Best Practices for Timetabling and Space Allocation Policies in Universities

In this report, The Hanover Research Council investigates best practices in timetabling and teaching space allocation. With particular attention to the timing and flexibility of centralized space assignment strategies, we construct a list of “best practice” principles based on a comparative analysis of policies at peer universities in Australia, the UK, and the US.
Overview

The Space Management Group (SMG), in existence between 2003 and 2007, was a UK-based network of public and private consultants who conducted research into and designed tools for better space use in higher education. According to its chairman, the group was created to “demonstrate that there are significant financial and academic advantages to effective space management.”¹ In 2008, the SMG circulated a summary report of overarching findings, including a correlation between efficient use of university space and the implementation of a centralized timetabling system.² The following passage from the report stresses the primacy of timetabling space issues to the overall success of institutions:

Space planning is intrinsically linked to pedagogical change. Today, the way students learn is almost certainly ahead of the way we teach … In that context, space planning and timetabling move to centre stage as enablers, if approached professionally, but as high risk areas, if not.³

In many ways, the SMG’s findings are not new, and nor is the basic strategy by which institutions of higher education now manage teaching space. Automated timetabling has existed in higher education since the 1970s, and from the beginning, universities have reviewed strategies to continually update and harness the full potential of this technology. For example, a 1984 article assessing a 1978 introduction of automation to a Newfoundland university listed the following promises of the revolutionary “new” system:

(a) facilitating a more efficient use of classroom space;
(b) effecting a more equitable distribution of students into time slots;
(c) providing for better control of section sizes;
(d) providing for a more centralized control of the number of sections offered in each course.⁴

A 1988 article “College Course Scheduling: A Market for Computer Support Software” presents the findings of a survey of registrars at nearly 1,500 American colleges. The survey concludes that, despite extensive automation, there continued to be high levels of dissatisfaction with registration systems at the time of the study.

¹ “Chairman’s Statement.” Space Management Group website, accessed 29 July 2009. See http://www.smg.ac.uk/chairman.html
² Ibid, pg. 19.
Frustration was not necessarily attributed to automation, itself, but rather to a sense that new technologies should be better able to solve basic registration problems.\(^5\)

While this report looks specifically at timetabling and teaching space allocation, there are important parallel issues in examination timetabling as well. The 1996 book *The Practice and Theory of Automated Timetabling* contains a chapter surveying examination timetabling strategies at over fifty British Universities.\(^6\) The researchers aimed to understand the size and complexity of the timetabling problem as it varied across institutions, towards the goal of developing a universal timetabling template. The survey revealed considerable and complex variation both among and within universities. The report of findings concludes by asserting that an effective system should be *user-friendly*, *flexible* enough to “cope with special circumstances which fall outside the scope of the normal timetable,” and *centralized* so that the full range of registrar services are consolidated at a single information portal.\(^7\) The report ends humbly by sharing advice from an administrator who took part in the survey:

> Having tried to do in the past what you are proposing now, I hope you have the time and resources to match your enthusiasm. Do not underestimate the complexity of the problem! Good luck anyway.\(^8\)

We mention these historical examples from the 1970s, 80s, and 90s in order to place current challenges in perspective. University administrators continue to cite difficulties in meeting the foundational goals articulated in this early literature, even after decades of technological innovation. Timetabling and space management is clearly an evolving but persistent challenge; our research suggests that solutions require robust, legible policy as much as improved technology.

Given the important connections linking registration and space issues with efficient resource use and evolving pedagogy, XYZ University does well to undertake a review of its current Timetabling Policy. We understand that areas of particular concern for the University include how to effectively time student registration in class sections to minimize scheduling problems, as well as how to implement a timetabling system that better adapts to “real world” challenges like under-enrollment and consequent space vacancy.

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\(^7\) Ibid, p. 88

\(^8\) Ibid, p. 89
Literature on timetabling models for higher education is surprisingly sparse.\(^9\) Having not found existing comparative studies that detail best practices in timetabling, we have reviewed the current policies of several peer institutions in Australia, the United Kingdom, and the United States. In the remainder of this report, we reference these institutions in our descriptions of a number of key principles in timetabling policy, relating to the following areas:

- Stakeholder Involvement
- Policy Statements
- Equity Issues
- Campus Geography
- Guidelines for Delegation
- Legible Protocol for Revision
- Flexible and User-Friendly Technology
- Outreach to Differentiated Participants

We have chosen our discussion points having reviewed as well the current policy document posted on the XYZ University website, and we have an understanding of what areas in the policy may benefit from clarification or expansion.\(^10\) Our goal is not, however, to make specific recommendations. Rather, we aim to highlight effective strategies in place at peer institutions because we believe XYZ University may find these considerations helpful in revisiting its own approach to timetabling and space allocation.

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\(^9\) The exceptions are works in computer science that deal with algorithmic models for timetabling solutions, a topic that is beyond the scope of this report.

Policy Guidelines: A Comparative Analysis

“Mosaic Space” is a consulting partnership among three software and space management companies located in Australia and the United Kingdom. In July of 2009, the Mosaic Space website featured a post entitled “Better University Space Management with a Timetable Policy,” which offers the following insight:

Many universities that have tried to create a better timetable see it as a technological exercise. However, no timetabling system, no matter how sophisticated, will be able to deliver genuine space efficiency without a well thought out timetable policy. All timetable software requires large amounts of data, but the nature of this data and how it is to be applied must be established, preferably before the institution even starts collecting any data.11

We accept the premise that university policy must underwrite secondary concerns like what software system to adopt (a topic we explicitly address in the below subsection “Flexible Technology”). The presumption is that strong policy can help to prevent problems from proliferating in the first place.

For the purposes of this report, we have extrapolated industry recommendations for sound timetabling and space management based on a review of policy documents, websites, and registration systems in place at several research universities. We have selected these institutions for their comparative resemblance in size and mission to XYZ University, because their policies are current and freely available, and also because their priorities and innovations reflect a strategic approach to policy formation. The institutions that feature in our discussion include:

- University of Western Sydney (AU)
- Monash University (AU)
- City University London (UK)
- Leeds Metropolitan University (UK)
- University of Warwick (UK)
- University of New South Wales (UK)
- University of Wolverhampton (UK)
- Purdue University (US)
- Penn State University (US)

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The body of this report is organized into topical subsections, within which we discuss specific strategies adopted by the above universities. As a whole, the report presents a possible guideline for best practices in policy construction and implementation.

**Stakeholder Involvement**

A 1997 article titled “Automated University Timetabling: The State of the Art” provides an introduction to the field, and it includes a discussion of stakeholders in space management. According to the authors, “the timetabling process is made more difficult by the fact that so many people are affected by its outcome.” The article identifies three major categories of stakeholders:

- **The administration**, which “sets the minimum standards that the timetable must conform to.”
- **Academic departments**, which make specific demands for preferential space and time considerations that facilitate subject development.
- **Students**, who represent a wide variety of needs and preferences that are especially difficult to consolidate.

The Mosaic Space blog entry referenced above also includes a discussion of the importance of differentiated stakeholder involvement in the creation and ongoing revision of policy.

Any space policy is likely to be a flexible document and should undergo periodic review. It is important to involve all of the stakeholders in formulating a timetable policy, including facilities management, academic managers, administrative staff and student representatives. The timetable will have an ongoing impact on all of these groups and their needs and sources of conflict need to be addressed in any policy document.

Monash University is a multi-campus, international university that was founded in Melbourne in 1958. Monash University’s timetabling policy provides a clear example of the stated prioritization of user consideration. The policy document includes a detailed list of “key stakeholders” that anticipates the delegation of responsibilities later in the document. This list includes a systems manager and director, “campus timetablers” and “timetable coordinators,” software user groups,

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13 Ibid, p. 657
14 Ibid.
“domestic and international students,” administrators, faculty, and assistant teaching staff and coordinators. The decision to forefront the inclusion of stakeholders frames these policies in terms of openness and collaboration. This choice can serve to invite greater levels of participation, which is, itself, one of the essential factors of successful policy implementation.

City University London educates over 20,000 students from around the world at its campus in the heart of London. The university’s current timetabling policy, drafted in 2006, provides a second example of a document that takes care to consider the interests of many contributors. The first page of the document reads:

In developing timetables, City University aims to recognise and act on the needs and interests of a range of stakeholders in a University that offers an extensive academic program, across a number of campuses.

The policy also emphasizes the following:

The University’s teaching timetables are prepared using a software system that considers each stakeholder’s requirements and aims to produce an equitable timetable from the information provided.

As this citation indicates, the consideration of stakeholder involvement is key to the successful development of all other areas of timetabling policy, from equity to software. An article detailing the process of developing effective policy at Purdue University, a top ranking public research university based in Indiana, describes this principle as the need to give all players “ownership of the process, which is important in a complex organization.”

**Policy Statements**

XYZ University’s “Policy Statement” is a concise single sentence that declares, “The development of an efficient and effective teaching timetable is essential to allow choice for students, spread teaching workloads and make optimal use of teaching space across the University.” Peer institutions we investigated elaborate considerably on this section of the policy document, which details overarching problems and

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19 Ibid.
principles before delving into specific guidelines and designations. Examples we reviewed range from several paragraphs to several pages devoted to explicating overarching policy problems and stating priorities.

The University of Western Sydney is a six campus university located in the Greater Western Sydney region. The institution has drafted a lengthy policy statement that is preceded by an introductory explication of its purpose. The introduction strikes a good balance between concision and comprehension, while effectively explaining the purpose of the policy. The heart of the introductory statement is as follows:

(1) The purpose of this Policy is to inform the University community of the practices and principles that will be used by the University to:

a. assign appropriate facilities to meet the requirements of the University’s operations in an effective and efficient manner;

b. inform the University community of their responsibilities in providing necessary accurate and timely information to enable this to be carried out;

c. provide a framework for regular monitoring and review of the University’s teaching facilities usage and needs;

d. advise staff and students when and how all teaching space allocation and timetabling issues should be dealt with and by whom.21

This statement is useful because it clearly defines the policy document, itself, as a teaching tool intended to facilitate effective timetable creation and implementation by all stakeholders. In its subsequent “Policy Statement,” the document details allocation priorities, university-wide time constraints (as in the exclusion of classes on the weekend), standards of acceptable behavior, and the fact of central administration.22

Equity Issues

At the heart of effective timetabling is the equitable management of limited space resources that are required by a large number of users. An important aspect of the fair distribution of resources is the anticipation of clashes and conflicts. An effective timetabling policy will likely include a protocol for dispute resolution. Monash University urges faculties to “nominate clash-free paths for the most common activities for a course,” and any department or faculty that wishes to make changes to

22 Ibid, p. 2.
A published timetable is required to take on the responsibility of soliciting the cooperation of those counterparts with which it may be in competition. When clashes do occur – and they inevitably will – Monash University’s policy includes a list of “guiding principles” intended to lay out the priorities for consideration in dispute resolution. This list is worth reproducing in full:

- access for students with disabilities takes precedence over other considerations, unless this causes unjustifiable hardship;
- larger classes have precedence over smaller classes;
- first year units have precedence over later year units;
- activities which occupy large blocks of time have precedence over those which occupy small blocks of time;
- specialist teaching space shall be used for its designated purpose;
- activities requiring specialised teaching facilities (e.g. media equipped lecture theatres) have precedence over those requiring standard facilities;
- the extent to which the alteration of existing arrangements will impact on other staff and students.

As important – perhaps essential – as this kind of triage may be to effective conflict resolution, analysts of the system in place at Purdue University raise an interesting point. System designers at Purdue wished to “counteract the tendency of the solution to favor those who place the most restrictions” on space use. In other words, the most highly specialized classes – those which are most difficult to accommodate – tend to receive preferential treatment in the centralized timetable, simply because other classes can “make do” with whatever teaching space remains. Purdue dealt with this problem by weighing “the value of time preferences inversely proportional to the amount of time affected.” This means that a class with many restrictions has those restrictions less heavily “weighted” in consideration than a class with fewer restrictions. A paper describing this experiment reports that timetabling users were more satisfied with space assignments because they knew the process had been corrected towards the end of greater fairness.

The first item in Monash University’s list cited above highlights the crucial fact that equity considerations are not limited to the challenge of fairly divvying space among faculties and departments. Access and diversity needs of various categories of users are also important. In fact, the first policy consideration listed in Monash University’s over-arching statement is that timetabling must be consistent with “university policies in relation to work, life and family, equity and diversity.”

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24 Murray and Muller, p. 3. Op cit.
25 Ibid.
legislation and policies as including a disability discrimination act, occupational health policy, work life family policies, equal opportunity policy, and sexual harassment grievance procedures.\(^27\) In a document detailing timetabling procedures, Monash University also includes special best practice provisions for “disability support,” including conducting interviews with students with disabilities at the beginning of the academic year in order to facilitate any necessary scheduling changes. Faculty Timetable Coordinators are charged with the responsibility of coordinating disability support staffs hired to accompany students to their classes and assist with note-taking, etc.\(^28\)

City University London delegates these same responsibilities to Disability Officers in the faculty, who are responsible for keeping School Timetablers up to date about any special access requirements.\(^29\)

**Campus Geography**

Centralized timetabling is predictably more complex at multi-campus institutions like XYZ University. Monash University’s policy contains a clause relating to the logistics of travel between campuses. This clause asserts that, wherever possible, “activities for student cohorts or individual staff will not be scheduled at different campuses on the same day unless requested.”\(^30\) If this cannot be helped, then sufficient travel time should be built into the schedule. Separate from timetabling policy, Monash University has posted online its relevant general policy for “Academic Programs Offered from Multiple Campuses.” This policy contains information about informing students as to the need for travel between campuses, the protocol for transferring from one’s “home campus,” and the provision for consistency among courses taught at more than one site.\(^31\)

Penn State University is a major public research university in Pennsylvania. Its online Undergraduate Advising Handbook includes a special page for “multi-campus registration,” which outlines the protocol by which students register for courses at more than one physical site.\(^32\) At Penn State, students in this situation are divided between those who are originally affiliated with a “multi-campus college” in the university network, and those who are not. Students in the former category do not require special permission to register at more than one college. Students in the latter category must seek special advisement when opting to register for courses at more

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\(^{27}\) Monash policy, p. 4. *Op cit.*

\(^{28}\) *Ibid,* p. 2.

\(^{29}\) Delacy, p. 4. *Op cit.*

\(^{30}\) Monash policy, p. 4. *Op cit.*


than one campus. They must additionally ensure that at least half of their total credit hours are at their “home campus.”

The Melbourne-based company Timetabling Solutions offers products and consulting services to universities, including customized training courses for university administrators who are either using its “Timetabler” software or require support in enhancing their own alternate system. The “Advanced Timetable Development” one day course is designed to equip participants to improve timetabling in ten areas, including the creation of a multi-campus timetable.

As far we can ascertain, XYZ University’s timetabling policy does not make specific mention of provisions for its multiple campus status. Because of this, the university may wish to review peer policies and/or solicit expert advice in order to ensure that the complexities of multi-site course registration are being adequately anticipated and accommodated.

Guidelines for Delegation

Successful implementation, revision, appeal, and dispute resolution are all linked to the clear delegation of responsibilities at every level of the university community. Again, in relation to peer universities researched, XYZ University does address this issue, but with less comprehensive detailing of how responsible parties relate to one another.

City University London’s policy provides a good example of detailing the “roles and responsibilities” of “key entities and staff” involved in timetable construction and implementation. The policy clearly addresses each of the following categories, in turn:

- Timetabling Manager
- Students
- School Timetabler
- Heads of School/Department
- Programme Directors
- Teaching Staff
- Disability Officers

For its simplicity and clarity, this list is worth explicating in some detail. According to this policy, the Timetabling Manager is responsible for final scheduling, maintaining a

33 Ibid.
“diary of key dates” for information collection, coordinating timetabling “from an institutional perspective rather than a particular academic area,” reviewing the “collection of teaching requirements,” and managing “the web room booking system.”

Students are charged with the responsibility of informing the Disability Liaison Unit or School Timetablers of any special needs with regards to disability or “religious beliefs.” They are also urged to attend only “those classes into which they are timetabled.”

School Timetablers are charged with the greatest number of data management tasks as well as many intermediary responsibilities, from advising staff with regards to “workload and equity issues,” to educating students “to regularly check for amendments before and during term.”

Heads of Schools and Departments are charged with approving timetable changes and faculty requests that affect availability of courses. They are also responsible for allocating “teaching loads consistent with University policy” and enforcing “Central Timetabling deadlines.”

Programme Directors are, in essence, designated to “liaise with School Timetablers” to ensure smooth data collection, submission, and review. Teaching Staff are charged with responsibilities to provide data about course module requirements and constraints, as well as to educate students to effectively use the automated timetabling system and remain abreast of any course scheduling changes. Disability Officers interview students and notify School Timetablers of special scheduling needs.

**Legible Protocol for Review**

All of the policies we researched emphasize the importance of detailing clear processes by which stakeholders might revise and amend the initial timetable once it is published. The timetabling policy for the University of West Sydney features a detailed explication of the various stages of timetable creation (requirements gathering, compilation and automatic scheduling, review, manual adjustment, publication, enrolment, and ongoing review). After initial data collection and the automatic generation of a draft timetable, staff are invited to “check the draft...”

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37 Ibid, p. 2
38 Ibid.
39 Ibid, p. 3
40 Ibid.
41 Ibid.
42 Ibid, p. 4
43 This list is taken from an email correspondence with ABC, Registrar at XYZ University, 13 August 2009.
timetable thoroughly and provide feedback … well in advance of the official publication dates.”

The University of West Sydney’s policy then includes a detailed list of considerations that affected parties should consult when resolving conflicts concerning the timetable. Considerations include issues of disability, the size of the classes involved, and the “importance of the activity to the University.” The policy document clarifies that if involved parties are unable to resolve the conflict themselves, then the Registrar will be consulted and his or her decision will be final.

The policy document then turns to the protocol for making changes after official publication of the timetable. First, schools within the university are made responsible for posting signs and otherwise notifying all students about any last-minute changes. Second, changes are only permitted if there are “valid reasons,” which are defined as:

- unexpected enrolment variation;
- unexpected staff turnover
- a location is a health or safety hazard;
- a unit is no longer deemed viable; and
- reasonable adjustments to accommodate students with special needs.

The University of West Sydney’s timetabling policy then differentiates protocol for changes that do or do not impact “scheduled days, times or campus.” In both cases, Timetabling Officers serve as important intermediaries. Once changes to the timetable are published, the semester’s registration and teaching space allocation decisions are no longer open to fundamental amendments by users. Space use is continually monitored, however, to ensure that facilities are occupied according to the timetable. The policy document also contains a provision that, “Those who do not utilise requested timetable space may be subject to penalties as determined by the Chief Operating Officer.” Another important aspect of timetable revision, according to this policy, is the continual monitoring of the quality of teaching space, and the timely reporting of any health and safety issues that may impact availability.

The University of Wolverhampton, a multi-campus university near Birmingham in England, is currently undergoing a major overhaul of its timetabling system. The review was prompted in part by research by the Space Management Group.

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44 Delacy, p. 4. Op cit.
46 Ibid, p. 5, 6
48 Ibid.
(introduced above). In 2008, the university began to accept proposals for improving a situation of serious under-utilization of space as well as the difficulties of navigating the online registration system. Extensive details of this review are available on the university’s website. One of the innovative suggestions relating to timetable revision is that students be notified via SMS of any last-minute revisions or cancellations.\textsuperscript{50} Communication was, in general, cited as a major area for improvement.

Students are the central stakeholders in the timetabling system. As such, they should be consulted and accommodated as much as possible. A university may decide, however, to place clear constraints on the capacity of students to amend their chosen timetables. Web pages for particular academic schools at the UK’s Leeds Metropolitan University include special information about timetabling. The university’s School of Cultural Studies, for example, posts clear language pertaining to the responsibilities of students to adhere to the timetable:

\begin{quote}
Our policy … is NOT to allow students to change their seminar times in order to meet work commitments. We have so many students, and so many students are employed in part-time work, that if we allowed these changes the timetabling system would quickly break down. Instead we ask you, as a full-time undergraduate student, to fit your paid work into the schedule of your university studies. The ONLY exceptions to this rule are students with responsibilities for the care of children.\textsuperscript{51}
\end{quote}

If XYZ University faces persistent problems at the revision stage of the timetabling process, it may be wise to consider if those issues can be addressed through better communication with stakeholders and, possibly, the imposition of certain limitations on students who wish to amend their personal schedules.

**Flexible and User-Friendly Technology**\textsuperscript{52}

In 2006 and 2007, a network of researchers from universities across Europe gathered to take part in an “International Timetabling Competition,” which tested emerging computer programs by imposing time constraints for data processing. Contestants vied for cash prizes even as they worked to build a stronger community of interdisciplinary innovators in timetabling research. The website for the second competition described its raison d’être as follows:

\begin{quote}

\end{quote}

\textsuperscript{50} “Transforming Timetabling Project: Proposals for Centralized Timetabling and Rooming.” Posted online 17 August 2009. See www.wlv.ac.uk/Docs/Proj-TT-P-1000-Proposals(Version%20M).doc

\textsuperscript{51} “School of Cultural Studies: Timetables.” Leeds Metropolitan University website, accessed 17 August 2009. See http://www.leedsmet.ac.uk/as/cs/50E5B98221DB47E690D2E01A72925056.htm

\textsuperscript{52} The following link contains information about a wide range of other software solutions (many of them free) not discussed here: http://www.shambles.net/pages/staff/TTsoft/
Timetabling within Universities has long been recognised as difficult. Whether it be timetabling exams or courses, much effort is spent producing solutions which are workable and of a high quality. An important aim of this competition is to generate new [multi-disciplinary] approaches to the associated problems … [and] to close the gap which currently exists between research and practice within this important area of operational research.\(^{53}\)

In this section we follow the lead of the International Timetabling Competition by reviewing popular technological solutions already available to universities.

*The University of Warwick, Personalized Lecture Timetables*

The University of Warwick educates over 16,000 British and international students at its rural campus in England. Warwick’s timetabling system educates students as to how they can generate a “personalized lecture timetable” (PLTT) on the registration website. After a student has selected courses, he or she can log on to review an automatically generated PLTT and check for any clashes or conflicts. If there are clashes, students have the opportunity to choose different course modules after consulting with the central timetable or, if necessary, with their department. The PLTT is also a tool students can use throughout the semester to check for any changes to the timetable.\(^{54}\)

*Leeds Metropolitan University, Google Calendar*

Similar to the University of Warwick, Leeds Metropolitan University encourages students to make use of personalized timetabling tools. At Leeds Metropolitan, these timetables are generated through the Google Calendar application.

*Scientia, Syllabus Plus Software*

Scientia is a software design company that specializes in timetabling solutions.\(^{55}\) Its signature software suites “Syllabus Plus” and “Syllabus Plus Enterprise” are, according to the company’s website, “used in over 450 higher and further education institutions in 24 countries and has been selected by 25 of the top 100 Universities in the World.”\(^{56}\) Syllabus Plus is also the software of choice for many of the universities

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\(^{54}\) “Central Timetabling: Personalised Lecture Timetables.” Warwick University website, accessed 17 August 2009. See http://www2.warwick.ac.uk/services/roombookings/personalisedlecturetimetables/


\(^{56}\) “Scientia Resource Scheduling Solutions.” Scientia website, accessed 14 August 2009. See
cited in this report, including the University of Western Sydney and Monash University.

Within the Syllabus Plus Enterprise suite, Scientia markets software designed to accommodate specific timetabling problems, such as ad hoc booking or last-minute changes. The scheduling tool Enterprise Timetabler allows for fully automated scheduling or the use of a hybrid model accommodating manual control as well. Importantly, it allows for “fine grained authorization,” which means that users at multiple levels of responsibility can be authorized to access the same application.57

Mosaic Software Development, a component part of the Mosaic Space Group, offers “add ons” to Syllabus Plus, as well as customized additions to a university’s alternative existing system. The website for the company lists “web-based room booking systems” and “interactive web-based timetable displays” as examples of past custom designs. Mosaic also markets a product called RUIS, which allows space managers to “obtain a clearer picture of room utilisation … in a matter of seconds … using data imported from popular timetabling and architectural systems.”58 In addition, the company’s tool EPiCentre creates an interface between popular events management and timetabling software products.59

Timetabling Solutions, The Timetabler Software

The Australian company Timetabling Solutions markets The Timetabler suite, which it claims is “the most powerful and flexible school timetabling software package” on the market.60 Products include:

- The Timetabler, which includes provisions that facilitate student selection of courses, fully automated or hybrid interactive timetable development, and a daily organizer capable of updating changes on a daily basis.61
- General Access, which is “an add-on multi-user module for The Timetabler that gives network wide access to individual teacher, room and student timetables, student lists, student activities and school bulletins. Student and teacher photos can also be displayed allowing you to see exactly who is in a particular class.”62

http://www.scientia.com/ca/
59 Ibid.
TimetableFind, which is an application designed specifically for Macintosh systems.\(^{63}\)

Software Maintenance Agreement, which automatically manages software upgrades and licensing issues.\(^{64}\)

Web Preferences, an interface that allows students to submit course preferences online.\(^{65}\)

DayMap – Web Attendance, which helps instructors keep track of student attendance rolls and notes on student progress and behavior.\(^{66}\)

Training support in use of The Timetabler suite.

Open Source, Timefinder Software

Timefinder is an open source timetabling project that freely “provides automatic scheduling for high schools and universities.” Made public in April 2009, Timefinder will most likely improve with time, but it is already being hailed as a user-friendly and cost-effective alternative to products on the market. It is available free of cost and features an “intuitive graphic user interface” and compatibility with “nearly any operating system.”\(^{67}\)

Outreach to Differentiated Participants

If the inclusion of stakeholders is a foundational priority in drafting policy, outreach to and education of users is crucial to successful implementation and dispute resolution. Towards this end, the University of New South Wales maintains a “frequently asked questions” web page designed to educate faculty users. The questions included on the list offer some insight into common concerns and anxieties of this category of timetable users. Because they may be relevant to XYZ staff as well, we reproduce the questions here:

- Will we provide you with a specified or preferred day and time as part of our scheduling request?
- What about [non-central] teaching space? Will we schedule our own teaching activities in those spaces?
- Will team-teaching be catered for?
- Can you guarantee classes will not be held too far away from our home base?
- Will the teaching timetable be rolled forward from year-to-year once it is implemented?
- What if our area has special timetabling needs? Who do we contact?

\(^{63}\text{Ibid.}\)
\(^{64}\text{Ibid.}\)
\(^{65}\text{Ibid.}\)
\(^{66}\text{Ibid.}\)
\(^{67}\text{Timefinder website, accessed 17 August 2009. See http://timefinder.sourceforge.net/index.html}\)
How will we know what information to provide and what we need to do to schedule our courses for next year?

What if we need a bigger room when the class is reaching its capacity?

Can we swap rooms we don’t like?

What should we do if we need to schedule additional classes for a course due to enrollment demand?

What about teaching staff? How will the timetable take into account their needs?

If we’re unsure about whether a course will be run or not, do we have to tell you about it?

What happens when we close a class e.g. due to insufficient enrolment demand?

How will school and faculty meetings be accommodated in the timetable?

Are off-campus courses to be included in the timetable?

Will weekend teaching be included?

It may be advisable for registration strategists at XYZ University to consider which of these questions apply, and to ensure that timetabling policy provides clear answers. Even if the answers are available in a policy document, however, a university’s centralized timetabling committee does well to set up multiple avenues for user education and outreach.

The University of Warwick’s website also features answers to several “frequently asked questions,” which are divided into the following categories: general teaching timetable questions, ad hoc booking questions, and teaching timetable construction questions. These questions are clearly addressed to student as well as staff users. Examples not covered by the above list include, “How do I book a room out of term?” and “What week are we in?” Warwick’s central timetabling website also includes a “Did you know…?” page that highlights the user features of the system. Other user outreach features are a “Useful Tips” section, a “Help with Timetables” webpage, a “Maintenance Line” for reporting problems, and an “Interactive Campus Map” that helps users to navigate teaching space.68

68 “Timetabling FAQ’s.” The University of New South Wales website, accessed 17 August 2009. See https://my.unsw.edu.au/student/Staff/TimetablingFAQs.html


70 Ibid.

71 “Central Timetabling: Did you know…?” Warwick University website, accessed 17 August 2009. See http://www2.warwick.ac.uk/services/roombookings/didyouknow/


73 “Central Timetabling: Maintenance Line.” Warwick University website, accessed 17 August 2009. See http://www2.warwick.ac.uk/services/roombookings/maintenanceline/

74 “Interactive Campus Map.” Warwick University website, accessed 17 August 2009. See
In addition to including provision for outreach in its policy and developing user-education features online, XYZ University may wish to consider how policy stakeholders will be trained in effective timetabling through workshops and tutorials. Student orientation workshops aimed at encouraging better time management and study skills may provide an appropriate forum for education about how to use the timetabling system, as well.

http://www2.warwick.ac.uk/about/visiting/maps/interactive/
Conclusion

Research by the Space Management Group found that 86% of UK universities surveyed had instituted centralized, computerized timetabling to some extent, and 12% had timetabled “all their teaching space.” The Group concluded that “full central timetabling … [has] a statistically significant positive effect on space performance.” SMG research also found that there were a number of features present at institutions that enjoyed effective timetabling and space management systems. We reproduce a list of these features here:

- top level support
- expertise and effective resourcing of the timetabling unit
- a clear policy for staff
- access to core student record data
- detailed knowledge of rooms, sizes, capacity and facilities

In its pamphlet “Implementing SMG Guidance,” the Space Management Group compiled a “best practices” checklist to assist universities in improving their approaches to space use in general. Although the list is relevant for space issues beyond those impacted by university timetabling, we feel it is helpful enough to reproduce some of them here. XYZ University may wish to consider the following questions as it seeks to improve its own space and timetabling policy.

Space management checklist

- Is there a space management champion?
- Is there a space management committee?
- Is there a space management policy approved by the senior management team?
- Is the policy subject to annual monitoring and review?
- Is the space management committee consulted on the space implications of strategic plans?
- Is space management regularly reported to the governing body?
- Is up-to-date information available on space provision and usage?
- Are space needs regularly assessed for both current and future activities?

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It is clear from our research that the problem of timetabling and teaching space management is a complex one, which continues to attract significant research in computer science but relatively little comprehensive policy analysis. Reports circulated by the Space Management Group is one exception to the overall dearth of literature, but unfortunately access to the SMG implementation model is restricted to space management directors at UK universities. Nevertheless, our research suggests that XYZ University may do well to consider the problem of timetabling to be, at heart, a policy problem, and to expand upon and detail each aspect of the current policy, with consideration of how all stakeholders are consulted and engaged at every stage of the process.
Note

This brief was written to fulfill the specific request of an individual member of The Hanover Research Council. As such, it may not satisfy the needs of all members. We encourage any and all members who have additional questions about this topic – or any other – to contact us.

Caveat

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