**DEPARTMENT OF
ADMINISTRATIVE SERVICES**

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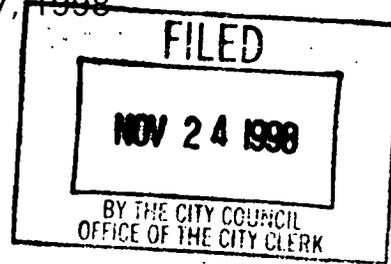
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FILED

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BY THE CITY COUNCIL
OFFICE OF THE CITY CLERK

City Council
Sacramento, California

Honorable Members in Session:

SUBJECT: **UPDATE ON THE YEAR 2000 READINESS (Y2K) EFFORT FOR THE CITY OF SACRAMENTO**

LOCATION: Citywide

RECOMMENDATION:

This report is for information only.

CONTACT PERSONS: Sally W. Nagy, Chief Information Officer
264-8600

FOR THE COUNCIL MEETING OF: November 24, 1998

SUMMARY:

This report provides information on the Year 2000 Readiness (Y2K) issue as it affects the City of Sacramento. It also provides a summary of the effort to-date to bring the City into compliance, current activities and the next steps in the timeline leading to the Year 2000.

BACKGROUND:

What is THE YEAR 2000?

The 'millennium bug' – or 'Y2K ' as it is also called – is a programming flaw that will cause some time-sensitive computer systems to malfunction at the turn of the

century. The degree to which everyday life will be affected by the Y2K bug is unknown, but the possibilities range from shutdowns in water and waste treatment systems to the failure of transportation control systems such as traffic lights.

Simply put, the problem resulted from the assumption of computer developers, year after year, that all dates belonged to the 20th century (i.e., 1900 through 1999). For example, as the year 2000 draws near, computer date-and-time clocks programmed for three decades to translate four-digit years into two-digits (e.g. 1998 = '98') will mistake the '00' of 2000 for '00' of the year 1900 and miscalculate dates in millions of time-sensitive computer records.

What is a Year 2000 Compliant Community?

A coalition of governmental agencies and organizations including the International City/County Management Association (ICMA) and the National League of Cities have joined together to launch a national campaign to avert a 'millennium bug' crisis in communities. Their "Y2K and You" campaign defines a Year 2000 compliant community as one in which all functions, both privately and publicly operated, within a local community will be operating and interacting normally into the Year 2000 and beyond.

They define an automated system as Y2K compliant when it will process normally, as it was designed, (i.e. without any extra processing, procedures, or other manual intervention) before, during and after January 1, 2000. Information from the "Y2K and You" campaign and the 'tool' kit it provides are attached to this report as Exhibits A-1 through A-4.

Staff has set the goal of having the arrival of the year 2000 be a 'non-event' for the City of Sacramento. That goal will have been achieved if, when we look back in March, 2000, there have been no major or significant problems to City systems as a result of the year rolling from 1999 to 2000.

The Y2K and You coalition mentioned earlier suggests that each local government entity needs to ask these questions in respect to Y2K:

- Is your community Y2K compliant?

- What are the consequences of Y2K for your community?

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- Can your community fix the problem before January 1, 2000?

- Do you have sufficient human resources in your community to solve the problem? And, if not, do you know where to get help?

- What contingency plans have been made to deal with the effects of Y2K?

Strategy to Tackle the the Year 2000 Issue for the City of Sacramento

In order to address the issue, evaluate its magnitude and prioritize the use of limited resources, staff identified the following steps:

- Initial Assessment – Conducting an inventory of all systems that might be affected, testing for compliance and determining the scope of the problem.

- Prioritization – Identifying critical data processing systems and other potentially affected systems that could disrupt operations and then, assigning these the highest priority for remediation.

- Identification and Evaluation of Alternatives – Estimating the best approach to address the problem in each area (i.e. fix or replace hardware and/or software, perform the work with City staff and/or hire contract programmers, create work-arounds, etc.)

- Development and Implementation of Workplans – Developing workplans which are being concurrently implemented for each of the five categories detailed in the next section in order to address the most critical problems and test the results prior to 2000.

Generally, the approach taken up to this point has been to:

- Address the top priority issues relative to the mainframe operating software and hardware and the citywide network operating systems first;

- Modify existing mainframe hardware and software rather than replace it;

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- Contain costs by primarily using City staff to address the mainframe problem and to utilize contractors when salary savings/vacancies occurred. This continues to require that computer support for modifications and upgrades be significantly reduced during this time period;

- The Administrative Services, Technology Divisions staff would initially focus on the mainframe systems while departmental staff focused on departmental systems. As the citywide systems are made compliant, they would be redirected to assist departments as needed.

Scope of the THE YEAR 2000 Issue for the City of Sacramento

The scope of the problem for the City of Sacramento can be put into five broad categories:

Mainframe Operating Software & Hardware
The City's mainframe operating hardware was at least three generations behind current technology. The mainframe operating software was equally outdated, not Year 2000 compliant and no longer vendor supported. Because of this, key application systems (e.g. Finance, Human Resources) could not be updated to take advantage of Year 2000 fixes provided by the vendor.

Application Systems
Key citywide application systems such as Finance, Human Resources and the Utility Billing System and function specific systems such as Police Alarms/Permits, Traffic Accident Reporting and Business/Rental Tax tracking had a myriad of problems in addition to not being Year 2000 compliant. These included customization resulting in limited vendor support and the need to upgrade to allow the exchange of information between systems. Interfaces with outside entities such as electronic fund transfers also needed to be considered.

Microcomputers/Software Applications
Microcomputers (PCs) needed to be individually assessed based on age, applications, operating systems (i.e. Windows, MS/DOS) and real time clock and other chips to evaluate their Year 2000 compliance.

Networks
The City's wide area and local area networks had to be evaluated in order to ensure they were Year 2000 ready and that they would work with newly upgraded and/or remediated hardware and software.

Embedded Chips
Until recently, most discussions have focused on mainframe systems whenever the Y2K problem is discussed. However, the problem with embedded chips is really more significant and more difficult to identify and fix. Everything from personal computers to sprinkler systems may have computer chips "embedded" in their design, which may not be readily apparent to the user. As a result, all automated systems require assessment to determine their Y2K compliance. This assessment requires careful coordination with the equipment manufacturer, as the user may not have any indepth understanding of the equipment's internal workings. These chips can be found in elevators, building security systems, water and waste water systems, radio and telephone systems, traffic signals, etc.

What's Been Accomplished To Date?

Due in great part to the Herculean efforts over the past two years of Technology Divisions staff in the Administrative Services Department and Departmental Data Analysts in the operating departments, the City is in a much better position than many other entities in working towards Year 2000 compliancy. Accomplishments to date include:

Mainframe Operating Software & Hardware
In December 1996, the City Council approved the purchase of a new IBM enterprise server and operating system software to replace the old mainframe hardware and software. Using a phased-in approach, the new equipment and software has been installed and tailored to accommodate existing city applications. Staff is currently setting up the final test area where they will conduct Year 2000 simulation tests to ensure all hardware and software is fully compliant.

Application Systems
The City's Financial and Human Resource systems have recently been upgraded to the latest version of the software, which the vendor has asserted is Year 2000 compliant. Because the City was so far behind in software releases, both systems required several upgrades to make them current. In addition, due to the customization that has occurred to meet the City's needs on these systems, each upgrade had to be individually implemented, customized and tested before moving on to the next one. At this point, staff is ready to begin final testing to ensure this software really is Year 2000 compliant. Fortunately for the City, this effort not only addressed Y2K issues, but also creates a platform, which will enable the City to accept future upgrades more readily as well as improving the reporting capabilities in these key applications.

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The Utility Billing System is scheduled for conversion to the newly compliant version in early December. Like the Financial and Human Resource systems, this effort also required multiple upgrades. This was accomplished with a 'minimalist' approach while a process to select a new utility billing system is underway. In addition to these three key applications, twenty-six (26) other existing city systems required modifications. These are in varying stages of readiness.

In the Police Department, the Computer Aided Dispatch (CAD) and Records Management (RMS) systems have been remediated and are currently being tested for compliance.

Microcomputers/Software Applications
Microcomputers (PCs) have been inventoried to access their Year 2000 compliance. The PCs that have a time-clock problem have been identified. Many of those have been slated for replacement prior to January 2000. For those remaining, instructions on how to reset the clock will be sent out prior to January 1, 2000. Additionally, as we become aware of applications requiring an upgrade that information is being shared with City staff. Most of the major applications used within the City are compliant without an upgrade.

Networks
The network systems used within the City are advertised as being Y2K compliant. Staff continues to monitor information clearinghouse sites for the latest updates on testing and has created a lab for conducting its own tests.

Embedded Chips
There are a myriad of efforts that have taken place to address the other automated systems that may be affected. In the case of telecommunications, staff is working directly with vendors or those agencies responsible for supporting the system to assure the issue is addressed. These include the '911' systems, the Sacramento Regional Fire Communication system; and the City's telephone system. Regular meetings are held to assure that those systems identified as ready really are. Departmental staff, such as Public Works and Utilities, continue to assess the systems within their operations and are working towards compliancy.

Next Steps
Although substantial progress has been made and projects are underway in many areas, there is much yet to be done and the deadline is rapidly approaching. The focus for most of 1999 will be to finish the work in process, reevaluate and test what's been done, identify any remaining problem areas that haven't been

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addressed and develop contingency plans to deal with possible Y2K failures both by City systems and those outside our control.

- At this point, it is important that remaining activities progress as a coordinated effort. Therefore, an Executive Committee will be formed to heighten Citywide awareness, monitor compliance efforts and oversee the development and testing of contingency plans. There will also be a focus on working with other government agencies to achieve a Y2K compliant community. A Public Safety Year 2000 group has already begun to meet to address public safety needs related to Y2K.

- Additionally, an independent review and audit of the efforts to date will take place to validate the systems and identify potential problems. This audit will also identify any other problem areas that may have been overlooked.

- At this point, staff has reassessed our approach and have increased the use of private contractors and identified a need for testing tools to speed up the process. Staff will be bringing forward a report requesting Council approval to purchase these tools within the next several weeks.

- Staff will provide regular updates to the Mayor and Council for the duration of this project.

FINANCIAL CONSIDERATIONS:

This tremendous effort to become Year 2000 compliant does not for the most part result in any improvements − it merely allows us to keep operating after the calendar changes over to 2000. Existing City staff was primarily used to support the effort with consultant costs being funded through staff vacancies and salary savings. The trade off has been significantly reduced computer support for any requested modifications or improvements in other areas.

ENVIRONMENTAL CONSIDERATIONS:
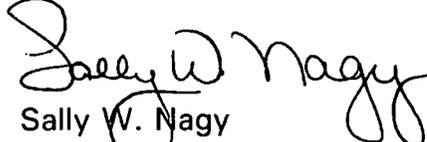
Not applicable.

POLICY CONSIDERATIONS:

Addressing the Year 2000 problem for the City is critical to continued operations and services to the community in the Year 2000 and consistent with the City Council's direction.

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MBE/WBE:

Not applicable.

Respectfully submitted,

Sally W. Nagy
Chief Information Officer

RECOMMENDATION APPROVED:

WILLIAM H. EDGAR
City Manager

Exhibits:
A-1   THE YEAR 2000 Overview (PTI)
A-2   THE YEAR 2000 Frequently Asked Questions
A-3   THE YEAR 2000 Dos and Don'ts
A-4   Y2K Internet Resources

OVERVIEW

What is "Y2K?" Simply put, it is a programming flaw that will cause some time-sensitive computer systems to malfunction at the turn of the century. The potential for trouble caused by "Y2K," also known as the "millennium bug," is enormous -- from shutdowns in water and waste treatment systems to the failure of transportation control systems, such as traffic lights and railroad warning signals. The problem can be solved before any serious consequences are felt in cities and counties, but only if local governments develop a comprehensive strategy to address "Y2K" in their communities.

With recent surveys revealing that as many as two-thirds of the cities and counties in the United States have not taken the necessary steps to avoid suffering the effects of "Y2K," a partnership comprising of Public Technology, Inc. (PTI), the National Association of Counties (NACo), the National League of Cities (NLC), and the International City/County Management Association (ICMA), has launched the "Y2K & YOU" campaign. This campaign, which is directed by Public Technology, Inc., is designed to make public elected and appointed officials aware of the impact that this potentially troubling computer glitch can have on their communities.

As part of the campaign, five questions have been developed that every city, town and county needs to ask in respect to "Y2K":

1. Is your community "Y2K-compliant?"

2. What are the consequences of "Y2K" for your community?

3. Can your community fix the problem before January 1, 2000?

4. Do you have sufficient human resources in your community to solve the problem? And, if not, do you know where to get help?

5. What contingency plans have been made to deal with the effects of "Y2K?"

This tool kit has been provided to serve as a resource for public officials in their fight against the "millennium bug." It contains valuable background information on "Y2K," guidelines for the steps that need to be taken to safeguard your community against its effects, and tips for where help can be obtained.

The campaign sponsors are continuing to add resources for local governments on-line at http://www.algov.org

For further information, please contact:
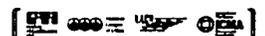Public Technology, Inc. (202) 626-2400
National League of Cities (202) 626-3000
National Association of Counties (202) 393-6226
International City/County Management Association (202) 289-4262

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FREQUENTLY ASKED QUESTIONS

How did this mess occur?
Successful programmers used computer shortcuts that conserve computer space. One of the short-cuts was the use of the last two digits of the year, e.g. "98" was used instead of "1998". This practice became pervasive (look at your checkbook, odds are it has a pre-printed "19" for the century) and was mistakenly even built into the "AT" class computer chip designed and first used in the early 1980s. Thus, computers, computer code (programs), and data contain this shortcut. The result is computers can-not reliably determine that "00" is a short-hand abbreviation for "2000" and is really one year greater than "99".

Why did this mess occur?
When automated applications were first developed, computers were huge room-sized affairs -- with very little main storage in which to execute computer programs and very little permanent memory in which to store data. Computer managers, computer program designers and computer programmers were all rewarded for quick, efficient programs that used very little space.

Is it hard to fix?
Actually fixing the problem is not hard, finding the problem and testing the "fix" is time-consuming and mistake-ridden.

How is the problem fixed?
Technically there are probably only five ways to fix the problem.

The first, most obvious solution, and the most expensive, is to find all uses of the two-digit date and change them to conform to the International Organization for Standardization (see http://www.iso.ch/ for a description of this organization) date format of ISO8601. This format would put all dates into the format of YYYY MM DD hh mm ss TZD where: YYYY = a year designation of four (4) numeric digits based on the Gregorian calendar (all four digits are required); MM = a month designation of two (2) numeric digits ("00" through "12" is the acceptable range); DD = the day of the month ("00" through "31" is the acceptable range); hh = a two numeric digit hour descriptor based on the 24-hour clock ("00" through "24" is the acceptable range); mm = a two numeric digit minute ("00" through "59" is the acceptable range); ss = a two numeric digit second descriptor ("00" through "59" is the acceptable range); TZD = the Time Zone Descriptor (offset from Coordinated Universal Time and is expressed in plus or minus hours).

Other ways include Windowing (using a selected 100-year period as a way of interpreting the meaning of any two digit year), Sliding Window (using Windowing but the window moves with each day),
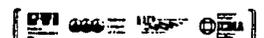
Encapsulation (utilizing the fact that the Gregorian calendar repeats itself every 28 years, and Encryption (which relies on computer math to reduce the size of an ordinary date by about half). All fixes to the Year 2000 problem utilize one of these five techniques to manipulate the use and storage of dates.

### What if we don't finish before January 1, 2000?

Many organizations will not finish "remediation" of their computer systems. Hopefully, only minor applications will be left. However, every organization must carefully prioritize its applications -- putting those critical to its self-preservation first. Contingency plans must be developed for those applications that are not completely "fixed and tested" before January 1, 2000. In addition, many applications depend on data from other systems. Organizations must develop contingency plans on what to do with data that is not Year 2000 compliant or is compliant but uses a different technique for becoming compliant.

Why should local government be concerned?

Many applications and systems within local communities are not Year 2000 compliant today. Yet, citizens depend on these applications daily. Local governments need to ensure that such critical systems as water and waste water, traffic signals, and telephone and electrical systems are Year 2000 compliant even though the local government may not be directly responsible for those systems. Civil authorities will be expected to make up for deficiencies in the local communities when essential services no longer function. While the Year 2000 problem may not turn out to be as bad as natural disasters such as tornadoes and hurricanes, citizens will look for guidance and leadership from their local authorities.

Where do I start?

The first thing any manager should do is to create a list of all automated systems that are either contained within government or whose failure will cause citizens discomfort. Management should educate their staff on the importance of this effort and elicit their help and responsibility. This issue is less of a technical issue than it is a managerial issue. The hard part is to focus on all critical automated systems, and make sure that sufficient resources are used to fix or avoid the problem.

Y2K
&
YOU
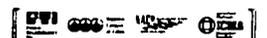
Y2K DOs AND DON'Ts

Do

· Inventory all systems that "might" be affected by the Year 2000 problem.

Set up and enforce a remediation process. Involve leaders from your jurisdiction. Employ emergency procurement processes as needed to avoid major crises.

· Consolidate your jurisdiction's efforts so that you can keep track of who is responsible and how the project is moving.

· Be sure that all departments and divisions are included. For instance, don't forget such agencies as General Services (building security, elevators), Transportation (traffic lights), Water, etc.

· Develop contingency plans for those "What if we don't finish..." processes.

· Discuss this issue with other community leaders. Encourage them to work with local government to make the community "Y2K ready." It is not just a government problem.

Make a list of critical functions within the community. Ask yourself, "Who is looking for Y2K problems on each issue?"

Don't

· Panic. Remember there are many organizations -- public and private -- that are in similar situations.

· Assume anything. This problem requires management and calm, cool thinking. You will think of things that the "experts" will overlook. Ask lots of questions.

· Let the threat of lawsuits paralyze your jurisdiction. Your best defense is to establish evidence of due diligence. By equipping your jurisdiction with knowledge and then acting to the best of your ability, you probably have created the best defense you can create.

· Isolate the problem to certain members of staff. Involve the entire staff. One of the long-term Y2K problems involves bad and non-compliant data. Clerks maintain most data. Educate all employees -- make it something they should look for.

· Isolate the problem to your government. The Year 2000 problem may well affect the entire community. Talk it up. Be proactive. The economic health of your community may depend upon it.
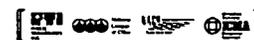
Y2K INTERNET RESOURCES

ASSOCIATION SITES

Access Local Government. http://www.algov.org/login/ -A private service for members of the International City/County Management Association (ICMA), the National League of Cities (NLC), and Public Technology, Inc. (PTI).

CPSR. http://www.cpsr.org/program/y2k -Computer Professionals for Social Responsibility (CPSR) Y2K Working Group.

DISA. http://www.mitre.org/research/cots/COMPLIANCE_CAT.html -Defense Information Systems Agency Year 2000 Product Compliance Catalog.

Federal Financial Institutions Examination Council. http://www.ffiec.gov/y2k/impact.htm -Gives guidance concerning Y2K impact on customers.

NIST. http://www.nist.gov/y2k -National Institute of Standards and Technology Y2K Web site.

Public Technology, Inc. http://pti.nw.dc.us -Keep up with latest news for local government by visiting this site frequently.

Reengineering Domain. http://www.stsc.hill.af.mil -An Internet site run by The Software Technology Support Center (STSC) from within the U.S. Air Force.

Standard for Year 2000 Test Certification. http://www.software.org/y2k/index.html - From The Software Productivity Consortium.

U. S. Federal Government Gateway for Year 2000 Information Directories.
http://www.itpolicy.gsa.gov/mks/yr2000/y2khome.htm -U.S. Federal Government gateway.

STATE SITES

Alabama. http://agencies.state.al.us/y2k/index.html

Alaska. http://www.state.ak.us/local/akpages/ADMIN/info/yr2000.htm

Arkansas. http://www.dis.state.ar.us/y2k/y2kintro.htm

California. http://www.year2000.ca.gov

Connecticut. http://www.doit.state.ct.us/y2k

Florida. http://y2k.state.fl.us

Idaho. http://wwwv2.state.id.us/itrmc/2k/default.htm

Iowa. http://www.state.ia.us/government/its/century

Massachusetts. http://www.state.ma.us/dls/year2k.htm

Minnesota. http://www.state.mn.us/ebranch/admin/ipo/2000/2000.html

Nebraska. http://www.das.state.ne.us/das_cdp/rfp/rfp.htm

New Jersey. http://www.state.nj.us/cio/nj2000.htm

New York. http://www.irm.state.ny.us/yr2000/yr2000.htm

Ohio. http://www.state.oh.us/y2k/ -What the State of Ohio is doing about the problem

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Y2K INTERNET RESOURCES

Oregon. http://www.state.or.us/IRMD/y2k/year2k.htm

Pennsylvania. http://www.state.pa.us/Technology_initiatives/year2000/index.html

Tennessee. http://www.state.tn.us/finance/oir/y2k/webindex.html

Texas. http://www.state.tx.us/Standards/

Utah. http://www.gvnfo.state.ut.us/sitc/yr2000.htm

Virginia. http://www.cim.state.va.us/cdc/INDEX.htm

Washington. http://www.wa.gov/dis/2000

Wisconsin. http://badger.state.wi.us

LOCAL GOVERNMENT SITES

Access Local Government. http://www.algov.org/login/ -A private service for members of the International
City/County Management Association (ICMA), the National League of Cities (NLC), and Public Technology, Inc. (PTI).

Albuquerque, NM. http://www.cabq.gov/y2k/index.html

Arlington County, VA. http://www.co.arlington.va.us/arlcty/budget/thmtech.htm

Indianapolis, IN. http://www.indygov.org/cio/express/Jan97/yr2000.htm

Montgomery County, MD. http://www.co.mo.md.us/Year2000/

Orlando, FL. http://www.ci.orlando.fl.us/departments/y2kinter/y2k.html

Portland, OR. http://www.ci.portland.or.us/y2k/

Riverside, CA. http://www.ci.riverside.ca.us/riverside/year2000.html

Roanoke, VA. http://www.ci.roanoke.va.us/depts/cis/y2k.html

San Bernardino County, CA. http://www.co.san-bernardino.ca.us/y2k/

Tallahassee, FL. http://www.ci.tallahassee.fl.us/citytlh/info_systems/alt2k1.html

PRIVATE SITES

2000 Legal.Com: Year 2000 Legal Resources for Avoiding Y2K. http://www.2000legal.com/Index.htm
-A law firm providing "Legal resources for avoiding year 2000 business disruptions and reducing
litigation exposure."

Audit Serve, Inc. http://www.auditserve.com -The Worldwide Connection for Audit, Security,
Control, and Y2K Conversion Professionals.

BIOS Setup Information. http://www.sysopt.com/bios.html -A site devoted to technical information useful to
Personal computer technicians.

Challenge 2000: Assessment. http://boris.mfltd.co.uk/year2000/ -A UK vendor site.

CUNA Mutual Insurance Society: Credit Union Staff Pages. http://CUNAMUTUAL.COM/custaff.asp -A credit
union resource.

Dell Year 2000. http://www.dell.com/year2000/index.htm -Dell Computer Corporation's Y2K site.

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Dover Elevators. http://www.doverelevators.com/whatsnew/y2k.html -Year 2000 and Dover Elevators.

GT Becker. http://www.RighTime.com -The RightTime Company, Miami, offering a test and solution for most non-compliant personal computers.

IBM. http://www.ibm.com/IBM/year2000 -IBM's Year 2000 site.

IEE. http://www.iee.org.uk/2000risk -The UK-based Institution of Electrical Engineers' Y2K site.

MatriDigm Corporation. http://www.matridigmusa.com -MatriDigm Corporation, a privately-held software technology company.

Microsoft. http://www.microsoft.com/year2000 -Micosoft's Year 2000 Resource Center.·

NRF. http://www.nrf.com/hot/it/sur2000/ -National Retail Federation Survival 2000 Project.

Peritus Software Services. http://www.peritus.com -A software company with a Year 2000 product.

Princeton Softtech. http://www.princetonsoftech.com/year2000/index.htm -A software vendor with a suite of Year 2000 tools.

Team C4IEWS: http://www.monmouth.army.mil/y2k/y2khome.htm -Combined Army, Navy, Air Force, and Marines Y2K Resources.

The Year 2000 Information Center. http://year2000.com/ -Peter de Jager's Internet site. Mr. de Jager has been active in trying to make people aware of the Year 2000 problem for several years. This site contains· a useful and easy-to-use archive and a list of vendors who have paid to advertise on his site. He also maintains one of the most active and useful Internet listserves available. ·

VIASOFT. http://www.viasoft.com -A private company offering several Y2K products.

Washington D.C. Year 2000 Group. http://www.monumental.com/bwebster/y2k -The Washington D.C. Year 2000 Group is the largest and most active Y2K group in the world. Members actively work on or deal with· Year 2000 issues on a daily basis, in business, government, the military, or other organizations.

Westergaard Year 2000. http://www.y2ktimebomb.com - A news forum offering "strategic analysis of the Y2K problem."

Yahoo! Full Coverage - Year 2000. http://headlines.yahoo.com/Full_Coverage/Tech/Year_2000_Problem - An Internet-based news clipping service of Yahoo.

Year 2000 Embedded Systems Vendors, Associations and Manufacturers. http://ourworld.compuserve.com/ homepages/roleigh_martin/y2k_com.htm -A private page maintained by Roleigh Martin covering Y2K embedded systems firms.

Year 2000 Information Network. http://www.mbs-program.com -Year 2000 Information. A Canadian multimedia publication.

Year 2000 Working Group Online conference. http://www.year2000.unt.edu/ -Society for Information Management (SIM) International's Y2k Working Group site.

OTHER

Cassandra Project. http://millennia-bcs.com - 'A doom and gloom' view of the Year 2000 problem, offered by a grassroots non-profit organization.