



USM PUSHING THE FRONTIERS OF TOWN PLANNING

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Abstract

The USM Campus in Penang is arguably one of the most beautiful in Malaysia set amidst undulating terrain with a rich treasure trove of exotic flora and fauna and panoramic views. But this former Military Camp has been subjected to 30 years of unrelenting development threatening its unique assets. Efforts are being made to protect those treasures in line with the aspirations of Agenda 21 but rather than following the conventional path, the USM Campus Planning Project has attempted to chart new frontiers in the use of ICT for planning and realigning the philosophy towards sustainable development. Amongst the innovations introduced are “publish as we plan”, online surveys and the notion that we should “only take what we need” from nature up to a maximum threshold beyond which further development will be considered detrimental to the well-being of the campus community.

Keywords: Agenda 21, ICT, Sustainable Development

INTRODUCTION

USM has one of the most (if not *the* most) beautiful campus in Malaysia set amidst undulating terrain overlooking the sea and enriched with exotic flora and fauna and panoramic views. It is a gazetted bird sanctuary with more than twenty protected species. As a former British Military Camp it inherited numerous elegant heritage buildings and majestic trees 3 or 4 storeys high. On the West Side, the campus is set amidst jungle on hill slope reaching up to 200 m above sea level. A large portion of this area has been cultivated as fruit orchards for several generations by previous owners. Covering a total of 236 hectares, the Universiti Sains Malaysia Penang Campus is a major landmark strategically located at one of the main gateways (Penang Bridge) to Penang Island.

Relentless construction over the previous 30 years to satisfy the need for ever increasing demand for more floor space has however taken its toll on the

campus. While it has retained much of its charm, students, staff, alumni, visitors as well as the University's Top Management are alarmed that continued development at this rapid pace has placed USM's treasures under threat of being further degraded. A group of concerned lecturers¹ proposed to the Vice-Chancellor various actions to "tackle the rot" including the setting up of a high-powered body to control campus development and the initiation of a campus planning project.

USM CAMPUS PLANNING

USM has had its share of campus plans dating back to the early days of the University. The first two (1974 and 1976) were typical of the master plans of the past with their grand designs and little regard for the protection of natural and man-made heritage. Two subsequent plans followed (1979 and 1984) and while these promoted the protection of green areas there were no coherent guidelines or policies to ensure compliance. As a government institution, the university also seemed to be immune from all laws governing development. The lack of an agenda to protect our treasures and the absence or non-adherence to a formal structure for reviewing and approving projects based on approved policies have generally contributed to continuous degradation of the campus environment. The priority was to develop or create more space to meet rapid growth in student and staff population. In this regard, USM is not unique as a review of any Structure Plan or Development Plan in Malaysia will reveal the message that "development is good" and "more development is better" for the community.

An enlightened leadership has now brought about a re-examination of the old approach and philosophy towards development. There is now a moratorium against construction of new buildings in order not to further reduce the soft and green surfaces. The Vice-Chancellor has also articulated the concept of a Garden Campus² for USM where ecology and development must be considered hand-in-hand to ensure that future generations will continue to enjoy a high quality of environment conducive to learning and working in USM³. The

¹ The group which was headed by Professors A. Ghani Salleh and Ahmad Yusoff was given the task of making recommendations to the Vice-Chancellor. Amongst the major recommendations implemented by the university was the setting up of a Development Committee Chaired by the VC. This group has now been formalised as the "Technical Committee for Campus Development and Environment".

² The Vice-Chancellor Professor Dato' Dzulkifli Abdul Razak outlined this vision to the Press at the launching of USM Healthy Campus project (The Star Online, 3rd Dec 2001).

³ This was re-emphasised by the USM VC at a presentation and dialogue with the Campus Planning Team on 2nd August 2002.

current USM Campus Planning Project is the follow-up to realign the development philosophy for USM. The project started in January 2002 and has developed a conceptual framework for the development of the campus as proposed in the document *The University in A Garden: Policies and Guidelines*⁴ submitted to the University for consideration in October 2002. The biggest challenge for the Campus Planning Team was to implement a planning project that will not suffer the same fate as all the other plans – decorative items on the shelf. The Team henceforth resolved to do it differently. It was felt that a major goal for the Team would be to keep campus planning as a continuous activity as opposed to a one-off project that would die a natural death upon completion. It must be kept alive by innovative projects that will sustain planning as a priority of the University towards the eventual attainment of the goals expressed in the concepts and philosophy for the development. And most of all, it must create a critical mass of interested individuals and groups who will contribute ideas and keep the University on its toes by monitoring developments and actively “pressuring” the University Administration to honour its commitments expressed in the campus planning doctrine, policies and principles for development.

This paper discusses the extraordinary efforts made by the Campus Planning Team to “push the frontiers” of town planning. In particular, efforts to achieve sustainable development on the USM Penang Campus and innovative use of ICT to make information accessible to all stakeholders are discussed.

ONLINE PLANNING

The term online planning could conjure up different visions of how planning is or should be undertaken. Obviously, to be online requires that we be connected in some way but whether we should always be connected (which is possible with broadband) is not a critical issue at this stage in our embrace of ICT for planning. The more important concern is how the activity of planning is or should be carried out. Is it sufficient, for instance, to merely have the plans published on the World Wide Web to qualify for the exalted status of having conducted online planning? That would be a major and significant step but only one of the many on the road to online planning.

These are two major ways we are making a difference through the USM Campus Planning Project:

⁴ The document is available for download from <http://www.hbp.usm.my/usm/>

- **Publish as we plan** - As we conduct our studies, the results of our analysis are published through our website as the respective experts complete their assignments. Proposals and ideas are published online for all interested parties to comment or as just a part of the process of information dissemination. Materials published or made available include data, text-based reports, live maps and other relevant information including resources on the WWW. A major focus of this project is to ensure that the data collected, the reports generated and the Concept Plan itself are all maintained in form which will facilitate continued usage into implementation. The attraction and major benefit of this approach is accessibility and timeliness of information but a major difficulty will be to ensure that published materials are not taken out of context especially in a culture and society where open discussion is not yet the norm. The USM Campus Planning Website was activated on 1st March 2002

- **Continuous participation from start to finish** - With ICT, we are now able to offer continued and sustained participation by any interested party. We realise that a project like this will require input from numerous parties from the top management to the support staff as well as from the students and members of the public. Whether the participants will have the energy, interest and perseverance to go the distance with the Project Team is a finding that will hopefully guide others in similar ventures.

Other major efforts to encourage participation include:

- An Online Discussion Forum where anyone can participate, even without registering.
- More than 10 different sets of structured questionnaires were prepared and made available online (staggered over a period of three months) through the website. The responses are stored directly into a database on the server. Only registered participants can take the surveys but they are still given the choice not to identify their completed forms with their Personal ID.
- Interactive, searchable live GIS maps of the campus for access to the Building Inventory and other maps. Eventually this will incorporate the Trees Inventory and Planning Policies and Guidelines relevant for each building or area.
- The Campus GIS maps (ArcView shapefiles) are available for download. Maps are critical for understanding the spatial context of the issues and problems in planning.
- An online Photo Gallery to showcase the treasures and pride of the USM Campus.

Much of what we propose to do or have done in terms of integrating ICT into planning have been tried in one form or another in other parts of the world but the extensiveness of what we are doing in terms of online planning puts us amongst the pioneers in the world. We acknowledge that campus planning may be a world apart from planning by a local planning authority particularly in terms of the higher expectations and level of active involvement by stakeholders. We have discovered that response to online surveys is very disappointing (see discussion below) but we have nevertheless achieved the objective of our experiment to report on the level of participation through use of innovative technology.

Various technologies are being used for this project:

- **Webservers** – originally, two Pentium-based servers are used running Windows NT, IIS 4.0 and MS Transaction Server. One is an “aging” HP LC Netserver with 256 MB RAM on a 450 Mhz processor. The other is actually a HP Workstation with 128 MB RAM converted into a server. We have now acquired a new server (Dell Pentium 4, dual 2.0 Gigahertz processors, 1 Gigabyte RAM) and migrated the Campus Planning website and other services to this server. Front-page Server Extensions are installed for remote publication of the websites.
- **Internet MAP Server** - ArcIMS 3.1 is installed on the HP LC as well as the new Dell server to serve the maps over the WWW. Various HTML, Java and customised dynamic and searchable websites incorporating photographs of buildings are now available (prototypes).
- **Database** - MS Access 2000 is the backbone for all the databases that we are developing. The data for the Online Surveys are all stored on a backend Access dB. Two major prototype GIS-enabled databases (Building Inventory and Tress Inventory) have been developed.
- **Web Publishing Tool** - Front-page 2000 is the main authoring tool for creating the websites including major portions of the Online Survey website involving creation of forms for questionnaire surveys and retrieval and display of results. Other software used includes Flash and Photoshop.
- **GIS** - ArcView 3.2a and its extensions (3D and Spatial Analyst) are used for the data capture and analysis. We will be migrating to ArcGIS 8 in due time to take advantage of its geodatabase capabilities.

Other technology especially 3D animation and visualization will be explored to provide the user a richer experience and better understanding of the issues. A proposal is being prepared to undertake the creation of 3D animations of the heritage buildings as part of the historical documentation of the university's treasures.

Online planning obviously embraces much more than what we have accomplished in this project. Our goal is to make the use of ICT as the preferred technology for the all-planning activities in the campus.

THE PARTICIPATORY PROCESS

A central theme of *Agenda 21*⁵ is concerned with the concept of good governance facilitated by principles of transparency in decision-making, the consultative process and access to information. This is generally translated into the Local Agenda 21 as depicted in the diagram below (Figure 1).

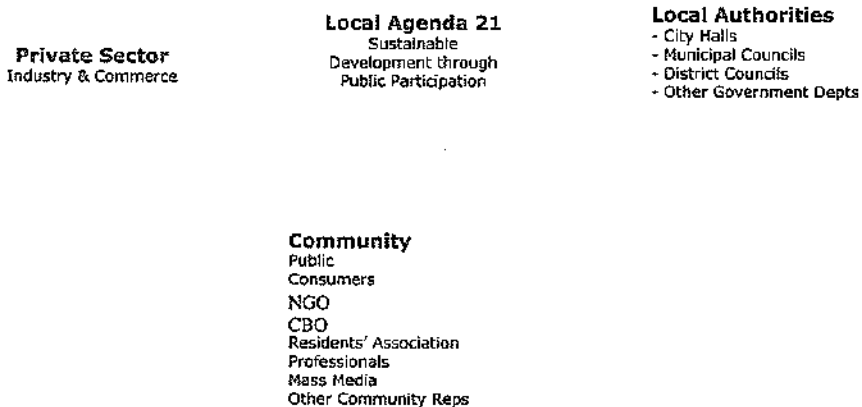


FIGURE 1: Participants and Stakeholders in Local Agenda 21

The TCP Act 1976 also requires various levels of public participation in relation to the preparation and adoption of Structure Plan (s. 10(5)) and Local Plan (13(3)) but the concept of participation is generally limited to submitting *objections* after the draft plan have been prepared by the planning authority. The planning authorities are usually able to overcome these objections using

⁵ United Nations Sustainable Development Website
<http://www.un.org/esa/sustdev/agenda21.htm>. The number "21" refers to the 21st Century.

various arguments or justifications. Added to the fact that most objections are personal in nature (typically for higher potential value of their property) it is not surprising that the rate of success of such objections is very low⁶. Exhibitions of draft plans are well publicised involving a lot of effort and expense and generally attract a fair number of visitors but the actual number of feedback and submissions by the public remain small averaging around 11 submissions per plan (Table 1).

It does not help professionals (including town planners, architects, engineers, etc) from the old school view participation as merely a necessary legal formality⁷. In fact, professionals are generally protective of their turf and believe they know what is best for the community. Other obstacles towards effective participation are the culture of secrecy and confidentiality of government documents and operations, and deference and subservience towards authority inculcated in the school system as well as inherited from traditions and norms.

TABLE 1:
Exhibitions and Public Participation for Structure and Local Plans
(1996 – 1998)

Type of Plan	Number of Exhibitions	Number of Visitors	Total Number of Public Participation
Structure Plans	50	15,745	386
Local Plans	16	18,135	296
Structure Plans (Review)	6	2,769	127

Source: Ministry of Housing and Local Government
<http://www.kpkt.gov.my/statistik/perangkaan1998/jadual5-1.html>

Public participation in the urban planning process is not a simple operation. It is notoriously difficult to operationalise - it means different things to different

⁶ In the case of the Bukit Bendera (Penang Hill) Local Plan, Penang there were slightly more than 20 objections but only one was successful (submitted by a statutory body).

⁷ In Penang, the legal advice given was that the planning law does not require the local planning authority to publish the reasons for the acceptance or rejection of objections to a draft plan (as such the reasons were not published). However, in Selangor the State Planning Officer has taken her own initiative to make available the planning authorities response to objections.

people. Opportunities created by legislation and the considerable amount of time and effort to promote participation are necessary but not sufficient conditions for effective and meaningful citizen participation in the planning process⁸. We have always assumed that every citizen needs to participate and that public participation is good and even critical to the success of a plan⁹. In reality, it is neither possible nor desirable for everyone in the community to be involved in the formulation of development plans. Most people are contented with what they are, or are too busy, or too complacent to take the trouble to organize their thoughts, to commit their views on paper and take that extra effort to be sent them to the relevant authorities.

In USM, we are extremely fortunate that the Chief Executive (namely the Vice-Chancellor) have not only supported participatory planning but was himself the brainchild of the USM Healthy Campus Agenda which encourages members of the USM community (including staff and students) to voluntarily contribute to the betterment of the campus environment. In fact, one of the two instructions given to the Campus Planning Team at the start of the project was to “involve the community”¹⁰.

The following are among the specific efforts taken to encourage participation:

- More than five campus walkabouts to appreciate the beauty and issues confronting the campus. These walkabouts are given advance publicity on our website with an invitation for all to participate but response was poor. Nevertheless, the University itself organised a Merdeka Walk (2002) while the Vice-Chancellor himself has walked around the campus to inspect development projects with heads of departments in tow.
- A publicity blitz was undertaken in campus through posters and mass emailing to all lecturers and news items in the local newspaper inviting ideas and participation.
- A small group dialogue for selected participants on the impact of ICT on campus planning was held.

⁸ Goh Ban Lee. 1991. *Urban Planning in Malaysia, History, Assumption and Issues*. Selangor: Tempo Publishing (M) Sdn. Bhd.

⁹ For instance, JB Cullingworth in his book “Town and Country Planning in Britain” (1989, 9th Ed.) writes that “Citizen participation is more than a desirable feature to the new system (of planning) – it is an essential feature. If citizen participation fails, so will the system”.

¹⁰ The other instruction was to undertake research related to the project. Apart from these two “instructions”, the Team was left very much on their own to innovate and explore the frontiers for campus planning.

- We took part in a static exhibition in conjunction with Planning Student Assembly Week at USM (July 2002) attended by all planning schools in Malaysia as well as invited guests and the Malaysian Institute of Planners Council Members.
- Presentations and dialogues with the USM Technical Committee for Campus Planning
- A dialogue and discussion was held between the Vice-Chancellor and Team (August 2002) to discuss preliminary findings and recommendations.
- We offered specially designed T-shirts for the most active online participant.
- Presentation of a working paper at the Agenda 21 Symposium in Universiti Malaya (August 2002).
- Presentation of proposed Concept Plan and policies (as contained in *The University in A Garden: Policies and Guidelines*) to the USM Development Committee chaired by the Vice-Chancellor (October 2002)
- On-site presentation (and picnic) of landscaping and pedestrianisation proposal for the Sungei Dua Entrance attended by the Vice-Chancellor and invited guests. The response was encouraging with around 40 participants turning up.
- A two-week exhibition at the USM Library with feedback forms and dialogue sessions officiated by two Deputy Vice-Chancellors and attended by the Vice-Chancellor. The exhibition was extended for another one month on the instructions of the Vice-Chancellor to allow greater participation.
- Participation of the Team members at the Annual USM Healthy Campus Convention in terms of presentations and exhibition (January 2003) to inform and generate interest in the activities of campus planning.

Response to the Online Surveys

As of 6th August 2002 (after 5 months after the survey went online) there were 108 registered participants on our Online Survey section (after discounting repeat registrations)¹¹. This would seem an insignificant number compared to the 1000 academic staff and some 18,000 students in the USM Penang campus. The profile of the registered participants shows a high percentage of males (62%) compared to female. In terms of ethnicity the percentages are Chinese

¹¹ There has been no further significant increase in the number of registered users as at 31st Dec 2002.

49%, Malays 41%, Indians 8% and others 10%. USM students (65%) out-numbered USM staff (18%), USM Alumni (10%) and the Public (7%).

On the question of anonymity, we offered the participants the choice of allowing us (or refusing) to publish their profiles. Half the participants chose to reveal their identities.

We had followed up with email to the registered participants (on 1st August 2002) tasking them how they know about the USM Campus Planning Project. Only 11 of them replied. Six of them knew about the project from the USM official website, 3 of them from receiving emails, 1 of them saw the poster and also 1 of them was told by somebody else. The results cannot be considered conclusive but it indicates that the traditional methods of publicity may not be very effective (or that we probably have not done it well enough).

Among those who participated in our Online Surveys, only one of them has filled in all the 13 survey forms¹². There are 61 of them (more than half) who have not filled up a single survey form at all after registration. The rest of them have only filled up a few of the survey forms.

There were 19 records in the General Comments section and 15 records in the Discussion Forum in August 2002 (and has not changed since). Generally, the participants raised issues on:

- Building conditions in the campus
- Trees, landscape and the natural environment in USM
- Campus traffic conditions
- Other suggestions, for instance to build a water fountain, create a cat sanctuary in the campus, and build a guardhouse besides every hostel.
- Some of them commented on the USM Campus Planning Project itself (generally praises), and we also received some criticisms on development projects in the campus.

These initial findings point to various issues with regard to participation and the use of Online Surveys to effect participation but it will require more research and experimentation. Although the actual reasons for the poor rate of participation must be studied further, we believe that these maybe the possible causes:

¹² This was in fact one of the Research Officers.

- The number or sizes of the posters around the campus are not big enough to attract attention.
- Students may have difficulty accessing to the Website due to limited access points (even though the campus is fully wired). However, there is no excuse for lecturers who are all connected to the network from their offices.
- Some of them who received the emails or have seen the posters but may have forgotten the website address.
- They may feel that this kind of participation does not benefit them.
- Those who are not related to the planning field have less interest and knowledge on public participation and campus planning.
- Others may be put off by the need to register, especially through the Internet.
- There are too many survey forms
- The questionnaire requires the respondent to think and reflect before they respond and hence takes time (the problem of priorities).

We do not regard this low response rate as a failure of the project to encourage participation nor do we regard this as reflecting badly on the community's concern for issues affecting their everyday lives. In fact, the results raise issues on how we should or can be more effective in encouraging more effective participation. In a culture where public participation and "speaking ones mind" is not a way-of-life, it is certainly not sufficient to merely provide the opportunities for participation, albeit through state-of-art ICT¹³.

We have not carried out any detailed study on the causes of the low rate of response and at this stage of our project we are not concerned with the numbers¹⁴. However, a subsequent survey carried out in conjunction with the Exhibition at the USM Library in December 2002 revealed that in fact about 41% of the respondents were aware of the existence of the USM Campus Planning website¹⁵ indicating that the publicity in relation to the project had

¹³ Amongst authors who have called for greater integration of ICT for public participation is Roger Bristow, 2001, "2K Planning in the United Kingdom: With Asean Implications" in *Proceedings of the Living Cities in the K-Economy*, Kuala Lumpur.

¹⁴ The USM VC has advised the Team not to be overly "concerned with the numbers" as he sees that a sustained effort will have to be made over a long period of time to get the community involved.

¹⁵ The total number of respondents was around 400 at the time of writing. Amongst those who were aware of the campus planning website, 63% new about it from the USM's Main Website (www.usm.my), 40% were told by others, 28% knew about it from posters while 8% were informed through email (respondents could choose more than one category of response). Other results are being analysed and will be reported elsewhere.

reached quite a large section of the campus community but requires more effort to convert them into actual participants.

Website Traffic

The statistics on registered participants however does not provide the whole picture of the interest in the Campus Plan. Since the Campus Planning website was launched on 1st March 2002, the main or default page was visited about 7700 times (until 31st July 2002)¹⁶ which translated into an average of about 1500 visits each month with the highest recorded in April (the second month of operation). We have not yet analysed the direct traffic to the other pages but hope for a few surprises as sophisticated surfers using search engines may have been directed straight to the specific pages of interest.

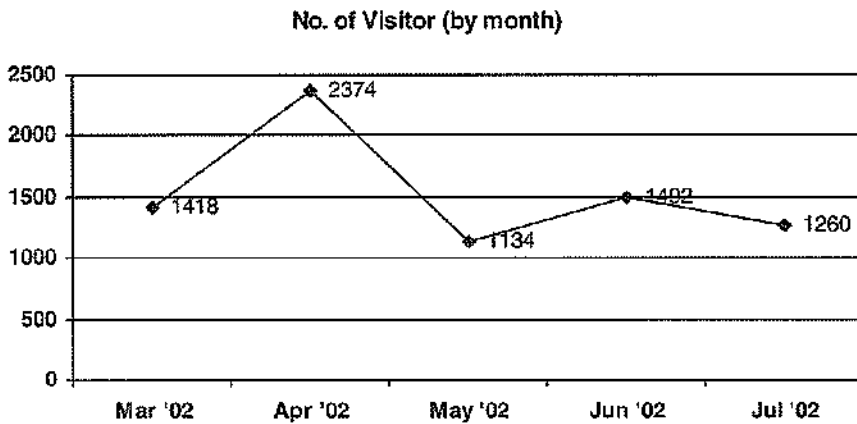


FIGURE 2: Web Visitors to Campus Planning Website by Month

A more detailed examination of the daily logs reveals interesting patterns (Figure 3). During the first two months, the traffic appeared to have peaked and then started to drop towards the third month (May)¹⁷. Interest on the website seems to have picked up again towards the end of May and early June and this can be attributed to the publication of a special feature in the local newspaper ("A Dream Campus", The Star, 29th May 2002). Traffic is heaviest during weekdays and this can be attributed to the fact that the majority of traffic originates from within the campus (73%) comprising 34% from within the

¹⁶ This is based on the number of times the default page for www.hbp.usm.my/usm was downloaded from the webserver as recorded in the weblog.

¹⁷ We are still analysing the weblog but assume that the high volume of traffic in the first 2 months can be attributed mainly to Team Members during intensive development of the website.

Housing, Building and Planning School (HBP) local area network and about 39% from outside of HBP (mainly through USM's Central Proxy Server). We consider the 27% traffic originating from outside campus as very important but at this moment we are not able to read very much into its significance.

The 26th March 2002 recorded the highest number of visitors (149) but we are unable to attribute it to any event. On the other hand, on the days when email was sent to all lecturers inviting them to participate there was no spike in the traffic¹⁸. It appears that mass emailing may have become an ineffective tool for drumming up support and interest, perhaps because the recipients have started ignoring email which are unsolicited, considered junk mail or even applied filters on accounts which they had previously encountered unpleasant experiences. We have met close colleagues who appeared to have no recollection of receiving the email inviting them to participate.

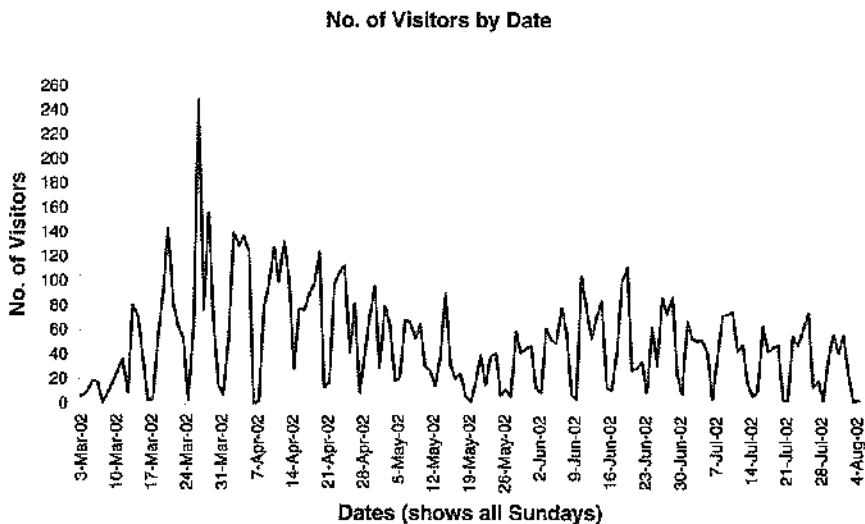


FIGURE 3: Daily Fluctuations in Web Traffic to Campus Planning Website

Traffic to the Campus Planning Website has now stabilised, indicating a group of diehards (and they are more just the Team Members) who constantly monitor our activities through the web. We are delighted to note that the Vice-

¹⁸ On March 28 2002 an email was sent to all HBP lecturers and then on April 1st another email was sent to all USM lecturers via USM Computer Centre. An initial attempt to obtain the email addresses of all USM students was abandoned as it was found that most students preferred to use free email services (e.g. Hotmail, Yahoo, etc) because of problems with continuity of accounts after graduation and other issues.

Chancellor has told us that he makes use of whatever little opportunities he has to visit our website to keep in touch with developments.

Perhaps the bright spark in our promotion of ICT for participation is the surprisingly large number of downloads of the two reports in *pdf* format which we have made available through the website, namely the “Preliminary Report for Campus Planning”¹⁹ and “Proposal for Health Centre”. Since the first report was published in April 2002, we have recorded a total of 835 downloads (up to August 2002) for the earlier reports (statistics on later reports will be analysed soon).

In our effort to be environment-friendly, we have only printed 12 hardcopies of the Preliminary Report and 2 hardcopies of the Health Centre Report for distribution (mainly to USM Top Management). Everyone else is encouraged to download the electronic version of the report. The high rate of download shows that this method of distribution can increase accessibility to information with minimal cost (mainly download time). It is estimated that printing 400 copies of the Preliminary Report in full colour would have cost close to RM10,000. Even though the web visitor is made aware of the large size of the *pdf* files, they still made the effort to download the reports hence indicating a high level of interest on the subject matter.

However, we have not received any feedback in any form at all (none on the Online Discussion Forum and no email communication) regarding the Reports. Again, it appears that Malaysians are satisfied with just being observers and passive participants. Or perhaps we have done such a good job that they have nothing to complain about. Nevertheless, we are most excited about this high rate of download of reports, as one of the aims of public participation is to inform and to facilitate access to information. We just have to work harder to draw them out into the open to give their views.

Exhibitions and Feedback

Following the presentation to the USM Development Committee in October 2002, the Vice-Chancellor invited the Team to organise a yearlong exhibition to promote the work of the campus-planning project to the entire USM community. An initial 2-week exhibition and participation event²⁰ was organised in conjunction with the USM Library and the Students Affairs Section. To encourage more participation from the Top Management, one

¹⁹ The Preliminary Report was offered as a complete set (Pre.Report) or in two sections (Pre.Report 1 and 2).

²⁰ This event was headed by Lim Yoke Mui, a member of the Campus Planning Team.

Deputy Vice-Chancellor was invited to open the Exhibition and while another was invited to chair the Dialogue with the Student bodies while the Vice-Chancellor attended as a participant. Even though all heads of department were invited to all the events, only a handful showed up (while one pleaded ignorance of the events when he encountered the Vice-Chancellor at the dialogue). The greatest disappointment was the no-show by any of the elected student representatives on the Student Council²¹.

Nevertheless, the Exhibition was a resounding success. Some 600 visitors completed and returned a 2-page questionnaire on the ideas proposed in the campus plan (especially on the USM Walkable Campus Project) while another 400 returned a one-page questionnaire concerning online participation. The Vice-Chancellor on the second last day instructed that the exhibition be extended by another month to enable even greater participation. In addition, the VC offered the walls leading to the Main Library as a permanent exhibition area for activities related to campus planning. This area has possibly the highest pedestrian traffic in campus as well as being strategically located in the foyer of the Convention Hall (Dewan Tuanku Syed Canselor) frequented by tens of thousands of parents and members of the public each year.

The Team in a continuous effort to better understand the mindset of “participants” have put the same questionnaires online during the extended period (January 2003) of exhibition to see how the campus community as well as members of the public would respond.

Further Efforts Towards Greater Participation

Public participation in the planning process should not be considered as one-off events. Planning itself is a continuous process (often referred to as a “cyclical process”) and participation as such should logically be a continuous activity through dialogues and open communications between the community, stakeholders, planners and decision-makers.

It is our intention that the Campus Planning Website will become the vehicle for that dialogue and communication. At anytime in the near or distant future, visitors should be able to visit the website and fill in the survey forms (repeatedly if so desired) and planners can then analyse the results and perhaps be even able to understand and perceive changes in the attitudes and preferences of the community. The website will also be a permanent reference for the

²¹ We attributed this to the transmission resulting from the just completed student elections. However, another effort will be organised to engage them in a dialogue.

community to know what we have planned. We intend to encourage and mobilise the campus community to be the eyes and ears in monitoring the developments on the ground to ensure compliance with approved campus policies and guidelines.

As researchers, we also need to better understand what motivates the “protestors” (or objectors). The current controversy in Penang over the Penang Outer Ring Road (PORR) has seen well-organised opposition to the project employing more sophisticated arguments including raising issues on whether the project fulfills the criteria of sustainable development as well as transparency and accountability of public funds. The more affluent neighbourhoods in Petaling Jaya have also in recent months gained considerable publicity for their assertive actions to make their preferences known to the local planning authorities as well as demanding access to minutes of meeting to know how the decisions affecting their neighbourhoods are made. In Penang, various interest groups have called for the Committee Meetings of the local authorities to be opened to the public in the name of good governance²². Penang is well known for its vocal residents and highly active interest groups and NGOs but surprisingly none have come forth to offer their views on how we should develop or protect the treasures of USM despite the open invitation in the mass media. We can speculate that only if it affects their life and properties personally will they come forth to complain or object.

It is obvious that online participation is still ahead of its time registering only 100 odd “participants” (who in fact did not bother to provide feedback) while the good old-fashion pen and paper managed to generate some 800 completed responses. But our intention is not to agitate the population to complain and to protest. We want the community, both within and outside the campus, to work together with us to chart the directions for the development of the campus. The Campus Planning Team will continue to organise activities to gather all the relevant parties and stakeholders together to both sensitise the community to the issues confronting the sustainability of the campus environment as well as to draw on the expertise and knowledge of all the experts to build a culture of caring for our environment and giving back to the community in a lifelong partnership. One such effort is to participate in a Convention being initiated by

²² The local authorities have chosen to interpret that the Local Government Act 1976 does not oblige or compel them to do so while the State Government have not given any directive to the local authorities to do so. Nevertheless, the Penang State Government has set up the Local Government Consultative Forum comprising government officers and representatives from various interest group but its effectiveness is yet to be assessed.

the USM Healthy Campus Group²³ (January 2003) to inform and to mobilise the campus community to take active part in protecting our treasures.

We should have no illusions that public participation will result in all and every decision favouring our particular position or stand, for there are diverse values and interests, each of which has its justifications. But we should all agree that decisions should balance the need for development and ecological protection.

THE UNIVERSITY IN A GARDEN AGENDA

Agenda 21 is the global blueprint for sustainable development arising from the Earth Summit Conference in Rio de Janeiro in 1992. The message to the world is that we must protect and conserve our planet's resources for future generations. Take only what we need and make sure that there is enough for our children and for many generations after that. The questions for planners and decision-makers are "How much is enough?" and "How much is too much?"

The Town and Country Planning (TCP) Act 1976 and its several amendments (1995, 2001) are the legislative mandate given to town planners and the planning authorities to plan and to control development. Even though the planning law requires developers to respect the natural topography and protect flora and fauna, the concept of sustainable development and the ecological approach has not been embedded into the legislation. Land is generally treated as a commodity (to sell and to profit) rather than as a scarce resource (to treasure and to conserve), while housing is not treated as a basic need but as an investment and hedge against inflation and a major engine of growth for the local and national economy. This is in conflict with the objectives of Agenda 21.

Even though USM has not formally adopted Agenda 21, the Campus Planning Team has embraced the ideals of the Agenda. *The University in A Garden* that we have in mind certainly will have abundance of trees and vegetation. But it must also subscribe to the various principles and practices of an ecologically vibrant community where man and nature co-exist in harmony.

The difficulty for the Campus Planning Team is the lack of data as well as yardsticks to measure that harmonious relationship. Getting answers to "how

²³ The Healthy Campus agenda covers landscape, food, management, health, disability, security and others. It stresses on volunteerism in making the campus a healthy environment for learning and working.

much is enough” or “how much is too much” will involve much more research and even soul-searching but in the meantime, we must implement policies and take measures to protect what we still have.

Since 1998, USM has implemented a policy to discourage the use of motorcycles amongst students on campus even though the policy has been very unpopular. The university offered the campus shuttle bus service as an alternative means of transport but even the Top Management is unhappy with the service and operations²⁴ but must provide a safe and conducive walking environment before the bus service can be phased out.

The University has also adopted as a matter of policy that there will be no more new buildings that will further reduce our open spaces. New buildings must be justified and should preferably take over the footprints of existing buildings. In a major paradigm shift, the University has accepted the recommendations that when the new Health Centre is completed the existing building should be demolished and the site given back to nature (as an extension of our Durian-Bird Valley forest). We are propagating the notion that protecting the existing forests only is not enough.

USM has indeed taken steps to embrace the ideals of Agenda 21 but much more needs to be done. In particular, a comprehensive set of planning policies and guidelines must be adopted and diligently adhered to and respected by all sections of the campus community as a common vision for the campus. These are contained in the document *The University in A Garden: Policies and Guidelines* (October 2002) but have yet to be adopted officially by USM.

THE I-CAMPUS DOCTRINE

This doctrine espouses the many facets of how the campus should develop (see Figure 4). It takes the form of a web, a direct influence from the complexities in the ecological web and the web of life. In the current age of information, the web also encapsulates the campus as a borderless entity facilitated by ICT and the World Wide Web.

USM is represented by the purple hexagon surrounded by a green hexagon to signify the embrace of nature and green practices. But the campus is not just the physical campus. It stretches far beyond. The emphasis on integration of

²⁴ The big coach buses are clumsy, noisy and generally an intrusion into the tranquility of the campus. It is often crowded and the comfort level is low and the routing inadequate.

ICT into the planning of the campus will help increase accessibility and reduce commuting (two objectives Agenda 21).

The letter *i* stand for the intelligent campus both in the *intellectual* (academic) sense as well as a reference to a *wired* community. It also stands for *I* as in *my* campus (to create a sense of belonging and attachment).

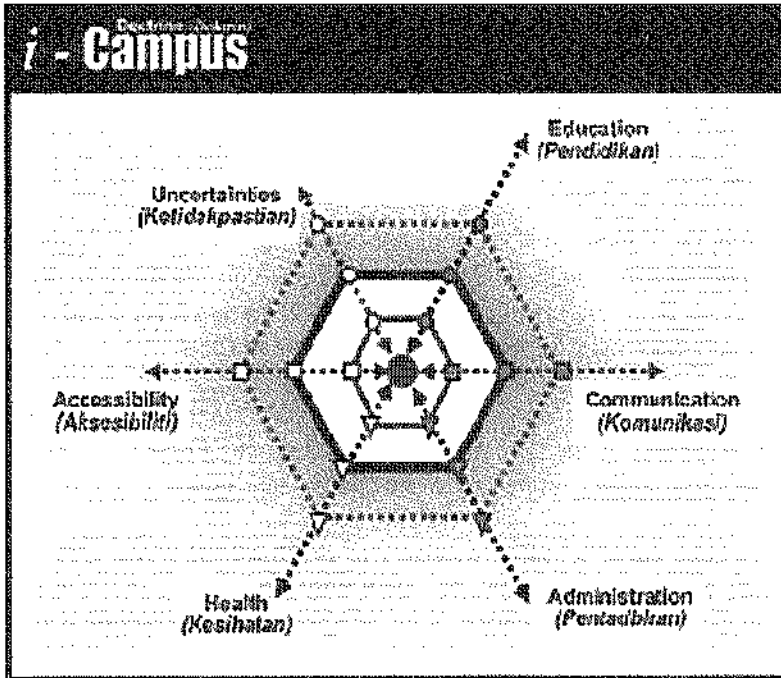


FIGURE 4: The *i*-Campus Doctrine for USM
(Note: the original graphic is in colour)

THE PLANNING PRINCIPLES

In line with the goals for sustainable development, the following planning principles were formulated:

1. USM's Treasures in terms of the flora and fauna, vistas and architectural heritage must be protected, rejuvenated and enhanced.

2. An ecologically-friendly approach to development and good practices must sustain the ability to provide a consistently high quality of environment for present and future generations.
3. Networking of buildings and outdoor spaces between the disparate units of the University to create an intellectual community and promote interdisciplinary interactions.
4. A pedestrian-oriented focus with priority for activities which encourage walking will support our harmonious existence with USM's Treasures and promote the lifestyle of a Healthy Campus.
5. Spaces must be designed for both the able-bodied and disabled users.
6. Vehicular movement should be reduced or curtailed to eliminate noise and air pollution especially near the academic core and environmentally sensitive areas. Parking only in allocated designated parking lots should be explored to encourage park-and-walk in pedestrian precincts.
7. ICT infrastructure must be an integral component of the planning and development of the campus with specific focus in terms of reducing the pressure to release more land for building activities.
8. To ensure consistency in the physical development of the Campus, a clear and efficient framework for decision-making on matters related to development and protection of its heritage should be established.

THE CONCEPT PLAN

Various alternative concept plans are being considered. Certain types of land use are already well established such as the Core Academic Area where the Schools and Lecture facilities are located. The University had also decided that the student hostels would eventually concentrate on the western section of the campus. This structure has helped to allow more walking between lectures but the problem is the long commute between the hostels and the lecture halls. It is hoped that a comprehensive network of well-shaded pedestrian walkways will overcome this problem. The specific location of other proposed land uses are subjected more discussion of the issues and needs of each activity. For instance, would it be better to site the new Student Affairs Building closer to the hostels or near the academic core? Would a research park make better use of the tranquil environment around the current Desa Cahaya area to better stimulate creativity?

Regardless of how the concept plan will eventually take shape, each of the alternatives nevertheless share a common emphasis on protection of forests, habitats and natural and local landscapes.

We have also reevaluated our original concept plan for the USM Extension Area (West Side) situated on steep hill slopes rich with jungle and thriving fruit farms. Our analysis reveals that it may be possible to protect up to 70% of the West Side by concentrating developments on the foothills in a compact form. Such an approach would be consistent with the objective of leaving only a small ecological footprint, taking only what is enough. The needs for “future development” should be evaluated when the need arises in the future, and reexamined based on needs and priorities.

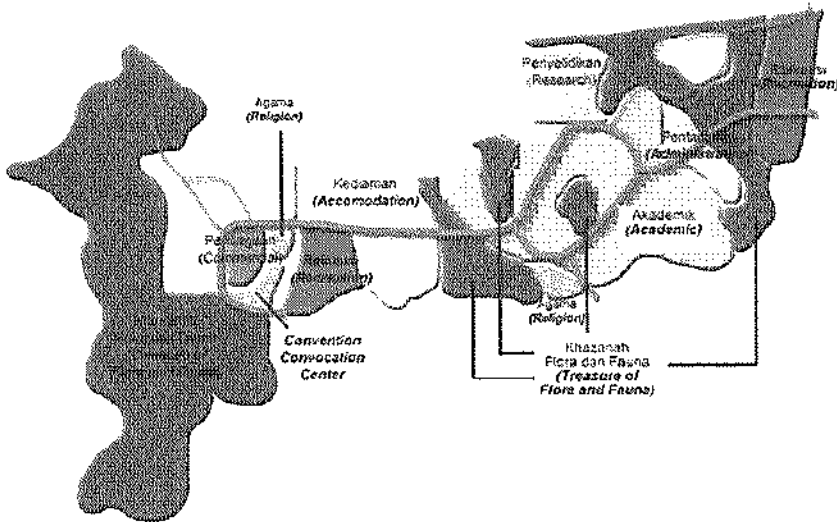


FIGURE 5: The Preferred Alternative Concept Plan
(Note: the original graphic is in colour)

These ideas and concepts have been presented to the VC and University's Top Management during the Development Committee Meeting in October 2002 and will be further refined as we engage in further dialogue with the rest of the campus community.

ECO-YARDSTICKS AND PRINCIPLES

The campus (and any settlement) is a dynamic entity where there will be constant and continuous demands and pressures to expand and to increase physical space and development. It is, therefore necessary to develop some form of eco-yardstick, which will allow the University to gauge where it stands in terms of its usage of environmental resources. Essentially, the University would need to have some form of measurements to decide, "how much is enough" and "how much is too much".

Soft-Hard Surface Ratio

Currently, the hard surface on the East Side (original part of campus) is around 31% (see Table 2 below).

The question confronting the University is 'what is the optimum level of hard surface in order to maintain and even enhance the garden campus image'. By way of comparison, our analysis of the established housing area of Minden (adjacent to the campus on the north side), shows that a housing estate comprising semi-detached and bungalow units can range from 40 to more than 50% hard surface. In highly built-up areas (such as George Town), the percentage could reach 80% or higher. There is no magic figure but as a guide, it should not exceed the optimum level for efficient storm water runoff (about 37%)²⁵. However, we have recommended that the 35% hard surface cut-off limit (giving it a small margin for errors) should be used rigorously to monitor future development. As such, we have almost reached the upper limit of the ratio and the moratorium on new buildings is a most appropriate policy response. Meanwhile, there should be more research to present scientific evidence to suggest an appropriate ratio for a garden campus taking into consideration heat emissions, energy efficiency, storm water runoff, pedestrian comfort, campus population size and the image of a garden.

An appropriate computer-based (preferably GIS) system will be necessary to quickly generate the statistics required for decision-making by the university.

²⁵ There are however communities which are adopting even more stringent standards of only 25% hard surface.

TABLE 2:
Hard and Soft Surfaces on USM Penang Campus (East Side)

			Area	
			Hectares	%
Hard Surface				
Buildings	Existing	17.41 ha	18.18	
	Under Construction	0.77 ha		
Roads & Parking			22.65	
Sport Facilities	Stadium	1.47 ha	3.82	
	Others (Hokey, Tennis)	2.35 ha		
Sub-Total (Hard)			44.65	31.02
Soft Surface				
Field (Main Gate)			8.80	
Water Element	Lake	1.38 ha	1.83	
	Main Drainage Sys.	0.45 ha		
Conserved Area	Durian Valley, etc	16.06 ha	17.99	
	Arboretum	1.93 ha		
Sub-Total (Soft)			28.62	19.89
Unbuilt-up Areas (Including Spaces around Buildings)			70.65	49.09
Total Area of Existing Campus (East Side)			143.92	100.00

Space Audit

Integrated into the GIS system would be functions for space audit in which usage statistics (lecture halls, tutorial rooms, office space, etc) would be reviewed to justify proposals for additional buildings and floor space. The USM Campus Planning Project is developing a prototype version of the GIS-based Building Inventory System, which will eventually provide for space audits²⁶.

A corresponding shift in the way we measure the “success” or “status” of a public university must be made. Most universities would trumpet the huge amount of allocation it received for development (mainly new buildings) to show that it is progressive, of high standing and important. But these new projects may not have been evaluated within the overall vision of the image of the campus resulting in undue pressure to locate the buildings even when the campus has no more space for development. Universities must use measures, which are eco-friendly – the more money we obtain to fund eco-friendly developments the more successful we are.

²⁶ A student in the M. Sc. Planning Programme it undertaking this project for his dissertation.

Apart from these measures, we have also proposed that projects should be subject to review by a Design Review Panel comprising not only professional-technical persons but be represented by a cross-section of the campus community. This will allow the airing of various views and values as well as inculcate transparency and a sense of collective contribution to the well being of the campus community.

The Walkable Campus

One of the major projects proposed by the USM Campus Planning Team is the creation of a Campus Square, which will give priority to pedestrians. The focus of this project is to give back the streets to the people with priority for pedestrians over vehicles. The main road (Jalan Universiti) is proposed to be reduced from a 4-lane road to 2-lanes and made into a one-way street. In the process it will release land for planting and pedestrian walkways. The proposal also calls for the extension of the current pedestrianised mall in front of Dewan Budaya (Permatang Pelajar) with restrictions on vehicle entry, centralised car parking, disabled-friendly access and the creation of a conducive environment for students to congregate (e.g. use of steps for seating, wireless network access, central location of bank ATMs and other services). The car park around the Post Office and Dewan Tuanku Syed Putra is to be reduced and the shaded area given back to nature and the people.

The project also calls for the bringing back of nature through the re-creation of an original stream which has now being reduced to a concrete pipe buried under the ground at the *Pesta Convo* site. The car and motorcycle parking in front of the mosque is proposed to be removed or reduced and replaced with a mall with water fountains and landscaping in harmony with the image and function of the mosque as place of worship.

The *Walkable Campus Project*²⁷ is currently underway to design and eventually develop a network of pedestrian-friendly walkways throughout the whole campus. It will give emphasis to the pedestrians rather than vehicular traffic to promote walking as the preferred mode of transport. This is in support of the USM Healthy Campus Agenda to promote a healthy lifestyle amongst the campus community as well as the general community.

²⁷ The project is being headed by another member of the Campus Planning Team (Dr. Aldrin Abdullah).

The thought which will cross in every town planners' mind (especially those in government service) reading this paper will probably be "this is not going to work in reality". In particular, we have attempted to chart new frontiers for participation and access to information that will require radical shifts in attitudes as well as institutional structures before it can take place. Planners will also have to shift their focus from promoting more development to managing growth (also called smart growth) with emphasis on taking (from nature) only what is necessary to maintain a high quality of life for the community.

There are many hurdles confronting the successful adoption of Agenda 21 in Malaysia. Our hope for sustained and significant results lies in the systematic training of future planners who subscribe to the ideals of Agenda 21. We also need to develop the communities' interest and skills in articulating their concerns and pursuing the ideals of eco-friendly development.

CONCLUSIONS

USM hopes to contribute and show leadership in the implementation of the ideals of Agenda 21 through its various innovative approaches. We are proud to be the first and only university in Malaysia undertaking such a project as described above and hope that other universities will follow suit so that we can share and exchange ideas and experiences in a long-term research effort to adopt smart growth, not only for the campus but also for the country.

Various measures have been proposed to promote planning as a sustained effort in USM including the eventual establishment of a Planning Office as well as creation of Design Review Panels to advise and monitor the quality of developments on campus. The Vice-Chancellor has announced that a Secretariat for Campus Planning is being established under the Healthy Campus Agenda and, while this falls short of the Planning Office proposed, it is nevertheless a significant milestone for campus planning in Malaysia²⁸. He has also announced that USM will not prepare a Masterplan but all developments will nevertheless be evaluated according the USM's development policies. This position is consistent with the views of the Campus Planning Team as a detailed masterplan is inappropriate for a highly developed campus like USM. The next major goal for the Team would be to instigate, agitate and facilitate the eventual adoption of the proposed *Policies and Guidelines* as

²⁸ Unlike universities in developed countries such as the United States of America, local universities in Malaysia do not have a Planning Office or Department.

official policies of USM which will be sustained for the long-term and not subject to arbitrary modifications or being ignored at will by unsympathetic university administrators in the future. Much more remains to be done and the moment of writing, the Team was in the midst of producing a coffee table book entitled *The University In A Garden*, which will showcase the beauty within USM.

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