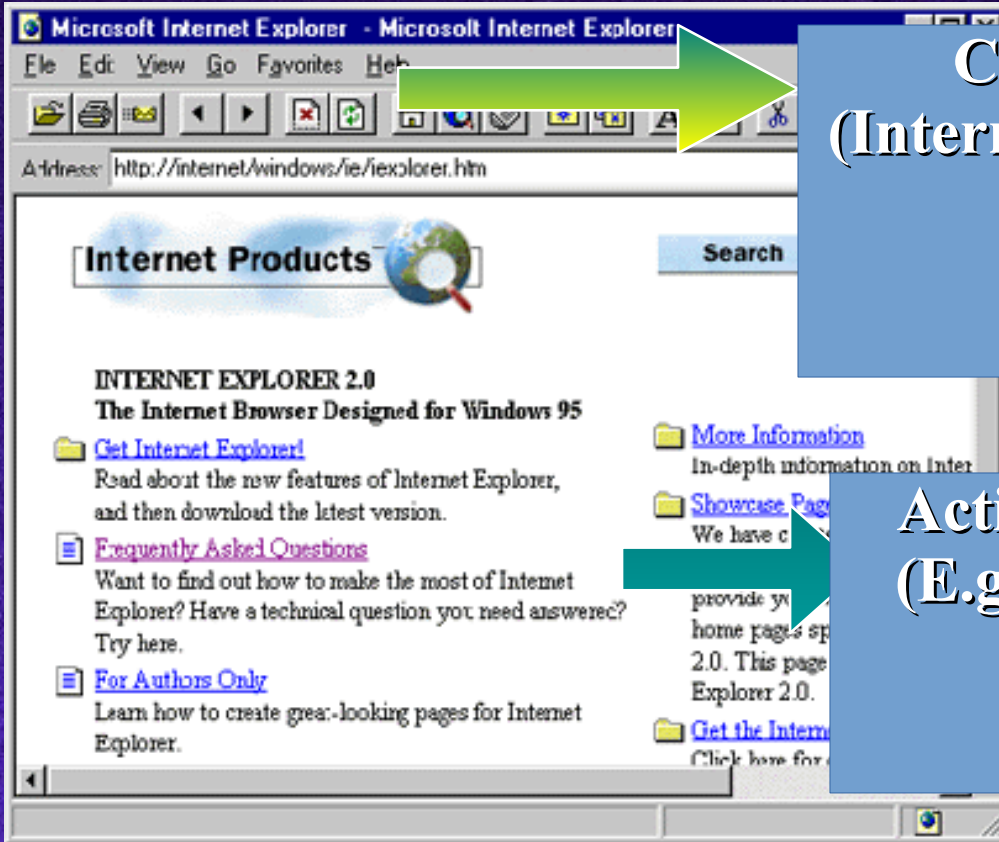
Basis for ActiveX components

- Versionable, programmable
- Lightweight, fast
- Open standard
 - Language and tool-neutral
 - Works with today's applications
 - Cross-platform
- ActiveX components are COM objects



Active Documents

Rich browser integration



Container
(Internet Explorer)

Active documents
(E.g. Visio, Word)

Network services
(URL moniker)

● IUnknown

● IOleContainer

● IOleDocumentSite

● IHTMLinkFrame

● IUnknown

● IOleObject

● IOleDocument

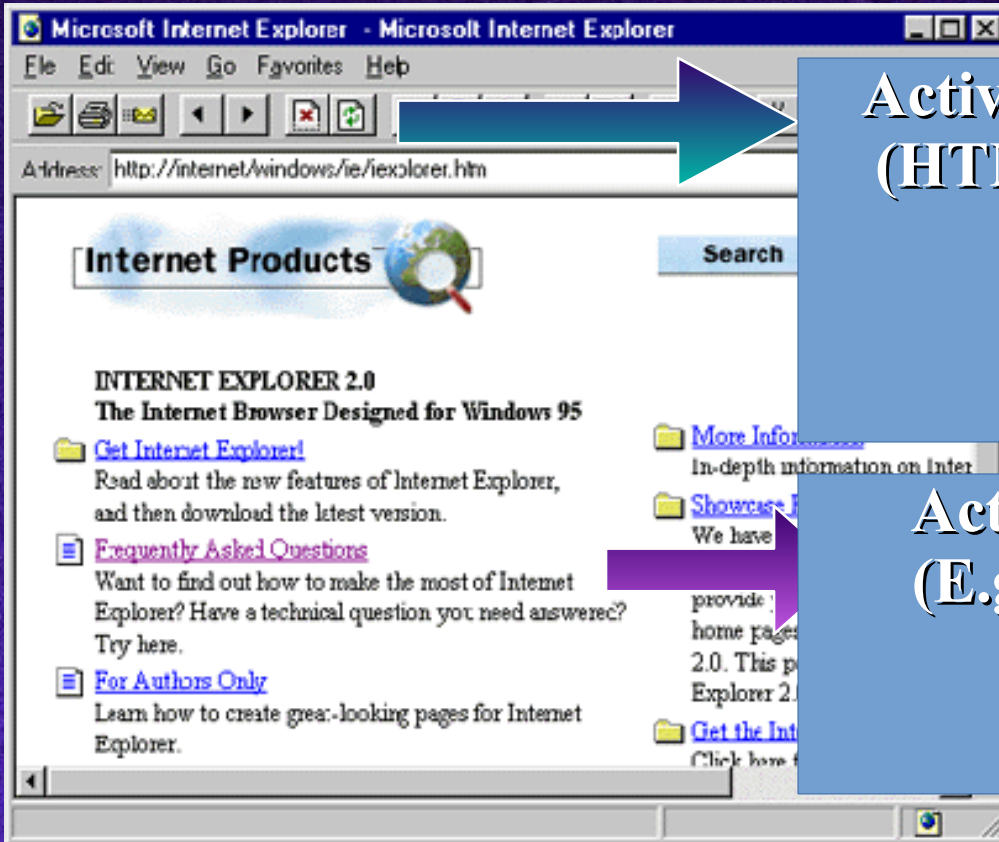
● IHTMLinkSite

○ IUnknown

○ IMoniker

ActiveX Controls

Reusable, programmable objects



Active document
(HTML viewer)

ActiveX Controls
(E.g. Shockwave)

Network services
(URL moniker)

● IUnknown

● IOleContainer

● IOleScriptSite

● IUnknown

● IViewObject

● IOleControl
(optional)

● IUnknown

● IMoniker

HTML Component

Leading-edge document and control

 Supports existing content

 Frames, JavaScript, tables

 Support for new W3C standards

 Script, object, style sheets

 Used for ActiveX controls and scripts

 Reusable in your application

 As a control or document

ActiveX Media Services

High performance, streaming

Existing content

 AVI, WAV, VRML, RealAudio

Enhancements

 Streaming media, ActiveMovie™,
ActiveVRML™

Reusable and extensible

 Use as controls in your application

 Plug in new formats

ActiveX Network Services

HTTP and beyond

 Use built-in protocols

 HTTP, FTP,
Gopher, file

 Write your own
protocol (foo:)

 Extend URL moniker

 Use shared cache

 Write to
Windows[®] Sockets

 For real-time applications

URL moniker
urlmon.dll

Custom
IBinding

HTTP, FTP, Gopher
wininet.dll

Caching
urlcache.dll

Windows Sockets
wsock32.dll

Distributed COM

ActiveX controls run anywhere

Client

Internet Explorer

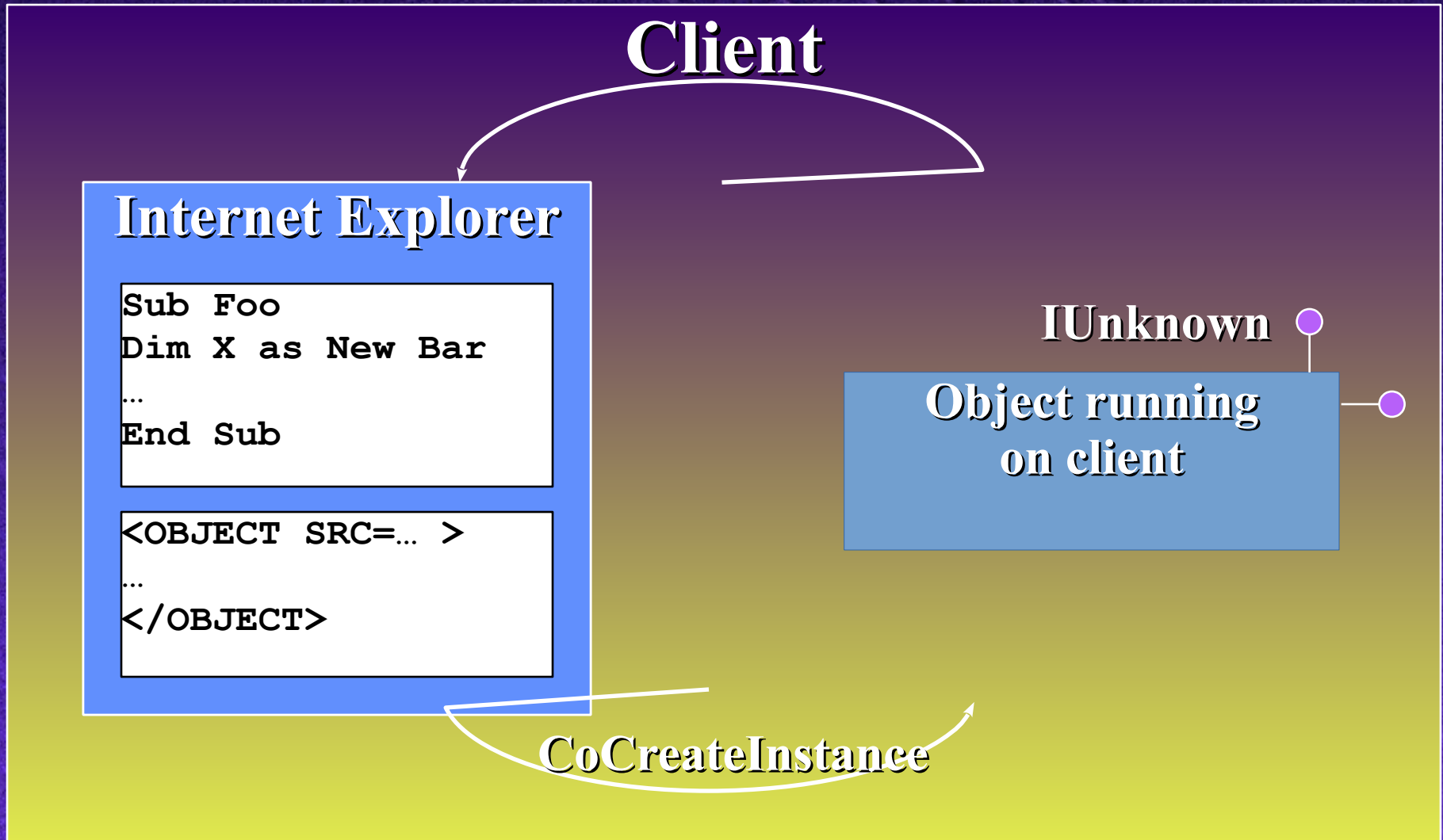
```
Sub Foo  
Dim X as New Bar  
...  
End Sub
```

```
<OBJECT SRC=... >  
...  
</OBJECT>
```

IUnknown

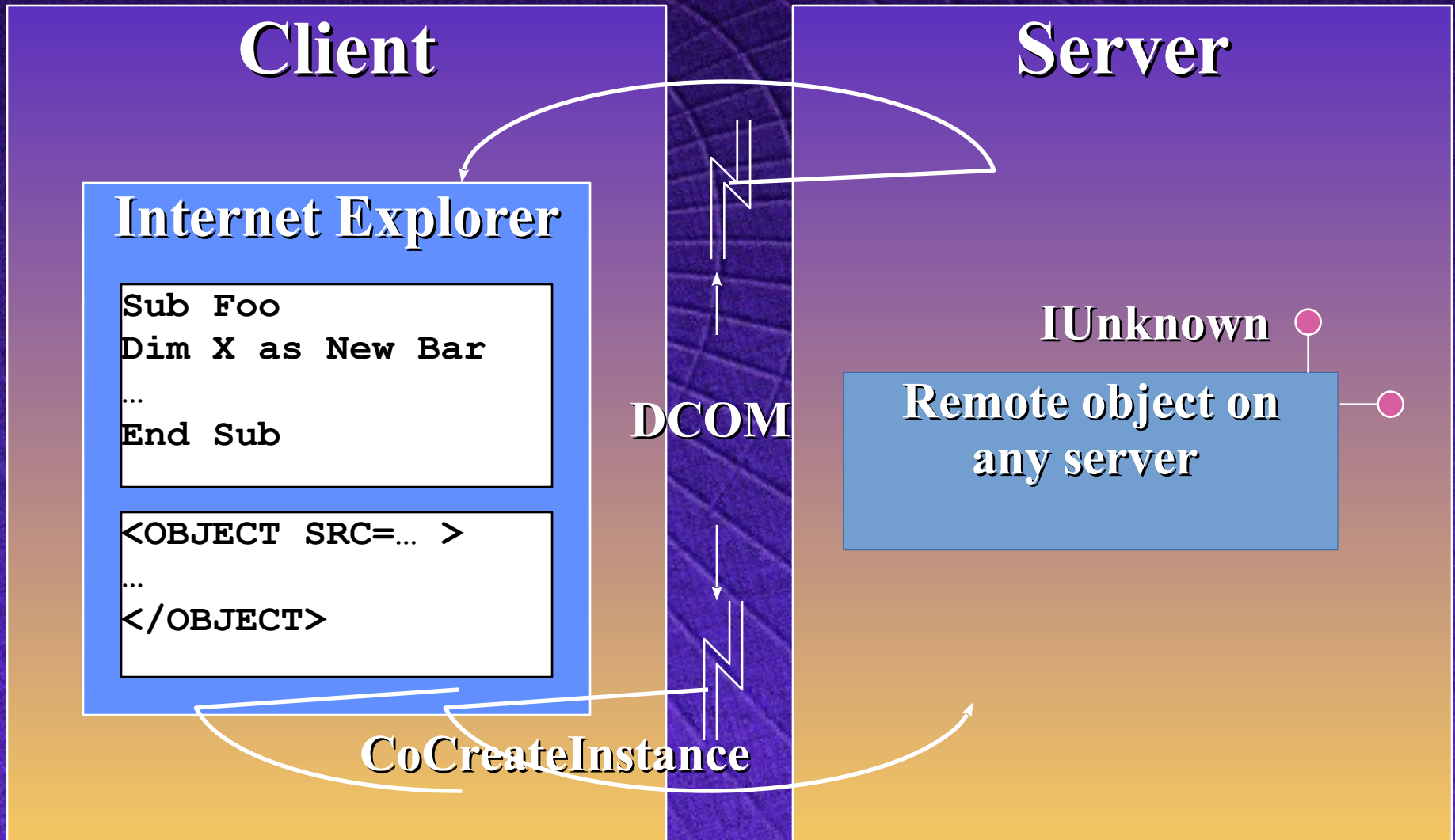
Object running
on client

CoCreateInstance



Distributed COM

ActiveX controls run anywhere



What About Code Safety?

Greater power = greater risk

Current Web page is informational and static, but changing to be active

Risks include

Malicious code

Tampered code

Unknown sites/authors

Impersonations

Code Signing Goals

Open, industry-wide, cross-platform solution

- Safe code download for OCs, scripting, Visual Basic, macros, etc.**
- Allow download of rich code that makes full use of native platform features**
- Minimize user actions or decisions required to determine safety - seamless whenever possible**

Approach: Digital Signatures

Used like a handwritten signature

- ☐ Digital signing is industry-standard, accepted security solution
- ☐ Identifies and provides details about the publisher
- ☐ Validates the integrity of the image
 - ☐ Guarantees that the image has not been altered from the time it was signed
- ☐ “Shrink-wrap” for Internet code

What's Internet Explorer 3.0?

New browser built using components



Container
explorer.exe
shdocvw.dll

~~Container
ieexplore.exe
shdocvw.dll~~

Active documents
mshtml.dll

ActiveX controls
Buttons, image,
VRML, ActiveMovie

Services
Network, code signing,
history, favorites

ActiveX scripting
vbscript.dll

ActiveX Client Availability

 3/12 - developer Alpha

 April - Beta

 Win32[®] RTM - Mid-'96

 Macintosh[®] and
Windows 3.1 - Q3 '96

Summary For Developers

Write ActiveX controls

 **Implement what you need**

 **IViewObject, IConnectionPoint**

 **Support high-latency networks**

 **URL moniker, WinINet, or WinSock**

 **Expose your object using IDispatch**

Summary For Applications

Write active documents

Host controls

 IOleContainer, gracefully degrade!

Be a document object

 IOleDocument

 For hyperlinks use IHLinkSite

Take advantage of scripting

 IOleScriptSite

Expose methods through IDispatch

Summary For Containers

Host active documents

 Host OLE document objects

 IOleDocumentSite

 Provide history, navigation

 In the context of your container

 Provide hyperlinking support

 IHLinkFrame

Summary For Authoring Tools

Publishing, development, scripting

Publishing tools

-  Host controls, scripts

-  Target W3C HTML

Development tools

-  Encapsulate COM

-  Support new packaging standards

Script engines

-  Package as a scripting engine

-  Implement IOleScript

Conclusion

Write to ActiveX!

■ Premiere support for today's standards

■ Full support for today's Web content

■ Interoperable with today's applications

■ New extensions to bring them together

■ New W3C extensions to HTML

■ New factoring of COM, OLE

■ Result - choice and opportunity

■ Activates your applications!

■ Choice of containers, languages, and tools

Microsoft[®]

