

GETTING TO GRIPS WITH INFORMATION AND COMMUNICATIONS TECHNOLOGY

RESOURCES FOR GOVERNORS OF
UK HIGHER EDUCATION INSTITUTIONS

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FOREWORD

As the governance of universities and higher education (HE) colleges in the UK evolves, there are major implications for members of governing bodies: increasing expectations about how they undertake their role; a greater focus on measuring institutional performance with associated implications for information and strategy; the need to come to terms with the increasingly complex environment in which governance takes place; and so on. All this means that governors (particularly new ones) need to be well prepared for their roles and the challenges they face so that they can contribute effectively to their boards from the outset.

To support governors, the Leadership Foundation for Higher Education (LFHE) has commissioned a set of materials to help them get to grips with key areas of concern. Produced with financial support from the UK HE funding bodies (coordinated through the Higher Education Funding Council for England (Hefce)), there are ten volumes: on finance, risk, human resources, estates, audit, internationalisation, research, academic standards and quality, on being a new governor and this one - on information and communications technology (ICT)¹.

In an easy-to-read format, this volume provides the core information that *all* governors need for an understanding of their roles in relation to ICT, a topic which is becoming ever more important. To support the text there are quotations from various sources², self-challenge questions and suggested activities. The content and quotations - some provocative - do not represent any "agreed" view, but are designed to illustrate different opinions and to encourage self-reflection, debate and critical thinking. Although we expect that readers will agree with most of what is written, we hope that some aspects will be contested.

The material is intended to be used both by individual governors and by higher education institutions as part of in-house governor development activities. It is not intended to provide specialist information, although references to such material are given in Annex A. In particular, more information is available on the LFHE's website (www.lfhe.ac.uk/governance).

An additional information source that all new governors should be aware of is the Guide for Members of HE Governing Bodies in the UK and its associated Code of Governance Practice, produced by the Committee of University Chairs (CUC)³. The Guide and this Getting to Grips series complement each other: the former setting out the formal responsibilities falling upon boards and the latter exploring more informally what this means in practice for individual governors.

¹ All these publications are available from www.lfhe.ac.uk/governance/publications

² The quotations have been obtained from a wide range of sources, including personal meetings with governors. Where the professional background of the source governor is known it has been provided.

³ The Guide is available at www.hefce.ac.uk/pubs/year/2009/200914

A note on terminology and diversity

As most governors know, governance in UK HE is complicated by the use of different terms for similar functions so, for simplicity, some key terms have been standardised throughout all “governing body” and “board” are used generically to include: the governing bodies of post-1992 higher education institutions; the councils of pre-1992 universities; and courts in Scotland. Similarly the word “governor” is used to indicate a member of these different bodies; “external governor” for all board members from outside (whether technically independent, lay, co-opted or whatever); “chair” is the term for the person who convenes governing body meetings; “head of institution” is used for the vice-chancellor or principal; and “executive” for members of the senior management team or equivalent. Finally, the abbreviation HEI is used as the widely accepted shorthand for “higher education institution”.

It is also important to recognise that the UK HE system is very diverse, which means that some aspects of what is effective governance in one HEI may not necessarily be so in another. Moreover, different governors will have legitimately different views on many of the issues presented in this material, as will heads of institutions and other senior managers. It follows that if, after working through the text, important issues are raised for governors about practice in their own HEI (and we hope they will be), then they may need to obtain more detailed information from the clerk or secretary of their board or its chair.

Because HE is now the responsibility of the devolved administrations within the UK, another aspect of diversity is the need to recognise differences in governance arrangements in HEIs in England, Scotland, Wales and Northern Ireland. Where no separate discussion of the different jurisdictions occurs, readers can assume that the content applies to all four HE systems.

How this volume is organised

The technical - and sometimes complex - nature of ICT means that this volume contains slightly more descriptive and background content than in some of the other volumes in the Getting to Grips series and readers should feel free to skim read as required. Chapter 1 provides an introduction to ICT in HE and summarises the overall role of the governing body in relation to it. Chapters 2 to 5 then consider the implications for the governing body in four key areas: learning and teaching; research; management; and the library. Chapter 6 pulls the earlier discussion together and focuses on the strategic role of the governing body in relation to ICT. Chapters 7 and 8 then address two key areas from a board’s perspective: legal issues and compliance; and costs and value for money. Finally, Chapter 9 provides some speculation about the future of ICT in HEIs.

Disclaimer

Although every care has been taken to try and ensure the accuracy of the content of this material, if in doubt about a specific issue governors should always check with the clerk or secretary of their own board.

Allan Schofield

Series Editor

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TEN KEY ISSUES FOR NEW GOVERNORS

- 1 ICT is pervasive in a modern HEI and requires the active attention of the governing body to deliver the potential benefits that it offers. [SEE CHAPTER 1 ►](#)
- 2 Governing bodies should ensure that there is appropriate knowledge and experience of ICT among their membership. [SEE CHAPTER 1 ►](#)
- 3 In order to ensure student satisfaction, governors need to have an awareness of how ICT is being used to support learning, teaching and academic quality and standards. [SEE CHAPTER 2 ►](#)
- 4 Governors need to have an awareness of how ICT underpins research and research management. [SEE CHAPTER 3 ►](#)
- 5 The use of ICT to support management and administration is not just about making current business processes more efficient and effective but about changing the way they are done. [SEE CHAPTER 4 ►](#)
- 6 ICT has transformed the academic library and governors need to understand such changes if they are to oversee its governance. [SEE CHAPTER 5 ►](#)
- 7 Governors need to feel confident undertaking their key role of approving and monitoring the ICT and information strategy and associated risks. [SEE CHAPTER 6 ►](#)
- 8 The governing body needs to be aware of its legal and regulatory responsibilities in relation to ICT, including - but not limited to - data protection and freedom of information. [SEE CHAPTER 7 ►](#)
- 9 The governing body should understand the cost, benefits and value for money of ICT. Such information is required for any strategic consideration of possible shared services. [SEE CHAPTER 8 ►](#)
- 10 In future, ICT is likely to transform higher education, and governors should seek to understand likely developments as part of overall strategic planning. [SEE CHAPTER 9 ►](#)

1. INTRODUCTION: ICT AND THE ROLE OF THE GOVERNING BODY

An overview of the importance of information and communications technology to higher education

1.1 Information and communications technology (ICT) is pervasive in the modern HEI: it is central to the student experience, vital to research, and underpins almost all major aspects of decision making, planning and administration. However, the effective management of ICT is not a trivial task and all too often we read in the media of ICT projects that have failed to deliver, have significantly overspent or that cannot provide the information required.

1.2 It follows that the governance of ICT is becoming increasingly important but the issues involved can be difficult and raise numerous challenges for governors.

They include:

- What role should governors have in ensuring the effective use of ICT throughout their HEI?
- What should boards look for in an ICT strategy?
- How can boards know whether ICT provision supports high levels of student satisfaction or underpins quality research?
- Is suitable risk management in place for ICT and can governors be confident that their institution won't hit the headlines for the wrong reasons?
- How can a governing body ensure that ICT contributes value to the institution and is not a cash sink?

These, and other, key issues for governors are explored below.

1.3 Effective governance and management is critical in ensuring that ICT contributes to institutional performance. Although this is stating the obvious, it sets the context for thinking about many key issues. For example, there is a huge diversity of ICT applications in most HEIs and ensuring their optimal integration is a major challenge. In many institutions there is also a tendency to focus on the technology of providing services or running new projects rather than seeing ICT as one aspect of delivering organisational change. In such cases, ICT projects may well fail to deliver their expected benefits, an experience no doubt familiar to many governors.

1.4 The need for integrated planning, management and governance exists across the whole range of modern ICT-based services and the most important areas for a typical HEI include:

- The use of ICT in all aspects of teaching and research and in enhancing the student experience, including programmes that may be delivered partly or entirely online.
- Providing the foundation for administrative and corporate services, for example finance, student administration and communication tools (email, web access and so on).
- Delivering library and information services where ICT has radically changed the nature of the library, for example academic journals are now almost wholly electronic.

"Digital technologies have transformed media, retail, entertainment and many other industries - higher education is next. Campuses will remain, but digital technologies will transform the way education is delivered and accessed, and the way 'value' is created by higher education providers, public and private alike."

(ERNST & YOUNG (AUSTRALIA) UNIVERSITY OF THE FUTURE, 2012, SEE ERNST & YOUNG (2012), UNIVERSITY OF THE FUTURE, AT [WWW.EY.COM/UNIVERSITY_OF_THE_FUTURE/\\$FILE/UNIVERSITY_OF_THE_FUTURE_2012.PDF](http://WWW.EY.COM/UNIVERSITY_OF_THE_FUTURE/$FILE/UNIVERSITY_OF_THE_FUTURE_2012.PDF))

SUGGESTED TASK

Think about how much you as a governor know about ICT issues in your HEI and how they contribute to the quality of teaching and research.

- Providing a comprehensive ICT infrastructure (both electronic and physical) which includes the need for security in all aspects of service delivery.
- 1.5 The typical outlay on ICT for an HEI is around 3-4% of the total recurrent spend, plus occasional (and often substantial) capital spending on corporate ICT systems. The pressures on ICT budgets are increasing with new services demanded all the time. As many governors will recognise, student expectations of high quality ICT are also constantly increasing: new technologies are rapidly evolving and students expect the social media they use in their private lives to be part of their learning. Of course, the growth in student fees (where charged) is likely to increase expectations of ICT still further, presenting a challenge not just for academic staff who may not be technologically savvy, but also for the central ICT service that finds itself having to stretch its own resources further to meet increased demand.
 - 1.6 The pervasive nature of ICT should also be reflected in an integrated approach to all major ICT developments and be evident in the information strategy (which the governing body should approve - see Chapter 6). However, in a large HEI with a wide range of diverse ICT needs such integration is easier said than done. Governors will find that, unlike many private sector organisations where IT requirements are built around a small number of common systems, many ICT applications in HEIs are specialist - particularly in supporting research. In the past many users (particularly academics) may have acquired their own preferred applications and, indeed, in some cases they may have developed their own. In such circumstances there has been a tendency for ICT applications to proliferate within HEIs, with some staff closely attached to retaining "what they know".
 - 1.7 Of course, the rapid developments in this area raise major issues about the risks associated with ICT that should concern governors, for example systems failure and data security (see Chapter 7). In highly diverse HEIs, mitigating risk is particularly problematic and few - if any - institutions could claim with absolute certainty that ICT guidelines are wholly observed in practice. (For example, in some HEIs initial responsibility for student and staff data may be devolved to academic units and researchers may maintain personal databases.) It follows that assurance is needed that all staff dealing with data have a good understanding of their responsibilities and this should be backed up with effective training, policies and procedures.
 - 1.8 An important - but less obvious - development brought about by ICT is the impetus towards co-operation and collaboration both within and between HEIs. The costs and complexities of ICT are such that the early notions of each HEI doing its own thing in its own way have rapidly given way to a recognition that there is advantage in sharing hardware, software and services. The UK has led the world in aspects of this, most notably through services such as Jisc (see Annex A). The rise of cloud computing, open source software, open access courseware, outsourcing, shared services etc has given more impetus to this idea. Consequently governors will need to take advice on the implications, including what commercial confidentiality means in this context.

Infrastructure

- 1.9 Ensuring an effective ICT infrastructure is a clear governing body responsibility with management accountability usually falling to the director of ICT services (or similar title). The director of estates will also be involved in providing some of the physical aspects of the ICT infrastructure and it is important to maximise use of the estate to support ICT. It follows that close integration between the information and estates strategies is essential, including in relation to refurbishment projects.
- 1.10 Operationally, the services delivered by ICT staff will often be set out in a service definition document, forming the basis for assessing infrastructure priorities and levels of service and helping manage user expectations given multiple and conflicting priorities. Some HEIs also have ICT committees (such as the “strategic information systems group”) which have representatives from faculties or schools and help determine priorities. Members of governing bodies should have no role in such a process but they do need to satisfy themselves that effective decision-making processes are in place, with appropriate management accountability.
- 1.11 A critical aspect of the infrastructure on which governors need assurance is the operation of high capacity wireless networks allowing 24-hour, seven day a week connectivity for all. Students will bring their own devices to the campus and will expect to be able to connect easily to the network. A wireless network allows any space to become an area for student group work and the estates strategy must recognise the need for flexible use of space in both new builds and refurbishments. All HEI networks are connected through a national network (JANET⁴), funded by the four UK HE funding bodies and institutional subscriptions.
- 1.12 The expectation of wireless connectivity extends to residential accommodation and halls of residence are now expected to be wireless. Where HEIs have outsourced provision of their residences to commercial providers, installation of a high capacity wireless network with large bandwidth may need to be built into the contract. In particular, the importance for international students of maintaining contact with their home should be recognised, and consequently mechanisms to deliver online television feeds (such as Skype) to residences should be available.
- 1.13 Of course, many HEIs are no longer focused on a single campus and there is increased use of distance learning, home and remote working for both staff and students and multiple kinds of internationalisation. In this environment a huge range of core services are underpinned by the ICT infrastructure extending beyond the campus. A danger is that any problems with such usage will be largely unseen not just by governors but also by senior managers and it follows that there is a risk of major reputational issues as well as operational challenges.
- 1.14 It is no longer necessary - or desirable - for all ICT provision to be delivered directly in-house, and many HEIs now use commercial suppliers either in known locations or “in the cloud”⁵. Carefully planned, such outsourcing can improve service delivery and free up resources, for example the volume of data storage provided to students by using one of the free cloud-based services greatly exceeds that provided by

⁴ See www.ja.net

⁵ For a guide to issues concerning the use of cloud computing in HE see ‘Cloud Computing’, UCISA, at www.ucisa.ac.uk/publications/cloud

“Technology has already transformed higher education profoundly and there is every expectation that it will continue to produce even more deep and lasting changes....It is incumbent on members of governing boards, therefore, to ensure that the institutions they serve are fully poised to address the challenges of technology, and more to the point, to use to full competitive advantage the new capacities that technology offers.”

(‘TECHNOLOGY IN CONTEXT’ ASSOCIATION OF GOVERNING BOARDS OF UNIVERSITIES AND COLLEGES (AGB) PRESS.)

SUGGESTED TASK

Review the strengths and weaknesses of the way in which your governing body works with the executive on ICT issues.

institutions. There is also increased interest in ICT services being shared between HEIs (see Chapter 8).

- 1.15 All this gives rise to major challenges for directors of ICT services, and the Universities and Colleges Information Systems Association (UCISA) undertakes a biennial survey of their concerns⁶. The 2011 survey highlights the main concerns as: future funding (including meeting increasing demands with constrained resources); protecting and developing the infrastructure; aligning ICT to support the overall institutional strategy; and delivering the potential benefits of ICT to improve operational practice in highly devolved environments.

The role of the governing body in relation to ICT

- 1.16 It follows that a governing body needs to play an active role in assuring that ICT is effectively deployed against an agreed information strategy. Although this responsibility is similar to that for other areas of governance, the rapidly changing nature of ICT and its technical complexity can provide additional challenges both to individual governors and to boards collectively. The quotation in the side box from the Association of Governing Boards of Universities and Colleges (AGB), the US equivalent to the CUC, emphasises this responsibility⁷.
- 1.17 Formally, in the UK the CUC Guide is silent on the role of the board in relation to ICT, as indeed are most (if not all) board statements of primary responsibilities - perhaps overtaken by the very rapid developments in the last few years. However, the governing body needs to ensure processes are in place so that it receives information to enable it to:
- Consider and approve the information strategy and associated budgets.
 - Monitor and measure performance against plans.
 - Evaluate the outcomes of major ICT implementation.
 - Compare ICT performance not only against plans but against performance in other institutions.
 - Have confidence in data accuracy and management.
- 1.18 As in other areas, a governing body needs to carry out its duties without eroding the management responsibilities of senior staff, with the director of ICT remaining accountable to the head of institution. The separation between governance and management is central here and it is not the role of the governor to get involved in operational ICT issues, even when complaints are made. This balance can only work if a clear schedule of delegated powers is in place with authorised levels for ICT spending defined. Whatever amounts are involved, governors must be clear about what is expected and why.
- 1.19 There is, however, a specific duty cited in the CUC Guide for governing bodies to ensure that effective risk management (including business recovery) is in place - particularly important with regard to ICT because of its centrality in institutional life. As part of this, a governing body needs assurance that its business data is accurate, is held appropriately by the institution and meets regulatory requirements (see Chapter 7).

⁶ See UCISA's top concerns survey 2010-11 at www.ucisa.ac.uk/tcs

⁷ AGB, (2010), Technology in Context, Association of Governing Boards of Universities and Colleges (AGB) Press (page 20) at <http://agb.org/reports/2010/technology-context-10-considerations-governing-boards-colleges-and-universities>

1.20 A question sometimes raised by governors is: how much expertise in ICT should they possess? The general answer is that unless they were specifically appointed because of their ICT expertise then they don't need to be an expert, although they probably do need sympathy for and a general understanding of the potential contribution of ICT to their HEI. Technophobic governors may find it difficult to reconcile their views with the reality of institutional life. However, all external governors need experience of management and must possess the basic personal skills and knowledge required of an effective governor. Without these they may not have the confidence or ability to challenge constructively ICT plans and proposals.

1.21 Some governing bodies appoint one or more external members for their expertise in ICT, with obvious potential advantages. However, there may also be drawbacks: there is a danger that a board becomes overly reliant on them or that they become too close to management and (particularly in small HEIs) may almost become part-time members of the ICT team.

1.22 Still more dangerous is the governor who thinks that he or she is knowledgeable about ICT but whose expertise is flawed. Of course, even if a board has members with ICT experience, it should not let their judgement pass without challenge or question. In other words, as with all governing body issues, there is a collective responsibility and although a small number of members may be key in providing ICT advice, that does not absolve all members from pursuing issues and ensuring that they are satisfied with the information provided. In extremis, inappropriate governor behaviour can lead to a major crisis - for example in 2012 a major research university in the USA was thrown into turmoil when a prominent governor (trustee) persuaded the board to undertake a major ICT initiative that was opposed by the university executive and academic staff.

1.23 So far as the structures by which a board considers ICT are concerned, there are four main approaches:

- Where a governing body committee deals with ICT, often with a broader responsibility for estates and infrastructure. The potential benefits of this are fairly clear in allowing more detailed scrutiny and providing a means of focusing the expertise of members. The potential downside is also clear: lengthening decision making; the dangers of committees straying from strategy into operations; and more generally the danger of removing strategic oversight from the main board where it belongs. For these reasons the trend is probably away from committee systems in many HEIs.
- Where a "lead governor" arrangement exists with an individual board member having delegated oversight for ICT. This approach applies to only a few HEIs and can be very effective. However it is crucial that the ICT lead governor has sufficient expertise and credibility with the director of ICT.
- Where the full governing body deals with ICT issues, usually as part of its overall strategic review arrangements.
- Where a time-limited working group is established by the board for the occasional major strategic issue concerning ICT, for example in relation to a substantial new project.

"I'm very much aware that the board looks to me for advice on IT issues - indeed that's why they asked me to join in the first place. But I have to be very careful how I play it, so I have resisted the request to become chair of the estates and infrastructure committee."

(EXTERNAL GOVERNOR WITH PROFESSIONAL IT BACKGROUND)

- 1.24 In addition, the audit committee will have a particular interest in: the robustness of ICT systems (especially concerning financial control); those aspects of ICT concerning data management and integrity; and, as in other areas, procurement and risk. In practice, the relationship between the committee and ICT service managers may be uncomfortable, with the latter concerned about the role of the audit committee for fear of the inevitable scrutiny, and committee members possibly feeling uncomfortable in dealing with ICT matters because of the technical jargon. This is unfortunate and the beneficial role of the audit committee should be clear to all.
- 1.25 For the board to be effective in this area, its relationship with the director of ICT services (or equivalent) needs to be informed and constructive (similar considerations apply to the head of library services). However, in practice, in many HEIs there may be no direct relationship, other perhaps than for occasional board discussions of ICT issues which the director of ICT may attend. Much will depend on the management structure of a particular HEI, for example there may be a direct reporting line from the director of ICT services to a chief operating officer (or equivalent) who does have a relationship with the board.
- 1.26 Nonetheless a governing body with an active interest will, from time to time, want to talk to the director of ICT services and regular briefings should be provided in some form. Governors can promote these open interactions by making their interest in ICT visible and the perspective of reputation and risk management may be useful here - it is clearly a piece of common ground for governors and service heads.
- 1.27 Relationships can also be developed less formally. For example, some HEIs invite governors on to groups to pep up thinking about ICT and they may also be invited to join "task and finish" groups on a specific issue where their particular skills may be valuable. Another approach is for the director of ICT to make a presentation to governors in a slightly less formal environment - perhaps the evening before a board meeting. Personal contacts between governors and heads of ICT are also useful, although always in the context of an HEI's protocols about engagement between the board and senior managers. Developing an effective working relationship also provides a helpful context for more challenging discussions where required and - suitably undertaken - there can be real value in a difficult question from a neutral governor.
- 1.28 Finally, a note on a potentially confusing term some governors might come across: so-called "information or IT governance". This is used quite widely by IT professionals but rather than just relating to governance it is typically used to cover all aspects of decision making, and so covers both management and governance, making little distinction between the two. As a concept it therefore sits uneasily with UK codes of governance (including the CUC code for HE) and could lead to the uninformed governor being involved in operational matters and crossing the management-governance divide. Where governors see this term they should take care in considering any good practice advice that is given.

Self-challenge questions

- How confident are you in your ability to contribute effectively to any governing body discussion on ICT matters?
- Does your governing body have the opportunity to discuss relevant ICT issues with the director of ICT services and/or the director of library services?
- How well does your governing body understand the ICT agenda facing your HEI?
- How much does your governing body take on trust in relation to ICT in your institution and what are the implications?
- How is ICT represented on the executive board of your HEI and does it understand the impact of ICT?
- What does the risk management system in your HEI say about risk in relation to ICT and what action has the board taken on the issues identified?

2 ICT AND TEACHING, LEARNING AND THE STUDENT EXPERIENCE

2.1 In reading this chapter governors may need to remind themselves of their responsibilities concerning students and educational provision. This is a complex area and practice varies between HEIs. Formally, governing body responsibilities are defined in at least two key sources: an HEI's governing instruments and the annual financial memorandum with the funding body. However, the four UK funding bodies vary in the exact wording of the memorandum. In post-1992 HEIs the instrument and articles of government give governing bodies an explicit responsibility for "determining educational character", but different arrangements apply in pre-1992 universities. For more details see the separate guide in this series on academic and student issues⁸.

SUGGESTED TASK

Before reading this chapter reflect for a few moments on what you actually know about the ways that students in your HEI use ICT and what assumptions you have

2.2 Over the last 20 years the importance of ICT in supporting learning, teaching and the student experience has hugely increased. As such, ICT has moved from a useful appendage of educational practice to becoming part of its central nervous system. Today's expectation is that students have to both engage in technology at some level in order to learn and be supported by it in all kinds of ways throughout their period of study and beyond. The National Union of Students has produced a charter for using technology in HEIs which some HEIs⁹ have adopted.

2.3 This growth of ICT has led to different kinds of developments in relation to learning and teaching:

- At undergraduate level most HEIs have adopted "blended learning" where a wide range of electronic content and support is integrated with more traditional forms of learning including lectures and small group discussions.
- The growth of wholly online programmes, mainly (in the UK) in vocational and professional subjects at postgraduate level and for continuing professional development. Typically students on such programmes will be more mature and, it is argued, better able to organise their own learning. There are no figures on the number of UK students undertaking such online courses but a 2012 study for Hefce reported approximately 400 online courses in more than 100 HEIs and partner providers.
- Some HEIs have moved to a modular curriculum structure with credit points per module completed. In such cases there may be a mixed portfolio combining blended learning modules with the occasional wholly online one.
- The broader provision of a wide range of electronic services to support learning and teaching for all students which goes beyond what happens in the classroom - real or virtual.

2.4 Before the dot com bubble burst there had been some extravagant projections about the future growth of wholly online learning, particularly in the USA. Although this has failed to take over the US HE system as some expected (and many feared!), nonetheless growth has been substantial, and in the USA nearly a third of all full-time and part-time students took one or more online courses in 2010. Such trends are

⁸ Middlehurst R, (2010), Getting to Grips with Academic Standards, Quality, and the Student Experience, LFHE-CUC at www.lfhe.ac.uk/g2p

⁹ www.nusconnect.org.uk/news/article/6010/2489

evident in other countries¹⁰ and global competition for students is intensifying through the use of online provision.

- 2.5 A recent development is the growth of “massive open online courses” (MOOCs), where content is available either from individual HEIs or through consortia¹¹. These started in the USA but in 2012 several UK universities announced that they were to offer them and more are likely to follow. Typically, MOOCs are free but with a fee (which may be modest) for a certificate of completion and/or for assessment. Most HEIs offering MOOCs are high status and are providing them either because they believe that their courses should be widely available, or as a branding exercise to maintain public reputation. For these reasons MOOCs are - at the moment - not thought to compete with mainstream provision but in future they may.
- 2.6 Such growth in ICT - and the ensuing diversity - raises competitive and reputational issues about the recruitment and retention of students. For example, in a 2012 study of more than 1000 prospective students to UK HE over half said that having access to computers and the latest software was one of the most important factors when choosing an HEI¹², and a student satisfaction rating of the availability of ICT resources is a part of the new key information sets (KIS) in England¹³. As a result, many HEIs have adopted schemes to ensure hardware and software are available to students, for example by providing laptops at favourable prices or by including them in the course fee.

The ways in which students use ICT

- 2.7 Students’ first experience of ICT in HE begins before their application, usually through looking at an HEI’s website or a social media site putting potential applicants in contact with current students to give a feel for life at that institution. The introduction of key information sets makes this first ICT contact even more important for HEIs and emphasises the need for effective information management to ensure that the data presented is accurate.
- 2.8 Once enrolled, students find that ICT is increasingly changing the ways in which teaching is typically delivered and how they are expected to learn. Traditionally (outside of Oxbridge) undergraduate teaching was almost wholly lecture based with some small group work but it has now generally moved from a class-based model to a much more blended approach where students make use of ICT for learning, coursework, revision and accessing electronic resources both within the HEI and across the entire internet.
- 2.9 There are two main kinds of electronic resources which directly support learning and teaching: those developed within individual HEIs by academic staff and those more generally available. So far as the former are concerned, in many HEIs there is a significant effort to develop new electronic materials. This was once the preserve of a small number of enthusiastic early-adopting academic staff but increasingly all staff are being required to engage with ICT. Accordingly, many HEIs have specialist

“My problem as a governor is that I don’t know enough about this stuff [ICT] even to ask serious questions about whether we should be investing more or less in technology or whether the students want what we are providing. Nor, I suspect, do most members of the management team.”

(EXTERNAL GOVERNOR WITH PRIVATE SECTOR)

“I predict that two early observations will be reinforced. First, online courses will be in great demand from students, both as their primary source of education and as a supplement to traditional courses... Second, while the gold standard of small in-person classes led by great instructors will remain, online courses will be shown to be an effective learning environment, especially in comparison with large lecture-style courses.”

(JOHN HENNESSY, PRESIDENT, STANFORD UNIVERSITY, THE WORLD UNIVERSITY RANKINGS, 4 OCTOBER 2012)

¹⁰ For a description of global developments in the provision of ICT for HE see Understanding Global Activity in Higher Education and Research, JISC, 2009, at www.jisc.ac.uk/publications/research/2009/globalactivityinhe

¹¹ For an example of a MOOC consortium see www.coursera.org

¹² See The Digital Campus Report, 2012, at http://press.adobe.com/cgi-bin/pr.cgi?show=content;rel_id=2147

¹³ The key information sets initiative requires substantial course data to be publicly available for prospective students, see www.keyinformationsets.com

SUGGESTED TASK

To get an appreciation for the availability of material to support learning and teaching, governors might look at that part of the Jisc website which lists all the electronic projects and programmes it has supported in UK HE - see www.jisc.ac.uk

“Online learning – however blended with on- or off-campus interactions, whether delivered in the UK or overseas – provides real opportunity for UK institutions to develop responsive, engaging and interactive provision which, if offered at scale, can deliver quality and cost-effectiveness and meet student demands for flexible learning.”

(REPORT OF THE UK ONLINE LEARNING TASKFORCE AT WWW.HEFCE.AC.UK/PUBS/YEAR/2011/2011101/#D.EN.63891)

support staff assisting in developing learning materials and providing staff training. However, the pace of change inevitably varies, so a student’s experience of online learning may differ from course to course.

- 2.10 In addition, there are almost limitless electronic resources available for students to draw on - indeed so many that finding appropriate ones can be a major challenge. A real problem for academics is that students stumble on all sorts of material through a naive Google search without having the judgement to discern between the valuable and the crank. In addition, HEIs are increasingly putting course materials openly available online, driven in part by the move towards encouraging open content. Perhaps the best known example of this is the initiative by MIT in the USA to make its materials available free for worldwide use through its open courseware programme¹⁴.
- 2.11 ICT has not just altered learning and teaching but has also resulted in a range of personalised information services for students, typically delivered through a portal or mobile app. These include information such as a timetabling changes, real time availability of services (such as free seats in computing rooms) and access to the personal student record. In addition, in many HEIs students now submit coursework online and can track its progress, receive feedback and marks and view their transcripts. There have been a number of innovative approaches to the provision of feedback to students including video commentary on submissions.
- 2.12 More informally, students make extensive use of social media for study, including collaborating with peers both at their own and at other HEIs. For example, group study discussions may occur through Facebook or similar or via chat services. Academic staff may also make use of social media for teaching, using sources such as Flickr or YouTube to hold course material.
- 2.13 Using social media can present challenges and, in extremis, injudicious use could lead to individuals being charged with criminal offences, with potential reputational harm to an HEI. The institution should provide both staff and students with guidance on its use and ensure that misuse is covered by the regulations for ICT use (see Chapter 7). There has been some resistance to HEIs communicating with their students via social media and it is important to establish guidelines on this.
- 2.14 In the UK the hub of online learning is the virtual learning environment (VLE). For students this is often the critical application run by an HEI and is the personalised portal through which students can gain access to the multiple services and information they need. Usage statistics show that, in many HEIs, the VLE is used 24 hours a day and a number of institutions have outsourced its operation to ensure such availability. VLEs have been around for some time but are only now beginning to reach maturity in how they are used. If governors haven’t seen one before, they might find it interesting to explore how the VLE in their own HEI works.

Off-campus ICT provision

- 2.15 The challenge in ensuring effective ICT provision to support learning and teaching is not just a matter of on-campus provision. There are at least three crucial off-campus aspects of which governors should be aware.

¹⁴ See <http://ocw.mit.edu/about>

- 2.16 The first is the students' need for access at a distance so that learning can take place anywhere away from the campus. To assist this many HEIs provide a virtual desktop allowing remote users to connect to institutional facilities as if they were on site. Other HEIs use cloud services which allow access both on and off campus. Of course, this assumes adequate off-campus broadband availability which cannot be guaranteed in some rural areas.
- 2.17 The second off-campus use is by partner institutions which provide a franchise (or similar) programme within the UK where students may need to use applications from the home HEI notwithstanding a different local ICT infrastructure being in place. Among the implications is the need to provide students with similar ICT provision irrespective of the partner, and there may also be implications for software licensing.
- 2.18 Finally, the most complex position (and for governors the one involving most reputational and legal risk) is overseas provision, either where students are studying programmes of UK HEIs online or where overseas partners or overseas campuses of UK HEIs are providing local ICT-based courses. An overseas campus will require a similar ICT infrastructure to the home HEI and internet connectivity may not be straightforward. There may also be restrictions placed on internet use by some governments (for example, access to Facebook is blocked in China). There may also be software licensing costs as the terms for UK-procured software are unlikely to permit use overseas.

Quality and plagiarism

- 2.19 Oversight of academic standards and quality is an important role of the governing body although in practice much of it is delegated to bodies (such as the senate or academic board) that are concerned with academic governance. Complex issues are raised here which are considered in more detail in the separate guide in this series on academic issues. Quality issues related to ICT are just one part of this broader role.
- 2.20 Views about the implications of ICT-based learning for quality and academic standards are mixed. Among ICT enthusiasts it is almost axiomatic that access to unlimited educational resources in appropriately designed programmes must enhance both quality and standards. For sceptics, the concern is not so much about the potential value of ICT as the way it might be used, with possible dangers being: an over-reliance on technology; ignoring the differing needs of students (see the quotation in the side box from a recent report for Hefce¹⁵); a possible reduction in academic staff contact time; an over-reliance on electronic communication between staff and students; using automated assessment because it might be cheaper rather than better; and the possibility of high drop-out rates on wholly online courses. All these potential dangers are not about ICT as such but about how HEIs adopt it and governors can play a valuable role by ensuring that robust quality assurance mechanisms remain in place.
- 2.21 A particular concern is the role of ICT in increasing plagiarism by students, and many HEIs now take measures to detect it in assessed work by using software to compare submitted work with other texts. While plagiarism in HE has always been opposed, this has not been the case in much of secondary education and so many students

"The needs and expectations of online distance learning students are distinctly different from traditional campus-based undergraduate students."

(HEFCE REPORT ON ONLINE LEARNING OCTOBER 2010)

¹⁵ Hefce, 2010, A Study of Online Learning, at www.hefce.ac.uk/media/hefce/content/pubs/2010/rd1710/rd17_10.pdf

come to HE unaware of the traditional conventions of HE about citing relevant work. Most HEIs have adopted policies on plagiarism¹⁶ and while governors do not need to know the details, they do need to know that such a policy exists and that it provides the necessary protection in the face of student complaints.

Issues for governors

- 2.22 Given that primary responsibility for academic governance lies with bodies such as an academic board or senate, the main issues for governors lie in a number of key areas:
- Ensuring that a realistic learning and teaching strategy fully referenced to ICT is in place and being implemented.
 - Receiving assurance that effective quality assurance arrangements exist in relation to ICT-based activities.
 - Being aware of student expectations in relation to ICT and ensuring that institutional practice meets them.
 - Adopting coherent financial strategies which ensure support and resources for delivering ICT (see Chapter 8).
 - Encouraging realistic institutional change management practices designed to implement the ICT strategic plan.

Note that these issues are not primarily technological and - assuming the existence of a suitable infrastructure - for governors are more to do with monitoring the implementation of agreed strategy.

- 2.23 For governors the starting point must be to have a basic understanding of the use of ICT in practice. A report by the Association of Governing Bodies (the American equivalent of CUC) concludes that: "governing boards would benefit by gaining a full picture of just how dependent education has become on technology and the extent to which students and faculty rely on technology every day". In other words, one cannot understand modern learning and teaching - still less govern it - unless a basic awareness of the use of ICT exists.

Self-challenge questions

- As a governor, how aware are you of the key challenges facing your HEI in the use of ICT for learning and teaching?
- Has the governing body approved ICT regulations for students and staff in areas that risk reputational or legal damage?
- Do the course and/or module approval mechanisms take account of the need to budget for ICT learning resources?
- Are effective mechanisms in place to ensure a coherent approach to how academic staff use ICT to enhance teaching?
- Is the governing body adequately informed to ensure that effective decisions are made on the deployment of ICT to support learning and teaching?

¹⁶ For more details on plagiarism see www.plagiarismadvice.org a website supported by Jisc to provide guidance to HEIs.

A GOVERNOR'S DILEMMA 1:

As a governor you keep hearing grumbles from students that academic departments and their staff are very inconsistent in the way they use ICT. At a governing body meeting about a year ago the president of the students' union complained that there was no standard practice across the institution and that such inconsistency was unfair on students.

The head of the institution commented that although academics were encouraged to make full use of ICT for teaching they were not compelled to do so. However, he agreed that the academic board should look at the issue again. At a subsequent governing body meeting you noted that a recent academic board had done so and decided to stay with the status quo of encouragement to make good use of ICT but no compulsion.

The student members of the governing body grumbled about this and you have some sympathy with them in that you don't understand why practice can't be consistent across the institution. You also fear that future National Student Survey ratings for ICT at the institution might be affected. What - if anything - should you do?

3 ICT AND RESEARCH

- 3.1 Much of the technology underpinning the business operations of an HEI will be familiar to governors and is similar to that found elsewhere. However, the ICT that supports research can be very different, may be complex and requires significant investment. Therefore it is important that governors have a basic awareness of research computing so they can get to grips with decision making about research investment and opportunities¹⁷. As much research is expensive and funding very competitive, many HEIs identify a risk in their strategic risk register along the lines of: “a lack of available research computing services could have a negative impact on future research funding, reputation and the recruitment of research staff”. This chapter provides a short briefing about the background to this risk and some of the challenges faced in addressing it.
- 3.2 Research computing can be broken down into four broad areas:
- Generic support for researchers*: this is part of mainstream ICT services and consequently is not covered in this chapter, except to mention that researchers who have their own IT needs or preferences might cause support headaches for a central IT service provider (for example, a research team that uses Apple Macs when the standard provision is Microsoft Windows-based).
 - Provision of specialist applications*: much research requires specialist software to provide specific functionality (such as statistical analysis and mathematical modelling¹⁸); or to support appliances and specialist equipment running in laboratories; or to allow researchers to develop their own applications. In addition, researchers may create, use or modify specific datasets¹⁹. Some of these are in the public domain, others have to be procured (and might come with licensing restrictions). The costs of such applications and datasets can range from a few hundred pounds to many thousands of pounds.
 - Computationally intensive research*: also called high-performance computing (HPC) or supercomputing, this is the most complex and potentially the most expensive area of research computing. At one time associated with the sciences, medicine and engineering, HPC now plays an important part in humanities and social science research. Much of the content of the rest of this chapter attempts to explain some of the jargon, to look at some of the shared resources available and to set out some of the challenges of which governors need to be aware.
 - Research administration*: these are the ICT systems that support the business of research itself. They are described below and some approaches summarised.

Computation-intensive research and high-performance computing

- 3.3 A high-performance computer (HPC) or supercomputer is designed to process huge amounts of digital data as quickly as possible. They are typically at the forefront of computing technology, being used for highly calculation-intensive tasks to solve complex problems including quantum physics, weather forecasting, climate research, oil and gas exploration, molecular modelling, genome sequence analysis and so on.

¹⁷ The broader role of the governing body in relation to research and knowledge transfer is set out in a companion volume in this series: Schofield A (2010), *Getting to Grips with Research and Knowledge Transfer*, LFHE-CUC at www.lfhe.ac.uk/g2g

¹⁸ Good examples are Wolfram Mathematica (www.wolfram.com) and SPSS from IBM (www-01.ibm.com/software/analytics/spss).

¹⁹ An example is the UK Data Archive, housing the largest collection of digital data in the social sciences and humanities in the UK. See www.data-archive.ac.uk

The UK Science and Technology Facilities Council's high-performance computer located at the Daresbury Laboratory is the 13th most powerful supercomputer in the world²⁰.

3.4 Developed primarily by Cray in the 1970s, supercomputers used to be large machines with just a single processor. Now they are built from thousands or even tens of thousands of off-the-shelf processors, linked in parallel. These systems are generally combined in one of two types of cluster, both of which are found in HE research environments:

- A cluster of processors (or nodes) linked by a fast network with some common storage in the same place.
- A grid made of a number of clusters whose resources are shared over a network. JANET (the UK's academic and research network - see Annex A) allows such grids to be connected by high-speed data networks, even if nodes are many miles apart²¹. Grid computing provides greater processing power and maximum efficiency, as different users can take advantage of computing power when it is available. However, this does mean that resource allocation can be a problem and needs appropriate management.

Governors may see reference to the digital capacity of such clusters measured in terms of multiples of computer memory, such as gigabytes, terabytes (1000 gigabytes), petabytes, exabytes and upwards.

3.5 With the growth of grid-based computing systems, the ability to aggregate computing power and share the investment and operational costs has seen the development of a number of regional HPC/grid computing resources or eScience Centres located at research facilities around the UK²². In addition, the UK's National Grid Service (funded by Jisc and the Engineering and Physical Sciences Research Council) aims to facilitate UK research by providing access to a broad range of computational and data resources ensuring that UK researchers can use computing facilities across the globe through partnerships with infrastructures in Europe, the USA and elsewhere²³.

3.6 Another important resource is HECToR, the UK's high-end computing facility, funded by the UK research councils. It provides a world-class supercomputer (ranked the 32nd most powerful in the world in June 2012). There are a number of European initiatives supporting HPC of which perhaps the two most significant are the Distributed European Infrastructure for Supercomputing Applications (DEISA), Extreme Computing Initiative²⁴ and the Partnership for Advanced Computing in Europe (PRACE)²⁵. The UK's HECToR is a member of PRACE.

ICT supporting the business of research

3.7 HEIs need to manage information about their research in order to inform strategic decision making and to report to external stakeholders such as funding councils and research funders. To provide this, HEIs typically have in place a range of ICT-based

²⁰ From the top 500 list of supercomputers at www.top500.org

²¹ For details of JANET see www.ja.net

²² Image from www.nesc.ac.uk/centres

²³ See www.ngs.ac.uk

²⁴ See www.deisa.eu/science/dec

²⁵ See www.prace-ri.eu

processes, including: customer relationship management systems; research proposal management systems; project costing and financial management systems; post-award management systems; workflow and research project management systems; and so on.

- 3.8 The information that these systems generate and which may be relevant to a governing body includes:
- Analysing the success rates of research bids (so that resources and support can be appropriately targeted).
 - The administration and auditing of research expenditure to ensure financial control of externally funded projects.
 - Submissions to the Research Excellence Framework (REF) and other statistical returns (for example to the Higher Education Statistics Agency and many others).
 - Providing data for the research costing, bidding and management processes.
 - As open access becomes more important, ensuring that outputs from funded projects are published in open access journals or are available through institutional repositories.
- 3.9 One of the main challenges in this area is to enable ICT systems to work together to meet reporting requirements and all the main research funding bodies are supporting work to help HEIs better manage research information. In England Hefce has funded a shared service project creating a Research Management and Administration System (RMAS)²⁶ - a collaborative venture that includes a procurement framework containing “best of breed” systems for the research management process. This should substantially reduce costs and the HEIs involved claim that savings of around £75,000 a year for a medium sized HEI for each RMAS module can be achieved.

Challenges associated with research computing

- 3.10 Given this context, governors will realise that many challenges arise from such a broad and complex area. A few of the major ones are summarised below and may help explain why research computing can be extremely expensive.
- 3.11 *Dealing with big data:* The term “big data” has been coined to describe datasets that have grown so large that they are beyond the capability of commonly used software tools and systems to capture, manage and process within a tolerable time period. The volume of data (whether truly “big” or not) being produced is growing exponentially. To take just one example: the amount of data relating to climate change research is due to grow from 10,000 terabytes today to 350,000 terabytes by 2030²⁷.
- 3.12 Such data is not just of electronic origin. Handwritten notes, photographs and images are being digitised and voice and other audio content is being catalogued. How will all this data be stored, processed and made available? How will electronic data be preserved so that it is always accessible and in formats that survive the advances of technology?

²⁶ www.rmas.ac.uk

²⁷ Source: Dr Tim Osborne, UEA, speaking at the Jisc Research Integrity Conference in September 2011, www.jisc.ac.uk/jiscres11

- 3.13 *Data accessibility*: There is a general commitment to make data available on an open access basis. Examples include:
- The research councils have begun to enforce research data management policies, with the expectation that publicly funded research output will be in the public domain²⁸.
 - The Research Excellence Framework includes an assessment of research impact.
 - HEIs are increasingly making more data available through institutional repositories.
 - The number of open journals where research can be made freely available is also increasing.
- 3.14 Such developments present a number of challenges for HEIs: how will this data be made accessible? Who needs access? How will access be controlled (to comply with legislation and to protect sensitive data)? How will data be shared? Who owns the data? Should it stay with the parent institution or be placed in an external repository? Ultimately governors will have to agree a policy on such issues for their own HEI.
- 3.15 *Should high-performance computing be carried out in-house or outsourced?* Unless an HEI is already a host node for one of the regional or national HPC clusters/grids, this is a question that needs to be asked. Smaller HEIs are unlikely to have the resources or expertise to support a complex HPC system, despite some academic researchers “selling their skills”. Such procurement can be costly and lengthy and may fall under EU procurement legislation. Even if capital funding is available, the recurrent cost of maintaining such a facility should not be underestimated (power and cooling costs alone can run into £100,000s a year). Therefore, HEIs may wish to join one of the regional or national services or partner with others. Accordingly, a governing body will need to carefully consider the return on investment that HPC might realise (or not) in their institution.
- 3.16 *Research has always been collaborative but technology makes that much easier*: While research collaboration has become easier, new risks have been introduced. Some researchers routinely use cloud-based storage such as Dropbox and Microsoft’s Skydrive to store and share data, making it accessible from pretty much anywhere. But is the data safe and secure? Is it held legally? How does the institution gain access, particularly if a researcher leaves? (See Chapter 7 for more detail.)

The implications for governors

- 3.17 The implications for governors of the use of ICT for research are inevitably closely linked with their more general responsibilities for research as a whole. The companion guide in this series on research and knowledge transfer summarises these as:
- The approval and monitoring of the research strategy.
 - Measuring institutional research performance against agreed strategic plans.
 - Overseeing effective research governance.
 - Proactively monitoring risks in relation to research, including - but not limited to - reputational and financial ones.

²⁸ www.rcuk.ac.uk/research/Pages/outputs

3.18 Aspects of ICT fall within each of these overall responsibilities, but given the competitiveness of research funding and the ever increasing emphasis on the effective financial management of research, perhaps the most important function is to ensure a sense of realism in the provision and funding of the overall infrastructure (including ICT) which is required for research.

Self-challenge questions

- What are the main ICT risks in your HEI in relation to research?
- How confident are you that the ICT systems supporting research enable the governing body to assess the effectiveness of the research strategy?
- Has any major investment made by your institution in high-performance computing resource paid off? How do you know?
- If your HEI has ICT-intensive resources used for research, how are they funded? Are these provided in-house or by using shared or other services and what are the associated risks?
- Does your institution have a research data management policy and what assurance does your governing body receive that it is being implemented?

A GOVERNOR'S DILEMMA 2:

Your HEI is in the fortunate position of having substantial financial reserves, and a commitment to enhancing its research profile. As a governor, you receive the papers for the next meeting of the governing body and a business case is included for your consideration, as the proposed spend is above the limit that can be authorised without board approval. The case has been made by a high-profile research group. They want to establish a local centre of excellence and cite the benefits that a high performing computer centre might bring: increased research output; selling the service as a managed facility to other HEIs and even private organisations; and acting world-class researchers to boost the reputation and ultimately the research ranking of the institution.

What factors will influence your decision and do you agree to contribute funding to the proposal?

4 ICT AND MANAGEMENT AND ADMINISTRATION

- 4.1 ICT has changed the way that HEIs are managed and run and this chapter summarises three main aspects of this in terms of what governors need to know: how ICT systems support business processes including issues relevant to procurement; data management and information security; and using ICT for management information and regulatory returns.
- 4.2 In all these areas there is increasing interest in adopting shared services, based on the argument that many business processes appear to be similar throughout HE (see Chapter 8). However, to date collaboration between HEIs over business ICT systems has met with varying degrees of success and governors should not assume that specifying and implementing shared administrative ICT will be easy.

Business processes and ICT systems

- 4.3 Many ICT systems supporting management and administrative (or business) processes are the standard ones to be found in all medium to large organisations, such as finance, audit, HR and estates²⁹. In these areas most of the systems used by HEIs are widely used across all sectors. The main exceptions are the crucial areas of student administration and, to a lesser extent, research administration, which are largely unique to HE (and FE insofar as student systems are concerned). In these education-specific areas, many early ICT systems were developed in-house but, as more vendors have entered the marketplace, almost all HEIs now use commercial systems for student administration although often with some adaptation.
- 4.4 All such ICT systems are expensive to acquire and a governing body should have the opportunity not only to approve a major ICT procurement recommendation from management but also to be involved at an early stage in considering the business case for procurement. However, major ICT systems are purchased only occasionally and many governors will not have been involved before and need to be clear about their role. The challenges of procuring and implementing new ICT systems should not be underestimated and ICT failures in all types of organisations are common, usually occurring because of inadequate design, preparation or implementation. Governors may not be able to comment on the technology (and generally should not do so) but they can ensure that management is on top of the implementation processes. The main lessons are: be prepared; take advice from qualified professionals and advisors; ensure that management puts the necessary resource into systems design and implementation; and - perhaps - retain a little constructive scepticism about the extent to which the claimed benefits will be realised.
- 4.5 In considering the case for new ICT to support business processes, there are two key issues that governors will need to take advice on: the type of ICT system to procure; and how business processes need to be changed to accommodate a new ICT system. So far as the type of system is concerned the main approaches are:
- A “best of breed” procurement for a particular aspect of an HEI’s business (eg finance), rather than seeking a single system that covers a wider range of business processes.

SUGGESTED TASK

As a governor spend a few moments thinking about how much you know about the way that ICT supports the management and administration of your HEI and how much assurance you receive about its effectiveness.

²⁹ More details about many of the aspects of using ICT for management and administration can be found at www.jiscinfonet.ac.uk

“Although we [the governing body] had to approve the purchase of the new student record system there was no real debate. No one knew enough about it to ask any sensible questions, other than had the procurement been undertaken properly.”

(EXTERNAL GOVERNOR WITH PRIVATE SECTOR EXPERIENCE)

- Procuring an “enterprise resource planning system” (ERP) which comprises a suite of integrated applications to support multiple business functions.
 - Using commercial vendors to provide a managed service for applications.
- 4.6 There are pros and cons to each. The best of breed approach typically has a lower cost in terms of initial outlay but there are likely to be ongoing costs to ensure that the various ICT systems are well integrated. This approach can accommodate in-house bespoke applications that have evolved to meet specific requirements but it may require substantial ongoing maintenance (for example to meet changes in statutory requirements) and is slowly going out of favour. Nonetheless it is still used by many HEIs, particularly for specific applications (for example student records or postgraduate admissions) which have then been integrated with other systems. However, shared ICT services are probably most difficult to adopt using this approach.
- 4.7 Conversely an ERP system requires less in-house integration since most of the main business applications are included within the single suite of programmes. However, this can be an initially expensive option and for large HEIs costs may easily run into millions of pounds. Those who favour such systems point to lower staff implementation costs.
- 4.8 The use of commercial vendors to provide a managed service has the benefit that upgrades and patch applications are managed by the provider to an agreed schedule, determined - in part - by a service level agreement between the supplier and the HEI. The primary driver to move to a managed service may be not only cost but overcoming skill shortages within an HEI or improving system resilience. There are a number of issues that should be considered when outsourcing such services to an external provider and many are highlighted in a UCISA briefing paper on cloud computing³⁰.
- 4.9 The second main decision facing an HEI is whether to acquire new ICT systems to support current administrative and business practices or whether to use new ICT systems to change the way that administrative processes work. In other sectors the latter view has become increasingly dominant - as customers we can all recognise the benefits that have resulted in the retail world as well as the numerous frustrations! HE has been much more cautious, particularly in academic departments which have a culture of wanting to do things in their own way. Nonetheless the trend is in the direction of acquiring ICT systems to enable HEIs to change business practices, for example in many HEIs much student enrolment now takes place online thus avoiding long and tedious queues.
- 4.10 One challenge for HEIs in using ICT in this way is the high level of devolved responsibility for data entry and maintenance. In many HEIs, academic departments effectively act as individual business units and have some responsibility for maintaining financial, personnel and student data. However, because ICT systems support different business processes, data accuracy is crucial as it is often required for more than one application and hence is held in more than one ICT system.

For example, student data will obviously be held in the student records system but will also be in the finance system, the library management system, the VLE (see Chapter 2) and so on. This requires all the main ICT systems to be integrated to allow for efficient data flow, ideally with a single - and secure - point of data entry.

Data management and information security

- 4.11 The use of all forms of ICT raises important issues of data management and information security, particularly in relation to core business processes. The Data Protection Act (see Chapter 7) provides the main legal reference point and the dependency of HEIs on ICT is such that governing bodies need confidence that effective information security arrangements are in place. The consequences of failure can be dramatic and there are several examples of institutional reputations being undermined as a result. Of course, information security is one element of the overall resilience of ICT systems to be considered as part of a business continuity and disaster recovery strategy. (See the separate guide in this series on Getting to Grips With Risk³¹.)
- 4.12 Given the high levels of devolution in most HEIs, maintaining information security can be a challenge and breaches may arise as a result of staff having little or no understanding of the need to keep information secure. This places a great emphasis on the need for advice and training covering all aspects of information security for staff who process personal data. In particular, academics need to understand and adhere to information security principles as they may hold sensitive personal data as part of their research.
- 4.13 Consequently an HEI needs information security policies (approved by the governing body) that identify good practice and clear accountabilities for data management and control. One aspect of this is the need to take into account the growing trend for home working and the increasing use of personal devices to access institutional systems. Such policies need to ensure that data is secure on any portable device, whether it is an institutionally provided laptop, a memory stick or a smart phone. The policy also needs to ensure that staff are aware of their responsibilities when accessing personal data from a remote system.
- 4.14 There is an international standard for information security (ISO 27000) but this applies a one size fits all approach and, in practice, it is unlikely that a standard level of security needs to be applied to all systems where personal data is held. A more pragmatic and risk-based approach is usually adopted in HEIs, where the level of security is proportional to the likelihood and consequences of a system being compromised.
- 4.15 UCISA has produced a toolkit on information security³² that includes template policies which adhere to the principles of ISO 27000 and which is used by many HEIs. Governors do not need to know the details but should seek assurance that effective arrangements are in place that take account of recognised good practice in the HE sector.

³¹ Summers E and Boothroyd K, (2009), Getting to Grips with Risk, LFHE-CUC at www.lfhe.ac.uk/g2g

³² www.ucisa.ac.uk/IST

Using ICT to support management information and regulatory returns

- 4.16 The application of ICT is of direct concern to governors in producing a wide range of management information, including that which is the basis for regulatory returns. An HEI is required to submit and/or publish a substantial range of data for various regulatory, statutory and professional bodies; a study carried out by the Higher Education Better Regulation Group identified over 500 different returns made by the sector³³. About a third of these were required by funding bodies or were statutory reports required by law. A number (in particular the returns made to the Higher Education Statistics Agency) are used to produce league tables of HEIs. More recently the UK Border Agency (UKBA) has introduced its own requirements for data returns to monitor international students. The need for accurate reporting - and therefore reliable management information systems - is critical. For example, inaccurate reporting led to a number of HEIs being fined by Hefce for incorrectly reporting their student numbers³⁴.
- 4.17 A governing body needs to have confidence in the accuracy of these returns and, although the audit committee will have responsibility for validating the processes of data collection, management accountability rests with the head of institution. The timing of many returns is such that they are compiled some time after the data has been gathered and validation can be time consuming and expensive. A number of HEIs have sought to reduce this cost for their student data by carrying out extensive validation exercises closer to the time of data collection. One approach adopted for staff data is to carry out a regular (annual) audit where individuals are asked to check and, where appropriate, update their own records.
- 4.18 A recent development in producing such information is the requirement for HEIs in some parts of the UK to produce key information sets³⁵ containing information on individual courses for applicants. This has highlighted the need for HEIs to be able to standardise aspects of the information they hold.
- 4.19 Internally, the data held on administrative ICT systems will be used for measuring the institution's performance through a number of defined key performance indicators (KPIs)³⁶ and for making business decisions and planning. It is, of course, imperative that a governing body is clear about its own information needs in this context.

Self-challenge questions

- As a governor, what information do you receive to provide assurance that your HEI has effective ICT systems in place to support management and administration?
- Does your HEI have effective systems in place to ensure that management information data is accurate and timely, and that there is confidence in the content of regulatory and statutory returns?
- Does your governing body regularly receive reports which review key business processes to ensure that they are running efficiently, deliver a good service to users, and make the best use of the available resources?

³³ www.hebetterregulation.ac.uk/OurWork/Documents/HEBRG_PSRB%20report_FINAL.pdf

³⁴ www.hefce.ac.uk/news/newsarchive/2009/hefcesdealingswithlondonmetropolitanuniversitylmu

³⁵ www.hefce.ac.uk/whatwedo/it/publicinfo/kis

³⁶ For more information on the use of KPIs and strategic planning in HEIs see Schofield A, (2012), Getting to Grips with Being a New Governor, LFHE at www.lfhe.ac.uk/g2g

- Are any major changes in ICT systems to support management and administration planned in the near future that might involve the governing body and, if so, are you confident in the proposals?

A GOVERNOR'S DILEMMA 3:

The fairly large HEI of which you are a governor has a devolved structure with faculties having an important role in key aspects of student administration, including in relation to admissions and maintaining part of the student record. Over the past couple of years you have become slightly concerned about the ICT system for student administration, for example on at least two occasions the governing body could not be given up-to-date student enrolment numbers because of (unspecified) problems with the system. You have also heard the occasional remark from some senior managers about the system not being 'fit for purpose', with comments like 'clunky', 'it doesn't give the information we need', and so on.

You recognise that it is not your role to get involved in operational issues, but you can't help wondering if all is well and if management shouldn't be taking the issue more seriously. Certainly nothing about it has come formally to the governing body. Given the ever more competitive environment for recruiting good students and then ensuring student satisfaction, you are wondering what - if anything - you should do.

What is your answer?

5 ICT AND LIBRARIES

- 5.1 Academic libraries have undergone a revolution in the last two decades. The traditional notion of the library as a vast repository for books and journals, with study spaces where people work in total silence, has changed. While access to information and study environments is still at the core of its business, the library these days is much more - in large part due to the transformational advances in ICT.
- 5.2 Governors need to understand these changes if they are to be able to oversee governance in this area and this chapter provides an overview of academic libraries with specific reference to ICT. It looks at: the role of the library in the 21st century; the student experience; enabling access to information; supporting research; financial issues; and future trends.
- 5.3 The library is one of the largest central resources in an HEI and it exists to support its entire academic community. It represents significant financial investment and needs to be accountable. Typically this is exercised by the head of library services who generally reports to a member of the senior management team. Mechanisms for making decisions on library services and new investments vary. Traditionally many HEIs had a library committee (with representation from across the institution) but these have tended to fall out of favour. Other HEIs may operate through teaching and learning or similar committees. User groups are also common.
- 5.4 Operationally, libraries tend to have excellent relationships with their academic community and many have staff in liaison roles specifically to work with academics in areas such as collection development and information skills. The relationship between the library and the ICT service is also critical, as the library depends on a high quality ICT infrastructure, with new developments inevitably requiring dialogue between library and ICT professionals. While much of this communication may be informal, it is helpful to have more formal mechanisms in place to ensure a common understanding of requirements.

SUGGESTED TASK

Have you visited the library in the HEI of which you are a governor and/or had a discussion with the head of library services to understand what the library does? If not why not arrange a visit?

The role of the library in the 21st century

- 5.5 Libraries reflect the mission of their HEI and accordingly vary in nature and size, from large research-intensive university libraries with several million printed books and manuscripts, to smaller specialist libraries. However, common threads are neatly summarised in the SCONUL³⁷ strategy: the library “provides a set of important interconnected functions: a space for quiet concentration or collective study, a source of expert support (for example on digital and information literacy) and access to the world’s knowledge. The quality of the library service and facilities contribute to an institution’s reputation, featuring in student satisfaction surveys, contributing to league tables, and forming part of the research environment”. However, librarians are not simply custodians of information. They play an active role in advising, supporting and developing the skills of users. Information literacy skills (ie those necessary to locate, evaluate and manage information) are recognised as core to successful study and librarians now routinely teach these skills, often in partnership with academic staff.

- 5.6 Just as there is a variation in the nature and size of libraries, there are also different practices when it comes to what they are called. Typical terms include: university library, learning centre, learning resource centre, library and information centre, computing and library centre and information commons. In this chapter, the term “library” is used throughout.
- 5.7 A number of factors have shaped the academic library of today. The first is that changes in teaching and learning practices require different types of learning space. As well as individual study places, facilities are needed for group discussion and project work with access to books, electronic journals, computer hardware, software, multimedia materials and expert advice. Developments range from iconic new buildings to inspiring refurbishments of 1970s space. As a result, the number of students using libraries has risen and evidence suggests that high quality library space has a positive effect on the student experience.
- 5.8 The second factor is that the growth of electronic publishing has resulted in an information explosion. It is estimated that two million journal articles are published each year, mostly electronically. The number of books available in digital format (e-books) continues to rise, and most HEIs now have a digital repository in which they store research outputs. All this adds up to an enormous quantity of information and it is the library’s role to provide access to it and to make sense of it for its users.
- 5.9 The third change factor is that new organisational structures have been introduced merging academic support departments³⁸. Convergence of library and ICT services has been common and although there have been instances of de-convergence there is general agreement on the need for libraries and ICT services to work together to exploit information technology. The most recent development in academic support structures has been termed “super-convergence”, and is student-led, bringing together a mixture of library, ICT and student services such as welfare, careers, study skills and student finance.

The student experience

- 5.10 A typical HEI library will have significant ICT provision, including: a large number of fixed wired computers; wi-fi throughout the building; provision for laptops and other mobile devices; printing, copying and scanning facilities; front line ICT support, provided physically from a helpdesk, or by phone, email or even through a chat service. Outsourced service provision now makes this possible 24 hours a day.
- 5.11 Libraries have often been at the forefront of developing a student-centred approach to support, as evidenced by the number holding national standards such as Customer Service Excellence³⁹. Student satisfaction with library services is assessed by the National Student Survey, as is general ICT provision. There is a strong link between the two in students’ minds. For example, if computer login times are slow or the printers do not work efficiently, a student’s view of the library will be adversely affected.

“Libraries pioneered networking. They have developed robust frameworks for resource sharing and cooperative cataloguing, leveraged publisher and aggregator platforms to deliver electronic collections, and created vibrant consortia and groups that share services across regions and countries. Significant network advantages have been achieved, but the full potential of what library networks can deliver has yet to be realised.”

(OCLC, 2011, LIBRARIES AT WEBSCALE, PAGE 19 AT WWW.OCLC.ORG)

“As part of my induction [on being a new governor] I was taken on a tour of the library. What struck me most was the noise! It seemed more like a coffee bar than a place to study in peace and quiet.”

(EXTERNAL GOVERNOR)

³⁸ For a review of developments in integrated support services see G Bulpitt (ed), (2012), Leading the student experience: super-convergence of organization, structure and business processes, LFHE, In Practice 30, at www.lfhe.ac.uk/engage

³⁹ Customer Service Excellence is the government standard for customer service in the public sector. See www.customerserviceexcellence.uk.com

"Of course I use the library all the time, but I can't remember when I actually set foot in it!"

(AN ACADEMIC GOVERNOR ELECTED BY THE SENATE)

5.12 Increasingly the library's role in brokering and managing access to scholarly information is undertaken electronically, meaning it is no longer necessary to visit the library physically. Particularly in science, technology and medicine most library use is now electronic and search services have also been transformed through web-scale discovery services, providing Google-type interfaces to review the millions of items available. There is a paradox here: a "good" physical library environment enhances student satisfaction even if some students almost never visit it!

5.13 A long-standing challenge for academic libraries has been to give users access to material at the point of need - often just before a student assignment is due! It is not feasible for a library to stock an essential text for each student and despite various mechanisms such as short loan collections and reference-only copies, this has often been a source of complaint by students. However, technology has come to the rescue in two main ways:

- E-books are increasingly available, although copyright and licensing issues mean libraries are a long way from having electronic versions of all academic texts.
- Reading list software (in conjunction with policies requiring the provision of reading lists by academics) means that it is possible to provide students with up-to-date reading lists. Subject to copyright and licence compliance (a major issue), direct links from reference lists can be made to an electronic version of the text. A student can therefore access core reading materials at any time and such a service is a good example of collaboration between librarians, ICT professionals and academic staff.

Supporting research

5.14 A fundamental role of the academic library is to support research by providing access to the information that forms the building blocks for research activity and ICT provides the technical infrastructure for much of this. Besides enabling access to e-journals, databases and the many other sources of information previously noted, there are three other areas in which libraries play a key role in supporting research:

- Archives and special collections: many HEIs have collections of national and international importance, ranging from manuscripts and rare books through to photographs and sound recordings. Public funding is increasing access to these collections through digitisation.
- Institutional repositories: these are managed by the library and embody an open access ethos, ie making research outputs available online to everyone, not just those whose libraries can afford the cost of journal subscriptions.
- Research skills development: librarians are increasingly involved in developing the skills of researchers, particularly in information retrieval and bibliographic citation. In the future it is possible that librarians will take on a data curation role and assist with research data management.

Financial issues

5.15 In the last ten years there has been a massive capital investment in library space across the HE sector, together with innovative designs providing the combination of space and technology that is now essential to 21st century study. Total library expenditure of all UK SCONUL members is in excess of £700m a year (at 2011-12), and a Russell Group university will typically spend between £8m and £15m a year, others less. Whatever the total spend, as a proportion of institutional expenditure the library will account for between 2% and 3% - a substantial sum.

- 5.16 As a generalisation, between 40% and 50% of a library's annual budget may be spent on staffing and between 35% and 40% on the provision of information resources, with this latter figure exceeding £1m a year in over 100 HEIs and £2m a year in over 50.
- 5.17 A long-standing issue for librarians (and indirectly for the governing body) is the cost of journal subscriptions. Some publishers have consistently raised the costs above the rate of inflation and, given that around 60% of a library's total information resources budget may be spent on journals, this has dire consequences for the sustainability of library collections. As journal costs increase, a librarian's choices are limited: to cancel subscriptions, to reduce the expenditure on books and risk having insufficient copies or subject coverage, or to seek additional funds from the institution. This is a complex area, as publishers typically sell electronic journals in bundles which, while more expensive, may offer much more favourable terms than purchasing on a one-off basis. The costs of cataloguing may also be built into the subscription.
- 5.18 Fortunately, national negotiations are starting to take effect and price rises of key journals are starting to be contained. Efficiency savings can be made through membership of various purchasing consortia, of which the most widely used is J C Collections, established by the UK HE and FE funding bodies to support the procurement of digital content. Regional procurement consortia also exist, which negotiate on book prices and journal supply through subscription agents.
- 5.19 An important financial issue relevant to governors in many research-intensive universities is the cost of storage of hard copy items, the demand for which has grown notwithstanding electronic publishing. These may be very little (or almost never) used items but need to be held in case of future usage or to maintain collection integrity. To try to reduce storage costs a collaborative scheme (the UK Research Reserve⁴⁰) has been established under the auspices of the British Library so that HEIs can remove items from storage in the knowledge that, if required, a duplicate can be obtained from the UKRR. Substantial sector-wide savings in storage costs are planned.

Future trends in libraries

- 5.20 Rapid developments in ICT are likely to continue to have major implications for the academic library and governors will need to keep in touch with them if they are to understand library strategy. Indeed, in the USA a few people have even suggested a future with a wholly electronic library and almost no traditional hard copy books. At undergraduate levels this might be possible for some subjects; increasingly in practice many students rarely set foot in the library. However, in the UK the wholly electronic library is unlikely in public HEIs (at least for a few years) because of its wide range of uses at both undergraduate and postgraduate levels. Conversely, some of the new private providers of HE may well operate mainly virtual libraries to reduce costs.
- 5.21 Nonetheless, a number of trends are evident. The first is that scholarly publishing is changing. The open access movement is gaining momentum with more publishing likely in open access journals and less in subscription journals. Although eventually this should mean reduced subscription costs, in reality much of the budget will need to be diverted to pay for the mechanisms by which open access articles would be submitted, peer reviewed and published in a structured form. As more journals

⁴⁰ See www.ukrr.ac.uk

become open access, the role of institutional repositories may also change, focusing more on other types of material, such as conference proceedings and reports.

- 5.22 The second trend concerns the role of the library in supporting greater digital literacy. Librarians have for many years taught and supported the development of information literacy skills in students and now there is the need to combine ICT skills with information literacy skills, to create digitally literate graduates. Librarians, ICT support staff, e-learning technicians and academics all have a role to play. Without such digital literacy many of the potential benefits of ICT for future library use cannot be realised.
- 5.23 The third trend for governors to look out for concerns shared services. Libraries have a long history of collaboration (exemplified by the SCONUL Access scheme which enables access to member libraries by students and staff at other institutions and by the British Library's document supply service). Some academic libraries now share space and services with their public library counterparts. New initiatives are in progress, for example in licence management, and it is likely that interest in shared services will continue, despite the increasing competition between HEIs.
- 5.24 Finally, libraries will have to stay alert to the implications of the numerous technological developments described in the rest of this publication. To take just one of many examples: given that mobile technologies are a fact of life, students increasingly expect to be able to access all the information they require via a mobile device and therefore new platforms will need to be developed for delivering library resources and services. It is for such reasons that HEIs need to be clear about their vision for the future of their library and what that implies for governance.

Self-challenge questions

- How does your library compare with the National Student Survey benchmark and what are the implications?
- How do you know if the library is delivering what staff/students want?
- Has your governing body seen and approved the library strategy and what KPIs are used to monitor its performance?
- What is your library's vision for its future and has the governing body considered the resource implications of achieving it?

6 INFORMATION STRATEGIES AND MAJOR PROJECTS

- 6.1 Although governors will be familiar with strategies in other areas, the rationale for information or ICT strategies may be less clear. Why is one needed? What should it contain? What is the role of the governing body? There is no “right” way of writing an ICT strategy and the funding councils do not require one. In fact, the rationale is straightforward: an HEI’s dependency on ICT, the costs involved, and its importance for student satisfaction all mean that there are ICT policy and risk issues requiring board involvement.
- 6.2 In theory this should be straightforward and just part of overall strategic planning: identifying needs; setting objectives; integrating with the financial plan to ensure sustainability; modelling available options; undertaking risk analysis; monitoring implementation; and reviewing subsequent performance management. In reality this may be more easily said than done and the 2011 UCISA top concerns survey⁴¹ notes a shared worry among the directors of ICT services that ICT strategies still tend to be developed in isolation.
- 6.3 It also needs to be recognised that strategic engagement with ICT does not always feature in the work of governors. This can be because of the pressures of other business, the perceived complexity of the topic, or merely a complacent board, but the risks of a governing body not focusing on ICT strategy become ever greater. Therefore the question needs to be asked: is there a board level “ICT attention deficit”?
- 6.4 As Chapter 5 in *Getting to Grips With Being a New Governor*⁴² in this series sets out the overall strategic role of the governing body, generic issues such as monitoring performance, the use of KPIs and relationships with the senior management team are not considered here⁴³. Rather the focus below is on issues that are specific to ICT strategy.

Governing body involvement in ICT strategy

- 6.5 The CUC Code of Governance notes the role of the governing body in relation to institutional strategy: “approving the mission and strategic vision of the institution, long term business plans, KPIs and annual budgets and ensuring that these meet the interests of stakeholders”⁴⁴. This applies as much to ICT as anything else, but what does it mean in practice?
- 6.6 A governing body will want enough time to debate both a draft ICT strategy and the key assumptions underpinning it. It will also want to be assured that the strategy is based on an evaluation of its predecessor, if any, and that it represents the outcome of a process involving a conventional top down/ bottom up/top down iteration. This is an obvious way of ensuring an appropriate level of stakeholder consultation.

⁴¹ See www.ucisa.ac.uk/tcs

⁴² Schofield A, 2012, *Getting to Grips With Being a New Governor*, LFHE at www.lfhe.ac.uk/g2g

⁴³ A useful source on integrating the financial strategy with other strategies - including the ICT one - has been provided by HEFCE in *Financial Strategy in HEIs - a Business Approach* at http://webarchive.nationalarchives.gov.uk/20100202100434/http://hefce.ac.uk/pubs/hefce/2002/02_34.htm

⁴⁴ See www.hefce.ac.uk/pubs/year/2009/200914

“The board gets an opportunity to look at the IT strategy, but there is usually no discussion. Quite frankly, I think most of us are worried about looking stupid if we say anything.”

(EXTERNAL GOVERNOR)

- 6.7 Depending on its overall approach to considering strategy, a governing body may want more than one input to the ICT strategy. At a minimum this might involve an initial discussion (perhaps as part of an away day) to agree the policy assumptions on which the ICT strategy is based and then a subsequent discussion of a draft strategy and the options presented. Of course, if a major ICT project is involved this will usually be given more attention and may be a recurring item on a board or committee agenda while the project lasts.
- 6.8 Governors should not assume that agreeing a new ICT strategy will be easy - a board will need to work hard on engaging with strategic ICT issues. Most obviously, governors need to read often complex strategic documents (notwithstanding the responsibility of the executive to make them as readable as possible). Going beyond this, a board also needs to have sufficient expertise to understand and comment knowledgeably. From a governor’s point of view, this may be anything but straightforward and nor, of course, is it their role to second guess the work of management. Rather they need to be confident in the advice provided and ensure that the ICT strategy is subject to rigorous assessment with a systematic means of monitoring and evaluating progress and impact.

What should be in an ICT strategy?

- 6.9 The ICT strategy should be the place where the various aspects of ICT come together in a coherent planning document with defined timescales. Probably drafted by the director of ICT services (or equivalent), it should have the direct input of many other heads of services (including the librarian) and the active support of the HEI’s executive. It should also have been through a process of consultation with relevant user groups to ensure that its proposals meet their needs. It is important that the strategy does not stand alone but is consistent with other strategies, for example the estates strategy, the learning and teaching strategy and so on. An important role for the governing body is to assess such overall consistency.
- 6.10 It is also important that the strategy is not just fine words but is capable of being implemented - after all ICT stands or falls by whether it is used effectively. Given the technical nature of much ICT it is particularly important that the strategy should be written in plain English and, although aspirational in tone, it should also be grounded in reality. A commitment to “provide the best ICT services to students in the country” is not likely to be taken seriously - unless governors really think that it can be done.
- 6.11 Given that the ICT strategy should provide an integrated institution-wide plan, it will usually consist of a number of obvious key functional areas including: the ICT infrastructure (see Chapter 1); the multiple ICT systems to support teaching, research and other academic activities (see Chapters 2 and 3); key corporate and management ICT systems (see Chapter 4); and ICT library requirements (see Chapter 5).
- 6.12 For each of these areas the ICT strategy is likely to be broken down into various parts⁴⁵:
- Identifying how ICT can help an HEI achieve its mission and overall strategic plan and what key assumptions are in place to guide the development of the strategy.

⁴⁵ Jisc has produced a briefing guide for HEIs which suggests similar stages to developing ICT strategy although some of the headings are different, see Jisc, Strategic Management: Making IT Work For You, at www.jisc.ac.uk/publications/briefingpapers/2011/strategicmanagement

In this context governors may come across the term “enterprise architecture” which is used by some IT professionals to define the systems and processes that determine the way in which information is handled.

- Some form of analysis to identify future requirements, accompanied by a strengths and weaknesses analysis of current provision (this might include the results of competitor analysis and environmental scanning).
- The costs of existing provision and proposed future developments, supported by a costing analysis.
- An assessment of specific ICT needs in all main areas, taking account of all other relevant strategies.
- Proposed implementation arrangements, including how to adopt change management approaches in how information is received, collected, processed and disseminated, ie how key business processes are undertaken. Also important will be plans to get whole organisation buy-in, and addressing a range of HR and training issues.
- Relationships with existing information systems and processes, including data security, legal compliance and associated issues.
- Arrangements for monitoring the implementation of the strategy and measuring impact.
- A risk assessment (including the risks of not undertaking ICT proposals), as well as risks in the delivery itself. Governors have a particularly important role here in ensuring that risk mitigation is built into an ICT strategy.

6.13 In many HEIs the ICT strategy will then be broken down into sub-strategies for each of the faculties and services and typically these will contain the work which the academic or service unit intends to do over the planning period. The tone of these will generally be less aspirational and more operational and risk-based considerations also apply here.

6.14 The time frame for the information strategy also needs to be determined and may be different from other areas. For example, an estates strategy may be quite long term whereas an ICT one may need to be shorter given the rapid developments in technology and the dangers of obsolescence.

6.15 Although such an approach to developing ICT strategy may appear commonplace, it implies an order which may not exist in some HEIs, particularly those which are highly devolved. In such cases numerous ICT systems may operate widely across the institution and strategic moves to obtain the benefits of greater standardisation may well be contested.

What can go wrong?

6.16 All governing bodies, of course, formally approve numerous strategies but at a minimum this can be no more than routine confirmation or rubber stamping. The question is how should the board be involved, without undermining the role of the executive? The relationship between a board and the executive are crucial here and determining and approving an ICT strategy should not be a battle of wills between different “sides”, but a mature evidence-based process.

- 6.17 However, this remains a challenging area of governance. The director of ICT and the executive should be committed to its draft strategy that will have been drawn up on the basis of their substantial expertise and a clumsy and uninformed board challenge can easily be construed as an insult to their professional competence. Conversely, a board has to be confident that the strategy optimises ICT opportunities, is consistent with mission, is evidence-based and is financially sustainable often in the face of substantial potential risk.
- 6.18 Many of the things that might go wrong are generic to a board considering any kind of strategy so are not considered here, but there are specific challenges around ICT strategies. The first is trying to make it understandable to all, avoiding the technical detail and jargon in which it is easy to get bogged down. One thing is certain: governors will not be alone in not understanding the technical issues associated with the strategy and it may only be a few ICT professionals who do comprehend them entirely. Moreover, governors should remember that most of the major problems with ICT are less about the technology as such but its implementation - an area in which external governors should have experience.
- 6.19 The second challenge is the rapid pace of change: keeping up to date is difficult enough for ICT professionals never mind governors. Good - and regular - briefing can help here, for example by:
- Ensuring that the director of ICT has access to the governing body and that there is opportunity for discussion.
 - Exposing strategic ICT thinking to governors in both formal and informal settings at an early stage.
 - Ensuring that technology implications of major projects are specifically considered early in the decision-making process.
 - Having access to relevant HE briefing materials.
- 6.20 The third challenge lies in a board being completely realistic about how aspirational an ICT strategy should be. Too much so and it may be rejected by staff and students as something unlikely to be achieved (and it may even be seen as a potential waste of resources) but if not aspirational enough then the potential benefits of ICT may never be achieved.
- 6.21 The last challenge lies within the membership of the governing body itself and its expertise in ICT. Quite simply does it know enough to do the job? (see Chapter 1).

Governors and major ICT projects

- 6.22 A specific aspect of strategy concerns the planning of major ICT projects and the role of governors. Projects can be of various kinds: major estates projects with ICT implications; procuring large information systems; or major organisational change projects where the technology component may be relatively low. The distinction is important. If a project is, say, replacing a finance system, then the ICT implications are clear, but there may also be major ICT implications in projects which do not appear, on first sight, to be technology-dependent.

- 6.23 The practice of governing bodies will vary here depending upon numerous factors: the overall role of the board; the size of project; the extent of delegated authority to management; and the size of HEI (in that governors in smaller HEIs tend to be much more involved in projects than those in larger ones).
- 6.24 Perhaps the key issue is the need for a governing body to adopt a standard approach to the oversight of large projects, which should involve those with a substantial ICT element being treated in a similar way to other high-value or high-risk activities. There are various project methodologies that can be used to support such a process and typically these are helpful in ensuring that the same degree of scrutiny is given to different types of project, thus reinforcing a clear role for the governing body within an overall project management framework.

Self-challenge questions

- As a governor, have you seen the ICT (or information) strategy of your HEI and if not why not?
- How effective is your governing body in considering and monitoring the ICT strategy?
- What information is the governing body given to enable it to compare the provision of ICT in your HEI with that in comparable ones?
- What KPIs has your governing body adopted to measure the achievement of the ICT strategy, and are they appropriate?
- Is there a board level ICT attention deficit in your HEI?

A GOVERNOR'S DILEMMA 4:

ICT provision in the HEI of which you are a governor appears to be reasonably good, and although you know little about the details, the students appear generally satisfied. However, you are a little concerned that neither the head of institution nor the chair of the governing body seem very interested in thinking about the future use of ICT in the long term. Both seem to have a dislike of developing strategies, and prefer to retain maximum flexibility to respond to market opportunities. Their response to a question about the long term use of ICT has been to say that it is too difficult to predict the future, and we will cope with any problems when we come to them. You and several other governors are a little unhappy about this, and think that the institution needs to be more proactive in thinking about future opportunities in using ICT to get a competitive advantage. As a governor, what - if anything - do you do?

7 THE GOVERNING BODY AND LEGAL ASPECTS OF ICT

- 7.1 There is a significant volume of legislation applicable to ICT and - as for all other aspects of law - governors should ensure both that HEIs comply and also that there are processes in place to monitor such compliance. If not, there may be a substantial risk if an HEI is found to be in serious breach of ICT law.
- 7.2 This chapter summarises these key legal aspects: internal regulation and controls; freedom of information; data protection; copyright; and misuse and cybercrime. Up to date advice for governors should be available from the clerk or secretary to the board and in addition there should be a central point of contact within an HEI for all ICT legal matters.

Internal regulations and controls

- 7.3 The starting point in ensuring ICT legal compliance is for an HEI to have clear systems of internal regulations and controls. In highly devolved institutions this is more easily said than done, but nonetheless all students and staff must be made aware of their responsibilities and the controls that exist. These need to be supported by good information and records management and adequate training for everyone involved.
- 7.4 Typically such regulations are included in staff employment terms and conditions and in the student contract signed at enrolment. These provide the basis for any disciplinary action, whether they have been broken by accident or design, and many HEIs have adopted UCISA model regulations⁴⁶. Such regulations should have a broad scope as offences may be committed on systems outside an HEI. Furthermore, the growth in the use of personal devices and the continued merging of work and personal ICT present new challenges to such regulations.

The Data Protection Act

- 7.5 The Data Protection Act (1998) concerns the use of personal data and an HEI has a responsibility to ensure that such data is managed according to eight principles defined in the Act, including that an individual knows that data is being held, why it is being held, that it is being kept securely and that it is being held for no longer than necessary. The Act limits the transfer of personal data to countries within the European Economic Area or to other countries that have adequate levels of data protection.
- 7.6 Data subjects (ie the individuals whose personal data is held) can request copies of the data held. Requests may be complex (and most commonly are from individuals in dispute with an institution) and require central coordination to ensure that all aspects are addressed. Each HEI should have a named data protection officer who normally leads on coordinating responses to an access request. HEIs need to understand where all data on individuals is held and good records management is critical.

- 7.7 Breaches of data protection are often inadvertent. Relevant cases include the loss of sensitive data from a university hospital when it was copied by a student on to a memory stick which was then mislaid⁴⁷, and the institution that published students' personal data when an error was made while working on a university's ICT system which meant that students could access data on their classmates for over a year before the problem was identified and security restored⁴⁸. Both cases highlight the need for data protection training and established procedures on personal data use. Fines can be imposed by the Information Commissioner's Office on organisations breaching the Act. However, the greater risk is reputational - decisions regarding breaches are published on the ICO website and are often picked up by the media.
- 7.8 The need to consider data protection is particularly acute when moving systems off the campus (including to the cloud). An HEI will need to be satisfied that any third party holding its data meets the requirements of the Act while allowing the institution timely access in the event of an access request.
- 7.9 It is important to realise that the United States has not been deemed to have adequate levels of data protection. This does not prevent using US companies for cloud services but it is necessary to ensure that any third party adheres to the Safe Harbor Agreement that allows US companies to compete in this market. Most major US companies who host student email for HEIs (such as Google and Microsoft) adhere to Safe Harbor.
- 7.10 There has been much talk about the use of US companies for cloud services and the implications of the data being accessed via an application under the US Patriot Act, which allows a request for data from US companies no matter where the data resides. So if an HEI's data is hosted by a US company, the US government could invoke the Patriot Act in order to access personal data regardless of where it is stored. In practice this presents a very low risk, as the US government has to go through a rigorous process to justify access before it is granted.
- 7.11 Finally, there is a need to consider data protection when setting up overseas campuses or partnerships. It may be necessary to gain explicit consent from individuals for their data to be transferred overseas to countries where there is no agreement with the EU and no equivalent Safe Harbor agreement.

The Freedom of Information Act (FOI)

- 7.12 The principle behind the 2000 FOI⁴⁹ is to encourage openness and transparency in public sector organisations and HEIs are public authorities under the Act. This allows public requests for information provided none of the Act's exemptions apply. An HEI must comply within 20 working days. Data does not have to be released if there are plans to publish it and the date of publication is public. Details of planned releases should be in an HEI's publications scheme, which should be on the institutional website and have been approved by the governing body (and also needs to be approved by the Information Commissioner). As a result of the Act, almost all HEIs have expanded the volume of information they routinely publish.

⁴⁷ www.bbc.co.uk/news/uk-england-manchester-14826616

⁴⁸ www.ico.gov.uk/news/latest_news/2011/university_breached_law_by_making_students_details_available_online_20072011

⁴⁹ Scotland has separate but similar Freedom of Information legislation

- 7.13 The need to adhere to the Act places two specific requirements on HEIs. First, since the Act does not require a request to be made of a specified individual, there is a need for all staff to understand the process to be followed if an information request is received. Second, the short timeframe permitted to release information means that an HEI must have a good records management system, accompanied by established retention policies which define when and how data should be deleted. As for data protection, it is important to ensure that an HEI is able to retrieve such information from external third parties.
- 7.14 Although much of the burden of complying with the FOI falls upon the central administration, there are also implications for academic departments and research units. Academics may assume that “their” data is confidential, whereas as employees most of it is likely to fall under the Act - for example where a student makes an FOI request. Ensuring institution-wide compliance is therefore challenging and there have been examples of poor ICT data management practice in academic departments causing reputational damage to an HEI.
- 7.15 Both the Freedom of Information and Data Protection Acts require staff to demonstrate a good understanding of their responsibilities for information security. A recognised standard exists for this (ISO 27000) and UCISA has developed a toolkit⁵⁰ which outlines the responsibilities of an HEI and includes templates for policies that adhere to the standard.

Copyright

- 7.16 A significant proportion of an HEI’s population is in the age group that, statistically, is most likely to breach copyright. It is important, therefore, that ICT regulations explicitly state that breaking copyright is prohibited. The Copyright Act is currently under review and although the law on copying material for personal or educational use will be brought up to date to reflect the digital age, publishing copyrighted material in any form⁵¹ will remain illegal. Consequently an HEI must have procedures to address known breaches of copyright. These may come direct from the rights holders or be routed via the JANET network service. The Digital Economy Act details action that may be taken against organisations infringing copyright but at the time of writing it is not clear how this will be enforced. UCISA has published guidelines⁵² on responding to copyright infringement.
- 7.17 Copyright also applies to software and HEIs should maintain a software inventory and ensure that illegal software copies are not made. In most cases licences exist for popular applications but what they cover may vary, for example some licences may apply to just a specific campus but others to a whole institution.
- 7.18 ICT copyright and ownership extends to digital content created by staff and students, including online teaching materials. As such, it may also be necessary to review whether definitions of electronic copyright are included in the terms and conditions of employment for academic staff or other institutional policies.

⁵⁰ www.ucisa.ac.uk/IST

⁵¹ For example, on webpages or file sharing systems

⁵² www.ucisa.ac.uk/groups/ng/~media/groups/ng/documents/Copyright_templates_v0-06.ashx

Misuse and cybercrime

- 7.19 HEIs need to ensure that they protect themselves from misuse of ICT facilities by students and staff and all should have regulations in place. A range of misuse is possible ranging in seriousness (for example staff time spent on social networking in office hours through to accessing pornography). More seriously there are activities that might be in breach of the Computer Misuse Act and, more specifically, the Obscene Publications Act and/or Protection of Children Act. If an individual is suspected of breaching these laws, the police should be informed and the governing body notified.
- 7.20 So far as attacks on an HEI are concerned, there has been a growth in what is termed “cybercrime”, and this includes phishing attacks, denial of service (where a service is flooded with requests thereby rendering it unusable), viruses and hacking. Obviously HEIs need to protect themselves from attacks, but they also must have procedures to ensure that such activities are not undertaken by their own staff or students. Such behaviour is also regulated by the Computer Misuse Act and it is recommended that HEIs maintain logs of activity to allow any complaints to be investigated.

Disability law and ICT

- 7.21 The general requirements of disability legislation (for which governors have an explicit responsibility) also exist in relation to the use of ICT with requirements that a disabled person should not be treated less favourably for a reason relating to their disability. HE has put in place numerous initiatives to support good practice in this area, and the Jisc TechDis service⁵³ assists in making HE more accessible.
- 7.22 At a minimum, HEIs need to ensure that ICT facilities are available for those with disabilities, including specialist hardware and software. Particularly valuable may be the use of a range of assistive technologies which allow individuals to perform tasks they would otherwise be unable to do. While some assistive technologies benefit all users, others enable a minority to gain access to digital resources that would otherwise be impossible for them to experience. Governors should expect issues relating to disability to be part of an information strategy.

Self-challenge questions

- How does your governing body receive assurance that your HEI fully complies with the law relating to ICT?
- How does your HEI avoid the risk of unauthorised or unintentional breaches of data protection and copyright legislation?
- Have the audit committee or the internal auditors reviewed the risks associated with the work of the data protection officer?
- As a governor, how confident are you that your HEI can quickly and accurately meet freedom of information requests?

⁵³ www.jisc.ac.uk/whatwedo/services/techdis

8 VALUE FOR MONEY AND SHARED SERVICES

8.1 In challenging financial times, many governors are concerned about the costs of ICT and, in particular, whether an HEI is getting value for money (VfM) for what is often substantial expenditure. Although the potential of ICT for reducing costs through more efficient business processes is often cited, in practice savings may be elusive unless there is effective management. Given such experience, many HEIs are now actively pursuing the use of shared services with other institutions and private providers. Concerns about VfM and the difficult financial environment are also shared by directors of ICT services and dominated UCISA's 2011 list of top concerns⁵⁴. This chapter explores these issues and considers the role of governors in seeking better value.

"It seems to me, and some other governors, that IT is some kind of bottomless pit that never seems to deliver what is promised. Every year or two we purchase some new system with promises of greater efficiency, but they all seem to go wrong and we end up appointing more staff to sort it all out. The problem is that we [the governing body] don't know enough to challenge proposals from the IT people, and neither - I suspect - does the VC."

(EXTERNAL GOVERNOR WITH PRIVATE SECTOR EXPERIENCE)

8.2 In trying to maximise VfM governors face a number of challenges. In particular, it is relatively easy to assess the VfM of one-off ICT initiatives but much more difficult for the overall adoption of ICT. In doing so a board also needs to work collaboratively with the director of ICT services and other senior staff. Given pressures on institutional budgets it is inevitable that most ICT departments will face difficulties in maintaining service delivery and governing bodies need to understand such pressures and take account of them in measuring value.

Understanding the costs and benefits of ICT

8.3 The starting point for any consideration of VfM must be for governors - on the advice of management - to understand the costs and associated benefits of ICT. Clearly the focus for this should be the information strategy and any KPIs associated with its measurement. However, reliable cost-benefit analysis in this area is generally underdeveloped, for several reasons:

- There is a need to distinguish cost-benefit in the different areas of ICT, for example administrative computing, supporting teaching and learning and so on.
- The rapid pace of technological change adds complexity to any cost-benefit analysis.
- The decentralised nature of many HEIs means that it is difficult to assess total spending on ICT or the benefits accruing.
- In some HEIs the focus of ICT may have been to stimulate innovation rather than to improve practice.
- In some areas ICT may be so central to operations that its costs may be perceived to be simply part of "doing business".

8.4 Whatever the reason, cost analysis in relation to ICT is challenging. In a briefing paper for heads of HEIs, Jisc⁵⁵ noted a tendency for institutions to assess ICT costs on a marginal rather than full cost basis, at least partly because of the difficulties of assessing full cost. The study also noted difficulties in costing the benefits of much ICT investment and establishing a causal link between investment and benefit.

⁵⁴ See www.ucisa.ac.uk/bestpractice/surveys/tc/tc2010-11/top12

⁵⁵ See Jisc, A Study on Costing, at www.jisc.ac.uk/media/documents/programmes/strategicmanagement/BIILS%20Project%20Evaluation%20Toolkit%20-%20Revised%20-%20Version%203.pdf

- 8.5 The same Jisc briefing study noted that different attempts at cost-benefit analysis are used by HEIs in relation to different kinds of ICT. As might be expected, investments in institutional ICT infrastructure and corporate information systems generally attempt a more quantitative approach using techniques such as a full financial appraisal and internally derived targets, which may be coupled with formal internal audit VfM reviews. Conversely, investment in ICT for learning and teaching tends to make more use of comparative statistics and benchmarking - not surprising when assessing the costs of teaching is itself a challenge, leaving aside the ICT element.
- 8.6 In addition to standard national data (for example from the Higher Education Statistics Agency - see Annex A) financial information on ICT is available from UCISA, which conducts its annual HEITS survey (Higher Education Information Technology Statistics) on a range of ICT issues including financial information⁵⁶. This is only available to member HEIs but is available to governors through the director of IT services.

“UK institutions would be foolish to approach online learning simply as a revenue generating stream. Quality online learning is not a cheap option. Developing good courses is expensive, so the cost of entering the market can be high. And it may be impossible to achieve the scale necessary to make it a commercial success.”

(TIMES HIGHER EDUCATION, 12 MAY 2011, PAGE 9)

Value for money

- 8.7 The principles of VfM should be well known to governors and HEIs routinely undertake VfM reviews of a wide range of goods and services with the results being made available to the governing body via the audit committee. Conventionally, VfM analysis is based on three elements:
- Economy: achieving best value based on price and quality.
 - Efficiency: maximum output for minimum use of resources.
 - Effectiveness: the optimum realisation of objectives. For ICT this is the most challenging aspect of identifying VfM, and raises numerous issues concerning the information strategy.

For more details about VfM and the governing body see Chapter 7 of the companion volume in this series on finance⁵⁷.

- 8.8 Benchmarking may also be undertaken in identifying comparative VfM, both internally (to compare between departments or academic schools) and externally with peer HEIs or other similar organisations. However, value-based benchmarking can be difficult as data is seldom fully comparable and tends to be restricted to baseline costs and associated ratios based on input measures (for example, ICT spend per student). Such benchmarking data can be useful for building a business case that highlights how the return on investment for a new proposal will be demonstrated.
- 8.9 In practice, a rigorous attempt to assess VfM must distinguish between the different types of ICT use and it is quite possible for VfM to exist in one area but not in another. The following four examples illustrate this.
- 8.10 First, the VfM of ICT procurement, which should be the most straightforward area to assess and will normally be covered by standard institutional methods of assessing procurement value. Failure to achieve VfM here would be a notable criticism of management and is likely to require action by the governing body. Factors may include cost consolidation achieved from bulk procurement from a few suppliers or by reducing the support burden on the ICT department by restricting the options for

“In many cases investment in ICT will be part of a wider process change which has financial benefit, but which cannot solely be attributed to a single investment.”

(JISC, BENEFITS OF ICT INVESTMENT - LANDSCAPE STUDY - WWW.JISC.AC.UK/PUBLICATIONS/REPORTS/2008/BIILSFINALREPORT

⁵⁶ See www.ucisa.ac.uk/bestpractice/surveys/statistics

⁵⁷ See Pearson M, (2009), Getting to Grips with Finance, LFHE/CUC at www.lfhe.ac.uk/g2g

"It is unlikely that the distance learning market will materialise to anything like the scale dreamed up by the wishful thinkers of Wall Street... Suckered by the siren-songs and scare tactics of the silicon snake-oil salesmen, university and college officials have thrown caution to the wind and failed to full cost their pet projects."

(DAVID NOBLE, DIGITAL DIPLOMA MILLS PART III, 1998 AT [HTTP://COMMUNICATIONS.UCSD.EDU/DDM3.HTML](http://communications.ucsd.edu/ddm3.html))

hardware procurement. A number of purchasing consortia within the sector have negotiated framework agreements for hardware which many HEIs use.

- 8.11 Second, assessing the VfM of the use of ICT to help HEIs provide cost effective corporate services (see Chapter 4). This can range from achieving immediate - and easily demonstrable - savings by automating processes (for example, online student enrolment), through to delivering complex business change projects to improve service delivery. Assessing VfM here may not be easy and needs to be built into any project methodology at the outset. It is important that senior managers and governors recognise that major ICT projects in this area will not necessarily deliver an immediate return on investment. Indeed, it can be three to five years before a return starts to be realised.
- 8.12 Third, using ICT to enhance the student experience and to improve learning, where any assessment of value must take full account of the views of students as customers. There are no simple VfM measures here: on the one hand much student use of ICT is demand driven and may not be possible to assess until reflected in indicators such as the National Student Survey. On the other hand, value assessments of the use of ICT for online learning may be much more immediate and integral to content delivery. This is difficult territory and the senate or academic board will also have an interest in assessing value.
- 8.13 Finally, different considerations apply to the VfM of outsourcing, where HEIs contract with external vendors to deliver services as an alternative to traditional in-house delivery. Given the growth in cloud computing, assessing value in this area will be more important in the future and audit committees will need to understand the issues involved. At its simplest, VfM here can be quite simple to determine. For example, one process popular in HEIs is outsourcing student email; other areas in widespread use include network monitoring, spam detection, hosting virtual learning environments and some bespoke software development using offshore organisations. However, much outsourcing in HE is more complex and may not be designed to deliver cost savings alone.
- 8.14 One area where VfM analysis in relation to ICT is very underdeveloped concerns learning and teaching. About a decade ago there was much uninformed speculation about how online learning would reduce the costs of teaching and at the same time transform learning. The collapse of the dot com bubble brought more reality into the debate and, as most UK HEIs have adopted a blended approach, it is likely that additional costs have been incurred rather than efficiencies generated.
- 8.15 Perhaps the main message for governing bodies is to recognise the complexity of the area, to refrain from making over-simplistic assumptions about assessing value and that - in turn - any judgement in this area needs to be closely related to strategic ICT planning.

Shared ICT services

- 8.16 HEIs are increasingly thinking about the potential benefits of sharing aspects of ICT services. This is not new for HE: much procurement has long since been shared and JANET (the HE network provider) is one of the largest shared services in the sector. Until recently, the potential financial advantages of shared services were not achievable because non-recoverable VAT was chargeable. In recognition of this the 2012 Budget introduced an exemption on VAT for shared services in a number of sectors including HE. However, as the regulations relating to this exemption are still being defined at the time of writing it is not clear how it will work in practice.
- 8.17 There have been three other main barriers to shared services:
- Competition between HEIs and an unwillingness to risk relying on other institutions for corporate ICT services.
 - The traditional practice of many HEIs adopting a best of breed approach to ICT, with the result that uniformity of the systems infrastructure across institutions is rare.
 - As part of a best of breed approach, HEIs configuring their ICT systems to meet specific institutional requirements which cannot easily be shared.

For these reasons (coupled with inadequate cost information) a shared services approach is not yet mature in UK HE.

- 8.18 However, financial pressures, examples of successful outsourcing, the growth of cloud services and the greater conformity now being built into ICT systems in HEIs bring greater opportunities for shared services. Additionally, the increasing professionalisation of ICT departments in HEIs has led to a greater willingness to collaborate and share knowledge.
- 8.19 As shared services develop they are likely to be of two kinds: those involving collaboration solely between partner HEIs and those based around a third party vendor - most obviously a software supplier or business services provider. A governing body should expect management (and the director of ICT in particular) to examine the opportunities for shared services and be ready to offer solutions that can mitigate loss of income and generate savings with no loss of services.

Self-challenge questions

- Does your governing body know the true cost of ICT services?
- How effectively does your governing body and audit committee undertake VfM reviews of ICT and act on the results?
- How effectively does your HEI consider proposals for capital spending on ICT across departments?
- How would you describe your HEI's ability to demonstrate the business benefits (including "soft benefits") of major ICT projects?

"Governors are interested in the possibility of shared IT services. They see the obvious potential advantages, and it's the one area in IT where they feel they can contribute"

(PVC OF A UNIVERSITY).

9 THE FUTURE OF ICT IN HIGHER EDUCATION

"In 50 years, people will probably look back on all this with amazement. Why, students will ask, did our grandparents put up with cramped and dingy halls of residence and depleted libraries when they could have stayed at home and achieved nearly all their academic objectives by electronic communication?"

(N FERGUSON, *IVORY TOWERS GO ONLINE*, FINANCIAL TIMES, 5 JAN 1998)

- 9.1 Many of the technologies in use today did not exist a few years ago, the potential of the internet remains underdeveloped, and a number of today's nascent concepts will emerge to become mainstream technologies in a few years' time. It follows that the pace of change in the use of ICT will rapidly increase as new technologies emerge and are applied in innovative ways. This rate of change makes future development and trends difficult to predict but, difficult or not, governing bodies will need to attempt it as part of their strategic responsibilities.
- 9.2 Two sets of issues are raised in this concluding chapter: the first is speculative and about the future directions of an ICT-led higher education; the second is more operational and concerns what HEIs need to do in the short and medium terms to use ICT more effectively. Most of this chapter looks at the second set of issues but, before that, a few words about the "big picture".
- 9.3 The quotation in the side box provides one vision of HE in the future and, while some might contest such a view, many commentators predict a complete change in the way HE is undertaken. Driven by ICT, globalisation and the power of the media and telecommunication industries, the future HE world may be a very different place from the current one. For example, in Australia Ernst & Young have predicted that the dominant university model will prove unviable in all but a few cases over the next 10-15 years⁵⁸. Such pressures will affect HEIs in very different ways but all institutions will be affected. At a minimum, governors need to understand that, for most HEIs, such developments are inevitable and need to be taken into account in long term strategic planning.
- 9.4 Governors also need to recognise that there is often very substantial hype associated with the potential of new technology, and the vast expansion of wholly online learning projected at the turn of the 21st century has yet to be delivered. Although specific markets are developing (most obviously in vocational qualifications and continuing professional development), wholly online learning for undergraduates remains rare. Gartner (an international ICT research and advisory company) has produced an interesting "hype cycle" concept which highlights common issues associated with the cycles of technology development and implementation⁵⁹.

Future student expectations

- 9.5 It is inevitable that students will continue to have ever greater expectations of ICT. Student fees in some parts of the UK are likely to add further impetus to this trend. One probable impact is that HEIs will develop new ICT services to improve the student experience to gain competitive advantage. Depending on their mission, HEIs will focus on different aspects of ICT to support teaching and learning. Growing numbers of part-time students, distance learners and those accessing courses as part of in-work learning will have different demands from traditional undergraduates and will need to be reflected in the ICT strategy.

⁵⁸ See Ernst & Young (2012), *University of the Future*, at [www.ey.com/Publication/vwLUAssets/University_of_the_future/\\$FILE/University_of_the_future_2012.pdf](http://www.ey.com/Publication/vwLUAssets/University_of_the_future/$FILE/University_of_the_future_2012.pdf)

⁵⁹ See www.gartner.com

- 9.6 Regardless of the blend of teaching provision, student expectations will require ICT resources to be accessible off site and at all times of the day. Indeed, the 18-21 year olds that make up the bulk of undergraduate students have grown up to expect online services always to be available, including from off the campus and on the move via mobile devices.
- 9.7 The student will consume an increasing range of personalised services, largely delivered through a web-based portal or mobile applications. Such services will be customisable and will be a blend of course information, general HEI data, news, targeted alerts and bulletins and will require a high level of integration between ICT systems. All this means that HEIs will require a high bandwidth wireless network and an estates strategy that encourages the flexible use of space. Although much software will be provided to mobile and remote computers, not all of the specialist software used in teaching will be.
- 9.8 The growth of online learning in its multiple forms is likely to have substantial implications for the way that students study and perceive the quality of their courses. For example, given the future widespread availability of massive open online courses (see Chapter 2), students - or their parents - may ask why they are paying fees for lectures when they are available for free online. The future delivery of HE is thus unpredictable, but all governors can be certain of substantial changes.

"I would choose to argue that, through the English language, the UK and UK institutions have a unique advantage, but reciprocally are uniquely vulnerable to being pre-empted by large, powerful, prestigious, well-funded American institutions, perhaps in partnership with the American media and communications and information technology industries... We may find the historic mould of higher education as the preserve of the university and college cracked wide open."

(SIR RON DEARING, THE UNAUTHORISED CHAPTER OF THE DEARING REPORT, ECONOMIC AFFAIRS, VOL 18, NO 2, 1998)

Future staffing issues

- 9.9 The growth of "bring your own device" (BYOD) will not just be restricted to students; many staff will use their own hardware both within the boundaries of the institution and beyond. Institutional services will need to respond to this and associated risks such as a breach of data protection law or the loss of commercially sensitive material. Accordingly, an HEI should consider the use of staff-owned devices for institutional business as part of their information security policies.
- 9.10 A major challenge for many HEIs is likely to be ensuring a broadly consistent approach to the use of ICT among academic staff. As noted in Chapter 2, in most HEIs ICT for teaching and learning has been led by a relatively small group of early adopters, but student expectations are such that good practice will need to be mainstreamed among all academics. This will raise numerous HR challenges, including the need for enhanced ICT skills training and the question of whether possessing ICT skills should be an appointment requirement for all staff. Ensuring consistency of practice may be an area in which some HEIs compare poorly with the new generation of private HE providers. These - and related issues - are considered in more detail in the companion Getting to Grips guide on HR⁶⁰.
- 9.11 There are similar future ICT implications for researchers and the technical demands on data storage will grow as the volume of research data being generated rises. While it is likely that publicly funded research will be concentrated in fewer institutions, this may - in part - be compensated by a growth in business-funded research or greater business-HEI collaboration.

⁶⁰ Hall A, (2009), Getting to Grips with Human Resource Management, LFHE-CUC at www.lfhe.ac.uk/g2g

Improving future business processes

- 9.12 Given competitive challenges, all parts of an HEI's operation will need to be efficient and effective, with ICT playing an ever increasing role. Although business process review techniques will result in improvements, these will need to be backed up by a strong customer focus and a culture of continuous improvement. In many HEIs there will be a need to standardise business processes if true shared services are to stand a chance of being adopted across the sector.
- 9.13 In a competitive and uncertain HE world, HEIs will need to make increased use of business intelligence and analysis to monitor institutional performance and improve services. This may require linking business ICT systems in new ways, with an increasing number of services likely to be delivered through outsourced or cloud services. Both governing bodies and senior managers will need to recognise that outsourced services will require different procurement skills from those that exist within the traditional HEI procurement function. It will, therefore, be vital that an HEI has the vendor management skills to establish robust service level agreements with suppliers and to work with them in partnership to mutual benefit. This may mean some ICT professionals changing their role to become informed contract managers rather than ICT deliverers.
- 9.14 All such developments will require a responsive ICT department that will need to understand the requirements of its customers (whether students, academics or administrative staff). Decision making about ICT may also need to be strengthened to be able to assess the value and impact of the ICT delivery, the business benefits and priorities of competing investment proposals and the impact of ICT-based projects after they have been completed. Such decision making will need to be speedy to ensure that an HEI is in a position to respond to new technological developments, should allow for the piloting of new technology and services and should provide a mechanism to transition successful pilots to fully supported services.

What can governors do?

- 9.15 Given so many unknowns, realistically what can governors do to help their HEI address such an uncertain future? Clearly the answer is tied up in their overall role in relation to ICT (see Chapter 1 and - in relation to strategy - Chapter 6), but in addition to their oversight and strategic roles there are at least four steps that governing bodies can take while maintaining the distinction between governance and management:
- Seek to understand the issues about the future of ICT and how it might be used in an HEI.
 - Adopt and encourage a sense of realism in what might be done, which matches support for well-argued innovation in ICT with challenge for more speculative proposals.
 - Encourage open debate on the future of ICT, recognising the diversity of interests within an institution.
 - Support a culture of evidence about the future adoption of ICT, not just about costs but also impact and benefit.

Self-challenge questions

- How well informed is your governing body about future trends in ICT and how these might influence the future of the institution?
- Has the governing body considered future ICT trends at an awayday or had a presentation from the director of ICT? If not, why not?
- What are the main barriers to the increased adoption of ICT in your HEI and what plans do management have for addressing them?

ANNEX A: SOME KEY INFORMATION SOURCES

There is a substantial body of expertise and guidance available on ICT that may be of interest to governors.

General

- UCISA (the Universities and Colleges Information Systems Association) is the professional body for IT services staff in HEIs. It promotes best practice and acts as a representative and lobbying body on behalf of the sector. UCISA publishes a range of material, some of which is referenced in the chapters of this guide and below. (www.ucisa.ac.uk)
- SCONUL (the Society of College, National and University Libraries) performs a similar function to UCISA for directors of library services. (www.sconul.ac.uk)
- Jisc (www.jisc.ac.uk) is an HE sector body providing expertise on ICT for education and research through a wide range of services and resources. These include the UK's national research and education network, JANET (www.ja.net) and JISC infoNet, which provides a range of self-help material on ICT and management (www.jiscinfonet.ac.uk). A number of Jisc resources are cited below.

Comparative data on ICT

- Data on the sector is collected by a number of organisations for a variety of purposes. The Higher Education Statistics Agency (HESA) collects, analyses and publishes a range of quantitative information about HE including that in its HEIDI database (HE Information Database for Institutions). (www.hesa.ac.uk)
- The National Student Survey is used as a comparative barometer of student feedback and has three questions that relate to satisfaction with library, ICT and specialist resources. The results are published on the Unistats website. (<http://unistats.direct.gov.uk>)
- UCISA collects annually a range of data on ICT services within HE, allowing high level comparisons to be carried out (for example, comparing the scope of institutional ICT services) and also providing more detailed data (such as the range of wireless coverage across an HEI). Access to the full range of data requires UCISA membership. (www.ucisa.ac.uk)

The management of ICT and business intelligence

- Jisc has produced a number of resources that may provide assistance and background information, including a briefing paper, Strategic Management: Making IT Work for You. (www.jisc.ac.uk/publications/briefingpapers/2011/strategicmanagment)
- Many HEIs are now using cloud services for aspects of their ICT provision, and UCISA has produced a briefing paper on the issues involved. (www.ucisa.ac.uk/publications/cloud)
- UCISA has also produced a methodology to establish the business cost of ICT downtime and to assess any insurance cover required to mitigate the loss of ICT systems during key business operations. (www.ucisa.ac.uk/publications/itdowntime)
- HEIs use various models for managing ICT, libraries and related student services. A recent trend has been to integrate them and a useful paper by the Leadership Foundation sets out the issues. (www.lfhe.ac.uk/resgov)

- Jisc has carried out a programme of work on management information and provides a helpful briefing paper Business intelligence: Monitoring performance and planning improvement. (www.jisc.ac.uk/publications/briefingpapers/2011/businessintelligence)
- The enhancement of ICT requires effective staff training and development and two Jisc briefing papers provide more details: Supporting staff through technological change (www.jisc.ac.uk/publications/briefingpapers/2012/supportingstaff) and Developing Digital Literacies. (www.jisc.ac.uk/publications/briefingpapers/2012/developing-digital-literacies).
- The broader HR issues concerning academic staff engagement with ICT and other innovations are considered in Hall A, (2009), Getting to Grips with Human Resource Management, LFHE-CUC. (www.lfhe.ac.uk/g2g)
- UCISA have also produced a best practice guide to engaging academics, and other staff, in the use of technology enhanced learning. (www.ucisa.ac.uk/publications/engaging)

Professionalism, standards and the law

- UCISA has published a toolkit drawing on the ISO 27000 standard for information security, and so reducing the risk of breaching data protection legislation. (www.ucisa.ac.uk/IST)
- The IT Infrastructure Library (ITIL) is an IT service management framework used by many HEIs and is a recognised world standard. UCISA has published resources which are intended to ease ITIL implementation in HEIs. (www.ucisa.ac.uk/representation/activities/ITIL)
- The Jisc legal service provides legal guidance for ICT use in education, research and external engagement. (www.jisclegal.ac.uk)
- Using ICT equipment in HEIs should be managed by conditions of use linked to terms of employment or student regulations, and UCISA has produced model regulations. (www.ucisa.ac.uk/publications/modelregs)

Research and ICT

- For information about how research is conducted in UK HE see the companion volume in this series on Getting to Grips With Research and Knowledge Transfer. (www.lfhe.ac.uk/g2g)
- For examples of the use of high-performance computing and research see the Edinburgh Parallel Computing Centre (www.epcc.ed.ac.uk), the Daresbury Laboratory of the Science and Technology Facilities Council (<http://www.stfc.ac.uk/About+STFC/5225.aspx>) and the National Grid Service (www.ngs.ac.uk).
- For information about the use of external datasets held in institutional or national repositories see the UK Data Archive (www.data-archive.ac.uk) or MIMAS (<http://mimas.ac.uk>).

Futures and trends

- There are a number of organisations that assess new technologies and their likely impact. For example, Gartner (an international ICT research and advisory company) produces an annual hype cycle highlighting common issues with each new technology and innovation. (www.gartner.com)
- Educause, the IT body for HE in North America, publishes an annual Horizon report. (2012 edition: www.educause.edu/library/resources/2012-horizon-report)
- UCISA surveys its membership biennially to establish the key issues for heads of ICT services and publishes the results as its top concerns survey. (www.ucisa.ac.uk/tcs)
- UCISA carries out a more detailed survey to examine trends in technology enhanced learning. (www.ucisa.ac.uk/tel)

ANNEX B: SUGGESTED ANSWERS TO GOVERNORS' DILEMMAS

A governor's dilemma - 1 (page 17)

First of all, beware of grumbles and noises-off particularly when you are not confident of the issues concerned. Moreover, the academic board has looked at the issue and decided not to require a standardised procedure in using ICT for teaching and learning across the institution. This is now very much an operational issue and, moreover, one concerning academic practice, so the governing body should be wary of intervening even if you can get your fellow board members to share your concerns.

In practice, HEIs vary depending on the extent to which they require academic staff to adopt consistent institution-wide policies using ICT, even over basic things such as putting Powerpoint slides on a VLE. In some it is a requirement but in others academics are left to use ICT as they think fit, with student pressure (and perhaps that of academic colleagues) being the main driver for change. A key issue is how different academic behaviour supports practice. Governors are not able to make a judgement about this without knowing how particular teaching takes place and it is not their role to enquire.

Assuming your concerns (and those of the student governors) remain, at the most at this stage you might want to contact informally the chair of the governing body to express your concerns about whether the academic board decision is appropriate given the potential impact on student satisfaction. If he or she agrees with you they should discuss it with the head of institution (as chair of the academic board) and let you know the outcome. No governing body should want to get involved in academic decisions of this kind, nor should it get drawn into a dispute with the academic community about teaching and learning processes.

Perhaps the best way forward is to try to ensure that the governing body has regular discussions (at least once a year) on student satisfaction and - in this case - the ICT implications, so that the issue can be revisited if not resolved. If such future discussions highlight problems then the board should expect the executive to resolve them through the academic governance system.

A governor's dilemma - 2 (page 22)

Assuming there is general confidence in the research group making the proposal, there are some obvious potential attractions for the governing body here: not least enhancing research reputation.

However, the governing body should also have numerous questions, many of which would normally have been addressed, initially by management and then by a governing body committee, before the proposal came to the board. If not, substantial challenge may be necessary. Remember, of course, that the academic content of the research is not a matter for the governing body but its financial sustainability and consistency with institutional strategy is.

Such questions about which the governing body might seek assurance include:

- Has the business case been properly constructed?
- Does it show the total cost of ownership over the projected life of the facility using full cost analysis and what is the expected lifetime?
- Does it identify and quantify all the benefits stated, with proper measures of how these will be tracked over the duration?
- Is there evidence to support the claims being made?
- Have other options been considered and similarly appraised? For example, has reference been made to existing regional and national high-performing computer facilities (HPC)?
- Has outsourcing to other HEIs or commercial or cloud-based vendors been considered?
- Have the required support staff been identified and costed and do they have the requisite skills and expertise?
- Have power and cooling costs (these can be considerable for HPC) been factored in?
- Will the resource be made available to others?
- Will it be supported by the central IT provider and, if so, at what cost?
- Has provision been made to increase capacity, processing power or storage within the projected lifetime?

In reflecting on such information governors might think about the following real white elephant example: a university procured a single vendor-provided "supercomputer" costing more than £1m on the back of a high-profile principal investigator's (PI's) field of research. The project received the backing of the vice-chancellor and was brought to the governing body for formal approval as a fait accompli. Additional costs were incurred in constructing a dedicated computer room to house it and the project promised much. In fact, although the PI in question did use the facility, it was only to a fraction of its capacity. The cost of running the equipment (power, cooling, maintenance) over time far exceeded the cost of replacing it with a cluster of small, cheaper, processing units. The original supercomputer never achieved a return on its investment.

A governor's dilemma - 3 (page 27)

As with the first dilemma, the starting point is to beware of grumbles and noises-off. In addition, you are also correct that this is primarily an operational issue and - as you understand it - not one for the governing body. However, there are things that you could do that will provide you with more information, most obviously going to the information or ICT strategy (which your board should have approved) to see what it says about maintaining, updating or replacing the student ICT system. If the strategy is silent about the matter (or worse, you don't have access to a copy or, even worse, there isn't one) then an informal word with the clerk to the board might provide the information you need.

After doing this, if the issue is unresolved in your mind then speaking informally to the chair of the appropriate governing body committee might be the best way forward, possibly giving an indication of whether other discussions have taken place on the issue. Directly contacting the director of ICT services or the head of student administration is almost certainly not a good idea, and would probably be perceived to be interfering in management.

In practice, this issue is just one example of the many situations in which a governor becomes aware of a possible problem with an operational issue and may not be sure what to do - if anything. Probably the best approach is for a governing body to have regular and systematic methods for reviewing key aspects of monitoring institutional performance and in this case the information strategy should have KPIs or other indicators built into it to enable some kind of reporting to take place. Many governing bodies have an annual process that enables both overall institutional performance and that of key services to be reviewed. Such a process would be helpful in this case as it would allow any concerns about the performance of the student ICT system to be assessed against agreed strategic targets. If your governing body does not have such mechanisms then your concerns about student ICT might be raising a much broader issue about board oversight of the performance of management and key services. This would certainly warrant a discussion with the chair of the board and thereafter be an item on the board agenda.

A governor's dilemma - 4 (page 37)

Your response here must depend to a degree on the circumstances (including the financial circumstances) of the HEI and on how you read its internal politics. Do you have a sense of who else on the governing body (lay members, staff or students) shares your concern?

Having done this, how you play things will depend rather on what you have found out but, essentially, your approach is likely to reflect some indisputable points. An HEI's strategy (in this case ICT) should always be based on policies which strike a balance between providing a clear sense of direction and leaving room for manoeuvre when circumstances change or opportunities arise. However, neglect of ICT or the associated infrastructure may mean that an opportunity cannot be taken because the necessary facilities are not in place and the opportunity will have been lost - a particular problem given the lead times on some ICT projects.

The focus for you as a governor must, of course, be on the development, implementation and evaluation of the strategy: how does the risk of missing tricks or of simply reacting to market opportunity rather than driving policy forward manifest itself? And how does the HEI propose to respond to the manifestations? In raising questions such as these you need

to recognise that you are likely to have to play a long game. A bust-up with the chair and/or head of institution is likely to be counter productive: it is more likely to help the institution if you use the opportunity afforded by the processes of planning, implementing and evaluating strategies to steer policy and practice towards a healthier balance between strategic direction and opportunism.

ABOUT THE LEADERSHIP FOUNDATION:

The Leadership Foundation was launched in March 2004, to serve the diverse leadership development needs of the management of the UK's universities and higher education colleges, including governors. Dr Mark Pegg became the chief executive in January 2013, and the Board is led by Sir Andrew Cubie.

The Leadership Foundation supports and promotes the excellent leadership, governance and management development that exists within higher education, both in the UK and around the world. It also provides current and future leaders in higher education with services such as:

- Open programmes, mentoring and coaching;
- Customised programmes, consultancy, and benchmarking and needs analysis;
- Networks and communities of learning through alumni activities, special interest groups and international links;
- Applied research and development to support new learning initiatives and stimulate innovation;
- Sharing and championing good practice in leadership, governance and management.

The Leadership Foundation has a small team of experienced leadership and organisational development professionals drawn from higher education, other parts of the public sector, and also from the private sector. And it works in partnership with the higher education sector and other partner organisations. For more information about the Leadership Foundation visit the website www.lfhe.ac.uk

ABOUT UCISA

UCISA, the Universities and Colleges Information Systems Association, is a membership organisation representing those responsible for delivering information management systems and technology services in universities, colleges and other institutions. UCISA membership is institutional and has almost 100% coverage within the higher education sector. The Association exists to promote best practice amongst its members and to act as a representative and lobbying group. The contributors to this publication are drawn from UCISA staff, members of the Executive Board and a member of the Executive Board of our equivalent organisation for the library community, SCONUL



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