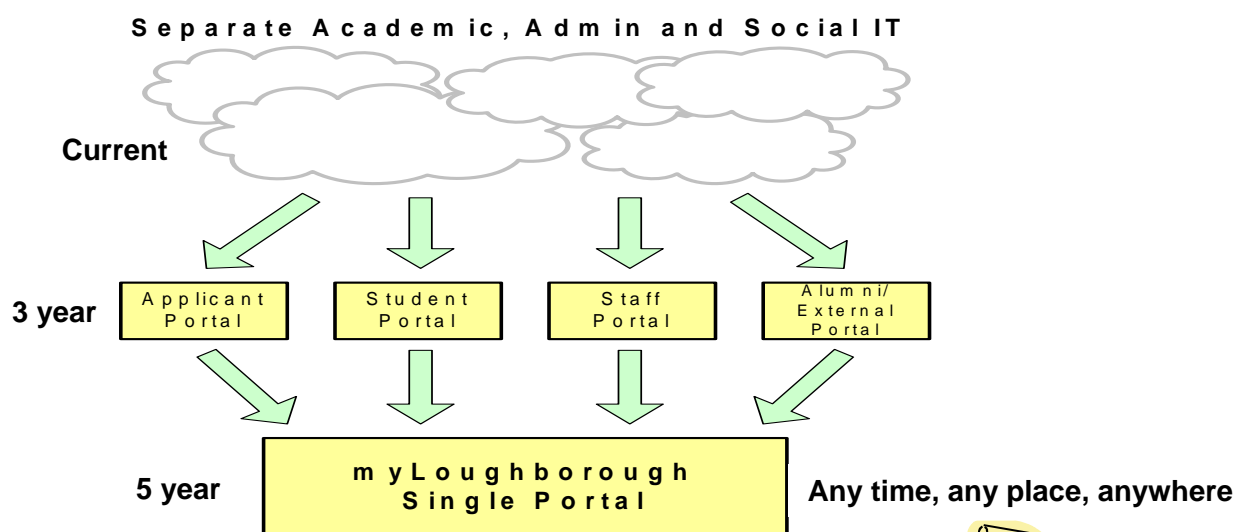


Loughborough University 5 Year IT Vision – Beta2 version

1. 5 Year IT Vision Summary



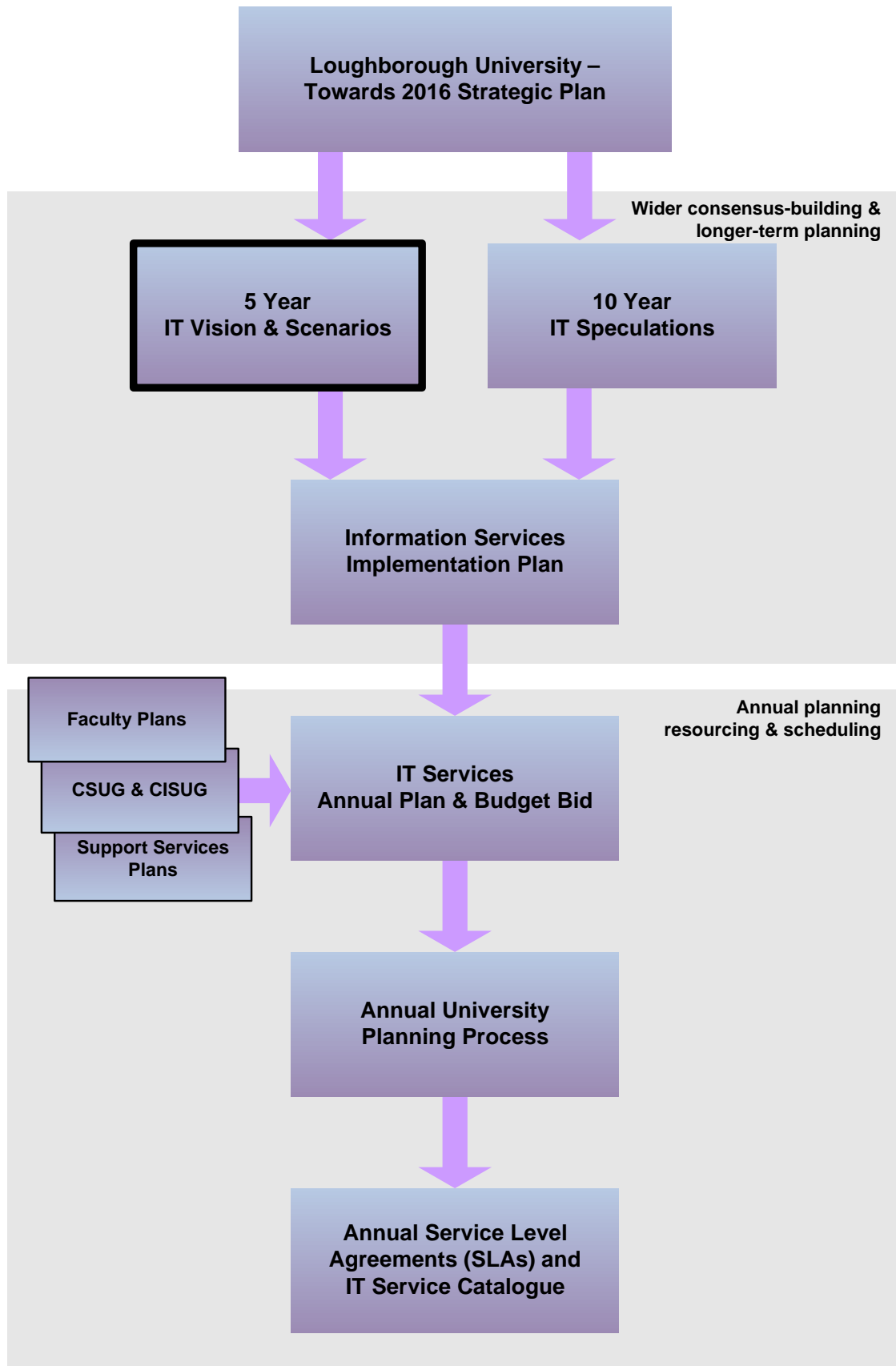
- **Personalisation of IT via portals**
Central to Loughborough's 5 year IT vision is a personalised IT portal interface, seamlessly bringing together all academic, administrative and social IT systems in one place, with information personally tailored to your needs, reflecting your roles and relationships with the University
- **IT any time, any place, anywhere**
Also core to the vision is that this portal interface will be delivered reliably, safely and securely, to anywhere in the world via a ubiquitous Internet, and accessible via the full spectrum of user devices
- **IT vision articulated via user-centred scenarios**
A series of scenarios (small personalised stories or vignettes) has been produced, which illustrate how IT adds value to the University experience across the full range of University stakeholders (from prospective student right through to Vice-Chancellor), and puts the user's experience firmly and squarely at the centre of the discourse
- **Mapping on to core University themes organised under 2016 headings**
The IT services featured in the scenarios are then mapped on to and listed under the headings of the Loughborough 2016 plan, plus other emerging University and IT themes e.g. sustainability
- **Strategic deliverables to achieve vision**
Strategic Deliverables are then distilled from the scenarios and the mapping on to themes, which themselves will form the basis of the Information Services Implementation Plan; a glossary is also provided
- **How to use this document** – it is suggested the table of contents overleaf is used to focus on those specific areas of interest to you



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3. 5 Year IT Vision and the wider University strategic framework



4. IT vision consultation and discussion schedule

Date	Audience
Oct 2007-Mar 2008	1:1 discussions with Senior Managers, Deans, HoDs, HoSSes, FITCs etc.
Jan 2008	Alpha version scenarios to CSUG and IT Services staff
April 2008	ITMT
	CISUG
May 2008	CSUG
	Faculty Boards
	Faculty IT Committees
	Open meetings as required
June 2008	EMG
	Open meetings as required
July 2008	Senate
	Council

Dr Phil Richards
Director of IT
 April 2008

5. Student Scenarios

5.1 A potential applicant

H had taken the virtual reality campus tour, and played the 'Virtual Healthy Eating Choices' viral game on the University Web site. The virtual reality was impressive, but only when he saw the scale of the campus and the quality of the facilities with his own eyes, while attending an open day, did he realise just how far ahead of the competition Loughborough was.

H was not an IT expert by any means, but he was impressed by the modern student workstation room facilities – it looked much better than facilities at the other Universities he visited. He was also impressed by the HallNet Student PC Shop, and the fact the University made it as easy as possible for students to own and support their own laptops, phones and other gadgets, and use them all over the campus, in hall and in the town.

During the talk he went to about life at the University, H began to see more about how these IT facilities would be used to create quite a distinct learning experience, and how many students used IT to organise their social life and cheaply keep in contact with their friends and families. No wonder Loughborough has the biggest presence on Facebook of any University! The approach and thinking was so much more joined up than in other places he had visited – and acknowledged that there was more to life than just work.



Three weeks later, just as he was making his final UCAS choices, H was pleased to get a text message from Loughborough on his phone, inviting him to visit the Loughborough Applicant Portal, to pose any more questions he might have, and linking through to phone video clips about the Loughborough student experience. Watching these videos on his phone brought it all back to H just how brilliant Loughborough life was.

There was no question the lifestyle would be great, but H just had one more question over his proposed course, over possible third year project options. He was impressed to get a full, informed reply to his query from a member of the departmental support team, via the Applicant Portal, within two days. In the end there was no hesitation or doubt: he was certain he had done the right thing by making Loughborough his first choice.

5.2 An applicant

L had found the whole on-line UCAS application process a bit impersonal, so she was pleased to receive a letter inviting her for an interview at Loughborough that was actually signed by a human being!

Just before her interview, she went to a talk explaining how the Applicant Portal would help people coming to the University do everything they needed on-line, before ever getting to the University. She could track her application, book her place in hall or private accommodation, choose her optional modules, and ask questions on line to course advisors. She would be able to link through to Facebook, take part in a forum, and chat on line with others that would be starting her course and living in her hall, and make some new friends early. She would even be able to access the Virtual Learning Environment (VLE) via the portal, look at some of the early course material, and perhaps get a head start in her course – at least that is what she would say in her interview!



L's interview later in the day was more relaxed than she had imagined, and she was really pleased, when a week later, she received a friendly text message from the University confirming that she had been made an offer, inviting her to check the details on the Applicant Portal, and fire any further questions on-line through to the course support team.

5.3 A first year undergraduate student

D held off buying his own laptop until arriving at Loughborough, because the Applicant Portal had advised him that he would be eligible for a Faculty Bursary to pay for this, provided he bought it from the HallNet Student PC Shop. He was pleasantly surprised to find a choice of modern laptop options from leading suppliers, with Microsoft Office bundled in, already set up for the Student Portal, HallNet and the wireless network, and all for less than the high street price; not to mention that he could run his own software and hook up to his game console. D's friend K was not eligible for a bursary, but took advantage of a 0% finance deal to spread the cost of his laptop evenly over the three years of his course.

D had quickly become a fan of his University smart card. As well as using it for meals in the hall, it was great to use the Student Portal to be able to load up and use it for payments in the shop, laundry, and printer credits – especially as he never seemed to have any cash left straight after a night out!

D did not realise quite how much he relied on his laptop for his studies until its hard disk developed a problem. He took it back to the PC Shop, who promised to have it all working again under guarantee within 48 hours. D was able to keep up with his emails, personal study calendar, and also the last-minute instant message postponing Dr X's lecture, on his phone, and he knew he could go to the Library to submit his essay on-line. On finding that the first computer room he went to was full, he was able to view a video clip on his mobile phone showing him directions to other rooms with free workstations. Luckily his laptop had been set to back up his work over the



wireless network to the central filestore at regular intervals, so he had only lost the last few changes when his hard disk failed. He reinstated these changes, gave the essay one last proof read, did an automatic on-line check of his bibliography, then pressed the submit button in the coursework submission section of the Portal. Deadline met, but he would much rather have done all this from his room in hall via HallNet!

5.4 A second year overseas undergraduate student

Y had enjoyed living in hall during her first year, and had used HallNet to good effect for her studies, had watched her favourite Arabic TV news channel on-line. She had enjoyed mixing with the range of nationalities in her flat and in the rest of the hall, but it was great to use Skype to keep in regular free video contact with her middle-eastern family back home. When choosing her digs for the second year, she and her friends had made sure their search of the residences database via the Portal only flagged up properties within the range of 'Community HallNet', which brought the University's wireless network to the main student residential areas in the town. Of course, she could have paid for a commercial broadband connection instead, but Community HallNet was free!

Just like the workstations in the central PC labs, Y's PC Shop laptop had been set up to ensure the fullest international support, so she could browse her favourite Arabic Web sites, and keep up with all the news back home. With her Community HallNet connection, she could do everything she needed from her digs via the Portal: check her email and study calendar, submit coursework, look at the video library of recent keynote lectures, catch up on the podcasts from her courses, and use Skype to contact her international family and friends.



Despite being able to do all this from her digs, she still continued to make her regular Sunday evening visit to the 24x7 PC lab, which almost became like an overseas common room at this time. She never got quite as much work done as she hoped to, but she always bumped into plenty of her friends, and caught up face to face with all the news of the week.

Walking back to her digs in the dark evenings was sometimes a bit intimidating – it wasn't quite the same as in hall, where the on-line smart card access system made it feel as safe as possible, but the instant message link via the portal to the community security patrols, which she could access quickly via her phone, went a good way to redressing this.

Y had heard someone saying that, now that 99% of students owned their own laptops, there would not be so much need for student labs. Y hoped this was wrong – she felt people who make the decisions need to realise the social as well as the academic importance of these student facilities, especially for students who sometimes feel a long way from home.

5.5 A disabled undergraduate student

K logged on to the Student Portal. Her multiple disabilities meant she was not always able to get to the University campus. However this did not preclude her participating in her project group's meeting this morning as she had requested that a video-conference be set up, and all the relevant papers were available via the project group's 'our-space' facility.



K was pleased to learn via the portal that her exam time requirements, which she had discussed with her support advisor in the Disabilities and Additional Needs Service (DANS), had been properly taken into account for scheduling her module exams. One less thing to worry about!

Next she needed to do some work on her assignment. She accessed the specialist environmental modelling software available via the University's specialist software library, and used her adapted keyboard to input and manipulate data. This enabled her to complete the work and she submitted her assignment on-line with a couple of hours to spare before the deadline. She finished her working day watching in real time her 4.00pm lecture from home and participating in the question and answer session at the end. Tomorrow she was due to start a virtual field trip to investigate the impact of global warming on the environment of the Amazon – a field trip that met sustainability criteria as well as being disability-friendly.

5.6 An elite athlete undergraduate

X's phone alarm went off at 05:00. With the national swimming trials just weeks away, he did not need any motivation to get up early and head to the pool, but that had not always been so. Earlier in the year, in the cold dark mornings, he was struggling to shake off an injury. The discipline of his on-line training schedule, carefully planned to fit around his coursework, had then really helped to keep his drive high. The automated reminders and alarms from his phone had provided that extra discipline, just in case he was wavering! Now he could feel his performance was coming to a peak, just at the right time.



X's University smart card gave him access to the pool 24x7; the side door swung open automatically as he approached it. He nodded to a couple of other elite swimmers who were warming up as he headed into the water.

Later that morning, back in his room, X fired up his laptop and triggered the on-line conferencing tool to take part in his weekly performance review. His conditioning coach was on business in South Africa, and his sports psychologist at an international gathering in Beijing, but he saw them both sign

in on time, alongside the other members of his team, who were probably not so far away.

His conditioning coach had already reviewed his latest performance benchmark figures and his food tracker on-line diary confirming plenty of effort and a good diet. Through a video window on screen, the psychologist was able to look X in the eye and was reassured that he was happy and relaxed – just the frame of mind required for this critical part of the season. Everyone else around the virtual table was just as positive, which gave him a big boost as he knuckled down and got on with his extended essay project for a couple of hours, before heading back to the pool for afternoon training.

5.7 An undergraduate student on a placement year abroad

E was really enjoying the year in industry in Scandinavia, but she still felt she firmly belonged at Loughborough University thanks to the Student Portal. She was able to complete her on-line placement

professional log, and to keep in touch with her course-mates on their placements all over Europe via the 'Placements Virtual Common Room'. She had asked a couple of important questions on-line of her placement co-ordinator, and was even able to watch live via a streaming Internet video as the



Loughborough rugby first XV gave Bath their traditional annual thrashing in 'the real varsity match'. Not quite as good as being there in person to cheer on the lads, but not far behind!

E had tried to stay in shape and eat sensibly, and something she definitely missed was not being able to take full advantage the Loughborough on-line food diary on the portal, and the general 'well-being culture' that was pervasive on campus. 'If only I could order and download a good healthy meal on-line' she thought, 'maybe someone will find a way eventually!'

E had decided to take the placement option right at the last minute, so there had been a change to her fees. She was so glad she could check her student account online during her lunch hour, and could see that her application for the loan had been processed and she was not in debt, at least for her tuition fees! She could see that she owed some accommodation fees and had an outstanding library fine, which she was able to pay off on-line using her credit card. She had also been able to update her change of address online, so she knew any communications from the University would be sent to the correct place. She had a change of heart about one of her module choices for next year, and so, next time she was on the portal, she would change that too.

5.8 A final year undergraduate

G had really enjoyed the first two years of his engineering course: the work was interesting, and so was the social life! But now, half way through his final year, he felt under a bit of pressure. His final year project work had gone really well – he was part of a virtual design team, with other members located in Universities in the USA and Germany. The on-line group work task-assigning system had helped to make sure every member of the team knew what they had to do and were pulling their weight. The weekly video-conferenced team meetings provided a good focus for the project work, and the project wiki and regular emails kept things on track in between. Being able to email G's Dad a URL pointing at the team's final design modelled in 3D virtual reality was a personal highlight.



In fact, G had made such a good impression on his American project supervisor that it had led to the offer of a masters place in that leading US University – provided he got a 1st or 2:1. That was where the pressure came from – he really wanted that American place.

Internet cheating in higher education had become a national issue, often in the news – it had got easier and easier to obtain content for essays, projects, etc. from the Web by paying. G felt it was not fair on students like him who wanted to do the work for themselves, and get the proper credit. He certainly did not want to miss out on his 2:1 because other people had done better than him by foul means rather than fair. G was therefore delighted when the University announced it was introducing automatic plagiarism detection across the board on the on-line coursework submission system, and widening the use of formal computer-based exams. Now if he missed out on his American masters place he would only have himself to blame!

6. Academic Scenarios

6.1 A community warden

Dr M had been quite intrigued when the role of Community Warden had been first advertised, and he had certainly had plenty of interesting experiences since taking the role. The launching of the 'Community Portal' on-line, with links stressing the good side of living close to a University (e.g. value access to excellent sporting and cultural facilities), as well as details of how to report perceived student misconduct at any time of day or night, had been a real plus.



Dr M was worried when he was tipped off by those preparing a regular 'Web 2.0 Watch' briefing for senior managers that a flame-war was breaking out on Facebook between a student house and some younger local residents. It was fairly easy to track down those involved within the University, and a 'quiet word' quickly diffused what could have escalated into a very ugly situation. Over the summer vacation he was looking forward to working with the rest of the pastoral team on some Facebook communities for new students, as part of a pre-induction – social-networking Web sites were not all bad news!

6.2 A lecturer working and marking from home

It was 10:15 Tuesday morning, and Dr M was working from home. She was in the middle of reading a long email on changes to policy on dealing with plagiarism when the soft-phone on her PC rang.

"Hi, it's Judy", said the familiar voice of a colleague, "is it OK if I pop round to your office now to pick up those research pre-prints I was after?"

"You could if I was in the office, but I'm working from home today", replied Dr M.

"Sorry, as soon as you answered the phone, I assumed you were in! I still haven't got used to this Internet business of diverting your phone to anywhere in the world, or whatever!"



"Yes, I can do literally everything from my Apple Mac at home now that I can in work. I'm not sure if being able to answer the phone is a blessing or a curse though! Look, if you just go on-line to the University research repository and search under my name, you'll find it all there."

"Oh yes, of course – I am still getting used to everyone putting all their research into the repository as a matter of routine – I should have just gone straight to it via the Portal!"

Now for some marking. Dr M had slowly got used to marking students' essays on the screen, which was the simplest way for a lecturer to use the on-line coursework submission system. Previously she used to have all the essays printed off centrally, then sent to her for marking through internal mail. As well as the cost and the volume of paper, the downside was she had to manually enter the marks to be fed back to LUSI (when marking work on the screen, this is automated); but then, on the other hand, she was saving carbon by working from home and not driving into work once a week.

Time did not pass quickly while marking, and at 3:00 pm Dr M was somewhat relieved to be able to leave her keyboard and mouse, and go to collect her young daughter from school. This was the one day of the week where she was able to do this herself, rather than leaving it to her child-minder, and this was something she greatly enjoyed.

Later, at 8:00 pm, and with her daughter tucked up in bed, Dr M felt like doing something other than marking, and used her Mac to log on to the University's on-line art exhibition and virtual installation space. There was a new screen-saver exhibition of photography relating to protest, and new virtual reality representations of installations that had both been recommended to her. After a refreshingly cultural hour, she went back to her marking, and in the quiet of a spring evening made excellent progress with a further two hours before finally stopping work for the day.

6.3 A lecturer engaged in teaching a post-graduate course

J got into her office and loaded her Outlook client – as well as numerous emails, she noticed a couple of interesting items from her subject specific news feeds relating to an issue she discussed in her lecture the week before. She updated the module blog, including references to the news items demonstrating the relevance of what was discussed, and to remind students of their lecture at lunchtime.

After lunch, she went to present her lecture. While she loaded up the lecture slides, she pressed the 'record' button on the lectern control panel to start videoing the lecture, streamed to a central server. After 40 minutes of lecture, she loaded up the Question and Answer system and invited students to post questions. The students used the wireless connectivity in the lecture hall to post up questions via laptops and phones, which J answered verbally and summarised via the lectern PC. At the end of the session, the Q & A transcript was posted to the module wiki for future reference. Then J clicked 'stop record' button on the lectern to stop the recording of the session. The central server coded the recording, and posted it to the module wiki for future reference.



As she returned to her office, J's mobile beeped up a text message informing her that her coursework reports had been submitted and were ready for

collection. She opened the module control panel on her PC and clicked the assessment link, which loaded the coursework report. As well as a breakdown of who had submitted, the plagiarism detection system had flagged up a couple of submissions for special attention. If only there was something that marked them automatically too...

6.4 A taught post-graduate student on the same course as above

F's phone woke him, the message said there was a lecture at lunchtime, and that J had updated the module blog. He checked the blog via his phone using the hall's wireless connectivity, saving the need to get up – useful links. He clicked through to the wiki to look at something a fellow student had posted up that would be a big help for revision. He posted back something he had found a couple of days ago that he thought would also help. He then skimmed the on-line video of last week's to refresh his memory ready prior today's lecture.



He got himself to the university in time for the lunchtime lecture, and sat in his usual spot at the back. After 40 minutes of talking, J invited questions via the Q&A system. He opened his phone and asked her to clarify a point from an earlier slide. She did so and made a note of it on the system.

A week or so later, F was revising the module prior to the exam – reviewing the material from the module blog and wiki, and playing back some of the lecture video recordings. His phone beeped again – coursework marks were back. He clicked through to see the feedback and his mark – nice to have the grade prior to the exam, it gave him more confidence in his performance.

6.5 A research post-graduate

B was the first member of his family to go to his local University in Egypt, where he achieved an outstanding result in his first degree in computer science. B's final year project involved use of a virtual research environment, working as part of a virtual research team, using on-line collaborative research and data-sharing tools and video links alongside students from Universities all over the world, including Loughborough. Contacts made during this work led to the offer of a research studentship at Loughborough.



Moving to another country was hard, but B was able to keep in regular free video contact with his family back home by using Skype. B was acknowledged as exceptionally bright, but, like many, his research project was a bit slow to take shape. Things changed when B started using the central 'Condor' computing service, which worked by harnessing the unused power in desktop

PCs around the University. B solved a research problem that had been unsolved for 40 years: Condor completed a key calculation in weeks that previously would have taken years. Presenting this work at an international conference in the middle-East even allowed him to slot in an extra visit back home!

6.6 A new lecturer building a research profile

F was offered a position in Loughborough in the same theoretical area that she had previously worked in at a leading eastern European University. While she was considering whether to accept the offer, she had checked the department's areas of research on the University's publications database and repository system; it quickly confirmed to her why the department was so highly rated. F was also aware of the excellent Loughborough High Performance Computing (HPC) facility, and this was a factor in her accepting the post.



F found the move to Loughborough difficult at first, but she was able to keep in regular email and video contact with her former colleagues, and track her own progress through the on-line Personal Research Plan (PRP) system. Taking part in a pilot of new collaborative tools for a Virtual Research environment (VRE) had given her an excellent idea for a collaborative project involving her new colleagues, former University and other commercial partners, which (following considerable hard work) led on to a successful European grant application paving the way for more world-class research.

6.7 A lecturer engaged in entrepreneurship

Having decided to spin-off a start-up company to commercialise his groundbreaking patent, obtained with assistance through the University Enterprise office, Professor E rented office space in the new Science Park facility. E was pleased to note that in addition to the fully serviced office suite, IT services including an Internet connection had been provided. These were managed by the University's IT department, providing friendly local support - rather than a remote call centre.



In addition to his company's website and email hosting, the IT department also provided E with centrally managed PCs (one less headache for a new business!), storage for all his critical files (with an off-site backup), and access to key facilities on the University network. This meant that when working over in the Science Park, E had access to the same services and information as when working in his old office in department X. This was very important to E, who had decided to split his time between his old and new roles.

6.8 A Head of Department

Prof Q had set aside some time to start the budget planning for next year. He logged into the staff portal and was pleased to find all the finance, student and staff information he needed was easy to access via his personal dashboard, since it was a long time since he had last had to do this. With a quick reminder from the online training video on how to use the pivot tables, he soon had all the information he needed to start a first draft.



Q could see that spending on specialist teaching software had gone up far quicker than inflation over the last few years. Clicking through the dashboard, he was able to access application usage statistics, which showed all the most expensive packages being heavily used by students. Not the answer he wanted to help balance the books, but at least he could see the money was being well spent.

Q could see that recent research grant income was higher than projected, and clicking through to the PRP reporting tool, he could immediately see the reason: three newly recruited lecturers making more grant applications than originally agreed, and all getting a high success rate. Excellent news for the University and the department; he wondered how long would it be before all three were knocking on his door asking for promotion.

7. Management & Administration Scenarios

7.1 A Dean

The Dean had put a good deal of effort into preparing for this trip to China. She used the Portal to quickly cross-reference the invitation list for the formal dinner for alumni on the first night against the contacts management database, and took extra care to note details of two guests who had attended a Beijing seminar the previous month given by one of the Heads of Department in his Faculty. A quick scan through the print-out this data before the pre-dinner drinks made for a much smoother set of introductions, getting the whole evening off to an excellent start.



However, the main preparation was for a smaller, less formal, but possibly much more important dinner on the second night: the guest was to be a Loughborough graduate who had become an extremely successful businessman. Despite his busy schedule had made a point of keeping in touch with his former Department, and during a business trip to the UK last year had slotted in a lecture to final year students on career opportunities in far-eastern financial markets, which had proved extremely popular. After the lecture, he had told the Dean he might be interested in 'doing a bit more' for Loughborough if the right opportunity arose.

On the afternoon before this important meal, at her hotel, the Dean went back on line via the Portal and accessed the most restricted area of the contacts management system. She checked again the biographical details, and hoped that her proposal would press all the right buttons.

The meal was excellent, the atmosphere cordial, and the businessman was full of enthusiasm over his own time and Loughborough, and how the University had gone from strength to strength since then. Now, over coffee, it was time for 'the ask'....

The next morning, the Dean logged on to the portal, and updated the contacts management section with a report of an evening that had wildly exceeded any expectations, and an agreement in principle to fund a new wing of a building to house a flagship financial research grouping.

7.2 A senior administrative manager

B was very pleased that the Dean had got agreement in principle for the new Financial Research Group wing (see above), and was following it up with a formal Memorandum of Understanding. Work on the costing section was at a critical stage: B still had some concerns about exchange rate fluctuations; his sensitivity analysis depended on whether payment would be made in Hong Kong Dollars or the Yuan; and this needed to be explicit in the documentation.



Fortunately Prof K, an expert on international currency in the Department, owed B a favour. B sent Prof K an instant message: ‘Urgent currency advice needed. Please ring.’

Two minutes later, B was speaking to Prof K on the phone.

‘I’m just on the train heading down to London. That grant proposal that you helped me work up a few months back looks like it is coming good – I have just been invited up to give some final clarifications on the details.’

‘Excellent. Now I’ve got a big favour to ask. We’re working up a Chinese philanthropy memo, and I need some help on exchange rates.’

‘You’re in luck – I’ve been doing some consultancy on that very thing recently. Just wait while I pop open my laptop...’

Five minutes later, Prof K had connected his laptop securely through via the fast phone network from the train, and was using Portal collaborative tools to work directly on the memorandum document. B looked quietly satisfied as he watched Prof K’s typing appear on the document in front of his eyes, resolving the uncertainties, and showing clearly how the exchange rates should be handled.

7.3 A member of the Vice-Chancellor’s Office

The draft Internal Audit report on IT directions landed on J’s desk. There were no red or amber traffic lights flagged, which was always a good start! The summary made excellent reading: evidence of clear alignment of IT Strategy with institutional goals; distinctive in-house developments such LUSI and the Staff and Student Portals delivering clear competitive advantage; evidence of high user satisfaction, particularly for services under the HallNet brand; implementation the IT Infrastructure Library (ITIL) ensuring sound IT governance; and benchmarking of IT Total Cost of Ownership (TCO) demonstrating value for money.



Further on in the report, the new regular ‘Web 2.0 Watch’ briefing for managers was commended. J had

already seen the University's own outward-facing Web presence improve dramatically as a result of the new content management system. Now it was good to track how arts were getting 'up there' alongside sport in terms of Loughborough's presence on Facebook, and see how some of the on-line discussions that really did not go down well in the town had been removed by consent. The 'low key' approach of dealing with social-networking Web site issues via the Wardens and Community Wardens was clearly paying off.

Later in the week, at a UUK strategic briefing day, K had had lunch with a couple of counterparts from other Universities; they had both told her some horror stories about IT incidents in their own institutions that had dragged on for months, and ground their institutions to a halt. One of them told her, in strict confidence, that auditors had estimated the cost to the University of the disruption, based on impact on productivity and reputation, as being over £20M. On her return, just to be on the safe side, J asked to be briefed on Loughborough's IT Disaster Recovery plan, and was reassured when she discovered that, since the new second machine room had been fully commissioned and fully equipped, Loughborough's IT systems would recover fully from a major fire in a machine room in a matter of minutes, not months, and business continuity was assured.

7.4 A departmental administrator

N had just come back after a week's holiday and knew he'd have plenty to catch up on. At least he'd been able to take a week off in the summer. It was so much easier now the programme regulations were on the system, as so much more was automated. The students could register online for their re-assessments without having to come to see him individually, as most of them didn't understand the complex rules. Most of the module registrations would be done automatically too, so he'd just need to check those, and sort out any problems. He knew that the requests for Leave of Absence, Transfers and Withdrawal applications would have been automatically forwarded in his absence. The new students had already got access to the portal, so he could give them access to all the information they needed electronically. He knew the first week of term would be hectic, but he was looking forward to the students being back. He was also looking forward to using the Staff Portal to put in his next annual leave request!



N was still struggling to remember his new password – the system had forced him to change it to a more secure one the week before. Still, since the Single Sign-On (SSO) system had been applied to all the core corporate systems, there was only one password he needed to remember. He had immediately volunteered to take part in the new 'biometrics' pilot – using his fingerprint to log into SSO. "The greatly improved data security sounds good," he thought, "but the main reason I am doing it is that I won't have to remember any more long passwords..."

7.5 An Assistant Academic Registrar

S was checking everything was in place for Registration. Now that students registered online, and updated their own addresses and other details, her main job was dealing with changes such as programme transfers which students couldn't do themselves. She had dealt with as many as possible already so he was confident the early statistics would indicate the University was well on target to meet the increased numbers required by the funding council.



7.6 A Finance Clerk

Z knew that the student invoices had just been sent out and so he was expecting the queries desk would be busy. There had been considerably fewer queries since the students had been able to view their account online, and that online payments went automatically to the student account so there was less of a delay. Improved reporting from the finance system meant there were fewer queries and requests for information from staff to his colleagues as well, so there was more time to deal with the problems which needed individual attention.



8. External & Other Scenarios

8.1 An iconic new building (allegory)

I am an iconic new building. I am the ideal base for a flagship research group or high profile external tenant.

The IT building management system keeps me warm and saves money and carbon – I automatically open my windows during the day to let out hot air, but at the same time the sun is soaking into my thick walls to keep me warm in the night.

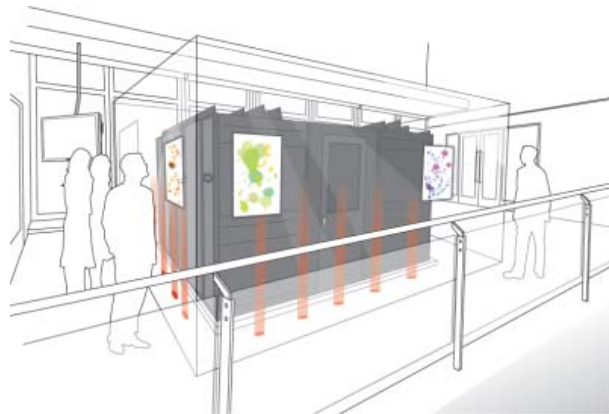


The data flowing through my data network is like the blood in my veins – all the academic IT data goes through here of course, but so does telephones, CCTV, security systems, access control and green building management – it all hangs off the one network, saving a small fortune compared to separate systems – and to think at one stage they argued about the cost of putting in resilient data network ducts into my foundations!

8.2 A green virtualised data centre (allegory)

I am a green virtualised data centre. I live in an imaginatively lit glass case in the atrium of an iconic new building. I am a showcase for green IT technologies, and I double up as an art installation in my spare time.

I am nationally famous, the first of my kind, but the real reason my masters like me is that I was paid for by a large IT infrastructure company's philanthropy fund, and I am now saving the University £250K per annum in electricity, plus the associated 25K tonnes of carbon. Before that my masters did not even know we spent that much on power for IT!



The other reason my masters like me is that the virtualisation technology I use has reduced the time the University would take to recover from a major IT disaster from 3 months to 3 minutes. Plus they can do all the maintenance on me during the normal working day without disrupting service to users – which was starting to get a bit tricky before I arrived!

8.3 An alumnus

C had really enjoyed his time as an engineering student at Loughborough in the 1970s, and while he had been to a couple of hall reunions soon after he had left, he began to lose touch with the old crowd as he settled down, got married, and developed his career in industry. With his youngest son at University (not Loughborough, alas!), he found himself with more time on his hands, not just for recreation, but (and he hated the phrase mid-life crisis) to reflect on the direction of his life.



It was around this time that C received a letter from Loughborough saying that they were making a new effort to contact former student with whom they had lost touch, and inviting him to log into the 'Alumni Portal'. Going to his personal area, he quickly spotted that one of his old mates, whom he had not met for years, lived just half an hour away, and worked for a rival engineering firm. After updating his own personal details, and supplying a brief CV (only allowed to be read by fellow 70s engineers), he left an on-line message, and a couple of weeks later with meeting up with his old mate for a drink and a good chat. His mate had kept in touch with Loughborough for longer, and had even donated money to the alma mater – now there was a thought! He also passed on details of an interesting engineering vacancy, which was not quite right for C, but he appreciated the thought. From that point on he attended a number of reunion events, caught up with many old friends, became a donor himself, and even watched the live streaming video of the Real Varsity Match on line.

8.4 A parent

A couple of weeks after she had waved goodbye to her son Tim, Mrs L was pleased to see the latest parents' email circular newsletter from the University. They managed to keep parents involved and informed, whilst making it absolutely clear that they were obliged to deal with the students as adults, rather than with their parents! That suited her, but there was a fine line between encouraging independence and providing a touch of support where needed. She also appreciated the 'Parents Portal' link on the Web site which gathered together the various pieces of information that she found useful, such as term dates, plus allowed her to directly top up Tim's Diners+ account, making sure she knew exactly what her money was being spent on! The email bulletins sent out during the meningitis scare had really helped reassure her too.



Tim was not the best at keeping in touch, so Mrs L had to employ a variety of methods, including things like instant messaging which she had never used before, as well as email and txt. Looking forward to Timmy's second year, Mrs L noted that the HallNet extended out into town, so he would enjoy the same sort of communication facilities and support next year when he was in a student house, and not be able to use that as an excuse for failing to keep in touch!

8.5 A member of Council

Sir P checked his diary for the next two weeks – Loughborough Audit Committee had come round again, so soon! Sir P logged into the External Portal, and reviewed the papers. Was there anything about IT this time?

At first he had been a bit sceptical about the sums being spent on IT in the University, but an independent Total Cost of Ownership (TCO) analysis and comparison with benchmarks had convinced him that the service was value for money after all. It was at that point that he suggested that all Council papers be put on line (in a secure section of the Portal), so that busy people like himself could catch up when it suited them, without having to carry round reams of documentation.



Sir P had got particularly enthusiastic about the new ePayments service on the Portal – it was a handy way for students (or their parents if they were lucky) to pay their fees etc., saving on overheads, but also for potential benefactors, alumni and otherwise, to make a one-off donation or schedule a regular gift. He had even tried that part of the system out himself!

9. Acknowledgements

The concept of using scenarios to articulate IT vision was here drawn from scoping work for the University of Oxford ICT Strategy.

The approach was first used by the primary author in creating a set of IT scenarios at the University of Plymouth. Some of this work has been transferable to the Loughborough context.

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[Appendix 2 – IT strategic deliverables to achieve 5 year vision](#)

[Appendix 3 – Glossary](#)

Dr Phil Richards

Director of IT

April 2008

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10.1 Research

- Staff Portal enabling seamless access to the institutional repository, publications database and Personal Research Plan (PRP) tracking system
 - Merging the current publications database and repository to ensure maximum on-line impact and exposure for Loughborough research, with a positive effect on citation indices
 - Linking this to a new on-line Personal Research Plan (PRP) tracking system, to provide comprehensive information on grant applications and awards, referencing these to personal targets
 - Eventually linking through into RACEII research costings etc. and Agresso
- High Performance Computing (HPC) and High Throughput Computing (HTC)
 - Develop University-level super-computer/cluster as flagship HPC service, including sustainable funding model
 - Utilise unused processing power on student and staff PCs to deliver University-wide 'Condor' HTC virtual supercomputer at low cost, to complement the cluster service
 - Develop associated staff training activities and support networks
- Data analysis tools on the desktop
 - Continue to provide and support range of specialist data analysis tools as part of University software service, in line with research needs
 - Provide a Linux desktop service targeted at researchers, to complement the PC and Mac services
- Virtual research collaboration and middleware
 - Register Loughborough research resources including on UK National Grid Service (NGS) and Enabling Grids for E-Science (EGEE) as appropriate, allowing easier set-up of virtual research collaborations
 - Facilitate and support other NGS and EGEE services as resources allow
 - Provide a collaborative Virtual Research Environment (VRE) via the Staff Portal
- Internetworking
 - By continuing to take an active role in the EMMAN regional network, ensure continued high speed standard data connection through to JANET and the rest of Internet
 - In addition to the above, deliver dedicated 1GB eResearch optical network pipe via EMMAN and JANET

10.2 Education

- Web-based Student Portal enabling personalisation of the on-line learning experience, course administration and social interactions, usable on the full spectrum of user devices including phones
 - Integrating key learning systems such as Portal, Perception Computer-Based Assessment, Coursework Submission, Plagiarism Detection, eJournals, etc.
 - On-line module information, option selection, module and programme feedback, transcripts, etc.
 - Student email, groupware, calendaring and messaging service
 - Personalised Links through to appropriate sections of social networking Web sites, e.g. Facebook
 - Primary purpose to support campus-based blended learning, but system easily adaptable to flexible and distance learning contexts

- Loughborough University Student Information (LUSI)
 - In-house student record system highly tailored to local needs and contexts
 - Example of good practice in programme and project management

- Working with the Head of eLearning and other key stakeholders to champion good practice and assist delivery of eLearning Strategy
 - Facilitating access by academics to a flexible set of IT tools and environments that can be integrated with central systems for a seamless student experience, including social networking Web sites, and virtual second worlds
 - Participation in and scaling up of projects developing new modes and channels of blended University learning, including student phones and other portable devices
 - Developing resources allowing lecturers to record and stream video of their own lectures and presentations
 - Enabling wide dissemination of niche-based good practice around the University, enabling like-minded academic practitioners to join up their thinking and share experience

- High quality University-provided student workstation facilities for lab teaching, open access usage, and assessment
 - Modern PC and Mac hardware and core software, allowing students to gain transferable skills on the latest platforms
 - Macs allowing industry-standard experience and learning on specialist multimedia packages
 - 24x7 access provided to meet emerging need
 - Rooms set up for presentation practice and group work, with networked access and projection systems

- Comprehensive on-line library of specialist academic software applications
 - Mapping student PCs firmly on to the core business of academic teaching
 - Available in any location to ensure user convenience and optimum use of workstation fleet
 - New service to deliver specialist academic software via the Internet any time, any place, anywhere (remote desktop), including student digs and overseas (where software licences permit)

- Sophisticated data gathering to aid the academic planning process
 - Workstation room usage statistics ensuring academic needs met and optimum resource provisioning
 - Detailed software application usage statistics, allowing informed software licence purchasing choices at the centre and in Faculties

- Enterprise support for Computer Aided Assessment (CAA) and Optical Mark Recognition (OMR)
 - Seek funding and a location for a dedicated computer examination suite (with movable partitions so it can also be used for open access and scheduled large group teaching) for use in formal end-of-module summative objective assessments, leading to savings of 1000s of hours in academic marking time
 - Integrate the CAA system even more strongly with LUSI allowing instant downloading of class lists, uploading of marks etc.
 - Work with colleagues in Academic Registry and Faculties to amend academic regulations as necessary to allow the use in formal assessments as above
 - Continue to support the current OMR system when CAA is not appropriate, but in a scalable manner that does not draw disproportionately on administrative staff time

- Training and documentation
 - Effective user training and raising staff and student skills will continue to be the single most effective tool to ensure best use of, and maximum return on, University IT investment
 - Raising staff IT skills across the institution, ensuring maximum return on University IT investment
 - Working with Human Resources, the familiar two or three-hour training course format for those who are comfortable with it, complemented by growing use of bite-sized, self-paced and on-line flexible training packages for those who prefer that approach
 - Providing indirect support for student IT skills, via document packs which may be taken and customised by academic and other staff in Faculties and support services

10.3 Enterprise

- Build on our 10 year experience of providing IT services to over 60 external organisations, mainly start-ups and University spin-off companies
 - Provide tailored IT desktop, ISP and communication services, including telephony, server hosting, etc. at realistic and keenly priced market rates commercial rates
 - Provide associated support and consultancy options, at rates as above
- Developing a Customer Relationship Management (CRM) system, tracking benefits and leads across all University business engagement activities
- Revamping the existing Web-based Directory of Expertise to assist those external stakeholders wishing to approach the University for consultancy etc.
- Third stream access to JANET
 - Continue to lobby nationally that, as third stream activity is part of every University's mission, appropriate direct access to the JANET academic network from third stream activities should be permitted
- Sharing our own expertise
 - IT Services has over 10 years experience of providing expert IT advice to the HE and FE community under a series of JISC and JANET contracts
 - We will add to this by looking for possible commercial outlets where these fit well with our expertise and future University plans

10.4 Sport and the Arts

- Sport
 - Working with Sports Development, arranging for video streaming of key sporting fixtures (e.g. Real Varsity Match rugby streaming), bringing them to a wider audience, including alumni, students away from campus, and potential benefactors
 - Working with Sports Development and the Development and Alumni Relations Office (DARO), encouraging sponsorship and philanthropic giving from our major IT suppliers to sports clubs (e.g. Logicalis plc sponsorship of Loughborough Rugby) – ICT providers typically have strong links and interests with sport, so this should be a fruitful line to pursue
 - Make an active contribution to providing a rich ICT environment for any team/teams hosted at Loughborough in the run-up to the 2012 Olympics

- Arts
 - Working with the Director of Arts to provide support for on-line exhibitions (e.g. student protest screensaver) and similar virtual artistic endeavours
 - Working with Departments in the Faculty of SSH to create a virtual art installation and exhibition space, and working with the Library to see this properly referenced via the Publications Database and University Repository

10.5 The Loughborough Student Experience

- Joined-up support and services for student-owned laptops and phones (which are assumed to support the functionality of Personal Digital Assistants (PDAs), plus video, instant messaging, email, groupware, calendaring and Web browsing capabilities)
 - Providing a pervasive wireless network, and plug-and-go facilities across all University locations to meet student demand
 - Providing direct fibre-speed (i.e. faster than standard broadband or wireless) Internet access within all University Halls of Residence ('Premium' HallNet), with value-added services such as TV channels (including international) and cheap Internet telephony and video call bundles (including international)
 - Working with the local council and mobile phone providers and ISPs as appropriate to provide a University wireless network service to the main student residential areas (Community HallNet); while this will not be as fast or richly featured as the full HallNet service, and will not feature the same value-added services, it will still serve to enhance the experience of students not in hall
 - Developing the HallNet brand further, by working with imago to provide an on-site student one-stop PC and Phone shop, including lease arrangements (in conjunction with Abbey Santander if appropriate) to spread the cost of payment, maintenance, repairs, advice and support, beating the high street price, and giving suitable advice on overseas tariffs etc. to international students
 - Advising Faculties on setting up bursary schemes etc. allowing eligible students to more easily fund their own PCs etc.

- Web 2.0 technologies
 - Embracing technologies such as social networking Web sites, mash-ups and virtual worlds, and investigating how we can link and integrate these via the Student Portal to enhance the student experience
 - Regular 'Web 2.0 Watch' briefing for managerial and pastoral staff, tracking the University's presence on social networking sites such as Facebook, virtual worlds such as Second Life, etc., and reflecting on this in terms of the impression the University and Students' Union wish to give to the rest of the world
 - Working with the Pastoral Team including the Community Wardens to promoting appropriate use and positive messages about the University via social networking Web sites
 - Being ready to react swiftly, and inform the pastoral and community warden teams as soon as possible, where we become aware of any particular incidents or flare-ups occurring on external Web 2.0 that risk the University's reputation

- Further student eAdmin
 - Self-Service facilities via the Student Portal providing quick and easy access to view student account, maintain personal details e.g. addresses and view personal teaching timetable
 - For applicants, the ability to track application and access to information
 - For past students the facility to request copies of official documentation e.g. transcripts
 - Appropriate follow up on enquiries from potential applicants through improved system for enquiry handling
 - Comprehensive ePayment facilities, allowing for secure on-line payment and purchase of a wide variety of items and 'charging-up' on-line payment accounts
 - Combined University Smart Card for student ID, access, library, cash card, etc.

10.6 Social Impact and Engagement

- Work with stakeholders including Community Wardens, the Wider Pastoral Team, and Marketing and PR, to create an on-line 'Community Portal' to emphasise the huge positive dimensions of living close to a University, while providing the information residents may need should they perceive any issues
- As noted in the previous section, produce a regular Web 2.0 Watch briefing for University staff, which will aim to pick up any issues which may not be helpful in terms of cordial community relations

10.7 Human Resource Management

- Support for flexible and home working, as in 10.14 below
- As noted under Education above, continue to work closely with Professional Development colleagues to develop a rich and relevant programme of user training as the single, proven most effective way to maximise the return on our investment in IT
- Continue to provide a stable and fit-for-purpose Human Resource and Payroll information system (Trent) to support this area
- Equality and diversity
 - A commitment to promoting equality and diversity and meeting the needs of diverse users is mainstreamed through all University IT planning and provision
 - On student PCs and Macs, providing full services for international students, including the widest possible support for international languages and fonts
 - IT provision and processes which ensure that we fully meet our anticipatory duty for disabled students
 - IT provision which is able to provide reasonable adjustments for disabled staff and students
 - Appropriate sharing through the Staff Portal and LUSI of disability and additional needs information
- Professional capability development within IT Services
 - As a service, we recognise that our own IT staff are our greatest asset
 - We wish to invest in appropriate training and development to maximise our potential, including taking full advantage of the University's reward and sponsorship schemes, to keep our staff's knowledge up to date and fit for purpose
 - We will use appraisal as a key tool for personal development and exploring how individuals' roles support overall University objectives: staff of all grades, whether formally covered by the University appraisal scheme or not, will be offered an annual appraisal-like experience by their line manager
 - We will set up a Professional Development forum for Team Managers and other staff to develop their professional base; and a job-shadowing scheme for junior members of staff to experience a wider range of roles, to inform their career development
 - We will encourage networking and other informal means of communication to build mutually-beneficial relationships etc.
 - We wish to employ best practice in using IT to enhance the work-life balance etc. of our own staff, as an exemplar for the University

10.8 Financial Sustainability

- Finance information systems
 - We will continue to work closely with Finance to support associated corporate information systems (e.g. Agresso, Albacs, Barclays, D.Cal, ePayments, InTend, etc.)
- ePayments system, allowing Web-based charge card and credit card transactions to all areas of the University, linked seamlessly to Agresso
- Value For Money
 - We will employ robust procurement procedures in key projects, under the advice and scrutiny of the University Purchasing Officer
 - Where appropriate we will undertake mini-tender processes within national HE framework agreements
 - Otherwise we will undertake full OJEU processes for all procurements above the OJEU threshold
 - With external input, we will undertake a Total Cost of Ownership (TCO) analysis of all IT usage across the University, providing a sound financial information basis for informed resourcing decisions both in the centre and in Faculties
 - We will feed TCO figures into appropriate resourcing models e.g. TRAC, RASCAL, and also see that the grand total TCO is fed into appropriate national league table compilations for IT spending, ensuring that our 'score' in this context is maximised
 - We will compare our TCO with benchmarks within the sector and beyond to demonstrate quality service delivery at controlled cost
 - We will seek external philanthropy funding from our IT suppliers for work which is potentially ground-breaking within the sector
- Shared services and co-operation driving efficiency
 - Regionally, we will continue to take a leading role in the East Midlands Metropolitan Area Network (EMMAN), providing Internet access to all HE, FE, and (indirectly) schools in the region
 - Nationally, we will maintain our existing strong role in the JANET academic network, including continuing to host JANET-funded posts in advanced network technology (e.g. wireless, security, etc.)
 - We will continue to take strong participative roles in other relevant regional and national forums, including East Midlands Universities IT Directors (EMUIT), the Universities and Colleges Information Systems Association (UCISA) and the Joint Information Systems Committee of the Funding Councils (JISC)

10.9 Marketing and Communications

- We will work alongside the Web Development Manager and other Marketing & Communications colleagues to introduce Web content management procedures and technology to support, standardise and enhance the University's Web presence, playing a key role in both internal and external marketing of the University
- Working with Academic Registry, Faculties and Marketing, we will deliver a personalised Applicant Portal and associated contacts management system, so cater for the very first contact of a potential student with the University right through to arrival for induction week
- Support for related information systems, including image archive and specialist graphic design services

10.10 Commercial Services

- We will provide an ePayments service linked to Agresso for commercial as well as other customers
- We will continue to provide the 'premium' HallNet service (see Student Experience above) only in University-owned and PFI halls, providing a unique selling point and competitive advantage over all other residential offerings
 - Note that for technical reasons would not be possible to match the 'premium' experience more widely via 'community HallNet'
- We will continue to host the range of small IT systems employed by imago to provide high quality commercial services, including: Access accounts package for Burleigh Court; Kx conference and accommodation management; QPulse document management system; StarChef catering management package; Stocklink stock control software; Tiger call logger software; etc.
 - We will build the required interfaces between these packages and LUSI or Agresso
- We will provide a commercial wireless networking service for non-University members in Burleigh Court and other locations as appropriate
- We will recharge for these services at full economic cost rates as appropriate in line with imago's and other business models, and University policy in this area

10.11 Advancement and Fundraising

- Alumni Portal and associated services for our graduates, providing a basis for the 'friends for life' concept
- Contacts management system to track potential benefactors and others with whom the University wishes to develop strategic relationships
- Continued support for existing related systems, including Raiser's Edge, NetCommunity, etc.

10.12 Estate

- Central timetabling and room booking system
 - Introduce a centralised system that will optimise use of space in the University, in line with local constraints
- IP-enabled 'Smart Buildings'
 - Working closely with Estates colleagues during an extensive building programme
 - Enable modern IP telephony, building management systems, access control systems, CCTV, RFID asset tracking, etc., efficiently, economically and effectively via the IP data network
- Support for other systems including Archibus space management, IMRIS incident management, PAT access control (or replacement), etc.

10.13 Information Services

- Information Strategy
 - Removal of duplication of information held (as far as practicable)
 - Overarching normalised University data architecture
 - Identification of the single, authoritative source of all information, with all other systems either referencing directly that source, or flowing data from it on a frequent, timely basis
 - Capturing information as close as possible to the source
- Close collaboration with the Library in areas of mutual interest
 - eLearning
 - Integrated publications database, repository and Personal Research Plan (PRP) system
 - Student IT facilities
 - Single Sign-On (SSO) technologies
 - Authentication and authorisation services (e.g. Shibboleth)
 - University smart card

10.14 Sustainability and work-life balance

- Services facilitating flexible and home working
 - For staff, a new Remote Working Service based on VPN technology, to enable secure access from anywhere in the world to full desktop and IP telephony services via consumer broadband Internet or equivalent
 - For students, complement Web-based email and Portal access with new service to deliver specialist teaching software remotely to anywhere in the world via the Internet (Remote Desktop)
 - For staff and students, promote appropriate use of modern phone technology for messaging, calendar, contact and email access on the move
- IT power consumption
 - Investigate energy-saving 'thin client' PC desktop solutions where appropriate, particularly in the context of information kiosks, etc.
 - Minimise desktop fleet power consumption by employing so-called 'Wake-On-LAN' technology on PC fleet, to enable PCs to go to sleep in very low power mode when not in use, then be 'woken up' via the network when required, perhaps for critical software updates in the middle of the night; when these are installed, PCs can be centrally sent back to sleep
 - Minimise server power consumption by employing virtualisation technology that only brings server capacity into use when needed
 - Minimise power consumption on both desktops and servers by employing multi-core processor technology, which uses about 75% less power than legacy processor technology
- Video-conferencing
 - Keep records continuing to show financial and carbon benefits of video-conferencing to the University
 - Support the use of Skype and/or other consumer-driven products to facilitate desktop video communication
- Lean print in partnership with Facilities Management
 - Encourage Faculties and central administration to make best use of printing services available to them, promoting the central bulk print service and distributed printer/copier multi-functional devices (MFDs), but discouraging the use of expensive personal printers except where really necessary
 - Provide a print quota and charging system for staff and students that can provide management information to allow informed print choices to be made and savings to be achieved
 - Promote the use of recycled papers etc. throughout the institution
- Smart buildings as under 'Estate' above

10.15 Internationalisation

- Strong support through the HallNet brand and service for international students
 - Survey evidence shows that, in general, overseas students rate quality of Internet access as the most important factor shaping their experience
 - Loughborough's Internet service was recently given top ratings by overseas students in a recent iGraduate survey, and was a factor in the THES Overseas Student Award 2007
 - We need to maintain this high level of satisfaction by:
 - Overseas TV channels and cheap international Internet voice and video call bundles for international students in hall
 - More general advice for international students in terms of phone tariffs etc.
- On student PCs and Macs the widest possible support for international languages and fonts

10.16 Faculty IT

- At University level, we will focus on proving central IT services that have applicability across multiple Faculties
- We will work closely with Faculty IT Co-ordinators (FITCs), and keep awareness of and track IT initiatives organised at Faculty or Department level
- We will provide access from such Faculty systems to central directory services to enable Single Sign On (SSO), giving the potential for a seamless student experience between central and devolved systems
- Where requested, we will assist any Faculty in drawing up its own formal Faculty IT Strategy or Plan, to complement the University IT Strategy
- Where such a request is not made, we will encourage and request that each Faculty completes its own 'IT mini-Strategy' – perhaps comprising of a half a dozen bullet-point objectives for items of IT work within the Faculty to be prioritised at a strategic level

10.17 Support for Management and Administration

- A fit-for-purpose staff desktop providing access to standard office software, collaborative workflow tools, analysis tools, access to email, groupware, calendaring, messaging and the Web, filestore, backup, and client software for corporate systems as appropriate, plus easy access via the Staff Portal
- In partnership with business process owners, we will assist in the re-engineering and improvement of business processes that lend themselves to automation, and implement corporate applications to meet the data capture, processing, and analysis requirements of the support services and academic departments
- Operational, management and executive reports will be readily available and customisable by users at all levels of the organisation to meet their requirements, via a simple dashboard interface on the portal that will allow easy tracking of Key Performance Indicators (KPIs) etc.
- We will develop components of the staff and student portals enabling submission, checking and, where appropriate, amendment of records by the individual concerned. This will lead to greater ownership – and hence accuracy - of the record by the individual themselves and will take away some of the administrative burden within the organisation
- We will seek to improve automation of administrative tasks such as student registration
- The integration between University information systems will be improved: duplicate information sources and systems will be identified and rationalised/normalised; there will be clear ownership of the source of data and well-documented flows of information where data is interfaced with other systems

10.18 Governance

- Strong engagement with Faculties and University via formal and informal channels
 - Termly University-level IT User Groups, feeding particular items of business into EMG and/or Ops as appropriate
 - Programme and Project Management structures
 - Faculty IT Policy Committees as invited
 - Use of stratified focus groups for streamlined consultation on certain new service developments, minimising the time we expect users to put in to assist with these
 - Informal briefings of Vice-Chancellor's Office, Deans, and others throughout the organisation as particular circumstances dictate

- Adoption of industry-standard best practice, tailored to HE context where appropriate
 - ITIL Service Delivery and Service Management
 - PRINCE2 project management and the inception of a Programme and Project Office (PPO)
 - ISO17799 via the UCISA Framework on Data Security
 - Inspection shows we already meet most of these; but their more formal adoption, and use of the common language underpinning them, will make it easier for us to demonstrate to the University that we are doing a good job
 - Whilst adhering to the above, we will be mindful of the sometimes disproportionate workload in obtaining formal accreditation

- IT Service Desk
 - This is central to best-practice delivery as above, for ensuring standards across the whole service, and for giving service based on customer need rather than patronage, local knowledge, or standing in the organisation
 - In line with ITIL, we will make the Service Desk a first line of enquiry for all users, staff and students, though subsequently different categories of users may be referred and escalated via different routes
 - Provide an on-line system for users to track their queries
 - Continue to improve the first line fix rate at the Service Desk beyond its current level of 60% for IT incidents
 - Provide relevant statistical information both to IT managers and to users, to demonstrate quality of service and allow IT problems to be identified and tackled
 - Respond positively to any requests from Faculty IT or other support services to use the IT Service Desk as their first point of contact and conduit for query escalation and tracking

- Internal Audit
 - We have been audited approximately every other year in the recent past, and we will continue to welcome this degree of scrutiny as further reassurance to the University that we are doing a good job

- Storage, archiving and data retention
 - Be pro-active in assisting the University in defining its data storage, archiving and retention policies, particularly as they apply to electronic data storage media
 - Deliver a central storage and archiving infrastructure that complies with these policies
 - Work with individual areas of the administration, at the centre and in Faculties, to ensure best practice in the storage and backing up of core corporate data entered into non-core systems (e.g. local Faculty databases, other small systems, etc.)

10.19 Business Continuity

- Service availability
 - Based on user requirement for our services to be available 24x7, all year round, we will aim to deliver 99.99% availability in key applications, and 99.999% availability in the network core
 - Subject to funding, we will employ virtualisation and clustering technology to deliver this availability whilst minimising the power consumption and carbon footprint of hardware, in line with best industry practice

- Disaster Recovery Planning
 - We will work closely with other support services to produce an overarching IT Disaster Recovery Plan linked as appropriate to the emerging University Business Continuity Framework
 - To meet University need, we will continue to arrange core services and data across two machine rooms, and employ virtualisation technology where appropriate, to reduce our disaster recovery time

10.20 Technology

- Technology to underpin personalised portals
 - Identity Management system, linked to and integrating data from core corporate systems and other authoritative data sources, defining each individual's identity (i.e. multiple roles and relationships) within the University, e.g. membership of departments, research groups, programme, modules, clubs & societies, courses applied for, alumni details, etc. etc.
 - Secure Directory Service containing usernames, passwords, personal details, and group memberships as determined by the Identity Management system
 - Single Sign-On (SSO) framework giving seamless access across multiple systems (including core corporate) from a single username and password, and taking a pragmatic approach to adoption of relevant interoperability standards
 - Portal personalisation engine, seamlessly and securely integrating personalised information from a diverse range of data sources and underlying information systems, and presenting to the user via a Web interface
 - All leading to myLoughborough single personalised portal

- Technology to deliver high availability 24x7 IT services
 - Standardised server and storage virtualisation platforms
 - Investigation of virtualised Disaster Recovery 'shared service' facility with EMMAN partners

- Technology to deliver energy and carbon savings
 - Server blade arrays and intelligent enterprise storage
 - In-rack cooled data centre solutions

- Taking a national HE sector lead in technological and associated areas of expertise, including
 - Network security
 - Wireless networking
 - SSO
 - Legal compliance and policy development

11. Appendix 2 – IT strategic deliverables to achieve 5 year vision

Strategic Theme	Deliverable	Description	When	Cost
Research				
RE1	Staff Portal first version	Bringing together publications database, repository and personal research plans (PRPs) on line	2009	Existing resource
RE2	HPC	High Performance Computing Service launch and sustainable funding model	2008	Existing resource
RE3	HTC	High Throughput Computing 'Condor Pool' to harness unused processing power around the University for research	2009	Existing resource
RE4	VRE	Virtual Research Environment collaborative tools	2009	Existing resource
RE5	1GB research network pipe	Fast, dedicated optical pipe to JANET for eResearch and large data set manipulation	2010	TBD
Education				
ED1	Student Portal first version - enhanced LEARN	Migrating the Virtual Learning Environment (VLE) to the Moodle platform	2008	Existing resource
ED2	LUSI Programme	Loughborough University Student Information, the in-house student records system highly tailored to local needs	Ongoing	Existing resource
ED3	New student email	Updating the student email service, which has reached the end of its planned 5 year life	2009	£120K
ED4	On-line library of specialist teaching software	Employing new 'application virtualisation' technology and the 'SoftGrid' solution	2009	Existing resource

ED5	Remote Desktop	Making the specialist software library, and the wider student workstation experience, available over the wire via the Internet (subject to software licensing constraints)	2010	Existing resource
ED6	Enterprise CAA	Upgrading the current CAA system so it is robust and reliable enough for the conducting of formal examinations	2010	Existing resource
ED7	CAA exam suite	Allowing the use of Computer Aided Assessment (CAA) for formal University exams for all cohort sizes	2010	TBD
Enterprise				
EN1	Directory of Expertise	Revamped Web-based directory of expertise	2010	Existing resource
EN2	CRM	Customer Relationship Management tracking of contacts and leads among our business links	2011	Existing resource
Sport and the Arts				
SA1	Live video streaming	Live Internet video broadcast of high profile sporting fixtures (e.g. Real Varsity Match)	2008	Existing resource
SA2	On-line art exhibitions	E.g. 'screensaver' art exhibition of student protest	2008	Existing resource
The Loughborough Student Experience				
SE1	Community HallNet	Brokering imaginative partnerships with the council and ISPs to provide value-added data services to students living in the town	2010	Existing resource
SE2	HallNet PC and phone shop	An imaginative partnership with imago and commercial hardware suppliers to beat the high street price and provide value-added services whilst not exposing the University to commercial risk	2009	Existing resource
SE3	Web 2.0 Watch	Briefing for managers and the pastoral team regarding the way Loughborough is coming over on key new media	2008	Existing resource
SE4	University Card	A single student smart card integrating all current card functions (and potentially becoming the staff card too)	Pilot 2008	TBD

Social Impact and Engagement				
SI1	Community Portal	Providing useful and relevant information to the local community	Ongoing	Existing resource
Financial Sustainability				
FI1	TCO model	Total Cost of Ownership analysis of all IT spending and Estate across the University, establishing the baseline for future investment and savings	2008	Existing resource
FI2	ePayments	ePayments system allowing Web-based charge card and credit card transactions to all areas of the University, linked seamlessly to Agresso	2009	£130K
Marketing and Communications				
MC1	CMS	Content Management System to enhance the University's Web presence	2009	Existing resource in IT
MC2	Applicant Portal	A personalised on-line experience catering from the very first contact with the University from a prospective student, potentially right through to induction week arrival	2010	TBD
Advancement and Funding				
AF1	Alumni Portal	The on-line one stop shop for former students, to keep in touch with the alma mater and each other	2010	Existing resource
AF2	Contacts Management System	For senior University members to track contacts with potential benefactors and others with whom a strategic relationship is to be developed	2010	Existing resource
Estate				
ES1	Central timetabling and room booking	An IT system to optimise use of space in line with local constraints	2010	TBD

Sustainability and work-life balance				
SW1	Remote Working Service	Using VPN technology, allowing full, secure access to desktop IT and IP telephony from anywhere in the world via a broadband-speed Internet connection	2008	Existing resource
SW2	Desktop fleet power consumption	Costs and benefits of upgrading to modern efficient multi-core processor technology and thin client where appropriate, given that the cost of powering a PC over its normal lifetime now exceeds the capital purchase cost	2010	Funding via energy savings
SW3	Server fleet power consumption	Costs and benefits of upgrading to modern enterprise server and storage hardware, including virtualisation technology, given that current power costs are likely to be in excess of £400K per annum	2010	As above
SW4	Video-conferencing	Recipe for successful desktop conferencing and analysis of data on travel and carbon savings	2009	Existing resource
SW5	Lean print	Enabling cost savings by promoting use of Multi Functional Devices (MFDs – combined printer/copiers), and promoting use of recycled paper for computer printing	2009	Existing resource
SW6	IP telephony	Providing modern IP telephony services, in new buildings and in older, that fully support flexible and home working	2010	TBD
Faculty IT				
FA1	Faculty IT Strategies/Plans	If invited, assist in drawing up either full-blown or mini Faculty IT Strategies/Plans, in line with local Faculty needs	Ongoing	Existing resource
Support for Management and Administration				
MA1	Corporate Dashboards	Management and executive reports, allowing tracking against Key Performance Indicators (KPIs) etc.	2009	Existing resource
Governance				
GO1	ITIL	Implement the IT Infrastructure Library framework for IT service delivery and service management, which is now widely adopted in the HE sector	2010	Existing resource

GO2	IT Service Desk	The first point of contact for students and staff	2009	Existing resource
Business continuity				
BC1	IT Disaster Recovery Plan	As requested by external audit, a comprehensive overarching plan that will also quantify the time to recover from a major IT disaster, and the like cost of the disruption to the University in terms of lost productivity	2008	Existing resource
BC2	EMMAN off-site virtualised second machine room	A proposed regional shared service that would provide the ultimate in disaster recovery, IT availability and business continuity at very low cost	2010	TBD
Technology				
TE1	Directory Service	Revamped Microsoft Active Directory and domain service reflecting greater emphasis being placed on the Microsoft infrastructure	2008	Existing resource
TE2	SSO	Single Sign-On implemented across 90%+ of systems	2010	Existing resource
TE3	Identity Management	Robust enterprise identity management as a lynch-pin system modelling multiple roles and associations which individuals may hold with the University	2010	Existing resource
TE4	Portal Personalisation Engine	Web-based personalisation engine seamlessly and securely integrating data from a range of back-end information systems	2010	TBD
TE5	myLoughborough Portal	Bringing all the above together to provide a single portal that 'knows' about all the multiple relationships an individual may have with the University, and provides personalised tailored information via an ergonomic Web interface	2011	Existing resource

12. Appendix 3 – Glossary

Term	Definition
3D virtual reality	A computer simulation of a real or imagined environment which can be experienced visually in the three spatial dimensions of width, height, and depth.
Application programme	A program designed to perform a specific function directly for the user, including word processors, database programs, Web browsers, development tools, drawing, paint, image editing programs, and communication programs.
Agresso	The University's finance package. See www.agresso.com .
ALBACS	The University's software for using BACS the UK scheme for the electronic processing of financial transactions. from Albany Software www.Albany.co.uk/ALBACS
Application virtualisation	Application programs packaged and held centrally and delivered to end-user computers when needed, reducing Total Cost of Ownership.
Archibus	Facilities management information system. See www.archibus.com .
Avatar	In 3D or virtual reality games and in some chat forums on the Web, your avatar is the visual 'handle' or display appearance you use to represent yourself.
Biometrics	Measurable biological attributes to uniquely identify individuals such as fingerprints, iris patterns, or DNA sequences.
Blog	Blog (web log) is a website where entries are displayed in reverse chronological order. Blogs provide commentary or news on a particular subject
Broadband	In practice: high speed commercially available Internet services targeted at the consumer market. Strictly: telecommunication in which a wide band of frequencies is available to transmit information, allowing more information to be transmitted in a given amount of time.
CCTV	Closed Circuit Television, in this context video is carried across the Loughborough data network.
Central Filestore	A networked file storage system allowing users to take backup copies of their data files and transfer of data between Computer Labs and personally owned computers.
CISUG	Corporate Information User Group – currently focussing on matters relating to corporate systems and management/administrative IT; the remit etc. of IT-related user groups will be reviewed in Autumn 2008

Term	Definition
Client / server	Client / server describes the relationship between two computers or computer programs in which one program, the client, makes a service request from another program, the server, which fulfils the request. For example, on your PC (the client), Outlook (also the client) makes service requests on the relevant e-mail server to receive or send e-mail messages.
Clustering technology	The use of multiple computers, typically PCs or UNIX workstations, multiple storage devices, and redundant interconnections, to form what appears to users as a single highly available system. Cluster computing can be used for load balancing as well as for high availability.
Community HallNet	A proposed extension of the existing HallNet system providing wireless access to the main student residential areas in town.
Computer cluster	Multiple computers, multiple storage devices, and redundant interconnections forming what end-users see as a single high availability system. Clusters can be used for load balancing as well as for high availability.
Condor	Condor is a specialized workload management system for computing-intensive jobs. Condor can harness CPU power from otherwise idle desktop computers (e.g. when the keyboard and mouse are idle).
Contacts management	Programs which allow people to keep track of people and tasks, and histories of interactions.
Content management	A computer software system for organizing and facilitating collaborative creation of documents and other content, especially for loading to a website.
CSUG	Computing Services User Group – currently focussing on academic computing, policy and infrastructure; the remit etc. of IT-related user groups will be reviewed in Autumn 2008
Dashboard	A user interface which organizes and presents information in a way that is easy to read, and often resembles a car's dashboard.
D.Cal	Procurement and purchasing credit card information system, see www.deecal.com .
eAdmin	Electronic tools to administer your business including payment features.
eJournal	Electronic Journal.
eLearning	A formalized teaching and learning system specifically designed to be carried out remotely by using electronic communication.
E-mail	Electronic mail is the exchange of computer-stored messages by telecommunication. You can also send non-text files, such as graphic images and sound files, as attachments.

Term	Definition
EMMAN	East Midlands Metropolitan Area Network is a high bandwidth Regional Data Network developed by eight Higher Education Institutions in the East Midlands. This provides Loughborough University's connection to JANET.
ePayments	Electronic payment system using debit or credit cards, or digital cash or an electronic wallet.
Enabling Grids for E-Science (EGEE),	The Enabling Grids for E-science (EGEE) project aims to provide researchers in academia and industry with access to major computing resources, independent of their geographic location. It was funded by the E,U,
Facebook	Facebook is a social networking website with more than 60 million users worldwide. The name of the site refers to the paper "facebook" depicting members of the campus community that some U.S. colleges and preparatory schools give to incoming students, faculty, and staff as a way to get to know other people on campus.
FLOPS	Floating Point Operations per Second, a measure of the speed of computing. Floating Point is "a method of encoding real numbers within the limits of finite precision available on computers". Computation of floating-point numbers is often required in scientific or real-time processing applications and FLOPS is a common measure for any computer that runs these applications.
HallNet	The computer network and services provided to the University halls of residence, and also the brand associated with this service.
Forum (Internet)	An Internet forum is a web application for holding discussions and posting user-generated content. A sense of virtual community often develops around forums that have regular users.
Game console	An interactive entertainment computer or electronic device that displays a game. The term is used to distinguish a machine designed for consumers to buy and use solely for playing video games from a personal computer, which has many other functions, or arcade machines, which are designed for businesses that buy and then charge others to play.
Groupware	Programs that help people work together collectively while located remotely from each other.
Hard disk	A non-volatile storage device which stores digitally encoded data on rapidly rotating platters with magnetic surfaces.
High availability	High availability refers to a system or component that is continuously operational for a desirably long length of time.
High Performance Computing (HPC)	High-performance computing (HPC) is the use of parallel processing for running advanced application programmes efficiently, reliably and quickly. The term applies especially to systems that function above a teraflop or 10 ¹² floating-point operations per second.

Term	Definition
High Throughput Computing (HTC)	For many experimental scientists, scientific progress and quality of research are strongly linked to computing throughput. They are concerned with how many floating point operation per month or per year they can extract from their computing environment rather than how much per second (see FLOPS). Related to High performance Computing (HPC) but requires effective management and exploitation of all available computing resources.
Identity management	A broad administrative area that deals with identifying individuals in a system and controlling their access to resources within that system by associating user rights and restrictions with the established identity.
IMRIS	Incident Management system. The goal of Incident Management is to restore normal service as quickly as possible, while minimizing any adverse impact on business operations.
Instant messaging	The exchange of text messages through a software application in real-time. This differs from ordinary e-mail in the immediacy of the message exchange and also makes a continued exchange simpler than sending e-mail back and forth.
Institutional repository	An online location for collecting, preserving, and disseminating - in digital form - the intellectual output of an institution, particularly a research institution.
InTend	Provider of Electronic Procurement services (contracts management, tender notification service and electronic auction tools) www.in-tend.com
Internet	A worldwide system of computer networks - a network of networks in which users at any one computer can, if they have permission, get information from any other computer (and sometimes talk directly to users at other computers). The most widely used part of the Internet is the World Wide Web.
IP	Internet protocol.
ISO 17799	Renumbered ISO/IEC 27002:2005 in July 2007.
ISO/IEC 20000	ISO/IEC 20000 is the first international standard for IT Service Management .

Term	Definition
ISO/IEC 27002	<p>An information security standard published by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC).</p> <p>It provides best practice recommendations on information security management for use by those who are responsible for initiating, implementing or maintaining Information Security Management Systems (ISMS). Information security is defined within the standard in the context of:</p> <p>The preservation of:</p> <ul style="list-style-type: none"> • confidentiality (ensuring that information is accessible only to those authorised to have access), • integrity (safeguarding the accuracy and completeness of information and processing methods), and • availability (ensuring that authorised users have access to information and associated assets when required).
ISP	Internet Service Provider.
ITIL	ITIL (the IT Infrastructure Library) is essentially a series of documents that are used to aid the implementation of a lifecycle framework for IT Service Management. This customisable framework defines how Service Management is applied within an organisation. It also aligned with the international standard, ISO 20000. See www.itil.org.uk .
IT Service Management (ITSM)	A discipline for managing information technology (IT) systems, philosophically centred on the customer's perspective of IT's contribution to the business. ITSM stands in deliberate contrast to technology-centred approaches to IT management and business interaction.
JANET	JANET is the network dedicated to the needs of education and research in the UK. It connects the UK's education and research organisations to each other, as well as to the rest of the world through links to the global Internet. In addition, JANET includes a separate network that is available to the community for experimental activities in network development.
Laptop	Portable computer, usually based on either Microsoft or Apple technologies.
Link	The address of a Web page or resource.
Linux	A Unix-like operating system that was designed to provide personal computer users a free or very low-cost operating system comparable to traditional and usually more expensive Unix systems
Load Balancing	Load balancing is dividing the amount of work that a computer has to do between two or more computers so that more work gets done in the same amount of time and, in general, all users get served faster. Load balancing can be implemented with hardware, software, or a combination of both.

Term	Definition
Local Area Network (LAN)	A group of computers and associated devices that share a common communications line or wireless link.
LUSI	Loughborough University Student Information system.
Mac	Apple Macintosh Computer. Apple Macintosh operating system. It runs Unix applications as well as older Mac applications.
Mash-up	A Web page or application that integrates complementary elements from two or more sources.
Microsoft Office	Suite of Office productivity software from Microsoft , including word processing, spreadsheet, and presentation software.
Middleware	A general term for any programming that serves to "glue together" or mediate between two separate and often already existing programs. A common application of middleware is to allow programs written for access to a particular database to access other databases.
myLoughborough	A proposed single portal that 'knows' about all the multiple relationships an individual may have with the University, and provides personalised tailored information via an ergonomic Web interface.
National Grid Service (NGS)	Aims to provide coherent electronic access for UK researchers to all computational and data based resources and facilities required to carry out their research, independent of resource or researcher location. See www.grid-support.ac.uk
NetCommunity	Fundraising software – see www.blackbaud.com/products/internet/netcommunity.aspx
Network	A series of points or nodes (computers, printers, servers) interconnected by communication paths. Networks can interconnect with other networks and contain sub-networks.
Newsfeed	News headlines (e.g. there is a new entry on my blog) are made available on the web. Users can subscribe to Newsfeeds, and are then notified when there is news, and can click to see the full news article or blog entry.
OJEU	Official Journal of the European Union - lists large European contract tenders and notices from 25 European Union countries
Online	Available via the Internet.
Operating system	The programme that manages all the other programmes in a computer. Examples are Windows, Mac, Linux, and Unix.
Optical Mark Recognition (OMR)	The technology whereby user-supplied writing (marks) on a pre-printed pro-forma (typically a multiple-choice style questionnaire) are automatically read and recorded by a machine.

Term	Definition
Outlook client	Part of Microsoft's Office set of application programmes, Outlook allows the user to read and send their e-mail and manipulate their electronic calendar. It is referred to as a "client" as it is in a client / server relationship with the e-mail servers: it makes client requests for e-mail messages.
Parallel processing	Dividing programming instructions among multiple processors with the objective of running a programme in less time.
Personal Digital Assistant (PDA)	Handheld Computer Uses include calculation, use as a clock and calendar, accessing the Internet, sending and receiving E-mails, and Global Positioning System (GPS). A PDA which can be used as a mobile phone is referred to as a Smartphone.
Pivot table	A program tool that allows you to reorganize and summarize selected columns and rows of data in a spreadsheet or database table to obtain a desired report.
Podcast	Usually audio but sometimes video information regularly updated and available to download to a computer or a personal media player (such as an Apple iPod). A portmanteau word formed from "iPod" and "Broadcast".
Portal	A portal is a Web site created to function as a single point of access to information via the Web, internally and externally. Portals present personalised information drawn from a wide range of diverse data sources in a unified, coherent way.
PRINCE2	A project management methodology developed by the government of the United Kingdom (UK) and used internationally, especially in information technology (IT) environments.
PRP	Personal Research Plan - see www.ncl.ac.uk/hr/forms/promote/reader/documents/20070921_form-promote-reader-research-plan_jj.doc .
RACEII	A software package used by the Research Office for management of research costings.
Raiser's Edge	Contacts Management system www.blackbaud.com/products/fundraising/raisersedge.aspx
RASCAL	A resource allocation model used at Loughborough University to apportion funding across departments and services.
Remote Desktop	A mechanism providing the ability to get access to a computer or a network from a remote location.
Repository	A place where data are held and maintained. See Institutional Repository .

Term	Definition
RFID	Radio-frequency identification (RFID) is an automatic identification method, relying on storing and remotely retrieving data using very small devices called RFID tags or transponders. An RFID tag is an object that can be attached to or incorporated into a product for the purpose of identification using radio waves
Second Life	An Internet-based virtual world. Users or "Residents" interact with each other through avatars , and can explore, meet other Residents, socialize, participate in individual and group activities, create and trade virtual property and services from one another.
Server	A central computer or resource providing services to many computers or users (known as clients).
Shibboleth	A standards-based, open source software which provides web single sign-on across or within organizational boundaries. http://shibboleth.internet2.edu/ .
Single Sign-On (SSO)	A user authentication process that permits a user to enter one name and password in order to access multiple applications or servers.
Skype	Skype is a free Internet telephony program that allows you to make free internet-based phone calls between computers used by one Skype user and another. In addition you can also purchase 'Skype-out' credit to allow low-cost calls to be routed to standard Public Telephone lines.
Smart Card	Any pocket-sized card (usually credit card sized) with embedded integrated circuits which can process information.
Smartphone	A Personal Digital Assistant (PDA) or handheld computer which can also be used as a mobile phone.
Social networking Web site	A web site which focuses on the building and verifying of online social networks for communities of people who share interests and activities, or who are interested in exploring the interests and activities of others. They provide various means of interaction including chat, messaging, email, video, voice chat, file sharing, blogging, discussion groups.
Softgrid	Microsoft's Application Virtualisation (q.v.) solution.
Software	Computer programmes.
Streaming Internet Video	Video that is constantly received by and displayed to the user while it is being delivered by the provider over the Internet.
Thin client	A low-cost, centrally-managed computer devoid of CD-ROM players, diskette drives, and expansion slots. See also Client / server .
Third stream	Generic term for activities in support of Enterprise and Knowledge Transfer
Teraflop	10 ¹² FLOPS, i.e. 1,000,000,000,000 Floating Point Operations per second

Term	Definition
Total Cost of Ownership (TCO)	Total Cost of Ownership (TCO) is a form of full-cost accounting that allows the assessment of total direct and indirect costs of IT service provision across an entire organisation, taking full account of costs of acquisition, migration, and ultimate disposal of systems and infrastructure, as well as the more apparent costs relating to their ongoing use.
TRAC	Transparent Approach to Costing produced by the Joint Costing and Pricing Steering Group - see www.jcpsg.ac.uk/guidance/ .
Transponder	An automatic device that transmits a predetermined message in response to a predefined received signal.
Trent	Integrated Human Resources and Payroll computer applications provided by Midland HR, www.midlandhr.com .
txt	Text messaging.
UCAS	UCAS is the UK central organisation through which applications are processed for entry to full-time first degrees, HNDs and university diplomas.
UCISA	UCISA is the Universities and Colleges Information Systems Association.
UK National Grid Service (NGS)	The National Grid Service aims to provide coherent electronic access for UK researchers to all computational and data based resources and facilities required to carry out their research, independent of resource or researcher location.
Unix	An operating system providing an interactive time-sharing system. Linux, a Unix derivative available in both "free software" and commercial versions, is increasing in popularity as an alternative to proprietary operating systems.
URL	Universal Resource Locator – typically the address of a Web site or page – e.g. http://www.lboro.ac.uk
UUK	Universities UK is the 'club' of University Vice-Chancellors and other senior managers, promoting and supporting UK Universities.
Video-conference	A set of interactive telecommunication technologies which allow two or more locations to interact via two-way video and audio transmissions simultaneously.
Viral game	Viral marketing is a marketing phenomenon that facilitates and encourages people to pass along a marketing message voluntarily, including the use of games.
Virtual reality	A computer simulation of a real or imagined environment which can be experienced visually in the three spatial dimensions of width, height, and depth.
Virtual world	Virtual reality providing social networking, e.g. Second Life.

Term	Definition
Virtualisation	A technique for hiding the physical characteristics of computing resources from the way in which other systems, applications, or end users interact with those resources. This includes making multiple physical resources (such as storage devices or servers) appear as a single logical resource.
VLE	A Virtual learning environment (VLE) is a software system designed to facilitate teachers in the management of educational courses for their students
VRE	A Virtual Research Environment (VRE) provides a framework of resources to support the underlying processes of research on both small and large scales, including collaboration and sharing of resources.
VoIP	Voice over IP (Internet Protocol). A set of facilities used to manage the delivery of voice information (e.g. telephone calls) over the Internet.
Wake-On-LAN	A technology that allows a network or computer professional to remotely power on a computer or to wake it up from sleep mode. By remotely triggering the computer to wake up and perform scheduled maintenance tasks, the technician does not have to physically visit each computer on the network, nor does the end-user need to wait while such tasks occur in the normal working day.
Web 2.0	A popular term for advanced Internet technology and applications including blogs, wikis, newsfeeds and social networking
Website	A collection of Web pages, images, videos or other digital assets that is hosted on one or several Web server(s), usually accessible via the Internet, cell phone or a Local Area Network.
wiki	A website that allows visitors to add, remove, and edit content. A collaborative technology for organising information on Web sites.
Windows	Microsoft's personal computer operating system.
Wireless network	A network which is wireless, it uses radio instead of wires to transmit data back and forth between computers on the same network.