

## **ADAPTABLE SOFTWARE SHELLS VERSUS MICROSOFT SOFTWARE SHELLS**

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**Abstract:** *Development and evolution of Microsoft Office and Microsoft Windows shells is based in general on the special methodology of Software creation and implementation such as macros, subroutine, custom commands and specialized features. This methodology of Microsoft Software shells is analyzed. The universal methodology of Adaptable Software creation is proposed. Present result evaluates from [Tod-08.1]<sup>3</sup> which is an evolution of the Fulbright research project no. 22131 "Societal Information Systems' Adaptable Tools" performed in the University of Omaha at Nebraska, USA in the 1997/1998 academic year [Tod-98].*

**Key words:** *adaptable software; Microsoft software; software shells*

### **1. Introduction**

**Microsoft Office** is an office suite from Microsoft for Microsoft Windows and Apple Mac OS X operating systems ([http://en.wikipedia.org/wiki/Microsoft\\_Office](http://en.wikipedia.org/wiki/Microsoft_Office)). Along with core office applications, it includes associated servers and web-based services. Recent versions of Office are referred as "Office system".

The current versions are Office 2007 for Windows, launched on January 30, 2007,<sup>4</sup> and Office 2008 for Mac, released January 15, 2008. Office 2007/Office 2008 features a distinct user interface and a new XML-based primary file format.

Office was introduced by Microsoft in 1989 on Mac OS,<sup>5</sup> with a version for Windows in 1990<sup>6</sup>. Initially a marketing term for a bundled set of applications, the first version of Office contained Microsoft Word, Microsoft Excel, and Microsoft PowerPoint. Additionally, a "Pro" version of Office included Microsoft Access and Schedule Plus. Over the years, Office applications have grown substantially closer with shared features such as a common spell checker, OLE data integration and Microsoft Visual Basic for Applications scripting language. Microsoft also positions Office as a development platform for line-of-business software under the Office Business Applications (OBA) brand.

### **2. Microsoft Office & Windows 95 / 97 / 08**

As was underlined in (<http://www.zisman.ca/Articles/1995/Office95.html>) Windows 95 is nice, but while it does a pretty good job of running the current generation of

applications, it really needs new applications to take advantage of all its improvements. It really shouldn't come as much of a surprise, therefore, that Microsoft is revamping virtually its entire product line to run as native, Win95 applications.

The flagship of Microsoft's armada is the MS Office suite [1995-Office] - it should come as no surprise that MS Office 95 was released on August 24<sup>th</sup> - the same day as Windows 95 itself - might as well give everyone in those long lineups something else to buy!

In the past few years, software Suites have become big business - accounting for a majority of sales of word processors and spreadsheets, for example. And despite competition from Lotus SmartSuite and Novell (formerly Word Perfect) Perfect Office, MS Office has garnered over 70% of the suite sales. Where in the former DOS world, Microsoft seemed to always have the also-ran contender in word processor and spreadsheet sales, the combination of Windows and suites has pushed them into a comfortable sales lead.

All Win95 applications must be written as 32-bit software, rather than the 16-bit versions standard with Windows 3.x. This doesn't automatically make them run faster. The 32-bit Windows NT versions of MS Word and Excel, for example, ran slower than their 16-bit equivalents, because they left out the highly-optimized programming code of the older versions in order to be compatible with NT on a wide range of CPUs.

The newer Win95 versions of these programs, however, do feel snappier than the last generation.

Win95 allows new programs to be multi-threaded - to run separate processes in the background to improve performance. The Office applications don't make much use of multithreading, however, adding it only to printing.

A nice Win95 feature that may take getting used to is 'Scraps' - the user can highlight part of a document, and drag it to the desktop, where the scrap can sit and wait for you to drag it into a different document or even a different application. Use it, for instance, to drag an address from a letter, and drop it into a contact list... but like the other features, only usable with Win95-compatible applications, like all of Office 95. Similarly, right-clicking on the desktop gets you the standard Win95 popup menu - choose New to simply create a new Word or Excel or PowerPoint document. In fact, as with Win95 in general, right-mouse clicking is implemented throughout Office 95.

Office 95 applications also all make use of Win 95's Exchange client - the user can send e-mail from any of them, or use it to share information across a network. You can also use Word to edit your Exchange e-mail. Help items in all the applications can automatically connect the user to the correct forum on the Microsoft Network.

## 2.1. Working together

Schedule Plus [1995-Office], a group scheduler and personal information manager that debuted in Windows for Workgroups has been moved from **the core** Windows package into Office. As well, suite marketing has claimed that purchasers would find it easier working with a collection of applications that were sported the same interface.

Office 95 is better than previous versions in this way - Microsoft's programmers worked on using as much common code for all of the applications: they share File Open and Save dialogue boxes, for example, enhancing Win95's standard dialogues with Previews of the selected files and integrated search. While users of Word 6.0 could run AutoCorrect, now this feature appears across the Office, as does a new help extension, the Answer Wizard. A

nice touch is the vertical scrollbars - you can now see what page number the user are scrolling to. The user can open these applications from Win95's Start Menu, but by default, he gets the Microsoft Office Shortcut Bar, replacing the previous version's anemic Microsoft Office manager (MOM). The user can have multiple Shortcut toolbars-- it's configurable enough that some users may find it preferable to Win95's Start Menu for most of their computing.

In addition, Office adds a new kind of document - a Binder file. This lets the user to combine data from any of the Office apps, or other Office-compatible software into a single, notebook-like setting... as easily as dragging them in. Because the Binder uses OLE 2, as user changes to a page created in a different application, the user don't open that application-- his tool bar and menus change to fit the data.

Several years ago, Microsoft promised a single, Visual Basic-based macro language, that would be supported across its applications. While Excel has supported Visual Basic for Applications, Word and PowerPoint still lack this support. Word and Excel continue to use the same file formats with the previous versions, but PowerPoint and Access produce **new, incompatible files.**

**2.2. Working separately**

The applications in Office95 (Table 1) and its successor Office97/98 (Table 2) benefit from being designed for Windows95, and to share the common features of Office. Otherwise, the actual feature-sets of the separate applications are not dramatically changed from the last generation. That's not a bad thing-- Word 6.0 and Excel 5.0 were both rich with features that many users still haven't had a chance to fully get used to.

Like other suites, Office 95 is a hefty program [1995-Office] that can demand a lot of ram and hard drive space. It can be installed in a minimal fashion, taking a 'mere' 27 megs, or can be set up to run off a CD-ROM drive (which still asks for 30 megs of hard drive space).

Home users and some small offices running Win95 may find their needs better served with one of the new generation of all-in-one programs, such as Microsoft Works-95, or the soon-to-be-released Claris Works 4.0.

Even though the biggest improvements users will find with this suite come from Windows 95 (like long file names) rather than from the core applications, at the moment, this is the product of choice for business users running Win95. Even when Lotus and Novell release their Win95 competitors, in a few months, this will remain the one to beat.

**Table 1.** Microsoft Office95 edition

<b>Standard</b>	<b>Professional</b>
Word	Word
Excel	Excel
PowerPoint	PowerPoint
Schedule+	Schedule+
	Access

**Table 2.** Microsoft Office 97 Powered by Word 98 editions

<b>Standard</b>	<b>Professional</b>	<b>Small Business</b>	<b>Developer</b>
Word	Word	Word	Word
Excel	Excel	Excel	Excel
Outlook	Outlook	Outlook	Outlook
PowerPoint	PowerPoint		PowerPoint
	Access		Access
		Publisher	Developer Tools and SDK

### 3. Microsoft Office 2000

In [2000-MsOffice] the author underlined that "... some people mistakenly think that Office is a single program. The confusion is understandable because Microsoft markets Office in this manner. Although the Office 2000 (Table 3) programs and its successor Office XP (Table 4) are designed to almost seamlessly together, Office 2000 still consists of several individual programs. There is a smart strategy to learn and use the Office suites of programs. Each Office program works best for a different task: you can best compose text with Word, you can best crunch numbers with Excel, you can best manage tables of information with Access...Given this, what you want to do is learn to use the Office programs that best handle the sort of data that you work with..."

The programs in Office 2000 include integrated features; for example [2000-MsOffice] "... Word includes a rather crude spreadsheet features (called tables) that you can use to make calculations – such as for the budget. Excel’s worksheets, however, are both easier to use and more powerful in what they can do. Similarly, you can use Excel to create lists of information, but for working with lots of data pieces, Access’s tables feature is both easier to use and more powerful than Excel". Regardless on which Office features the user uses most often, he/she performs many tasks in exactly the same way in all Office programs.

**Table 3.** Microsoft Office 2000 edition

<b>Standard</b>	<b>Small Business *</b>	<b>Professional</b>	<b>Premium</b>	<b>Developer</b>
Word	Word	Word	Word	Word
Excel	Excel	Excel	Excel	Excel
Outlook	Outlook	Outlook	Outlook	Outlook
PowerPoint		PowerPoint	PowerPoint	PowerPoint
	Publisher	Publisher	Publisher	Publisher
		Access	Access	Access
			FrontPage	FrontPage
			PhotoDraw	PhotoDraw
	Small Business Tools			Developer Tools and SDK

**Table 4.** Microsoft Office XP edition

Standard	Professional	Professional with FrontPage *	Professional Special Edition	Developer
Word	Word	Word	Word	Word
Excel	Excel	Excel	Excel	Excel
Outlook	Outlook	Outlook	Outlook	Outlook
PowerPoint	PowerPoint	PowerPoint	PowerPoint	PowerPoint
	Access	Access	Access	Access
		FrontPage	FrontPage	FrontPage
			Publisher	Developer Tools and SDK
				SharePoint Team Services

#### 4. Microsoft Office 2003

Microsoft Office 2003 (Table 5) introduces the user to the new, far-reaching features of Microsoft Office 2003 and shows how you can put them to work in your business, organization, or home. If the user works with ideas...his imagination will kick into high gear as he see how Office 2003 can support the total lifespan of an idea, from that first scribble on the back of his business card, to the final Web publication produced by his management team, and the translation and distribution of the smart document to his satellite offices in 14 countries around the globe.

The user [2003-MsOffice] "...don't have to be part of a large organization to get maximum benefit from the new features in Office. Employees of small to mid-size business, entrepreneurs, and independent contractors – anyone who exchanges ideas and data with someone else – will find features in Office that enhance communication and collaboration; make project management simpler then ever; capture innovative ideas from everyone on the team; and easily produce and change documents, Web pages, reports, and presentations based on data saved in structured formats. It's the "create-it-once, used-it-many-times" idea, which allows the user to work smarter and faster by streamlining the creation process and reducing the margin for error among different versions of the same document".

**Table 5.** Microsoft Office 2003 edition

Basic	Standard	Small Business	Professional Edition	Professional Enterprise Edition
Word	Word	Word	Word	Word
Excel	Excel	Excel	Excel	Excel
Outlook	Outlook	Outlook with Business Contact Manager	Outlook with Business Contact Manager	Outlook with Business Contact Manager
	PowerPoint	PowerPoint	PowerPoint	PowerPoint
		Publisher	Publisher	Publisher
			Access	Access
				InfoPath

**5. Microsoft Office 2007**

In [2007-MsOffice] the authors underlined that in Microsoft Office 2007 "...the entire user interface has been redesigned to be more intuitive, easier to navigate, and better suited to the task at hand...the developers pf Office 2007 ...decided to go back to the drawing board and create an interface based on the way people use their computers today. The result is a simplified, smart system that brings you just the tools you need, when you need them. No more clicking through menus, submenus, and nested dialog boxes. Now the command you need come to you, depending on the type of object you select and the application you are using". All those features are represented in the Table 6.


The newest version of Microsoft Office is 2007, which was released at the same time as Windows Vista (on January 30, 2007). The different editions of Microsoft Office 2007 are:<sup>7</sup>

- Microsoft Office Home and Student 2007 (not for use by commercial entities)
- Microsoft Office Standard 2007 (Retail and volume license)
- Microsoft Office Small Business 2007 (Retail and volume license)
- Microsoft Office Professional 2007 (Retail only)
- Microsoft Office Ultimate 2007 (Retail only)

Limited Availability of Microsoft Office 2007 are:

- Microsoft Office Basic 2007 (Available only through OEMs)
- Microsoft Office Professional Plus 2007 (Available only through volume licensing)
- Microsoft Office Enterprise 2007 (Available only through volume licensing)

**Table 6.** Microsoft Office 2007 edition

Basic	Home and Student	Standard	Small Business	Professional	Ultimate	Professional Plus	Enterprise
No box shot available						No box shot available	No box shot available
Word	Word	Word	Word	Word	Word	Word	Word
Excel	Excel	Excel	Excel	Excel	Excel	Excel	Excel
	PowerPoint	PowerPoint	PowerPoint	PowerPoint	PowerPoint	PowerPoint	PowerPoint
Outlook		Outlook	Outlook	Outlook	Outlook	Outlook	Outlook
			Accounting Express	Accounting Express	Accounting Express		
			Publisher	Publisher	Publisher	Publisher	Publisher
				Access	Access	Access	Access
					InfoPath	InfoPath	InfoPath
					Groove		Groove
	OneNote				OneNote		OneNote
						Communicator	Communicator

## **6. Microsoft Software perspectives**

### **6.1. Common features of Microsoft-Office-2007-Windows-Vista**

A major feature of the Office suite is the ability for users and third party companies to write **add-ins** that extend the capabilities of an application by adding **custom commands and specialized features**. The type of add-ins supported differ by Office versions:

- Office 97 onwards (standard Windows DLLs i.e. Word WLLs and Excel XLLs)
- Office 2000 onwards (COM add-ins) <sup>8</sup>
- Office XP onwards (COM/OLE Automation add-ins)<sup>9</sup>
- Office 2003 onwards (Managed code add-ins) <sup>10</sup>

These programs are included in most editions of Microsoft Office.

### **6.2. Microsoft Office 2007**

The newest version of Microsoft Office is 2007, which was released at the same time as Windows Vista (on January 30, 2007). The different editions of Microsoft Office 2007 are:<sup>11</sup>

- Microsoft Office Home and Student 2007 (not for use by commercial entities)
- Microsoft Office Standard 2007 (Retail and volume license)
- Microsoft Office Small Business 2007 (Retail and volume license)
- Microsoft Office Professional 2007 (Retail only)
- Microsoft Office Ultimate 2007 (Retail only)

### **6.3. Microsoft Office 2008 for Mac**

Microsoft Office 2008 for Mac is available in three editions. All three editions include Entourage 2008, Excel 2008, PowerPoint 2008 and Word 2008.

- Office 2008 for Mac Home and Student Edition
- Office 2008 for Mac Standard Edition (*adds Microsoft Exchange support*)
- Office 2008 for Mac Special Media Edition (Microsoft Exchange support and Expression Media)

### **6.4. Prior editions for Microsoft Windows**

Prior Editions for Microsoft Windows are:

- August 30, 1992: Office 3.0 (CD-ROM version: Word 2.0c, Excel 4.0a, PowerPoint 3.0, Mail): (repackaged as Office 92).
- January 17, 1994: Office 4.0 (Word 6.0, Excel 4.0, PowerPoint 3.0).
- July 3, 1994: Office for NT 4.2 (Word 6.0 [32-bit, i386, MIPS, PowerPC, and Alpha], Excel 5.0 [32-bit, i386, MIPS, PowerPC, and Alpha], PowerPoint 4.0 [16-bit], "Microsoft Office Manager").
- June 2, 1994: Office 4.3 (Word 6.0, Excel 5.0, Power Point 4.0, Mail 3.2 and in the pro version, Access 2.0.). This is the last 16-bit version. This is also the last version to support Windows 3.x, Windows NT 3.1 and Windows NT 3.5 (Windows NT 3.51 was supported up to and including Office 97).
- August 30, 1995: Office 95 (7.0) (Word 7 for Windows 95, etc.) - coincided with the Windows 95 operating system release.
- December 30, 1996: Office 97 (8.0) (Word 97, etc.) (was published on CD-ROM as well as on a set of 45 3½-inch floppy disks), was Y2K safe with Service Release 2. Last version to support Windows NT 3.51 on i386 and Alpha.
- June 20, 1998: Office 97 Powered by Word 98 (8.5) was released only in Japanese and Korean editions. First version to contain Outlook 98 in all editions and Publisher 98 in the Small Business Edition. The only way to get Word 98. And also the first version of Office 97 to support Windows 98.

- January 27, 1999: Office 2000 (9.0) (Word 2000, etc.). Last version to support Windows 95, and last version that does not use Product Activation.
- May 31, 2001: Office XP (10.0) (Word 2002, etc.). Last version to support Windows 98/Me/NT 4.0. Improved support for working in restricted accounts under Windows 2000/XP.
- November 17, 2003: Office 2003 (11.0) (Word 2003, etc.). Last version to support Windows 2000.
- January 30, 2007: Office 2007 (12.0) (Word 2007, etc.). Broadly released alongside Windows Vista, Microsoft's newest operating system.
- Unknown (possibly the first half of 2009):<sup>12</sup> Office 14. There will be no Microsoft Office 13 due to superstition.<sup>13</sup>

### **6.5. Windows Lifecycles**

Beginning in 2002, Microsoft instituted a policy of Support Lifecycles including [4], [5]:

- Earlier versions than Office 97 (including Outlook 97) are no longer supported.
- Office 97 (including Outlook 98) – Mainstream hotfix support ended on August 31, 2001. Extended hotfix support ended on February 28, 2002. Assisted support ended on January 16, 2004.
- Office 2000 – Mainstream support ended June 30, 2004. Extended support is available through July 14, 2009.
- Office XP – Mainstream support ended July 11, 2006. Extended support will be provided until July 12, 2011.
- Office 2003 - Mainstream support will end on April 14, 2009. Extended support will end at April 8, 2014.
- Office 2007 - Mainstream support will end on April 10, 2012. Extended support will end on April 11, 2017.

Current and future versions - Mainstream support will end 5 years after release, or 2 years after the next release, whenever time is later, and extended support will end 5 years after that.

### **6.6. Difficulties in porting Office**

Microsoft develops Office for Windows and Mac platforms. Beginning with Mac Office 4.2, the Mac and Windows versions of Office share the same file format. Consequently, any Mac with Office 4.2 or later can read documents created with Windows Office 4.2 or later, and vice-versa. Microsoft Office 2008 for the Mac drops VBA support.<sup>14</sup>, Microsoft has replaced VBA with support for AppleScript. As a result, macros created with Office for Windows will not run on Office for the Mac, and vice versa. In addition, Microsoft has also ceased development on Microsoft Virtual PC.<sup>15</sup>

There were efforts in the mid 1990s to port Office to RISC processors such as NEC / MIPS and IBM/ PowerPC, but they met problems such as memory access being hampered by data structure alignment requirements. Difficulties in porting Office may have been a factor in discontinuing Windows NT on non-Intel platforms.

### **6.7. Criticisms of Microsoft Office**

Microsoft Office is commonly criticized for its security issues and infections from macro viruses.<sup>16</sup> Secunia reports that out of the 15 vulnerabilities reported in 2006 for Microsoft Office 2003 (Standard Edition), 20% are unpatched, 33% are marked as Extremely Critical and 53% are marked as Highly Critical.<sup>17</sup>

Another common criticism of Microsoft Office is its preference of proprietary formats over open standards to store data, which is often intended to be shared with other users, hence forcing them into adoption of the same software platform.<sup>18</sup> However, Office



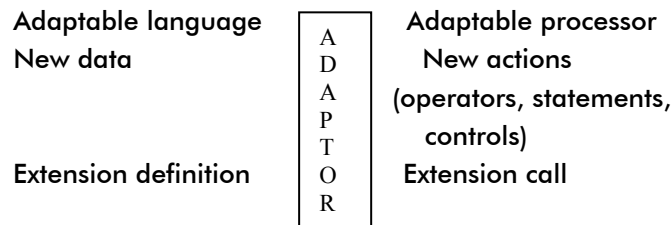
Open XML, the document format for the latest versions of Office for Windows and Mac, is an ECMA standard and open for implementation to anyone. Microsoft has freely published the complete format documentation under the Open Specification Promise<sup>19</sup> and has made available free downloadable converters for previous versions of Microsoft Office including Office 2003, Office XP, Office 2000 and Office 2004 for the Mac. Implementations of Office Open XML exist on the Mac platform (iWork 08) and Linux (OpenOffice Novell Edition).

Microsoft Office for Mac has for long been criticized for its lack of support of Unicode and BiDi languages, notably Arabic and Hebrew. This has not changed in the 2008 version.<sup>20,21</sup>

## 7. Adaptable Software

The Adaptable Software can be created on the base of adaptable computing theory [Tod-07.1] which is based on the notion of adaptable tools.

ADAPTOR is a meta-system tool which supports the Adaptable Software creation and application. This meta-system tool support Adaptable Software flexibility (extension and reduction):



ADAPTOR is composed from the pragmatic, syntactic, semantic, environment, and examples element's component parts:

- \_BL\_ <element's pragmatics>
- \_SY\_ <element's syntax>
- \_SE\_ <element's semantics>
- \_CO\_ <element's usage context>
- \_EX\_ <element's examples call>
- \_EL\_

The ADAPTOR' s component parts support both the process of adaptation of languages and of processors as component parts of Adaptable Systems. ADAPTORS permit the definition, modification, and usage processes of derived data, operations, instructions, and controls Software' elements.

Each ADAPTOR is represented by the corresponding EXTENDER and REDUCTOR. Both, the EXTENDER and REDUCTOR permit to obtain special and universal Software for human-machine communication in the Information and Knowledge based Societies.

The ADAPTORS permit the Bottom-Up, Top-Down, and Horizontal Adaptable Software' Development.

Adaptable Software is represented by Adaptable Software's Basis and its flexible environment.

### **7.1. Adaptable Software's Basis**

Adaptable Software's Basis is represented by the Definition, Fixation, Calling, and Reduction Adaptable sub-systems. The Definition sub-system implements the extension definition; Fixation sub-system fixates the extension definition in the Adaptable Software; Calling sub-system implements the extension call in the Adaptable Software; Reduction sub-system creates the individual Adaptable Software.

### **7.2. First level of Adaptable Software**

There are distinguished three different types of the first complexity level of Adaptable Software. They are based on three types of the Adaptable Software creation methods: (1) the Extension's Time Implementation Method (E-T-I-M), (2) the Extension's Level Implementation Method (E-L-I-M), and (3) the Processor's Type Implementation Method (P-T-I-M).

### **7.3. Second level of Adaptable Software**

There are distinguished three different types of the second complexity level of Adaptable Software: the ELIM-PTIM type, the ETIM-PTIM type, and the ELIM-ETIM type.

The second complexity level ELIM-PTIM type of Adaptable Software, for example, is represented by the L-L-Preprocessors, L-D-Preprocessors, and L-L-D-Preprocessors. The second level ELIM-PTIM type of Adaptable Software is created on the base of Extension's Level Implementation and of Processor's Type Implementation Methods.

The second complexity level ETIM-PTIM type of Adaptable Software is created on the base of Extension's Time Implementation and of Processor's Type Implementation Methods.

The second complexity level ELIM-PTIM type of Adaptable Software is created on the base of Extension's Level Implementation and of Processor's Type Implementation Methods.

It is demonstrated [Tod-08.2] the possibility to realize the second complexity level's Adaptable Software on the base of translation interactions of the first complexity level's Adaptable Software.

### **7.4. Third level of Adaptable Software**

Third complexity level of Adaptable Software is represented by such types of processors as pre-processor-L-L-compiler, inter-processor -L-D-compiler or post-processor-L-L-D-compiler.

The demonstrations of automatically creation of Adaptable Software of the third complexity level is based on the corresponding demonstrations of automatically creation of the Adaptable Software of the first and of the second levels of translation complexity.

### **7.5. Adaptable Software advantage**

It is demonstrated [Tod-08.2] that Adaptable Tools as base for creation, application, and development of Adaptable Software are characterized by a set of advanced linguistics' and processors' features.

It is demonstrated [Tod-07.2] that Adaptable Languages as part of Adaptable Software integrate such linguistics' features as:

- Multilanguageability,
- Universality,

- Speciality,
- Exensibility,
- Dialectability,
- Compactibility of Basis,
- Reducability,
- Effectivity of modification,
- Continuity of Human and Machine experience,
- Touchability to the Formal Natural Language level of Human-Machine Interactions.

It is demonstrated [Tod-07.2] that Adaptable Processors as part of Adaptable Software integrate such processors' features as:

- Universality,
- Mobility,
- Transferability,
- Cognisability,
- Specializability,
- Minimizing of Processors' Quantity, and
- Raising the level of Adaptable Software to the level of Problem Formulation.

## 8. Conclusion

Human social and economic demand and supply for Adaptable Software in the Information and Knowledge Based Societies is too important.

Different types of Adaptable Software will have different domains of its applicability in the process of computerized human-machine intelligent interaction. This process conducts to develop human-machine interaction on the base of Natural Language Processing Adaptable Software.

The Adaptable Software forms new industry branch of Informational technologies of the Information and Knowledge Based Societies.

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<sup>4</sup> [http://en.wikipedia.org/wiki/Microsoft\\_Office#\\_note-8#\\_note-8](http://en.wikipedia.org/wiki/Microsoft_Office#_note-8#_note-8)

<sup>5</sup> [http://en.wikipedia.org/wiki/Microsoft\\_Office#\\_note-1#\\_note-1](http://en.wikipedia.org/wiki/Microsoft_Office#_note-1#_note-1)

<sup>6</sup> [http://en.wikipedia.org/wiki/Microsoft\\_Office#\\_note-2#\\_note-2](http://en.wikipedia.org/wiki/Microsoft_Office#_note-2#_note-2)

<sup>7</sup> [http://en.wikipedia.org/wiki/Microsoft\\_Office#\\_note-8#\\_note-8](http://en.wikipedia.org/wiki/Microsoft_Office#_note-8#_note-8)

<sup>8</sup> [http://en.wikipedia.org/wiki/Microsoft\\_Office#\\_note-3#\\_note-3](http://en.wikipedia.org/wiki/Microsoft_Office#_note-3#_note-3)

<sup>9</sup> [http://en.wikipedia.org/wiki/Microsoft\\_Office#\\_note-4#\\_note-4](http://en.wikipedia.org/wiki/Microsoft_Office#_note-4#_note-4)

<sup>10</sup> [http://en.wikipedia.org/wiki/Microsoft\\_Office#\\_note-5#\\_note-5](http://en.wikipedia.org/wiki/Microsoft_Office#_note-5#_note-5)

<sup>11</sup> [http://en.wikipedia.org/wiki/Microsoft\\_Office#\\_note-8#\\_note-8](http://en.wikipedia.org/wiki/Microsoft_Office#_note-8#_note-8)

<sup>12</sup> [http://en.wikipedia.org/wiki/Microsoft\\_Office#\\_note-9#\\_note-9](http://en.wikipedia.org/wiki/Microsoft_Office#_note-9#_note-9)

<sup>13</sup> [http://apcmag.com/microsoft\\_to\\_skip\\_unlucky\\_office\\_13.htm](http://apcmag.com/microsoft_to_skip_unlucky_office_13.htm)

<sup>14</sup> [http://en.wikipedia.org/wiki/Microsoft\\_Office#\\_note-13#\\_note-13](http://en.wikipedia.org/wiki/Microsoft_Office#_note-13#_note-13)

<sup>15</sup> <http://www.macnn.com/articles/06/08/07/ms.kills.virtualpc/>



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<sup>16</sup> [http://en.wikipedia.org/wiki/Microsoft\\_Office#\\_note-14#\\_note-14](http://en.wikipedia.org/wiki/Microsoft_Office#_note-14#_note-14)

<sup>17</sup> [http://en.wikipedia.org/wiki/Microsoft\\_Office#\\_note-15#\\_note-15](http://en.wikipedia.org/wiki/Microsoft_Office#_note-15#_note-15)

<sup>18</sup> <http://www.gnu.org/philosophy/no-word-attachments.html>

<sup>19</sup> [http://en.wikipedia.org/wiki/Microsoft\\_Office#\\_note-16#\\_note-16](http://en.wikipedia.org/wiki/Microsoft_Office#_note-16#_note-16)

<sup>20</sup> [http://en.wikipedia.org/wiki/Microsoft\\_Office#\\_note-17#\\_note-17](http://en.wikipedia.org/wiki/Microsoft_Office#_note-17#_note-17)

<sup>21</sup> [http://en.wikipedia.org/wiki/Microsoft\\_Office#\\_note-18#\\_note-18](http://en.wikipedia.org/wiki/Microsoft_Office#_note-18#_note-18)