Programmatic Review of the CIT School of Engineering – Phase 1

Report of the Review Panel

April 2013

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1 Executive Summary

1.1 Overview:

The Panel has undertaken its review of the two Schools in the Faculty of Engineering, namely the School of Building & Civil Engineering and the School of Mechanical, Electrical and Process Engineering with their associated research centres. The Panel was very appreciative of the arrangements made for their review, including opportunities for discussions with senior CIT staff, teaching and support staff, employers and students. In all the various discussions and interviews, the people we met were uniformly open, enthusiastic and supportive of our activity.

The overall impression gained is of an experienced, well respected and enthusiastic educational establishment, effectively serving the needs of the region and of the industry therein.

The Institute is facing very challenging times, through no fault of its own, with the downturn in the Irish economy leading to a dramatic reduction in the need for the Institute's educational activities, especially in the construction related disciplines.

In addition, the reduction in exchequer funding of Higher Education is resulting in a reduction in the "income per student" received by the Institute and to proposed salary reductions for staff. Despite this economic situation, overall staff and student motivation appears to remain high. These challenges are present at the CIT level, as well as at the individual School and Faculty level, so some of our recommendations are, of necessity, aimed at this higher level.

We perceived an "Institute level" drive to increase student numbers in order to maximise Central Government income. Equally, there were significant efforts being made to reduce costs and improve efficiencies. These are naturally responses we would support. However, increasing the volume of education may represent a risk to the quality of education delivered.

Strategic relations with industry are recognised as being vital and we make recommendations elsewhere in this document on this topic. At the level of department heads and team leaders, there is a good recognition of this need and we saw evidence of well-motivated, individual responses to this need.

The Panel were concerned, however, that the responses seen were essentially "tactical" in nature. They are being delivered through the individual efforts of department heads and lower staff. The Panel felt such a response could be insufficient in the light of the magnitude of the challenges facing the institute.

Whilst there is a very high level "strategic" initiative to gain Technological University status, we felt there was a need for a coherent institute level strategic drive to identify new opportunities and new markets for the services provided by CIT. It is in this more 'pro-active' area of seeking additional "business" that we felt the organisation

could achieve significant extra gains. This is covered in more detail in later sections, including additional offerings as well as a drive to new markets.

1.2 Recommendations:

The Recommendations of the Panel are described in more detail in later sections. However, the key points are:-

The Faculty Strategic Plan

- The Plan should include a high degree of consultation to ensure maximum 'buy-in', essential in these challenging times.
- It should include a Change Management Communication Plan .
- The Faculty should constitute a formal Faculty Industrial Panel, as recommended by the previous Programmatic Review Panel.

Focus on Education Options

- A concerted study to define CIT's core competencies and examine the courses offered based on that focus.
- The Faculty should prioritise a small number of strategic areas for development and seek to develop critical mass in these areas.
- The Faculty should address the balance between education and research.

Formal Staff Development Processes

- Implement a structured staff career progression system linked to the needs of the Development Plan.
- Set up a scheme to enable staff to reduce their teaching commitments and to focus on research for a period of some months.

Education and Management Information Systems

- Set up a 'just graduated' survey. Ask for feedback on education experience and follow-up graduates' employment and salary levels.
- Survey alumni graduated 2 – 3 years ago and their employers.
- Define key indicators for regular management reporting purposes.

Enhance Graduate Skill Package

- Increase interdisciplinary project work and include more industry experience.
- Develop programmes where students work in virtual teams.
- Provide opportunities for "multi-cultural" teamwork.

Business and Market Development

- Establish a market development initiative at Institute level.
- Develop existing co-operation with enterprises.
- Identify possible new enterprises with whom to form a **strategic** relationship, scaling up the Extended Campus to a standard operation procedure at CIT.
- The Faculty should actively explore the international market for its offerings, both by partnering with academic establishments and by marketing directly to enterprises.

1.3 Review Panel Membership

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Professor Terence Knibb (Chair)
Technology Policy & Strategy Consultant

Mr. Ger Breen
Associate Director
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Dr. Kati Korhonen-Yrjanheikki
Director of Education and Employment
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Mr. Richard O'Halloran
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Professor John Ringwood
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Dr. Stephen Cassidy
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2 Review Panel SWOT Analysis for CIT

The Panel would have welcomed an 'in depth' SWOT analysis as part of the submission. However, they have produced the following, based on the information gathered during the review.

2.1 Strengths

- Reputation - Very well regarded by customers, students, industry / employers
- Close co-operation with industry. Good practices in industrial co-operation.
- Enthusiastic and committed staff, students say lecturers 'listen to them'
- The institution atmosphere is open, non-hierarchical and trusting.
- Excellent industry-oriented research work in niche areas
- Contract Research leading to 'manufacturing ready' products
- Cloud computing skill-sets
- Staff enthusiastic in pursuing post-graduate courses, Institute support available
- CRM / Extended campus – Also an 'Opportunity'
- Training offerings for technicians etc.
- Continued accreditation from the leading professional organisations
- Continuous assessment of students regarded as better than end-of-year exams

2.2 Weaknesses

- Appear to have different inputs regarding abilities of student intake as UCC and universities but trying for same outputs
- Need to up-skill certain staff as more graduate / post-graduate courses are being developed
- Issue around whether contract-based research staff become 'permanent' after 4 years leading possibly to a churn in research staff
- Apparent low-usage of CRM / Extended campus
- Limited marketing, especially to potential students in schools
- Poor image of engineering as a career opportunity in Ireland at present
- Apparent lack of customer review in planning new courses
- Computer rooms / library opening hours limited, especially at exam times
- Limited collaborative training between different disciplines

2.3 Opportunities

- Use strategic planning process to involve staff and students and generate buy-in and enthusiasm for the strategic direction CIT wishes to take.
- Under-employed construction workers wanting to up-skill, achieve better degrees
- Possibility that Irish construction economy turns-around leading to sudden shortage of engineers / technicians and demand for CIT services
- Ability to combine teaching on-campus with 'e-learning teaching'
- Potential for consolidating courses as well as the possibility of adding new courses without significant need for additional resources (Using 'Modularisation')
- Overlaps with UCC in certain courses etc. giving opportunity to CIT to develop / leverage off UCC skill-sets

- Alumni - CIT graduates who have emigrated to other parts of the world who would wish to keep in touch with Ireland / might plan to return and who might want to engage with a CIT on-line teaching offering
- Market for short-term courses based on good / improved relationship with local industry
- Wide spread of courses provides opportunity for increased collaborative training between disciplines

2.4 Threats

- Reduction in demand for engineering / technical graduate courses leading to potential / actual under-employment of staff, empty laboratories and reduced income related to student-numbers.
- Competition from UCC in certain areas e.g. similar graduate and post-graduate courses in a number of areas
- Student perception that engineering degrees from UCC are better than CIT (E.g. when UCC re-named its food science course as process/chemical CIT students numbers on its chemical engineering course dropped appreciably)
- Reduction in government funding with knock-on impacts across the faculty
- Not certain how CIT would differentiate its teaching (at graduate and post-graduate level) and research offerings from competitors, especially UCC
- Opportunity for UCC to 'take over' certain courses due to overlap
- E-learning - competition from leading institutions on a world-wide basis; not clear how CIT has thought about differentiating its e-learning offerings
- Government 'not convinced' technological university aspiration was justified / affordable and instructing CIT to revert to its original service offerings
- Risk that if CIT moves 'upmarket' it may lose its skills relating to the training of technicians etc. – i.e. may neglect its core market

3 Summary of Key Findings and Recommendations

From the Guidelines for the Review Panel, we addressed the question:

- **Is there evidence of a thorough, effective and reflective review which identifies challenges, addresses shortcomings, and which lays the foundations for a successful development of the faculty/college over the next five years?**

Many of our questions to the various groups we interviewed, and our searching of the documents, were based on this prime question. It is certainly fair to say that the review submitted to us did address the topics above, but we did feel that the overall work fell somewhat short of a " **thorough, effective and reflective review** " and thus was in danger of not leading to " **a successful development of the faculty** ".

Possibly because of the severity and suddenness of the challenges facing the Institute, we perceived that much of the response was 'reactive' and 'tactical' in nature, and that a more 'pro-active' and 'strategic' initiative would be beneficial.

The Panel would like to emphasise that this opinion in no way diminishes the enthusiasm, expertise and commitment of all the people we met, at all levels in the organisation. It is purely a matter of degree and of coherent and structured application of appropriate processes. Our comments which follow are presented in the spirit of seeking to advise the faculty and the schools such that they may achieve the most successful outcome.

3.1 The Faculty Strategic Plan

In a time of uncertainty, the requirement for the Faculty to develop a strategic plan which remains robust to changes in the external environment, becomes increasingly important. Such a plan would allow the Faculty to pro-actively identify and manage risk arising from the environment rather than adopting a reactive strategy to change.

The CIT Strategic plan 2012 – 2016 requires each Unit to prepare a Development Plan highlighting priorities and goals and how these will contribute to the Institute's strategy. These plans are to be operational in nature, contain detailed actions as well as measurable targets. The Schools of Engineering have not yet prepared such a plan and they anticipate that the outcome of the current strategic review component of this Programmatic Review will facilitate finalisation of their plan.

The Programmatic Review Submission contains elements of this plan but the Themes and Proposed Actions, reproduced here as Appendix 2, are aspirational in nature. They appear to have been developed without any significant consultation with stakeholders, make no reference to the student experience or external stakeholder needs and are not explicitly linked to the Institute's priority areas within the CIT strategic plan 2012-2016. There is no analysis of their robustness to changes in the operating environment, nor is any credible action plan described to deliver them. Despite these concerns, the Panel found a general level of buy-in to the Themes and

Proposed Actions at School, Department Head and key senior staff level. The Panel broadly supports the general direction of the nine actions proposed.

The driving factor of CIT is defined as what society and industry needs. However, the prime response of the presented strategic plan is to maximize number of students in order to get more public funding. Increasing the volume of education may put a risk on the quality of education. The Institute should also include in the strategic objectives criteria measuring the quality of CIT education. This should be over and above professional association accreditation criteria.

In responding to the challenges facing the institute, there is a clear ambition at senior management levels to achieve "Technological University" status and recognition. This has led to greater emphasis on Level 9 and Level 10 degree aspirations, as well as exploration of strategic linkage and possible merger with the Institute of Technology, Tralee.

The implications of this strategy are discussed later, but we have concerns about 'trying to do too many things'. The Panel detected a degree of concern on this aspect among some staff.

Equally, there is need for a clear and coherent communications process as part of "Change Management", if the objectives are to be achieved.

The Panel also briefly reviewed progress against the recommendations of the previous Programmatic Review. This dealt largely with the impending modularisation programme imminent at the time. The Panel is satisfied that the spirit of these recommendations have been broadly addressed with the exception of the recommendations regarding the establishment of a Faculty Industrial Panel and a greater degree of coordination of the Continuing Professional Development programmes offered by the Faculty.

Recommendations:

The Schools of Engineering are required to prepare a Development Plan, explicitly linked to the eight priorities set out in the CIT Strategic Plan.

- This should place the Faculty strategy firmly within the context of CIT's institutional strategy as a minimum requirement. In particular, the aspiration to technological university status is important, and the Faculty needs to present clear policies which will aid CIT in achieving its desired strategic goals.
- The Panel recommends that the plan addresses the issues identified by the Panel in this Review report. It is suggested that this should also include a re-examination of the coordination of the CPD programmes as part of the Engineering Schools' Development Plan and metrics monitoring the 'student experience' and quality of education provided.
- The process to produce the Plan should include a high degree of consultation to ensure maximum 'buy-in', essential in these challenging times. The Panel also proposes that this is prepared such that it can be reviewed in advance of Phase 2 of the Programmatic Review.

- Develop an outline implementation plan as to how the identified strategic goals will be achieved. Without such a plan, it is unlikely that any specifically actionable items will result from the strategic planning process.
- The Faculty/Institute should initiate a Change Management Communication Plan to involve stakeholders and to mitigate the effects of ongoing uncertainty. This would include a structured approach to making relevant information available in a systematic and timely manner.
- The Faculty should reconsider constituting a formal Faculty Industrial Panel, as recommended by the previous Programmatic Review Panel, which would complement its current, more informal, strategy of partnering with enterprise.

3.2 Institute Ambitions

In addition to the above, we probed the "desirable position" of the Institute in 5 to 10 years time. Probably the best summary of the position described to us was "To be the benchmark institute for *career focused education* in Ireland and hopefully in Europe".

This is a laudable ambition, albeit a very challenging one, and is seen as building logically on the institute's existing, demonstrated strengths.

3.3 Strategy Risks

The Panel received a coherent picture of the Institute context during the Review, supported by the External Environment analysis in the Submission documentation. In the course of our interviews, the Panel identified a number of risks which need to be further addressed in the Schools' Development Plan (many of which are also relevant at Faculty and Institute level). While some of the risks are outside the control of the School and even Institute, the Development Plan should be tested for robustness in managing these risks.

The journey towards Technological University status is driving greater Research activity and increased PhD numbers. There is evidence of growing tension between this and the ongoing teaching load, leading to some concerns about the quality of both. Difficulties were also recognised in getting adequate and appropriate staff for delivery of research related services to industry. There are concerns about declining numbers in Engineering in general, and building related courses in particular, but there is little time or effort expended to promote such programmes in school visits.

The ongoing modularisation review and common entry system may also pose a risk in balancing the competing demands of developing curricula specific to a discipline area and the requirement for standardisation to support smaller cohorts and promote student choice. The Schools appear to value the breadth of programme offerings across Level 6 to Level 10 but there is a concern amongst some staff that the move towards graduate education and research may dilute the focus on core Level 7 and Level 8 degrees.

The philosophy of professional accreditation is understood and supported but there is also a move toward European wide accreditation and further cooperation with UCC which complicates delivery. The Panel has expressed some concern that the emphasis on professional accreditation has led to the Professional Bodies setting the admission

criteria for CIT programmes rather than CIT itself. This could prove to be a constraint in these challenging times.

In the context of declining numbers and lack of promotional effort, the Panel noted that a CIT brand was being established but that there was little hard data to support differentiation between CIT and other Higher Education Institutions. Information on first destinations, national graduate surveys and feedback from students was at best incomplete. Moreover the inability to interrogate data bases and extract useful information on cohorts of students in a structured manner mitigates against the identification of a coherent differentiation for CIT.

The Panel also identified the lack of any evident staff development and progression system, including management training and preparation for new jobs. While staff and management were supportive of each other and all exhibited enthusiasm and flexibility and understanding, the lack of a structured approach represents a risk to delivering School goals.

It was also clear that neither staff nor students had been engaged or consulted in developing the Schools' response to CIT's strategy. The documents are now available for staff to read but the process runs the risk of staff not buying into the eventual Development Plan, possibly alienating staff members (voiced in particular by some Technical and Administration staff who felt marginalised by the process).

The uncertainty around the environment in which staff are operating in the absence of a proper engagement and communication structure and the impact on them represents a challenge to management and a risk to plan delivery. It is a testament to the character of the staff that this uncertainty has not yet impacted negatively on students' experience on course delivery.

Recommendations

- The Engineering Schools should develop a marketing effort in conjunction with Institute and other key stakeholders, internal and external, to promote school level entry to Engineering courses.
- The Faculty should implement a structured staff career progression system linked to the needs of the Development Plan.
- The Institute should implement a system to provide relevant information available in a systematic and timely manner.

3.4 Role of Research

The Panel were very interested in probing the Institute's view of the role of research. At the very beginning, we were told what it was not, i.e. "the institute is not research intensive". However, contract research and institute driven research was mentioned repeatedly.

What did emerge after discussion was the recognition that the institute operated as what is often called an "Intermediate Institute", bridging the gap between pure academic "curiosity driven" research and the needs of industry for mature technologies and skills. This has led the Institute to pursue research often referred to

as Applied Research, operating at Technology Readiness Levels (TRL's) of 3 to 7, only undertaking more fundamental research where this is in direct support of the chosen areas of expertise.

Thus the "role of research" can easily be defined as directed at Innovation rather than Invention. This was amply demonstrated by the descriptions of the "research centres", which have been built on, and benefit greatly from, close strategic linkage with major local industry.

The Panel is entirely supportive of this policy, but we felt that it is not highlighted or promoted enough in the various documents. If clearly enunciated, we felt that it could represent a powerful differentiator for CIT.

3.5 Focus on Education Options

CIT is in danger of lacking a clear focus in education. It offers education between levels 6 – 10. The number of the degree programs is high and volume in several programs is small, which could be a risk factor.

The Panel would note that there are ways of meeting the changing skill needs of the labour market without always setting up a new degree programme. For example, existing modules may be amended or elective streams within programmes developed to meet these new requirements.

The Panel notes that student retention rates within the Schools are in line or better than national norms for similar programmes within the Institute of Technology sector. The Panel agrees with the Faculty that addressing retention challenges should remain a priority for the Faculty and would like to commend the Faculty for its commitment, active contribution and leading, where necessary, of the new Institute-wide Student Engagement & Retention Initiative coordinated by the Office of the Registrar. In particular its support of the Institute initiatives in relation to Peer Assisted Study Support and The Good Start programme are noteworthy.

Recommendations

- We recommend a concerted study to define CIT's core competencies and examine the courses offered based on that focus. This may result in discontinuing degree programs that are either outside the focus or too small.
- We highlight a danger that the existing extensive use of shared modules may lead to an unintended consequence in that discontinuing a programme because of lack of students may result in the constituent modules of another programme being 'sub-critical'.
- The Faculty continue to be actively involved and lead initiatives such as PASS and The Good Start programme to improve the student experience for all students leading to improved student satisfaction and retention.
- The research culture within the Schools reviewed may be described as developing with a small number of registered research postgraduate students in both schools reviewed. Based on a CIT core competencies

analysis, the Faculty should prioritise a small number of strategic areas for development and seek to develop critical mass in these areas.

3.6 On line delivery

The very positive experience with the Cloud Computing on-line offering, with a very effective industrial partner, is to be welcomed. However, some care needs to be taken in the roll-out of additional offerings in more traditional areas. Specifically:

- The cloud computing course has a number of important advantages that may be partly responsible for its success. It is a vanguard programme in that it is an early entrant into the set of on-line offerings in this area. It also has a strong industrial partner, which also provides a captive clientele, which helps to increase student numbers. In addition, cloud computing is an ideal on-line course offering, since any laboratory-style experiments and learning components are implemented directly on the on-line delivery platform.
- On-line delivery purports to offer an educational programme to a world audience, which is not entirely consistent with the stated mission of CIT, which is primarily to support the local industrial community. In addition, stand-alone on-line offerings will be in direct competition with offerings from high-profile institutions such as MIT and Stanford.
- The development and integration of experimental laboratories attracts a huge overhead for traditional engineering modules. Any attempt to streamline this activity through the extensive substitution of simulation/CAD tools in the place of hardware laboratories may compromise CIT's excellent reputation for 'hands-on' education.

In the Panel's view, CIT should search for a differentiator in order to compete in the on-line area. In conversation with the industry partners, there seemed to be a genuine appetite for a 'blended-learning' approach which could potentially exploit the strengths of CIT (local support, 'hands-on') while increasing its reach through greater flexibility in on-line learning materials. Thus programmes could be taken by industry employees in evenings, or off-shift, supplemented by local face-to-face sessions for tutorial and laboratory work. Such a blended approach could also facilitate the offering of short courses to industry and build on the existing relationships between regional employers and CIT.

Recommendation

The Engineering Schools may wish to develop online offerings though a blended approach of online and face-to-face teaching. Having gained valuable learning from this type of delivery, the Engineering Schools may wish to develop new programmes amenable to being fully delivered online.

3.7 Enhance Graduate's Skill Package

The feedback received from all employers consulted, and from the students themselves, showed that the engineering graduates from CIT are highly regarded as being well-equipped with technical skills.

However, skills gaps were identified in the interpersonal skills, extended communication utilisation, project management, cultural awareness and a basic understanding of working in interdisciplinary teams. These skills are an essential 'core competence' of an engineering graduate of today.

Recommendations

- Increase interdisciplinary project work in the curriculum.
- Develop the learning environment to include more industry experience.
- Develop programmes where students work in virtual teams with students from another university.
- Encourage internships and work based studies.
- Provide opportunities for "multi-cultural" teamwork.
- Provide "self-teach" packages for students to acquire skills in Microsoft Office

3.8 Formal Staff Development Processes

In our discussions with "middle management", there appeared to be no formal or effective staff development programs at CIT. We heard of two examples where members of staff had received significant promotion but are having to "learn on the job". There appeared to be no automatic procedure to provide them with the additional skills needed for effective performance.

Conversely, there appears to be an effective program to encourage staff to seek further formal qualifications, such as higher degrees, with full support of fee provision and time allowed. These were fully recognised by staff and were highly valued.

Recommendations

- Increase investment in human resources development at CIT. In the first stage, analyze staff development needs and take action based on results. Development and staff training also increases the attractiveness of CIT as an employer enabling it to recruit skilled teachers and researchers.
- The Faculty should implement a structured staff career progression system linked to the needs of the Development Plan.
- The Institute should set up a scheme to enable staff to reduce their teaching commitments and to focus solely on research for a period of some months. This may give staff the opportunity to develop links with other research groups, attend conferences and to write initial funding proposals.

3.9 Education and Management Information Systems

In several cases, the Panel sought additional statistics and figures and were informed of the significant and dedicated effort required to produce the information. The Panel notes that there appears to be a marked absence of business intelligence style reports available to management and staff to allow them to proactively manage their areas.

In order to be able to develop education in a systematic way, feedback systems of both education and management information systems need to be developed considerably. This may be a long process, but it should be pursued steadily and consistently.

Part of the education systems should focus on feedback from students. Some information is available on a "First Destinations" survey, but more detailed information could be very valuable.

Course Boards may be useful but an anonymous survey for module and programme feedback is also needed. Trends emerging from these surveys need to be disseminated and resulting appropriate actions developed and implemented.

Recommendations

- Set up a 'just graduated' survey. Ask for feedback on education experience and follow-up graduates' employment and salary levels.
- In the second phase, when the above has been implemented, develop a survey targeted at alumni graduated 2 – 3 years ago and their employers.
- Define key indicators to follow-up for management purposes.

3.10 Extended Campus and influence on Enterprise Relations

The presentation on the development of the Extended Campus was very impressive and encouraging. CIT seems to have developed an excellent tool which, by the nature of the contract, will be shared with other Institutes of Technology.

One of the key challenges facing the Faculty and the Institute is to extend their market for both education and research. The main key to this objective is the formation of strong, strategic relationships with more customer organisations.

Whilst the Extended Campus tool provides an excellent relational database of contacts with the key industry partners, the Panel believes that to it could also give a very valuable "proactive" tool to develop strategic relationships with new partners.

The Panel is supportive of the efforts being made in the Extended Campus initiative and notes the involvement of NIMBUS in piloting its application. In the Panel's experience this reflects best practice in developing a structured and strategic approach to Customer Relationship Management as a basis for growing the service provided to Industry, gaining revenue for the Institute and contributing to economic growth in the Region.

It does appear, however, that the lack of a concerted, institute wide commitment to maximise the value obtained could well mean that CIT, as developers of the tool, may lose out to other Institutes who adopt it enthusiastically. A more systematic approach

to cooperating with Extended Campus across the Engineering Schools would add greater value to the initiative.

Recommendation

The Engineering Schools are encouraged to adopt this tool in a proactive way, applying resource as necessary, and actively embrace the Extended Campus as part of a systematic approach to gaining further business development opportunities with Industry

3.11 Business and Market Development

In response to the challenges facing CIT, the faculty appears to be concentrating mainly on cost reduction, efficiency and greater "normal" student numbers. This is entirely understandable and appropriate reaction to the challenges. However, the Panel believes that this approach should be complemented by a strategic initiative of new market development in order to ensure the ongoing success of CIT.

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The close co-operation with enterprise is clearly an essential strength of CIT. Several excellent practices of industrial co-operation exist. However, it seems that co-operation is not yet strategic and Extended Campus services are not yet, in practice, widely known and utilised.

In meeting the challenges facing CIT, the Panel believes it is essential that the institute explores closer and more strategic relationships with its existing partners, seeks new partners for a similar relationship and searches for new markets for existing educational modules within Ireland.

The linkage with Pune seemed to be a good example of international collaboration in education, and other possibilities should be explored, building on this experience.

However, we believe the Institute should also explore the international market for its programmes and training in a coherent and structured way. Building on the expertise and reputation of CIT, along with developing on-line delivery skills, the Institute could well find appropriate markets in countries unaffected by the Eurozone crisis, especially in the Middle East.

It is believed that the faculty and Schools should carry out a coherent and concerted effort to enhance the business area and access to markets. This is already happening at department head level, but would benefit from a clear strategic lead from faculty level. This needs to address additional enterprises with them to form strategic relationships, new markets for the various modules available, and a concerted exploration of the overseas market for CIT's expertise.

Recommendations

- Establish a market development initiative at Institute level, with appropriate resources, visibility and top management and monitoring.

- Develop existing co-operation with enterprises to become more strategic and long-term.
- Identify possible new enterprises with whom to form a **strategic** relationship, scaling up the Extended Campus from a pilot project to a standard operation procedure at CIT to support this initiative.
- The Engineering Schools are encouraged to actively to embrace the Extended Campus as part of a systematic approach to gaining further business development opportunities with Industry
- The Faculty should actively explore the international market for its offerings, both by partnering with academic establishments and by marketing directly to enterprises. This could perhaps be best done through a CIT structure, existing or new.

4 Appendix 1: The Review Panel's Interviews

4.1 Employer Feedback

We met with a number of employers, who had taken graduates from the Faculty at all levels, from Level 6 to Level 8.

We were very impressed that all the employers spoke very highly of the CIT output, comparing it very favourably with other apparently equivalent Institutes. In particular, several spoke of the ability of CIT recruits to "hit the ground running" and produce useful work straight away. In contrast, recruits from some other Institutes often needed 3 to 6 months to achieve useful output.

Conversely, one or two spoke of the recruits having difficulty when asked to progress to higher levels of learning after some 18 months to 2 years.

As we probed for areas for improvement, employers spoke of the lack of experience of working in a multi-skilled teams, essential for many of their businesses, and of operating in a teleconference/video conference environment. Cross cultural awareness is also needed, particularly related to globally dispersed teams.

Some spoke of the absence of placement in some programmes and the limited use of site visits to raise student awareness of industry. This view was echoed by students when we met with them.

Additionally, the expertise in the more normal "tools" of business, such as Microsoft office packages, was more limited than they would have expected.

4.2 Student & Alumni Feedback

Again, we were impressed by the degree of support for CIT shown by the students.

The point made by employers regarding presentation skills and "awareness of industry" was echoed by the students and alumni. Recommendations were made, in certain areas, for more cross- disciplinary project work building of good practice already in place within the Faculty and for better links directly with possible employers. Generally, the students recognise the importance of understanding the environment in which they will be working. Suggestions included more guest lecturers from industry and perhaps student placements or "job shadowing" experience.

Whilst all the students recognise that there are routes for feedback within the Faculty, there were several criticisms. These included the absence of fully anonymous feedback mechanisms, which were not covered by the "course board" mechanisms. A particular concern was expressed by a small minority about the feedback they could make regarding fellow students in project teams. There was concern that some students would try to take the easy route and "piggyback" on the work of others.

Attempts to highlight this through the feedback processes fell far short of being anonymous and could generate bad feeling in the project teams.

4.3 Staff meeting

By and large, all staff are very supportive of the Institute.

Concerns were mostly focused on the changes being implemented and planned as part of the strategy. The staff, in particular the administrative and support staff, felt that they had not been consulted during the development of the Faculty strategy. Although there were no signs of fundamental disagreement with the general thrust of the proposed themes.

Naturally, staff identified the change in the operating environment of the Institute as a challenge to be met, but expressed concern about the number of initiatives being proposed. In particular, there was a concern about loss of quality in the pursuit of quantity.

The Panel also identified the lack of any evident staff development and progression system, including management training and preparation for new jobs. While staff and management were supportive of each other and all exhibited enthusiasm and flexibility and understanding, the lack of a structured approach represents a risk to delivering School goals.

It was also clear that neither staff nor students had been engaged or consulted in developing the Schools' response to CIT's strategy. The documents are now available for staff to read but the process runs the risk of staff not buying into the eventual Development Plan, possibly alienating staff members. The uncertainty around the environment in which staff are operating and the absence of a proper engagement and communication structure represents a challenge to management and a risk to plan delivery. It is a testament to the character of the staff that this uncertainty has not yet impacted negatively on students' experience on course delivery.

Much discussion was held on the allocation of staff time between teaching, research and administration. The fact that teaching on graduate programmes attracts a similar weighting in terms of hours allocation to undergraduate teaching was used as an example.

A significant need was identified to restructure some of the programmes and actively market them to career advisers in the schools. However, it was felt that resources were not available to do this effectively, thus generating a "Catch 22" situation.

5 Appendix 2 : Faculty Themes and Proposed Actions over Next 5 Years

(NB Extracted verbatim from Faculty document)
Following from the analysis presented in earlier sections of this document, the actions described below are proposed for implementation.

1. Rapidly deploy online programme delivery (eCIT) in relevant areas of both Schools to achieve the following:
   a) Increase uptake of selected level 9 MEng and MSc (and Postgrad Diploma) programmes
   b) Increase uptake of selected level 7 & level 8 programmes
   c) Increase uptake of "special purpose award" programmes, designed specifically for online delivery to specific target audiences
   d) Increase uptake of engineering "derivative" programmes (details specified in next recommendation)

2. Offer an expanded range of engineering derivative programmes in areas such as:
   a) BSc (Hons) in Operations and Supply Chain Management
   b) Higher Certificate/BSc in Manufacturing Operations
   c) BSc (Hons) in Product Innovation and Management
   d) BSc (Hons) in Facilities Management
   e) BSc (Hons) in Buildings and Estates Management
   f) BSc in Interior Design (an architecture-related derivative programme)

3. Re-position craft education based on outcomes of national review of apprentice education
   a) Explore synergies between craft education and full-time courses in engineering, construction, architecture and related disciplines and in art
   b) Create increased opportunities for students to study technical craft areas in conjunction with business in a manner similar to that which has been achieved with the BSc in Craft Technology (Wood) with Business
   c) Seek opportunities presented by smart metering, renewable energy, ocean energy and other green technologies
   d) Offer training and re-training courses for craft persons, operators and maintenance personnel

4. Exploit "whole of Institute" capability
   a) Seek to develop, deliver and operate an increased number of programmes with the National Maritime College of Ireland
   b) Seek to increase research activity with the Irish Maritime Energy Research Cluster
   c) Leverage eCIT to develop new programmes and delivery models for Ocean Engineering, Management and similar areas.

5. Internationalise fully
   a. Ensure that design of CIT programmes meets requirements of international students

b) Ensure that an increased proportion of engineering and engineering derivative programmes can be delivered using eCIT
c) Increase scale of adjunct faculty pool to provide the agility required to deliver state of the-art online programmes which are closely aligned with the needs of industry

6. Market CIT as a world class centre for professional, industry-driven education
   a) Ensure that marketing and promotion of "CIT Engineering" exploits fully the achievements of the two Schools, the Faculty and the Institute
   b) Devise a marketing and STEM promotion strategy which takes full advantage of online and social media options
   c) Ensure that the marketing strategy focuses on messages for national and international audiences rather than just a regional audience

7. Improve the integration of teaching, research and professional programme delivery using a flexible model
   a) Locate the various research/consultancy centres of the Faculty to report at School level to School Executive Board nominees
   b) Include research/consultancy centres fully in mainstream Faculty planning and management events
   c) Drive deep engagement between main body of academic staff and research/consultancy centres
   d) Make research/consultancy centre activity apparent to students and other stakeholders

8. Achieve best-in-class student retention levels
   a) Continuously develop retention initiatives at Department, School & Faculty level.
   b) Support and facilitate the CIT Student Engagement and Retention initiative
   c) Drive development of CIT IT systems to ensure that comprehensive retention information is provided to key decision-makers in a timely manner

9. Attract more female students to enrol in CIT engineering programmes
   a) Establish working group to develop a specific strategy in this context
   b) Identify engineering disciplines of most interest to female students
   c) Promote selected engineering programmes to female students in a focused manner

The outcomes to be achieved from this strategy will be as follows:

1. 1. 25% increase in FTE engineering students in CIT by 2018;
2. 30% increase in engineering research activity by 2018 (primarily measured on the basis of funding awarded);
3. 25% improvement in engineering student retention and completion rates by 2018;
4. 500 FTE online engineering students by 2018;
5. 100% increase in female engineering student enrolment levels by 2018;
6. 500 international engineering students by 2018; and
7. Delegated authority to level 10 in at least one additional discipline in each School.

6 Appendix 3 : Timetable of Programmatic Review

WEDNESDAY, APRIL 17TH , 2013	
Time:	**Event:**
8:30 – 9.30	Panel Convenes – Identification of Issues
	INSTITUTE CONTEXT
9.30 – 10.00	Mr. Tadhg Leane, Head of Strategic Development, CIT
10.00 – 10.30	Mr. Paul Gallagher, VP for Finance & Administration, CIT
10.30 – 11.00	Dr. Niall Smith, Head of Research, CIT
11.15 – 11.45	Dr. Irene Sheridan, Head of the Extended Campus Centre, CIT
12.00 – 1.00	**MANAGEMENT/DEPARTMENT STRUCTURE. OVERVIEW OF ACTIONS AND DEVELOPMENTS IN PAST FIVE YEARS. PLANS FOR NEXT FIVE YEARS.** Proposers: Head of Faculty & Heads of School
2.00 – 3.30	**PLENARY SESSION - ACADEMIC PORTFOLIO** Proposers: Head of Faculty & Heads of School
3.45 – 5.00	**PLENARY SESSION - ENGAGEMENT WITH ENTERPRISE** Proposers: Head of Faculty & Head of School Brian O'Rourke, Brian Cliffe, Richard Linger
5.00 – 6.00	**PLENARY SESSION WITH EMPLOYERS**

THURSDAY, APRIL 18TH, 2013		
8:30	Private Panel Meeting	
9.00 – 10.00	**PLENARY SESSION - RESEARCH** Proposers: Head of Faculty & Heads of School Dr Niamh Power, Dr John Barrett, Mr Daithi Fallon	
10.00 - 12.15	**MEETING WITH HEADS OF DEPARTMENT**	
	Mech & Biomedical Manufacturing Eng Process, Energy & Transport Eng Electrical & Electronic Eng Craft Studies	Civil Engineering Architecture Construction
11.45– 12.30	**MEETING WITH STAFF**	
12.30 – 1.15	**MEETING WITH STUDENTS**	
1.15 – 3.00	Private Panel Lunch – Draft Conclusions	