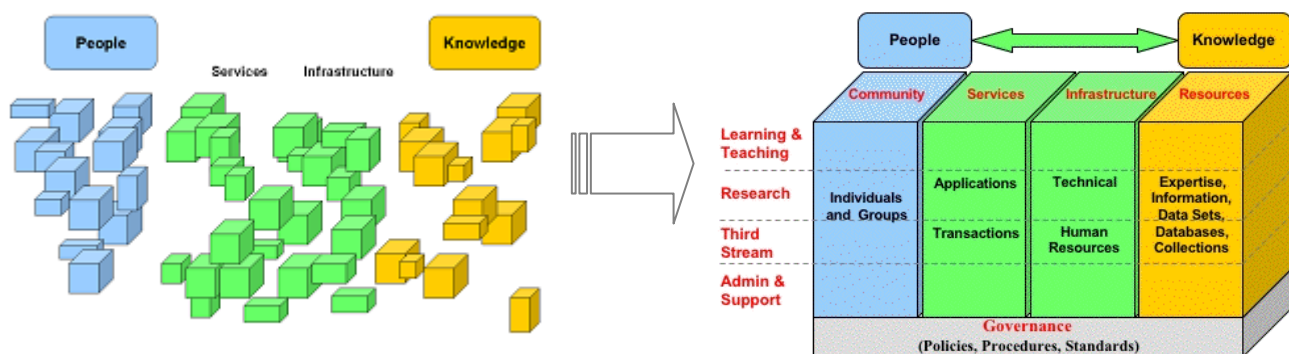


# ICT Strategy

2008 – 2012

## IOE Online

Developing and supporting a sustainable, integrated information-rich environment



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## 1. Introduction

- 1.1. In June 2005 the Institute endorsed a three year ICT Strategy. This provided the strategic direction for ICT provision and the framework for the planning of ongoing support and development of the ICT Infrastructure and information resources underpinning the delivery of the Institute's 2002-2008 Corporate Plan
- 1.2. The 2008-2012 ICT Strategy is a revision of the previous strategy taking into account the Institute's new Corporate Strategy (2007-2012), technological changes/opportunities and the need to ensure that the Institute's ICT provision is sustainable
- 1.3. As highlighted in the 2005-2008 ICT Strategy, ICT lies at the heart of the work of the institute. Ongoing investment (in terms of money and time/effort) is required to ensure that the IT infrastructure, information services and resources are appropriate to support the Institute as we go forward.
- 1.4. Input to the contents of the revised strategy have been gathered over the implementation period of the previous strategy via the new governance and feedback/liaison processes put in place from 2005. The draft strategy has/will be formally discussed via representative groups/committees including Information Strategy Committee, Management Group, Corporate Systems Programme Board, Academic Board and the Senior Management Team before formal endorsement via Senate and Council
- 1.5. This strategy document will be complemented by more detailed development plans including an annual action plan (monitored by the Information Strategy Committee) outlining the yearly programme of work across the various areas of activity
- 1.6. The implementation of the strategy will take into account opportunities to collaborate/partner with other HEIs and business, seeking creative solutions to gain maximum benefit from investments
- 1.7. Recognising the rapidly changing nature of the environment, it is expected that the strategy will need to be monitored regularly and reassessed in its last year
- 1.8. The Head of Information Services, supported by the Information Strategy Committee, is responsible for directing, monitoring and reviewing the implementation of the strategy.

## 2. Vision

2.1. Any institution-wide ICT strategy needs to be set in the context of the related corporate strategy i.e. what is the organisation trying to achieve over the coming years

2.2. The 2007-2012 Corporate Strategy prime aims relate to

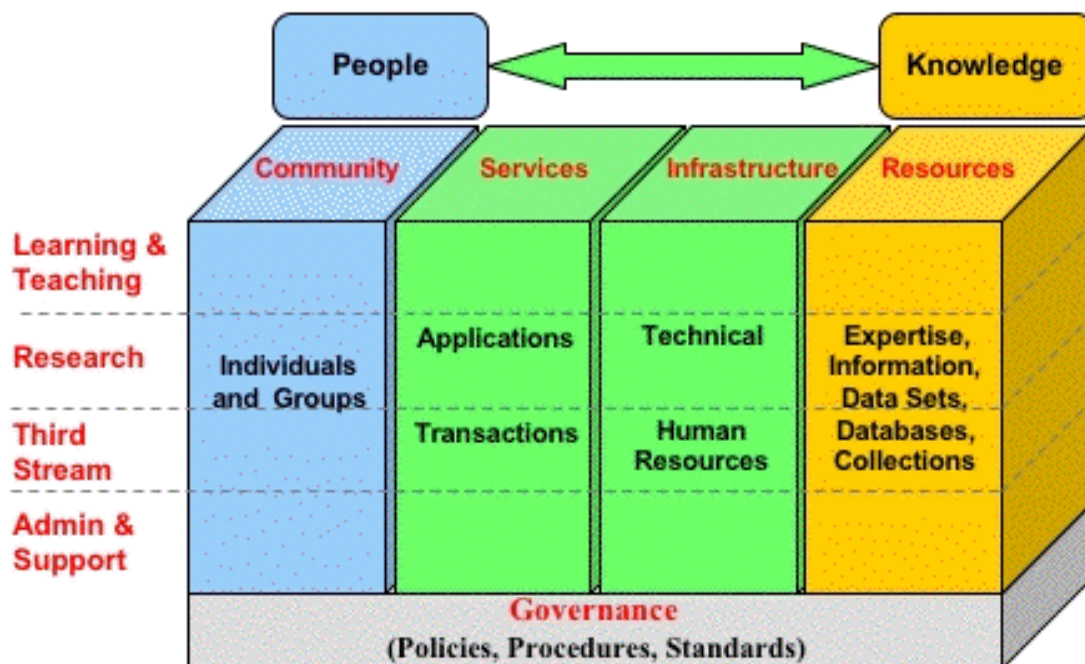
- extending global reach
- advancing learning
- promoting public engagement
- exercising leadership
- forming partnership

2.3. Key enablers to the delivery of the corporate strategy will be

- easily accessible/relevant information and collaborative environments
- fit for purpose online and face-to-face ICT/IS services
- a robust/resilient IT infrastructure
- skilled/knowledgeable/motivated staff

2.4. The 2005-2008 ICT strategy related to **'enabling and supporting the Institute's community - on campus and online'**

- Supporting/enabling **integration** (people, technology, data/information, support)
- Providing **personalised access** to services & resources
- Supporting staff and student **collaboration and communication** (as internal groups and their interaction with external groups/individuals)



2.5. The 2008-2012 ICT strategy further refines this vision as **‘developing and supporting a sustainable, integrated information-rich environment’**. It recognises that individuals are increasing ‘online’ wherever they are. In particular there will be more of an **emphasis on the individual** learner/scholar/worker and ensuring that our **ICT provision is sustainable** in terms of resources (energy and the environment, staffing and financial)



2.5.1. The aim is to create an environment that supports diversity/individual needs whilst engendering a sense of community. By providing easier access to information it can help to promote a culture of sharing, by upgrading and integrating systems it can improve efficiency and aid staff and students to focus on their key roles

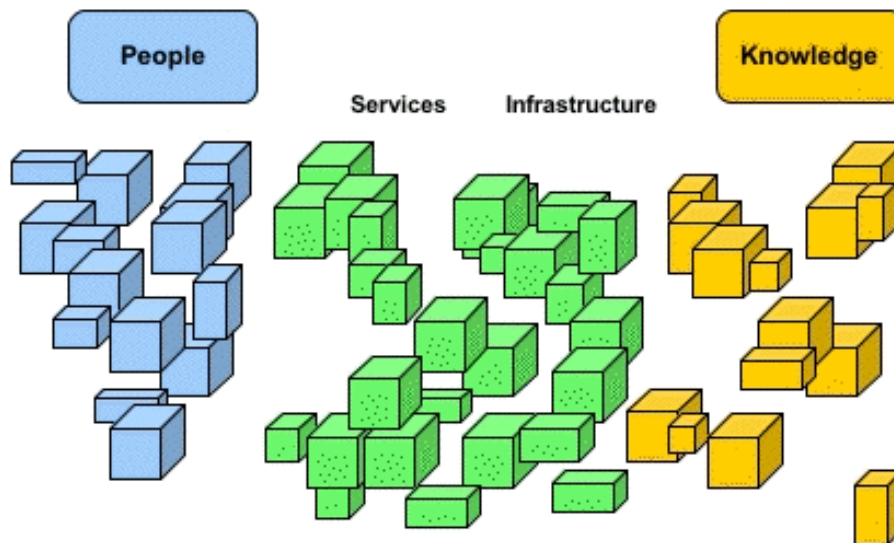
### 3. Key Principles

- There will continue to be a **significant increase in the use of ICT** to underpin research & consultancy, learning & teaching and support & administration
- A **robust and resilient campus ICT** infrastructure including systems, networks, equipment and staff is essential to support the existing and future needs of staff and students
- Information systems should be **managed and monitored** in such a way as to maximise benefit to users but at the same time achieving this at an acceptable cost over the long term.
- Levels of provision and availability of **printed information sources** must continue to be recognised as being important while the need to invest in **electronic information sources** is seen as increasingly key
- As the quantity of available information increases, students and staff need increased **help in discovering, exploiting and organising information** and data resources across the range of printed and electronic media
- Support for academic staff as they seek to develop a more **student-centred learning** approach to the delivery of their courses will be increasingly necessary
- Research is increasingly undertaken in a global context and requires a **flexible, collaborative environment**
- There will need to be ongoing investment in maintaining and developing the **skills** and expertise related to the use and support of ICT and information resources by staff and students
- Coordination between **central and local support** needs to be achieved with resource allocation striking an appropriate balance that best meets the needs of all users.
- The implementation of the strategy will require a **partnership between faculties and support departments** from across the Institute.

## 4. Landscape

### 4.1. Challenge

4.1.1. The challenge remains the same as at the time of developing the 2005-2008 strategy



4.1.2. The prevalence of information and technology, coupled with the varied needs of an increasingly mobile community of staff and students, presents a number of challenges

- **Knowledge, information, data is often dispersed** and difficult to locate, even within the Institute. The wealth of information available via the World Wide Web is substantially hidden due to its enormity (information overload) and relatively poor indexing.
- **Access to individuals, information and services off campus.** The nature of many courses within the Institute requires staff & students to maintain contact with each other and resources, potentially anywhere in the world at anytime. On campus service and information provision needs to be replicated online as far as possible to meet this need with more flexible methods of accessing the provision including support for mobile/wireless devices.
- **Good communication/information exchange** is fundamental for any successful business/community but often difficult to achieve as staff and student numbers grow.
- **Flexibility and choice** in the services and systems provided are increasingly required by staff and students. Interfaces, systems and policies that recognise individual and group needs are required.
- **The variety of technology and technical** solutions deployed across the Institute are inevitably heterogeneous in nature as they cover the variety of needs required by its staff and students. Technology and related standards have now matured to the point where its is feasible to link/integrate disparate systems

## 4.2. Context

- 4.2.1. In June 2005 the new strategy document highlighted the key 'successes' within the Institute's ICT provision "...an internationally acclaimed library collection, a secure data network with minimal impact from viruses, spam etc., wireless access to the network throughout the building in Bedford Way and the recent move to Voice-over IP (VOIP) for telephony"
- 4.2.2. The actions identified within the 2005-2008 ICT strategy were aimed at laying a solid foundation for the Institute as it moved forward, these have broadly been achieved and include
- Revised ICT governance (committee and liaison structure, programme and project management, key performance indicators, disaster management planning, IT security policy)
  - New Web and Corporate Systems strategies (replacement/upgrading of administrative systems (e.g. HR, Finance, Student, Library) and a new IOE website in Jan 09)
  - Investment in the IT infrastructure (new Bedford Way server room, upgrading of server hardware, improved network capacity and resilience, new video conferencing facility (within the WLE centre))
  - Upgrading/enhancement to the study spaces within the Library and associated areas (new computer and media rooms, library teaching room, WLE centre)
  - Expanded use of online access to learning materials and collaborative online environments (Blackboard, SharePoint pilot, online journals, Institutional Repository)
  - Enhanced user support (new helpdesk and call handling software, increased staffing to helpdesk, relocation of helpdesk alongside library enquiry desk)
  - Introduction of JANET roaming enabling visitors to access the internet via own university username/password and IOE staff/students similarly at other UK universities who have adopted the protocol
- 4.2.3. The Institute has grown over the period of the previous ICT strategy, in terms of increased staff/student numbers and its use of ICT. This has put even more strain/dependence upon the related infrastructure, services, resources and staffing.
- 4.2.4. Across H.E. there is recognition that expectations of students (and staff) have increased. Good quality, resilient ICT provision is expected – at 'work' and potentially anywhere/anytime.
- 4.2.5. Students make regular use of electronic communication in a social context – increased use of SMS texting and online social networks (Facebook, MySpace, Bebo etc) and Web 2.0 technologies (Blogs, Wikis etc) [85% of US students have a MySpace entry]

4.2.6. Sustainability and a focus on energy usage has become more prominent in society in general and increasingly central to the operations and planning of organisations (including ICT within HE)

### **4.3. Equal Opportunities**

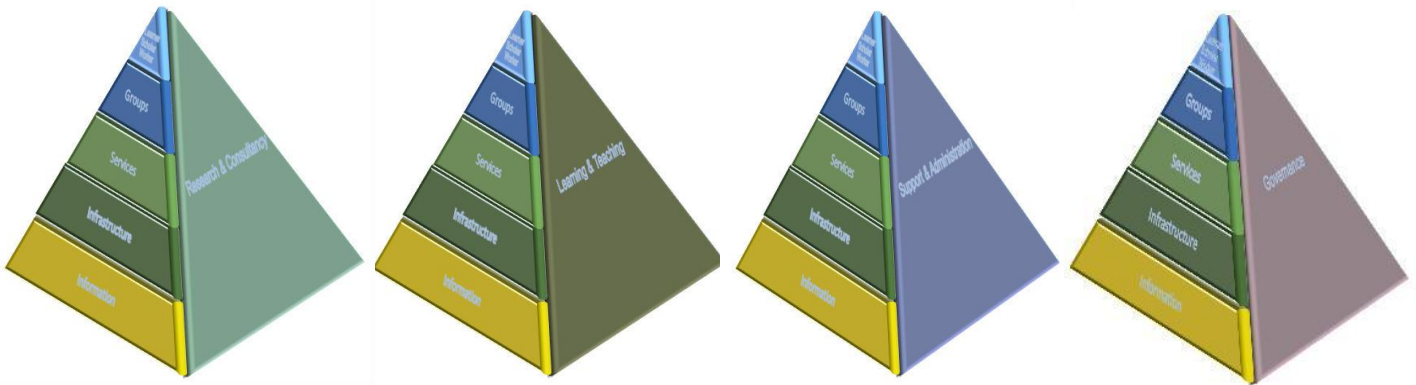
4.3.1. Use of ICT and access to information resources are fundamental to the day-to-day working life of staff, students and visitors to the Institute

4.3.2. Technology can provide support for people with disabilities but potentially can be a barrier and therefore needs to be introduced and developed being mindful of the range of end user needs

4.3.3. Information Services works closely with the various equal opportunities related services within the Institute to ensure that current/planned services are appropriate for all users and ,where identified, individual/specialist solutions are provided (e.g. learning support agreements, variations in library borrowing, screen reading software)

4.3.4. The strategy, with its focus on the individual and individual needs and supporting communication and collaboration, will have a positive effect in helping to recognise and support diversity. Examples include

- the institute's new externally-focussed website (due to be launched in 2009) which has had a fundamental redesign, both in terms of its look and feel and the underlying technology, to ensure that it is fully accessible with improved navigation and layout to ensure easier access to information
- the strategy looks also at improving internal communication which can help to provide opportunities to raise awareness of equal opportunities issues
- improved online collaboration can provide support for formal and informal online groups/communities related to equal opportunities issues



## 5. Key Objectives

### 5.1. Individual (Learner/Scholar/Worker)

To provide a customer focused service environment (online and face to face) to meet the needs of the Institute's staff and students and external community.

### 5.2. Group Working

To develop the on campus and online community of staff and students facilitating interactions between individuals and groups ensuring the physical and virtual environments are safe, accessible and fit for purpose

### 5.3. Services

To develop the online and face to face services related to Learning & Teaching, Research & Consultancy, Support and Administration enabling and supporting efficient and effective business/learning processes

### 5.4. Infrastructure

To provide the technical infrastructure to support the Institute's activities whilst minimising energy consumption and its carbon footprint

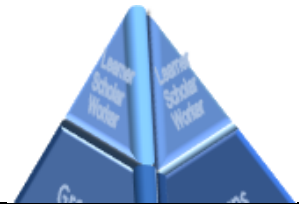
### 5.5. Information Resources

To provide adequate information resources (textual and audio-visual, online and printed), 'information about information' (metadata/catalogues), training and support staff to ease the process of accessing and exploring knowledge within the Institute and globally

## 6. The Plan

### 6.1. Individual (Learner/Scholar/Worker)

- **Customer Service/Focus**
- **Location Independent Working**
- **Customer Relationship Management**



- 6.1.1. Although the Institute is compact, in terms of its location and relatively small in terms of staff and students, it shares the same issues as universities globally
- Staff and student requiring access to information and services increasingly 24x7
  - Off campus access being important in providing support for home/mobile working/learning (location independent working)
  - Need to maintain/develop contact with prospective/current students and alumni in a global context
  - Increasing expectations from students and staff in terms of the quality of service provision
- 6.1.2. The specific nature of the Institute, with its postgraduate and post-experience/research-led population and strong links to the workplace, raises the importance of providing solutions to meet these requirements
- 6.1.3. **Customer Service/Focus**
- 6.1.4. Good quality customer service has become the expectation across society, especially within HE where students are paying more towards the cost of their education.
- 6.1.5. Providing an environment, virtual and physical, that is personalised and customer-orientated will be another differentiator, in terms of the institute's position within HE, adding to and developing its existing unique nature and assisting in the recruitment and retention of high quality students and staff
- 6.1.6. Portal technology enables personalisation of web interactions delivering tailored services and information. It can help meet the varied needs of a diverse student and staff population
- 6.1.7. Progress has been made in enabling a degree of 'self-service' for staff and students (e.g. self-issue within the library, provision of web access to staff to their own HR record) More could, and should be, done to extend this approach across the admin and learning systems and services
- 6.1.8. Standardisation of ICT desktop/laptop equipment across the Institute has enabled support levels to be maintained/enhanced and costs kept to a minimum as the Institute's population has grown, without a proportional increase in ICT support staffing. The range of devices and levels of support should be kept under regular review to ensure that user requirements are being met as far as is practical

- 6.1.9. Staff and students (and to a limited extent visitors) are able to access the Institute's online resources/services via personal devices (laptops, PDAs, phones), in particular via the wireless network. The wide range of these makes the provision of substantial Institute support difficult but current approaches and levels of support should be kept under review
- 6.1.10. As the tools have matured over recent years, it is increasingly common for staff and students to have their own web presence via individual and/or external organisation web pages hosted outside of the Institute. A clear statement as to the relationship between these information sources and the Institute is needed to clarify ownership, levels of support, legal responsibility etc.
- 6.1.11. Overall a balance is required to ensure that systems meet individual's requirements whilst maintaining adequate security
- 6.1.12. In order to ensure that services (including ICT-related) across the Institute are meeting the needs of students and staff, more regular and systematic methods of capturing user feedback are required that provide good data without creating 'survey overload'
- 6.1.13. **Location Independent Working**
- 6.1.14. The Martini Principle (relating to the ICT reuse of the 1970s advert's lyrics "Anytime, Anyplace, Anywhere" to people's need to access information) has never been more true with the proliferation and sophistication of mobile devices, cheap internet access from virtually anywhere in the world and the expansion of broadband network access within the home
- 6.1.15. As recognized in the 05-08 strategy, "ICTs will have a major role in the Institute's commitment to widening access, including the implementation of the disability policy, enabling students and staff to increasingly work from home and staff to keep in touch while travelling"
- 6.1.16. Combined with the requirement from staff/students for more comprehensive offsite access to information and services is the increased focus on the environment and efforts to reduce energy consumptions and unnecessary travel
- 6.1.17. There are a number of technologies (e.g. mobile devices, unified messaging, video conferencing) that can enable individuals to learn/work/interact with others remotely. Support for offsite or 'Location Independent Working' could be improved with investment, enabling staff and students to work/learn more flexibly
- 6.1.18. **Customer Relationship Management**
- 6.1.19. One of the key attributes of any successful business is good relationship management. Maintaining a good relationship with current/potential contacts (student, staff, partners, business) can improve service provision and aid income generation.

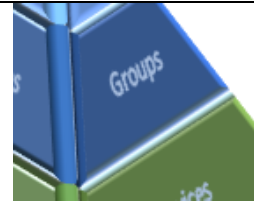
- 6.1.20. The Institute faces a very competitive student recruitment market-place which is increasingly global. Maintaining contact with students throughout their time at the Institute, from enquiries to applications, registration and alumni is important in developing a lasting, positive relationship.
- 6.1.21. The single faculty nature of the Institute provides strong scope for ongoing contact with graduates/alumni, both in terms of continuing professional development, research and third stream activities
- 6.1.22. The Institute operates within a budget funded from a variety of 'standard' sources of income. Identifying additional funding sources, fundraising activities etc. are extremely valuable in supplementing these and require careful management and good contact information
- 6.1.23. Inevitably within a research-strong organisation, there is often a close relationship between research output, knowledge transfer and consultancy. Maintaining contact information across academic and third stream activities can help to develop these

## **ACTIONS**

- **Review and revise the scope, content and frequency of Institute staff/student surveys**
- **Provide personalisation of the delivery of information (online and on campus) in a variety of formats enabling greater accessibility.**
- **Increase self-service provision**
- **Review and revise the support requirements for mobile devices (e.g. mobile phones, PDAs, laptops)**
- **Ensure adequate access is available for staff/students to be able to access online services on campus**
- **Provide clarity regarding support for, and appropriateness of, home working**
- **Progress the implementation of the Web Strategy with respect to ensuring staff and students have appropriate access to internal information and good internal communication is supported via the Intranet**
- **Revise related ICT/IOE policies to clarify the relationship and status of external web sites/content maintained either by individuals or groups**
- **Extend the deployment of Customer Relations Management (CRM) in support of the student/business 'lifecycle' i.e. student/business enquiries through to alumni**
- **Develop training programme to ensure all staff and students are able to acquire appropriate ICT skills and other related skills including awareness of the safety issues related to the use of technology**

## 6.2. Group Working

- **Online Collaboration**
- **Internal/External Communication**
- **Physical Study/Workspace**



### 6.2.1. Online Collaboration

6.2.2. Staff and students increasingly need to work together online in support of learning, research and/or administrative tasks. The creation of the internet, the World Wide Web and web-based technology has provided a mechanism to create online communities which can enhance the on and off campus experience

6.2.3. The extensive use of Web 2.0 technologies and social networks outside of the formal learning/work environment has begun to impact on organisations with the development of Enterprise 2.0 i.e. utilising Web 2.0 approaches and software to provide flexible internal online networks and services to support collaboration and communication

6.2.4. The Web Strategy identifies how the development of online communities for staff and students can be extended over time to include access for prospective students/staff, alumni, research collaborations, partner organisations etc

6.2.5. There has been an increased use of VLEs (Virtual Learning Environments) over the last three years, in particular Blackboard. This has enabled improved access to learning materials and aided internal communication. The work of the eLearning Task Group in 2008 provides a good roadmap for progressing online learning at the Institute

6.2.6. Research (and Research Groups) often works in the virtual/digital/web environment. Use of email to communicate is commonplace but collaborative virtual workspace is relatively rare. Individuals often create their own environments utilising web pages, linking to file store etc.

6.2.7. The growth and maturity of VLEs has led to the possibility of using a similar model to provide standard collaborative facilities to support research – Virtual Research Environments (VREs). A particular emphasis over the timescale of the strategy will be to develop/introduce an online collaborative environment for research and researchers to enable activity to be supported effectively within the Institute and beyond

### 6.2.8. Internal/External Communication

6.2.9. Good formal and informal methods of communication are essential in maintaining a vibrant, engaged community and supporting the Institute in delivering its mission

- 6.2.10. The Institute's Web Strategy identified a mechanism to improve the means of communicating information internally and externally, replacing the web site with an Intranet for staff and students and an 'externally facing' website (both of which will be introduced in 2009)
- 6.2.11. The new Institute web site will provide a refreshed 'shop window' for promoting the work of the Institute. There has been a considerable amount of effort to ensure that the content on the new site is up to date and appropriate for the various site visitors. In order to gain benefit from the new web site there will need to be ongoing effort in maintaining and developing its content
- 6.2.12. The Intranet will provide access for staff and students to information, forms, documents, communiqués etc complementing face-to-face and paper-based methods of communication
- 6.2.13. Providing mechanisms for internal communication (electronic or paper-based) are not in themselves sufficient however to ensure effective communication is in place. There is a need for these to be framed within a Communications Strategy (incorporating electronic communication) that describes how best to facilitate communication and how to
- 6.2.14. In addition there is a need to ensure that there are adequate means and opportunities for staff and students to access online information/services
- 6.2.15. **Physical study/workspace**
- 6.2.16. The lecture/classroom and library remain important environments to facilitate teaching and learning, although the nature of these spaces has changed over time. Audio-Visual and computer facilities within these and other shared spaces have become the norm within universities and primary/secondary schools
- 6.2.17. As the implementation of the Estates strategy progresses and funding allows, enhancements to the design, equipment and facilities within teaching and learning spaces are required, in particular to support group working

## **ACTIONS**

- **Progress the implementation of the Web Strategy ensuring the externally-focussed Institute website is adequately supported/maintained and the Intranet provides support for online group collaboration across the Institute**
- **Identify options for extending access to the online environment, services and resources to external groups (e.g. prospective students, alumni, partner organisations)**
- **Develop role of website in research for showcasing current/past research**
- **Provide support for research collaboration (internally and externally) via an online research environment/VRE (virtual research environment)**
- **Support the implementation of the Learning & Teaching strategy and the work of the eLearning Implementation Group focussing on delivering the recommendations of the 2008 eLearning Task Group**

- **Undertake a review of the appropriateness of the Institute's Virtual Learning Environment in terms of its support for student learning, internal/external collaboration and systems integration. Implement review recommendations**
- **Identify emerging technologies that may have an impact upon learning and teaching and research within the Institute, initiating pilots to explore their potential as appropriate**
- **Establish closer links between IS and research activity across the Institute**
- **Develop and implement an Institute-wide Communication Strategy to improve internal communication**
- **Revise the procedures and guidance related to internal electronic communication**
- **Review and revise the space configuration and ICT facilities within IS and teaching/work space to ensure they meets the needs of staff and students**

### 6.3. Services

- **Services & Support (local/central)**
- **Corporate Systems & Data**
- **Business Processes**



#### 6.3.1. **Services & Support**

6.3.2. The scope and levels of ICT services within the Institute are described within the associated service statements. These are supplemented/enhanced to reflect changes in requirements as funding allows, primarily annually following bids within the Institute's planning process

6.3.3. There are differences in the type of central ICT services provided between different groups, in particular staff and students, and the level of services amongst some groups ((e.g. allocation of pre-paid print quota to Masters and Research students) but the underlying principal has been to provide broadly the same level of central ICT service across the staff groups and across the student population

6.3.4. This central provision is supplemented within some academic and administrative departments where staff provide local (usually specialist) ICT support. There is variation in the method of funding these resources (fully local, fully central and shared local/central) and in their line management and location

6.3.5. The current pattern of local ICT service provision has developed over a number of years as departments have identified a particular need and associated funding

6.3.6. In order to ensure that services are coordinated and fit user needs, periodic reviews of ICT support/provision across areas (local and central) are undertaken, identifying changes where required

6.3.7. Central IT support has begun the process of adopting formal service management procedures (based on the industry standard ITIL) to maintain the quality of problem and change management and associated service levels

#### 6.3.8. **Corporate Systems & Data**

6.3.9. As identified in the 05-08 ICT strategy, there is an ongoing need to ensure that the Institute's corporate/central administrative systems are fit for purpose and support the business processes and information needs of the faculties and support departments

6.3.10. A Corporate Systems strategy is in place to give overall direction to this work and associated governance and programme/project management to ensure it is successfully implemented

6.3.11. As these systems are introduced there is a need to enable interaction at the data and transaction level to ensure consistency of information across the organisation thereby providing a solid base for reporting and online access

- 6.3.12. Although the prime driver for selecting replacement business solutions is to meet the needs of the Institute, opportunities to share systems/services with other partner organisations are pursued where appropriate (e.g. Bloomsbury Colleges shared Blackboard installation, London MAN (metropolitan network))
- 6.3.13. **Business Processes**
- 6.3.14. ICT solutions are sometimes seen as purely changes to the infrastructure, the hardware and software, with end user involvement focussing on training in using the new application
- 6.3.15. The introduction of a modern, flexible information system can provide however an opportunity to look again at the underlying business processes with an aim to improve their efficiency and effectiveness i.e. improving the quality and reduce the cost of services
- 6.3.16. There have been a number of process reviews across the Institute and levels of associated documentation have improved. A more comprehensive/systematic review of business processes would be beneficial, particularly if coordinated with the planned replacement of corporate systems

#### **ACTIONS**

- **Regularly review ICT support across the Institute in terms of the quality/quantity, scope and methods of delivery. Implement review recommendations**
- **Ensure systems and services are developed/introduced with due regard to their ease of access and usability by the Institute community**
- **Recognise diversity amongst staff and students by providing appropriate level of support/flexibility of environment**
- **Continue with the introduction of formal IT service management methods (ITIL) for IT problem and change management**
- **Keep under review the standard desktop and server-based software and hardware available to staff and students**
- **Progress the Corporate Systems strategy in conjunction with other HE/business partners where appropriate**
- **Undertake periodic reviews of Institute-wide business processes with an aim to improve their efficiency and effectiveness**
- **Produce a comprehensive data model related to the primary corporate systems, describing data sources, flows/interfaces in order to support improved reporting and information integration**

## 6.4. Infrastructure

- **Resilience & Robustness**
- **Supporting Research**
- **Green Computing**



### 6.4.1. Resilience & Robustness

6.4.2. ICT has increasingly underpinned the work of the Institute over the last decade, supporting its academic/scholarly and administration activity to the extent that interruptions to online services and/or network communications can impact significantly on the work of staff and students

6.4.3. Investments in IT infrastructure and staffing have taken into account the requirement to ensure that interruptions to services (planned or unplanned) are minimised as far as is possible within the budget/resource constraints

6.4.4. Planned downtime is scheduled, as far as is practical, to be undertaken at times of the year and week/day to cause the least disruption. Careful preparation for planned work helps to minimise the length of the downtime.

6.4.5. There are instances of unplanned downtime where systems/network are out of commission e.g. failure in a component of hardware, need for an emergency patch to software, an attack on systems causing failure (The Institute receives over 1.5m incoming email each week. 96% is identified as spam/viruses via the Institute's spam filter)

6.4.6. In order to minimise the number of unplanned interruptions, ongoing investment is needed to delivery more robust solutions. This is particularly true for the data infrastructure

6.4.7. Improving the resilience of systems, enabling work to continue in the event of a failure, again requires ongoing investment. The investment ranges from the specification of component parts through to doubling up on the data centre (if housed at an alternative location thereby supporting business continuity in the event of a major incident)

6.4.8. Collaboration, locally, regionally and nationally, is important in enabling the provision of sound solutions that are cost effective

### 6.4.9. Supporting Research

6.4.10. The Institute's ICT infrastructure has been developed to provide support for research and consultancy, learning and teaching, support and administration

6.4.11. Solutions and services have been primarily focussed on delivering generic services across broad groups, aiming to deliver the highest quality within available resource provision

- 6.4.12. Delivery of these solutions have however been challenging when the requirements of groups are at odds. This is particularly the case when considering the needs of researchers. There are areas of research that require even higher levels of security in systems terms than those related to administrative and standard communications/collaboration purposes. Conversely there is research and teaching activity that requires access to untested/beta software and/or unsecure online environments
- 6.4.13. To date the infrastructure has been developed to ensure that all of the online resources/services are available to all of the Institute (taking into account appropriate authorisation) In order to support research that requires a lower level of security, it will be necessary to delivery an alternative solution - a research/teaching 'sandbox' i.e. a segmented part of the network for the temporary use of non-standard software
- 6.4.14. Another aspect of research within parts of the Institute is the requirement to analyse very large data sets. Even with high specification workstations and fast bandwidth, this can be very time consuming. Solutions to support high performance computing (HPC) have matured over recent years with costs falling making a HPC facility within the Institute feasible with relatively modest outlay
- 6.4.15. **Green Computing**
- 6.4.16. The Institute makes continuing efforts in trying to reduce its power consumption and overall carbon footprint (c/f 2008 IOE Sustainability & Environmental Strategy)
- 6.4.17. Developments within the IT industry have provided some support for the widespread concerns to minimise waste and ensure sustainability. New IT hardware is now more energy efficient and often modular (supporting growth via adding to systems rather than wholesale replacement)
- 6.4.18. Software has also become more sophisticated enabling several different configurations to be run on the same server/workstation (virtualisation) reducing the power requirements
- 6.4.19. Increased use of online communication/collaboration, online services/resources, location independent working, video conferencing etc has, and can continue to, reduce the need for travel and associated costs – budgetary and environmental.
- 6.4.20. In order to gain benefit from these advances, a 'green computing' approach to future ICT investments will be required

## **ACTIONS**

- **Continue growth in network capacity, within the Institute and between it and other organisations, to support all types of media and the exchange of data internally, nationally and internationally**
- **Continue growth in data storage capacity, security for Institute systems and reliability and robustness of infrastructure, including arrangements with appropriate partners, to provide business continuity for all ICT systems in the event of a disaster**

- **Ensure systems are developed with due regard to the highest standards of security - in terms of systems and equipment as well as security and privacy of information**
- **Develop the IT infrastructure to support the needs of research and researchers (e.g. providing viable options for the safe use of 'non-standard' software and intensive/specialist computing)**
- **Develop and implement a Green Computing strategy to ensure that the increased use of technology across the Institute does not impact negatively on the environment**

## 6.5. Information Resources

- **Resource Discovery/Accessibility**
- **Decision Support**
- **Information Management**



### 6.5.1. Resource Discovery/Accessibility

6.5.2. Information resources, generated internally or externally provided, are key to the work of the Institute and require ongoing investment and support. (Annual subscriptions to journals and databases have risen substantially over recent years)

6.5.3. Information Services, as a matter of course, catalogues materials held within the library and archive, utilising IOE-appropriate subject meta-tagging to facilitate searches for material, with various interfaces provided to search the printed collection and online resources.

6.5.4. Solutions for comprehensive searching of online resources are becoming more available with the development of common standards and improved technology.

6.5.5. The Institute has a significant amount of audio and visual resources in analogue and digital formats within the library and archive collections. Newly broadcast material is now captured and stored digitally. In order to make all of the collection readily available, conversion of analogue to digital is required combined with the provision of server-based storage and delivery.

6.5.6. Although support is provided, centrally and locally, in terms of support staff, applications, services, staff training etc. there is a need to ensure that this is sufficient in terms of quantity and quality to support staff and students in locating and retrieving relevant information

6.5.7. Scholarly communication is central to a postgraduate community. Institutional repositories (c/f [www.sherpa.ac.uk](http://www.sherpa.ac.uk)) are proving a viable mechanism for the publication and sharing of scholarly output and the Institute has its own, still relatively sparse, repository ([eprints.ioe.ac.uk](http://eprints.ioe.ac.uk))

6.5.8. A likely metric within the new government funding mechanism for Research (REF) is likely to be related to citations of output. A fully populated IOE Institute Repository can help to support the dissemination of research output globally

### 6.5.9. Decision Support

6.5.10. Vital to any decision making process in organisations is the quality of the related data/information.

6.5.11. The Institute has made efforts over the last few years to improve the quality of data within the underlying business systems via a replacement programme which is ongoing.

6.5.12. Access to relevant information, drawing in a coherent/integrated set of data, can often be problematic with manual and/or parallel data being kept locally in order to accomplish analysis within timescales

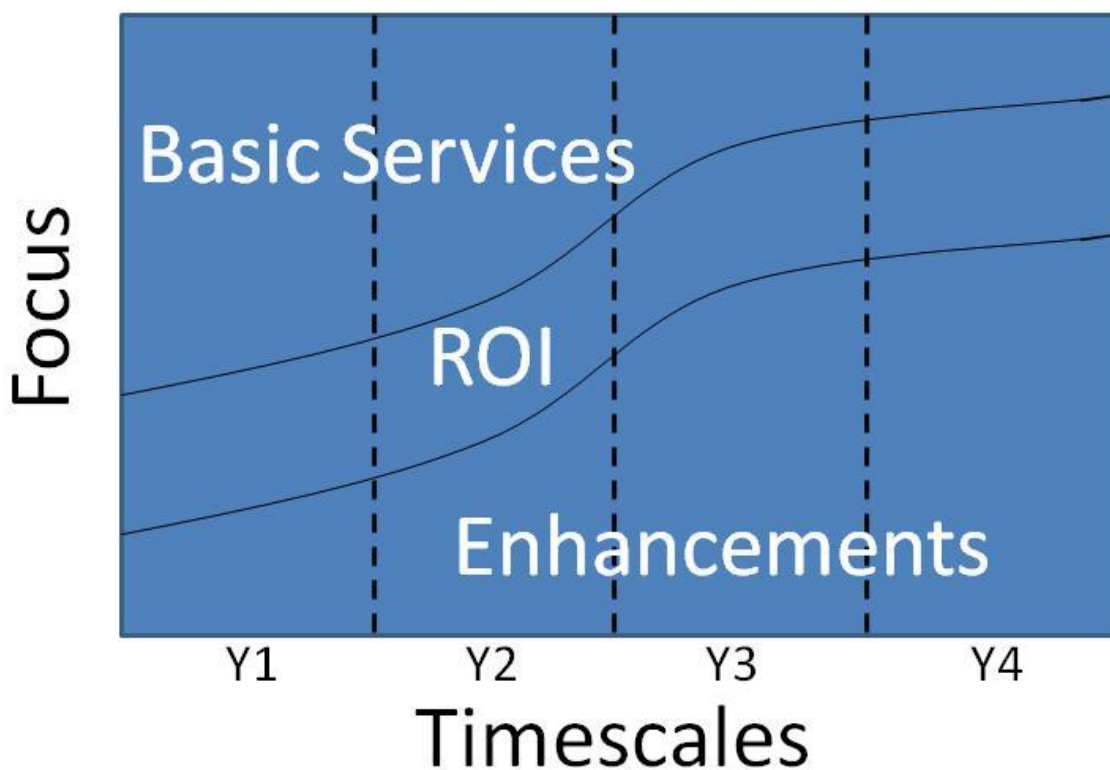
- 6.5.13. An analysis of high level reporting requirements for the Institute is underway and this will need to be translated into comprehensive solutions providing easy/seamless access to quality information to support faculties and support departments in the delivery of their remits
- 6.5.14. **Information Management**
- 6.5.15. Information Management covers policy and procedures relating to how information/data is stored, processed and accessed. This can provide a framework to implement document management and archive policies (i.e. what information to keep, how long for, where it should be held, who should have access) and related systems/databases
- 6.5.16. Documents (paper-based and electronic) are currently stored in a variety of locations inside and outside the Institute. On shelves, filing cabinets and boxes. On shared and individual filestore, as email attachments, on Cd-Roms, memory sticks etc.
- 6.5.17. The lack of consistency in storing documents leads to inefficiencies, wasted effort trying to locate documents for example, and creates difficulties when information is shared
- 6.5.18. To improve the situation, effort is required to introduce more formal Information Management across the Institute taking into account good practice and legislative requirements related to record and document management

#### **ACTIONS**

- **Develop a Information Strategy and Information Management Policy (incorporating measures to ensure the security of sensitive/personal information)**
- **Improve the provision for data storage and retrieval and the development of services such as the management of digital assets**
- **Instigate project to systematically digitise Institute analogue and printed resources**
- **Continue to improve the accessibility of the Institute's Archive by ensuring the collections are fully catalogued and digitised as appropriate**
- **Promote the use of the IOE Institutional Repository to support the dissemination of scholarly output**
- **Collaborate with library and archive departments nationally and internationally to increase access to resources**
- **Implement Document Management**
- **Improve the quality of information and related access methods for decision support and resources management**
- **Provide additional training and support for the development of knowledge search and management skills**
- **Support the Library strategy and related library collection development and archives acquisition policies**

## 7. Priorities

- 7.1. The sequence of steps/actions to further the ICT strategy are listed within the strategy document and further detailed in the associated action plan
- 7.2. Annually these will be agreed by the Information Strategy Committee following careful consideration of the need to progress the strategy within the context of current Institute priorities and budgetary allocations
- 7.3. In broad terms however the priorities for the implementation of the ICT strategy will be to focus in the early years on actions identified related to ensuring that the basic infrastructure/ services are adequate and that current investments are being fully exploited
- 7.4. There will be ongoing effort to maintain these over the later years but with increasing emphasis on developing/introducing new services, building on previous investment



## 8. Summary

- 8.1. The strategy aims to put in place a solid ICT infrastructure (technology, policies and procedures) from which the Institute can develop and grow in a sustainable manner. It will build on previous investment and gain benefit from advances in integrating technologies, good practice/current thinking in the HE community and opportunities for external collaboration
- 8.2. It will help to create an environment, physical and virtual, which recognises individual needs, in terms of learning and support, improves access to resources and services and facilitates improved communication and sharing throughout the Institute
- 8.3. The Strategy details the key projects and activities required to progress the overall aims related to connecting people, services and resources. These range from initial investigations of possible solutions, changes in working practices etc., with relatively minimal costs in terms of additional budgetary outlay, through to introductions/replacements of large systems requiring significant capital investment
- 8.4. Timescales listed against the actions within the Strategy will be influenced by the timing and levels of budgetary allocations and changes to priorities brought on by unforeseen/unplanned events and changes. Careful monitoring of progress, however, can ensure that overall progress is maintained and achieved
- 8.5. In addition to identifying funds to progress the strategy, there will need to be recognition of the impact on current operational activity across the Institute, particularly in the early phases.
- 8.6. It is not expected or proposed that, in order to support the implementation of Strategy, there should be a significant increase in overall permanent Institute staff numbers. A proportion of the actions will be achievable within existing resources and workloads. There will be however a need for a number of new key roles to ensure that the Institute gains benefit from the capital investments and temporary investment in staffing to ensure momentum is maintained at key stages
- 8.7. Although the strategy is far reaching in its scope and will entail substantial effort to achieve its outcomes, it should be seen as a step in a longer term strategy to invest in technology and information resources in order to fully support the Institute and its, increasingly mobile, community