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1. ICT Strategy 2013-2016

1.1 Introduction

This is the second Strategic Information Communication Technology (ICT) policy published by Dundalk Institute of Technology (DkIT) and has been developed by the IT Strategy committee^{1,2} to complement the Institute Strategy published in 17th December 2012. The previous IT Strategy document was published in 2002.

The focus of this ICT strategy is to support the Institute Strategic Plan (2011-2016) in delivering a quality learning experience to staff, students and stakeholders in the region. This document will outline ICT Strategic goals that are required to plan for future ICT deliverables in line with the overall Institute strategic goals. The strategy covers the time interval 2013-2016, a period during which there may be challenging circumstances due to currently unknown external factors such as changing financial funding models, developments in technology and increased demand for services.

It will involve the training of staff, the skills development of ICT support groups, better capital planning and justification of project expenditure and the streamlining of various services to our stakeholders.

While ICT has historically been seen as a key support service, it is important to recognise that ICT is now an essential business enabling tool and a platform to enable DkIT achieve its strategic objectives.

The Institute has invested significantly in ICT Infrastructure in recent years with the upgrade of the Network and Telephone services (2010 €750K) and migration to new server platforms (2011 €200K). The development of the PJ

¹ IT Strategy Committee Members are Dr Gerard (Bob) McKiernan (Chair), Mr James McCahill (Secretary), Dr Brendan Ryder, Mr Gerry Gallagher, Ms Caroline O'Sullivan, Mr Peter McGrath

² Terms of Reference

The strategy will have particular emphasis on the need, in a period of resource constraints, to:

- (a) Develop an IT environment capable of supporting blended and technology enhanced learning;
- (b) Develop the IT infrastructure to keep pace with changing needs and demands.

Carroll Building (2010 €650K) has seen major improvements in the delivery of ICT and Audio Visual (AV) services on campus.

These investments provide the underpinning technology platform to allow the Institute deliver a new ICT strategy.

An analysis of IT expenditure ([Table 3 page 16](#)) shows that the total ICT spend for 2011 and 2012 was €1,409,786 and €1,884,169 respectively. It also shows that in these years the percentage of the total ICT annual operations spent outside the central Computer Services ICT function for non-capital items was 34% and 46% respectively.

Also in Figure 1 Total Annual IT Expenditure Capital & Operations we see the annual IT expenditure for the Institute for period 2005-2012. In Figure 2 Computer Services Budget as % of total IT spend (including capital) p.a. we see the percentage of expenditure directly allocated /managed by Computer services in that same period.

A major expense item during the term of the ICT strategy will be the expenditure required for replacement of desktop machines. The current inventory of desktops in teaching areas is:

- 51 Labs / Public areas with a total of 1120 PCs and 120 Apple Macs
- 180 Lecture spaces with varying levels of AV service delivery.

There are 1550 desktops managed in Active Directory with 500 Machines used for staff/ admin operations. Apple desktop numbers for lab and staff usage are 130 units. Table 3: Annual Expenditure for Desktops and PCs shows expenditure for Desktops over the last 8 years.

The age profile for lab machines is a particular concern with 500 PC desktops equal to or over 5 years, there are 300 PC units at 3 years (6 years at the end of our strategic window); the remaining PCs are less than 3 years and no replacement strategy is necessary for them until after the strategic period 2016. Also the Apple desktop stock (130) is currently 3 years old and will require replacement within the strategic timeframe.

This document will outline the goals / deliverables required to enable the business changes required of the Institute. These goals will, by their nature, be competing with different elements of the Institute strategy for the scarce resources available to deliver the required business objectives/ targets. Computer Services will work with senior management in planning the allocation of resources to ensure a successful outcome of the overall Institute strategic objectives.

2. The Strategic Plan context

This document will outline an ICT strategy in terms of the three strategic pillars identified in the Institute Strategic Plan.

- Knowledge Asset Pillar
- Community and Development Pillar
- Organisation Pillar

3. Knowledge Asset Pillar

This IT strategy will place particular emphasis on supporting the first two goals of the strategic Knowledge Asset Pillar which focus on enhancing learning.

Goal 1: Learning and Teaching: Placing focus on the learner to fully realise their potential through the provision of high quality relevant programmes.

Goal 2: Flexible Delivery: To systematically embed blended learning and technology enhanced learning within the Institute.

ICT usage is more ubiquitous than ever before and is now a key element in the learning process. To facilitate those involved in this process we must consider the following:

- Delivery of ICT services infrastructure for learning
- ELearning Requirements
- Audio Visual Services
- Research Requirements

3.1 Delivery of ICT services infrastructure for Learning

The ICT service has to be delivered and enhanced in a time of financial constraint. As consumer technology has evolved more rapidly with the deployment of smart devices, the Institute must address this paradigm to provide a stable infrastructure as the means to deliver services to users anywhere on campus without loss of service levels, thereby raising confidence levels in our user community.

This infrastructure will provide means to access content

- Using Wi-Fi in a class environment and in open areas on campus
- Using web services: Anytime anywhere onsite / offsite.

3.1.1 Wi-Fi

On a macro level, we are observing the phenomenal growth of Wi-Fi and use of mobile technology. In market research presented by RedC Marketing and Research group (2011), smartphone usage/ growth had the highest percentage of any device type. Forbes Magazine (2013), quoting IDC market research group, predicts that by 2017 87% of connected devices will be smartphones or tablets.

On a local level, the IT strategy group undertook a survey of students (May 2013) to determine ICT usage on campus to inform / to provide input to the ICT strategy development process.

A total of 320 students completed the survey. In relation to mobility, 78% of students indicated that they used laptops at home, with 58% bringing them on site (27% of that group using laptops over 60% of the time). In respect of smartphones, 78% of students use these devices (43% Android, 28% Apple, and 4% Blackberry, Windows 3%).

A key point which emerged from the survey was the demand for Wi-Fi campus-wide. While student wireless access (installation 2010) is available in public areas across campus and throughout the PJ Carroll building, it is not available in other teaching areas on campus.

Furthermore, the current level of mobile device usage, which has well exceeded our original expectations, now requires more investment to deploy services into all of the learning areas on campus.

3.1.2 Web Services

Web services, which include application services such as Moodle a Virtual Learning Environment (VLE) and Banner our Student Management System, have become the preferred service delivery method to users. This reflects the rapid growth of consumer ICT and accessibility that web services provide.

To maximise the quality of the service provided, DkIT must ensure that the ICT environment is readily accessible to its users and provide for the needs of staff and students. This will require that we improve consistency between administration systems and learning systems.

Web services have evolved over time from being purely standalone to now having greater dependency on interactions between various service

platforms/ applications. An important consideration is the consistency and availability of data flows as the Institute integrates data from the various information /data sets from the programme development stage right up to student access and content delivery of that programme.

For example, staff have requested greater consistency in the integration and delivery of new programmes in the Moodle VLE. This will involve more integration of programme validation activity between the Banner information systems and the Moodle VLE (Middleware) to facilitate the dynamic nature of the education delivery services.

Improving the quality of web services will include:

- Defining good practice and enhancing support for academics and administrators in the setup of new programmes and modules for Moodle.
- Designing and delivering integrated web services for users, developing training; implementing web services/ views for academic staff, admin staff and students (look at web portal technologies).
- Ensuring that the ICT environment has more service availability uptime metrics.
- Improving service availability metrics, to provide a consistent Web/VLE service by looking at business continuity management practices in this area.

3.2 E-Learning Requirements

Embedding blended learning and technology enhanced learning within the Institute (Objective 2.4) as envisaged in the Flexible Delivery goal will pose new challenges to ICT technical services. In order to do this, it is essential that the Institute continue to build on existing services.

To further advance this goal the Institute will:

- Enable the delivery/ development of programme data and integration with existing information services.
- Enable staff and students to use their own mobile devices to access learning resources on campus on an anytime / anywhere basis.
- Improve Web content delivery.
- Review teaching / preparation spaces that may need to be modified to allow for new delivery methods in learning activity.
- Support the Teaching and Learning practices being proposed by CELT (Dallat & Ryder, 2012) and E-learning Policy adopted in June 2013.
- Employ technology to allow remote learner access to local services as is the case for on-site class activity.

If the Institute is to deliver these goals it is essential that the capital expenditure programme be reviewed to determine available funding, operations and activities to achieve these goals

3.3 Audio Visual (AV) Services

Robust and consistent audio visual services are essential pedagogical tools and should be available in all teaching spaces.

Historically, AV services have developed on an ad-hoc basis and are not formalised or centralised as a standard service available on campus. An audit of our facilities shows that of 180 teaching rooms audited, 160 have screens and projectors. 28 rooms have a projector but no audio, 126 rooms have fixed sound, of which 90 have a fully integrated AV management service. Funding for Audio Visual service delivery in academic areas is provided on an ad-hoc basis whether from capital programmes or from annual budgets/discretionary spend allocation in schools or departments.

Increased technology-enhanced learning activity will mean that there is a greater dependency on these systems and will require that they operate consistently across campus.

For this reason, the Institute must ensure that AV systems and ICT systems in teaching spaces across campus are configured to a common standard. This will also ensure that we meet expectations of students many of whom have been accustomed to this technology in primary and second level.

3.4 Research Requirements

In recent years, research activity has increased significantly within the Institute. Its importance is reflected in Goal 3 of the Knowledge Asset Pillar which states that "Research: By end 2016 to be the leading Irish Institute of Technology in our research areas"

To support achievement of this goal, the Institute will require appropriate ICT structures and procedures to be put in place. This strategy envisages that:

- ICT planning/resources are considered during the research planning programme phase.
- There are adequate resources available for research programmes to secure and archive the research project data as per research data retention requirements.
- Research projects are availing of central resources on campus and nationally (through HeaNet) for this activity.

3.5 ICT Strategy Goals (ITG) for Knowledge Asset Pillar

The table below outlines the major infrastructure/ technology investments required to meet ICT strategic goals relating to eLearning activities over the medium to long term timeframe of the strategy.

Table 1 Knowledge Asset Pillar Goals

IT Strategy Goals (ITG) for Knowledge Asset Pillar		
Knowledge Asset Pillar	IT Goals (ITG)s	Strategic Goals
Wi-Fi	ITG-1:-Extend Wi-Fi service to give total campus coverage in the Institute with sufficient capacity and access management.	Goals 2 (Objective2.2)
Data Integration	ITG-2:-Improve data integration services between programme design and programme delivery on e-learning services infrastructure. ITG-3:-Deliver a robust Web service infrastructure to deliver services across the Institute and beyond.	Goal 2 (Obj 2.4) Goal 7
Lecture rooms	ITG-4:-Ensure there is a standard desktop & audio-visual suite with management / ownership of AV under a single owner/ administrator across campus. ITG-5:-Establish standard facilities for web content preparation and delivery.	Goal 2 (Obj 2.3,2.4)
Labs	ITG-6:- Devise a policy for the planning of hardware acquisitions and deployment ITG-7:-Revise application delivery to users.	Goal 2 (Obj 2.3,2.4)

Virtual Desktop Infrastructure (VDI)	ITG-8:-Provide a PC desktop to users via web. This will enable students to access a wider range of campus based software and help reduce capital and operational costs in line with sustainable theme. This will allow learners, especially distance learners, access to software without the requirement to attend campus.	Goal 2 (Obj 2.3,2.4) Goal 7 Goal 11
Web service availability	ITG-9:-Balance user demands on service delivery with appropriate level of service. As there is greater dependency on delivery of programmes/services over the Web, there will be greater demands on delivering a more resilient and efficient service platform.	Goal 2 (Obj 2.3,2.4) Goal 7 Goal 11
Research Planning	ITG-10:-Ensure future proposals include provision for ICT funding where appropriate. Ensure that research data is secured and archived for future reference.	Goal 3
Shared Services	ITG-11:-Participate in shared services initiatives. This will allow the Institute to implement new service platforms provisioned specifically for the third level sector in Ireland and realise cost savings for the Institute	Goal 3 Goal 11

4. Community and Development Pillar

This Pillar in the strategic plan seeks to bring a new focus to the community and social engagement activities of the Institute.

Of particular relevance to ICT services is Strategic Goal 7.

Goal 7 “Access and Participation: Opening pathways of opportunity and engaging new learners”

Many of the objectives of this outreach activity which impinge on ICT services will have been addressed by the goals outlined in the previous section on Knowledge Asset Pillar.

New web services will allow programmes to be more readily accessed by people in the northeast region; an example being that part time learners would access the same services as fulltime cohorts have on site.

These will align with the proposals for the development and support of the part-time / distance learning programmes as outlined in the recent HEA Report “Part-time and flexible higher education in Ireland” (2012)

5. Organisational Pillar

The Organisational Pillar of the Strategic Plan addresses issues such as the Institute's status, organisation structure, human, physical and financial resources i.e. the processes and resources that underpin our work.

Fundamental to achieving this is the funding and organisational model. This is the landscape in which we are to develop and improve the ICT environment with less resources available while cognisant of the rapid uptake and development of Information Technology and services that are now becoming available externally to staff and students, thus creating expectations that such a level of service be available within the Institute.

In recent years major ICT change initiatives have been financed from capital programmes. However, the impact of public expenditure cuts has and will result in an aging inventory which will affect service delivery and impact on change/innovation for the Institute.

Any large scale ICT change / service delivery programmes will have to be funded from the annual recurrent funds. To ensure that there are sufficient finances centrally for the Institute to achieve its strategic goals it will be necessary to reduce discretionary spending so that the Institute is able to pool funds to make further change possible

These changes in turn will be evaluated by senior management to ensure that there are sufficient resources available to deliver on the Strategic Plan Goals particularly Learning and Teaching initiatives.

It is essential that the Institute:

- Review capital investment programme for all ICT expenditure/projects.
- Establish a business case review for each ICT Investment.
- Plan procurement and deployment of equipment to optimally manage service to users.

In terms of specific aspects of the Strategic goals outlined in the Organisational Pillar we will review:

- People and Culture
- Developing the IT infrastructure environment
- Communications
- Governance and Risk management

5.1 People and Culture

In pursuing the Strategic Goal 10: “People and Culture: Developing and empowering our staff in a positive and supportive culture”

The Institute will ensure that IT Support staff have the necessary skills and training to deliver and support the IT services for the Institute community over the next 3-5 year timeframe. This will include a staff development and skills assessment programme (The Skills Framework for the Information Age-SFIA could be considered) to assist the Institute to assist staff development and new programme initiatives.

5.2 Developing the IT infrastructure environment

IT services delivery is specifically covered in the declaration of the overall strategy in Goal 11: “Campus: Developing the Environment to meet the future needs of DkIT and the region it serves”.

Objective 11.3 “Develop the ICT infrastructure to keep pace with changing needs and demands”.

Amongst the challenges facing DkIT to achieve this goal are reduced funding, increasing operational costs to support and maintain our ever increasing hardware infrastructure.

The institute will accomplish this by investing strategically in planned IT services activities. This will enable/ empower the Institute to become more agile in how it can provision its IT service deliverables to its user base.

5.2.1 ICT service provisioning

The Institute will ensure that ICT staff are able to support the services and programmes in place. This will be achieved by adopting the IT Service management (ITSM) framework for example. The adoption of an ITSM methodology may result in a change of support structure to optimise support and services to users.

5.2.2 Sustainable delivery

New hardware investments will be made in line with our sustainability ethos. Equipment will be more energy efficient and easily managed. Investments will be made to ensure the institute as a public body will comply with energy sustainability programmes in the national and European context as reported in “The National Energy Efficiency Action Plan” (DCMR 2009) and EU Directive “The climate and energy package” (20-20-20)

These technologies should offer value for money and savings in operating costs. Also, by adapting to the change management practices of ITIL we aim to improve services with more integrated planning of activities to assist in meeting these strategic goals.

5.3 Communications

The strategic Goal 12: “Communication: Re-affirming our internal and external message” highlights the strategic importance of having an effective communications presence.

As part of this activity DkIT will review the ICT technologies (along with marketing and communications operations) in the context of delivering web content and services targeted to the various users, internal and external to the Institute.

The Institute will review the ICT infrastructure and application needs (and emerging social media trends) to deliver an overall communications presence in the web and mobile space.

5.4 Governance and Risk management

We must ensure that appropriate systems are in place for the proper governance of ICT services and the reduction of risk elements relating to ICT service provisioning.

5.4.1 Governance

We will adopt a professional IT service delivery methodology. An example being the ITIL framework as a set of practices for improving IT service management (ITSM).

Such a methodology outlines policies, procedures, processes, tasks and checklists to align with the Institute's strategy. These will also align with governance requirements as determined by regulatory issues or statute.

5.4.2 Standard Policies and Procedures

We will continue to develop and enhance policies and procedures for organisation compliance and service provisioning.

5.4.3 Greater emphasis on business continuity

The Institute will ensure that a business continuity plan is developed to deal with increased service delivery demands and risk management of the IT service delivery function.

It will be necessary to deploy an infrastructure/ backup service to provide continuity of ICT services to our clients. This has greater importance as we increase our web service delivery presence and our ability to support this environment which may provide a 24/7 service requirement with fewer resources.

5.4.4 Reviewing strategy

As in any strategy, there may be external and internal factors that could influence how it is implemented. This strategy will be reviewed on an annual basis to ensure that the Institute is keeping on track with its goals and also to allow management adjust direction in response to the developments that influence our operations.

5.5 ICT Strategy Goals (ITG) for Organisation Asset Pillar

Table 2 Organisational Asset Pillar Goals

IT Strategy Goals (ITG) for Organisation Asset Pillar		
Organisation Asset Pillar	IT Goals(ITG)Actions	Strategic Goals
Expenditure	ITG-12:-The Institute will implement a multi-annual strategic IT budget plan. Expenditure will be centrally managed and major expenditure items are approved by the Executive Board to ensure that the Institute will be able to deliver ICT services in line with overall strategic objectives	Goal 13 (Obj 13.1)
People:	ITG-13:-Develop training programme to deliver on new IT service requirements	Goal 10
ICT provisioning	ITG-14:-Implement an IT Service delivery methodology.	Goal 10
Web Communications	ITG-15:-Review communications presence in the web/internet space	Goal 12
Sustainability	ITG-16:-Review energy consumption in respect of sustainability objectives	Goal 11
Governance	ITG-17:-Review service delivery platform for Risk & Business Continuity ITG-18:-Ensure business activities are secured through development of further Policies and procedures.	Goal 13

5.6 Annual IT Expenditure costs

Analysis of Total IT Expenditure per annum: 2005-2012.									
Analysis of IT Capital Spend per annum (B340) 2005-2012									
		2005	2006	2007	2008	2009	2010	2011	2012
CE01	Computer Equipment	943,047	422,184	516,087	509,484	437,197	2,171,219	249,935	908,235
CE02	Network Equipment	30,218	3,392	75,906	29,082	1,875	312,268	571,799	0
CE03	Servers	0	334	1,865	15,113	38,175	317,275	3,782	74,358
CE04	Printers	6,729	2,884	608	33,341	3,415	26,302	1,419	374
FE05	Audio Visual	245,684	11,415	62,909	21,933	24,052	74,941	83,029	297,096
	Total IT Spend	979,994	428,794	594,464	587,020	480,663	2,827,063	826,935	982,967
	Total IT with AV	1,225,678	440,209	657,373	608,953	504,715	2,902,005	909,964	1,280,063
Analysis of IT Operations spend - Non Capital per annum (3600)									
		2005	2006	2007	2008	2009	2010	2011	2012
	Computer Services IT spend	256,684	312,175	253,812	254,929	254,500	303,527	332,484	327,106
	Total Institute IT Spend	422,877	411,461	398,728	509,142	436,138	565,462	499,822	604,107
	Computer Services IT spend as % Total Institute	60.70%	75.87%	63.66%	50.07%	58.35%	53.68%	66.52%	54.15%
	ICT % spent outside Computer Services	39.30%	24.13%	36.34%	49.93%	41.65%	46.32%	33.48%	45.85%
	Total IT Expenditure Capital & Operations	1,648,555	851,669	1,056,102	1,118,095	940,853	3,467,466	1,409,786	1,884,170
	Computer Services budget as % of total IT spend (including capital)	15.57%	36.65%	24.03%	22.80%	27.05%	8.75%	23.58%	17.36%

5.6.1 Annual Expenditure charts

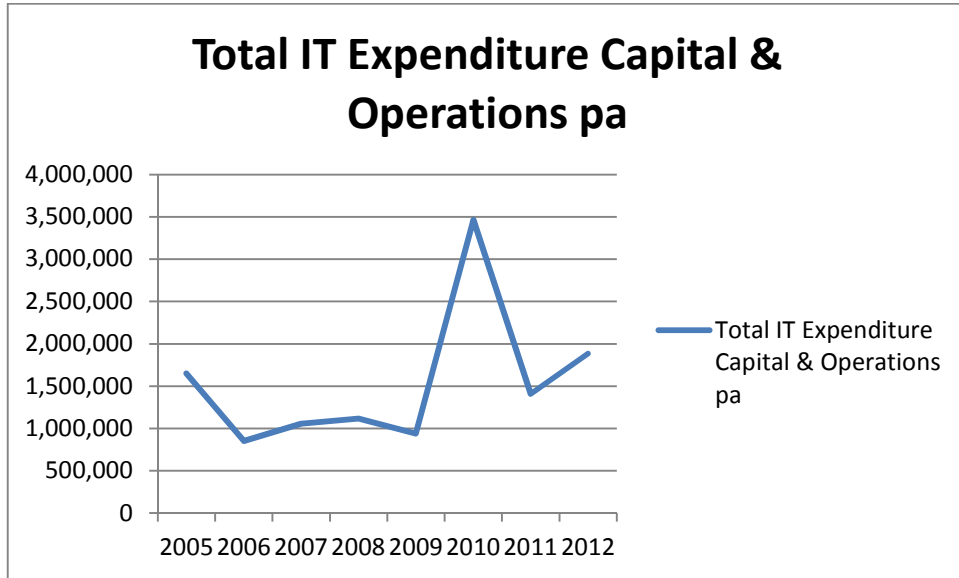


Figure 1 Total Annual IT Expenditure Capital & Operations

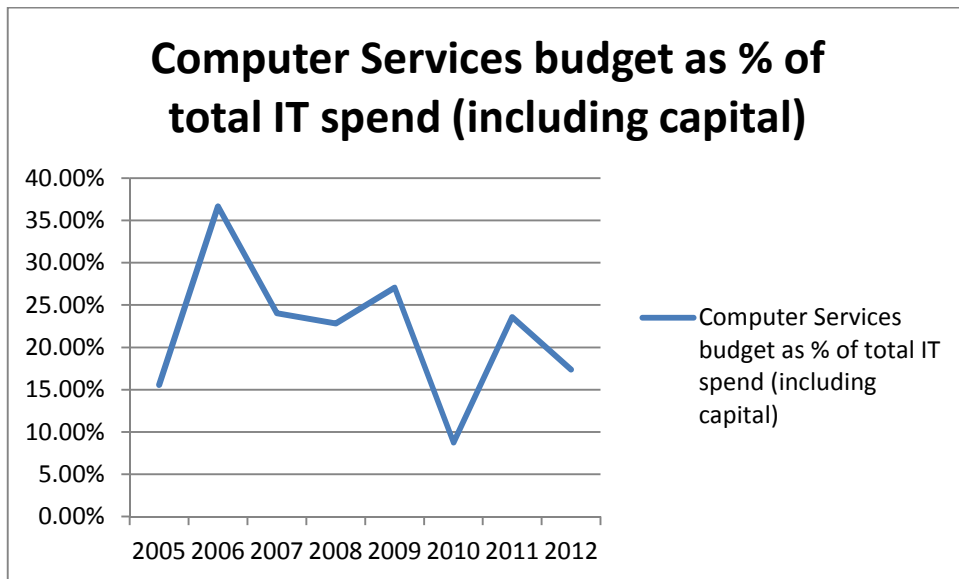


Figure 2 Computer Services Budget as % of total IT spend (including capital) p.a.

5.6.2 Annual Expenditure for Desktops and PCs

Summary of Current Fixed Assets Value for Desktops and PCs Including ICT Infrastructure capital (not disposed) purchased from 2005 through 2012. These figures are from fixed asset register.

Year	PC / Laptop / IT Infrastructure Expenditure
2005	412,704.00
2006	327,312.00
2007	231,110.00
2008	278,146.00
2009	403,757.00
2010	1,687,771.00
2011	464,096.23
2012	260,250.00
Total	4,065,146.23
Average over 8 years	508,143.28

Table 3: Annual Expenditure for Desktops and PCs

Note

2009, 2010 and 2011 represent major capital funding investments.

6. Glossary

AV: Audio Visual Technology

DKIT: Dundalk Institute of technology

HeaNet: - HeaNet is Ireland's National Education and Research Network.
www.heanet.ie

ICT: Information Communication Technology

ITIL:-Information Technology Infrastructure Library

A methodology by aligning IT services to support the needs of the Business. This is broken down into different delivery elements of an overall IT service management strategy (ITSM). The official website links is <http://www.itil-officialsite.com/home/home.aspx>

ITSM: IT Service Management (ITSM) – This activity incorporates an IT framework to assist in managing complex IT operations.

SFIA:-Skills Framework for the Information Age. Explanatory documents
http://www.sfia-online.org/files/9513/4417/5795/workingwith_SFIA_5_en.pdf

SKILLS development

Adopt professional skills development programme for IT personnel based on SFIPlus developed in UKL and implemented internationally

TEL - Technology Enhanced learning

VDI: - Virtual Desktop Infrastructure

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http://ec.europa.eu/clima/policies/package/index_en.htm
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8. Strategic Goals – For Reference:

Goal 1: Learning and Teaching: Placing focus on the learner to fully realise their potential through the provision of high quality relevant programmes.

Goal 2: Flexible Delivery: To systematically embed blended learning and technology enhanced learning within the Institute

Goal 3: Research: By end 2016 to be the leading Irish Institute of Technology in our research areas

Goal 4: Knowledge Transfer: Ensuring our research is translated into actions for the benefit of the Institute and the region it serves.

Goal 5: Regional Economic Development: Developing, supporting and actively engaging with Entrepreneurs and Industry in the North East and Cross Border Region

Goal 6: Regional Community Development: Developing, supporting and actively engaging with the community in the North East region

Goal 7: Access and Participation: Opening pathways of opportunity and engaging new learners

Goal 8: International Relationships: Bringing our strengths to bear in a global community.

Goal 9: Maintaining and enhancing our profile in the National Higher Education Landscape.

Goal 10: People and Culture: Developing and empowering our staff in a positive and supportive culture.

Goal 11: Campus: Developing the Environment to meet the future needs of DkIT and the region it serves.

Goal 12: Communication: Re-affirming our internal and external message

Goal 13: Finance: Efficiently resourcing the Institute to implement this Strategy