

TEFMA newsletter

'2008 - A Space Odyssey'

Barbara Robinson is the Manager of Standards and Records, Facilities Management at Queensland University of Technology, Brisbane and was the recipient of the 2007/2008 Maurie Pawsey Scholarship. In July 2008 Barbara visited universities across the USA and Canada to learn about the structure of their Facilities Management operations, archiving systems, space management and other areas of interest. Barbara also attended the annual APPA Conference in Texas which focussed on leadership training and development and the annual Society for College and University Planning (SCUP) Conference in Montreal which covered a broad range of topics including master planning, sustainability and space reporting systems. She also visited a hospital and a city council to broaden the spectrum of information derived from her travels.

I was pleased to find that in general my section, 'Standards and Records' which covers design standards and space management, GIS and building plan archiving operations compares favourably with its counterparts in US universities. Most usefully I gleaned a number of new ideas and approaches which could be of use to QUT and other TEFMA members. I now present briefly some outstanding examples of these.

Massachusetts Institute of Technology (MIT) has put their floor plans onto the same coordinate system as their campus site plan (GIS) and use ESRI to do a variety of reporting. For instance all rooms pertaining to a particular faculty can be instantly coloured a selected colour and shown graphically in transparent 3D buildings right across the campus. Their parking entitlements could also be shown. This efficient visualisation ability enables them to do campus master plans inhouse.

Harvard, MIT and University of British Columbia (UBC) are leaders in sustainability. They achieve good outcomes by, variously, appointing an inhouse sustainability guru, communicating issues comprehensively to the rest of the university via web sites, paid students and newsletters and subsidising public transport costs incurred by students. Also setting up a dedicated and trained team for achieving LEED (equivalent to Green Star rating) certification is vital to containing costs on major building projects.

To achieve a high level of client service Massachusetts General Hospital employs space analysts with medical research backgrounds. The analysts develop project briefs in consultation with the clients and assist in planning, space allocation, building project management and commissioning.

An interesting issue of standardisation versus diversity came to light at the Vancouver city council which is responsible for a large GIS system (VanMap). Initially they tried to limit the variety of software packages council staff used in their numerous activities that involve location data in some way. They have now found that this is counter productive. Instead their emphasis has now moved to making sure that users reference only VanMap data and not other sources of location data that might be available, but could be wrong, incomplete or incompatible. Given this level of standardisation VanMap administrators were easily able to connect data covering premises investigated for cannabis growing and show this graphically on VanMap.

At the Society for College and University Planners conference held in Montreal I learned the rule of 'ten attractors'. In order to make a space really work research has shown that at least ten attractors must be present. This might include; shops, libraries, gardens, lecture theatres, lighting, art works, seating, views, breezes, drinking fountains, vendors, markets, cross roads and even toilets. Generally no one will respond to all ten attractors but everyone should find at least a few and once the space has a few people they will constitute a new attractor.

MIT has instrumented five student residence units in different residence buildings so that their carbon footprint can be constantly monitored and displayed on a screen in the unit. This project is an example of a student managed project funded by the facilities department.

Many US universities (including Harvard and MIT) report that they are not required to keep paper copies of plans, instead they use Aperture cards in addition to the electronic copies kept for rapid access. Local Queensland regulators require paper hardcopies to be kept however in the event of the rules being changed a move to Aperture cards would free up space.

The following is taken from the diary I kept while on tour which covers the institutions I visited and presents ideas and discussions I had during my tour. I will be presenting a talk at the next Atem-TEFMA conference in Darwin which will cover aspects of my tour and actions we have taken as a result of it. A slightly longer version is also available from the TEFMA web page - <http://www.tefma.com/membership/awards/scholarships.jsp>

Johns Hopkins University

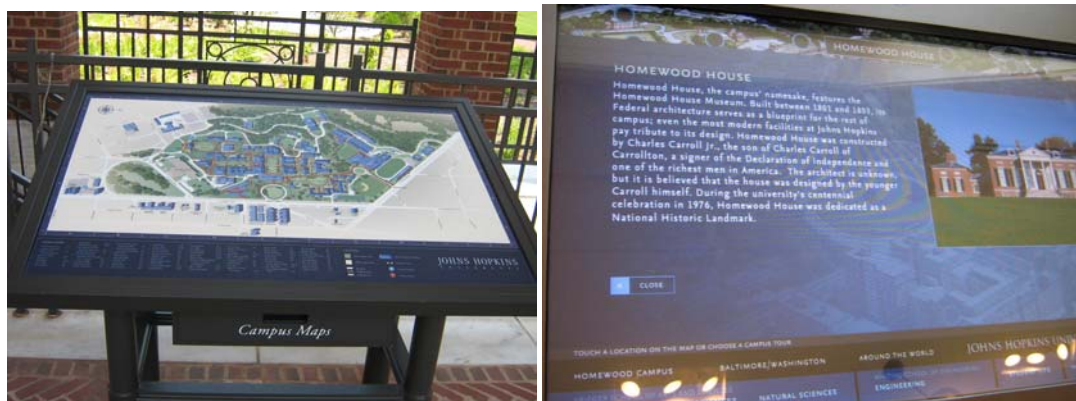
The Johns Hopkins University was the first university I visited in the USA and is one of the top 20 universities worldwide. It consists of six campuses and two centres in and near Baltimore, with an estimated 3.7 million people in the Baltimore region. Facilities Management at JHU is somewhat distributed, as divisions or faculties also have their own Facilities Management staff.

It was interesting to see that JHU had to implement a master plan for Homewood after the community became outraged when a modernist style Arts building was completed that was seen to be too different from the Federal Period architectural style the rest of the campus buildings reflected. All new buildings must now reinterpret the Federal Period style of the original campus in their design.



With regards to space management, JHU use the Archibus system and faculties are active in keeping their data accurate. The university has implemented an energy saving measure, using a central chiller that makes ice at night using a natural gas driven turbine (this is driven by the cost of energy). JHU have a free bus shuttle service from their campuses to major city destinations.

They have electronic signage across their campuses with on site touch screens which allow a lot of additional information about the buildings and university to be displayed and they can afford to maintain it due to being so well endowed.



University of Maryland, Baltimore

The University of Maryland is a large state run university with the main campus located in a run down part of Baltimore. It endeavours to engage with the community to improve its lot (e.g. UMA provides free health care) however they have security cameras on all access points, card access to all buildings and generally students avoid spending time in the neighbourhood.

The university's space management system Archibus is still in development and floor plans are not yet linked to Archibus. Their archive is mainly hardcopy supported by a searchable database and they are working on how to store BIM (building information management involving full 3D graphics and specifications for all elements) documentation which is being produced for a new building.

The university's master plans are updated every five years by each campus as part of a state requirement and the state demands that new buildings be certified LEED silver (equates to a Green star rating of 4). A major environmental concern is runoff, as the bay and harbour are silting up and particular attention has to be given to runoff from car parks and roofs.

University of Kentucky, Lexington

The next university on my list was the University of Kentucky, a state university in Lexington. I met with the managers of Capital Works, maintenance, GIS, design standards, master plans, space management, archives and energy management and discussed their processes regarding design standards, master plans, space standards and their buildings records archive.

UK use an FM built space system and their GIS system is Autocad and ESRI based. There is a good campus site plan with links to building data and photos as well as links to archived plans per building from the photo page.



Massachusetts General Hospital

My next stop was the Massachusetts General Hospital where I met with Clinical Space Manager, David Ryan and Research Space Director, Michael Fisher. The hospital's space is divided into two categories: Clinical Space, which is purely hospital space and also Research Space, which is affiliated with Harvard University. The Massachusetts General Hospital has 20 million square feet (~2 million m²) and all space is managed via the Archibus system.

With regard to space, MGH is well organised with data collection, validation and reporting. The important driver for the Hospital's space system is that the indirect cost associated with research space is paid for by the NHS (Federal Government) and thus great care is taken over all the necessary reporting.

Michael Fisher, Director of Research Space Management group looks after the research space and runs a team that includes four space analysts, two FM building managers, one programmer, two project managers and one asset analyst.

The space analysts have science research backgrounds so they understand the space needs of the research teams. They search out under-utilised space, complete reports, update records and collate/write the detailed design briefs for renovations. Project managers run minor works projects and work with the space analysts who act as the main links to the clients. Michael has shown how the space analysts add value to the organisation through assisting researchers in acquiring environments that best support their research.

Boston University

Boston University is situated on the Southside of the Charles River and is a private research university with around 30 000 students.

Paul Rinaldi gave me a tour of the university and detailed the challenges and achievements of Boston University and its Facilities Management department. They have a good set of residences for students, from old row houses that are progressively renovated and altered to brand new high rise accommodation. The library has a special exhibition space for their unique collection of Americana (e.g. documents, trophies etc) and the collection and operation is known as the Howard Gotlieb Archival Research Center.

Boston University has various green initiatives. In regards to transport, they encourage staff and students to carpool, buy subsidised bus passes and use subsidised zip cars. They claim to build energy efficient buildings but they do not go for LEED certification as they think it will add too much to the cost.

In house built space and archiving systems are used but it appears that faculties do a lot of the space management themselves. The Medical Faculty uses the space management system Aperture and does its own reporting to government. Boston

University's Facilities Management department is good at informing their users via the web about the construction/renovation projects progress and call for user feedback.

Massachusetts Institute of Technology (MIT)

I then moved on to Massachusetts Institute of Technology. Six years ago MIT aimed for Silver LEED Certification on all of their major projects and have since had a few Gold certified projects. In the US there is no separate certification for Higher Education buildings. MIT Facilities Management has a team of three sustainability officers who review designs and work with the design team particularly at the start of each project. Their experience has been that LEED certification does not increase the construction costs but only the design costs which increase by about 7%. They also run presentations/training sessions for all their consultants.

MIT's Facilities Management runs a students sustainability program. Currently a student working for FM has instrumented five units to give instant feedback to unit occupants as to how much energy each unit is using and its carbon implications. Rival Harvard is aiming at a 30% CO2 reduction on 2006 figures by 2016, a percentage that MIT hopes to better. In benchmarking with other institutions including Yale which has more money, they believe they are amongst the best for satisfying user's needs and sustainability.

Supporting this building program is an in-house developed GIS and space management system based on Autocad and ESRI. They use Sketch –up, Google and Street Views for scenarios. MIT also have interactive maps on the Web with background information on all buildings and are aiming to further develop this tool to include information such as parking maps and walking times to certain locations.

MIT have an average of 40 000 documents all on Microfish/Aperture cards and use Meridian archiving software. Drawings have been preserved since 1913 and all hardcopy archive files are stored off campus.





Harvard University

Next on my list of universities was Harvard University. Harvard has ten faculties, each with their own Facilities Management department, and has decentralised Facilities Management in addition to a limited centralised FM office. HR and Finance is centralised for Harvard, but maintenance and building acquisition, renovations and so on are not.

Harvard houses 100% of their Undergraduate students and about 40% of the Post Graduates. Records are kept centrally except for the Medical school and Harvard Real Estate has building construction project managers who can be used by the faculties.

The Staff who look after the central FM's building records are librarians and use EOS (Web-based Library Automation Software). Librarians bring robust cataloguing skills to the job and an emphasis on preservation of material. They have some very old documents in the collection of over 100,000 records. Harvard used to have everything on Microfish but now all hard copy plans have to be either Aperture cards or on Mylar which is then rolled and stored and all documents are scanned into a lossless file format such as tif.

The new science building at the Alston campus is being designed using BIM which will bring new challenges regarding how to record this data for future reference.

Harvard's GIS system uses Autocad and ESRI, and they use Cold Fusion to post to the Web. Their consultants want building and site documentation in the Autocad format so this is provided, however but they are migrating to a geo database for their asset management and GIS maps.





University of British Columbia

My next stop was the University of British Columbia, a high ranking Canadian university with 47000 students and 12000 staff and is a leader in sustainability issues. The UBC 'U Pass' system was introduced several years ago, which requires all students to pay a nominal amount for an annual all zones public transport ticket and the university tops it up. With this strategy they have been able to reduce onsite parking as well as carbon dioxide emission.

Sustainability had a strong champion in Freda Pagain, Assistant Director of UBC Facilities Management. They built their first sustainable building in mid 1990's, with composting toilets, natural ventilation and a lot of recycled material. Since then they have had a president (Vice Chancellor) who made sustainability a core issue in every activity the university undertook. The current director of Facilities Management is committed to sustainability and finding ways to fund the new initiatives.

An example of sustainability from UBC is the contract they hold with "Energy Service Company" (ESO) where the company would upgrade their building services and the savings in energy costs would in effect pay for the upgrade with ESO, carrying the risk and solving the financing of this capital cost.

The university also has sustainability projects undertaken by students, publishes triple bottom-line reports and is seen as a leader in campus sustainability.

UBC also has a large Renovate and Renew program called 'UBC Renew' where more than 36 000m² will be renewed over five years delivering 'as new' space at half the cost. By convincing the British Columbia government that tax payers were being saved money they were able to get additional financing for the scheme. UBC also conducts comprehensive post occupancy evaluations and has a large ongoing refurbishment program.



Vancouver City Council : VanMap

I visited the Vancouver City Council GIS office which runs an extensive GIS which is open to the public and provides a rich set of data.

They are migrating to Map Guide Enterprise and use the Oracle Special Enterprise Database. Depending on the business needs of users the GIS team will access other data sources live or by weekly download or monthly download. Real time data is not always needed.

They have developed a number of additional applications and connect to a variety of data. An interesting application developed by them and available to the public through VanMap is the 'Protected views' of the Vancouver mountains (for a selected site it will calculate the maximum building height allowed).

The main challenges are the politics associated with a large organisation and the complexity of permissions to manage over 1500 in-house users. For instance who may see the data relating to traffic black spots or crime locations?

APPA Conference

The annual APPA Conference was held at San Antonio, Texas with the conference centre being close to a famous river walk and 'Los Alamos' - a great conference location. The opening address focused on the US position in world politics, how to maintain a lead, how to regain the student numbers that were lost post 9/11 and looking at possibilities such as the "2nd World" taking over science and technology research. Dr John Maxwell, an author of more than 30 books on leadership was the keynote speaker at the conference. A believer in the philosophy "everything rises and falls on leadership", John discussed the five stages of development of a leader, which ranges from a person who is only followed because people have to, through to a person who is followed because of the respect that others have for that person. There were also a number of talks on sustainability and LEED (Leadership in Energy and Environmental Design) certification for buildings that were particularly interesting.

SCUP Conference

The SCUP annual conference is large, well organised and packed with information relevant to space management and planning. There were various interest groups meeting for breakfast and discussion sessions as well as a huge trade show with many concurrent sessions of interest.

SCUP also offered campus tours at McGill and UQAM. I completed a Campus Master Planning Course that covered processes including working with senior management data analysis, total environment perspective and how to resolve conflicts. UQAM is a particularly interesting city based campus as they share space with a rail station and all the commuters. Access to the buildings remains open at all times and because Montreal's winters are so severe there is an underground pedestrian system connecting all buildings which is also part of the public realm.



Conclusion

The TEFMA scholarship was a great opportunity to find out how others tackle the problems and tasks that are faced by a Facilities Management team. In most of the universities that I visited the FM function is organised in a fairly similar way to FM sections in Australia, the biggest difference being the number of staff employed which is typically two to three times more than in Australian universities. Most of the universities had master plans and were actively involved in planning space needs and updating their master plan. I was impressed by their use of GIS based thematic maps to support the planning process and it was particularly good to see a high end user of GIS - VanMap at Vancouver City Council. All the universities and other institutions were very welcoming and supportive and often provided six to ten staff members for discussions and presentations.

Thankyou to everyone involved including TEFMA for giving me this great opportunity.