



## **The Global Impact of Year 2000 Computer Processing Problems on Citizens, Businesses and Governments**

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### **Policy Statement**

The World Information Technology and Services Alliance (WITSA), the global public policy body comprised of twenty-eight information technology (IT) industry representative bodies, believes that governments and international organizations worldwide must immediately address the very serious threat posed to both individual nations and the global economy by computer processing problems resulting from the advent of the Year 2000. The Year 2000 computer problem is the single biggest challenge facing the IT industry since the first computer became operational 51 years ago.

### **The nature of the problem**

These problems arise because most computer systems have been written to recognize only the last two digits of a year when storing dates, the century being assumed to be redundant information. However, this convention means that the year 2000 will be written as '00', with the result that computer systems will logically assume that the year is 1900 rather than 2000. This will cause errors in arithmetical, logical and other operations. Computers will produce incorrect results or even shut down if the necessary changes are not made.

### **Reasons for the problem**

The basic reason why we have this problem is both economic and technical - as computers began to enter the marketplace in the sixties, the cost of memory and storage was extremely high relative to people costs, and memory was extremely limited on the early computers. In an effort to reduce the amount of memory and storage space required in regard to dates, it became accepted procedure to represent the year

by the last two digits only with the assumption that later replacement systems would take regard of the century date change. Many of these systems are still in operation though, and indeed the convention itself, now unnecessary due to falling costs of memory and storage, has also remained.

### **Impact of the problem**

While the problem is easy to understand and can seem almost trivial, it is extremely dangerous to underestimate the scale of action needed to correct it, due to the vast number of times dates are used in computer systems. For example, incorrect date processing will mean businesses will be unable to process orders, dispatch invoices, calculate payments, process transactions and so on. Government may not be able to issue checks, calculate tax returns, or produce forward looking budgets. In addition, computers are built into different types of equipment such as elevators, automobiles, and appliances which have date processing functions, and which may become inoperable with unpredictable results. The problem is so pervasive that it has the potential to disrupt severely not only individual businesses, but whole economies. This is compounded by the fact that almost all computer-based systems worldwide are affected with this problem at the same time. And the date by which solutions must be found is immutable.

### **Global cost to fix the problem**

Industry estimates of the global cost to fix the Year 2000 problem are very high. One of the most commonly believed estimates is from the IT industry analyst organization, Gartner Group, who price the global fix between US\$300 - \$600 billion (the higher figure approximately equal to the global spend on telecommunications last year). Such estimates do not include any possible operational curtailment or disruption costs. The systems most costly to fix are medium-to-large systems developed without rigorously enforced standards, with a high proportion of custom written code and high transaction volumes. Such systems are found in profusion throughout commercial and governmental organizations, with such organizations being fundamentally reliant on the continuous operation of their systems.

### **Little time to address the problem**

Time is running out to deal with this challenge. While the problem is frequently stated as the 'Year 2000 Problem', most organizations will be affected before 2000 due to the need to both plan and transact business on advance dates through the century change. Many long-range systems have already been affected. This means that the fix must be completed well before the end of 1999. It is also important to understand that a major element of the fix—an estimated 40-60% of the time and cost—involves testing

of systems once they have been converted to correctly process dates in the 21<sup>st</sup> century. Testing programs that involve millions or even hundreds of millions of lines of computer code both operating alone and in conjunction with many external computer programs is extremely time consuming, yet critical to success.

### **Shortages of skills to work on the problem**

Another limitation is on the human resources necessary to do the conversions. Many countries are already short of IT workers, a problem being exacerbated by the Year 2000. Also, many of the programs which must be altered are written in languages which are no longer used, which means finding people with the relevant skills is increasingly difficult. While there are software ‘tools’ to assist in the analysis, conversion, and testing phases of a Year 2000 response, no simple or ‘clever’ technical solution exists.

### **The Need for International Action**

While organizations and Governments are increasingly aware of the issue, they are, in the opinion of the world IT industry, not treating the Year 2000 problem with the urgency it requires. As the problem is simply stated it is assumed that it is simply fixed. It is not. We live in an information technology world with inter-linked and interdependent systems on a global scale with the continued operation of such systems threatened by this problem. As major industrialized nations with the longest history of computer-related automation are clearly at greatest risk, it is clearly in the best interests of these countries to coordinate their actions and to assign and reallocate resources to avert the potential problems. It is not necessary to introduce new legislation to deal with the Year 2000 problem, but governments need to escalate this matter to the highest priority.

### **The Essential Requirement to Prioritize**

In taking the actions outlined in the recommendations below, leaders in government and industry must realize that it may be necessary to prioritize which programs can be fixed in a timely fashion. Because of limited resources, it is likely that a form of ‘triage<sup>1</sup>’ will need to take place, with only the most essential programs getting immediate attention.

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<sup>1</sup> Triage - a three-part decision-making process to determine which programs and systems need immediate attention (or replacement), which need ‘work-arounds’, and those which are not cost effective to fix and therefore need to be discarded.

## **The Positive Impact of Early Action**

The Year 2000 picture is not altogether bleak. Organizations around the world which recognized the Year 2000 challenge early have made enormous progress, with some already completing their programs. Some organizations have used the advent of this problem to accelerate the replacement of old and unsatisfactory systems. The IT industry have also developed many specific services and tools to help organizations convert and test their systems.

It is therefore not an insuperable challenge, but one that without commitment from the highest levels could lead to economic and social disruption throughout the world. We urge national governments to escalate action now to avoid these unwanted consequences.

## **WITSA Recommendations**

WITSA specifically recommends that governments and international organizations adopt the following five-point 'Year 2000 Survival Plan':

1. Individually and collectively, governments and international organizations should announce their commitment to solving the Year 2000 challenge, thereby calling attention to its importance. Progress should also be publicly reported at regular intervals.
2. Each national government should immediately allocate sufficient financial and human resources to fix the most essential Year 2000 problems for its own government, and take appropriate actions to incentivize sub-national governments to do the same. In so doing, they may need to devote additional funds so that existing IT programs of national importance are completed.
3. Adjust government practices to ensure that future procurement of computer and communications systems recognize the requirement to process dates through the year 2000.
4. Each national government should take appropriate action to make the non-governmental sector aware of the need to re-assess priorities to address the Year 2000 computer problem. Businesses should be especially alerted to their systems which interact with other businesses and which are therefore reliant on each other to address the issue in a timely manner.
5. Identify systems of national importance and ensure there are plans for them to be fixed in time. These may include:
  - Communications - Telecommunications and data networks
  - Emergency Services - Police, Ambulance and Fire
  - Energy - Generation and supply

- Finance - Banking and trading
- Food Supply - Shipping, storage and distribution
- Manufacturing - Supply chains and automated process control systems
- National security - Defense and intelligence services
- Public health - Hospital equipment and systems
- Small and medium sized enterprises - Supply chains, manufacture and distribution
- Government Exchequer - Tax collection, customs and excise, and welfare payments
- Transport - Air, trains, traffic systems, mass transit systems
- Utilities - Water supply and waste management

## The World Information Technology and Services Alliance (WITSA)

WITSA consists of the national information industry representative bodies from around the world. Its role is to develop public policy positions on issues of concern to the information industry and present these positions to governments and international organizations. WITSA members are:

<b>Argentina</b>	Cámara de Empresas de Software y Servicios Informáticos (CESSI) <a href="http://www.cessi.com.ar">http://www.cessi.com.ar</a>
<b>Australia</b>	Australian Information Industry Association (AIIA) <a href="http://www.aiia.com.au/">http://www.aiia.com.au/</a>
<b>Bangladesh</b>	Bangladesh Computer Samity (BCS) <a href="http://www.samity.org">http://www.samity.org</a>
<b>Brazil</b>	Sociedade de Usuários de Informática e Telecomunicações - Sao Paulo (Sucesu-SP) <a href="http://www.sucesusp.com.br">http://www.sucesusp.com.br</a>
<b>Canada</b>	Information Technology Association of Canada (ITAC) <a href="http://www.itac.ca/">http://www.itac.ca/</a>
<b>China, Taipei</b>	Information Service Industry Association of China, Taipei (CISA) <a href="http://www.cisanet.org.tw/english/index.html">http://www.cisanet.org.tw/english/index.html</a> / <a href="http://www.worldcongress2000.org">http://www.worldcongress2000.org</a>
<b>Colombia</b>	Colombian Software Federation (Federación Colombiana de Software - FEDECOLSOFT) / <a href="http://www.fedecolsoft.org.co">http://www.fedecolsoft.org.co</a>
<b>Czech Republic</b>	Association for Consulting to Business (Asociace Pro Poradenství v Podnikání - APP)
<b>Ecuador</b>	Association Ecuatoriana de Tecnología de Información y Servicios (AETIS)
<b>Egypt</b>	The Co-operative Society for Computers of Egypt (CSCE)
<b>Finland</b>	Information Technology Services Association (Tietotekniikan Palveluliitto - TIPAL) <a href="http://www.tipal.fi/index.html">http://www.tipal.fi/index.html</a>
<b>France</b>	Syntec Informatique <a href="http://www.syntec-informatique.fr/syntec/ow/home.cgi">http://www.syntec-informatique.fr/syntec/ow/home.cgi</a>
<b>Germany</b>	Bundesverband Informationstechnologien (BVITeV) <a href="http://www.bvit.de/home-eng.htm">http://www.bvit.de/home-eng.htm</a>
<b>Greece</b>	Federation of Hellenic Information Technology Enterprises (SEPE) <a href="http://www.sepe.gr/sepe1en.htm">http://www.sepe.gr/sepe1en.htm</a>
<b>Hong Kong</b>	Hong Kong Information Technology Federation (HKITF) <a href="http://www.hkitf.org.hk/">http://www.hkitf.org.hk/</a>
<b>India</b>	National Association of Software and Service Companies (NASSCOM) <a href="http://www.nasscom.org/index.html">http://www.nasscom.org/index.html</a>
<b>Israel</b>	Israeli Association of Software Houses (IASH) <a href="http://www.iash.org.il/">http://www.iash.org.il/</a>
<b>Italy</b>	Associazione Nazionale Aziende Servizi Informatica e Telematica <a href="http://www.anasin.it/">http://www.anasin.it/</a>
<b>Japan</b>	Japan Information Service Industry Association (JISA) <a href="http://www.jisa.or.jp/">http://www.jisa.or.jp/</a>
<b>Lithuania</b>	The Association of Lithuania's Information, technology, telecommunications and office equipment (INFOBALT) / <a href="http://www.infobalt.lt">www.infobalt.lt</a>
<b>Malaysia</b>	Association of the Computer Industry (PIKOM) <a href="http://www.pikom.org.my">http://www.pikom.org.my</a>
<b>Mexico</b>	Asociación Mexicana de la Industria de Tecnologías de Información (AMITI)

	<a href="http://www.amiti.org.mx/">http://www.amiti.org.mx/</a>
<b>Mongolia</b>	Mongolian National Information Technology Association
<b>Morocco</b>	L'Association des Professionnels de L'Informatique de la Bureautique et de la Telematique (APEBI) / <a href="http://www.atlasnet.net.ma/forum-apebi/present.htm">http://www.atlasnet.net.ma/forum-apebi/present.htm</a>
<b>Netherlands</b>	Federation of Dutch Branch Associations in Information Technology (Federatie Nederlandse IT - FENIT) / <a href="http://www.fenit.nl/">http://www.fenit.nl/</a>
<b>New Zealand</b>	Information Technology Association of New Zealand (ITANZ) <a href="http://www.itanz.org.nz/">http://www.itanz.org.nz/</a>
<b>Northern Ireland</b>	Software Industry Federation in Northern Ireland (SIF) <a href="http://www.sif.co.uk">http://www.sif.co.uk</a>
<b>Poland</b>	Polish Chamber of Information Technology and Telecommunications (Polska Izba Informatyki i Telekomunikacji - PIiIT) / <a href="http://www.piit.org.pl/index_e.htm">http://www.piit.org.pl/index_e.htm</a>
<b>Portugal</b>	Associação Portuguesa das Empresas de Tecnologias de Informação e Comunicações (APESI)
<b>Republic of Korea</b>	Federation of Korean Information Industries (FKII) <a href="http://www.fkii.or.kr/english/index.html">http://www.fkii.or.kr/english/index.html</a>
<b>Romania</b>	IT&C Association of Romania (ATIC) <a href="http://www.softnet.ro/atic/">http://www.softnet.ro/atic/</a>
<b>Singapore</b>	Singapore Information Technology Federation (SITF) <a href="http://www.sitf.org.sg">www.sitf.org.sg</a>
<b>South Africa</b>	IT Association of South Africa (ITA) <a href="http://www.ita.org.za">http://www.ita.org.za</a>
<b>Spain</b>	Asociación Española de Empresas de Tecnologías de la Información (SEDISI) <a href="http://www.sedisi.es">http://www.sedisi.es</a>
<b>Sweden</b>	Swedish IT-companies' Organisation AB (Svenska IT-Företagens Organisation AB) <a href="http://www.sito.se/">http://www.sito.se/</a>
<b>Thailand</b>	The Association of Thai Computer Industry (ATCI) <a href="http://www.bdg.co.th/atci/atcihome.htm">http://www.bdg.co.th/atci/atcihome.htm</a>
<b>United Kingdom</b>	Computing Services & Software Association (CSSA) <a href="http://www.cssa.co.uk/cssa/">http://www.cssa.co.uk/cssa/</a>
<b>United States</b>	Information Technology Association of America (ITAA) <a href="http://www.ita.org/index.htm">http://www.ita.org/index.htm</a>
<b>Zimbabwe</b>	Computer Suppliers' Association of Zimbabwe (COMSA)