



**FOURTH NATIONAL
BIENNIAL SURVEY
OF COMPUTERISED TIMETABLING
IN HIGHER EDUCATION**

DECEMBER 2004

Website: <http://www.aims.ac.uk>

National Survey of Computerised Timetabling in Universities 2004

2004 SURVEY OF COMPUTERISED TIMETABLING IN HIGHER EDUCATION

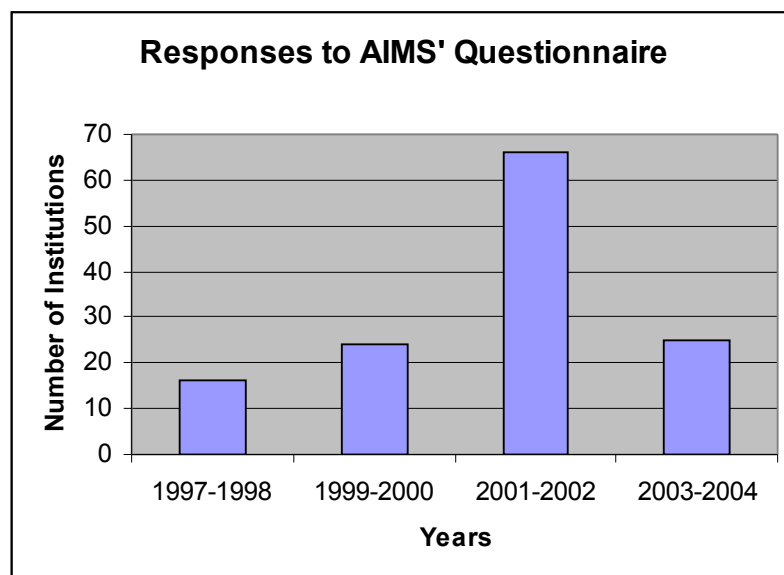
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INTRODUCTION

Background

This is the fourth national biennial survey of computerised timetabling in Higher Education that AIMS has carried out. The number of responses to each is shown in the diagram below.



The number of responses to this year's survey was lower than expected. This may have been because the number of responses in 2002 was unusually high. Another more likely explanation is that in 2004, institutions were approached only by email

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and asked to respond using an electronic form or to download a PDF form. Only one used the downloaded form. Previously, institutions were approached with a printed form and a written request to participate, with the electronic form offered as an alternative, and the majority used the paper form. This appears to have been a more fruitful means of seeking information.

Previous Survey (2002)

The previous survey asked which products were in use and which were known. Other questions in 2002 invited comparisons of products, advice to any institution considering the introduction of computerised timetabling, identifiable savings and other benefits, where particular functions were based organisationally, links to databases, WWW output, space charging, the scheduling of specialised space, and the disadvantages and constraints of computerised timetabling.

Many of the views expressed in the 2002 survey will still apply. The 2004 survey also asked about products that were recognised and those in use, but did not ask for comparisons of products, advice to others or identifiable benefits. It asked about the organisation of data entry and processing, and the extent to which central corporate software runs unconstrained or whether, at the other extreme, schools or departments produce their own schedules and inform the administrative centre. It also asked about other institutional policies concerning issues such as staff teaching time and workload balance. There were further questions about management reports, interactions with other corporate databases, the degree of corporate control of rooms and the use of space charges.

In the tables, institutions have been grouped as in 2002, according to size. This might be misleading in terms of the demands on the timetabling system. Some institutions have larger proportions of part-time students which may change the complexity of data collection for them. However, this is the most appropriate grouping available.

Acknowledgement

AIMS thanks all those who have contributed to this survey. Copies of this report have been circulated directly to them, and may also be downloaded from the AIMS website at <http://www.aims.ac.uk>.

Size Categories used in the Survey

The definitions of the terms used below for the size categories are:

Small	≤ 5,000 students
Medium	5,001 – 10,000 students
Large	10,001 – 15,000 students
Very Large 1	15,001 – 20,000 students
Very Large 2	≥ 20,001 students

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SUMMARY OF FINDINGS

1. All respondents used computers to schedule teaching, over 90% used them for ad hoc bookings and over 60% for scheduling examinations.
 2. The principal products used to schedule teaching are unchanged.
 3. Data entry in smaller institutions is usually centralised, but in larger institutions, a slight majority (approximately 60%) prefers distributed data entry.
 4. Scheduling is usually centralised, although institutions with 10-15,000 students often have mixed systems.
 5. For the allocation of rooms, approximately 25% of institutions of all sizes allow the software to allocate rooms, nearly 30% roll over the arrangements of the previous year and the same proportion uses departmental "soft" preferences that can be over-ridden if they cannot be met.
 6. For the composition of class groups in smaller institutions, the software decides, but in larger institutions, this is done in departments or schools.
 7. For days and times of teaching events, most institutions overall prefer to roll over the details from one year to the next. Where not rolled over, smaller institutions are more likely to allow the software to decide.
 8. For allocating teaching staff, most institutions prefer that the faculty, school or department should do it, rather than by the software.
 9. Availability for teaching: teaching staff are expected to be available throughout the entire teaching week. Decisions to vary this were taken in schools, rather than by institutional policy.
 10. Workload balance was a matter for schools rather than the institution or the timetablers.
 11. Room usage reports are standard, space utilisation reports are usual and staff workload reports are only produced by a minority of institutions and are usually for use in schools or departments.
 12. There were significant areas where the functionality of the software is not used fully: for instance:
 - a. A majority of respondents did not use the software to amalgamate or divide teaching groups automatically.
 - b. Integration with other corporate databases (staff, students and space) was unexpectedly low.
 13. Teaching space policies: larger institutions appear to have been more successful at implementing corporate strategies for teaching space, for example in the use of "pooled" rooms.
 14. Occupancy checks are usual in all except the smallest institutions, usually annual, and carried out by the Estates Department or the Timetabling Office.
 15. Space charges for teaching space apply in half the very large institutions (over 15,000 students). It is less common in smaller institutions.
 16. Charges for non-teaching space are uncommon, being reported overall by fewer than 25% of institutions.
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THE SURVEY

Question 1 – (a) Do you use computers to assist with scheduling teaching events, scheduling examinations and ad-hoc room bookings?

Table 1a. Use of Computers in Scheduling			
<i>Where computers are used</i>			
Size of Institution	<i>Number using computers to schedule:</i>		
	Teaching Events	Exams	Ad Hoc bookings
SMALL	4	3	3
MEDIUM	2	2	1
LARGE	11	5	11
V LARGE 1	4	3	4
V LARGE 2	4	3	4
TOTALS	25	16	23

All respondents used computerised systems to schedule teaching events and nearly all used them for ad hoc bookings. 64% overall used them for scheduling examinations.

The numbers in most of the size categories may be too small to enable valid conclusions, but in the "large" category, with 11 responses, approximately half used computers to schedule examinations.

(b) What systems are in use, and what other systems have you heard of?

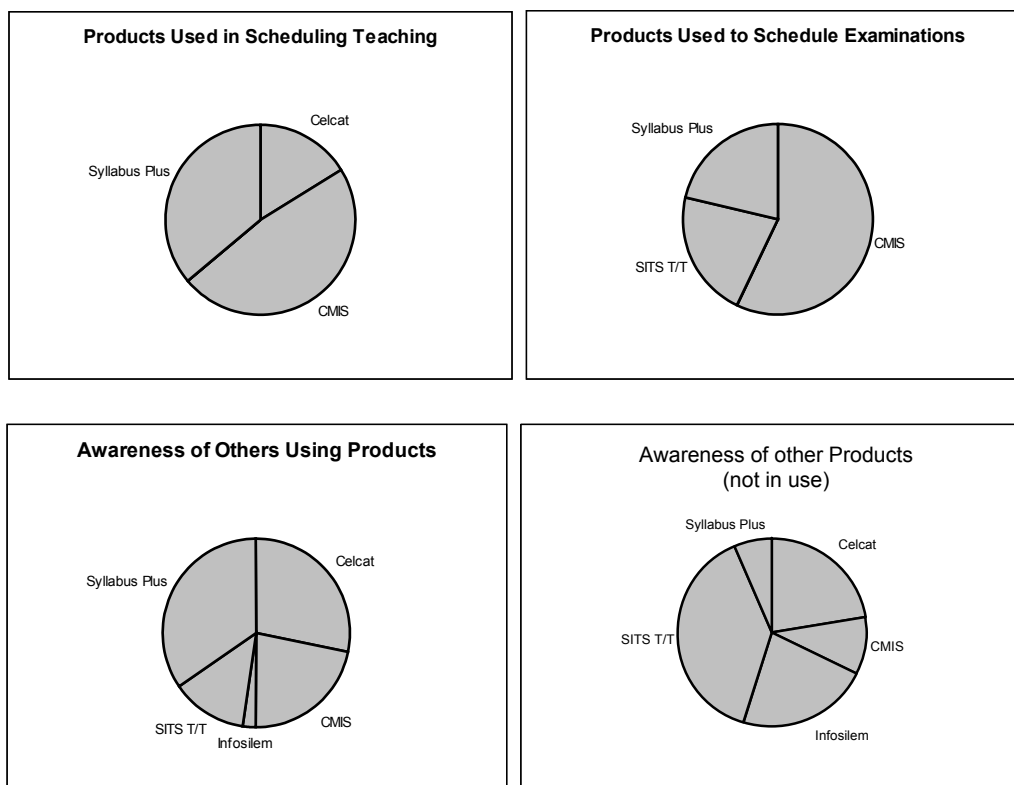
Table 1b on page 5 shows the number of positive replies to each question, again grouped by size of institution and as totals.

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Table 1b <i>Systems used and Awareness of Other Systems</i>					
		Number using this product to schedule teaching	Number using this product to schedule exams	Total number of other known implementations of this product	Number aware of this product, but not of any users
SMALL	Celcat	1	0	2	1
	EMS	0	0	0	0
	Facility CMIS	3	2	2	0
	Infosilem	0	0	0	1
	SITS (Timetabling module)	0	1	1	1
	Syllabus Plus	0	0	2	1
	Other				
MEDIUM	Celcat	0	0	2	0
	EMS	0	0	0	0
	Facility CMIS	1	1	0	0
	Infosilem	0	0	0	0
	SITS (Timetabling module)	0	0	1	1
	Syllabus Plus	1	0	1	0
	Other				
LARGE	Celcat	3	0	3	5
	EMS	0	0	0	2
	Facility CMIS	4	2	5	1
	Infosilem	0	0	0	4
	SITS (Timetabling module)	0	2	4	5
	Syllabus Plus	4	1	6	1
	Other	1	1	0	0
V LARGE 1	Celcat	0	0	3	0
	EMS	0	0	0	1
	Facility CMIS	2	1	0	1
	Infosilem	0	0	0	2
	SITS (Timetabling module)	0	0	0	3
	Syllabus Plus	2	2	4	0
	Other	0	0	0	0
V LARGE 2	Celcat	0	0	3	1
	EMS	0	0	0	1
	Facility CMIS	2	2	3	1
	Infosilem	0	0	1	0
	SITS (Timetabling module)	0	0	0	2
	Syllabus Plus	2	0	3	0
	Other	0	1	0	1
TOTALS	Celcat	4	0	13	7
	EMS	0	0	0	4
	Facility CMIS	12	8	10	3
	Infosilem	0	0	1	7
	SITS (Timetabling module)	0	3	6	12
	Syllabus Plus	9	3	16	2
	Other	1	2	0	1

Some of this information is illustrated graphically on page 6.

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The charts above show the proportions of all respondents using each product for scheduling lectures and examinations, the proportions aware of other users and the proportions aware of the products but not of other users.

This information is helpful but should be used with care, as according to data from the suppliers, the product with the most installations overall is Celcat, but this often has several implementations in a single institution. Of the products with automatic schedulers, Syllabus Plus has more installations than CMIS, despite what the charts above show. SITS is used quite widely for scheduling examinations, as the charts indicate. Celcat has announced an automatic scheduler for release in 2005.

Other interesting information can be obtained from the sub-categories of different sized institutions, shown in the previous table.

Question 2 – *Where teaching events are scheduled by computer, are the systems centralised or distributed?*

Responses are shown in Table 2 on page 7. They indicate that in the small and medium sized institutions that responded, data entry systems are generally centralised. There appears to be a balance of central and distributed arrangements in larger institutions, with the balance slightly in favour of distributed.

Scheduling is more likely to be centralised, which is unsurprising, though the large institutions, which provided the largest sample, are evenly balanced.

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Table 2. Arrangements for Scheduling Teaching Events			
Data Entry	<i>Central: information from users is sent to a central admin office for entry</i>	<i>Distributed: Information is entered in the department, school or faculty where it originates</i>	<i>Notes</i>
SMALL	4	0	
MEDIUM	1	1	
LARGE	5	6	One moving to distributed by 2006
V LARGE 1	0	3	Plus one "mixed"
V LARGE 2	2	1	Plus one "mixed"
TOTALS	12	11	
Scheduling	<i>Central: a central computerised system under central control produced the timetable for the institution</i>	<i>Distributed: each school or faculty produces its own timetable</i>	
SMALL	3	1	
MEDIUM	2	0	
LARGE	5	6	Many "mixed" systems
V LARGE 1	2	1	Plus one "mixed"
V LARGE 2	3	0	Plus one "mixed"
TOTALS	15	8	

Question 3 – Policy for several aspects of computerised timetabling.

The responses to this question are summarised in Table 3a on page 8.

Allocation of Rooms

Within the restrictions of the sample sizes, a similar pattern occurs in all sizes of institution. In a quarter, the software decides on room allocation, within institutional constraints but with no preferences indicated (clean sheet). In 30%, the previous year's arrangements are rolled-over. In the same proportion, users indicate "soft" preferences that the system will use if possible but can override if necessary.

Creating Class Groups

Small institutions seem to preference to allow the software to decide class groups. In large institutions, there is a distinct preference for it to be decided by staff in academic departments. Overall, the preferences were distributed fairly evenly except that the intermediate option ("soft" preferences) was unpopular.

Deciding Days and Times for Teaching Events

Overall, there was a clear preference for rollover, but two other categories taken together, faculty/school decisions and "soft" preferences, were as popular as rollover. As with rooms, small institutions appeared more confident in allowing the software to decide these issues.

Allocating Teaching Staff

Overall, there was a very strong preference for this to be decided by the faculty or school.

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Table 3a. Policies for Scheduling					
<i>Institutional Policy for Four Aspects of Computerised Timetabling</i>					
SIZE OF INSTITUTION		Deciding allocation of rooms	Deciding composition of class groups	Deciding days/times for teaching events	Allocating teaching staff
SMALL	Software decides, always beginning with a clean sheet, within institutional policy constraints	1	2	1	0
	Software rolls over as much as possible, then runs freely, within institutional policy constraints	2	1	2	1
	Faculty, school or department states "soft" preference, over-ridden if they cannot be met	0	0	0	0
	Faculty, school or department decides this matter.	1	0	0	3
	Other arrangements				
MEDIUM	Software decides, always beginning with a clean sheet, within institutional policy constraints	0	0	1 expected 2005/6	0
	Software rolls over as much as possible, then runs freely, within institutional policy constraints	1	1	0	1
	Faculty, school or department states "soft" preferences, over-ridden if they cannot be met	1	0	1	0
	Faculty, school or department decides this matter.	0	1	1	1
	Other arrangements				
LARGE	Software decides, always beginning with a clean sheet, within institutional policy constraints	2	2	0	0
	Software rolls over as much as possible, then runs freely, within institutional policy constraints	2	2	4	2
	Faculty, school or department states "soft" preferences, over-ridden if they cannot be met	3	0	3	0
	Faculty, school or department decides this matter.	1	6	3	8
	Other arrangements	3 - centre allocates rooms	1 mixed	1 mixed	1 mixed
V LARGE 1	Software decides, always beginning with a clean sheet, within institutional policy constraints	2	2	2	3
	Software rolls over as much as possible, then runs freely, within institutional policy constraints	0	1	1	0
	Faculty, school or department states "soft" preferences, over-ridden if they cannot be met	2	1	1	0
	Faculty, school or department decides this matter.	0	0	0	1
	Other arrangements				
V LARGE 2	Software decides, always beginning with a clean sheet, within institutional policy constraints	1	1	0	0
	Software rolls over as much as possible, then runs freely, within institutional policy constraints	2	0	2	0
	Faculty, school or department states "soft" preferences, over-ridden if they cannot be met	1	1	1	0
	Faculty, school or department decides this matter.	0	2	0	4
	Other arrangements				

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Other Policies related to Scheduling

Other policy issues are explored in the responses shown in Table 3b, below. Almost all institutions that responded expected teaching staff to be available throughout the normal teaching day, unless the Head of School or Head of Department agreed to different arrangements. Workload balance was generally a matter for schools, rather than the institution. Overall, the majority scheduled specialised space centrally, but there were significant numbers in which this was done by the main or only users.

A majority of respondents said that the software was not used to amalgamate or divide teaching groups automatically, when this is necessary. In future surveys, further information will be sought about this matter.

Overall, it appeared that many of the institutions that responded are not making full use of the functionality built into the software packages. However, AIMS is aware of institutions that do make full use of the features of the software and integrate it with other information databases. This too requires more information.

	SMALL	MEDIUM	LARGE	V LARGE 1	V LARGE 2
Is there a policy on when staff should be available for teaching or other student contact? If so, please outline it	Should be available for all normal teaching times (1); Must state when not available (1); No policy (2).	Should be available for all normal teaching times (1).	Standard day unless HOS has authority to permit changes (all).	Should be available any time in normal teaching week (all).	Normal teaching hours or determined by depts (all).
Is the time spent by academic staff on teaching, research and other activities determined by Institutional policy, by individual decisions in departments/schools, or by other methods?	N/A (1); Schools (2); Institutional (1)	Institutional, but depts / schools can vary it.	Generally a matter for schools; one institution had a policy.	Mostly in schools, which inform the centre.	Schools (2); Institutional (1).
Does the software schedule laboratories and other practical classes? If not, what is the rationale for excluding them?	Yes (1); No (1); Fixed by schools (2)	Some labs managed by schools. One booked most labs; the other booked PC labs only.	Yes (7), some on instructions from schools; scheduled by schools (2).	Yes (3); Done manually (1).	Yes (4). However, one does not include specialised space, only IT labs.
Does the software automatically create teaching groups where classes must be amalgamated or subdivided for certain aspects of the teaching programme?	Yes (1); No (3).	Yes (1); No (1).	Yes (2); No or not yet (8).	Not generally used. One linked activities to show this. One uses this in some schools only.	Yes (1); Not yet (1); No (1).
Does the software automatically handle classes that must appear at particular times in the teaching programme (eg a class requiring different arrangements that must be placed at a particular point in the schedule of lectures)?	Yes (1); No (3).	Yes (1); Not yet (1).	Yes (5); No (5).	Yes (4)	Yes (2); With manual intervention (1); Not yet (1).

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Question 4 – *Does the institution use the software to produce management reports?*

Table 4 summarises the responses to this question.

Table 4. Management Reports			
<i>Does the system produce management reports on:</i>			
	Room Usage	Space Utilisation (usage % x occupancy %)	Staff workloads
SMALL (4)	Yes (3). Annual and ad-hoc. For Estates & Buildings, Bursar and Learning Resources Team.	Yes (2). For Learning Resources Team and ad-hoc.	Yes (1). For senior management, Finance Office and ad-hoc.
MEDIUM (2)	Yes (2). For senior management, Estates, Heads of School and HEFCE.	Yes (2). For senior management, Estates, Heads of School and HEFCE.	Yes (1). On request by schools.
LARGE (11)	Yes (10). 8 annual, 2 biannual.	Yes (8). For space management committee, Estates, PVC.	Yes (4). Used internally by Faculties/Schools.
V LARGE 1 (4)	Yes (4). Annual or per semester. For Executive Group, faculties, Estates and PVC.	Yes (3). Annual or per semester. For Executive Group, faculties, Estates and PVC.	Yes (1). Partial service - some schools do not wish to use this feature.
V LARGE 2 (4)	Yes (4). Annual and ad-hoc. For Teaching or Space Mgt Committee, senior management, PVC.	Yes (4). Annual and ad-hoc. For Teaching or Space Mgt Committee, senior management, PVC.	No.

Room usage reports seem to be standard everywhere. Space utilisation reports are usually produced. Staff workload reports used by a minority, and are still not considered to be standard reports, even within schools.

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Question 5 – Does the scheduling system integrate automatically with corporate databases?

The degree of integration reported (Table 5, below) was surprisingly small, especially since this is often considered to be a very important feature. None of the respondents had integrated scheduling fully with a staff database, although some data transfer was possible. Integration with student information was also limited, although this, like other features that appear to be infrequently used, is often considered to be an essential requirement. Several replies stated that work was in hand to enable such integration. As with other features previously considered in this report, AIMS is aware of several institutions where integration, especially with student information, has operated successfully for some time.

Table 5. System Integration			
<i>Does the system interact automatically with corporate databases such as:</i>			
	<u>Staff information?</u>	<u>Student information?</u>	<u>Space/rooms database?</u>
SMALL	No (3).	No (2); not yet (1).	No (3).
MEDIUM	No (2), but one can download.	No (2); one can download, one working on automatic link.	No (2); one planning integration with Archibus.
LARGE	No (9), but 4 can download. Yes (1).	No (10), but 4 can download.	No (8), but 1 can download. Yes (1).
V LARGE 1	No (4); one under development. One downloads via spreadsheets and data transfer.	No (4); one under development. One had manual interfacing. One downloads via spreadsheets and data transfer.	No.
V LARGE 2	No	Yes (2). Not yet but planned (2)	Not yet (1); no (3)

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Question 6 – Control of Space

This question asked about two issues: the proportion of teaching rooms that are corporately controlled, even if particular schools or departments have preferential access (table 6a, page 13); and the use of space charges (table 6b, page 14).

Room Control

In several cases, the number of rooms available for teaching, including departmental rooms, was either unknown or known only approximately. Some figures provided are also improbable: for example, 64 teaching rooms at a “very large 2” institution.

In small institutions, at least two thirds of the teaching rooms were allocated by the CTO. The numbers of “pooled” rooms, available to any users, also exceeded two thirds except in one case where it was 47%.

For medium institutions, there is insufficient information and too wide a spread of data to reach any conclusions.

For large institutions, the proportion allocated by the CTO ranged from 12% to 84% and the number of pooled rooms ranged from 0% to 74% - clearly practices vary widely.

For the two groups of very large institutions, eight institutions in all, five stated that the number of rooms allocated by the CTO was 77% or more of the total number of teaching rooms, and all the four largest institutions indicated that 75% or more of their teaching rooms were pooled.

Larger institutions seem to have been more successful at implementing corporate strategies for teaching space, while in smaller institutions, the space is more likely to be controlled by individual schools or departments. Larger samples are needed to confirm this conclusion.

Space Charges

Occupancy checks are usual in all except the smallest institutions, usually annual, and carried out by the Estates Department or the Timetabling Office. Half the very large institutions (over 15,000 students) charge for use of teaching space. It is less common in smaller institutions. Charging for non-teaching space is uncommon, being reported overall by fewer than 25% of institutions.

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Table 6a. Use of Space					
	No of teaching rooms	No allocated by CTO	%	No pooled	%
SMALL	34	28	82%	28	82%
	120	80	67%	80	67%
	150	150	100%	70	47%
	70	70	100%	70	100%
MEDIUM	205	205	100%	85	41%
	90	84	93%	9	10%
LARGE	361	90	25%	90	25%
	220	67	30%	153	70%
	73+	73		0	
	329	277	84%	94	29%
	120	60	50%	0	0%
	96+	96		96	
	450	52	12%	52	12%
	?	97		97	
	283	209	74%	209	74%
	75+	0		75	
	480	111	23%	111	23%
V LARGE 1	390	44	11%	44	11%
	519	150	29%	0	0%
	359	20	6%	126	35%
	412	412	100%	172	42%
V LARGE 2	450	450	100%	450	100%
	150	144	96%	144	96%
	64	49	77%	49	77%
	258	258	100%	193	75%

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Size of Institution	Routine Occupancy Checks on Rooms	Central Charge for Use of Teaching Space	Central Charge for Use of Non-Teaching Space
Small (4 respondents)	No – 3. Yes – 1, annually by Estates	No – 2. Yes – 1. One respondent said that charges applied in the rest of the University (which would be in the VL2 category) but not in her school.	No – 3. Yes – 1.
Medium (2 respondents)	Yes – 2, by the CTO each semester.	No – 1. Planned – 1.	No – 2.
Large (11 respondents)	No – 3, but all hoping to start soon. Yes – 8, usually annually by CTO. One biannual, with occasional small surveys.	No – 10, but 2 were considering and 1 recharged on % usage. Yes - 1	No – 8. Yes – 3.
Very Large 1 (4 respondents)	Yes – 4. Ranged from termly to annual. By Estates/Porters.	No – 2. Yes – 2. One flat rate. One fines for unused seats if occupancy < 80%.	No – 3. Yes – 1.
Very Large 2 (4 respondents)	Yes – 4. 3 annual and 1 biannual.	No – 2. Yes – 2, both indicated it was unsophisticated.	No – 2. Yes – 1. Uncertain – 1.

CONCLUSIONS

This survey adds several further findings to the conclusions of the previous survey carried out two years previously, and the two surveys should be read together.

It considered:

- The use of computers to schedule teaching, examinations and for ad hoc bookings;
- The products in use and those that users were aware of;
- The organisation of data entry and processing;
- The policies for room allocation, formation of teaching groups, setting days and times and allocating teaching staff;
- The policies for the availability of teaching staff and workload balance;
- Room usage, space utilisation reports and staff workload reports;
- The degree of integration with other corporate databases (staff, students and space);
- Corporate strategies for teaching space;
- The use of occupancy checks;
- Policies for charges for teaching space and for non-teaching.

The survey identified areas for further investigation, which will be pursued in future work (the next survey is planned for 2006).

This report may be downloaded freely from the AIMS website:

<http://www.aims.ac.uk> or <http://www.aims.eu.com>.

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