Open Source Software – An Enabler of Malaysia's Vision 2020 transformation

TAN KING ING

Malaysian Administrative Modernisation and Management Planning Unit (MAMPU)

3rd Floor, Block B2, Prime Minister's Department Complex

Federal Government Administrative Center

62502 Putrajaya, Malaysia

Email: tankinging@mampu.gov.my

Telephone: +603-88725082

Fax: +603-88883201

JACOB THOMAS Jr.

Open Source Competency Centre (OSCC), MAMPU

Level 3, E302-304, Enterprise Building 3, Persiaran APEC,

63000 Cyberjaya, Selangor Darul Ehsan, Malaysia

Email: jacob@oscc.org.my

Telephone: +603-83191200

Fax: +603-83193206

Introduction

In pursuit of Vision 2020 which aims to steer Malaysia towards being a developed nation, the Government of Malaysia leverages Information and Communication Technology (ICT) to transform the public service delivery through various ICT programmes. These ICT programmes, inter alia, include the establishment of a long-term Malaysian Public Sector Open Source Software (OSS) Programme to supplement the entire Public Sector ICT vision. This paper aims to discuss the role of OSS as an enabler to achieve Vision 2020.

What is Open Source Software (OSS)? "Briefly, OSS/FS[1] programs are programs whose licenses give users the freedom to run the program for any purpose, to study and modify the program, and to redistribute copies of either the original or modified program (without having to pay royalties to previous developers)." David Wheeler [1]. This is a stark contrast to proprietary software licenses which strictly prohibit modification and redistribution of the program. Proprietary software usually comes with a license or royalty fee for every copy of the program and the cost of its use increases with the number of users. Legally, OSS is software that has been released under a license certified by the Open Source Initiative (OSI)[2] to meet the criteria of Open Source Definition [3]. The use of OSS does not incur licensing fees and this is the key contributor to cost reductions in large-scale OSS implementations.

Open Development Model

OSS is often developed by loosely organised communities of programming enthusiasts, comprising lead developers, committers and users, business entities and non-profit organisations such as Linux Foundation, collaborating via the Internet. This approach, also known as the Open Development Model (ODM), yields considerable benefits to OSS users. ODM enables deep levels of user engagement and understanding, process transparency, share and re-use, innovation through distributed peer reviews, and flat structures for self-governance and agility. As a result, ODM yields "best of breed" products through global collaboration that epitomises meritocracy, ownership neutrality, flexibility and sustainability of the software. Open source enthusiast Eric Raymond describes a successful OSS development project in his essay "The Cathedral and the Bazaar [4]. Good OSS projects reuse as much code from other projects as possible to avoid duplicated work. They rely heavily on feedback and suggestions from users of the software, operating under the principle of "release early, release often, and listen to your customers." This intense peer

1 FS is acronym for Free Software.

implement OSS. The OSS Master Plan's objectives were to reduce total cost of ownership, increase freedom of choice of software usage, increase interoperability among system, increase growth of ICT industry, increase growth of OSS industry, increase growth of OSS user and developer community, increase growth of knowledge-based society, and reduce digital divide, as shown in Figure 1. The plan outlined a roadmap comprising three phases, commencing with Phase I's Laying the Foundation and Early Adoption from 2004 to 2006. Now in the latter stages of the second phase of Accelerated Adoption, the initiative is focusing on rapidly increasing OSS adoption and implementation among Government agencies nationwide. Ultimately, its goal is Self Reliance in Phase III, when agencies are competent to develop and implement OSS solutions independently.

(Source: The Malaysian Public Sector Open Source Software Master Plan Phase II, December 2007)

Figure 1: OSS Vision, objectives and roadmap

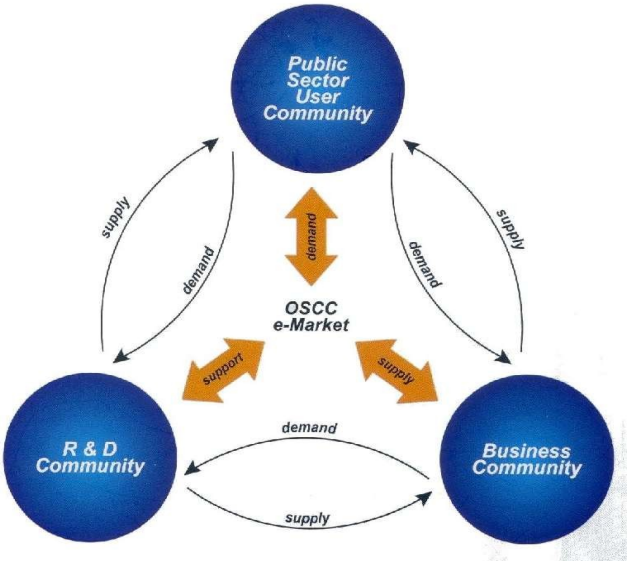
The Open Source Competency Centre (OSCC), which was launched concurrently with the OSS Master Plan, was charged to lead, coordinate and support the implementation of the OSS Master Plan throughout the Public Sector. As the single national reference centre for OSS, OSCC MAMPU offers various services to Government agencies such as training, promotion and awareness, technical support and research and development. All eight functional services of OSCC dedicated to implementation of OSS in the Public Sector is depicted in Figure 2.

(Source: The Malaysian Public Sector Open Source Software Master Plan Phase II, December 2007)

Figure 2: OSCC MAMPU 8 Functional Services

Apart from supporting Government agencies, OSCC MAMPU also engages the R&D community, which comprises

mainly universities, and ICT industry in smart partnership activities to facilitate the development of a sustainable OSS ecosystem. This tripartite smart partnership framework among the Public Sector, R&D and Business communities is illustrated in Figure 3.



(Source: The Malaysian Public Sector Open Source Software Master Plan Phase II, December 2007)

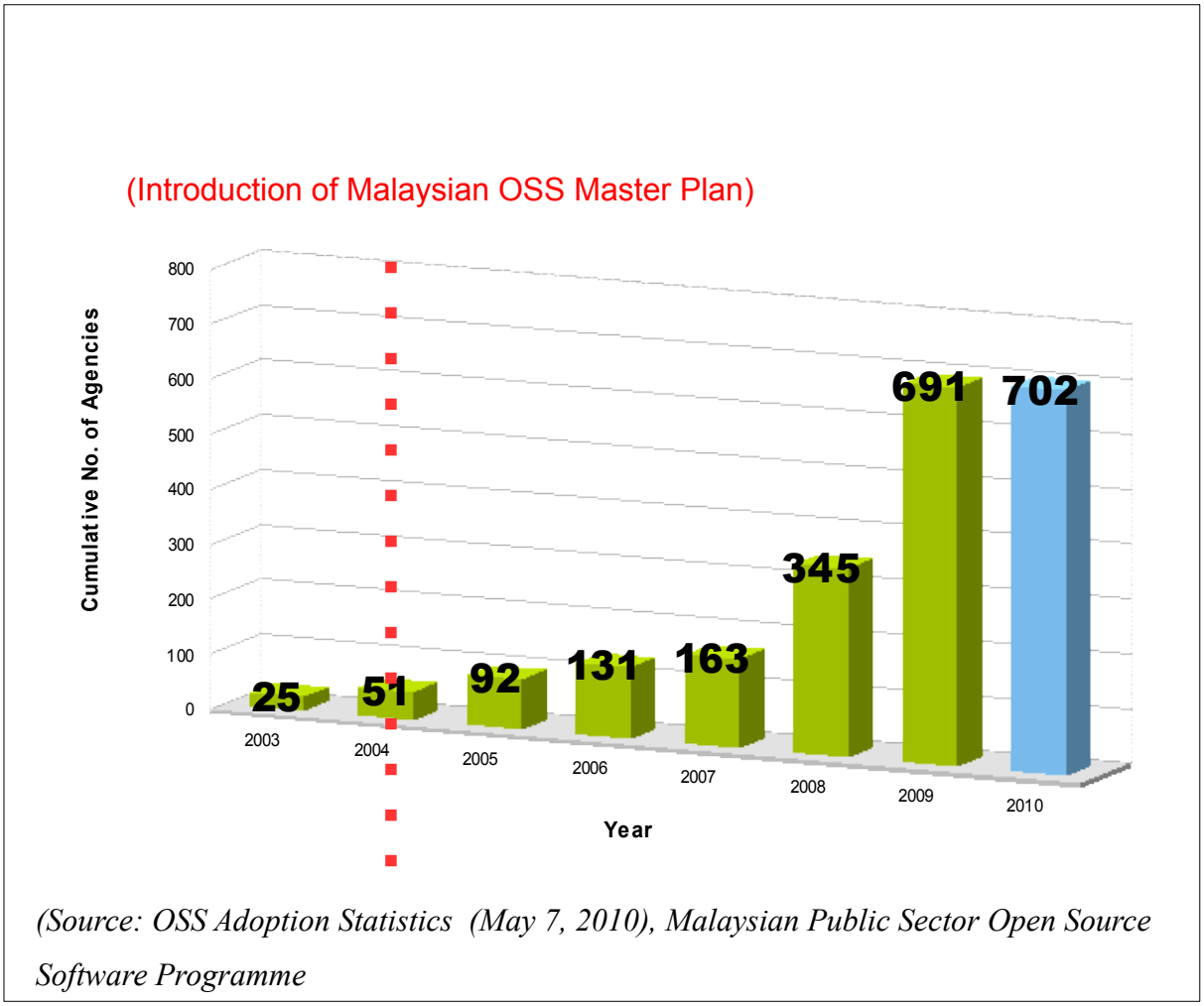
Figure 3: Smart Partnership Framework

Enabling enhanced public service delivery with OSS

Undoubtedly, MAMPU has achieved remarkable success in executing the OSS Master Plan in Phase I and II as evidenced in the Benefit Realisation Report (BRR) compiled in 2010 [11]. Among key benefits realised that have enabled enhanced public service delivery are a more cost-effective and connected government, enhanced human capital development, increased growth of knowledge-based society, increase growth in local ICT industry, reduced digital divide and increased competitiveness and web presence.

Cost-effective and connected government

OSS has proven to be a viable alternative to proprietary software and Government agencies have implemented OSS in many mainstream IT systems and applications. Today, the number of Public Sector agencies reported to be adopting and implementing OSS is 702 or 96% of Public Sector agencies, as reported in OSCC MAMPU's latest OSS adoption statistics in Figure 4 [12]. This represents more than a 25-fold increase in OSS adoption compared with just about 25 agencies adopting OSS in 2003 before the OSS Master Plan was introduced. Since OSS does not impose license or royalty fees, unlike proprietary software, the OSS adoption and implementation in Government agencies has also resulted in an estimated known savings of RM 198 million to-date. These known savings that represent a mere tip of the iceberg could be channelled for other essential Government projects and activities such as improving infrastructure in rural areas and upgrading ICT facilities in agencies.



(Source: OSS Adoption Statistics (May 7, 2010), Malaysian Public Sector Open Source Software Programme

Figure 4: OSS adoption chart (2003 – 2010)

In order to continuously provide enhanced public service delivery, it is vital that Government information is preserved and made accessible always. Government agencies will need to seamlessly share and exchange information among one another towards creating a connected government. To make this happen, the essential Government information in electronic documents must be kept in an Open Standards format. With this approach, any software that supports the Open Standards format will still be able to access these documents in years to come, thus ensuring preservation of Government information. OSCC MAMPU has been promoting and creating OSS awareness as an ideal choice for preserving Government information through productivity tools such as OpenOffice.org which complies to international Open Document Format (ISO 26300). In response to OSCC MAMPU's promotional efforts, five state governments, namely Pahang, Sabah, Perak, Sarawak and Penang, have issued circulars to their respective state agencies to use the OSS-based productivity tool, OpenOffice.org., in all PC desktops.

To recognise effective and innovative use of OSS by Government agencies and public institutions of higher learning to enhance public service delivery, OSCC MAMPU has been organising the annual OSS Case Study competition since 2008. The submissions received from Government agencies and public institutions of higher learning indicated that many mainstream IT applications and systems are developed and implemented using OSS. For example, Ministry of Health (MOH) developed and deployed an OSS-based email collaboration system called MOH-Cube to Government hospitals and clinics nationwide to provide cost-effective communication facilities for over 30,000 personnel. It enabled MOH to provide critical ICT services to its large workforce rapidly towards improving productivity and at the same time, enjoyed a savings of RM 5.3 million in terms of software license fees. Similarly, the Federal Department of Town and Country Planning (JPBD) deployed an OSS-based Geographic Information System (GIS) called Quantum GIS as an alternative to its range of proprietary-based GIS systems and found it has helped to improve productivity as it is easy to use and saves time. With this OSS solution, JPBD can easily provide the GIS facilities to many more personnel in a cost-effective fashion, with savings amounting to about RM 10,000 per person. Apart from JPBD, there are many other agencies that also require GIS facilities and they can also benefit significantly by emulating JPBD's bold move.

In short, OSS has been deployed in all 3 levels of Government, namely Federal(99.6%), State (94.9%) and Municipalities (95.8%). At the Municipal level, OSS has also been used in the entire spectrum of the e-government services such as e-Complaints, e-Submissions, e-Building, e-Planning and e-Licenses.

Enhanced human capital development

OSS with the availability of its source code and collaborative development model presents an excellent opportunity for learning, experimenting and innovating. It is relied on as an enabler to increase software development capabilities and enhance national human competencies. Effective human capital development and innovation are key factors in ensuring Government personnel are able to provide enhanced public service delivery to the citizens. In order to capitalise on this, much focus and effort has been placed in providing OSS training to Government personnel through the Public Sector OSS Master Plan programme.. Since its establishment, OSCC MAMPU has provided numerous OSS training and certification programmes and has trained over 5,100 Government personnel while over 70 Government personnel have been certified in various OSS certification programmes.

Increased growth of knowledge-based society

Isaac Newton observed, “If I have seen further than others, it is by standing upon the shoulders of giants.” The essence of OSS and ODM is captured in this famous quote.

OSS share and re-use avoids the reinvention of the wheel, freeing resources to focus on new frontiers of explorations and inventions. The rich repository of readily available OSS collateral reduces the need for development from ground zero. This aspect of OSS, coupled with its collaborative model, leverage global resources to accelerate innovation and creation of new ideas, solutions and opportunities. Malaysia's involvement in this global OSS community will result in increased and more rapid growth of our knowledge-based society.

Since the launch of the OSS Master Plan, there has been increasing awareness and participation of local ICT personnel in global OSS community projects, bringing cross-fertilisation benefits, global best practices, work culture and universal values into Malaysia. This increased participation is evidenced from the increasing number of vibrant local OSS communities such as OSDC.my, FOSS.my, PHP.net.my and Ubuntu-my.

One of the OSCC MAMPU pilot project has transformed a purely classroom-based learning to a blended learning environment which includes multimedia learning content through the roll-out of the Learning Management System to

10,000 schools nationwide. This is done in stages, beginning with the successful roll-out of OSS-based Enhanced Learning Management System (ELMS) to fifty schools nationwide. ELMS provides the opportunity for the learning process to take place "anywhere, anytime", and in collaboration with global parties. Apart from ELMS, about 58% of districts in the country have schools using OSS to support the teaching and learning facilities. Collectively, this will contribute to development and growth of a knowledge-based society in a cost-effective manner.

Increased growth in the local ICT industry

OSS promotes open market competition through a much lower barrier to market entry and exit. Any individual without much capital outlay has the potential to capture market share just as easily as an obsolete business entity finding itself irrelevant and out of business. Unlike the proprietary world which encourages vendor lock-in and monopoly, this open market competition offers opportunities to our local ICT vendors to grow by providing services such as training, technical support, research and development, documentation and OSS legal support and consultancy services. The OSS Programme's Benefit Realisation Report has shown increased growth in the local ICT industry in the form of a new category of OSS service providers. Out of these, seventy one OSS service providers have registered with OSCC e-MarketPlace while 53% of all ICT vendors, about 2100, now provide OSS product services.

Reduced digital divide

Deployment of ICT and access has not been able to reach all sections of the population due to the high cost involved. However, OSS has enabled rural and under-privileged communities to learn and benefit from the use of ICT through several initiatives due to its lower cost. An example of this is the K-Perak programme initiated training programmes on OpenOffice.org for the Orang Asli community and local villagers as part of its efforts to ensure ICT reaches to all segments of society. Its programme was carried out cost-effectively with the use of OSS solutions that enabled training courses to be planned and implemented in a short of period of time. The Bestari.Comm training programme conducted by the Terengganu Government has successfully trained over 30,000 members of the public in OSS and helped to equip the people with basic ICT skills. Another initiative carried out in reducing the digital divide is the NurITA pilot project by the Ministry of Women, Family and Community Development. This project, which was part of the OSS pilot projects in 2005, was implemented by the ministry to help single mothers in earning a living through available jobs and business opportunities. All these projects are examples of deploying OSS for a more affordable ICT towards the digital

divide.

Increased competitiveness and web presence

The accelerated adoption of OSS among Government agencies have contributed to Malaysia's high ranking in United Nations (UN) Global e-Government Readiness report in 2008 which saw Malaysia's ranking improving significantly from 43rd in 2005 to 34th in 2008. The report highlighted 3 Government websites that contributed to this achievement and all 3 websites were developed using OSS solutions. This recognition for our e-Government initiative is a strong testimony of the Government's efforts in enhancing the public service delivery through the OSS programmes. It also augurs well in increasing our national competitiveness in today's highly globalised world.

Clearly, OSS has proven to be a successful enabler for Government agencies towards providing an enhanced public service delivery thus far. Taking it a step further, OSS can be leveraged to enable the nation's transformation towards Vision 2020.

Transforming Malaysia towards Vision 2020

Vision 2020 is a Malaysian roadmap for the future introduced by the former Prime Minister of Malaysia, Tun Dr. Mahathir bin Mohamad in 1991. The vision calls for the nation to achieve a self-sufficient industrial and Malaysian-centric economy by the year 2020. Malaysia will be fully developed in terms of national unity and social cohesion, in terms of our economy, political stability, system of government, social justice, quality of life, social and spiritual values, national pride and confidence [13]. In short, Malaysia would be a progressive and prosperous nation and in full possession of an economy that is competitive, dynamic, robust and resilient.

To achieve Vision 2020, a plan was put in place to plot the journey towards being a world-class nation with first world human capital, infrastructure, education system and society, supported by a vibrant and sustainable economy anchored on innovation and creativity and managed using world-class governance practices. Although considerable progress has been achieved since Vision 2020 was launched, its momentum was hampered by regional and global crises over the last 19 years. Apart from slower economic growth rates, the nation's economy also appears to be caught in the middle income trap.

Under the leadership of the current Prime Minister, YAB Dato' Sri Mohd. Najib Tun Abdul Razak, the Government of Malaysia has taken bold steps to review its economic position and chart a new course for the future. The Prime Minister had called for the transformation of economy, society and government to ensure the goals of Vision 2020 are met within the stipulated timeframe. To move the country forward, the Government has crafted a framework comprising four pillars of national transformation to drive change, namely 1Malaysia, Government Transformation Programme, Economic Transformation Programme and 10th Malaysia Plan, as depicted in Figure 5 [14].

(Source: National Economic Advisory Council, New Economic Model For Malaysia – Part 1, March 2010)

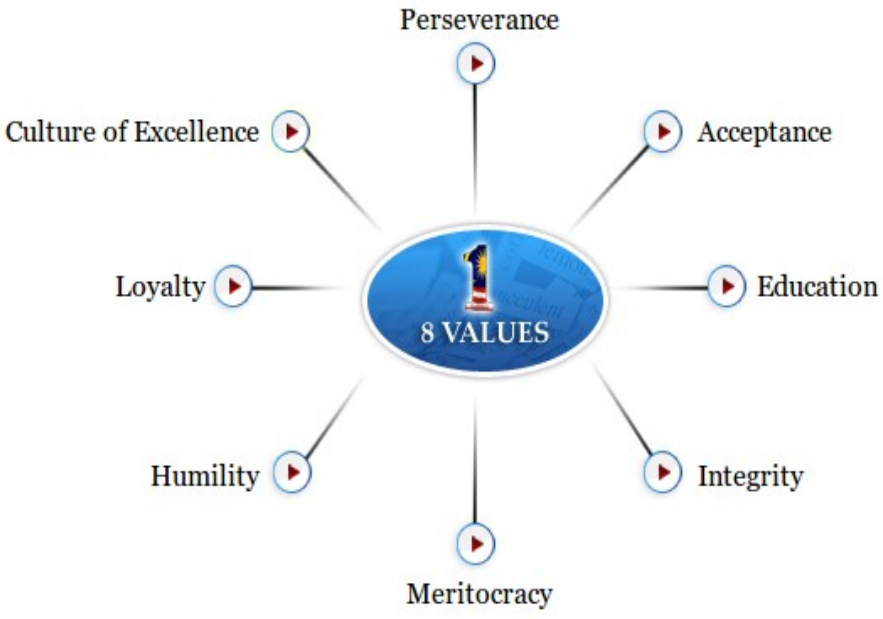
Figure 5: The four pillars of National Transformation

These key pillars call for a paradigm shift in the Public Sector, private sector, educational institutions, non-government organisations and across all sections of the community. ICT being pivotal role to realising some of the goals of the key pillars and in that regard, OSS can be a powerful enabler for each of the key pillars to help steer Malaysia towards achieving Vision 2020. The following sections will outline how OSS can be leveraged to enable transformation towards Vision 2020.

Using OSS to enable 1Malaysia: People First, Performance Now

1Malaysia, which is based on the principle of 'People First, Performance Now', is the clarion call to Malaysians, regardless of belief, to think and act as one - that is the 1Malaysian that thinks and acts towards a common goal to build

a nation that is prosperous, progressive, peaceful and safe thus enabling it to compete with other communities in the world [15]. It emphasises on cultivating a set of 8 core values, namely, culture of excellence, perseverance, acceptance, education, integrity, meritocracy, humility and loyalty, as shown in Figure 6.



Source: 1Malaysia website - http://www.1malaysia.com.my/8-values/8-values

Figure 6: The eight values of 1Malaysia

In achieving the 1Malaysia goal, OSS can exert an instrumental role, especially in the area of Culture of Excellence, Education and Meritocracy. Two of the inherent attributes of OSS and ODM are the collaborative community-centric approach and flat organisation structure in governing its projects and activities. This approach and structure encourages transparency whereby any work contributed to a particular OSS project can be and will be subject to peer review. The peer review process often results in recognition of good quality work being produced among OSS community. Psychologically, this approach also motivates the contributors to produce their best work before its submitted for review by their peers. This has led to a strong culture of excellence among OSS community members in order to gain recognition among their peers, which not only helps to improve their standing within the OSS community but also becomes a strong testimony of their capabilities and quality of work for personal reference. Clearly, OSS and ODM can be leveraged to produce similar outcomes among Malaysians by creating a conducive environment to nurture a culture

of excellence using a similar approach.

The ODM thrives on collaboration. A project could be initiated by lead developers with contributions from people of all ethnicities, culture and language. For example, the Linux operating system is available in many languages such as Mandarin, English, Bahasa Indonesia, Tamil and even in Bahasa Malaysia through the Embun project. This collaboration among multi-lingual and multi-cultural developers calls for humility, tolerance and acceptance and encourages understanding and respect for one another. OSS can become the glue that binds all diversities towards the common goal of excellence of 1Malaysia.

In the area of education, OSS has been used to produce numerous educational tools and learning content for students, professionals, hobbyists and enthusiasts. These tools and content are made freely and easily available through the Internet for the benefit of everyone. This generosity has been made possible by the unique OSS licensing model which grants some amount of freedom to the users. The freedom in this licensing model has also helped to increase number of OSS-based educational tools and content and has also been extended to other works such as documents, music, art and computer software. If OSS-based educational tools and content are used, it can help to make education more cost-effective. An example of OSS-based education tools used in Malaysia is the implementation of an OSS-based Enhanced Learning Management System (ELMS) to schools nationwide where ELMS has facilitated teachers to educate more effectively and also enabled students to enjoy the learning process through exciting multimedia-based content.

Meritocracy emphasises open competition based on pre-requisites that have been pre-determined and anyone who is able to fulfill the required criteria has the right to be chosen. OSS promotes meritocracy through its licensing model, whereby the license grants the rights to anyone to use, modify and distribute an OSS work. Let us look at this example – two ICT companies intend to develop software based on an existing OSS work; one is a small company, the other larger. Both companies can gain access to the same knowledge and information of the OSS work, usually at low or zero cost, without discrimination. Both companies are free to modify and improve on the OSS work based on their own innovation and creativity and eventually compete openly based on merit and capability.

It is evident that OSS can assume an essential role in enabling some of the values of 1Malaysia. This will go a long way in realising the goals of 1Malaysia and subsequently contributing towards achieving Vision 2020.

Government Transformation Programme (GTP) and OSS

The Government Transformation Programme (GTP), which is in accordance with the principles of 1Malaysia -- "People First, Performance Now" [16], was introduced in order to meet the challenges standing in the way of achieving Vision 2020 and to help the Government to enhance its public service delivery towards meeting the people's growing expectations. Six National Key Result Areas (NKRAs) have been identified as the nation's priority areas to address the urgent needs of the people as well as addressing long-term areas that requires the Government's attention immediately. The six NKRAs are reducing crime, fighting corruption, improving student outcomes, raising living standards of low-income households, improving rural basic infrastructure and improving urban public transportation.

OSS can potentially be an enabler to improve these six NKRAs through more cost-effective ICT that are OSS based and Open Standards compliant to ensure system interoperability and easy exchange of information across government agencies. In this article, we shall discuss only two NKRAs as examples, namely, improving student outcomes and raising living standards of low income households.

For the NKRA on improving student outcomes, among the areas emphasised are on improving the pre-school education system and increasing basic literacy and numeration skills in the early formative years. In order to help achieve the targets set in this NKRA, ICT educational tools and learning content for pre-school and primary school students can be used to complement existing teaching methods and aids. There are numerous OSS-based educational tools for pre-school and primary school students that can be used and deployed rapidly at a lower cost such as Edubuntu, Tux Paint and Open Directory Project. Apart from that, OSS-based pre-school management system is also available to help pre-school administrators to manage and operate the facilities. Furthermore, OSS enables these tools and learning content to be deployed at a much lower cost since most of the tools are available at no cost.

In the effort to raise the living standards of low income households, one of the measures planned in the GTP is to develop the capabilities of this group of people and create jobs through the Gerakan 1 Azam programme. The Gerakan 1 Azam programme aims to develop the capabilities of this group through training programmes in entrepreneurship, small service businesses and agriculture businesses. Typically, a blended training environment using classroom training and ICT-based learning tools will make the training more effective. In this regard, OSS can be leveraged to facilitate these

training programmes through OSS-based web-based learning platform such as Moodle.

Another example of OSS being used for training can be seen in the Perak State Government's K-Perak project, which aims to reduce the digital divide. Under this project, community training centres were established to train users, especially the rural poor, indigenous people and elderly, in basic computing and office productivity applications such as OpenOffice.org. The trainees will be able to obtain basic ICT skill sets, which among others will help them in securing a job or earning a living through entrepreneurship.

It is clear that OSS can contribute to the GTP activities to realise its goals in a cost-effective manner, as seen in its role in improving education and social economic development of low income households, and ultimately to act as an enabler to achieve Vision 2020.

Enabling Economic Transformation Programme with OSS

The Government of Malaysia needed a new approach to boost the economy from the present middle income level to high income level within the next ten years in order to achieve Vision 2020. This led to the introduction of the Economic Transformation Programme (ETP), which is a key pillar to leapfrog the nation to achieve Vision 2020. The ETP's main component is the New Economic Model (NEM), which focuses on high income nation, inclusiveness and sustainability, and collectively it will translate into a higher quality of life for the citizens. The ETP will be driven by eight Strategic Reform Initiatives (SRIs) which will form the basis of the policy measures.

No.	Strategic Reform Initiatives (SRIs)
1	Re-energising the Private Sector
2	Developing Quality Workforce and Reducing Dependency on Foreign Labour
3	Creating a Competitive Domestic Economy
4	Strengthening of the Public Sector
5	Transparent and Market friendly Affirmative Action
6	Building the knowledge base infrastructure
7	Enhancing the Sources of Growth
8	Ensuring Sustainability of Growth

(Source: National Economic Advisory Council, New Economic Model For Malaysia – Part 1, March 2010)

Table 1: The Eight Strategic Reform Initiatives (SRIs)

OSS can be used to support the implementation of some of the SRIs towards realising the goals of NEM.

SRI 1: Re-energising the private sector

In the NEM, the private sector will be positioned in a more prominent role in driving the nation's economy towards Vision 2020. Among the measures to be taken to facilitate this initiative are in targeting high value added product and services and removing barriers and cost to doing business. The OSS model focuses mainly on providing ICT services since it does not impose royalty or licensing fee for the products. This elevates OSS to a better position to catalyse the growth of a high value added ICT service industry which encompasses services such as training, consultancy, technical support and implementation. The local ICT services industry has the potential to be a significant revenue generator for the economy and will help to realise National Economic Advisory Council's (NEAC) forecast that services sector's share of GDP will increase from 59% in 2010 to slightly above 67% by 2020. This will be consistent with the trend in most developed countries where the services industry is the largest contributor to the GDP.

Since OSS does not have royalty or licensing fee, it becomes easier and cost-effective for businesses to operate as opposed to purchasing proprietary software. In addition, the plan to introduce a “Single-Window” licensing process connecting e-Government portals with state and local governments can be facilitated cost-effectively using OSS as the interoperability component. Eventually, OSS lowers barriers and reduces business costs especially important for new companies and start-ups.

SRI 2: Developing quality workforce & reducing dependency on foreign labour

Quality and skilled workforce is an essential element in building and growing a dynamic and robust national economic foundation. Considerable effort is needed in equipping the workforce with the relevant skills to support the economic activities and subsequently reduce dependency on foreign labour. The NEM has identified several measures to support this SRI and OSS can assume a role in one of them, namely reskilling the existing labour force.

The exercise in reskilling the existing labour force involves the process of unlearning and relearning. The learning process could be made more effective if the training also includes computer-based learning using a Learning Management System (LMS). Using a LMS, students will be able to learn or perform assignments at their own pace, resulting in a more enjoyable learning experience. OSS-based LMS can be easily implemented in a cost-effective

fashion to aid in the reskilling process.

SRI 3: Creating a competitive domestic economy

A vibrant and competitive domestic economy is vital in boosting the growth of a nation's economy. To achieve this, several measures have been outlined and OSS can be leveraged to support the measure on building entrepreneurship. With its unique licensing model, OSS enables anyone, especially budding entrepreneurs, to access various types of OSS-based work including software and also allows for it to be modified and distributed. In addition, OSS will provide opportunity for entrepreneurs to collaborate with the global OSS community and enhance their knowledge and skills. This freedom and collaboration approach provided by OSS will enable budding entrepreneurs to rapidly build and grow their businesses towards creating a competitive domestic economy.

SRI 4: Strengthening the Public Sector

A strong and effective Public Sector is key to ensuring the success of the NEM and the overall transformation programme. OSS is already widely used within the Public Sector and the benefits derived from using OSS have been outlined earlier such as achieving connected government and enjoying cost savings. Recently, the Government launched the MyProcurement portal as part of its efforts in creating an open and transparent process of Government procurement at all levels. This portal was developed using OSS components which helped the Government to save significantly.

SRI 5: Transparent and market friendly Affirmative Action

In this SRI, the focus is in providing equal opportunities to the disadvantaged groups in the community and to reduce the differences in economic development between regions in the country. OSS has been proven as effective tool to reduce digital divide, as outlined earlier. The K-Perak and Bestari.Comm initiatives are examples of the use of OSS that benefited the disadvantaged groups by equipping them with basic ICT skills which will provide better opportunities to them. In short, OSS can be used as an enabler to realise the goals of helping disadvantaged groups to increase their income and providing fair and equal opportunities to them.

SRI 6: Building knowledge base infrastructure

This SRI aims to create a conducive environment to help entrepreneurs and organisations to cultivate a culture of

innovation. OSS is ideally suited to enable greater innovation through the freedom provided in its licensing model and through the collective experience and knowledge of the global OSS community. OSCC MAMPU has developed a Knowledge Bank that stores all OSS resources such as Malaysian Public Sector case studies, OSS solutions and knowledge to facilitate sharing and exchange among OSS users. The rapid proliferation of social networking such as Twitter, Facebook and Identi.ca has helped to increase and ease access to global OSS community towards building and enhancing collaboration activities to explore and achieve new frontiers of knowledge and innovation.

OSCC MAMPU has also developed the e-MarketPlace for entrepreneurs who are keen to advertise their solutions for the benefit of Government agencies and for Government agencies seeking OSS solutions. The e-MarketPlace helps to bring together demand and supply of OSS together, just as OSCC MAMPU serves as the hub that bridges all diverse OSS communities to facilitate close communication and strengthen collaboration towards creating a sustainable reservoir of knowledge.

SRI 7: Enhancing the sources of growth

This SRI focuses on creating new markets and harnessing the innovation potential to widen the sources of growth for the nation. OSS can exert a role in developing the innovation potential by utilising the ODM approach to increase innovation and knowledge through collaboration with the global community. With its reusable concept, OSS enables more time to be spent on innovation and new ideas. Increase in innovation will eventually lead to new sources of growth for the nation.

SRI 8: Ensuring sustainability of growth

In this SRI, OSS can be leveraged for sustainability of growth through Green IT projects towards reducing carbon footprint. For example, OSCC MAMPU has assisted Ministry of Finance (MoF) to improve the system performance during the annual Budget speech by implementing appropriate OSS solutions to replace the existing system. In the course of improving the system performance, MoF was also able to reduce the number of servers needed from four to one and subsequently reducing carbon footprint.

There are other ways that OSS can support the optimal utilisation of computing resources such as hardware consolidation, virtualisation, cloud computing, reducing the need for hardware resources and extending the lifespan of

older hardware resources. For example, there are many OSS solutions for virtualisation and OSCC MAMPU has used them to create Advanced Virtualisation Facility (AVF) to enable agencies without the necessary computing hardware to test OSCC products and other OSS solutions remotely using the OSCC computing facilities.

Without a doubt, OSS offers a great potential to be utilised as an enabler for the NEM towards achieving its intended goals. With the support from OSCC MAMPU, OSS can exert a major role in helping the nation achieve Vision 2020.

Conclusion

Since its launch, the Malaysian Public Sector OSS Master Plan has been successfully delivering great value to government agencies by riding on the benefits and strengths of OSS. It has enabled agencies to enhance public service delivery through increased use of OSS in creating a cost-effective and connected government, enhancing human capital development, increasing growth of knowledge-based society, increased growth of local ICT industry, reducing digital divide and increasing competitiveness and web presence. Based on the benefits realised in enhancing public service delivery, OSS demonstrated great potential to be a powerful enabler towards achieving Vision 2020 through its role in supporting the goals of the four pillars of national transformation, namely, 1Malaysia, GTP, ETP and 10th Malaysian Plan.

1Malaysia's “People First, Performance Now” theme resonates closely with OSS and ODM. The global collaboration approach championed by the OSS community reflects the unity in diversity among the multi-lingual, multi-cultural members of OSS community. The emphasis of performance is clearly evident from ODM's approach which instils a culture of excellence and meritocracy and, coupled with the freedom to share and re-use, enables exploration and implementation into new frontiers and inventions.

ICT has a crucial role in the GTP in helping to achieve the targets of the six NKRAs. Every NKRA requires the close co-operation and support from multiple government agencies, working cohesively as one entity towards realising the goals. OSS can be leveraged to achieve the NKRAs through its cost-effectiveness, freedom of choice of software and system interoperability that facilitates seamless integration of government services and free exchange of information across government agencies.

As one of the key pillars to the nation's transformation in achieving Vision 2020, the ETP focuses on shaping and generating a renewed, stronger and sustainable economy by bringing about a paradigm shift to the public sector, private sector, non-government organisations and the community at large. OSS can be powerful enabler to support the aspirations of the NEM by supporting the growth of high value-added ICT service industry, facilitating reskilling of existing labour force, encouraging entrepreneurship, providing equal opportunities for the disadvantaged and cultivating a culture of innovation by building knowledge repositories, among others.

Through the four pillars of national transformation, the Government is gearing the nation and its people for a new way of working, thinking and living that will take us towards Vision 2020. The Government is committed to this goal and is mobilising its entire resources to support these national transformation efforts. OSS can be leveraged as an effective enabler for each of the pillar as it can contribute positively in many areas and eventually, surging the nation ahead in realising Vision 2020.

BIBLIOGRAPHY

[1] Wheeler, D., "Why OSS/FS? Look at the Numbers!" (16 April 2007). Retrieved from http://www.dwheeler.com/oss_fs_why.html on May 6, 2010.

[2] About. Open Source Initiative. Retrieved from http://www.opensource.org/about on May 5, 2010.

[3] Open Source Definition. Open Source Initiative. Retrieved from http://www.opensource.org/docs/definition.php on May 5, 2010.

[4] Raymond, E.S., "The Cathedral and the Bazaar". Retrieved from http://catb.org/~esr/writings/cathedral-bazaar/cathedral-bazaar on May 6, 2010

[5] April 2010 Web Server Survey. Netcraft Ltd. Retrieved from http://news.netcraft.com/archives/web_server_survey.html on May 10, 2010

[6] Lewis, J.A., Government Open Source Policies March 2010 Center for Strategic and International Studies Retrieved from http://csis.org/publication/government-open-source-policies on 6 May 2010

[7] Linux Journal. Oval Office Goes Open Source (22 April 2010). Retrieved from http://www.linuxjournal.com/content/oval-office-goes-open-source on May 6, 2010.

[8] OSS Use in UK Government UK Online. Retrieved from http://archive.cabinetoffice.gov.uk/e-envoy/frameworks-oss-policy/$file/oss-policy.htm on May 6, 2010

[9] Vietnam to widely use open source software, (6 Jan 2009). Available from http://english.vietnamnet.vn/tech/2009/01/822425/; accessed on May 6, 2010

[10] Indonesia, Go Open Source, retrieved from http://www.igos.web.id/index.php on 10 May 2010

[11] Phase II, Benefit Realisation Report (BRR). Malaysian Public Sector Open Source Software (OSS) Programme (2010)

[12] OSS Adoption Statistics (May 7, 2010). Malaysian Public Sector Open Source Software Programme, OSCC

MAMPU. Retrieved from http://www.oscc.org.my/content/view/227/139/ on May 8, 2010

[13] The Way Forward. Office of the Prime Minister of Malaysia – Dato' Sri Mohd Najib Tun Abdul Razak Official Website. Retrieved from http://www.pmo.gov.my/?menu=page&page=1904 on May 8, 2010

[14] National Economic Advisory Council , Part 1: Strategic Policy Directions. New Economic Model For Malaysia Part 1(March 30, 2010). Percetakan Nasional Berhad, 2010, pp.3

[15] 1Malaysia People First Performance Now. Official Portal of South-South Information Gateway. Retrieved from http://www.ssig.gov.my/ssig/kcent/material/1malaysia_-_english_version%5B1%5D.pdf on May 8, 2010

[16] Performance Management & Delivery Unit (PEMANDU), Prime Minister's Department. Government Transformation Programme – the Roadmap. (28 Jan 2010). Percetakan Nasional Malaysia Berhad (PNMB)