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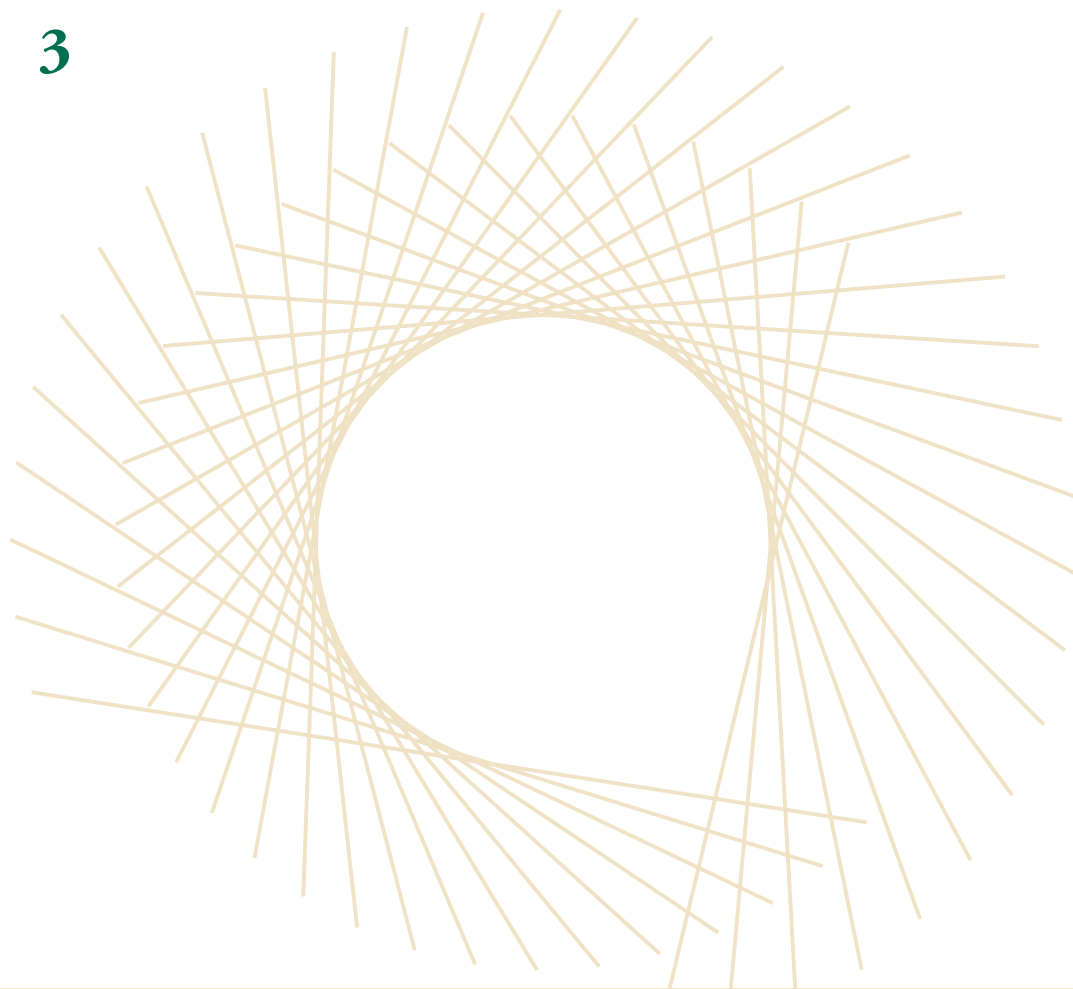
FOR INSTITUTIONAL RESEARCH
IN IRISH HIGHER EDUCATION

A series of booklets produced by
the Irish Universities Quality Board

3

IUQB

IRISH UNIVERSITIES
QUALITY BOARD

National Guidelines
2008

DCU

DIT

National University of Ireland, Galway
Ollscoil na hÉireann, Gaillimh

NUI MAYNOOTH
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Trinity College

UCC
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University College Cork, Ireland

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Irish Universities Quality Board

The Irish Universities Quality Board (IUQB) was established by the seven Irish universities in 2002 to increase the level of inter-university co-operation in developing their quality assurance procedures and processes, in line with best international systems and to represent the Irish university quality assurance system nationally and internationally. IUQB has been delegated with the statutory responsibility for organising the periodic review of the effectiveness of the quality assurance systems in place in the seven Irish universities.

Sectoral Projects

This booklet is one of a series produced by IUQB, the aim of which is to establish and publish good practice for Irish universities in the key areas of Teaching and Learning, Research, Strategic Planning/Management and Administration. This is in keeping with the IUQB aim to increase the level of inter-university co-operation in developing quality assurance processes. Each booklet is the result of an inter-university project on a topic selected, organised and driven by the Board with the close collaboration of the universities, and funded by the Higher Education Authority (HEA) Quality Assurance Programme, funded under the National Development Plan (NDP) 2000-2006. The selection of the projects is based on recommendations for improvement contained in the reviews of departments and faculties required by the Universities Act 1997 and also arising from recommendations from institutional reviews of the universities.

Other Booklets in the National Guidelines Series:

Acknowledgements

Contents

List of Abbreviations

CAO   Central Applications Office

CDS   Common Data Sets

CSO   Central Statistics Office

DIT   Dublin Institute of Technology

DoES   Department of Education and Science

DSS   Decision Support System

EIS   Executive Support System

ENQA   European Association for Quality Assurance in Higher Education

EU   European Union

EUA   European Universities Association

IOTI   Institutes of Technology Ireland

IPEDS   Integrated Postsecondary Education Data System

IUA   Irish Universities Association

IUQB   Irish Universities Quality Board

HEA   Higher Education Authority

HEIs   Higher Education Institutes

HERI   Higher Education Research Institute

HESA   Higher Education Statistics Agency

MA   Massachusetts

MIS   Management Information Systems

NCES   The National Centre for Education Statistics

NDP   National Development Plan

NEDRC   National Education Data Resource Center

NEU   Northeastern University

NUI   National University of Ireland

OECD   Organisation for Economic Co-operation and Development

PMDS   Performance Management Development System

QA   Quality Assurance

RGAM   Recurrent Grant Allocation Model

Glossary of Terms

Attainment: The highest level qualification attained.

Census files: Snapshots of complete data sets taken at agreed times.

Data Custodian: Is usually a person responsible for, or a person with administrative control over an organisation's documents or electronic files (or a sub-section thereof) while protecting the data as defined by the organisation's security policy or its standard Information Technology practices.

Data Governance Body: A designated group within an institution that is assigned the responsibility for managing its data.

Data Mining: Analysis of the complex and diverse data sets, which can be constructed in data warehouses, using special software and algorithms, in order to disclose additional information.

Data Warehouse: A collection of data designed to support decision-making. Development of a data warehouse includes development of systems to extract data from operating systems plus installation of a warehouse database system that provides flexible access to the data.

Decision Support Systems (DSS): A decision support system is a computer programme application that analyses data and presents it so that users can make decisions more easily.

Duelling Data: Different sets of data purporting to represent the same information.

Enterprise Data: Centralised data that is shared by many users throughout the organisation.

Executive Information System (EIS): An interactive computer-based system that allows executive officers to access data and information to identify problems, explore solutions, and guide the planning process.

Graduation Rate: The percentage of students taking a given time to complete a course of study.

Information Producers: Those who work with data systems to produce statistics and information for management and regulatory purposes, such as compliance reporting.

Knowledge Discovery: See under data mining.

Performance Dashboards: Performance dashboards are an at-a-glance tool for assessing performance. Dashboards align goals with their related strategies and measures over time and present them in a single, clear document. Dashboards can be a powerful way to link planning with operational outcomes. They can make planning tangible to boards, management, and staff.

Persistence: The retention of first year students into subsequent years of study.

Sub-enterprise Data: Data sets appropriate to all levels of the organisation or enterprise.

Preface

Irish higher education is recognised nationally and internationally as having contributed substantially to the dramatic national economic development that characterised the last fifteen years. Now, in these times of global economic re-balancing and financial readjustments, the expectations and challenges faced by Irish higher education are orders of magnitude greater than in the past. Government and society expect outputs, standards and performances equivalent to those found in the leading mature economies, but at levels of investment and funding that are much lower.

The key performance criteria for all higher education systems are the effectiveness of student learning (in the broad as well as in the career-orientated sense) and the significance and magnitude of knowledge creation through research, scholarship and creative activities. Irish higher education institutes (HEIs) must demonstrate their ability to perform well according to such criteria, and must exhibit the capacity to continuously improve their performance. They must simultaneously prove that the sector is cost effective. They also need to show unequivocally how student learning and general institutional performance would benefit greatly from improved and perhaps more diversified funding.

Until recently, the ability of Irish HEIs to accurately assess their own effectiveness and to plan on the basis of comprehensive information has been deficient. By extension, the efficiency and effectiveness of the overall higher education sector are unclear. While many gross indicators show impressive levels of effectiveness with respect to present levels of funding, finer analyses and estimates are often difficult or impossible. Internationally, the systems, mechanisms and processes whereby HEIs measure their own activities and performance, and supply comprehensive data to national agencies and other external bodies, are often termed collectively 'Institutional Research.'

Some of the main drivers for the establishment of an Institutional Research function in Irish universities and in the Dublin Institute of Technology (DIT) include the following:

- Mass higher education with provisions for wider levels of ability and more diverse entering cohorts has made the usefulness of full information on the performance of teaching, supports, services and administrative more evident.

- The need for greater transparency with respect to provisions that aim to address and underpin the economic, social and cultural life of society.

- Increasingly, the need for strategic planning that is tailored to the strengths, circumstances and ethos of individual institutions and secures their development has become evident. Institutional Research underpins institutional planning.

- In a period of value-for-money, there is a need for higher education institutions to ensure that all significant decisions taken are evidence-based.

- The demands of the external environment represented by the HEA, research funding agencies and bodies that request information for ranking purposes are growing. None of them can be ignored, and the information supplied be must comprehensive and fully accurate.

The goal of this project and booklet is to provide supportive guidance to all categories of institutions in Irish higher education as they develop their capacities for comprehensive data collection and analysis. While at one level it could be used within institutions as a list of things that may need to be considered or done, the intent is much more ambitious and includes modified approaches to management and planning at all levels. Co-operation across the university and higher education sectors is emphasised at all appropriate points, especially with respect to the agreement of common definitions for all important parameters and actions to build capacity for data collection and analysis at the national level. For example, gaining a complete picture of student progression and retention requires information on re-registrations as well as transfers through the system as a possible outcome. In addition, these developments will support the measurement of progress towards the higher education-related goals of the National Development Plan (NDP) 2007-13.

Finally, this IUQB project is complementary and supportive of other national projects on performance indicators and planning being undertaken by the Irish Universities Association (IUA), the HEA, the Institutes of Technology Ireland (IOTI) and by the IUQB. Collectively, these will increase opportunities for scientific, data-based studies of Irish higher education that will support large scale quality improvements and have the capacity to underline internationally the merits of the Irish higher education 'brand'.

Background

The Project

This project emerged from recognition within the universities of a real need to underpin strategic planning and decision-making with comprehensive, robust and readily available data and information. Quality review reports for university units regularly highlight the importance of quantification in the contexts of management, planning and performance assessment; and units anticipating review commonly report difficulties in gathering data to assist in self-assessment. The limited capacities of Irish universities for "institutional analysis and monitoring in order to provide better information for strategic governance and management" was also stressed by the expert review panels who visited the seven Irish universities as part of the jointly commissioned IUQB/HEA 2004-2005 *Review of Quality in Irish Universities*.[1,2]

Within the higher education sector, there have indeed been major implementations of new information technology and data systems to facilitate transactions and management, many funded under the HEA's Strategic Initiatives Scheme. However, their potential has been limited by the lack of data governance conventions and even agreements on data definitions.

International — and especially North American — good practice indicates that a dedicated Institutional Research function offers significant benefits not just to institutional planners and senior officers, but to managers at all levels. Capturing and using data on student needs and satisfaction is a key element of the work of Institutional Research in many places.

This project set out to explore issues related to Institutional Research across the Irish universities and make practical recommendations for improvements. The Dublin Institute of Technology (DIT) was invited to participate in the project with the expectation that the final recommendations would have relevance for all higher education providers in Ireland.

Aim:

To improve management practices and effectiveness within Irish universities, DIT and other HEIs through Institutional Research and to increase awareness of the potential of Institutional Research to enhance overall organisational, efficiency and in particular the student experience.

Objectives:

1. Analyse and establish current practice in the area of Institutional Research nationally and internationally.

2. Identify good practice in Institutional Research appropriate to the Irish higher education sector.

3. Develop and publish national guidelines of good practice in Institutional Research.

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1   European Universities Association Institutional Evaluation Programme/Irish Universities Quality Board (2005), *Review of Quality Assurance in Irish Universities: Review of the Effectiveness of the Quality Assurance Procedures in Irish Universities. University Reports.*

2   European Universities Association Institutional Evaluation Programme /Higher Education Authority (2005), *Review of Quality Assurance in Irish Universities: Sectoral Report.*

Methodology

The methodology used in this project centred on consultations with experts and key stakeholders with a view to establishing current good practices in Ireland and elsewhere. A wide range of activities were undertaken to achieve this objective. These included:

1. A national meeting with key stakeholders and with international presenters to initiate discussions and to identify the key themes requiring attention in the sector (see Appendix 1 and www.iuqb.ie).

2. A planning meeting with some of the relevant university/DIT officers and with an international expert (Dawn Geronimo Terkla, Tufts University, Medford Massachusetts). A programme was drawn up for a set of workshops (1 per institution) to get input from a wider stakeholder group in each institution.

3. A series of meetings/workshops in the universities and DIT involving relevant expert groups, to collect and analyse information on current good practices and on performance indicators used, and to prepare reports.

4. Analysis and evaluation of quality review reports in the seven universities and of the European Universities Association (EUA) Institutional reviews of the seven Irish universities (2004-2005)[3] and of the DIT (2006)[4].

5. Evaluation of current practices, data systems and resources in use on the national and/or international level.

6. The production of an Interim Report to summarise the results of the project and to set the scene for a major national conference dedicated to Institutional Research (available on www.iuqb.ie).

7. The 5th IUQB Annual Conference *Institutional Research: Benefiting the Student Experience and University Performance.* (12-13th October 2007) held in the National University of Ireland, Galway (see Appendix 1 and www.iuqb.ie).

8. Use of findings from the Conference and feedback on the Interim Report to inform these guidelines of good practice.

9. Distribution of draft guidelines to key stakeholders and targeted experts for feedback prior to publication.

10. Publication of National Guidelines for 'Good Practice for Institutional Research in Irish Higher Education'.

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3   As per footnotes 1 and 2.
4   European Universities Association Institutional Evaluation Programme (2006); *Review of Quality Assurance Dublin Institute of Technology; Reviewers Report.*

Introduction to Institutional Research

Functions

Institutional Research can be defined broadly as the application of social and enterprise research methods to improve institutional effectiveness by transforming institutional and other data into valid, reliable and useable information.

As a coherent set of activities implemented by recognised practitioners, Institutional Research had its origins in universities in the United States in the 1950s. Initially, Institutional Research had a relatively simple but fundamentally important focus on the collection of data and the application of standard analyses to support institutional and sub-institutional planning and management, and to meet regulatory requirements. In latter years, as higher education gained recognition as an economic driver, and planning and management needed to become more sophisticated, wider roles for Institutional Research developed.   In 2005, David Watson[5], identified the purposes of Institutional Research as being three-fold:

- • To understand and so enhance institutional performance against publicly stated goals,

- • To support strategic choice, not least by understanding the environment in which the institution operates, and thirdly,

- • To establish and strive to improve the institution's competitive position.

These purposes reflect the current breadth of Institutional Research, from data collection, analysis and transformation to underpinning institutional strategy and positioning. Institutional Research also acts as a single, co-ordinated source of reliable institutional data from which performance indicators and statutory reports can be derived, and information to inform decisions and funding applications obtained. To support Institutional Research, many higher education institutions — in the United States and Australia, in particular — have established dedicated offices with significant resources. Terkla (2005)[6] identified the Institutional Research Office as frequently being headed by a Director with discrete areas of activity as follows:

- • External & internal reporting - official numbers, accountability reporting

- • Planning & special projects – decision support studies, benchmarking, enrolment projections

- • Data management & technical support – student database, personnel database, data warehousing

- • Research & development – surveys, institutional effectiveness.

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5   Watson, D (2005): *"Why Institutional research is important: a UK perspective"* Presentation, IUQB Institutional Research Project, National Meeting, Dublin, Ireland.
6   Terkla, D (2005): *"Institutional Research is More than Just Data"*. Presentation, IUQB Institutional Research Project, National Meeting, Dublin, Ireland.

The Need for Institutional Research in Irish HEIs

According to the EUA review of Irish Universities[7], published in 2005:

> *There is a clear need to strengthen the universities' capacity for analysis of their own situations. [....] This institutional analytical capacity should link planning, QA, staff development and management information systems. [....] Better Management information systems are also needed in most universities.*

The Irish Government and the HEA have always been interested in information about the capacities and performance of the higher education sector, including financial performance, planning and management. In recent years, the HEA has switched to a new 'Recurrent Grant Allocation Model' (RGAM) based on student numbers in defined categories.

In addition, Government pronouncements and HEA publications clearly confirm that higher education institutions are viewed as a key means of addressing a broad range of public policy and economic goals. There are clearly identified objectives in areas such as retention, widening participation, promoting innovation and quality within higher education and encouraging sectoral reform. In early 2008, the HEA signalled a movement to align funding streams to such objectives. This development will place significant demands on the Irish higher education sector to demonstrate that progress is being achieved within each institution in attaining these objectives. In such an environment, an Institutional Research function is a major resource in co-ordinating the data and indicators required.

At the fifth annual IUQB Conference in October 2007, Tom Boland, Chief Executive of the HEA, gave a clear indication of the future direction of government in this area when he stated:

> *"at its most essential, effective Institutional Research provides an important means for the HEA to:*
>
> *• nationally, provide the accountability that is a necessary feature of the State's €1.3 billion investment of current funding in the sector annually*
>
> *• at an institutional level, allocate funding in a way that recognizes and rewards institutions that are committed to achieving strategic goals that fit within national strategy, and finally,*
>
> *• by assisting in the allocation of funding, Institutional Research provides an important instrument for the HEA to encourage institutions to take responsibility for their own progress and development."*

Growing awareness of these realities has led to increased commitments to Institutional Research as a substantive organisational activity, and already the majority of the universities and DIT have established Institutional Research functions. This has also been in response to greater needs for information institutionally and nationally, the need to know the real costs of decisions, the growing volumes of basic data, and developments in information technology, all of which demand meaningful data analysis

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7   See footnotes 1 and 2.

and information delivery. However, although a defined Institutional Research function may be the key element necessary for the transformation of enterprise data into meaningful information for all purposes, such a central function can be fully effective only if there is also active, co-ordinated and continuous support from divisional data professionals.

In parallel to this IUQB project on Institutional Research, the IUA is running a complementary activity named the 'Strategic Planning and Decision Support Project', which has as its principal objective the identification of a set of key performance indicators for the Irish universities. The report on this project is scheduled for publication by the IUA in late 2008. Effective Institutional Research functions will facilitate greatly the implementation of the outcomes of this project. In addition, the explicit dependence of performance indicators on common definitions will facilitate effective institutional research.

The Work of Institutional Research

Statistics and analysis

Self-evidently, the basic key to generating useful information from potentially huge data sets is to reduce them to a few numbers and/or to use graphical methods to give meaningful pictures. Given that a 'statistic' represents a useful portion of the information in a full set of numbers, it is essential to generate routinely 'means', 'averages', 'standard errors', etc. for a wide range of groups and sub-groups. In addition, 'differences' (indicating changes), 'ratios' and 'percentages' aid comprehension, and chronological plots show trends. Curve fitting and modelling methods bring extra insights by indicating associations and potential relationships.

Categories of data and indicators

Higher education institutions with comprehensive programmes of teaching, research and contributions to the community are complex organisations that require many categories of measurable *inputs*; human, financial and physical. For example, the students who undertake study programmes are a major regular input. Likewise, money, services and consumables are continuous inputs which support study programmes and research.

However, accurate measures of both outputs and inputs are essential to estimates of efficiency, and widespread awareness of output data across an organisation can help to drive improvements. For example, the number of students admitted to a programme and the size of a research grant are both important, but the number of graduates and the number/quality of the research outputs are what really determine efficiency.

In more recent years, educationalists have stressed the importance of measuring and tracking *outcomes* as well as outputs. A student who graduates is an output, a graduate who succeeds in a subsequent career represents an outcome. With respect to scholarship and research, an article

published is an output, significant use of the new information gained is an outcome. Outcome data allows the estimation of effectiveness.

Often measurement of outputs is more difficult than the measurement of inputs. Research grants are 'concrete' inputs but journal articles or books can vary enormously in significance. Therefore, journals are categorised by 'impact factors' and citation indexes are employed in order to estimate research outputs. The estimation of outcomes is more complex again. Graduate employment statistics may be collated, or the graduates may be asked to assess the usefulness of their study programmes; at the time of graduation or five years later. However, some outcome data needs to be interpreted with caution. A graduate going on to a 'standard' career could be assessed as an excellent outcome. On the other hand, a significant percentage of graduates pursuing non-conventional but happy and fruitful lives could lead to a study programme being evaluated unfavourably.

Enterprise data drawn from institutional functions is a core resource but it is by no means sufficient for all the demands on Institutional Research that can be anticipated. Existing regional and national demographic data are important for projections of demand for study places, and existing sectoral data (both national and international) is important for benchmarking and performance comparisons. Appendix 2 provides an overview of some of the key national and international data resources that are available for use to Irish institutions.

The counter-intuitive

A major role for Institutional Research is identifying and addressing the "counter-intuitive"[8]. At North Eastern University, Boston, it was predicted accurately that investing heavily in student accommodation would be 'cost neutral' or better because of its effects in improving student retention and attracting more-qualified students[9]. At the University of Brighton (among others), it was found that student part-time working was not related to financial circumstance and that 'course not appropriate' was the dominant reason for student withdrawal[10]. Such knowledge can be invaluable to a large educational institution when hiring or when investment decisions are to be made.

8 See footnote 5.
9 Putnam, M (2007), *"The Key Triad: Institutional Research, Planning and Quality"* (Presentation, 5th Annual IUQB Conference: *Institutional Research: Benefiting the Student Experience and University Performance*. (12-13th October 2007), National University of Ireland, Galway.
10 See footnote 5.

The Key Triad

Institutional Research may be the latest but it is not the only additional administrative function developed in Irish HEIs in recent years. Many HEIs now have research offices, health and safety offices, quality offices and functions to support access, disabled, mature and international students. Continuous strategic planning is now the norm, with many HEIs working to their second, or commencing development of their third, five-year strategic plans. While there are many synergies to be found between these functions, there are three that can be closely related given the interconnections that exist among them (Figure 1).

Figure 1: The Key Triad

In summary, since they are by their very nature inter-dependent, the functions of Institutional Research, strategic planning, and quality assurance are best approached in an integrated fashion. Both quality assurance and strategic planning are enhanced substantially by the information and analyses that can be provided by Institutional Research. In turn, strategic planning and quality assurance prioritise and guide Institutional Research as it provides data to be used as indicators of development and quality.

All three functions, but especially Institutional Research and quality, benefit from being (institutionally) apolitical and independent. Institutional Research exists to benefit all members of the community by providing analyses and research to inform decision-making, and it functions best when those officers and managers representing various interests all have confidence in the quality of the information and interpretations of data provided. It follows that Institutional Research should be a senior central function in all HEIs. Where institutional research functions have been established within Irish HEIs, all are closely associated with either the quality office or the strategic planning function.

In addition, in ensuring its effectiveness, the Institutional Research function must work on a regular basis with many other functions within the institute and with agencies and bodies external to the institute. These additional layers of interactions are depicted in Figure 2.

INTERNAL

- Institutional Research
- Academic Offices
- Registry/Administrative Offices
- MIS/Computer/Information Services
- Quality Function
- Planning and Performance Evaluation

Institutional Research

EXTERNAL

- HEA
- Research Funding Bodies
- State and Semi-State Bodies
- Central Statistics Office/Eurostat
- Other HEIs
- Public Relations/Media

Figure 2: Internal and External Dimension

International Context

Irish HEIs are now in a position to exploit the advantages of being 'late-developers' with respect to Institutional Research by learning from others with greater experience. The emergence of Institutional Research within the United States and its evolution over many decades has resulted in a centralised and coherent approach to the gathering of data relating to higher education. However, the sometimes deeply-embedded, older information systems in use in many universities in the United States often constrain the development of truly integrated data systems that are easily amenable to 'data warehousing' and 'mining' methods.

In the United Kingdom and Australia (as well as in the United States), there is clear evidence that central co-ordination of data relating to the higher education sector within agreed frameworks of definitions and terminology has resulted in a clearer understanding of the sector and greater progress in the achievement of institutional, sectoral and national strategic objectives. This has important implications for Ireland as there is an evident need to enhance further the overall approach to data collection within the higher education sector to underpin institutional and sectoral strategy and make international comparisons. From the national perspective, this will provide evidence of 'value for money' and highlight areas most deserving improved resourcing. From the international perspective, this will facilitate the characterisation and marketing of the Irish 'brand' of higher education.

The Path to Knowledge

In summary, effective Institutional Research requires integrated data compiled from a number of source systems in order to support management and to inform staff and students at all levels in the institution. As for any other institutional resource, the production of high quality information requires ongoing management, and as institutions evolve and change, the need for such information — particularly timely information — increases. This integration and transformation of data into knowledge may be termed the *path to knowledge* (Figure 3) and represent much of the essence of Institutional Research. However, whether used to plan, decide or assess quality, the knowledge derived in this way must always be evaluated in the context of ethos and mission.
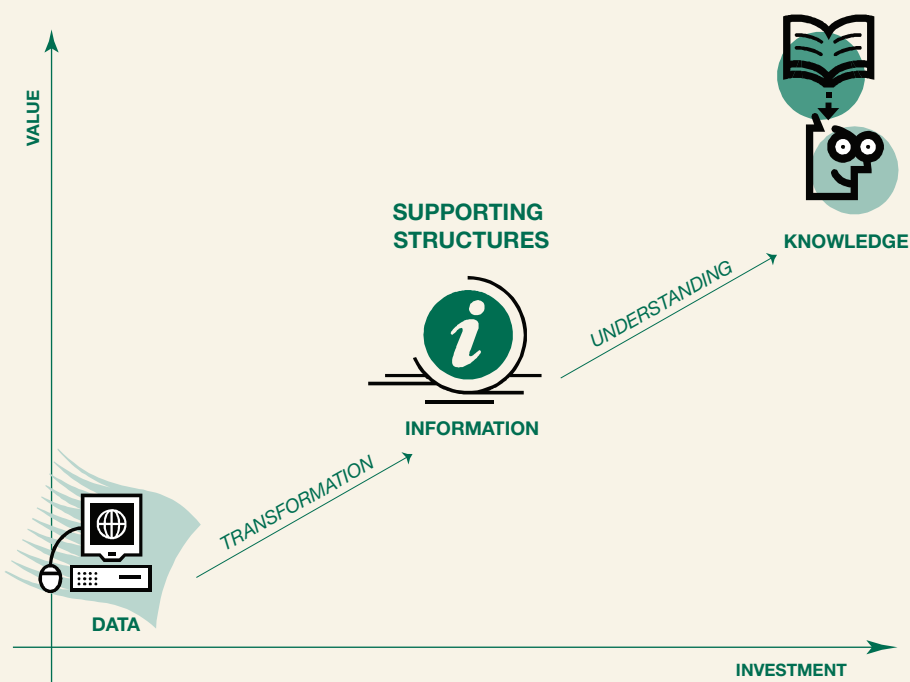

Figure 3: The Path to Knowledge

The Guidelines

Purpose

The purpose of these guidelines is to facilitate the development and standardisation of policies, regulations, procedures and documentation governing Institutional Research in the seven Irish universities, the DIT and other Irish HEIs, and thereby improve management practices and effectiveness.

The intention is that each institution will see this document as containing valid statements of good practice that they may take into consideration to improve management and exploitation of internal (and external) data, and facilitate sectoral activities. It is intended that these guidelines be directly useful at programme/school/faculty levels, and it is hoped that they will be seen to also have applicability across the entire Irish third-level sector.

Key Message

Institutional effectiveness at all levels in HEIs is enhanced by Institutional Research, the role of which is to transform institutional and other data into good information for decision making, planning, performance monitoring and quality purposes. Ultimately, Institutional Research activities are focused on facilitating the achievement of institutional goals, particularly an enhanced student experience. Co-ordination of information at the national level is a critical element in ensuring that Institutional Research can contribute to greater effectiveness of the entire higher education sector.

The Sections

Each of the guideline chapters starts with some paragraphs that outline the main topics and refer to issues that emerged from the various data collection activities, from points raised during the national meetings and conferences, from issues raised at the institutional workshops, from practices in other countries, and from the pre-finalisation consultation process. The purpose of these sub-sections is to place in context the specific guideline statements linked to each of these sections.

Each guideline item is expressed in the form of a non-prescriptive statement that represents 'a good practice'. In most cases, there are many ways in which a particular good practice may be achieved and it is recognised that diversity in this respect may exist. However, each institution should look at changing any policy, regulation or procedure that impedes good practice in knowledge management as soon as is practicable. Consequently, it is essential that each institute has appropriate quality assurance mechanisms in place to identify and rectify such 'deficiencies'.

1. From Data to Knowledge

Improving Data Management

Institutional Research in the institutional structure

As discussed in the Introduction above, the roles and responsibilities of an Institutional Research function may be very broad and encompass a range of sub-functions. Evidently, these sub-functions may not be the same in all HEIs. In addition, because Institutional Research must work with the most senior officers and interact with many other functions, the function itself and any responsible officer must be located appropriately in the administrative structures (and adequately resourced) to be fully effective and capable of contributing efficiently to key areas such as strategic planning, quality assurance and improvement.

The strengths and limitations of traditional practices

Higher education institutions collect large volumes of data arising from their administrative and financial activities, study programmes, research and contributions to the community (see Appendix 3 for an overview of the key data types collected). Some are transactional data captured in student records systems, human resource systems and financial systems. Some are operational data related to space usage, timetabling or teaching activities. Much data is processed and retained within potentially (or actually) compatible systems, but important data may exist in isolation.

Traditionally, the most valued data was for operational and administrative purposes, e.g. registering a student, awarding degrees, payment of employees, payment of suppliers. The supporting transactional systems were not configured to support management decision-making and census files were not accumulated. Furthermore, little in the way of governance, in terms of data definitions, timed data recording or reporting, existed. Without fundamental reform, this approach can often result in the production of irrelevant, replicated or even conflicting data that is not integrated and frequently requires additional resources to compile.

Information producers and custodians

The quality of the data stored is vital; if it is not entered correctly, or if it is otherwise of poor quality, then the information obtained from it may be practically useless (in other words, *garbage in – garbage out*). Two categories of persons play important roles with respect to internal enterprise data. *Information producers* obtain data from systems in order to produce statistics and information for management and regulatory purpose, such as compliance reporting to the HEA. Information producers depend on *data custodians* (who are closest to the business processes that capture data to support the transactional and operational processes) to ensure that the data captured is accurate, appropriate, timely and complete.

1. From Data to Knowledge (cont'd)

The Institutional Research team

Even institutions with generously resourced Institutional Research functions that include a number of specialists, depend greatly on data professionals that are located in management information services functions and in the major administrative and support departments. Their importance to the ability of the institution to 'know itself' needs to be recognised explicitly, and their inputs to relevant decisions always appreciated. Although reporting to a range of senior officers, these data professionals need to work together with the Institutional Research function to constitute a powerful, if in some respects, a 'virtual' team.

1. From Data to Knowledge (cont'd)

Guidelines - Improving Data Management

- A distinct, central Institutional Research function is an effective way to maximise the usefulness of enterprise and external data.

- In a HEI, the roles and responsibilities of the Institutional Research function are defined clearly and may include:

    » Data management & technical support – for student and personnel information systems, data warehousing

    » External & internal reporting – official numbers, accountability reporting

    » Planning & special projects – decision support studies, benchmarking, enrolment projections

    » Research & development – surveys, institutional effectiveness.

- The Institutional Research function is positioned within the organisational structure to support institutional priorities while remaining independent in its functioning.

- The post of the Institutional Research officer is sufficiently senior to facilitate appropriate levels of interaction with senior officers and managers.

- Institutional Research is closely associated with the quality office, the strategic planning function or both.

- Resources allocated to support Institutional Research activities are sufficient but are also flexible and take into account the changing needs of the institution.

- Institutional culture explicitly recognises the high value of data as an institutional resource and all staff are motivated to ensure its accuracy and completeness.

- The institution uses Institutional Research wisely and effectively, and guards against over-analysing information and 'paralysis by analysis'.

- Data on outputs and outcomes are valued as being essential to estimates of performance, and their measurement is resourced appropriately.

- All officers, managers and staff in the institution are aware of the Institutional Research function and of its general roles.

- The importance of the roles of staff most directly concerned with institutional data (the data custodians and information producers) is clearly understood by senior management.

- Divisional data professionals underpin the effectiveness of the Institutional Research function/office by giving it active and continuous support and by participating in joint projects.

GUIDELINES

1. From Data to Knowledge (cont'd)

Supporting Structures and Procedures

Data governance

For maximising the utility of enterprise data, good systems, software and staff who are open to good procedures and reform are not sufficient. There must also be effective data governance, possibly in the form of a body that is assigned the responsibility for managing the institution's data. The membership of such a *data governance body* should include sufficient relevant expertise for the collective body to be able to easily understand all of the standard issues that may arise, and the institutional and national contexts of such issues. The members should, therefore, include individuals who represent information technology, data custodians, information producers, and Institutional Research.

In parallel, and arising from the work of the data governance body, the roles and responsibilities of those who interact with enterprise data may need to be revised to reflect new agreed protocols, etc., and there must be a general awareness throughout the institution of the processes and technology that support data flows.

The data governance body should have clear terms of reference to guide its work, including:

- Defining the standards for enterprise data quality and accessibility
- Formulating definitions and resolving inconsistencies
- Assuring the implementation of policies and procedures.

Where such a body is unable to resolve an issue, another suitably senior individual or committee should have the formal responsibility for making the final decision. Like the governance body, the appeal entity should have terms of reference that define the scope of its authority and the procedures by which it operates.

Skills and training requirements

Good governance and defined procedures are unlikely to be effective without people who have the appropriate skill sets. Staff training is essential in any change and reform process and newly recruited staff normally need specific training to ensure they have the capacity to support the achievement and maintenance of an information-driven institution. Joint training exercises for all the staff of selected units can be particularly effective.

Institutional Research requires both technical and analytical skills as well as skills related to the use of established or new systems. Other skills related to project management, communication, documentation management and data interpretation are also needed by data custodians, information producers as well as by institutional researchers.

1. From Data to Knowledge (cont'd)

Guidelines - Supporting Structures and Procedures

- Advice from one or more centres that are recognised leaders in the field is sought when the establishment and governance of an Institutional Research function is planned.

- There is an institutional data governance body with responsibility for managing enterprise data. This body has clear terms of reference.

- The data governance body is collaborative and involves data custodians, information producers, management information services, information technology and institutional research.

- The data governance body is empowered and constituted to enable it to make decisions efficiently and quickly on data governance and accessibility issues. Where necessary, interested officers and managers not on the body are consulted in advance.

- There is a more senior 'appeal entity' or issue resolution process that ensures that work of the data governance body is not subject to undue delays because of difficulties in arriving at decisions.

- The skills needs of all relevant staff are understood and, according to a formal plan and/or policies, ongoing training to support the development of all the basic skills is available.

- Consistent with its defined roles, staff of the Institutional Research function are experienced and trained in providing advice and other inputs to the quality and strategic development processes, and not just data analysis and interpretation.

GUIDELINES

1. From Data to Knowledge (cont'd)

Data, Basic and Supplementary

Many categories of data (e.g. payments and examination results) have always been comprehensive and accurate, and, where evolving data systems have remained compatible over time, much useful historical data may be available. Other data categories of relevance to effective Institutional Research are sometimes incomplete or inaccurate (e.g. student socio-economic profiles or staff provenances) and the rectification of the systems necessary for their capture and quality control may be of the highest priority. Data, on students for example, and the way they are stored should be sufficient to allow the 'tracking' of individuals as they progress, as calculations based on gross numbers may be quite inadequate in estimations of progression and retention. The same consideration applies to staff data in estimating career progression and staff turnover.

Historical data is essential for time-dependent studies and, since most parameters of interest change constantly with time throughout each year, 'snapshots' of complete data sets (captured as *census files*) must also be taken at agreed times. Only these census files (and never equivalent data sets at other times) must be used for basic analyses over time. In the absence of such conventions, different sets of data (such as student numbers or amounts of resources) purporting to represent the same information may circulate, causing confusion and even disagreements. This phenomenon has been referred to as 'duelling data'. Depending on their purposes, census files may be created externally or internally (or locally) at defined times. Deciding the appropriate times to capture census files is always an important exercise.

In addition, systematic data collection may be undertaken periodically to supplement institutional data resources (e.g. student or staff satisfaction surveys, final destination returns). Primary research projects may be necessary at times to address such specific information needs (See also Chapter 4).

The reliability, quality, security and (if necessary) confidentiality of data systems should be also of direct concern to the internal audit and risk management systems, not least because of the risks of bad decisions being made when they are 'supported' by poor or inadequate information.

1. From Data to Knowledge (cont'd)

Guidelines - Data, Basic and Supplementary

- Management information services and all of the key data custodians and information producers are resourced and equipped adequately to ensure constant attainment of their missions, which include supporting Institutional Research.

- There are formal procedures that ensure that all necessary (and no superfluous) 'questions' are included on the forms to be completed by students, staff, etc., and that corresponding 'fields' exist in the data systems.

- All persons responsible for inputting data are made aware that this data may be essential to other functions and to the enterprise as a whole, and all data custodians understand fully the need to ensure that recorded data is accurate, timely and complete.

- The data captured is accurate, timely and complete and the relevant processes include methods for data verification. For example, information producers regularly send draft reports and the associated sets of data back to the relevant data custodians to allow them to check them for completeness, consistency and accuracy.

- All parameters recorded are consistently and clearly defined in accordance with data definitions used by external agencies and other higher education institutions to facilitate comparability across units within the institution and across the sector.

- Census files are always created at the agreed points in time.

- Historical data is stored securely, according to agreed procedures and norms.

- With respect to students and staff, sufficient data is captured and stored to allow calculations (of retention and turnover, for example) to be based on the tracking of individuals.

- External data (both national and international) is seen as being important for benchmarking and performance comparisons.

- The Internal Audit system takes an active interest in the quality, security and confidentiality of enterprise data and supports functions, such as Institutional Research, that act to ensure data quality and security.

- When potential benefits are evident, studies are undertaken to ascertain or collect data that is not already available.

1. From Data to Knowledge (cont'd)

Transformed Data is More Information

The growing quantities of routine transactional and other internal data gathered by organisations have led many of them to develop large multi-dimensional databases, often referred to as *data warehouses*. Data warehouses can increase greatly in the number of possible correlations and other analyses that can be easily performed, so maximising the potential harvest of information obtainable from the stored data. Optimally, a range of supplementary and external data sets are also regularly added into the warehouse. For example, when international, national, regional or special contexts are relevant, the ready availability within the warehouse of comparable and standardised data from internal and external sources may be invaluable.

A mature data warehouse, well stocked with *enterprise data,* supports multiple views of datasets for users who need to analyse the relationships between data categories or monitor trends over time. For example, a university (or any of its constituent parts) might want to answer the following questions:

- Have we got our academic portfolio right?
- What is the right research strategy?
- How is space used by staff/students?
- What was student retention like and has it changed over time?

1. From Data to Knowledge (cont'd)

Guidelines - Transformed Data is More Information

- A data warehouse system is used to create integrated multi-dimensional arrays of current and historic data of diverse categories and from diverse sources.

GUIDELINES

1. From Data to Knowledge (cont'd)

Understood Information is Knowledge

Analysis of the complex and diverse data sets that can be constructed in data warehouses require special software and algorithms (*knowledge discovery*). This is also commonly referred to as *data mining* and its purpose is to disclose additional information in large amounts of data. This information may be in the form of patterns and/or relationships with respect to selected themes. Data mining techniques search for patterns by means of a range of statistical analyses and, in the case of an educational institution, can contribute to the understanding or resolution of important issues, for example:

- Future enrolment patterns
- Which students are likely to fail a given subject
- The most important needs of current and potential students
- The characteristics of students who go on to different career paths
- Student performance and progression in relation to other behaviours and characteristics
- Teaching methods and student success

The knowledge resulting from effective data mining techniques enables evidence-based decision-making and the formulation of appropriate strategies, e.g. in predicting which students are likely to fail a given subject, thereby allowing intervention strategies to be used to improve the outcomes for these students. It could also allow the effectiveness of intervention strategies to be assessed.

There are many business intelligence tools that facilitate data mining, and these are subject to constant development. *Decision support systems* (DSS) help decision-makers utilise data models to solve unstructured problems. DSS allow the user to change certain assumptions or variables to visualise what the results will be if particular scenarios are chosen and decisions taken. *Executive information systems* (EIS) are often viewed as a subset of DSS, bringing together multiple data sources into one forum to supply management with a single channel of information. While the path from data to knowledge (Figure 3) is enabled by such knowledge discovery software, ultimately it requires that people interpret in a meaningful way the information that was derived from the basic data.

This stage in the 'path to knowledge' requires skill and appropriate tools for the effective presentation of data and information. Simplicity and clarity with sufficient detail should be the objective standard, and, given the vast range of presentation formats that are available, training of relevant personnel with respect to the basic skills may be essential. Basic ground rules may be appropriate in some areas. For example, the numbers of significant digits for numeric values should be minimal; and the axes of graphs should be clearly labelled and appropriate scales and origins used. Annual or periodic reports should have the same formats, unless improved formats are agreed.

1. From Data to Knowledge (cont'd)

Guidelines - Understood Information is Knowledge

- Appropriate software tools are used to interrogate the data warehouse to generate information and answer specific questions about the institution in its various contexts.

- Simplicity and clarity with sufficient detail is the rule when data and information are being presented or publicised.

- A selection of data presentation tools, as well as training on data presentation, are available and are used skillfully to enhance understanding of presented data and information.

- People are recognised as key in the interpretation of information in meaningful ways and all appropriate staff are supported with suitable training in this respect.

GUIDELINES

2. Supporting Management and Strategic Planning

Decisions and Management

Decision-making is at the core of management, and, optimally, the processes associated with making decisions should always be reflective and consultative. Over time, many decisions have important implications and 'knock-on' effects. Some may be taken as formal precedents or result in a cascade of unanticipated consequences. Decisions must be fast when deadlines are tight and, in such cases, previously agreed policies and plans may prove to be invaluable.

In line with modern practice, making important decisions — especially in educational institutions — is often much more effective when it involves structured consultations (via school and faculty bodies, for example) and when managers and management bodies can explain clearly and justify their final conclusions.

In all of the above aspects of decision-making, accurate, clear, comprehensive and timely information (such as the real costs of all options) is the key extra ingredient that increases the probability of success. Often, much of the relevant information is to be found within 'enterprise data', some may be external national or international information and yet more may have been obtained by means of specific projects commissioned by the institution. Important roles of Institutional Research are to make such information accessible to executives and managers in clear and concise forms and to anticipate non-standard information needs.

Levels and decisions

As decisions must be taken at all levels, so also must 'sub-enterprise' data (data sets appropriate to all levels of the organisation) be available. In the academic-cum-research domain, the levels within the overall institution at which significant decisions are routinely made are college/faculty, school/department/institute/centre, programme/project.

In addition to managerial decision-making, applications by individual researchers and others for grants require data on a wide range of areas and, increasingly, applications may fail solely because of major deficiencies in information provision (and strategic planning). For the already over-stretched teacher, researcher or administrator, readily available enterprise and sub-enterprise data can enable rapid and efficient responses to calls for grant applications and reports, which all too often are associated with excessively tight deadlines.

2. Supporting Management and Strategic Planning (cont'd)

Guidelines - Decisions and Management

- Management provides the leadership and commitment in making evidence-based decisions.

- Decision-making at all levels is supported by comprehensive, mutually compatible and complementary sets of up-to-date plans and policies.

- Institutional Research makes the data and information (including financial data) necessary for organisational decisions and strategic choices more readily available.

- Comprehensive 'sub-enterprise' data and information are valued as being indispensable to the effectiveness of all institutional components, academic, administrative, service and support. All institutional components are required to supply basic performance data to supplement enterprise data.

- The Institutional Research function acts to anticipate non-standard information needs, in so far as this is practicable.

GUIDELINES

2. Supporting Management and Strategic Planning (cont'd)

The Strategic Planning Process

As indicated above, planning and decision-making are related processes. Planning by its nature involves making lots of decisions and choices. Strategic planning in higher education institutions is essential to their rational development in the many contexts in which they operate, including the social, cultural and scientific; the economic and political; and the regional, national and global. The associated core activities, such as learning and teaching, research, technology transfer, and social and economic responsibilities, represent another level of complexity to be taken into account. Especially at times of rapid change, these contexts and activities, which all interact, are so complex that it is impossible to take them into account adequately without periodic exercises when the mission and aims of the institution are reviewed, new institutional objectives are set, and the potential contributions of each component section revised individually and in the context of the collective.

The manner of strategic planning is also important. If the process is consultative and involves adjustments to the plan promoted by feedback from all sectors of the institution, it can also be of enormous value as an agreed staff-management charter that includes fundamental choices with respect to future developments.

Although a strategic plan may be developed over a few weeks or months and have timetables that extend for up to five years or so, its effectiveness will depend largely on regular monitoring of implementation, accompanied by evaluation and even periodic selective revision. Formulating and managing strategy in these ways facilitates ordered development, decision making at all levels and responses to external demands.

Persons who want more information and guidance on strategic planning at the sub-institutional level should consult the IUQB report and booklet on *Good Practice in Strategic Planning for Academic Units in Irish Universities* which arose from a parallel project to the present one on Institutional Research. (All reports and booklets are obtainable directly from IUQB and can be down loaded at iuqb.ie.)

Statutory requirements and government policies

The governing authorities of Irish higher education institutions are obliged by law to plan strategically and to supply copies of these plans to the HEA and to the Minister. The Universities Act, 1997[11] includes a requirement that in each university

> *"the chief officer […] prepare a plan which shall set out the aims of the governing authority for the operation and development of the university and its strategy for achieving those aims, and for carrying out the functions of the university, during the period, being not less than three years, to which the plan relates."*

In addition, Government policy clearly indicates the need for individual institutions to respond to Government imperatives and the diverse demands from industry and society. Particular social and economic policies and goals are emphasised, including access for the disabled and socially and

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11 Government of Ireland, *Universities Act (1997)*, Government of Ireland, Dublin (http://www.gov.ie/bills28/acts/1997/a2497.pdf).

2. Supporting Management and Strategic Planning (cont'd)

economically deprived groups, numbers of science and technology graduates and, more recently, a national goal to double PhD graduate output by 2013. Increasingly funding is being tied to the attainment of progress against such stated national goals.

Informed planning and budgeting

If they are to be optimal, all core elements of planning and budgeting processes are dependent on the continuous availability of comprehensive data and information to achieve a good balance between high ambition and practicality. Without a foundation of hard data and information, informed perhaps by knowledge of what has been achieved elsewhere, plans may lack ambition or be overblown, or aims and objectives may be set too low or much too high.

Institutional Research can provide a coherent approach to the gathering and organisation of internal and external data — and its conversion into information — to be used at all stages in planning processes. Supporting data can be drawn from a wide range of areas including: student and staff numbers and related ratios; student profiles and enrolment figures; quality assessment exercises; regional, national and international trends and priorities; and sectoral analyses. Benchmarking exercises and comparative studies with carefully selected 'similar' high achieving institutions are also valuable activities. There may also be specific studies focused upon the making of strategic choices. For example, an exploration of regional and national demographic trends will help determine realistic objectives for growth in student numbers.

In HEIs where Institutional Research is well developed, its relationship with planning is explicitly acknowledged. In such cases, Institutional Research underpins all significant management decision-making and, by extension, all planning processes. Their activities are often co-located and share resources and reporting relationships. They support institutional planning from the strategic level down to the constituent units of the institution where more specific local strategic and development plans are prepared or revised. These subordinate plans should translate the goals, objectives and priorities that have been set for the institution into goals, objectives and priorities for the relevant units. All planning activities may be structured around annual planning cycles that seek to manage strategy within the institution while promoting ownership, engagement, integration and shared visions, in addition to the alignment of related planning activities.

An emerging feature in Ireland in recent years is the introduction of the Performance Management Development System (PMDS) which is centred on planning at an individual staff member level, and which should recognise and encourage the roles of all individuals in the attainment of institutional goals and objectives.

2. Supporting Management and Strategic Planning (cont'd)

Guidelines - The Strategic Planning Process

- An inclusive approach to the process of strategic planning is used that seeks inputs from internal (staff and students) and external stakeholders (industry, community, agencies, alumni) and thereby creates shared ownership of well-founded institutional strategies.

- Strategic plans are underpinned by an awareness of financial performance (including estimates of benefits accruing from capital employed) and incorporate financial plans.

- Institutional Research interacts with and supports planning and quality assessment, and informs staff development and physical development.

- Supporting data is drawn from a range of areas (including quality processes) that can underpin strategy formulation and integration, and is used in accordance with national frameworks of definitions and terminology.

- The institution, as a part of the higher education sector, is conscious that strategic planning combined with Institutional Research can demonstrate that higher education in Ireland is an improvement-orientated sector that provides value for money.

- Institutional Research provides a coherent approach to the gathering and organisation of internal and external data — and its conversion into information — to be used at all stages in the strategic planning process.

- Identifying achievable and realistic targets is recognised as being critical to the strategic planning process. The use of data and information to support the development of plans is systematic and co-ordinated and includes contributing to understanding:

  » The existing strategic position and strengths, and financial situation of the institution/ unit

  » Anticipated changes (and their magnitude) in major relevant external and internal factors

  » What is a good balance between ambition and realism in a mission/vision statement

  » What may be achievable with respect to aims and goals, and short, medium and long term quantitative key objectives with implementation dates.

- The university or institute benchmarks itself against a carefully selected and researched set of higher education institutions nationally and internationally.

- Institutional Research supports planning and budgeting at all levels in the institution.

- All institutional activities and thematic plans, and sub-institutional strategic plans, are aligned with the institutional strategic plan.

2. Supporting Management and Strategic Planning (cont'd)

The Monitoring and Evaluation of Implementation

Planning exercises sometimes become 'ends in themselves', and, if the process does not include effective mechanisms for monitoring implementation, this may be a real danger. All the activities of the institution should be influenced by the new or revised strategic commitments. Copies of the plan should be consulted regularly by management and staff, becoming (if printed copies) increasingly marked and 'dog-eared' in the process.

Implementation may be assisted greatly through the preparation of action plans and budgets that centre on particular aspects of the strategy, thereby bringing together the specific actions required with their respective budgetary demands in order to address key strategy imperatives.

Monitoring and evaluation

Good strategic plans specify actions and parameter quantities that are tied to completion dates. Monitoring implementation of a plan involves noting achievements of targets and how long before or after the prescribed timelines these occurred. As a strategic plan is implemented and the performance of many aspects of the institution changes, correlations between changes that have been made and performance become of great interest. Where an overall performance management system (for example a performance 'dashboard') is in place, many of these correlations or 'effects' should be indicated by it. (Ongoing external developments, including those in similar or competitor institutions, also need to be evaluated.)

In particular, key parameters generated from institutional data and/or from surveys of students, staff and others should show responses to the planned actions as they are progressively implemented. However, even where an initiative is having real effects, there will be delays between action and response that may be prolonged. For example, if training in pedagogy for teachers is improved, institutional student satisfaction with teaching may not perceptibly increase for some time.

Revision

Although in the 1990s some universities developed plans intended to cover ten years or even until the year 2020, now strategic planning cycles in Irish higher education are commonly five years. This may represent a good balance between practicality and effectiveness, but towards the end of its stated shelf life, even a good five-year plan will become partially outmoded or superseded in the rapidly changing world.

Therefore, linked to the monitoring and evaluation processes associated with implementation of a strategic plan, there should be a mechanism for updating particular elements of the plan that involve an appropriate level of consultation with representatives of the main stakeholders. Changes may be as simple as setting a new target if the old one has already been achieved — or has proven to be unrealistic.

The roles of Institutional Research

In monitoring, evaluating and revising a strategic plan, the approaches and methods of the Institutional Research function are similar to when the plan is being devised. In addition, Institutional Research may be essential if a flexible or adaptive approach to planning (as outlined above) is to be considered.

2. Supporting Management and Strategic Planning (cont'd)

Guidelines - The Monitoring and Evaluation of Implementation

- In all strategic planning exercises and revisions, the institution identifies key qualitative and quantitative indicators for all relevant objectives and other specific areas of relevance.

- Progress with respect to organisational strategic objectives is reviewed regularly with inputs from the Institutional Research function.

- An annual planning cycle, centred on the strategic planning process and empowered to revise targets, is supported by Institutional Research, which contributes to the preparation of progress reports to senior management.

GUIDELINES

3. Institutional Research and Quality

Quality in Higher Education

In the higher education sector, the determinants of institutional quality are the quality of the provision of academic programmes, research and contributions to community, Since all of these are of direct interest to students, staff and other stakeholders, it is important that the views of all stakeholders inform quality-related goals and processes. In the context of Irish higher education, it is accepted that stakeholders include management, staff, students, funders, employers and the wider community. Quality also includes the capacity of the institution to organise itself efficiently and effectively and to be capable of substantial change.

The quality of each output of a HEI is multi-dimensional because it is dependent on the degree to which each of a set of requirements or expectations is fulfilled. Therefore, it is important that a range of perspectives (and related expectations and perceptions) are considered when identifying and assessing the components of quality.

In addition, funding for higher education is being linked progressively to the achievement of national goals, such as those set out in the National Development Plan (NDP) 2007-2013. In such a milieu, the comprehensive development and use of institutional intelligence is essential to demonstrate both institutional needs and achievements in accordance with national policy.

Quality in the Irish higher education context

Quality processes in Irish universities operate within national legislative and regulatory contexts (particularly the Universities Act 1997)[12] that allow for institutional autonomy and, in accordance with the Act, 'quality improvement' is the fundamental guiding principle. This means that Irish universities are free to build on institutional strengths rather than having to perform to externally generated targets. However, there is an emerging imperative that Irish HEIs develop strategy and goals in accordance with national priorities for the sector, and to provide evidence of performance with regard to institutional and national goals.

The reports from the jointly commissioned IUQB/HEA 2004-2005 *Review of Quality in Irish Universities*[13], acknowledged the sector's active engagement with quality assurance, which it acknowledged went beyond mere legislative requirements. As demonstrated by recent appointments, the Irish universities (and DIT) are responding to the Report's separate recommendation on Institutional Research and now see it as playing a key role in supporting quality improvement through performance measurement and informing plans for improvement.

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12 See footnote 11.
13 See footnotes 1 and 2.

3. Institutional Research and Quality (cont'd)

Quality assurance in Irish universities is undertaken in accordance with the European Standards and Guidelines published in 2005 by the European Association for Quality Assurance in Higher Education (ENQA) (2005)[14], and as demonstrated in 'A Framework for Quality in Irish Universities' (IUA/IUQB, 2007)[15]. It is based on a number of principles that emphasise the need to demonstrate quality, accountability, transparency and the use of efficient and effective processes. Additionally, the European Standards and Guidelines specifically mention information systems and states that:

> *"Institutions should ensure that they collect, analyse and use relevant information for the effective management of their programmes of study and other activities."*

Therefore, having well-developed institutional information systems and processes is a key component of overall institutional quality.

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14 European Association for Quality Assurance in Higher Education (ENQA) (2005) *Standards and Guidelines for Quality Assurance in the European Higher Education Area*, ENQA, Helsinki.

15 Irish Universities Association/Irish Universities Quality Board (2007): *"A Framework for Quality in Irish Universities; Concerted action for institutional improvement"*, 2nd edition.

3. Institutional Research and Quality (cont'd)

Guidelines - Quality in Higher Education

- The Institutional Research function recognises explicitly that one of its most important roles is supporting quality assurance and quality improvement.

- Both the Quality Office and the Institutional Research function are seen as independent within institutional structures and processes, and as 'apolitical'.

- Emphasis on performance measurement requires institutions to have the capacity to identify appropriate indicators and measures.

- International and national benchmarking allows institutions and the sector to assess and monitor achievements in institutional and sectoral performance over time.

- Informed by Institutional Research, the university (or institute) and its constituent units uses comprehensive information to inform its students (present, prospective and past), staff and the external publics of its situation and achievements.

GUIDELINES

3. Institutional Research and Quality (cont'd)

Role of Institutional Research in Quality Assurance

Quality Review procedures carried every five to eight years are central to quality assurance activities in Irish HEIs. These reviews conform with European good practice and allow for each aspect of institutional activity to be assessed individually, within the institutional and wider contexts. The following questions (EUA guidelines for institutional reviews) for the unit under review to answer in their self-study report, summarise the essence of a review procedure:

- What are we trying to do?
- How are we trying to do it?
- How do we know it works?
- How do we change in order to improve?

Reflection, clarity of purpose and evidence of achievement are essential to giving full answers to these questions, but, in addition, the ready availability of a depth and breadth of unit and institutional information is fundamental.

Routine Institutional Research should be designed with a particular focus on the needs of those undertaking quality reviews. This should enable all constituent units easily and efficiently to measure their activities and to place them in the relevant wider contexts, thus regularly informing planning and decisions, and reducing the impact of quality processes on staff resources.

In summary, all self-study reports prepared for reviews should include evidence of:

- Analysis and use of data and information.
- Competitive comparisons and benchmarks
- Institutional performance indicators.

Finally, the Institutional Research function can support the completion of quality cycles by analysing and communicating information about progress on the quality improvement plans that are consequent to all reviews, so that this information can inform institutional planning, resource allocation and decision-making.

3. Institutional Research and Quality (cont'd)

Guidelines - Role of Institutional Research in Quality Assurance

- Institutional Research provides knowledge to the institution, to its components and to quality processes on the effectiveness of their operations and activities, including:
  - » Teaching activities
  - » Evaluation of teaching and learning activities
  - » Research activities
  - » Feedback from stakeholders including students, staff, community and employers
  - » Resources (including financial; library and information systems)
  - » Human Resources
  - » Institutional processes.
- Complete, accurate, reliable and timely data is essential to support quality assurance processes including self assessment.
- Data provided is up to date and easily obtainable, allowing for more effective and efficient quality evaluation processes.
- Mechanisms to obtain systematic feedback from key stakeholders inform perceptions of institutional quality and performance.
- International and national benchmarking allow institutions and the sector to assess and monitor achievements in institutional and sectoral performance over time.
- Institutional Research supports quality cycles by facilitating the generation and communication of information about progress on quality improvement plans.

GUIDELINES

4. Specific Information Needs

Special Projects

From time to time, an Institutional Research function may carry out studies and investigations that aim to gain original insights into the institution and its contexts. This research may rely entirely on data that is already available but frequently additional data has to be collected. This may be collected by means of surveys and it may include national and regional demographic, economic and social data.

Depending on the project, such additional data may be most useful when they are used to augment large integrated matrices of basic institutional data, so that correlations across numerous categories can be performed easily. Analyses across categories may yield particularly valuable insights, for example by linking student characteristics *to* satisfaction with teaching *to* the use of innovative learning methods *to* examination performance. The careful design of special projects and the use of the most appropriate tools to analyse the resulting data in conjunction with existing data may be characteristic of Institutional Research at its most sophisticated and powerful, and reports on the outcomes are frequently published.

The examples outlined below illustrate the usefulness of both stand-alone survey projects and of research that combines multiple sources of data.

Recruitment

In the present Irish environment of falling numbers of students completing secondary education, surveys of potential students may enable an institute to estimate the factors that influence the student's decision when selecting a particular university or indeed a particular programme. The leaders in this field are undoubtedly universities in the United States, where such studies have been a feature of the higher education landscape for some time.

Tufts University routinely conducts a variety of web-based surveys on 'admission inquirers', and on applicants who have been offered a place. Depending on their decisions, these latter are categorised as 'enrolled' or 'non-enrolling' students. The results for a recent cohort[16] indicate that the four issues that admission enquirers regarded as most important were a university's overall academic excellence/ quality, intellectual environment, availability of major programmes, and focus on the undergraduate. When asked about Tufts, two of these aspects were among the four aspects of Tufts that respondents rated most highly: overall academic excellence or quality, and focus on the undergraduate. In addition, perceptions of the quality of the liberal arts programme and the instructor/student ratio rated highly, and respondents felt that the adjectives that described Tufts well were 'academically rigorous', 'highly selective' and 'prestigious'. It was also found that more of the enrolling students had visited the campus.[17] Such findings can confirm that a particular approach to providing information is successful (as at Tufts), or that a college is failing to inform sufficiently well its 'admission inquirers' and 'non-enrolling' students.

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16 Terkla, D. (2005), *"Admissions Inquiry 2005"*. Report published by the Office of Institutional Research, June 2005, Tufts University, Massachusetts.

17 Terkla, D. (2005),*"Accepted applicant survey 2005: Enrolling and non-enrolling students"*. Report published by the Office of Institutional Research, September 2005, Tufts University, Massachusetts

4. Specific Information Needs (cont'd)

Engagement

Student engagement with their studies and with university life is another area of perennial interest. Greater understanding has the potential to improve institutional and national planning and polices, and student success.

A study completed at Babson College, Massachusetts,[18] linking the responses to a national survey of first year students to internal student data, identified significant relationships between 'interaction with academic staff' and 'perceived growth in knowledge', 'academic adjustment' and 'satisfaction with courses'. Regression analysis revealed that 'interaction with academic staff' significantly predicted 'academic performance', and that 'satisfaction with academic staff contacts' significantly predicated 'overall satisfaction'.

Retention

Internationally, student retention is one of the most widely analysed aspects of higher education today. Higher education institutions are concerned with retaining first year students into subsequent years of study (often referred to as *persistence*), the percentage of students taking a given time to complete a course of study, (*graduation rate*), and the highest level qualification attained (*attainment*). An understanding of the driving factors contributing to these parameters may be critical to improving retention, and higher education institutions (and even national agencies) embark on or commission special projects to enhance existing data.

A study at a Dutch University[19] using multiple data sources showed that student retention and student accomplishment depend not only on academic ability, but are, to a large extent, affected by degree programme satisfaction.

Data from a survey carried out by Indiana University on universities in five states in the United States[20] were used to model how institutional characteristics, conditions and practices impacted on retention rates. The study showed that the biggest impact factors on retention were having resources devoted to instruction and the percentage of first year undergraduates living on campus. A further study[21] at Indiana University showed that students who received family encouragement and institutional support during transitional periods where more likely to persist.

18 Delaney, A.M. (2007), *"Why Faculty-Student interaction matters in the first year experience"*, 29th Annual EAIR Forum.

19 Suhre, C.J.M. and Jansen, E.P.W.A. (2006), *"The impact of degree program satisfaction on college dropout"*, 28th Annual EAIR Forum.

20 Hossler, D.R., Ziskin, M., Wakhungu, P.K.,Gross, P.J. and Martin, T. (2007), *"A survey of institutional practices surrounding student persistence"*, 47th Annual Forum of the Association for Institutional Research.

21 Hossler, D.R., Ziskin, M., Moore, J. and Wakhungu, P. K. (2008), "The role of Institutional practices in college student persistence - results from a policy orientated study", 48th Annual Forum of the Association for Institutional Research.

4. Specific Information Needs (cont'd)

Staff performance and satisfaction

Educational institutions should also assess the impact of institutional change and strategic decisions on staff performance and satisfaction. Ongoing evaluations of teaching effectiveness, as estimated by examination results and student surveys, are useful in highlighting the effects of changes in learning and teaching approaches and/or course delivery. Separate surveys of staff may be particularly important in informing institutional change and strategic decisions.

One study at California State University – Fresno[22] analysed data from both its 1998 and 2005 returns from the Higher Education Research Institute (HERI) Faculty Survey to examine changes during the seven-year period. The institution was having difficulty hiring academic staff. Known contributing factors were stagnant faculty salaries and increased workload. Whilst the study demonstrated that satisfaction levels had increased amongst full professors, it made clear that a number of highly significant pressure points affecting less senior academic staff had developed, and it was clear that these were the result of a multitude or complex of factors, economic, demographic and policy – including faculty retirements, state budget cuts and consequent lack of pay raises. These objective findings gave the University an impetus to change policies and practices.

22 Leimar, C. (2006), *"Stasis and change: Faculty satisfaction, stress and university priorities. An analysis of the 1998-99 and 2004-05 HERI Faculty surveys"* Report from the Office of Institutional Research, Assessment and Planning, California State University, Fresno.

4. Specific Information Needs (cont'd)

Guidelines - Special Projects

- Planning for an Institutional Research function takes into account resources that may be required for special projects.

- When the need for additional resources is being considered, the importance of their potential contributions to enabling special projects is taken into account.

- The value of research undertaken on special projects is appreciated, especially in association with strategic planning and decision-making.

- When appropriate, outcomes from special projects are used to inform future routine data collection and governance policies.

- Data acquired though special projects are, wherever possible, added to the basic enterprise data to create large integrated databases.

GUIDELINES

Appendix 1

Work Programme

Background

The 2004 applications of all seven universities to the HEA Quality Assurance Programme Funded under the National Development Plan 2000 – 2006 included a request for support for an IUQB proposal to undertake a number of 'Sectoral Projects', concerned with the dissemination, publication and implementation of good practice, namely:

1.   Institutional Research

2.   Academic Workloads

According to the application, the project in each of these three areas would involve:

- The analysis of relevant data and departmental review reports to date for all seven universities.
- A set of seminars/workshops (1 per university) to obtain input from university officers/staff.
- A conference with international experts.
- Preparation and publication of national guidelines of good practice.

The 'Institutional Research' project was initiated by the IUQB in the autumn of 2005.

Project outline

Co-ordination

The project management team which co-ordinated the project consisted of Noel O'Connor (Campus Planning, DIT); Jim Gosling (Director of Quality, NUIG); Aoife Flanagan (Institutional Research Officer, NUIG); Joan Mullen (Institutional Research Officer, NUIM); Maura McGinn (Institutional Research Officer, UCD), and Teresa Lee (Quality Enhancement Manager, IUQB).

Initial actions

1.   Obtain the participation of senior officers from key functional areas within institutions including academic affairs, finance, MIS, personnel, estates, strategic planning and development, teaching and learning, research, quality assurance and institutional research officers.

2.   Promote the organisation of a number of workshops to discuss, clarify and prioritise issues and to familiarise participants with international trends and good practice.

3.   Establish current practice.

Activities

National Meeting

A national meeting with key stakeholders and with international presenters was held to initiate discussions and to identify the key themes requiring attention in the sector.

The key aims of the meeting were:

1.   To highlight international best practice in the area of Institutional Research.

2.   To bring together key university and DIT stakeholders (university and DIT teams) to discuss current good practices in institutional research in the universities and in the DIT; to identify gaps in this area and to identify current and future requirements for the Irish universities and the DIT.

3.   To identify the key themes and areas that will require in-depth discussion and exploration with stakeholders at the individual university/DIT level by means of a workshop meeting in each.

In advance of the meeting each university and the DIT was requested to prepare a short summary report on the current status of Institutional Research in their university, current good practices, perceived gaps and future needs. A synopsis of the reports was drawn up and distributed to participants.

Each university/DIT was represented by 3/4 members drawn from the senior university personnel: academic affairs/registrar, finance, Management Information Systems, human resources, estates, strategic planning and development, teaching and learning, research, quality assurance and institutional research officers.

Participants were updated on current international practices by:

> Prof. Sir David Watson, Professor of Higher Education Management at the Institute of Education, University of London, United Kingdom.

> Dr. Dawn Geronimo Terkla, Executive Director of Institutional Research, Tufts University, Medford MA, United States.

A synthesis of the key findings from the meeting was prepared and were used to inform the Interim Report (see below).

Institutional Workshops

A planning meeting held with some of the relevant university/DIT officers and with the international expert Dawn Terkla drew up a programme for a set of workshops (1 per institution). These workshops, held in 2006 and 2007, ensured input from a wider stakeholder group in each institution and provided a means of collecting information and undertaking analysis on key performance indicators used within each institution. A report from each workshop was prepared and key findings from workshops were used to inform the Interim Report (see below).

Establishing Current Practice

Current practices on the national and international stage were established by means of:

- The analysis and evaluation of Quality Assurance/Quality Improvement review documentation in the seven universities and of the EUA Institutional reviews of the seven Irish universities (2004-2005)[23] and of the DIT (2006)[24] and;

- The undertaking of overviews of current practices, data systems and resources in use on the national and/or the international level.

These exercises provided additional information to that already derived from the national meeting and the institutional workshops (as outlined above).

The Interim Report

In order to summarise all of the information collected, an Interim report was prepared (available at www. iuqb.ie). The Interim Report included the following sections:

1. The Project
2. The Current Situation

   Introduction

   International Context

   National Context

   Data Sources

   Collaboration on Data Resources

   Resources and Governance

3. Recommendations from Quality Assurance/
   Quality Enhancement reviews and evaluations
4. National Institutional Research Workshop Report-Nov 2005
5. Reports from the local workshops/initiatives
6. Appendices
7. Bibliography

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23 See footnotes 1 and 2.
24 See footnote 4.

The Interim report was presented for feedback at the 5th IUQB Annual Conference *Institutional Research: Benefiting the Student Experience and University Performance.* (12-13th October 2007) held in NUI Galway, Ireland. This conference was attended by about 150 delegates from Ireland and elsewhere with representation from academic staff, senior officers and administrators.

Presentations at the conference included:

- **Steering a University in the Light of Knowledge** by Prof. Richard M. Freeland President Emeritus, Northeastern University (NEU), Boston

- **The Irish Higher Education System** by Mr. Tom Boland, Chief Executive HEA

- **Measuring Student Satisfaction with Teaching and Services** by Ms. Aoife Flanagan, Institutional Research Officer, NUI Galway

- **University Ranking Systems: a Critique** by Dr. Torsten Kälvemark, former Head of the International Department, Swedish National Agency for Higher Education:

- **The Key Triad: Institutional Research, Planning and Quality by** Dr. Mark Putnam, Director of Planning and Institutional Research, NEU, Boston

- **Key Performance Indicators and Balanced Scorecards** by Mr. Bruce Nelson, Academic Registrar & Deputy Secretary, University of Edinburgh

Workshops sessions were held under the following headings:

- **Playing the Ranking Game**, facilitated by Dr. Mark Putnam, Northeastern University, Boston

- **Monitoring Student Retention and Graduation**, facilitated by Dr. Dawn Geronimo Terkla, Tufts University, Medford, MA

- **Key Performance Indicators for Irish Universities**, facilitated by Ms. Dera McLoughlin, Mazars, Dublin

- **Surveying Third and Fourth Level Students in IUA Universities**, facilitated by Dr. Liam Delaney, Geary Institute, UCD, Dublin

- **Assessing and Recognising Teaching Quality and Excellence**, facilitated by Dr. Iain MacLabhrainn, CELT, NUI Galway

- **Measuring Research Performance**: facilitated by Dr. Lisa Lucas, Graduate School of Bristol, United Kingdom

Information and presentations from the conference are available at www.iuqb.ie.

Further Consultations and Finalisation of these Guidelines

After the above Conference, the Interim Report, together with findings from the conference, were used as the basis for a first draft of these guidelines. In line with other publications in the IUQB Good Practice series, each section starts with a broad outline of the main relevant issues in order to place in context the specific guideline items, which follow.

A pre-publication draft of the booklet was reviewed and revised in light of the feedback obtained from stakeholders across the higher education sector in Ireland and from experts in the field who were invited to review the draft as part of an open consultation process.

Appendix 2

Overview of Key National and International Data Resources.

Table 1: Overview of major national data sources (Compiled February 2008).

SOURCE	SUMMARY OF DATA PROVIDED	EXAMPLES OF TYPE OF DATA PROVIDED
Department of Education & Science (DoES) www.education.ie	-Provides statistics on 1st, 2nd & 3rd level education sectors which are funded by the Department. -Produces intermittent reports on Irish education (e.g. gender matters; trends in Irish Education). -Information is accessible online. Annual reports online from 1996/97 up to 3 years prior to current academic year.	*All levels* Number of institutions; Students enrolled (total by age and gender); Amount of expenditure. *2nd level* Enrolment statistics (including by county); Statistics by school type, gender, programme and year of study; Analysis of subject provision and take-up; Public examination statistics. *3rd level* Analysis of student enrolment by: Age; Institution type; Domiciliary origin; County of study vs county of origin; Mode of study; New entrants.
State Examinations Commissions http://www.examinations.ie	-Provides summary statistics on state examinations, numbers of students and results received. -Data requests can be submitted. -Summary data online from 2001 up to the current academic year.	**Data on:** Total numbers of students by exam type, subject and gender. Grade and grade distributions by subject and gender.
Higher Education Authority (HEA) www.hea.ie	-Presents data on HEA-funded institutions about students and graduates, and compiles first destination statistics. -Produces annual digests of information for the HE sector incorporating data from the DoES. -Produces reports on Irish higher education (e.g. CAO application and acceptance trends; graduate destination trends, access to education). -Data requests can be submitted. -Information is accessible on-line. Approximately 9 years data available for most categories up to 1 or 2 years prior to current academic year.	**Student enrolment data (by academic year)** *New entrants* (Full-time) by: Institution, field of study and gender; Institution, gender and age. *Undergraduate* (Full- and part-time) by institution, gender, field of study and year of course. Listed by course type (degree etc). *Postgraduate* (Full- and part-time) by: Institution; Gender; Field of study. Listed by course type (masters, PhD etc). *Student details:* (Full-time). Details of: Age; Gender; County of origin; Residence type; Country of origin. **Graduates data (by academic year)** Statistics break down graduate awards by: Award type (certificate, degree, masters etc); Institution; Gender; Field of education; Grade distribution (where applicable); Mode of study (undergraduate degrees only). **First destination reports of graduates** Initial employment, further study and training patterns of award recipients (full-time; undergraduate and postgraduate) from the previous academic year. Information is presented by category of award and area of study. Includes first destination status, salaries; regional distribution of employment; sectoral employment distribution; and migration pattern.

SOURCE	SUMMARY OF DATA PROVIDED	EXAMPLES OF TYPE OF DATA PROVIDED
Central Applications Office (CAO) www.cao.ie	-Provides summary information and reports on undergraduate applications to Higher Education. 7-15 years data available up to current academic year. -Data requests can be submitted. -Provides each HEI with detailed data on applicants to their institution. -Information accessible online.	*CAO Points:* Requirements by course; Points distribution data (nationwide). *Applicant Statistics:* National profile of the number of applicants by field of study and course level. *Annual reports:* National profile of applicant numbers by field of study, preferences, offers and acceptances. *Information provision to individual HEIs.* All HEIs have access to data on applicants to their own institute and access to national trend data for comparative purposes.
Central Statistics Office (CSO) www.cso.ie	-Compiles and disseminates official statistics on economic, social and general activities and conditions. -'Database Direct Service': enables users to create customised tables of census data. -Information accessible online.	**Categories of data:** People & Society (including census data, other population data and information on health, education, crime and housing); Labour Market & Earnings; Business Sectors; Economy; Environment & Climate.

**Table 2: Overview of major European and transnational data sources
(Compiled February 2008).**

SOURCE	SUMMARY OF DATA PROVIDED	EXAMPLES OF TYPE OF DATA PROVIDED
Organisation for Economic Co-operation and Development (OECD) www.oecd.org	-Source of comparable statistics, economic and social data including education-related data across **OECD member countries**. -Education statistics are compiled from data submitted by national education ministries and statistical offices according to international standards, definitions and classifications. -A list of recognised standard definitions and classifications used by the OECD and others for international comparison is also published. -All information is available online.	***Education-related data groups:*** Learning; Society; Economy; Outcomes of Learning; Quality Teaching; Tertiary Education; Social Cohesion and Education; Futures for Education; Employment and Skills. ***Online Education Database includes international data on:*** Student enrolment; Foreign and international/mobile students enrolled; New entrants by sex and age; Graduates; Education personnel; Expenditure by funding source and transaction type; Expenditure by nature and resource category; Students aligned to finance and personnel data; Total population by sex and age.
Eurostat http://epp. eurostat.cec. eu.int	-Statistical Office of the **European Union** gathers and analyses figures from the different European statistics offices to provide comparable data. -Full access is provided free of charge to all Eurostat databases and electronic publications.	***Data groupings include:*** Key EU policies indicators; General and regional statistics; Economy and finance; Population and social conditions (includes education-related data); Industry, trade and services; Agriculture and fisheries; External trade; Transport; Environment and energy; Science and technology (includes research and innovation data).
Higher Education Statistics Agency (HESA) www.hesa.ac.uk	-HESA is the central source for the collection and dissemination of statistics about publicly-funded **United Kingdom** higher education. -Information is collected electronically directly from institutions. -Five main data sets collected. -The detailed definitions and categories used in data sets means that detailed breakdown of data is available. -Has identified a range of performance indicators for the United Kingdom higher education sector -Provides a range of institutional management reports around areas such as staffing levels, cost centre analysis, space utilisation and efficiency (available to UK HEIs only) -Produces a range of annual publications available online and in other forms. -An Information Provision Service to provide data for specific queries. -Online information includes data from 1994/5 to the previous academic year:	**Main data sets:** Student; Destination of leavers from higher education; Staff; Finance; Non-credit bearing course records. **Performance indicators developed in the areas of:** Widening participation; Non-continuation rates; Module completion rates; Research output; Employment of graduates.

Table 3:   Overview of major data sources in the United States (Compiled February 2008).

SOURCE	SUMMARY OF DATA PROVIDED	EXAMPLES OF TYPE OF DATA PROVIDED
The National Centre for Education Statistics (NCES) www.nces.ed.gov	-Located within the Department of Education and Institute of Education Sciences -Collects higher and further education data from 9,800 public and private institutions, through the IPEDS process. -Reports on IPEDS data, along with other education information and publication. -Access provided to a vast repository of tables/figures/charts which are published in the NCES' National Education Data Resource Center' (NEDRC), and other NCES publications. -Information and reports are available online.	**Digest of Education Statistics:** An annual compilation of statistical information covering the broad field of American education from pre-kindergarten through to graduate school. **Projections of Education Statistics:** Provides key education statistics, including enrolment, graduates, teachers, and expenditures in elementary and secondary schools. **Information in the NEDRC appears under the following headings:** Post-secondary Tables Library; the Condition of Education; the Digest of Education Statistics; Indicators of School Crime and Safety.
Integrated Postsecondary Education Data System (IPEDS) www.nces.ed.gov	-Recognised institutions within the United States are legally required to fulfil IPEDS requirements. -Data collection is via web-based surveys. -Agreed definitions and precise timelines mean that data should be complete, accurate, reliable and timely. -Data produced is publicly accessible. -IPEDS data for individual institutions is available on institutional websites.	**Data relates to:** Institutional characteristics; Degree completions; Enrolment; Human resources; Finance; Financial aid; Graduation rates.
Common Data Set (CDS) www.commondataset.org	-An initiative in which data providers in higher education collaborate with publishers to improve the quality and accuracy of information on higher education, and to reduce the reporting burden on data providers. -Clear standard data items and definitions have been developed, often in line with items and definitions used by Department of Education surveys. -Higher Education institutions are asked to adhere to CDS when responding to requests for information from various sources and when completing surveys. -Individual institutional websites have the institutions, CDS information.	**Data sets appear under the following headings:** Institutional details; Total student information; Student details; Enrolment and persistence data; Admissions data; Transfer data; Academic offering and policies; Information on institutional facilities and activities (student life); Annual Costs; Financial aid available; Teaching staff and class size data; Graduation/conferring data.

Appendix 3

Overview of Internal Data Collected in Irish Higher Educational Institutions

Categories of data collected internally in HEIs with breakdown given of several of the primary types of information collected. (Compiled February 2008).

DATA CATEGORY	Examples of types of data under this category
STUDENT RECORDS	Biographical; Socio-economic data; Application (including CAO applications, preferences, course choices); Qualification (Programme details); Subject (Modules studied in the programme studied and credit value); Examinations (Exam details and results); Pass rates; Completion rates; Graduation (Date, award, result); Financial (fees, grants, student payments); All information required to produce the Diploma Supplement.
STUDENT PLACEMENT	Student placements; Employers' details; Application record; Interview details; Review details; Any other interaction with external employers.
GRADUATE PLACEMENTS	First destinations of graduates; Information from Graduate Survey; Employment status.
TEACHING ACTIVITIES	Timetabled hours; Modules taught; Structure and content of academic programmes.
RESEARCH	Research interests; Biographies; Publications; Conferences; Proposals and Submissions; Sponsorship details; Grants/Awards/Donations; Expenditure; Intellectual Property; Patents.
PERSONNEL	Contract information; Salary data; Performance, review and related data (held in paper format); Policy documents; Staff numbers and grades.
ESTATES OFFICE	Facilities and planning services; Information on buildings, estates, timetabling and allocation of space; Facilities activities; Event Planning; Emergency information; Security; Cleaning services.
FINANCE	Student fees and payments; Student grant allowances; Management of financial accounts; Income and Expenditure by source and category; Budget allocations; Recurrent, capital and research.

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