# THE YEAR 2000 CHALLENGE – IMPACT ON THE REAL ESTATE INDUSTRY

*by Nitin Manchanda*

## ABOUT THE AUTHOR

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## Introduction

Perhaps the most frustrating aspect of the Year 2000 problem (commonly known as "Y2K" or "the millennium bug") is that it is not a result of industrial sabotage, but has been inadvertently woven into the complex fabric of corporate Information Technology systems over the last few decades. The cost and effort needed to eliminate this bug is monumental.

The principle problem with the Y2K bug is the inability of computer systems to recognize the existence of the 21st Century. Put another way, many computer systems will interpret January 1, 2000, as 01/01/00, which in effect is January 1, 1900. The simplicity of this bug completely belies the complexity of the problem.

This manuscript will describe the Year 2000 problem and cover critical issues in three areas of real estate – facilities and property management; capital markets/financial transactions; and real estate software. However, the impact of Y2K is far reaching. It may infect each and every part of your computer system that relies on valid dates to initiate, record, report, calculate, or facilitate a business operation. This could mean a breakdown of financial controls such as General Ledger and accounting systems, as well as the interruption of elevator service, security systems, air-conditioning, and fire alarms. In this age of technology, computers are intricately linked to one another, and this inter-dependency will only worsen the effect.

## WHAT IS THE YEAR 2000 PROBLEM?

Many computer systems were originally developed using a six-digit date (two digits each for the month, day, and year). This six-digit date saved precious file and memory space. Today's modern hardware

systems are not limited by the file storage and memory constraints of a few decades ago. Although these considerations are no longer an issue, many systems created over the years still use the original six-digit format.

Most systems with two-digit years will soon malfunction. Without the century in the date, information sorted, compared, and used in calculations is likely to produce incorrect results when the dates cross the century mark. The year "00" in many systems will become either invalid or will be considered 1900 by default. In addition, some data entry processes do not allow for the entry of a "00" year or a four-digit year.

Another related problem is that the Year 2000 is a leap year, and 1900 was not, thus editing and calculation routines will be further complicated. Some forecasters also believe the Year 2000 problem will first occur on April 9, 1999, since some programs may read this as the 99th day of the Year 99. Together this reads as "9999" which the Cobol language interprets as "end of file," indicating that all records in a query or report have been selected when they possibly have not. The same issue may arise on September 9, 1999, if computers interpret the 9th day of the 9th month of the Year 99 as "9999."

Year 2000 errors are not limited to mainframe computer systems. Most pre-Pentium personal computers have a clock chip that will not retain a year when re-booted beyond 1999. The same clock chip defect may also be present in other electronic devices that utilize the date and time such as VCRs, camcorders, time clocks, digital thermostats, etc. These are just some of the examples that need to be considered when addressing the Year 2000 bug.

## IMPACT ON THE REAL ESTATE INDUSTRY

The government and many leading industry leaders, notably in the financial services sector, have been quite forthcoming in discussing the Y2K bug. The commercial real estate sector, especially property and facilities management, remains an anomaly in this regard with limited evidence of discussion on this issue.

### Property and Facilities Management Issues

Richard D. Goulet, a service project manger with Burr Ridge, IL-based AMS Mechanical Systems Inc., is on the Y2K task force of the International Facilities Management Association (IFMA). Speaking about property managers, he says "they may be calling the manufacturers asking whether a system is Y2K compliant and, if the manufacturer says yes, just leaving it alone. But they are not thinking about all the different parts of the system, because if one component fails, then it all fails."[1] Another voice heard recently discussing the Y2K problem is from the Building Owners and Managers Association (BOMA). Coffe Colvin, secretary/treasurer of BOMA, in his testimony to the House Committee on Transportation of Infrastructure, mentioned that "embedded systems" could affect building access controls; surveillance cameras and badge readers; refrigerant leak detectors and underground storage tank monitors; telecommunication systems; power generators and distributors; etc.[2]

The exact impact that Y2K will have is difficult to ascertain, however, most experts agree that the problem will be widespread and span all property types – industrial, office, retail, hospitality, and mixed use, etc. Most buildings will be affected in one way or another if preventative action is not taken.

It appears that property and facilities managers rely on manufacturers' systems to solve the Y2K problem. The building owners are left with few choices other than to replace existing systems if vendors do not provide fixes for their current systems. Property owners are not the only ones that could be affected by the Y2K bug. Tenants could also be affected depending on the lease, since leases may delegate such responsibilities or be subject to system upgrade costs that tenants may not have anticipated.

Legal issues surrounding the Y2K issue could also arise in the year 2000 as tenants claim that building facilities were inadequate while owners may try to pass along the costs of system enhancements. In a round-table discussion at the IREM mid-year conference, Anthony Smith, president of Robinson Sigma Commercial Real Estate Inc., stated that, "We have tenants ask us what we are doing to bring buildings into compliance, but if tenants have net leases, compliance may really be their problem. Not all leases are clear."[3]

### Capital Markets/Financial Transactions

By many accounts, the real estate financial sector seems to be better prepared for the Y2K bug. Even though most industry leaders feel that not enough is being done, there are examples of corrective efforts that began early this decade. The possible reason for the financial sector to have been more pro-active with regards to this problem is that

both the implications and effects are more transparent, *i.e.* the number of date-sensitive transactions in the financial sector is huge and much more apparent. For a bank that miscalculates the amount of interest owed to its customers, the affect could be staggering, especially if it has a large customer base. Similarly, mortgage backed securities, that are usually large dollar amounts, could create havoc for investors if inaccurate monthly results are reported or paid.

Freddie Mac allegedly started working on the problem in 1994 and has more than 10 percent of its 3,300 employees assigned to the task. It claims to have fixed 75 percent of its programs and is working on the remainder.[4] Mr. Sichelman of Freddie Mac told the Chattanooga News-Free Press that the Mortgage Bankers Association has embarked on an ambitious Y2K testing program that will test transactions based on 16 core functions in loan origination and servicing in secondary marketing. Another early initiative is AMRESCO's Year 2000 initiative, which began in early 1995 and uses seven criteria to determine Y2K readiness. Included in the testing are 13 dates (including the April 9, 1999, issue discussed earlier) that are determined to be critical by the Federal Financial Institutions Examination Council (the oversight group for the Federal Reserve, OCC, FDIC, OTS, and NCUA).

Even though many professionals believe this segment is ahead of others, homeowners and tenants are advised to keep accurate records of payments and receipts during the latter half of 1999 and the first half of 2000.

### Real Estate Software Issues

The real estate software industry is seeing strong growth in sales as real estate companies replace some of their legacy systems with Y2K compliant technology. Most asset and property management software included leases with end dates in the 21st Century, and one would think that real estate software would have overcome this hurdle a long time ago. Newark's MIS Director, Sebastian Font claims that, "Real estate is one of those industries that has escaped the wrath of the year 2000."[5] This is partly true – some databases were storing mostly two-digit years with programming logic in place to treat the dates as 20th or 21st Century dates – two-digit years ranging from 00 to 29 belong to 21st Century, while 30 to 99 belong to the 20th Century. This workaround is limited for obvious reasons, but possibly (depending on the programming) could function during the Year 2000 and beyond. On the

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other hand, many software companies have already released newer versions of their software, which overcome these shortfalls. MRI and Skyline, two major real estate software companies, built their software with four-digit years many years ago. One such company, CTI Limited Inc., has been compliant since its software was first introduced in 1973. As with most software implementation, testing is a key part of the process. CTI tested its Y2K compliance early this year and found that when it simulated the transition from December 1999 to January 2000, no data was lost and its lease calculations were flawless. Most property and asset management systems released this year claim to be Y2K compliant. However, whether it is rewriting pieces of existing code, rewriting entire systems, or replacing legacy systems, Y2K testing should be part of any software review strategy. Many software vendors rely on third party controls or software development tools and their reliability can only be ensured through testing.

## SOLUTIONS AND COSTS

In technical terms, there are two main approaches to tackling the Year 2000 Problem. The first approach, "expansion" involves finding every reference to the problem year in the code and adding two digits to it, thereby expanding it. This approach not only requires changing the dates in the program code itself, but also changing all the date references in all the stored data associated with the software programs, making the process time-consuming.

The second approach, "windowing," involves finding and fixing only the code that needs to recognize

the change in the century but leaving all the data associated with the program intact. In effect, this approach reprograms the computer to properly recognize the correct century in a two-digit date. This is accomplished by programming a 100-year window into the computer's logic as described earlier; the years 30 to 99 can be part of the 1900s and 00 to 29 as 2000 and after. In addition to the expansion and windowing methods, there are many software programs designed to speed up the work by automatically sifting through lines of code.

The solutions to the Y2K problem will eventually depend on individual circumstances, and more importantly, will also depend on others achieving similar solutions since many systems are interdependent. Most big organizations are following a Year 2000 project life cycle which calls for the systematic analysis, repair, and testing of computer systems to ensure that all applications are made compliant. A decision to replace, repair, or reprogram computer code needs to be made on a case-by-case basis, and any "one size fits all" approach, is likely to miss certain angles of the problem.

The estimates of the cost of fixing the problem usually run into the hundreds of billions of dollars for the United States as a whole. Large companies, with different systems and computer networks, have already and continue to spend millions of dollars each year to become Year 2000 ready. Many major organizations are expected to spend between $50 and $100 million. The cost to each organization is again, very specific to their individual structure and needs. The following table, from Caper Jones' article — *Year 2000: What's the Real Cost?*,[6] describes some ballpark figures you can expect to spend.

| Software Staff (# of people) | Total Costs |
| --- | --- |
| 5 | $197,784 |
| 10 | $379,087 |
| 25 | $906,511 |
| 50 | $1,648,203 |
| 100 | $3,523,033 |
| 500 | $16,688,051 |
| 1,000 | $35,601,176 |
| 5,000 | $178,005,882 |
| 10,000 | $356,011,765 |
| 20,000 | $712,023,529 |

Source: *Software Productivity Research*

## CONCLUSION

The Y2K compliance issue is real and complex, and is a serious threat to real estate companies. Property management appears to be the most complex, mainly because of the hidden or "imbedded" systems in place and the legal issues surrounding them. Financial transactions will undoubtedly be affected, but these are more apparent; most public companies are being forced to assess their exposure and in many situations corrective measures are being taken. Commercial Real Estate software is less likely to be affected since it has been storing very long term leases, although they are not completely out of the woods given the numerous sides of the Y2K bug and the dependency on other software that they use.

Today, no simple solution exists and the bug will cause trouble for every enterprise in a different way. What is important to fathom is that organizations can plan a "treatment program" to mitigate the problem. Unfortunately, the deadline cannot be pushed off. BOMA recommends the following steps– educate yourself; designate a year-2000 manager; inventory existing systems; contact suppliers; prioritize problems; anticipate contingencies; identify solutions and test them.[7] REI

## NOTES

1. *Crains Chicago Business;* October 19, 1998.
2. *Federal Document Clearing House Congressional Testimony;* October 6, 1998.
3. *Journal of Property Management;* July 17, 1998.
4. *Chattanooga News-Free Press;* October 11, 1998.
5. *Real Estate Weekly;* January 29, 1997.
6. http://www.datmation.com
7. http://www.boma.org