

Taratip Narawong

Division of Nuclear Medicine, Department of Radiology, Rajavithi hospital, Bangkok, Thailand

Y2K or Millennium Bug is worldwidly known during this past few years. Many institutes and companies are trying to make their systems to be 'Y2K Ready'. The details about Y2K can be searched from many media. This is a brief information to tell us about Y2K in Thailand, which I found from the NECTEC (National Electronics and Computers Technology Center) website. Most of the contents are written in Thai.

There are many impacts of the Y2K problem as follows:

- the impact on business and economics especially e-commerce
- the impact on social, health and security
- the impact on education
- the impact on human

In 1998⁽¹⁾, Dr. Chonchanok wrote a publication about the government preparation for the year 2000. There are 8 main steps to solve these problems.

- Awareness – to know 'Y2K'
- Understanding – to understand the risk of this problem
- Scoping – to estimate the budget and assign working teams
- Assessment – to collect all available data such as hardware, software, network, manufacturer, model, installation year etc. and to do the basic test.
- Planning – to decide the solution methods such as fixing, developing or buying a new one.
- Conversion – to solve the problem as planned.
- Testing – to use manpower, time and budget to test all affected systems.

- Implementation – to train the manpower for the new system.

From those 8 steps, the government should make an outline of the activities which can be divided into three main parts i.e.,

- understanding and ready to take action
- evaluation
- planning and solving the problem.

In the first part, the government should concern about this problem and do a research of all appliances. The responsible personals should be assigned and the evaluation should be done. The second part is to make an inventory list, create a database and study the procedures and their limitations. From the inventory list, the severity of the problem can be assessed. Finally, the tools should be applied and test. For PC, the minimum test data set should be used to test the date. For example, the 1st of January 2000 should be displayed as Monday or the 29th of February 2000 should be Tuesday etc.

Apart from the above report, there is another publication titled 'Y2K Bugs in Embedded System' by Telecommunication Technology Laboratory.⁽²⁾ Embedded system is the electronics system which con-

trols or displays the function of the equipments or machines. This system is built to be part of them. The computer chip embedded in this system maybe a single microprocessor, individual microprocessor, small assemblies of microprocessors with no timing function or subassemblies with time function.

The signs of Y2K problem in the embedded system are as follows:

- non function
- malfunction in some parts
- sometimes it works inappropriately
- for networking, maybe the wrong data can be transferred to other systems
- the system may display the incorrect date.
- some data may be lost

There are 5 steps to achieve the solution.

1. Awareness

All staffs should have information about the impact on non-IT system such as the patient database or medical equipments that have timing function and the cause of Y2K. Some systems will only display wrong data but some will shut down and cannot work again. The working team to deal with these bugs should be set up.

2. Assessment

The working team has to assess all the systems and equipments, make a checklist and consider how serious of each problem. Each user should confirm with the manufacturer about the affected items list. The best way is to get the 'Year 2000 Certification' for each equipment and know the situation whether the equipment is fully compliant or not. More concern should be given if the equipment works with

the network such as LAN or ethernet.

3. Renovation

After receive the information from the manufacturer, each department should decide what to do with it by looking into the importance of each equipment. Then we can decide the suitable methods for each one.

4. Validation

This step is to test all system functions for both stand-alone and networking equipments. The service engineer should test for us to make sure that it can work properly after the test.

5. Implementation

Make sure that all validated systems can work as planned. We should have a reserve plan in case the systems do not work as expected.

Moreover, those who would like to have Y2K information from the Ministry of Public Health can have a look at 'www.moph.go.th'. This page also contains the Thai Medical Informatics-TMI.

As Nuclear Medicine equipment users, we should ask for the 'Year 2000 Certification' from each manufacturer to make sure that our equipments are compliant. Followings are some examples of the interesting websites.

- y2k.nectec.or.th
- www.toshiba.com/tams/y2k/
- www.biodex.com/y2k.html
- www.hologic.com/newsite/service/y2k.shtml
- www.picker.com/y2k/
- www.kodak.com/US/en/service/y2k

REFERENCES

1. Chonchanok Verawan. Government preparation for the Year 2000. Sarn NECTEC 1998;5:23-24
(y2k.nectec.or.th/pub/y2k-pub01.html)
2. Telecommunication Technology Laboratory. Y2K Bugs in Embedded System. 1998
(y2k-pc.ctl.nectec.or.th/embedded/Introduction.htm)