

YEAR: URGENT 2000: An Urgent Message to Management

BY PETE CLARK

This article presents the information necessary to construct an outline for a document from which to start developing a plan that will help management understand and deal with the Year 2000 issues in your company.

Over the last year, many Information Systems personnel in small and mid-size companies have indicated that the Year 2000 issue is not receiving the proper attention. From listening to these discussions, it seems the general consensus is that persons either are not aware of the issues surrounding the Year 2000 or not taking them seriously.

Many IS personnel have asked for assistance in bringing proper focus to Year 2000 issues. The following is an approach for creating a document to draw attention to the problem or breath new life into a stalled Year 2000 project.

If you are searching for some method with which to approach your company's management, perhaps this sample document can offer a few suggestions. You should copy, modify, add or delete issues relevant to your site and select the appropriate choices as you see fit. Throughout this document you will see notes and comments that are intended to assist and clarify. Key elements in the Year 2000 document include:

- **Definition of the problem:** This section should provide a brief overview and explanation of the purpose of this document.
- **Identity of systems affected:** For this section, select all that are appropriate and add others that are in use.

Caveat: This section should only be included for those managers who have responsibility for relevant systems. It may be adequate

to indicate that all systems (mainframe, midrange, office and PC-networked systems) will be affected.

- **Investigative results:** This section may or may not exist within your organization. If you have no investigative data, this article will offer some guidelines for formulating some estimates (see the sidebar titled "What to Do if There Are No Investigative Results").

Caveat: This section assumes there has been a formal corporate-driven initiative to invest resources into assessing the Year 2000. In such a case, it is less important to re-hash the old justifications and instead emphasize getting the project on track and assigning a realistic priority.

- **Effects of the issues:** This section should articulate the business effects of a failure to act.

Caveat: To suggest that a program will not sort correctly, or that records will be indexed incorrectly, does not identify an impact except to another technician. Are these functions serious? How difficult are they to correct? What is the impact to business? In this section, resist the temptation to point out too many technical examples.

Sample Document to Management Regarding the Year 2000

This sample document does not address issues found at any one company, but is a cross-section from numerous discussions with many companies and many support and management technicians. Each and every issue presented has surfaced somewhere in the last six months.

Document to (insert name) about Year 2000 Challenge

The Problem

The problem is that the end of the first century in which Information Systems will participate is rapidly approaching and we have knowingly created two-digit year fields that will roll from 99 back to 00.

The Year 2000 challenge simply defined is how to correct the problem of data being misinterpreted by programs which have never accommodated a century indicator.

The prevalence of two-digit date representations will cause most programs to behave as if the clock had been turned back to 1900. This is effectively what happens when two digits are used, since the century implied was always "19".

Systems Affected

The "Year 2000 Challenge" in IS at (insert company name) encompasses the following:

1. System 390 mainframe operating systems, products, data, programs and sub-programs.
2. RISC 6000 platform operating systems, products, data, programs and sub-programs.
3. AS/400 platform operating systems, products, data, programs and sub-programs.
4. PC Server platform BIOS, operating systems, products, data, programs and sub-programs.
5. PC Desktop platform BIOS, operating systems, products, data, programs and sub-programs.

Investigative Results

After spending several "man months" investigating the problem several conclusions have been reached:

- We are impacted by the Year 2000, and if we fail to address it appropriately, the company will be (significantly|catastrophically) affected.
- Two personnel resources are critical to the successful completion of this effort, applications programming and systems programming. These two groups' time allocation to complete the required changes are _____ person years or insufficient data to provide an estimate.
- Anticipated expenditures will be required in some arenas for software/hardware/firmware upgrades. At this time, our preliminary estimate indicates an investment of \$_____ or insufficient data to provide an estimate.

- The effort, time and expense required to complete this task are greater than any previous project we have attempted. The odds of completing this project on time, and with available resources are prohibitive and risky.
- The time to begin addressing this problem may be past and we are now starting late. If we continue to delay, we add to the probability of not completing the Year 2000 project as well as increasing the likelihood of errors to those elements which have been addressed.

Effects

We have concluded that the following will occur if we fail to address these issues:

- Data on reports and displays arranged by date will be out of order.
- Data that is pulled or processed by date will be incorrectly pulled or processed if the date span includes dates in 1999 and 2000.
- Records in files will be aged to history before they should after 1/1/00.
- Records in files will not be aged when they should after 1/1/00.
- History records will be deleted before properly expired in Year 2000 and later.
- History records will not be purged when they should in Year 2000 and later transactions and batch jobs will run using incorrect dates and produce incorrect results.
- Programs that calculate weekend, month end, and quarter end will calculate them incorrectly during the final weeks of 1999 and the first part of 2000, and produce incorrect results.
- Security programs that utilize dates may cease to function or compromise operations after 12/31/99.

Examples

Some specific examples of some of the problems and their impact include:

For display purposes, two-digit dates are a problem which can be minimal, moderate or extreme. Minimal because personnel can generally recognize and relate 00 or 01 to the years in 2000 rather than 1900. Moderate or extreme because on some personnel-related displays, the century can be less definite when it is not indicated.

Sample Document to Management Regarding the Year 2000 - continued

Caveat: The problem of displayed dates can become serious if the business operates internationally, since the standard for writing dates may be different. For example, a date written as 02/04/01 could be interpreted a variety of ways if the standard is YY/MM/DD vs. MM/DD/YY.

Most date displays deal with dates within five years of the current date and those are generally correctly related to the appropriate century by personnel using the data. Date displays that deal with dates 50+ years away from the current date can be confused and result in incorrect decisions (e.g., dates contained in personnel retirement records).

Two-digit years become a more significant problem when they are used in calculations, selection of data, aging of data, sorting of data, etc. As we roll over from 99 to 00 (1999 to 2000) the preceding produce incorrect results.

Aged Data Example

Programs that age data will in the Year 2000 (00 in date field) subtract 1, 2, 3 or ?? from 00 and will yield a negative number such as -99, -98 -97. If the number is perceived as negative then all records will be greater and no records will be aged. Failure to age records will dramatically increase required disk storage space on all platforms, resulting in "out of space" conditions, cancellations, programmer intervention, significant reruns, and more frequent requests for more hardware disk space.

If the program interprets the number as a positive representation e.g., 97, 98, 99, then all current records after 1999 will be purged, resulting in the loss of current records and retaining only records before 2000. How can we run the business without current customer records and orders?

Management Report Example

Management reporting that spans 1999 and 2000 using calculated dates to report period statistics will contain either no data or incomplete data. No data? Yes, because current programs will take the current date (e.g., 01/01/01) and compare it to an earlier date (e.g., 99/01/01) using the following statement. If record-date is less than "010101" and greater than "990101", then include data in analysis.

Data for the year 2000(00) is less than "010101", but is not greater than "990101" and will not be included in the report.

File Sequence Example

Data files that use date in the key as a tie breaker and for order orientation (i.e., to place the latest records last in the key group) will not find the latest records as the last records of the group. The Year 2000 records will be first in a group. We have programs that logically are dependent on latest records being last. A specific example: a log file that is in date/time sequence and/or is sorted into date/time sequence before recovery processing will recover data from 1999(99) rather than 2000(00) when both years are present in the data and multiple updates have occurred.

The preceding are just three examples of issues we have observed that will cause problems before, after and during the Year 2000. These examples are not all-inclusive; they are representative of the type of problems we must address.

Strategies/Recommendations

Within reason, maintain a two-position date strategy by utilizing a 100-year sliding scale date window for determination of century designation. To maintain this strategy will require program modifications but will not require file modifications nor increase file storage space.

Change to a four-position year only those systems that cannot exist with a two-position year and use the sliding date window for century designation.

Install, upgrade or modify all operating systems and BIOS to a Year 2000-compliant level.

Obtain and install corrective service or new releases of licensed or purchased software that supports Year 2000 compliance.

If a product will not be available for Year 2000 compliance, then modify the existing product, obtain another product or migrate from the product before Year 2000.

Examine, correct and test, if necessary, all in-house developed software using year dates to function correctly for Year 2000 and beyond.

Correctly assess the changes that are critical to the business and give those priority. Cosmetic changes such as report date and report data sequence would receive a lesser priority to be accomplished after critical business issues are handled. If time becomes a problem, non-critical tasks will not be accomplished.

Accomplishments to Date

We have begun a dialog with all vendors to identify solutions and delivery times. We have begun to install Year 2000-compliant releases of products. We are in the process of determining the status of software and hardware as it relates to the Year 2000. We have started application program investigation and categorization.

Specific Platform Issues

Note: The following is intended as an example of the content of the platform-specific information that may be included where appropriate.

Mainframe Platform Information

We have surveyed programs and files to determine which ones are affected and produced a listing.

The main operating system will be Year 2000 compliant by 9/96. The IBM subsystems accompanying the S/390 platform will be Year 2000 compliant by 12/96. (You may want to include a listing of Year 2000 compliancy dates for these products.)

Half of the S/390 in-house developed date subroutines have already been changed to be Year 2000 compliant, the rest are in process. In addition, a special subroutine is being written that will determine the correct century for a two-position year date based upon the 100-year sliding scale controlled by technical support.

PC Server and Desktop Platform Information

The basic BIOS (Basic Input/Output System) on most of our PCs does not handle Year 2000 correctly and must be replaced. We are

Sample Document to Management Regarding the Year 2000 - continued

currently in the process of identifying BIOS manufacturers and BIOS dates to determine the size of the exposure in this area. The older the BIOS, (or PC) the more likely it must be replaced, and conversely, the newer the BIOS the less likely replacement will be required. Our current expectation is that ____ PCs are affected and will require BIOS upgrades.

Many software products will require change or upgrades. See the attachment for information.

Some of the more popular database and application development products will work correctly if the application utilizes the extended date format. We will need to change in-house written applications.

Novell 3.1x does not and will not support Year 2000; we must move to Novell 4.x.

XENIX does not support Year 2000, a vendor-supplied patch is in the works or we may patch it or move to UNIX V5 for Year 2000 support.

UNIX V5 does support Year 2000.

Midrange RISC 6000 Platform Information

- The current AIX operating system is Year 2000 compliant and does not require change.
- Application products will require a new release for Year 2000 support.
- Application programs are currently being investigated. For database programs we must verify we are using the correct mask for the date.

Midrange AS/400 Platform Information

The current OS/400 operating system is Year 2000 compliant and does not require change.

Application products will require a new release for Year 2000 support.

Application programs are currently being investigated. For database programs we must verify we are using the correct mask for the date.

Conclusion

We have extensive knowledge of the potential impact of the Year 2000 challenge and have a plan of action to deal with the issues. We have determined that we must start by mm/dd/yy, with ____ person resources and \$_____ financial resources to complete the project by mm/dd/99.

If we expect to do business during and after the Year 2000, we must seriously address all of these issues. Should we choose to continue ignoring the obvious, it would be a wise to consider the liability to the business of stockholder losses, as well as the failure to disclose business impacts according to SEC rulings.

■ **Home-grown specific, real-life examples of problems:** Examples should be used to help clarify the "Effects" section. These two are extensions of one another.

■ **Strategies/recommendations to deal with Year 2000:** A strategy is appropriate to discuss if this is a solicited document and/or it's the follow-up to a stalled project. There is no sensible strategy which can be defined in the absence of an assessment.

Caveat: If your intended audience is technical management then articulating that you have a technical handle on things is appropriate. However, if your audience is non-technical management, then it is necessary to provide examples of how management can become involved or the role you are asking them to play (e.g., budget and personnel; things that management should be allocating to the project, etc.).

■ **Actions that have already been taken to start addressing areas:** Once again, this area serves as a status report for reviving a stalled

Assessing the Audience

While it may seem obvious that the audience will be management, there are many aspects to this issue which need to be carefully examined. Assessing the level of management responsibility is an important element in determining the content of any document being submitted.

It is incumbent on the person submitting a document to indicate what action, if any, is expected of the management level being presented to:

- ◆ Is the document for information purposes only?
- ◆ Is it expected that action be taken or decisions made?
- ◆ Has the document been submitted merely for review so that it can be passed to higher levels?

These questions, and whatever else comes to mind, should be examined so that the appropriateness of the document's content can be assessed. Once the document has been set up, it should be apparent to the receiver what the document's intent is.

Another element which must be examined is whether the document being submitted is unsolicited or a response to a management query. If this is a response to a management query, then generally the objectives may already be clear. In some cases it may be necessary to provide additional data, especially if the initial query may be incomplete or miss important points. In these cases, there will be more technical information provided within the document to emphasize the recommendations contained within the paper.

If the document being submitted is unsolicited, it should be short and contain only those points necessary to get the reader's attention. The only objective such a memo should have is to begin the dialogue. Once the appropriate attention has been received, there will be many more opportunities to make specific points and define recommendations. If this is a followup document, you may want to expand on the points being made to more forcefully present your argument.

Document Types

While most people recognize the various forms of documentation, it is appropriate to establish some definitions for the purpose of this article.

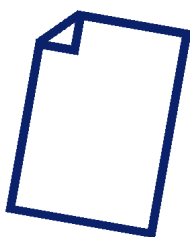
Memo: A memo will be considered a single page which should be used to either draw initial attention to a particular issue, or may be used as a cover letter for a more comprehensive document.

White Paper: A white paper is a general document which provides a technical discussion or presentation of a particular issue. This paper generally serves as a vehicle for overview-type evaluations of new technologies.

Position Paper: A position paper is an extension of the white paper that articulates the position a group or company is (or should be) taking with respect to a particular technology. This paper serves the function of discussing technology within the context of corporate applications.

Proposal: A proposal is a further extension of the position paper which makes specific recommendations regarding a course of action to be taken for technology or problem areas.

While there may be some disagreements among readers as to the specific definitions, they are intended only to provide a method for differentiating documents within the context of this article.



What to Do if There Are No Investigative Results

1. Identify your concerns.
2. Do a statistical assessment. Take a few programs, examine them, locate date references. Get a feel for how dates are used (especially in called date routines). Review some of the data definitions to see how many date fields there are and examine some of the logic within programs for potential errors or date problems. This entire process could be done in less than one day.
3. Extrapolate the findings from #2 across the total number of programs in the installation. This will obviously not be accurate, but it will make the preliminary point that the potential problem could be quite large.

4. Assess the costs of conversion. An initial starting point for this number could be:

$$\text{Cost/hr} * \text{Hours/Program Change} = \text{Cost/Program}$$

A useful starting point may be \$100/hr and 10 hours per program. This 10 hours can be broken down into percentages of time spent. For example, if 60 percent of the time is for testing, then six hours would be necessary for testing. These numbers can obviously be changed to accommodate any installation, but they represent a starting point for getting an approximate feel for the costs associated with the conversion effort.

5. It isn't terribly important to defend these numbers since it should be clear that these are very rough approximations. The primary purpose of the document at this point is to illustrate the potential threat to the organization. Accuracy will be obtained once an actual study is commissioned.

project and should not be included if there is no real activity which has occurred.

- **Specific platform issues:** As in the previous element, specific platform issues should only be included if the target audience has direct responsibilities for such systems.


The Year 2000 document could be prepared as a general purpose information document for everyone to view or as a specific document for a particular company position. It is suggested that a general purpose document be prepared first, and if management critiques are needed, they be prepared separately after the original document. Remember, it's important to assess the audience and produce a document that gains their attention.

When preparing a document of this type one walks a fine line between gaining the proper attention and being perceived as "hysterical". Resist the urge to indulge in doomsday anecdotes and scenarios. Focus on stark realities and be able to back them up with examples and proof.

It, perhaps, is also worth noting that the "bringers of bad news" (Year 2000 being considered in that category), are not always welcomed nor appreciated. As with many

significant documents published within a company there may be a professional risk associated with a Year 2000 document. You have within your control the capability to minimize the risk by producing a factual, professional document. Good luck, be careful, and present the reality.

PRIORITIES

It is important to convey a firm grasp of the reality of the Year 2000 and the need for action to deal with the business issues. It is also important to acknowledge that other business issues exist. The commitment of resources is important to ensure that the Year 2000 problem is addressed with equal, if not higher, importance than existing concerns. 

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Writing Tips Do's and Don'ts

The following suggestions are some tips when putting papers together for management and may be helpful in getting your particular point across.

DO articulate your point and indicate supporting evidence for your point as necessary. If the argument isn't sufficient, then it is important to evaluate whether sufficient evidence exists for the argument being advanced. There's nothing wrong with suggesting that research is needed to reach a conclusion or that there may be unknowns involved.

DO NOT try to anticipate every counter argument made for points. This tends to make papers difficult to read especially when the author introduces a point only to spend the next three paragraphs defending it. Space should be devoted to bolstering your position, not detracting from it.

DO use examples or analogies (indicating their limits if necessary) to make points and don't be afraid to take a position. Many technical arguments are lost because of an endless "waffling" between "what-if's" and other possibilities.

DO NOT shy away from technical accuracy under the mistaken concept that the audience will not understand what is being said. It is important that technical accuracy be maintained lest the point be lost because the problem is over-simplified.

DO NOT include support materials in the main body of the paper. If there are charts, graphs, or specific technical arguments which need to be advanced for your position, they should be included

as an appendix so that they can be reviewed independently. This will reduce the possibility that the reader gets bored and fails to finish reading your paper.

DO NOT fill a paper with technical irrelevancies or long lists of items. These generally do little to advance the argument and only serve to confuse the reader. The objective of your document is to inform the reader, not to be a vehicle to show off your own knowledge.

