IN THE IOWA DISTRICT COURT FOR POLK COUNTY

JOE COMES, RILEY PAINT, INC., an Iowa corporation, SKEFFINGTON’S FORMAL WEAR OF IOWA, INC., an Iowa corporation, and PATRICIA ANNE LARSEN, Plaintiffs,

vs.

MICROSOFT CORPORATION, a Washington Corporation,

Defendant.

SUPPLEMENTAL EXPERT REPORT OF ANDREW SCHULMAN

December 19, 2006
Andrew Schulman – Supplemental Report

1. The source code for Windows XP and Microsoft Office provide additional bases for opinion #21 in my June 2, 2006 technical expert report (“Microsoft Office uses (and copies) undocumented DirectUI APIs”).

   a. That DirectUI is a Windows API is shown by the presence of formal internal documentation in the form of web pages, marked “Internal Only”, written by Jeff Stall in March 2000, and describing the APIs for DirectUser Gadgets in the \windows\advcore tree of the XP source code. See e.g.:

   MSM_IA_298 windows\advcore\duser\docs\api\creategadget.htm
   MSM_IA_298 windows\advcore\duser\docs\api\core.htm
   MSM_IA_298 windows\advcore\duser\docs\api\addgadgetmessagehandler.htm

   b. That Microsoft regards DirectUI as part of Windows, rather than as functionality entirely within Office, is shown by the presence of the DirectUI HTML documentation in the \windows\advcore tree of the XP source code, noted above.

   c. That Microsoft regards DirectUI as part of Windows is also shown by the presence of DirectUI source code in the \windows\advcore tree of the XP source code. See e.g.:

   MSM_IA_298 windows\advcore\duser\engine\services\resourcemanager.cpp
   MSM_IA_298 windows\advcore\duser\engine\services\resourcemanager.h
   MSM_IA_298 windows\advcore\duser\engine\services\context.h
   MSM_IA_298 windows\advcore\duser\engine\services\public.h
   MSM_IA_298 windows\advcore\duser\engine\services\services.h
   MSM_IA_298 windows\advcore\duser\engine\winapi\winapi.h

   d. That DirectUI was designed for widespread use within Microsoft is shown by its early appearance in source code related to Windows logon (this is also reflected in the binaries for the XP logonui, arp, duipad, and start components):

   MSM_IA_381 SID9238\windows\AdvCore\DUUser\DirectUI\TestApp\LogonUI\logon.cpp
   MSM_IA_381 SID9238\shell\ext\logonui\priv.h
   MSM_IA_298 windows\advcore\duser\directui\test\app\logonui\priv.h

   e. That DirectUI was designed for widespread use within Microsoft is also shown by source-code references to multiple internal DirectUI projects, e.g. published.h ("Any other DirectUI project that wishes to use these services instead of going through public API’s can include…"):
The code that my earlier report, based on binary inspection, identified as DUser code residing in Microsoft Office, can also be found in the source code for Office and Windows XP. See:

- MSM_IA_298 public\internal\windows\inc\duser\duserctrl.h
- MSM_IA_298 windows\advcore\duser\engine\services\resourcemanager.cpp
- MSM_IA_377 otools\inc\netui\NetUICtrl.h
- MSM_IA_377 netui\platform\engine\Services\ResourceManager.h
- MSM_IA_413 otools\inc\netui\NetUICtrl.h

The source code confirms footnote 70 of my earlier report on the relation between NetUI (used for example in Office’s Online Research feature) and DirectUI. For example, a file in the Office2003 “netui” source directory states, “The primary purpose of this file is to determine which DUser projects this project has direct access to instead of going through public API’s”:

- MSM_IA_377 netui\platform\engine\Base\Base.h

There is substantial overlap (when measured by comparing “blocks” of source code, i.e., groups of one or more lines of code separated by blank lines) between DUser source code residing in the Office source tree and that residing in the Windows source code. See e.g.:

- MSM_IA_377 netui\platform\engine\Services
- MSM_IA_298 windows\advcore\duser\engine\services

On Dec. 8, 2006, a search at the Microsoft Developer Network (MSDN) web site, and through search.microsoft.com, for relevant strings such as “DirectUI”, “DUser”, “DirectUser”, “CreateGadget”, and “AddGadgetMessageHandler”, located no documentation.

Duser.dll is included with Windows Vista RC1, and is used by over 40 other modules also included with Windows Vista, including browseui.dll, several Control Panel applets, MMC, and Windows Error Reporting.

2. The source code for Windows XP and Microsoft Office provide additional bases for opinion #20 in my earlier report (“Microsoft Office and other Microsoft applications use undocumented Windows Line Services APIs”).

a. There is substantial overlap (when measured by comparing MD5 hashes of entire sources files) between Microsoft Line Services (MSLS) source code residing in the Office source tree and that residing in the Windows source code. See the following directory trees:
b. That MSLS was intended as a robust API is shown in the source code by the use of signatures such as “LSC:” (identified on page 28 of my earlier report) for parameter validation. See e.g.:

```plaintext
MSM_IA_377 ls\inci\LSC.H
MSM_IA_298 windows\richedit\inci\lsc.h
MSM_IA_381 SID9238\windows\AdvCore\gdiplus\Engine\text\inci\lsc.h
MSM_IA_377_SUP-A Office2003\Works Converter Files\msls2\inci\LSC.H
```

c. That MSLS is intended for use beyond Microsoft Office is shown by a “Line Services Component Description” that “This component is required by Microsoft Internet Explorer and the Microsoft Rich Edit text control for line layout”:

```plaintext
MSM_IA_298 windows\richedit\lssrc\line_services_component_description.htm
```

d. On Dec. 8, 2006, a search at the MSDN web site for names of MSLS APIs such as “LsCreateSubline” and “LsCreateLine” (along with hypothetical variants such as “CreateSubline” or “MslsCreateSubline”) turned up no documentation.

e. Msls2.dll and msls31.dll are included with Windows Vista; version 7 of mshtml.dll included with Windows Vista RC1 imports approximately 40 APIs from msls31.dll; it is also used by msftedit.all and riched20.dll.

3. **The source code for Windows XP and IE7Beta3 provide additional bases for opinion #36 in my earlier report (“IE7 and MSN Messenger use the undocumented DirectUser (DUser, Direct UI) API”).**

a. The IE7Beta3 source tree (MSM_IA_376) contains the identical (as measured by comparing MD5 file hashes) HTML internal documentation for DUser as does the XP source tree, described above at ¶ 1a. (The location of DUser within the XP source tree, windows\advcore\duser, is distinct from those used for IE modules, e.g. shell\shdocvw and inetcore\mshtml.)

b. The IE7Beta3 contains numerous source-code include (H) files that are identical to those in the XP source tree, and there is substantial overlap (when measured by comparing blocks of source code) between DUser C++ source-code files (CPP) in the IE7Beta3 and XP 2600 RTM source-code trees:

```plaintext
MSM_IA_381 SID9238\windows\AdvCore\DUser
MSM_IA_376 IE7Beta3\windows\advcore\duser
```
c. On Dec. 8, 2006, I downloaded and installed IE7,¹ and confirmed (using
Winspector Spy) that its tabbed controls continue to use DirectUIHwnd.

d. In Windows Vista RC1, the ieframe.dll component of IE7 makes extensive reference to duser.exe, DirectUI, and DirectUI Gadget APIs, and browseui.dll imports over 30 APIs from duser.dll; it also references duiAnimationCore.dll.

4. **The source code for Windows XP and Internet Explorer provide additional bases for opinion #35 in my earlier report (“Internet Explorer uses Microsoft’s undocumented Line Services API”).**

   a. The source code for Internet Explorer 5 (MSM_IA_310 and MSM_IA_311) contains include (H) files for MSLS (see inet/mshtml/external/inc/msls/*.h in ie5src.tar), but not C implementation files. Mshtml.dll in IE5 includes (based on inspection with dumpbin) about 40 different ordinal-only imports from msls31.dll

   b. The IE7Beta3 inetcore\mshtml\external\inc\msls directory includes about 110 H files, largely matching those in the XP 2600 RTM source code directories windows\richedit\inci and windows\richedit\lsinc. In addition, IE7Beta3 windows\richedit\lssrc contains about 70 C implementation files, which (based on block-by-block comparison as described in ¶ 1h above) are nearly identical to those found in the XP 2600 RTM source code directory windows\richedit\lssrc.

   c. On Dec. 8, 2006, after downloading and installing the latest IE7 (see ¶ 3c above), I confirmed (using Microsoft’s dumpbin utility) that version 7.00.5730.11 of mshtml.dll used by IE7 continues to import about 40 different APIs from msls31.dll.

   d. As noted above at ¶ 2e, version 7 of mshtml.dll included with Windows Vista imports approximately 40 APIs from msls31.dll.

5. **The source code for Windows XP and Internet Explorer provide additional bases for opinion #34 in my earlier report (“Even after the final judgment in United States v. Microsoft, a large number of APIs used by Microsoft middleware remain undocumented”).**

   a. As noted in ¶ 34e of my earlier report, Geoff Chappell has researched APIs that reside in Windows components such as shell32.dll and shlwapi.dll, and that are used by IE components such as shdocvw.dll and mshtml.dll. Given the APIs that Microsoft documented pursuant to the final judgment, and given the modules where those APIs reside and the modules from which they are called, there is a purely technical basis for comparing the caller/callee usage of APIs documented under the final

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judgment with the caller/callee usage of APIs that remain undocumented. I earlier confirmed Chappell’s findings through inspection of IE binaries (see ¶ 34f of my earlier report). Microsoft’s source code provides additional confirmation. Several examples are given below.

b. **Property Bag APIs:** A “property bag” is a data structure that acts as a “container” (a bag) to store different types of properties. For example, a browser might implement web “cookies” using property bags. Microsoft has a documented PropertyBag class. One of Microsoft’s listed “Settlement Program Interfaces” is SHGetViewStatePropertyBag; as noted in my earlier report ¶ 29b, this then-undocumented API was important in the implementation of a “big review feature” in Windows Media Player. However, there remain a large number of property-bag shell APIs, implemented inside Windows (shlwapi.dll), and used by Internet Explorer: SHLoadFromPropertyBag, SHCreatePropertyBagOnMemory, SHPropertyBag_ReadLong, SHPropertyBag_WriteGUID, and others. See e.g.:

```
MSM_IA_376 IE7Beta3\inetcore\lib\stock\bindctx.cpp
MSM_IA_376_SUP-A IE7Beta3Source\Shell\xp\Shell\shdocvw\inst.cpp
MSM_IA_310 shell\shlwapi\channel.cpp
MSM_IA_381 SID9238\shell\shlwapi\propbag.cpp
MSM_IA_381 SID9238\public\internal\shell\inc\shlwapi.h
```

c. **Connection Point APIs:** A “connection point” is a mechanism related to receiving callback notifications of given events. Microsoft has a documented ConnectionPoint class, and in 2004 Microsoft documented ConnectToConnectionPoint. However, there remain connection-point related shell APIs, implemented by shlwapi.dll, and used by the IE component shdocvw.dll, that are not documented: IConnectionPoint_InvokeWithCancel and IConnectionPoint_SimpleInvoke. See e.g.:

```
MSM_IA_310 shell\shlwapi\connect.cpp
MSM_IA_310 shell\lib\cnctnpt.cpp
MSM_IA_310 shell\shlwapi\windows.cpp
MSM_IA_376_SUP-A IE7Beta3Source\Shell\xp\shell\shlwapi\connect.cpp
MSM_IA_376_SUP-A IE7Beta3Source\Shell\srv03\Shell\lib\cnctnpt.cpp
MSM_IA_376_SUP-A IE7Beta3Source\Shell\xp\shell\shlwapi\windows.cpp
```

d. **SHPinDllOfClsid:** This API loads a dynamic link library (DLL), given an associated class ID (Clsid). A comment in the source code (dllload.c) indicates its usefulness: “does all the annoying work of… It also…” . It is used in the implementation of the auto-completion feature (see util.cpp).

e. Other still-undocumented shell APIs used by IE include:

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i. **SHRefreshSettings:**
   - MSM_IA_310 shell\shell32\util.cpp
   - MSM_IA_310 shell32\deskstat.cpp
   - MSM_IA_310 shdoc401\unicpp\advanced.cpp

ii. **SHGetNetResource:**
    - MSM_IA_310 shell\shell32\printer.c

iii. **SHGetCurColorRes:**
     - MSM_IA_310 shell\browseui\htmlbm.cpp
     - MSM_IA_310 SUP-A ie7beta3source\shell\xp\shell\shdocvw\browserext.cpp
     - MSM_IA_416 MSNExplorer\XPCLIENT\src\mars\lib\cthunk\miwapi.cpp

iv. **SHGetObjectCompatFlags:**
    - MSM_IA_310 SUP-A ie7beta3source\shell\xp\shell\shdocvw\explband.cpp
    - MSM_IA_376 SUP-A ie7beta3source\inetcore\lib\stock\viewframe.cpp

v. **SHGetAppCompatFlags:**
    - MSM_IA_310 shell\shell32\fstreex.c
    - MSM_IA_376_SUP-A ie7beta3source\shell\xp\shell\shdocvw\sccls.cpp
    - MSM_IA_381 SID9238\shell\shell32\mydocsfldr.cpp

vi. **SHRegisterDragDrop:**
    - MSM_IA_311 PRIVATE\SHELL\SHELL32\RUNDLG.CPP
    - MSM_IA_311 PRIVATE\SHELL\SHELL32\PRQWND.C

vii. **SHSimulateDrop:**
    - MSM_IA_376_SUP-A ie7beta3source\shell\xp\shell\shdocvw\mypics.cpp
    - MSM_IA_310 shell\shell32\unicpp\sendto.cpp
    - MSM_IA_310 shell\browseui\util.cpp

f. A quick examination of Windows Vista RC1 located most of the calls noted above from IE components to undocumented Windows shell APIs, including SHSimulateDrop, SHLoadFromPropertyBag, SHGetObjectCompatFlags, and IConnectionPoint_SimpleInvoke.

g. The APIs identified by Geoff Chappell are exported from DLLs such as shell32.dll and shlwapi.dll. Another type of API is provided as a class method, associated with a “globally unique ID” (GUID). By searching binary files for likely GUIDs, one can generate candidate lists of potentially undocumented interfaces. Interfaces appearing both in Microsoft middleware such as IE and in Windows XP, but not appearing in a large body of non-Microsoft software, with corresponding names (e.g. from PDB debug symbol files) not listed in Microsoft’s documentation, merit further examination as likely undocumented APIs. I searched Microsoft’s source code for such interfaces, and confirmed references to still-undocumented Windows APIs in IE source code. For example:

   i. **IWinEventHandler**: see bandsite.cpp, taskbind.cpp, startmenu.cpp

   ii. **IUserAssist**: see shguidp.h
iii. INSCTree2: see nsband.cpp, shpriv.h

iv. INotifyAppStart: see shpriv.h

v. IFileSearchBand: see srchasst.cpp, searchext.cpp, shldisp.h

h. Some still-undocumented functions are referenced in the same source-code files as functions, with the same callee/caller usage, that were documented in accordance with the final judgment. For example:

i. Still-undocumented SHSimulateDrop and SHGetCurColorRes appear in shlwapi.h near ConnectToConnectionPoint, which was documented. All are implemented in shlwapi.dll, and all are used by shdocvw.dll.

ii. SHChangeNotifyRegister has been documented, but SHChangeNotifyReceive has not. Both are referenced in a Jan. 1998 document, “SHChangeNotify family of apis”:

MSM_IA_381 SID9238\shell\docs\scnotify.doc

Still-undocumented SHChangeNotifyReceive is referenced directly in:

MSM_IA_311 PRIVATE\SHELL\SHDOCVW\DESKTOP.CPP

i. Similarly, in interface/class-based APIs, some public methods of the class have been documented, whereas other public methods in the same class have not, even when the still-undocumented methods are also used by Microsoft middleware. For example, the _NewEnum, Item, and Count methods/properties of IShellWindows are documented, but OnNavigate, RegisterPending, ProcessAttachDetach, etc. also appear in the IE source code, and appear in the ExDisp.h SDK header file, but are not documented. See:

MSM_IA_376_SUP-A ie7beta3source\shell\xp\shell\shdocvw\winlist.cpp
MSM_IA_310 shell\shdocvw\winlist.cpp
MSM_IA_381 SID9238\public\sdk\inc\exdisp.h

j. Based in part on the above facts, I conclude that an effort to systematically locate APIs for disclosure under the final judgment would have uncovered the APIs described above, and more.

k. The absence of documentation noted above is not explained by the security exemption to the final judgment. In Aug. 2002, Brad Smith stated, “we are withholding only two items – the Windows File Protection API and a Secure RPC Protocol. For the latter, we are withholding a version of the protocol that had a security hole, but we patched and are making
available an updated version of the same protocol.” Under the terms of the final judgment, what Smith refers to as “the Windows File Protection API” would mean, not the entire WFP API, but only that portion of it directly invoked by Microsoft middleware. The single such example, to which Smith was likely referring, was a WFP API, SfcFileException, used by the setup program for Windows Media Player (WMP) 7.0. See:

MSM_IA_412 WMP\DEV\SETUP\COMMON\sfcw.cpp
MSM_IA_412 WMP\DEV\WMPCORE\CORE\librarymedia.cpp

6. **Microsoft’s application and middleware users of undocumented Windows APIs are not “trusted components”**

   a. Microsoft’s recent statements in this case regarding the decentralized nature of the Windows source code, and the Windows team’s inability to access the source code for some components (e.g. WMP) shipped with Windows, undermine the notion that the lack of documentation for some Windows APIs used by Microsoft middleware and application is explained by a more “trusted” status of this Microsoft software, in relation to Windows itself, over software from third-party ISVs.

   b. Numerous components that ship with Windows itself have no technical entitlement to “trusted” status. In April 2001, Jim Allchin complained that some components shipped with Windows did not check their source code into the Windows build tree: “Windows as you know contains many pieces of functionality from different groups around the company. Regardless of product, good engineering practice would require us to be able to do a fresh build of a product at any time using the same tools. Unfortunately, we cannot do this with Windows today…. We need all the source code for Windows being built out of one place with one consistent set of tools. It is actually amazing how we have not done this for so long…. We need to be able to build what we ship long after we RTM…. There are legal obligations regarding our ability here…. There are 27 components … that are still dropping binaries [on Whistler] ….”

   c. Well over a year later, in the context of a discussion of SfcFileException (see ¶ 5k above), Allchin was still complaining that WMP developers were not checking in source: “You have bugs that he [a developer] can find, but not until he has the source. You don’t get any of the benefits of

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3 MS-CC-RN 41967
4 See Aug.-Sept. 2002 emails: MS-CC-RN 811183-93, MS-CC-RN 340756-8, MS-CC-RN 586859-61, MS-CC-RN 76910-6; see also MS-CC-RN 380289-93 (Aug. 2003).
5 See Affidavit of Kris Krueger, Oct. 18, 2006; Affidavit of Ernst Peter Oosterhof, Oct. 18, 2006; Affidavit of Andrew Newell, Nov. 14, 2006; “Windows XP Components Not Found In Source Tree,” attachment to Microsoft’s Supplemental Memorandum in Opposition to Plaintiff’s Motion for an Order to Show Cause, Nov. 14, 2006; Microsoft’s Opposition to Plaintiff’s Emergency Motion for an Order to Show Cause, Oct. 19, 2006.
archiving the source, mechanical scans that can be done, and on and on.”7 It is hard to see how WMP can be a trusted component to Windows, entitled to use private interfaces because it is “known to behave in a particular manner,” when its source code is not accessible to the Windows team, and when Windows programmers (including a co-inventor of Windows File Protection)8 actively disapproved of WMP’s use of this undocumented API.9

d. The WMP source code shows that, in addition to SfcFileException, it has also used still-undocumented DirectShow APIs. For the final judgment, Microsoft documented some DirectShow APIs, such as IAMMediaContent and IAMFilterGraphCallback, which are referenced by WMP. However, there remain undocumented DirectShow APIs referenced in the WMP 8 source code, such as IAMRebuild and IMediaStreamMonitor. See:

MSM_IA_412 WMP\FILTERS\DECOLORCONV\deColorDs.cpp
MSM_IA_412 WMP\WMAUDIO\V7\QUARTZ\DECO\msadds32.cpp
MSM_IA_412 WMP\WMVIDEO\QUARTZ\DECO\dsdec.cpp

e. The older mnpopup.c source-code file contains a comment about setting a variable “so that EndMenu works for popupmenus so that WinWart II people can continue to abuse undocumented functions.” That “WinWart” refers to WinWord (Microsoft Word) is indicated not only by the similar-sounding names, but also by the fact that WinWord at the time used the undocumented EndMenu API.

f. Teams within Microsoft whose undocumented APIs are used by applications developers sometimes don’t even know of, or approve of, that use. For example, in 1991, the Microsoft Money product (codenamed “Barney”) was accessing the Windows source code, apparently without the approval of the Windows team. According to one Microsoft applications developer, “Apps should be able to look at any Windows source. As a practical matter, we do, whether you like it or not.”10 This is not the behavior of a “trusted component.”

g. More recently, in July 2002, writing of an undocumented API called by Windows Media Server, a developer wrote, “Our team is already swamped with work related to APIs that we suddenly have to document because they’re being called unbeknownst to us by assailants from all over the company.”11 Unknown assailants are not trusted components.

7 Allchin, “Sfp api and WM setup,” MS-CC-RN 811236
8 US 6,971,018
9 See MS-CC-RN 811183-7, Aug. 2002
10 July 1991, MS 5062504; emphasis added
11 Email re: “GetTcpTable vs. AllocateAndGetTcpExTableFromStack,” July 2002, MS-CC-Bu 207344; see also http://msdn2.microsoft.com/en-us/library/aa365804.aspx
7. **Microsoft’s source code provides additional bases for opinion #28 in my earlier report (“Undocumented Windows interfaces used by Microsoft applications and middleware really are APIs”).**

   a. The source code, including files directly relevant to the undocumented interfaces used by Microsoft middleware and applications, contains numerous references to “private API”, “private client-side API”, etc. See e.g. shelp.h, shsemip.h, winsvcp.h, mapi.def, dcgdi.cxx, common.cpp, ntagum.c, etc. A text file included with the IE5 source code observes of the Windows shell32 module that “IE components call private internal APIs in this DLL”:

   ```
   MSM_IA_311 PRIVATE\EDEV\LIB\I386\README.TXT
   ```

   b. The source code include file shlwapip.h refers to “Internal APIs which we’re not yet sure whether to make public” (the APIs referred to are PathFileExistsDefExt and PathFindOnPathEx):

   ```
   MSM_IA_377 outlook\outlib\explor\shlwapip.h
   MSM_IA_298 public\internal\shell\inc\shlwapip.h
   MSM_IA_413 sps\userx\nsext\shell\priv\shlwapip.h
   MSM_IA_376 IE7Beta3\enduser\hlk\src\shlwapip.h
   ```

   c. The source code include file shsemip.h refers to “semi-private api ordinals” and “semi-private ordinals we semi-publish”; e.g., SHObjectProperties and SHCreateDefClassObject. Microsoft disclosed the implementation for SHCreateDefClassObject in the DefClsF.c file in the DropExt Visual C++ SDK Shell example; this, like references to an API solely in an interface definition library (IDL) file, or solely in a header file and magazine article, constitutes at most “semi” disclosure. A number of Microsoft ex-employees and certified developers have referred to much of Microsoft’s formal documentation as “undocumentation”

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13 For example, Server Extension Objects (SEO) interfaces such as IEventType, IEventSource, and ISEORouter, appear in seo.idl, but Microsoft treats them as not-yet-documented (“This topic is pre-release documentation and is subject to change in future releases. Its current status is: Writing,” followed by “To be supplied” for each interface; see “Exchange Server 2007 CDOEX Interfaces,” http://msdn.microsoft.com/library/default.asp?url=/library/en-us/exsdkotherref/html/a1a0ba9a-d280-41b5-8c21-2182961bab27.asp). See also Ed Prescott, “Let’s Talk about Server Extension Objects (SEO),” Microsoft Exchange Team Blog, July 1, 2005, http://msexchangeteam.com/archive/2005/07/01/407205.aspx (“The single most frustrating episode I’ve endured [in the Microsoft Exchange group] has to do with the documentation for SEO, or the relative lack thereof”). The SEO interfaces appear in cdoesys, imsinsnt, and msonsext (Microsoft Office Namespace Extensions).

14 For example, “COM supports an undocumented feature called channel hooks. Well, they are semi-documented in the Win32 header files and in Don Box's ActiveX/COM column (MSJ, January 1998). Microsoft does not officially support channel hooks on either Windows NT 4.0 or Windows 2000... If you're still reading, then you've acknowledged that disclaimer and I can get into the details” (http://www.microsoft.com/msj/0100/loadbal/loadbal.aspx).
because, while it looks like documentation, it discloses little that a
developer reading it doesn’t already know.15

d. Microsoft’s source code also uses the term “undocumented API,” e.g.
folder.c (SHGetSpecialFolderPath) and drawicon.c.

8. **Microsoft’s source code provides additional bases for opinion #38 in my
earlier report (“Microsoft application and middleware access to Microsoft
Windows source code is a substantial advantage that was not available to
ISVs”).**

   a. In addition to information on undocumented APIs, the Windows source
code also contains other useful information not available in the API
documentation. While I plan to continue to examine the source code, and
may decide upon different examples, if asked to discuss useful Windows
source-code files, I could point to:

   i. MSM_IA_381 SID9238\windows\core\ntuser\kernel\dwp.c – implementation of
      DefWindowProc

   ii. MSM_IA_381 SID9238\windows\core\ntuser\client\dlgmgr.c – implementation of
      DefDlgProc, e.g. DefDlgProcWorker

   iii. MSM_IA_298 windows\riched\re30\host.cpp – implementation of
      RichEditWndProc

   iv. MSM_IA_298 windows\core\ntuser\client\bbox\bbox3.cpp – directory list box routines

   v. MSM_IA_298 windows\advcore\gdiplus\engine\entry\metafile.hpp,
      metarecord.cpp -- EMF+ source

   vi. MSM_IA_416 Developer\HTMLhelp\XPCLIENT\src\itsst\msitstg.h,
      MSM_IA_416 Developer\HTMLhelp\XPCLIENT\src\itsst\itsfs.h – structure of ITFS
      and ITSC files

9. **Examining MCPP and WSPP documentation**

   a. I have only recently started to examine the protocol documentation
   provided as part of the MCPP and WSPP.

   b. I did not find documentation in either MCPP or WSPP for the HTTPMail
   protocol, used by Windows clients, including Outlook Express,16 to
   communicate with Microsoft’s Hotmail servers.

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15 See Jeff Atwood, “Avoiding Undocumentation,” Nov. 21, 2005
(http://www.codinghorror.com/blog/archives/000451.html); Scott Swigart, “The Undocumented
Framework,” July 15, 2005
(http://swigartconsulting.blogs.com/tech_blender/2005/07/the_undocumente.html); Wesner Moise, “MSDN
Undocumentation,” Nov. 23, 2005
(http://wesnerm.blogspot.com/net_undocumented/2005/11/msdn_undocument.html); Wesner Moise, “CLR
Dinner” (re: “Open API Specs”), March 24, 2005
c. I did not find documentation in either MCPP or WSPP on MAPI property
tags, such as PSETID_MAPIExtra, PSETID_Remote,
PSETID_FATSystem, PSETID_Appointment, etc. These appear in the
source code for Office and Windows, and relate to communication
between the Outlook mail client and the Exchange mail server, and
communication between the msexch40.dll Jet Exchange ISAM (included
with Windows XP) and the Exchange server. See:

- MSM_IA_377 outlook\outlcnm\psetguid.h
- MSM_IA_377 outlook\outlib\renutil\rennguid.c
- MSM_IA_377 outlook\outlib\fatns\fatfld.cpp
- MSM_IA_416_SUP-B WindowsSource\Partners\Exchange\Cabs\EXCHANGE.50.RTM_5.0.1457.11\olemsg32\dll\REN\RENITEM\taskitem.cpp


a. On the MS-DOS 6.0 source-code CD, I located a file named
JASTRO.TXT, related to a combined DOS/Windows install program
(“Non-Upgrade combined DOS/Windows setup”; “Setup installs MS-DOS
5.0 first, and then Windows 3.1”). This file contained a string labeled
“OS2_WARN_TEXT”, which reads: “Setup has found OS/2 files on your
computer. These files take up significant disk space. Setup can remove
OS/2 to make more disk space available for use with Windows and MS-
DOS.” See:

- MSM_IA_125 LANG\USA\INSTALL\OEM\JASTRO.TXT
- MSM_IA_125 INSTALL\OEM\NUDOSWIN.TXT
- MSM_IA_125 INSTALL\OEM\HELP.TXT

b. This warning message is invoked from the doswin.c source-code file:

- MSM_IA_125 INSTALL\RETAIL\DOSWIN.C
- MSM_IA_116 SRC\MSDOS\INSTALL\RETAIL\DOSWIN.C
- MSM_IA_116 SRC\MSDOS\INSTALL\OEM\NUDOSWIN.C

c. Though Windows NT would not be formally released until mid 1993, the
code also contains NT detection. Despite the roughly-similar reported
disk-space requirements of the two systems (60-70 MB), the code does not
contain an equivalent “significant disk space” option to delete NT files.
There is a check for NT files, but if these are found and the user has not
installed FlexBoot, the user is advised to install FlexBoot.

d. The appearance of a similar OS/2 warning message, when installing MS-
DOS 6.0, was described in a comp.os.os2.advocacy newsgroup posting on
April 2, 1993: “OS2 Files Detected … Although you can install MS-DOS,
these OS/2 files use considerable disk space…. If you continue setup
without removing your OS/2 files, OS/2 might be disabled.” The

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16 See e.g. http://support.microsoft.com/kb/247335
newsgroup poster states that OS/2 continued to work as expected. The poster also notes that Windows NT’s FlexBoot is disabled, but no mention is made of an NT-related “considerable disk space” warning.

e. This OS/2-related “considerable disk space” warning message is reflected in the MS-DOS 6 source code ("OS2_FILE_TEXT"):

```
MSM_IA_125 LANG\USA\INSTALL\RETAIL\ASTRO.TXT
MSM_IA_125 LANG\USA\INSTALL\RETAIL\JASTRO.TXT
MSM_IA_125 INSTALL\RETAIL\DOSWIN.TXT
MSM_IA_125 INSTALL\RETAIL\DOSWIN.C
MSM_IA_125 SRC\MSDOS\INSTALL\RETAIL\DOSWIN.C
```

f. A similar OS/2-related warning message, when installing a “Chicago” beta, was reported in the May 1994 issue of *PC World* (pp. 59-60): “When you install the latest beta version of Windows 4.0 on a machine that has OS/2 installed, you’ll get a curious message: ‘Setup has detected OS/2 files on your system. Although you can install this version of Windows, these OS/2 files use considerable disk space. Edit Setup or Continue?’”

11. **Dell Recovery CD Contains MS-DOS 7.1 from Windows 98 SE**

a. My earlier report noted (¶ 7d) that Dell recovery CDs from 2002-3 contained the MS-DOS 7.1 kernel and utilities. I had based this conclusion in part on the presence of strings such as “MS-DOS Version 7 (C) Copyright 1981-1995 Microsoft Corp Licensed Material” in nearly every file, including io.sys, command.com, drvspace.bin, emm386.exe, and himem.sys. I also based this conclusion on the striking similarity of the io.sys code, viewed in a debugger, with that which I had been accustomed to seeing in MS-DOS, and its dissimilarity to code I had seen in the DOS emulation of Windows NT, 2000, and XP.

b. I have since run a utility to compute the MD5 hash of the io.sys kernel found on these recovery CDs: “BAECEC2BEB000CA9E8FB51BA573EECB5”. This is also the MD5 hash of the io.sys file included with Windows 98 SE. There are identical matches for the other files.

12. **Several then-undocumented APIs cited in my earlier report have recently been documented**

a. Microsoft has documented one of the then-undocumented APIs cited in ¶ 34f of my earlier report. SHQueueUserWorkItem has (along with others not mentioned in my report, e.g. SHSetTimerQueueTimer) been documented as a “wrapper” function.17


HIGHLY CONFIDENTIAL
b. Microsoft has documented additional DPA functions (see ¶ 34g of my earlier report), e.g. DPA_Merge, which has been present in comctl32.dll since at least the time of IE 4, shipped in 1997.

13. Tests using ToolHelp and Dependency Walker provides additional support for opinion # 8 in my earlier report (“Windows is ‘componentizable,’ not monolithic, and Microsoft knows how to split Windows into smaller pieces”).

a. An XP SP2 CD contains just over 2,900 DLL and EXE files.

b. Even when running a sizable number of programs in XP SP2 (Microsoft Word, Microsoft Outlook, Internet Explorer, Windows Media Player, Mozilla Firefox, Adobe Acrobat, and Google Picassa), with a large number of background services (Google Desktop, iTunes, etc.), fewer than 200 of these DLL and EXE files from the XP SP2 CD were loaded, as determined by queries using Microsoft’s ToolHelp API (ToolHelp misses the NT kernel and HAL modules; these are visible, as are SYS device drivers, using the lm command in Microsoft’s Kd kernel debugger).

c. An assistant generated Dependency Walker profiling log files for 35 different application scenarios. In any given scenario, between 110 and 200 XP SP2 modules were loaded. Over all 35 scenarios, fewer than 400 DLLs or EXE from the XP SP2 CD appeared. Of these, over 100 appeared in only one of the 35 application scenarios, and another 50 appeared in only two or three scenarios.

d. Conversely, there were just over 110 DLL and EXE files that appeared in every scenario. From one perspective, this small set of files, together with the NT kernel and HAL, is empirically the core of Windows XP. But even this overstates the core of Windows XP, because the Dependency Walker logs were generated in an XP configuration in which the Explorer shell was running, along with a variety of background processes. By using the Windows Task Manager to unload Explorer and several background processes, DLLs such as shdocvw, mshtml, and browseui are also

---

20 http://www.dependencywalker.com/
21 The following Dependency Walker profiling options were selected: Hook the process to gather more detailed dependency information, Log LoadLibrary function calls, and Log GetProcAddress function calls.
22 Notepad, Freecell, Hearts, Minesweeper, Pinball, Solitaire, Spider Solitaire, Calculator, MS Paint, Internet Explorer, Media Player, WordPad, Real Player, Windows Explorer, Disk Cleanup, Cmd.exe, Winzip, System Restore, MS Word, Mavis Beacon Typing Teacher, Adobe Photoshop 7.0, Adobe Acrobat Reader 6.0, Adobe Image Ready, Windows Movie Maker, HP 48 Bit Scan Utility, HP Director, HP Toolbox, HP Photo Printing, Windows Address Book, Quick Books - Accountant Version, MS Excel, MS Access, MS Powerpoint, MS Outlook Express, MS Outlook. In most cases, the assistant reported having selected most of the application’s menu items.
unloaded, leaving a configuration with fewer than 100 DLL and EXE files, but from which Office, Internet Explorer, or Explorer itself can be started (and in which other needed DLLs, such as shdocvw, mshtml, and browseui, are loaded on demand).

Andrew Schloon

December 19, 2006
Source Code Materials

MSM_IA_298 windows\advcore\duser\docs\api\creategadget.htm
MSM_IA_298 windows\advcore\duser\docs\api\core.htm
MSM_IA_298 windows\advcore\duser\docs\api\addgadgetmessagehandler.htm
MSM_IA_298 windows\advcore\duser\engine\services\resourcemanager.cpp
MSM_IA_298 windows\advcore\duser\engine\services\resourcemanager.h
MSM_IA_298 windows\advcore\duser\engine\services\context.h
MSM_IA_298 windows\advcore\duser\directui\engine\util\published.h
MSM_IA_298 windows\advcore\duser\directui\test\app\logonui\priv.h
MSM_IA_298 windows\advcore\duser\engine\objectapi\objectapi.h
MSM_IA_298 windows\advcore\duser\engine\services\public.h
MSM_IA_298 windows\advcore\duser\engine\services\services.h
MSM_IA_298 windows\advcore\duser\engine\winapi\winapi.h
MSM_IA_381 SID9238\windows\AdvCore\DUser\DirectUI\Test\App\LogonUI\logon.cpp
MSM_IA_381 SID9238\shell\ext\logonui\priv.h
MSM_IA_298 windows\advcore\duser\directui\test\app\logonui\priv.h
MSM_IA_377 netui\platform\ui\Base\Published.h
MSM_IA_381 SID9238\windows\AdvCore\DirectUI\Old\Engine\ObjectAPI\Published.h
MSM_IA_298 windows\advcore\duser\directui\engine\util\published.h
MSM_IA_298 public\internal\windows\inc\duser\duserctrl.h
MSM_IA_298 windows\advcore\duser\engine\services\resourcemanager.cpp
MSM_IA_377 otools\inc\netui\NetUICtrl.h
MSM_IA_377 netui\platform\engine\Services\ResourceManager.h
MSM_IA_413 otools\inc\netui\NetUICtrl.h
MSM_IA_377 netui\platform\engine\Base\Base.h
MSM_IA_377 netui\platform\engine\Services
MSM_IA_298 windows\advcore\duser\engine\services
MSM_IA_377 ls\lssrc
MSM_IA_381 SID9238\windows\AdvCore\gdiplus\Engine\text\lssrc
MSM_IA_381 SID9238\windows\richedit\lssrc
MSM_IA_377 ls\inci\LSC.H
MSM_IA_298 windows\richedit\inci\lsch.h
MSM_IA_381 SID9238\windows\AdvCore\gdiplus\Engine\text\lsinc\lsch.h
MSM_IA_377 SUP-A Office2003\Works Converter Files\msls2\inci\LSC.H
MSM_IA_298 windows\richedit\lssrc\line_services_component_description.htm
MSM_IA_381 SID9238\windows\AdvCore\DUser
MSM_IA_376 IE7Beta3\windows\advcore\duser
source code for Internet Explorer 5 MSM_IA_310 and MSM_IA_311
IE7Beta3 inetcore\mshtml\external\inc\msls directory
MSM_IA_376 IE7Beta3\inetcore\lib\stock\bindctx.cpp
MSM_IA_376 SUP-A IE7Beta3Source\Shell\xp\Shell\shdocvw\inst.cpp
MSM_IA_310 shell\shdocvw\channel.cpp
Materials Considered

MSM_IA_381 SID9238\shell\shlwapi\propbag.cpp
MSM_IA_381 SID9238\public\internal\shell\inc\shlwapi.h
MSM_IA_310 shell\shlwapi\connect.cpp
MSM_IA_310 shell\lib\cnctnpt.cpp
MSM_IA_310 shell\shdocvw\swindows.cpp
MSM_IA_376_SUP-A IE7Beta3Source\shell\xp\shell\shlwapi\connect.pp
MSM_IA_376_SUP-A IE7Beta3Source\Shell\srv03\Shell\lib\cnctnpt.cpp
MSM_IA_376_SUP-A IE7Beta3Source\shell\xp\shell\shdocvw\swindows.cpp
MSM_IA_310 shell\shell32\util.cpp
MSM_IA_310 shell32\deskstat.cpp
MSM_IA_310 shdoc401\unicpp\advanced.cpp
MSM_IA_310 shell\shell32\printer.c
MSM_IA_310 shell\browseui\htmlbm.cpp
MSM_IA_376_SUP-A ie7beta3source\shell\xp\shell\shdocvw\browserext.cpp
MSM_IA_416 MSNExplorer\XPCLIENT\src\mars\lib\clthunk\mlwapi.cpp
MSM_IA_376_SUP-A ie7beta3source\shell\xp\shell\shdocvw\explband.cpp
MSM_IA_376_SUP-A ie7beta3source\inetcore\lib\stock\viewframe.cpp
MSM_IA_310 shell\shell32\fstreex.c
MSM_IA_376_SUP-A ie7beta3source\shell\xp\shell\shdocvw\sccls.cpp
MSM_IA_381 SID9238\shell\shell32\mydocsfldr.cpp
MSM_IA_311 PRIVATE\SHELL\SHELL32\RUNDLG.CPP
MSM_IA_311 PRIVATE\SHELL\SHELL32\PRQWND.C
MSM_IA_376_SUP-A ie7beta3source\shell\xp\shell\shdocvw\mypics.cpp
MSM_IA_310 shell\shell32\unicpp\sendto.cpp
MSM_IA_310 shell\browseui\util.cpp
MSM_IA_381 SID9238\shell\docs\sconotify.doc
MSM_IA_311 PRIVATE\SHELL\SHDOCVW\DESKTOP.CPP
MSM_IA_376_SUP-A ie7beta3source\shell\xp\shell\shdocvw\winlist.cpp
MSM_IA_310 shell\shdocvw\winlist.cpp
MSM_IA_381 SID9238\public\sdk\inc\exdisp.h
MSM_IA_412 WMPI\DEV\SETUP\COMMON\sfew.cpp
MSM_IA_412 WMP\DEV\WMPCORE\CORE\librarymedia.cpp
MS-CC-RN 41967
MSM_IA_412 WMP\FILTERS\DECOLORCONV\deColorDs.cpp
MSM_IA_412 WMPI\WMAUDIO\V7\QUARTZ\DECODER\msadds32.cpp
MSM_IA_412 WMPI\WMVIDEO\QUARTZ\DECODER\dsdec.cpp
MSM_IA_311 PRIVATE\IEDEV\LIB\I386\README.TXT
MSM_IA_377 outlook\outlib\explor\shlwapi.h
MSM_IA_298 public\internal\shell\inc\shlwapi.h
MSM_IA_413 sps\userx\nsext\shell\priv\shlwapi.h
MSM_IA_376 IE7Beta3\enduser\hlink\src\shlwapi.h
MSM_IA_381 SID9238\windows\core\nutuser\kernel\dwp.c – implementation of DefWindowProc
MSM_IA_381 SID9238\windows\core\ntuser\client\dlgmgr.c – implementation of DefDlgProc, e.g. DefDlgProcWorker
MM_IA_298 windows\riched\re30\host.cpp – implementation of RichEditWndProc
MM_IA_298 windows\core\ntuser\client\iboxctl3.cpp – directory list box routines
MM_IA_298 windows\advcore\gdiplus\engine\entry\metafile.hpp, metarecord.cpp -
- EMF+ source
MM_IA_416 Developer\HTMLhelp\XPCLIENT\src\itss\msitstg.h,
MM_IA_416 Developer\HTMLhelp\XPCLIENT\src\itss\itsfs.h – structure of ITFS
and ITSC files
MM_IA_377 outlook\outlcmn\psetguid.h
MM_IA_377 outlook\outllib\renutil\renguid.c
MM_IA_377 outlook\outllib\fatns\fatfld.cpp
MM_IA_416_SUP-B WindowsSource\Partners\Exchange\Cabs\*

EXCHANGE.50.RTM_5.0.1457.11\olemsg32\dll\REN\RENTITEM\taskitem.cpp
MM_IA_125 LANG\USA\INSTALL\OEM\JASTRO.TXT
MM_IA_125 INSTALL\OEM\NUDOSWIN.TXT
MM_IA_125 INSTALL\OEM\HELP.TXT
MM_IA_125 INSTALL\RETAIL\DOSWIN.C
MM_IA_116 SRC\MSDOS\INSTALL\RETAIL\DOSWIN.C
MM_IA_116 SRC\MSDOS\INSTALL\OEM\NUDOSWIN.C
MM_IA_125 LANG\USA\INSTALL\RETAIL\JASTRO.TXT
MM_IA_125 LANG\USA\INSTALL\RETAIL\ASTRO.TXT
MM_IA_125 INSTALL\RETAIL\DOSWIN.TXT
MM_IA_125 INSTALL\RETAIL\DOSWIN.C
MM_IA_125 SRC\MSDOS\INSTALL\RETAIL\DOSWIN.C
MS-PCAIA 5501473-74
MS-PCAIA 5501323-28
March 10, 2006
MS-DOS 6.22 Source Code
SRC\MSDOS\INSTALL\RETAIL\DOSWIN.C

MSM_IA_116
MS-PCAIA 5501180; MSC 05081817
March 10, 2006
MS-DOS 6.22 Source Code
SRC\MSDOS\INSTALL\RETAIL\DOSWIN.C

MSM_IA_125
MS-PCAIA 5501189
March 10, 2006
MS-DOS 6.0 Source Code
INSTALL\RETAIL\DOSWIN.C
LANG\USA\INSTALL\OEM\JASTRO.TXT

MSM_IA_298; Disk 1 of 1
MS-PCAIA 05501348; Disk 3 of 3
MS01 0000356
June 15, 2006
Windows XP RTM Build 2600 – Source
Files inside 2600src4.cab and 2600src5.cab:

- public\internal\shell\inc\comctrlp.h
- public\internal\shell\inc\shlguidp.h
- public\internal\shell\inc\shlwappip.h
- public\internal\shell\inc\shpriv.h
- public\internal\windows\inc\duser\duserctrl.h
- public\sdk\inc\d3drm.h
- public\sdk\inc\shldisp.h
- windows\advcore\directui\old\engine\core\element.cpp
- windows\advcore\directui\old\engine\core\element.h
- windows\advcore\directui\old\engine\dll\directui.cpp
- windows\advcore\directui\old\engine\dll\test.cpp
- windows\advcore\directui\old\engine\inc\duibasep.h
- windows\advcore\directui\old\engine\inc\duicorep.h
- windows\advcore\directui\old\engine\inc\dulayoutp.h
- windows\advcore\duser\directui\engine\util\published.h
- windows\advcore\duser\directui\test\app\logonui\priv.h
- windows\advcore\duser\docs\api\addgadgetmessagehandler.htm
- windows\advcore\duser\docs\api\core.htm
- windows\advcore\duser\docs\api\creategadget.htm
- windows\advcore\duser\docs\api\deletehandle.htm
- windows\advcore\duser\docs\api\findgadgetfrompoint.htm
- windows\advcore\duser\docs\api\getgadget.htm
- windows\advcore\duser\docs\api\getgadgetfocus.htm
- windows\advcore\duser\docs\api\getgadgetrect.htm
- windows\advcore\duser\docs\api\getgadgetrotation.htm
- windows\advcore\duser\docs\api\getgadgetscale.htm
- windows\advcore\duser\docs\api\getgadgetsize.htm
- windows\advcore\duser\docs\api\setgadgetstyle.htm
- windows\advcore\duser\docs\api\gm_changestate.htm
- windows\advcore\duser\docs\api\initgadgetcomponent.htm
- windows\advcore\duser\docs\api\invalidategadget.htm
- windows\advcore\duser\docs\api\motion.htm
- windows\advcore\duser\docs\api\registergadgetmessage.htm
- windows\advcore\duser\docs\api\registergadgetmessagestring.htm
- windows\advcore\duser\docs\api\removelgadgetmessagehandler.htm
- windows\advcore\duser\docs\api\sendgadgetmessage.htm
- windows\advcore\duser\docs\api\service.htm
- windows\advcore\duser\docs\api\setgadgetfill.htm
- windows\advcore\duser\docs\api\setgadgetfocus.htm
- windows\advcore\duser\docs\api\setgadgetorder.htm
- windows\advcore\duser\docs\api\setgadgetparent.htm
Materials Considered

windows\advcore\duser\docs\api\setgadgetrect.htm
windows\advcore\duser\docs\api\setgadgetrotation.htm
windows\advcore\duser\docs\api\setgadgetscale.htm
windows\advcore\duser\docs\api\setgadgetstyle.htm
windows\advcore\duser\docs\api\uninitgadgetcomponent.htm
windows\advcore\duser\docs\api\unregistergadgetmessage.htm
windows\advcore\duser\docs\api\unregistergadgetmessagestring.htm
windows\advcore\duser\docs\api\util.htm
windows\advcore\duser\engine\msg\msg.h
windows\advcore\duser\engine\objectapi\objectapi.h
windows\advcore\duser\engine\services\context.h
windows\advcore\duser\engine\services\public.h
windows\advcore\duser\engine\services\resourcemanager.cpp
windows\advcore\duser\engine\services\resourcemanager.h
windows\advcore\duser\engine\services\services.h
windows\advcore\duser\engine\winapi\winapi.h
windows\advcore\gdiplus\engine\flat\crtcheck\crtcheck.cpp
windows\advcore\gdiplus\engine\flat\officehack\officehack.cpp
windows\advcore\gdiplus\test\libtest\readme.txt
windows\richedit\inci\lsc.h
windows\richedit\lssrc\line_services_component_description.htm
windows\richedit\re30\ls.h
windows\richedit\re30\ols.h

**MSM_IA_310**
**MS-PCAIA 5501351**
**MSB-CD 00002**

**Internet Explorer 5.0 sources for Mainsoft Microsoft**

**Files inside ie5src.tar:**

iedev\uuid\guids.c
inet\urlmon\search\protbase.cxx
shell\browseui\channel.cpp
shell\browseui\favband.cpp
shell\browseui\itbar.cpp
shell\browseui\menuband.cpp
shell\browseui\menubar.cpp
shell\browseui\menusite.cpp
shell\browseui\mnfolder.cpp
shell\browseui\mnstatic.cpp
shell\browseui\util.cpp
shell\comctl32\da.c
shell\comdlg32\util.cpp
shell\evtmon\inc\msoem.h
shell\explorer\startmnu.cpp
Andrew Schulman
Supplemental Report, December 19, 2006
Materials Considered

```
shell\explorer\taskband.cpp
shell\ext\cdfview\folder.cpp
shell\ext\ftp\ftpfoldr.cpp
shell\ext\mydocs\src\copyhook.cpp
shell\ext\rnaui\contain.c
shell\ext\rnaui\rnaguidp.h
shell\ext\shscrap\template.cpp
shell\inc\evtmon\msodbglg.h
shell\inc\shguidp.h
shell\lib\cnctnpt.cpp
shell\lib\dllload.c
shell\shdoc401\unicpp\cpymovto.cpp
shell\shdoc401\unicpp\sendto.cpp
shell\shdoc401\unicpp\startmnu.cpp
shell\shdocvw\cdfview\copyhook.cpp
shell\shdocvw\dochohost.cpp
shell\shdocvw\nsc.cpp
shell\shdocvw\priv.h
shell\shdocvw\windows.cpp
shell\shdocvw\winlist.cpp
shell\shell32\sfvcmpt.cpp
shell\shell32\shlink.c
shell\shell32\unicpp\cpymovto.cpp
shell\shell32\unicpp\startmnu.cpp
shell\shlwapi\connect.cpp
shell\shlwapi\readme.txt
shell\shlwapi\thrdsvcs.cpp
shell\shlwapi\tpstimer.cpp
shell\shlwapi\tpswork.cpp
```

MSM IA 311
MS-PCAIA 5501352
MSB-CD 00003

Internet Explorer 5.0 sources for Mainsoft Microsoft

```
PRIVATE\IEDEV\LIB\1386\README.TXT
PRIVATE\INET\URLMON\EAPP\PROTBASE.CXX
PRIVATE\SHELL\COMCTL32\DA.C
PRIVATE\SHELL\EXT\CDFVIEW\VIEW.CPP
PRIVATE\SHELL\EXT\FTP\FTPFOLDR.C
PRIVATE\SHELL\EXT\MYDOCS\SRC\FLDRSAVE.CPP
PRIVATE\SHELL\EXT\RNAUI\RNAGUIDP.H
PRIVATE\SHELL\EXT\THUMB\VIEW\EXTRACT.CPP
PRIVATE\SHELL\INC\SHELLP.H
PRIVATE\SHELL\INC\SHSEMIP.H
```
PRIVATE\SHELL\LIB\FSMENU.CPP
PRIVATE\SHELL\SHDOCVW\BROWBAND.CPP
PRIVATE\SHELL\SHDOCVW\DOCHOST.CPP
PRIVATE\SHELL\SHDOCVW\DPASTUFF.CPP
PRIVATE\SHELL\SHDOCVW\HIST\HSFOLDER.CPP
PRIVATE\SHELL\SHELL32\CLOUDS.CPP
PRIVATE\SHELL\SHELL32\SFVCMPT.CPP
PRIVATE\WINDOWS\INC16\COMCTRLP.H

MSM_IA_375_SUP-A
MS-PCAIA 5501402
Oct. 18, 2006
Supplemental Source Code for Office XP

OfficeXP\Microsoft Universal Search Provider\Integration\USP\idbasync.cpp
OfficeXP\Microsoft Universal Search Provider\suggest\Newer Std Lib\D3drm.h
OfficeXP\Microsoft Universal Search Provider\suggest\Newer Std Lib\shldisp.h

MSM_IA_375_SUP-B
MS-PCAIA 5501417
Oct. 25, 2006
Second Set of Supplemental Source Code Files for Office XP

OfficeXP\Microsoft XML Parser v3\winhttp\debug\dbghandle.cxx

MSM_IA_375 SUP-C
MS-PCAIA 5501420
10/27/06
Third Set of Supplemental Source Code Files for Office XP

OfficeXP\Powerpoint 2002 Presentation
Broadcast\NSLSVPS_3.2.0.3594\nscore\cpuusage\ntcpuse.cpp
OfficeXP\Powerpoint 2002 Presentation
Broadcast\V4_1\nscore\cpuusage\ntcpuse.cpp
OfficeXP\Wave to ActiveMovie Stream Converter\V4\nscore\cpuusage\ntcpuse.cpp

MSM_IA_376
MS-PCAIA 5501392
8/23/06
Internet Explorer Beta 3 [source]

Files inside IE7Beta3Source.zip:

IE7Beta3\enduser\hlink\src\shlwapip.h
IE7Beta3\inetcore\ieframe\shdocvw\priv.h
IE7Beta3\inetcore\ieframe\shlwapi\reg.c
Supplemental Source Code Files for Internet Explorer 7 Beta 3

MSM_IA_376_SUP-A
MS-PCAIA 5501403
Oct. 18, 2006
Files inside office2003src.zip on Iomega USB drive:

access\src\core\hooks.c
ls\inci\LSC.H
misc\Install\AUClient\exe\msoglue.cpp
misc\Install\AUClient\exe\stdafx.h
mso\gel\gelgdiplus.h
netui\platform\dll\msoglue.cpp
netui\platform\engine\Base\Base.h
netui\platform\engine\Services\ResourceManager.h
netui\platform\engine\inc\NetUIBaseP.h
netui\platform\engine\inc\NetUICoreP.h
netui\platform\engine\inc\NetUIObjectAPIP.h
netui\platform\ui\Base\Published.h
otools\inc\delivery\dutil\shelutil.h
otools\inc\netui\NetUICtrl.h
outlook\outlcmn\psetguid.h
outlook\outllib\explor\shlguidp.h
outlook\outllib\explor\shlwapi.h
outlook\outllib\fatns\fatfld.cpp
outlook\outllib\fatns\fatmod.cpp
outlook\pstprx\stordav\davcmd.cpp
outlook\pstprx\stordav\davutil.cpp
outlook\pstprx\stordav\dosmtask.cpp
pptview\pptview\appsimple.cpp
pub\mspub\environ.cpp
rms\core\mapisess.cpp
rtc\server\src\cayman\inc\shellp.h
word\src\olesrvr.c
xl\shr\layer\win\xwindows.h
xl\shr\msowcm.c

Supplemental Source Code Files for Office 2003

Office2003\Graphics Device Interface
(GDI+)\5.1.3102.1229\Engine\flat\crtcheck\crtcheck.cpp
Office2003\Graphics Device Interface
(GDI+)\5.1.3102.1229\Engine\flat\officehack\officehack.cpp
Office2003\Graphics Device Interface (GDI+)\6.0.3260.0\Engine\flat\crtcheck\crtcheck.cpp
Office2003\Graphics Device Interface (GDI+)\6.0.3260.0\Engine\flat\officehack\officehack.cpp
Office2003\Graphics Device Interface (GDI+)\6.0.3260.0\Engine\text\lsc\lsc.h
Office2003\PIA for Windows Common Control
dialog\msvbt\inc\SHELL\shsemip.h
Office2003\Works Converter Files\mssql\inci\LSC.H

MSM_IA_381
Disk 1 of 1
9/1/06
MS-PCAIA 5501395
Windows XP RTM Build 2600 [source code]
Files inside WindowsXP_RTM.zip:

SID9238\windows\AdvCore\DirectUI\Old\Engine\ObjectAPI\Published.h
SID9238\admin\pchealth\Client\Binary_release\dwsr\client\msoglue.cpp
SID9238\admin\pchealth\Client\Binary_release\dwsr\client\tools\mdversionmain.cpp
SID9238\base\mvdm\MeoWThunks\inc\whkrmm32.h
SID9238\base\mvdm\MeoWThunks\inc\whshll32.h
SID9238\base\ntsetup\docs\sfc.doc
SID9238\base\ntsetup\docs\win2k\exep.doc
SID9238\com\mobile\sens\conn\senssvc\dest.cxx
SID9238\com\mobile\sens\conn\senssvc\lan.cxx
SID9238\enduser\HelpEngines\winhelp\winhelp\inc\helpwin.h
SID9238\inetcore\OutlookExpress\AutoDiscovery\client\dpa.h
SID9238\inetcore\OutlookExpress\inetcomm\ixmnp\davdef.h
SID9238\inetcore\OutlookExpress\inetcomm\ixmnp\ixphttpm.cpp
SID9238\inetcore\OutlookExpress\mailnews\http\httpserv.cpp
SID9238\inetcore\mshhtml\external\inc\shsemip.h
SID9238\inetcore\urlmon\search\protbase.cxx
SID9238\inetcore\vml\msog\gel\gelgdiplus.h
SID9238\inetcore\vml\msog\inc\msodbglg.h
SID9238\inetcore\winhttp\v5\debug\dbghandle.cxx
SID9238\inetsrv\iis\admin\w3ext\PropShellExt.h
SID9238\public\internal\shell\inc\shlwapi.h
SID9238\public\internal\shell\inc\shpriv.h
SID9238\public\internal\windows\inc\DUser\DUserCtrl.h
SID9238\shell\browseui\itbar.cpp
SID9238\shell\browseui\searchext.cpp
SID9238\shell\comctl32\v5\da.c
SID9238\shell\docs\scnotify.doc
SID9238\shell\docs\shelldev.doc
Materials Considered

SID9238\shell\evtmon\inc\ms OEM.h
SID9238\shell\explorer\Desktop2\deskhost.cpp
SID9238\shell\explorer\Desktop2\logoff.cpp
SID9238\shell\explorer\Desktop2\moreprog.cpp
SID9238\shell\explorer\util.cpp
SID9238\shell\ext\escui\folder.cpp
SID9238\shell\ext\ftp\ftpfoldr.cpp
SID9238\shell\ext\logondui\priv.h
SID9238\shell\ext\occache\view.cpp
SID9238\shell\ext\shscrap\template.cpp
SID9238\shell\ext\webcheck\folder.cpp
SID9238\shell\inc\bands.cpp
SID9238\shell\inc\ccstock.h
SID9238\shell\inc\dllload.c
SID9238\shell\inc\fsmenu.cpp
SID9238\shell\inc\shelp.h
SID9238\shell\inc\shguidp.h
SID9238\shell\inc\shsemip.h
SID9238\shell\lib\cncnpt.cpp
SID9238\shell\lib\propertybag.cpp
SID9238\shell\lib\rpttimeout.cpp
SID9238\shell\lib\util.cpp
SID9238\shell\osshell\cpls\main\mouseptr.c
SID9238\shell\osshell\lmui\shareui\notest.txt
SID9238\shell\osshell\shole\template.c
SID9238\shell\published\dload\shell32.c
SID9238\shell\shdocvw\dhuihand.cpp
SID9238\shell\shdocvw\favband.cpp
SID9238\shell\shdocvw\hist\hsfolder.cpp
SID9238\shell\shdocvw\isbase.cpp
SID9238\shell\shdocvw\nscband.cpp
SID9238\shell\shdocvw\priv.h
SID9238\shell\shdocvw\srasst.cpp
SID9238\shell\shdocvw\swindows.cpp
SID9238\shell\shdocvw\winlist.cpp
SID9238\shell\shell32\finddlg.cpp
SID9238\shell\shell32\flrdcust.cpp
SID9238\shell\shell32\menuband\dpastuff.cpp
SID9238\shell\shell32\menuband\menusite.cpp
SID9238\shell\shell32\menuband\mnfolder.cpp
SID9238\shell\shell32\menuband\sftbar.cpp
SID9238\shell\shell32\ole2dup.c
SID9238\shell\shell32\regflldr.cpp
SID9238\shell\shell32\unicpp\dcomp.cpp
SID9238\shell\shell32\unicpp\sendto.cpp
Materials Considered

SID9238\shell\shlwapi\connect.cpp
SID9238\shell\shlwapi\propbag.cpp
SID9238\shell\shlwapi\readme.txt
SID9238\shell\shlwapi\security.cpp
SID9238\shell\shlwapi\tpstimer.cpp
SID9238\shell\shlwapi\tpswork.cpp
SID9238\shell\shlwapi\util.cpp
SID9238\tools\publicchanges.txt
SID9238\windows\AdvCore\DUser\DirectUI\Test\App\LogonUI\logon.cpp
SID9238\windows\AdvCore\DUser\Engine\Services\ResourceManager.cpp
SID9238\windows\AdvCore\DirectUI\Old\Engine\Dll\DirectUI.cpp
SID9238\windows\AdvCore\DirectUI\Old\Inc\DirectUI.h
SID9238\windows\AdvCore\ctf\tools\uuidgen\sysinc.h
SID9238\windows\AdvCore\gdiplus\Engine\flat\ctcheck\ctcheck.cpp
SID9238\windows\AdvCore\gdiplus\Engine\flat\officehack\officehack.cpp
SID9238\windows\AdvCore\gdiplus\Engine\text\lsinci\lsinc.h
SID9238\windows\AdvCore\gdiplus\Specs\emfplus.doc
SID9238\windows\AdvCore\gdiplus\Specs\gdiplusoverview.doc
SID9238\windows\AdvCore\gdiplus\test\libtest\readme

MSM_1A_412
MS-PCAIA 5501397
9/27/06
Windows Media Player 8 [source code]
Files inside WMP.zip:

WMP\DEV\SETUP\COMMON\sfcw.cpp
WMP\DEV\SETUP\COMMON\wmd_util.cpp
WMP\DEV\WMPCORE\CORE\librarymedia.cpp
WMP\DEV\WMPCORE\CORE\wmpgraph.cpp
WMP\DEV\WMPCORE\CORE\wmpgraph.h
WMP\FILTERS\DECOLORCONV\deColorDs.cpp
WMP\WMAUDIO\V7\QUARTZ\DECODER\msadds32.cpp
WMP\WMVIDEO\QUARTZ\DECODER\dsdec.cpp

MSM_1A_413
MS-PCAIA 5501398
9/27/06
MSONSEXT [source code]:

ootools\inc\CoreSDK\cdoexstr.h
ootools\inc\CoreSDK\winternl.h
ootools\inc\delivery\util\shelutil.h
ootools\inc\netui\NetUICtrl.h
sps\userx\nsext\defview\da.c
Supplemental Report, December 19, 2006

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sps\userx\nsext\o10\inc\mso\msodbglg.h
sps\userx\nsext\shell\priv\comctrlp.h
sps\userx\nsext\shell\priv\shlguidp.h
sps\userx\nsext\shell\priv\shlwapi.h
sps\userx\nsext\shell\sdk\shldisp.h

**MSM_1A_416**
**MS-PCA1A 5501399**
**10/20/06**

Supplemental Source Code for Windows XP

Developer\VB5and6engines\XPCLIENT\src\msvbm60.dll\ruby\guids.c
MSN\MSNMessenger\XPCLIENT\src\dev\inc60\shldisp.h
SQL\MDAC-CORE-MSXML\XPCLIENT\src\msxml\winhttp\debug\dbghandle.cxx

Currently-unknown Bates

Office2003\Wave to ActiveMovie Stream
Converter\V4_1\nscore\cpuusage\ntcpuse.cpp
WindowsSource\Partners\Office\FPSE\XPCLIENT\src\DW\DWWIN.EXE\dws\cli
ent\tools\mdversionmain.cpp
OfficeXP\Microsoft Office Name Space Extensions (Web
Folders)\nsext\shell\inc\shguidp.h
OfficeXP\Microsoft Office Name Space Extensions (Web
Folders)\nsext\shell\inc\shellp.h

Other Materials


MS-CC-RN 811183-93,

MS-CC-RN 340756-8

MS-CC-RN 586859-61

MS-CC-RN 76910-6

MS-CC-RN 380289-93

Affidavit of Kris Krueger, Oct. 18, 2006 (attachment to Microsoft’s Opposition to Plaintiff’s Emergency Motion for an Order to Show Cause, Oct. 19, 2006)

Affidavit of Ernst Peter Oosterhof, Oct. 18, 2006 (attachment to Microsoft’s Opposition to Plaintiff’s Emergency Motion for an Order to Show Cause, Oct. 19, 2006)
Affidavit of Andrew Newell, Nov. 14, 2006 (attachment to Microsoft’s Supplemental Memorandum in Opposition to Plaintiff’s Motion for an Order to Show Cause, Nov. 14, 2006)

MS-CC-RN 1099975-84.
MS-CC-RN 811236
MS-CC-RN 811183-7
MS 5062504
MS-CC-Bu 207344


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http://support.microsoft.com/kb/247335

PC World (May 1994) (pp. 59-60)


http://www.dependencywalker.com/


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CDOSysStr.h, Windows SDK header file

CDOExStr.h, Windows SDK header file


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MS-CC-RN 000000440258 – 440266
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MS-CC-SUN 000001053824 – 1053829
MS-PCAIAEC 111849-50
MS-PCAIAEC 111852-4
MS-CC-RN 000000856893 - 856923
MS-CC-RN 000001038314 - 1038322
MSS0000000167.0.1
MSS0000000168


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http://news.com.com/Microsoft+meets+EU+deadline+in+antitrust+case/2100-1014_3-6138096.html?tag=sas.email


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http://www.microsoft.com/resources/sharedsource/Licensing/WindowsCE_Academic.mspx (in Google cache)

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