Open Systems Concepts and Programmes in Malaysia

AI
Mohamed b. Awang-Lah
Director, Computer Systems Division
Malaysian Institute of Microelectronic Systems (MIMOS)
7th Floor, Exchange Square
Jalan Semantan, 50490 Kuala Lumpur
Tel: +60-3-255-2700
Fax: +60-3-255-2755
E-mail: mal@rangkom.my

Introduction

The Programme for Open Systems in Malaysia or POSIM was announced in April 1990. Although the official national committee for POSIM has not been formed, I am happy to note that many developments with regards to Open Systems have taken place through the awareness resulting directly or indirectly from that initiative. We have seen the formation of the Open Systems Special Interest Group (OSSIG) by IT professionals through the Malaysian National Computer Confederation (MNCC). We have also seen the formation of the Industrial Standards Committee on Information Technology (ISC/IT) as an effort from the standards community. The most recent one, the launching of the Public Sector Open Systems Programme has marked the most significant milestone in IT development for the country. What is lacking now is a clear stand by the IT industry. It seems that our IT industry is still too much dominated by trading activities. Research and Development (R&D) efforts are still very minimal. Without R&D programmes, the IT industry may not be able to appreciate the value of Open Systems. So far, we have heard only "noises" made by certain people within the IT industry regarding Open Systems.

Last year, we faced certain difficulties in establishing the POSIM National Committee due to problems in finding representatives that reflect local needs and capability. However, after looking at the many positive developments over the last one and a half years, perhaps now is the right time to bring all the relevant people together, including press representatives, into the POSIM National Committee. While waiting for this committee to be formed, a more clear stand by the IT industry would be a useful indicator.

Open Systems activities are being highlighted more frequently these days in the local newspapers. Most write-ups are very positive while others are slightly negative and sometimes confusing. To me these reports reflect the learning and growing up processes that we are going through now. It will take sometime before the news articles become more credible.

Open Systems Concepts

I would like to take this opportunity today to discuss a few issues about Open Systems and to clarify a few misconceptions and confusions. These may be genuine or may have been created by people who either do not want to understand or purposely try to confuse the users in order to gain certain advantages.

First of all let me put it straight. Open Systems is not UNIX System although the UNIX Operating System may be a part of Open Systems. Further more, Open Systems is not OSI (Open Systems Interconnection) although OSI is a part of Open Systems. Open Systems covers all technologies or standards that can serve to achieve its objectives. What are the objectives of Open Systems?

Before I answer that question, let me first state a practical definition of Open Systems:

It is a design concept, for computer and communication equipment, based on international standards, to achieve a high degree of compatibility, between hardware and software systems, of different sizes and brands, acquired at different times over a reasonably long period.

As implied in this definition, Open Systems is not absolute. It is not a package that you can buy and use directly. It may mean different things depending on whether your are an end-user, a student, a designer or a supplier.

Now, let us come back to the question of objectives. The objectives of Open Systems are reflected in the objectives of the Public Sector Open System Programme, announced on 22nd July 1991. These are:

• to coordinate the acquisition of computer and communication equipment;
• to promote resource sharing between different agencies and departments which may have different kinds of computer equipment;
• to reduce duplication of efforts in developing common software applications;
• to optimise the cost of training and maintenance;
• to support the development of local industry especially in software;
• to avoid being dependent on any particular supplier.

It so happens Open Systems has been reasonably well defined such that most of the above objectives can be achieved through it. If there were no such thing as Open Systems, we have to create one to achieve the same objectives. But why should we create one if the foundation for Open Systems has been well established? Why should we, re-invent the wheel?

The question remains. What are the components of Open Systems? It is ironic that although the Open Systems concept has been well documented over the last ten years, most people still cannot talk coherently when it comes to the subject of standards. Some people keep referring to the UNIX system, which is not a standard, as the Open Systems. UNIX technology is definitely a very interesting technology. It is a perfect tool for learning system software. It may be the most appropriate creative platform to train system developers, but not the end users. But whatever it is, I would like to stress again that Open Systems is not equal to UNIX system.

About eight months ago, SIRIM formed the Industrial Standards Committee on Information Technology. The committee has created nine Working Groups on various fields related to IT. These include Working Groups for OSI, EDI, Character Coding, Office Systems, Telecommunications, etc. The biggest problems have been to find people to sit in these Working Groups. Most people have not seen standards document in their lives. These include people from both the industry and academia. But we are grateful to those who are brave and are willing to learn and contribute their time and energy. Most of the Working Groups had their first meeting. The first task is to adopt or adapt any relevant existing IT standards. Once that's done, we can start looking into creating new ones - if we need to.

Standards

I am bringing up this matter as an illustration about our familiarity or rather unfamiliarity with the subject of standards. So it is not surprising when we hear many confusing and conflicting statements about Open Systems standards. Let me try to list down some of the major items for which standards have to be identified.

- Operating Systems Interface
- Network and Transport Protocols
- network filesystem
- preferred programming language(s)
- database query language
- message handling system
- file transfer
- virtual terminal
- office document format
- electronics data interchange (EDI)
- network media interface
- graphical user interface
- serial line communication interface
- printer interface
- data format for printing
• modem communication protocol
• character set
• data compression
• data encryption
• software documentation
• PC networking
• etc.

This list is not exhaustive. It is expected that the guideline for Public Sector Open Systems Programme will define the standards for most if not all of these areas. The list will be refined and updated continuously as we progress towards the mandatory implementation stage.

Software

Let me change the subject slightly and elaborate on the subject of software investment and its relation to the Open Systems Initiative.

Over the years since the arrival of electronics technology and subsequently the microelectronics technology, the cost and size of hardware systems of the same capability have been continuously decreasing. On the other hand, the processing power using new processor chips packed with millions of transistors has increased many times. The same is however not true for software. The cost of making and maintaining new software keeps on increasing. In fact, the software inefficiencies and deficiencies have in many cases been hidden using new hardware system with higher capability and faster speed. That’s why we keep getting new software releases, new versions or updates that require more and more memory on the pretext that the cost of memory is going down. The real reason is our software development methodology is still largely based on very old technology.

If we take the cost of software development and maintenance, and compare it with the total cost of a system, we find that its proportion is getting bigger over time. The investment on people to develop and maintain software is big and will get bigger. It is this investment that has to be protected. This is actually the primary reason for going to Open Systems. Software has to be written to interact not only with the human end-user but also with the underlined interfaces - operating system, network, remote application, file system, etc. Hence to ensure compatibility, interface standards have to be agreed to.

Hardware

Old hardware can be replaced with new hardware as the latter get faster, cheaper and less expensive to maintain. That’s why we need a standard operating system interface. When the old hardware is replaced, so is the operating system. As long as the operating system interface remains the same, all existing applications software will not be affected.

The people also have to be trained. It will take many years before a person becomes proficient with his work. This is another important reason. Through Open Systems, the relevant people can be trained on the same platform. Uniform training programmes and materials can be used. Rather than having to learn many variety of systems superficially, more in-depth training on the same system can be given. The computer personnel do not have to learn many new things when they change their machines or move to other places of work.

A few words about existing proprietary systems. We cannot expect that these systems have to be replaced overnight. We expect that these systems will continue to be used until it is no longer economical to maintain them. In any process of upgrading we hope that Open Systems possibilities and options will be considered seriously. There are many products that can make almost all proprietary systems more “open”. It is up to the users to insist!

National Development

Over the last one year or so, clear statements of direction have been made by the government through a number of documents. These are the Action Plan for Industrial Technology Development, 2020 Vision, the Second Outline Perspective Plan (OPP2) and the latest one, the Sixth Malaysia Plan. The statements have been made with the primary goal of making the country an industrialised and prosperous nation within 30 years. Among them:

• We recognise that human resource development is a critical factor,
• We want to develop a strong, market driven R&D capability,

• We stress that private sector should be the prime engine for growth.

Last Saturday, I presented a paper entitled "Towards an Information Age" at the Seminar on Malaysia Year 2020 in Kuching, Sarawak. In that paper, I outlined four strategies, as far as the Information Technology is concerned, to ensure that we are better prepared to be an advanced industrialised country. These strategies are:

IT Development Strategies

• We must prepare our younger people as early as possible with adequate skills in using modern IT tools such as the computer. They should be able to adapt and adopt new, more advanced tools as they grow older. Computer literacy should not be seen as a mere awareness or exposure to computers and some simple software. It should mean a much deeper understanding into the know-how of using computer hardware and software as tools to search, acquire and analyse new information and transform it into new know-how.

• Existing administrators, managers and decision makers from all levels should be transformed into IT literates. It would be too late if we were to wait for the new generation of a more IT literate administrators and managers. Only through understanding IT, the existing procedures, rules and regulations can be re-evaluated and modified in order to take advantage of IT to ensure higher efficiency, greater productivity and better quality of services.

• We must have a good national information infrastructure with international links for educational and R&D activities, and to support efficient and responsive public sector services. The information infrastructure, consisting of data communication networks and well integrated information databases, can be used to develop trained manpower and to create innovative environments for the enhancement of indigenous capability for producing new, more competitive, high value-added products and services. National and international information networks will serve to expand the markets for these products and services.

• The mass media should be more committed and serious in dealing with new technologies to achieve real credibility in the eyes of the experts. In many instances, news related to modern technology has been (most probably unintentionally) distorted due to lack of understanding and appreciation by most reporters and editors who have very minimal technical background. The public at large should be given the chance to educate themselves through the mass media - which may be the only means affordable.

The implementation of the first three strategies - computer literacy, IT literate decision makers and information infrastructure are very much related to the Open Systems Programme.

IT Industry

Open Systems should not be looked upon purely from the technological perspective alone nor should it be viewed from the business angle only. Open Systems should also be looked from the context of national development. The government as a user and facilitator has its own objectives. The industry should also set its own objectives. One hopes these two sets of objectives will meet at some point.

I would like to point out that Open Systems technology should be the basis for faster growth of the IT industry. The window of opportunity is beginning to open. If anyone wants to be an active participant, now is the time. A lot of new products can be designed based on Open Systems technology. Worldwide market is wide open. Does our industry want or willing to take up this challenge? I leave it at this point for you to ponder.

I wish all of you a successful symposium.

Thank you.