Year 2000 Date Change Problem In Polish Banking

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Almost every day new facts are revealed about how year 2000 date change problem affects computer systems. On one hand more and more organisations are struggling to get ready, on the other, one can observe a total, absolute ignorance and disbelief. Since serious sources say now many of US government agencies will not have their IT systems year 2000 ready until 2010 or later, how do, in this respect, Polish banks perform? How big is the issue there, and what they do to avoid the worse to happen?

One thing is beyond doubt now - year 2000 problem is not an IT problem - it is a business issue and should be addressed as such. The question is not to have an IT system year 2000 compliant - the real question is how to avoid being out of business.

Since there are many variations in hardware and software infrastructure from bank to bank, this paper concentrates on most common issues and the desktop IT. This seems to be of more universal value to any environment - whether banking or other. It is virtually impossible to address all main implications to banks and financial institutions of the Year 2000 problem in one paper only.

Introduction

Although IT can be seen as an initial source of a phenomenon called *Year 2000 Problem*, this problem itself reaches now much further beyond the domain of IT. Its new implications seem to pick up an impact not only within areas traditionally linked with IT, but also quite away from there. Now it is obvious that there are also many organisational, psychological, social, legal and finance implications involved in it.[1] More and more often voices are raised about year 2000 problem bringing the leading economies of the world out of their normal functional rhythm and close to the brink of total recession. [2] One of the world gurus of year 2000 problem - Ed Yardeni of Deutsche Morgan Grenfell - maintains his own „counter" indicating the possibility for world wide recession, similar to that caused by 1973-1974 oil crisis, to take place due to year 2000 problem. Mid-March this year he raised the odds of that to happen from 40 to 60%. [3]

[1] some of these are discussed in more detail in [1]

Unprecedented amount of money is spent worldwide to solve that problem, and while work continues, the number of issues to be resolved grows instead of shrinking. One of the Internet lists presenting the addresses of sites dealing with year 2000 issue reaches now 400 Kbytes in size[2] [4]. This list is purely of text without any graphics or similar elements likely to blow up its size.

Trying to attempt to position the year 2000 issue among other problems troubling enterprises, one can easily name it as „business problem", since it endangers the very ability of any organisation to function. The scale of that danger relates directly to organisation's level of dependence on IT solutions. It's a kind of bitter irony but those which are more advanced with their use of IT, are also more vulnerable to negative impact of year 2000 problem. This also means the results of any action taken to restrict that impact will be very limited if any at all, if this action will address IT area alone.

1. The nature and qualification of the problem

The problem related to 1999/2000 year change in fact is much wider and connected with a number of so called critical dates, of which 31/12/1999 and 1/1/2000 are the most important ones. There are hundreds of papers dealing with the sources and the nature of the problem in more or less detail. In a simplified picture it results from once made assumption for IT systems to register the dates with a year number indicated by its two least important digits, and to complement it automatically with „19" in front, when expanding to full four digit shape. In case of the year 2000 (expressed in short as „00') that is to result with „1900" [3]

Banking IT systems are closely related with time measurement. Time, besides value expressed in money is one of the main measures employed by any bank, for most of its operations and services. The banking itself, as we know it now, would simply loose its basic sense without the scale of time. Out of 201 mathematical formulae used in administration, banking, trade, taxes, industry and insurance, quoted in [5], 54 use time as one of their factors. The results of those formulae do in turn become factors of many others, so some more of them use time factor indirectly. All that means the scale of time is without doubt an especially important part of any banking IT system. [6, p.7]

In old days when the banking accounts and registers were maintained manually, the flow of time was taken as granted, measured by natural and obvious to anyone rhythm of sunrises and sunsets. The chance for major error was, in such conditions, very limited. The situation changed dramatically after implementation of IT methods and

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[2] as per February 1998

[3] most papers use symbolic date representation expressed as dd/mm/ccyy, where : dd - day, mm - month, cc - century, yy - year. That can be suitable for presentation purposes and allows to avoid the descriptive form of expression white writing, because cc part of a date can be 19 or 20; for the sake of precision however one needs to say the 20-th century ends at midnight on 31 December 2000, and not a year earlier. The magic of numbers (1999-2000) however will most probably result in the end of the 20-th century been celebrated on New Year's Eve 1999.

computer driven systems. These keep their own time record which only imitates the natural flow of time. Unfortunately there is almost no restriction on setting and changing the point at which that count starts, what allows for it to be freely manipulated backwards or forwards. The computer clock itself is maintained by adding to it, in equal intervals, a small unit of time, usually being only a small fraction of a second, and then recalculating the result into seconds, minutes, hours, days, months and years. [7] The example of an abrupt disturbance to that scale of time was the premature change of day saving time done by Microsoft Windows 95 operating system during Autumn 1997

The year 2000 problem constitutes in fact a real danger of serious disturbance to the time scale maintained by computers and IT systems. That can result in those systems running into errors or even to stop operating at all. Both those cases can be classified as belonging to IT systems security area. Any IT system is regarded as safe if it can guarantee three basic attributes of itself : accessibility, integrity and confidentiality. [8]

An IT system which stops operating due to century change will become inaccessible, but a system which reacts to such a change with unexpected behaviour will thus endanger the very integrity of its data. This does not in any way change what was previously said, that the year 2000 problem is not only an IT problem, but - first of all - a business issue. The same can be said about other IT systems security infringements, not particularly related to the year 2000. Any such a breach always results with some kind of business outcome.

It is quite easy to validate those two potential security threats likely to result from year 2000 problem, despite that might be seen as an attempt to find a lesser harm. The integrity of data of an IT system which keeps operating impacted by this problem, can be affected so deeply, so widely and in a very complicated manner, and without any logic, so it could prove itself almost unrecoverable. In case of year 2000 problem that can easily lead to the beginning of the end of an organisation.

If however the IT system becomes unavailable because it is unable to operate at all (the other kind of security threat), the situation becomes similar to that experienced e.g. in case of power outage. Any organisation maintains (or at least should maintain) contingency plan allowing for such a situation to take place without causing any serious trouble. In case of year 2000 issue there is a huge difference in potential weight attached to that problem. The hardware breakdown or power failure usually last for no longer than few hours. The IT system affected by failure resulting from time scale disturbance relating to year 2000 problem can last much longer, and even very, very long indeed (what would mean days and weeks rather than hours). The currently existing contingency plans would prove to be totally useless in such circumstances.

2. Formal conditions

The Year 2000 Problem was until recently regarded by many as kind of a phantom which will never appear in real. Others thought (and few still do think) its of no more than another media hype. In US this has been qualified as an „early denial phase" typical for all facing problem for the very first time. This initial approach is seen as typical by John Ivinson of British Computer Society, who says about it in his Introduction to BCS's Year 2000 manual : *„...I have described the problem to professionals [..] : chartered accountants, surveyors, lawyers and journalists. Their reactions follow an almost uncannily similar pattern. The issue suddenly sinks in and they become aware of it and then deny that what you have just described can possibly be true! Their disbelief turns to anger and outrage and they start to look for someone else to blame for it."* [9]

The above was also true in Polish banking industry until end of 1997. Till that time just a few foreign or foreign owned banks in Poland embarked upon separate Year 2000 Project. The turning point came with a so called *Recommendation E* by Supervisory Body of National Bank of Poland, issued December 1997. [10] This paper clearly and officially stated few basic things :[4]

- the Year 2000 Problem does exist,
- it seriously threatens banking industry worldwide, Poland being no exception,
- it must be dealt with highest priority using all possible means,
- the deadlines are clearly defined in this paper and must be kept,
- all Polish banks are required to prepare and send in by end of June 1998 detailed reports, stating the size of the problem, cost of getting compliant, and human resources involved.
- further progress will be closely watched and audited by this Supervisory Body, and also included in special quarterly reports,
- it is bank management, which is responsible for getting appropriate actions to resolve the problem,
- final deadline is 30 June 1999, when every single bank should report in writing its full readiness at the latest.

Further *Recommendation E* discusses the exact sources of the problem, steps to take to get ready and compliant with requirements, areas of risk and how to minimise it. This document has dramatically changed the whole scene : the year 2000 issue has been declared to be a real business problem and no longer a fantasy of few obsessed prophets.

There is no question at all that this document is of special value and on very good professional level. However it limits the problem to business risks and pure IT systems

[4] *Recommendation E* regards also the typical business implications of the Year 2000 Problem, like the so called chained dependencies, when customer of a bank, impacted by this problem, faces business difficulties and is unable to pay back his debts to a bank; this can run into multiple businesses impacting one another; that part of the problem, however serious in its own right, is not discussed here as not directly IT related

only. It does not clearly cover embedded chips systems and devices, which are quite common in banking environment, and the very presence of which within this equipment is not always realised. This can be telephone exchanges, data transmission equipment, telephones (traditional and cellular), faxes, pagers, access control systems, vault lock controls, surveillance cameras, heating and air conditioning controls, escalator, stairs, lifts, cars, to name just these few. The other weakness of *Recommendation E* is it was issued that late. The target dates given there are as they are simply because it would be almost impossible to begin and end the whole cycle of year 2000 related tasks within less than one year. What this document misses because of that is the chance, for the amended system, to prove themselves of being capable to work through „normal" end of year, before the real trial comes.[5]

The US banking regulatory bodies have gone even further. November 1997 they issued the cease and desist orders against three allied banks in the State of Georgia, because it was stated, those banks have no chance to get their IT systems year 2000 compliant in time. Federal Reserve Board took similar action against holding of companies owning those banks. [11]

In other countries control and regulatory bodies of stock markets require their listed companies to report in detail about their plans for dealing with the problem. Companies listed on the Australian Stock Exchange (there are some 1200 of them) need to report by June 30, 1998 their exposure to the problem, the measures taken and their cost. They must also include assessments of possible impact of links to other systems. If they fail to report by date given, they will face suspension of trading of their shares. [12] Similar position was taken by French Commission des Opérations de Bourse. [13]

To begin any action to bring the IT systems to year 2000 compliance one needs to define what exactly this compliance means. It's not only the ability of such a system to creep somehow through magic border of 31 December 1999/1 January 2000. The list of the dates regarded as critical can be found in [14]. This list begins with 31/12/1998 for reasons explained in [6] above, and is followed by 9/9/1999, since this date (expressed as 9/9/99) is widely used in database records to indicate „valid for ever" (no expiration date), and also as „end of this part of a file".

Some Polish banks designed the year 2000 compliance standards of their own. [15] Most of them are based on British Standard DISC PD 2000-1 with some modifications derived from US sources. The said standard defines simple however exhausting rules of year 2000 conformity. These are :

Rule 1 No value for current date will cause any interruption in operation.
Rule 2 Data-based functionality must behave consistently for dates prior to, during and after year 2000.

[5] many sources say any system brought to year 2000 compliance should be real-life tested during „normal" end-of-a-year procedure; the 1998/1999 year change will be the last opportunity to do it before year 2000 comes

Rule 3 In all interfaces and data storage, the century in any date must be specified either explicitly or by unambiguous algorithms or inferencing rules.

Rule 4 Year 2000 must be recognised as a leap year. [16]

Because of its generality this standard particularly suites banks and financial institutions, since these maintain multiple links with various organisations by the very nature of banking business. It is almost impossible to adopt one single standard in such a compound environment.

The other problem is how to include such a standard into legally bounding purchase contract or service agreement. These will differ from country to country to reflect requirements of local law. However some examples can be found in various Internet sources, which can be used as skeleton to design more detail documents. [17] [18] [19]

3. Is anything one can rely on available on the market ?

3.1 Desktop PC

The question raised above relates at most to the „off the shelf" hardware and software products available on the market. This is especially important to banks and other organisations equipped with hundreds and thousands desktop computers, many of which are networked.[6] Despite numerous opinions[7] PC, whether networked or standalone, is a clear candidate to become most severely hit victim of a year 2000 problem. First of all the construction of its internal clock was never prepared to handle a date with four digit year. The problem results from Motorola MC146818 Real Time Clock, which or a compatible of which is a standard component of all AT x86 based personal computers, having only 8 bits to store two last digits of a year in BCD format. This chip however maintains date and time only while the computer power is off. It contains also some non-volatile memory in which the location 32_{hex} holds century information. However this store location is never accessed by the computer clock itself. This functionality has been added by IBM at some stage and is maintained by computer's BIOS. This has been changed for IBM's PS/2 computer, where location 37_{hex} is used to keep century data. An example of CMOS non-volatile store contents of an AT computer is presented on figures 1 and 2. Figure 1 pictures the state for 31 December 1999 - see locations 07_{hex} through 09_{hex} for date (expressed as ddmmyy) and location 32_{hex} for century data. The current time is indicated by contents of bytes 04_{hex} (hours), 02_{hex} (minutes) and 00_{hex} (seconds). The same data for 1 January 2000 is presented in figure 2.

[6] Wielkopolski Bank Kredytowy in Poznań, with almost 4500 employees uses now about 2500 personal computers

[7] in Poland these were expessed publicly by some prominent IT figures, stating that as far as PC and its environment is concerned year 2000 problem simply does not exist at all

Figure 1. Non-volatile PC memory contents (as of 31/12/1999, 23:51:09)[8]

	ss		mm		hh			dd	mm	yy						
Adr	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	**09**	32	**51**	27	**23**	20	00	***31***	***12***	***99***	26	02	40	80	00	00
1x	42	F4	FF	01	4F	80	02	00	4C	2F	2F	00	FF	FF	88	05
2x	10	FF	FF	87	05	3F	7F	03	0A	FF	FF	7E	03	37	0C	57
3x	00	4C	***19***	80	FF	FF	00	00	FF	FF	00	0F	E6	C5	A8	98
			cc													

Both above figures do picture CMOS' state as maintained together - by real time clock and computer's BIOS software. To see how exactly real clock behaves one needs to access it directly through input/output ports 70_{hex} and 71_{hex} (to get date via BIOS one uses function 04_{hex} of BIOS interrupt $1A_{hex}$). Those two ways of accessing clock are used by programs examining computer's ability to properly handle year 2000 date change (and also recognising year 2000 as a leap year). Results of such a tests a pictured in figure 3.

Figure 2. Non-volatile PC memory contents (as of 1/1/2000, 00:02:05)

	ss		mm		hh			dd	mm	yy						
Adr	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	**05**	32	**02**	27	**00**	20	01	***01***	***01***	***00***	26	02	40	80	00	00
1x	42	F4	FF	01	4F	80	02	00	4C	2F	2F	00	FF	FF	88	05
2x	10	FF	FF	87	05	3F	7F	03	0A	FF	FF	7E	03	37	0C	57
3x	00	4C	***20***	80	FF	FF	00	00	FF	FF	00	0F	E6	C5	A8	98
			cc													

One can clearly see from above example that real time clock and BIOS of tested computer failed to recognise year change, and it was only operating system to put it correctly. On the other hand - all those three functions correctly handled the days 28th and 29th of February, 2000. However

[8] all CMOS data presented in this paper has been retrieved and registered with VIEWCMOS program by RighTime Company, Miami, USA. version 5.08.

Figure 3. Year 2000 test results.[9]

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** DOSCHK DEBUGGING INFORMATION **

Operating System: MS-DOS v7.0
  BIOS Copyright: (C) 1984-95, Award Software, Inc.
    BIOS Version: 11/03/95
       Processor: 80486              (fc,1,0)
      CMOS Date: 1998-03-05  1999-12-31  1900-01-01  1900-01-01
      CMOS Time:  22:41:48   23:59:55   00:00:05   00:00:05
      BIOS Date:  1998-03-05  1999-12-31  1900-01-01  1900-01-01
      BIOS Time:  22:41:48   23:59:55   00:00:05   00:00:05
       DOS Date:  1998-03-05  1999-12-31  2000-01-01  2000-01-01
       DOS Time:  22:41:47   23:59:54   00:00:04   00:00:04
  CMOS Status(B): 2  (0) ok  Conditions: 0  BiosCflag: 0
        Results: ExitStatus 2;  RTC 1  BIOS OK
     Wait Params: 5      10      Dos  Win
       Feb CMOS: 1998-03-05  2000-02-28  2000-02-29  2000-02-29
       Feb BIOS: 1998-03-05  2000-02-28  2000-02-29  2000-02-29
       Feb  DOS: 1998-03-05  2000-02-28  2000-02-29  2000-02-29
 Program Version: 2.3d  Feb 17 1998, 22:07:09       #C135;
```

there are many versions of computer clocks in use, and also many various versions of BIOS and DOS operating system. It is almost impossible to guess, what the result of co-operation of these three will be. This is especially true with some older PCs (two years back from now is well enough for a PC to be classified as old) and also those of no world recognised brand name. Many users, hearing about Year 2000 Problem try to reset computer date and time close to the midnight of 31/12/1999, and after some time they examine those two values. Everything seems to be OK since DOS (and Windows as well) operating system maintains date and time of its own. But after having the computer switched off and on again the date is usually displayed as 4/1/1980. All major PC suppliers maintain their own web pages on the Internet, and that is the best place to seek information and advice. BIOS makers pages could also be of help. For all those no-name or some-local-name PCs however, only the extensive, well prepared and structured testing seems to be a solution.

All that above means plenty of desktop PCs would need to be replaced by new ones before 1/1/2000, only because their BIOS and clocks do not maintain the century part of the date properly. To avoid that costly and otherwise unnecessary exercise one can use a special program, which runs as resident and keeps watching CMOS date and time. When year part of the date reaches 00 and time has just passed midnight, this program enforces 20 into CMOS location 32_{hex}, replacing 19 previously present there. Once

[9] real time clock, BIOS and operating system date handling presented here was tested using DOSCHK program, by Saphena Computing, Hantshire, United Kingdom

written this value stays there undisturbed and allows a computer in question to report the date and time properly. There is quite a number of various such programs available on the Internet. However for serious professional use a licensed and guaranteed program is needed. Most popular in Polish banking is a program called YEAR2000.COM by American company RighTime[10]. It needs to be initiated from AUTOEXEC early commands (Start-up Folder under OS/2) and occupies less than 1 KB of store. This program works with DOS, Windows (3.1 and 95) and OS/2, and it deallocates itself automatically when year field in the date reaches 2000. One needs to remember this program resolves only hardware clock and operating system date problem, and does not touch any software above that level, which still needs to be brought to compliance and thoroughly tested to prove it is really year 2000 compliant.

The above is of utmost importance for any further application software testing for year 2000 compliance. A personal computer and its operating system, regarded as a single unit, and which are year 2000 compliant constitute so called **clean testing environment**. Only that can be used to perform any compliance tests of any software. Testing it in an unknown environment would invalidate all test results and make them void from the outset. Many banks (including WBK and other Polish banks) have adopted the practice to devote special PCs for year 2000 testing only. Having completed one set of tests such a PC is wiped off of everything on its disks, and the clean testing environment is restored from backup before next test commences.[11]

3.2 PC Software

The Microsoft Corporation a major supplier of PC Software takes a comfortable position with year 2000 problem. First of all they by all means avoid using the term „compliant" or „compliance" and use „ready" or „readiness" instead. [20] In more colloquial terms that means „we are ready" but it is up to you whether the whole thing you're using is compliant or not. But - first of all - Microsoft insists on buying their products released to market in 1997 or later to get those „year 2000 ready" versions. Anything what hit the market before 1997 may or may not be ready. The Microsoft position on year 2000 issue against its major products is presented in the table in figure 4 below.[12]

The best idea for finding an answer to PC software problems which are year 2000 related is to search trough Internet sources. However it is not that easy to find as one might thought it is. The only way to get the right and comprehensive information is to examine several places, bearing in mind new issues are discovered almost continuously.

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[10] for current commercial use licencing conditions see http://www.RighTime.com

[11] in fact the clean testing environment includes also a clean copy of other software required for given application to be tested; e.g. to test an Microsoft Access database would require a clean, compliance tested version of Microsoft Access software to be uploaded from backup each time such a test is to be carried

[12] for some unknown reasons this table is no longer available on Microsoft's web pages; an attemtp to access its address redirects a caller automatically to another Microsoft year 2000 site

One of the main sources of concern is the so called century windowing technique. This is regarded as cheap an relatively easy means of solving the problem. It leaves data unchanged with two digit year fields, but assumes (using software means) a range of years, e.g. 00 - 25 as belonging to 21st century, while years 26 - 99 are treated as being of 20th century. It is best when this technique, while used within one organisation, assumes equal century windowing rules for all applications used there.

First exception to that may come from external data exchanges, especially intensive in banks and financial institutions. It is impossible for every single bank to impose its standards on organisations like VISA International, national clearing offices, credit bureaux and the like. It is rather them to set up some standards of them own and superimpose them on all banks. The problem is, those organisations use various date notification rules.

Second problem comes from among manufacturers of software, PC software not excluded. In 97 version of Lotus 1-2-3 spreadsheet, the year window is 1950-2049, though it is adjustable through User Preferences. Earlier versions of Lotus 1-2-3 do not use windowing. All of its dates start at 00 (1900). A year entered as 101 is interpreted as 2001. Release 4 doesn't allow for year 2xxx to be entered (it rejects it as invalid). It is possible to enter 1xxx and 2xxx years from version 5 of Lotus 1-2-3 onwards.

Microsoft Excel brings even more havoc upon its users. Excel 95 uses 19 as a „pivot" year. That means a year entered as 00-19 will be treated as 2000-2019, while 20-99 as 1920-1999. The next major release of Excel - Excel 97 assumes 29 instead of 19 as a pivot. That means an Excel spreadsheet can come out with the same operation giving different results depending on version used. This is best illustrated in figure 5. The date in upper cell of first column has been entered using Microsoft Excel version 5. Then the whole spreadsheet has been moved to Excel 97, where

Figure 4. Date formats and scope in selected Microsoft products

Product Name	Upper date limit	Date Format
Access 95	1999	yy
Access 95	9999	yyyy
Access 97	2029	yy
Excel 95	2019	yy
Excel 95	2078	long
Excel 97	2029	yy
Excel 97	9999	long
Project 95 (and previous versions)	2049	32 bits
SQL Server	9999	„datetime"
DOS File System (FAT16)	2108	16 bits
Visual C++ (4.x) Runtime Library	2036	32 bits
Visual FoxPro	9999	long

Product Name	Upper date limit	Date Format
Windows 3.x File System (FAT16)	2108	16 bits
Windows 95 File System (FAT16)	2108	16 bits
Windows 95 File System (FAT32)	2108	32 bits
Windows 95 Runtime Library (WIN32)	2099	16 bits
Windows for Workgroups (FAT16)	2108	16 bits
Windows NT File System (FAT16)	2108	16 bits
Windows NT File System (NFTS)	future centuries	64 bits
Windows NT Runtime Library (WIN32)	2099	16 bits

Source : http://www.microsoft.com/cio/articles/year2000.htm, June 1997

the other date (indicated with bold italic) was put in. After that both dates have been copied to adjacent cells (right hand side column), and their format has been converted from dd-mm-yy into dd-mm-yyyy. The difference is clearly visible.

Figure 5. Treatment of dates by Microsoft Excel.

31-03-22	31-03-1922
31-03-22	31-03-2022

Source : authors design

Some twenty strange features and behaviours of various electronic spreadsheets are presented by Patrick O'Beirne of System Modelling company. [21] E.g. one can learn from there the =DATE(y,m,d) function does not use the same windowing behaviour as the rest of Excel. It takes three parameters - year, month, day. If one specifies all four digits for the year, one can get all dates from 1900 to 2078 (Excel's maximum). But for any two digits, it always assumes 19xx. If one uses three digits, then 100 gives 2000 and 178 results in 2078.

The same author in another source raises various year 2000 related problems which may manifest themselves while using PC software. Three of these are especially interesting, since they come as a surprise to those who for instance would assume various pieces of software coming from the same originator should not create any problems working together. [22] These are :

- Microsoft Access package would differently interpret dates with two digit year, depending on whether operating system it runs with contains an OLEAUT32.DLL module. This module is installed automatically along with Microsoft Explorer package.

- a standard function of Visual Basic V3, given a parameter of character string date like „23/11/00" converts it to 23/11/1900.

- Microsoft Excel (year 2000 compliant application) can not exchange some types of data with Informix software (also compliant), because the ODBC software acting as a go between among them, can not handle dates with four digit years.

According to information gathered so far during asset inventory stage of the Year 2000 Project, there are of 10 to 50 separate spreadsheets sitting on every single PC in an average bank.[13] Most of them are locally developed and maintained and of unknown complicity. Many of those are exchanged between various units of the bank during normal course of business. Taking control of these and getting them all year 2000 compliant is an enormous task. Without getting it to successful completion no bank can feel comfortable or prepared to face year 2000.

4. Conclusion

The Basle Committee on Banking Supervision commonly regarded as kind of superior by European banking community, is to meet early April 1998. It is expected to recommend to national banking regulatory bodies to take a very strong position against all those being late with their year 2000 preparations. What adds to the problem even more is that many banks in Europe need to adapt their IT systems to handle new European money, to be introduced from 1 January 1999. Some earlier expressed opinions indicate what can result from that conference. For example at the Best Practice for Financial Institutions conference in England held March 1998, the authority's managing director of financial supervision, Michael Foot, said it is not the job of the Financial Service Authority (FSA) to "solve other people's IT problems. It is our job to help protect investors from losses caused by inadequate preparation for the Year 2000."

The year 2000 preparation process does not end with having all the IT systems and their internal and external links ready. Since new faces of the problem discussed here are discovered almost every day, even those best prepared must be ready to face something unexpected when the critical time comes. Even those regarded as best prepared say they still have some 10% of problem unresolved simply because we all don't know what we still don't know about how wide the impact will be.

This requires serious contingency measures to be prepared. Typical contingency plan like those to be used in case of power outage, fire, flooding, terrorist attack etc. are not enough. All those usually last for no more than few hours, sometimes a day or two - year 2000 problem related contingency can last for days, weeks or even months.

[13] data gathered during initial Year 2000 IT assets inventory in WBK Group of Banks in Poland

It is very difficult to measure seriousness of problems like the one discussed here Usually one can not rely on opinions expressed by insiders. This time however it is probably them who sea some things closer and clearer than others An American agency CPM Media interviewed some 1100 prominent IT specialists from all over the world November 1997. What resulted from that is 38% of them said they are to withdraw all their money from banks and investment funds prior to year 2000 [23] Who better knows what's really inside the systems they've developed?

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