University College Dublin

Quality Improvement Plan

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UCD School of Computer Science and Informatics

20 January 2009

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1. Introduction

The staff of the UCD School of Computer Science and Informatics (CSI) wishes to express sincere gratitude to members of the Peer Review Group (PRG) for the many commendations returned in their Quality Review Report and for their constructive recommendations in view of enhancing our overall performance and reputation. The School sees the quality review process as an opportunity to reflect on our quality standards and processes in view of: (1) identifying shortfalls in resources and providing an externally validated case for change and/or increased resources, (2) identifying weaknesses and shortcomings in our procedures and organisation that can be addressed internally, and (3) gaining a deeper understanding of where our strengths/weaknesses lie and encouraging discussion on how we, as a School,can prosper by maintaining and building on these.

The School was pleased to find that many of the recommendations made by the PRG aligned very well with our primary goals and our strategic plan (a copy of which was attached in Appendix S1 of original Self-Assessment Review Report). Examples include:

- To be recognized nationally and internationally for the quality of all of our degree programmes (i.e., undergraduate, taught graduate, and graduate research);
- To continue developing and enhancing the research profile of the school in priority research areas where critical mass and international recognition already exists (e.g., Artificial Intelligence including Case-Based Reasoning and Machine Learning, Speech and Language Technology, Forensic Computing, ...) ;
- To implement a School self-assessment policy that defines a clear set of quality measures and targets for research inputs/outputs (e.g., research income, citations, patents, impact factors) and teaching performance (e.g., peer-review, student feedback, statistical analysis of student performance);
- To be a leader in the promotion of innovation and knowledge transfer through collaboration and engagement with other Schools, Universities, industrial partners and major centres of established research excellence;
- To support the development of CSI staff to achieve their full potential and maintain the positive and constructive atmosphere of the School that is enjoyed by all of its stakeholders.

It was difficult to categorise a number of the PRG recommendations and provide a School response according to the QIP template provided (i.e., where School actions are separated away from resources required, for example). In order to deal with situations of this kind the QIP committee have duplicated recommendations that fall into more than one category and provided appropriate referencing.

The Quality Improvement Plan (in conjunction with the peer review report, Self-Assessment Report and related appendices) will be an important reference by which CSI can gauge progress towards continuous quality improvement. It will be implemented by the School in the coming period in so far as resources permit in the current difficult climate.

Quality Improvement Committee

Dr. Lorraine McGinty   [CSI SAR Coordinator]
Dr. Neil Hurley   [Director of the CSI Taught Postgraduate Programmes]
Dr. Tahar Kechadi   [Chair of the CSI Teaching & Learning Committee]
Dr. Chris Bleakley   [Chair of the CSI Research & Development Committee]
Ms. Patricia Geoghegan   [School Manager]
Prof. Padraig Cunningham [CSI Director of Postgraduate Studies]
Mr. Gerry Dunnion   [Manager of the Technical Support Team]
Mr. John Dunnion   [CSI Representative for Fudan]

Progression of the Quality Improvement Plan (QIP)

26-29 May 2008	Quality Site Visit: Peer Review Group (PRG) visits CSI
18 Aug 2008	PRG report received by HoS and circulated to CSI staff
12 Sept 2008	Feedback gathered from staff relating to factual actual errors reported to UCD Quality Office
25 Oct 2008	First draft of QIP circulated amongst CSI QIP Committee members.
8 Dec 2008	Deadline for internal CSI staff feedback. Subsequent trevisions to QIP incorporated this.
16 Dec 2008	HoS met with College Principal to discuss the CSI QIP.
19 Dec 2008	Draft of QIP forwarded to UCD Quality Office for approval.

2.   Response to Recommendations in the Review Group Report

Recommendations for Improvements

Category 1: Recommendations concerning academic, organisational and other matters which are entirely under the control of the unit

Category 1(a)

Recommendations already implemented

1. Recommendation: The Review Group recommends that a core leadership group, consisting of senior academics focused around the HoS, might continue to work together to steer the strategic direction and manage the integrity of the School, as a single unit in the face of centrifugal forces caused by multiple locations. This group might also consider the risks and associated responses if major external funding initiatives were reduced.

   Action taken: The School Executive Committee is taking responsibility for this activity. This group of twelve people consists of 10 senior academics (including six professors) along with CSI's technical and School managers. The Head of School (HoS) has decided that this group should meet more regularly (i.e., monthly in line with plenary sessions) than has been the norm. Examples of tasks/issues handled by this group include matters arising from sub-committee meetings (e.g., Teaching and Learning, Research and Innovation, etc) that relate to the strategic direction of the School. In addition, the Executive carefully considers the risks and benefits associated with options related to various strategic planning tasks (e.g., external funding initiatives and commitments, the UCD promotion process, the negotiation of short and long term solutions to the CSI space problem, etc). Responsibility for the scheduling and communication of these meetings to committee members will rest with the School Manager and the HoS.

2. Recommendation: The implications of the Fixed-Term Workers Act, particularly with respect to the contractual position of postdoctoral researchers should be addressed at the University level, as a matter of urgency. It is crucial that the School retain its best researchers.

   Action taken: The HoS is working closely in a positive manner with the College Principal and SMT to resolve this matter and it is hoped that a satisfactory outcome from the School's perspective will be reached shortly.

3. Recommendation: The School is encouraged to review continually their workload allocation model and their shared understanding of the role of academic   researchers   in   undergraduate   teaching.

   Action taken: The University is due to circulate a report on workload models in Dec 2008. Meanwhile, the HoS has consulted staff and

established a small working group to consider the details in relation to CSI with respect to current teaching/administration/research commitments. In consultation with this group, and also with the Chairs of the Teaching and Learning Committee and the Research and Innovation Committee, the HoS has taken responsibility for this action. It is expected that related documentation and workload allocation sheets for CSI for the academic year 2009/2010 will be finalised before end of April 2009.

4. Recommendation: The School should participate in any national or regional initiatives to promote knowledge of, and interest in, computing at second-level.

Action taken: The School is committed to cooperating in such initiatives and with particular aim of encouraging second level students to select Computer Science at UCD as their primary degree choice. The School has recruited a Retention Officer to deal with this recommendation of the PRG. It has taken a lead role in one such initiative with the launch of a module targeted at second level students - Introduction to Computer Science and Programming (ICSP) in Nov 2008. This module is aimed at opening up the world of computers and programming, to post-primary school students (5th and 6th year), for exploration and discovery. It is effectively a Level 0 university module and an award of 5 credits will be made to students who successfully complete the module.

In recent months, CSI flyers have been included in the annual Science Programme Office mail out, advertising new initiatives the School will be running to promote computer science.

A further education outreach/promotional initiative is the "Computer Science Tasters" event offered by CSI. These one-day free workshops are run for four weeks in early spring each year. The course materials are based heavily on Scratch, a programming tool developed by M.I.T. With approximately 20 students on each session, the goal is to remove the 'fear factor' around computer science as a post-Leaving Certificate option.

Other recent/upcoming events from the School outreach calendar include:

New Era Summer Schools (July 2008) - CSI held workshops for New Era students to introduce them to Computer Science.

Science Summer Schools (July 2008) - CSI provided demonstrations of current research to visiting students.

National Science Week (Nov 2008) - CSI stand and guest speaker at the UCD Science Festival.

UCD Open Days (Dec 2008) - CSI stand with demonstrations will be up on both days.

Young Scientist Exhibition (Jan 2009) Computer Science Demo at the UCD stand.

5. Recommendation: The School might reflect on the strategic impact of identifying 'Hardware' as an 'emerging area' for CSI in a University with a long-established Electronic Engineering tradition. It might consider ensuring that any such development is mutually acceptable and synergistic.

Action taken: The Hardware area has been re-named Embedded Systems to better reflect the school's activities. CSI research in this area does not overlap with that of EEME but the two schools have a postive and constructive relationship. CSI and EEME are co-hosting next year's Irish Signals and Systems Conference (June 2009). Expected numbers of participant is in the region of 130.

6. Recommendation: The School is encouraged to ensure that all PhD students develop a deep understanding of computer science research challenges (as opposed to tasks). The Review Group would suggest having thought-provoking, less specialised, seminars which students must attend. This will only succeed if senior academics show leadership and make a point of attending and supporting these seminars.

Action taken: The School already holds a weekly Research Seminar Series (RSS) that is well-attended by all PhD students. This has recently been extended (since Oct 2008) to include presentations from academic staff on "grand challenges" in computer science research. The slides will be made available on the CSI web site. The CSI Postgraduate Director will ensure that these thought-provoking seminars will be delivered on an ongoing basis, at least quarterly. Any further observations and/or further recommendations will be communicated back to the Chair of the Research Committee and the HoS.

7. Recommendation: Senior postdoctoral researchers should be encouraged to seek research grants or fellowships in their own right, as part of their professional development.

Action taken: The SFI Starting Investigator Research Grant (SIRG) programme is an appropriate mechanism for this. The University can propose 20 candidates to SFI under this programme and the selection process is underway at the moment. The need to support post-doctoral researchers in grant applications has been communicated to all academic staff and our purposely-appointed Research Officer has been very pro-active in encouraging suitable candidates to apply. Ten post-doctoral researchers from the School have submitted proposals to the SIRG programme (deadline Nov 2008). The School has provided mentoring and review of these proposals and feels that the level of activity in this area is appropriate at the moment.

8. Recommendation: In light of the growing student numbers, the School might consider in the future how they will monitor the quality of the PhD supervisory process, from both the student and staff perspectives.

Action taken: The School has led the way in the introduction of a structured PhD programme. This programme represents a considerable

improvement in the PhD supervisory process. It represents a change from a single supervisor model to a situation where each student has a doctoral studies panel comprising at least three members of academic staff. It also introduces a PhD transfer assessment process, which is overseen by a committee of four, three of which will not be members of the doctoral studies panel.

The School has also formed a working-group to prepare a set of publication guidelines in relation to the dissemination of PhD research. A draft is expected to be reviewed by the Schools Director of Postgraduates and the Research and Innovation Committee by end of Jan'08. The final document will be made available to all CSI postgraduates shortly thereafter.

Furthermore, The Research and Professional Development Plan is a process put in place by UCD Graduate Studies to help plan and monitor research progress of PhD students. This will also help address the objectives of this recommendation.

9. Recommendation: The Review Group recommends that the School, in addition to its current policy of lobbying UCD and pursuing a PRTLI 5 solution to its concerns about space, might also consider the establishment of a Development Board in order to capitalise on its many external   links.

Action taken: This is under active consideration and the School is currently awaiting guidelines from the University. The School Executive Committee will make a recommendation by Spring 2009.

10. Recommendation: The Review Group recommends that the School give thought to internal measures that would assist staff in their promotion applications (e.g., peer review of teaching, and ongoing mentoring of junior staff.

Action taken: The School has established a "panel" of mentors to assist staff who are seeking promotion at either the SL or Professorial levels. It is not obligatory but any candidate may choose to discuss their application with one or more of these mentors. In addition, the School strongly encourages staff to conduct peer review of their teaching (through asking another CSI staff member or through seeking consult from the UCD Centre for Teaching and Learning - CTL).

Other points of note here include:

  a. The School strongly encourages and supports all staff to look at enrolling in the Graduate Certificate in University Teaching and Learning offered by CTL. To date, seven staff members have enrolled (three of which have already graduated).

b. The School has recently appointed a dedicated Research Officer who amongst other duties can assist promotional candidates with respect to the application of research funding etc.

c. The School also has designated a specific point of contact for matters related to research accounts and budgets within the CSI administration office.

d. The School has introduced a new policy relating to the rotation of internal committee chairs that aims to ensure that all staff members have the opportunity to gain from this experience.

e. The School is also in the process of preparing a set of publication guidelines in relation to the dissemination of research.

11. Recommendation: The Fudan link has clearly been fruitful and stimulating for all those involved. However, it may now be time for the School to reflect on the costs – including opportunity costs of this relationship. The Review Group recommends that a strategic assessment might address questions such as:

   a. What is the academic and pedagogical impact on CSI of the Fudan connection?

   b. Can the relationship be re-negotiated to ensure that it provides clear tangible benefits to the School, including a significant financial surplus?

   c. How might such a surplus be best used? This would consider what part of the surplus might be used to provide payment or resources to staff involved?

   d. If the prospects for achieving a financial surplus are limited, then the benefits of the link are questionable.

Action taken: The School has invested a significant effort in establishing links with Fudan at the undergraduate level during the last 6 years. We are seeking to extend the existing links at postgraduate and research levels.

   a. The UCD-CSI staff involved in teaching in Fudan find that it is a rewarding experience. They are exposed to a very different teaching environment, teaching some of the top students in China. We have already started to attract the best students graduating from the UCD-Fudan BSc degree to our postgraduate courses including the PhD programme and we expect that this initiative will grow within the next year or so. Furthermore, the graduated students from this programme will be great ambassadors to our School in particular and UCD in general.

b. The contract has already been re-negotiated. The new contract for the next 3 years has been agreed and signed on the 20th of October 2008.

c. We intend to use some of any financial surplus to fund a number of initiatives that encourage Fudan's best students to continue their studies in UCD through postgraduate courses and/or research and build strong collaboration between SCI and Fudan staff. These include: 1) Further promote our postgraduate programmes and research activities in Fudan, 2) Initiate an internship programme in which the best of the BSc-Fudan students will be selected to work on some research projects during the summer, and 3) invite some of Fudan leading researchers to the School to encourage research collaborations.

d. We have already addressed this issue in the new contract signed recently (Nov 2008).

12. Recommendation: The Review Group recommends that the School should identify which of its many international links are strategically significant, and they should focus on developing these links further.

Action taken: The School Self-Assessment Report discusses how CSI actively participates in >70 international research collaborations – all of which are strategically significant. The significance of the Fudan link was questioned by the PRG during the Quality Review site-visit (i.e., in May'08) and in recommendation 11 above. The School is very pleased to be involved in this partnership with one of the top-ranking universities in the world and hopes it will continue long into the future.

In addition, subject to the approval of financial resources, the School would like to extend the existing UCD/DCU undergraduate "Odysses" Research Internship programme it offers. The primary goal of this programmme is to afford exceptional undergraduate students the opportunity to participate and contribute to exciting yet challenging research projects and to inspire them to go on to undertake research careers. The aim is to offer a further 4-5 student places to international universities.

13. Recommendation: The relationship between CSI and CASL needs to be nurtured and developed carefully. The Review Group agrees with the proposal to bring CASL under the organisational umbrella of the College. While the CASL initiative is clearly successful, care should be taken to ensure that two cultures do not develop, e.g. where less well funded researchers are located within CSI and bear the responsibility of undergraduate teaching, whereas researchers in CASL focus solely on research and postgraduate level teaching and supervision.

Action planned: This is indeed an important issue that the HoS, School executive, and University Senior Management will address in the coming years. The School sees this recommendation as falling under all three categories (i.e., critical physical constraints/resources and decision-making authority towards an ideal solution here are outside the control of the

School). It is the unanimous opinion of all in CSI (including those currently housed in CASL) that the ultimate solution is to eliminate the complications introduced by the current geographical set-up. Plans for the Science Centre are near to being finalised and CSI welcomes the provisions that have been made to re-house CASL in this project (see later sections). At the local level the School has already taken a number of actions.

(a) CSI has been proactive in delivering feedback to the Science District process in relation to the School's projected needs to accommodate CASL and CSI staff in the plans for the Science Centre and is well represented on the planning committee.

(b) The HoS is very conscious to ensure that communication lines are open between the two buildings (i.e., The Computer Science & Informatics Centre building and CASL at Belfield Park Offices).

The School agrees with the PRG recommendation in that it does not support the notion of there being two cultures established across these locations. The HoS nor the School Executive has not asked (nor do they intend to expect) CSI academics to co-exist in view of nurturing separate teaching and research camps. To be clear, CSI staff located in *both* buildings are active in research *and* teaching. The multi-disciplinary nature of the collaborative CASL project and current space limitations has resulted in certain members of staff volunteering to relocate *temporarily;* that is, they recognised that it was sensible given their overlapping research agendas and current collaboration partnerships. However, the School admits that more local internal collaboration opportunities may suffer if this level of separation continues. Thus, the School will continue to insist that the appropriate wing of the new Science Centre be completed as an absolute priority (i.e., in Phase 1 of the building plan – expected to commence in 1st quarter of 2009).

14. Recommendation: The Review Group would endorse the School's recommendation of re-introducing Stage-level co-ordinators as this would provide a more cohesive quality review of each stage.

Action planned: The School recognises the need for this and we have already implemented the recommendation.

Category 1(b)

Recommendations to be implemented within one year

1. Recommendation: The promotion process is a vital motivation mechanism for staff. The Review Group recommends that the School gain a better understanding of how to demonstrate excellence in teaching (perhaps by consulting with the UCD Centre for Learning and Teaching).

Action planned: As outlined by Category 1(a) point 10 the School places high emphasis on promoting and demonstrating excellence in teaching. The HoS strongly encourages all staff to look at enrolling in the Graduate Diploma in University Teaching and Learning offered by CTL. To date,

seven staff members have enrolled (three have already graduated). CTL also offers many modules through the staff development programme at UCD (e.g., The Reflective Practitioner). CSI ensures that staff can volunteer for these options at no monetary cost to themselves. CSI has already had a number of noteworthy achievements in terms of teaching recognition: 2 President's Teaching Awards have been presented to staff from within CSI and 1 Teaching Fellowship Award. The HoS will be encouraging academic staff to submit to 2009 application rounds when these are announced by the University.

The School would welcome the opportunity to further engage with the UCD Centre for Teaching and Learning on this topic at a more local level. A key objective here is to gain a clearer understanding of the required expectations and achievements towards achieving excellence in this promotional category. The School found the comments of the PRG on this topic, during the May'08 site-visit, very valuable and thought provoking. Recognising that some staff may be inclined to "under-sell" themselves in promotion application rounds in relation to this assessment category, the School plans to seek consultation with the CTL to address this matter (e.g., have a representative come to discuss how best to prepare a teaching portfolio and discuss the alternative modes of providing evidence-based demonstration of quality teaching). Many CSI staff take very innovative approaches to teaching and promoting active-learning, but yet the School has a history of staff applying for promotion only on the basis of achieving the "excellence in research" benchmarks. Informal surveys, prior to the site visit, revealed that many feel the "excellence in teaching" benchmarks are, for example, "too high", "unclear", and "not well-aligned with our subject". The intention is to seek clarity through such consultation with CTL (est. 1st quarter 2009) and the UCD promotions committee (subsequently). The HoS will personally follow up this action.

2. Recommendation: In its planned curriculum revision, the teaching and learning group might explore the issue of student assessment workload, to continue the initial work being done in this area. In addition, consideration should be given to whether some core modules (i.e. computer programming) may have 'non-compensatory' status. These issues were raised by students on the site visit.

Action planned: The Teaching and Learning Committee (TLC) has already initiated the review of all Computer Science undergraduate programmes. All these issues have been taken into account. There is also a clear distinction between core and optional modules for each programme. The new curriculum will be fully implemented by the 2010/2011 academic year.

3. Recommendation: The Review Group recommends that the balance of teaching across PG and UG levels and the commitment of senior and full-time academics across PG and UG programmes is frequently reviewed to ensure adequate full-time and senior coverage.

Action planned: This will be reviewed as part of the introduction of a university Workload Model tailored to the activities of CSI staff.

4. Recommendation: The Review Group supports the School's recommendation to review its suite of taught Masters programmes particularly in the light of small class sizes, which may be neither financially nor pedagogically sustainable. The issue of assessment overload for students could also be revisited at this level.

   Action planned: All Masters programmes will be reviewed at the curriculum level by the Teaching and Learning Committee during this academic year (2008-09). The goal of the review is to determine:

   1. Whether the programme is sustainable in its current form.

   2. Whether the programme is sustainable after some minor curriculum changes.

   3. Whether the programme requires a major curriculum review.

   4. Whether the programme should be discontinued.

   As part of this review, past graduates and fourth-year students will be surveyed to assess the strengths and weaknesses of the programmes. Decisions on curriculum changes will be made in time for the next in-take of students in September 2009.

   The School has recently announced that is will be introducing a Negotiated Masters Programme in the next academic year. This programme will be initially targeted at those already working in the computer industry and related disciplines. The Director of the Negotiated Masters Programme will work closely with the UCD Graduate School throughout the 1st quarter of 2009 streamline the entry process for participants of this innovative programme offering.

   The School will further aim to improve its promotion of the Masters and PhD programmes this coming year. There is a general feeling that, while the postgraduate programmes are strong, they need active promotion in order to attract larger student numbers. A promotional plan will be put in place within the second semester of 2008/2009 academic year.

5. Recommendation: The School should consider allowing some specialisation in the third and fourth years, possibly on the lines of the 'streams' that were abandoned after the 1999 review.

   Action planned: This is part of the curriculum review. Currently, the TLC is discussing the strategic importance of some streams. The decision will be taken very soon (early 2009) and will be part of the new undergraduate curriculum. According to the UCD deadlines for submitting new changes in the curriculum, this will not be possible to implement all the changes in the next academic year. We plan to implement the new curriculum in the following year (2010/2011).

6. Recommendation: The School should move quickly to increase the number of quality publications. The intention to set targets for Tier 1 publications (p43 SAR) is welcome and could be the first step in establishing a publishing strategy. Other steps that might be considered include:

     a. Mentoring of less experienced staff to produce journal articles.
     b. Familiarising all staff and students with the peer-review process, impact factors and citation

Action planned: The R&I Committee is currently preparing a CSI Publication Guidelines document which will be circulated to all CSI staff and post-graduate students. The document will make recommendations on publication strategy, tier 1 publications, the peer-review process, impact factors and citation rates. A presentation on these matters will be given in the School Research Seminar Series. The document will be given to all incoming post-graduate students. The CSI Publications Guidelines document will be complete and on the School web site for the start of the academic year 09/10.

In addition, the School will track the CSI publication counts (not individual publications counts) via the Presidents Report. The R&I Committee will seek to set targets for future reports.

7. Recommendation: The School should take steps to categorise, systematically, its output of conference papers so that it can defend its contention that they are of high value within the international CS community.

Action planned: The CSI Publications Guidelines document will make recommendations for how this should be done at the research group level. The R&I committee is currently studying the best way to do this at the school level. The CSI Publications Guidelines document will be complete and on the School web site for the start of the academic year 09/10.

8. Recommendation: The School should consider ways to systemise its handling of PhD students so as to minimise possible problems in the future. These steps should address both the pastoral and academic care of the students. The School is encouraged to develop processes that are lightweight yet effective.

Action planned: The University has introduced the structured PhD programme model to address the academic care aspects of this recommendation. Processes to support the academic care of post-graduates have been defined as part of the School's Structured PhD. These processes are under continuing review to improve their effectiveness. The structured PhD programme as implemented in CSI assigns a doctoral studies panel to each research student as they enter the school and also formalizes the PhD transfer process (a key milestone reached after 18 months on the PhD programme). The first cohort of

students completed the PhD transfer process in April/May 2008 and the first of these students will submit their theses in 2010.

The R&I Committee is currently in discussions with the School's resident Student Advisor to develop processes for the pastoral care of post-graduates. These processes will be included in the Structured PhD documentation and implemented before the start of academic year 09/10.

Also,following our recent site review our student advisor spends one day per week in the CASL building so that CSI postgrads located here can meet with her.

9. Recommendation: The School highlights in the Self-assessment Report that there is a need for initialising a new curriculum review at undergraduate level. The Review Group would support this recommendation and based on discussions with the School on the site visit the areas that require some focus are the review of a) the core computer science and b) the generic competencies required in the undergraduate programme.

Action planned: The issue of generic competencies required by undergraduates is being examined at university level by the UCD Fellows in Teaching of Learning. The School is pleased to have representation here. In parallel, the CSI Teaching and Learning Committee has identified all the core and optional modules for each computer science degree programme, with the view to implement the changes in 2010/2011 academic year.

10. Recommendation: An area, not mentioned in the SAR that might be worth considering, is the gathering of feedback at programme and stage level to help clarify and validate the overall quality of the programme.

Action planned: The School agrees with this recommendation and plans to develop and implement further procedures for feedback gathering in the upcoming academic year (starting Jan 2009) and for subsequent years. The HoS will continue to encourage academic staff to collect module feedback at the midterm as well as end of each module term (usually through the use of a suitable feedback form). Also, as part of the recently started curriculum review process the Teaching and Learning Committee are proposing the re-establishment of Stage/Programme Co-ordinators. This will streamline the handling of module feedback and help The School to better understand and balance undergraduate workloads.

Already the newly established Computer Programming Support Centre(CPSC) is proving to be a valuable service to our undergraduate students experiencing difficulties. Tracking the nature of the difficulties and queries presented by troubled students may also prove be a useful feedback loop for module, stage and programme co-ordinators. The Centre has now been open since Sept 2008. The plan is to gather feedback from the Co-ordinator of the CPSC periodically (to be shared with module, stage and programme co-ordinators). The report will be

prepared by the Co-ordinator of the CPSC in Mar 2009 and thereafter at the end of each teaching term.

11. Recommendation: The Review Group notes that support services are heavily skewed towards undergraduate students and recommends ongoing monitoring of its development, preferably with reference to support of graduate students.

Action planned: The Schools resident student advisor provides support services to the full cohort of students (i.e., undergraduate and postgraduate) and is accessible to all students in both buildings (i.e., main CSI block and CASL).

It has been proposed that the services of the CPSC could be extended to support our postgraduate student. The School agrees that this is a good idea but resourcing this to cater to the needs for our large cohort of postgraduates is a real problem. Specifically, with our School budgets already dramatically cut, it is not clear how we could cover the cost of having advisors available in the centre.

12. Recommendation: The School held its first "Away Day" this year; the School is strongly encouraged to continue to hold such an event on an annual basis. This is an ideal forum for the School to reflect upon their strategic goals and developments, School strategies and structures and to develop shared identity and collective strategic thinking.

Action planned: The School accepts this recommendation and will seek to hold a similar event in the first half of 2009. Details of the nature of this event will be finalised by the HoS and communicated to all staff by the School Manager in March 2009.

Category 1(c)

Recommendations to be implemented within five years

1. Recommendation: The School has responded well to a period of major expansion and substantial change within the broader University context. As the "dust settles", the next challenge will be how best to develop strategic thinking and leadership with regard to future development and consolidation. For example, the School should be aware that there may well be a tension between maximising opportunities for staff to develop their own careers and the obligation on them to provide strategic leadership to the School.

Action planned: This is an important issue, which will be addressed in the introduction of the Workload Model. Staff may also wish to use the upcoming Performance Management Development System (PMDS) that has recently been introduced by UCD as a means of considering their role in this regard. All CSI staff will have completed their personal PMDS reviews by Feb 2009. It is the responsibility of the HoS to follow-up identified needs through the facilitation of further training, for example, if required.

3. Recommendation: As research becomes more multi and inter disciplinary, the School is encouraged to reflect upon and define its own identity and core discipline. It should ensure that the way in which the School and the discipline is perceived within the University aligns with this, as the external perception of the School will have wide ranging impact, for example, on spatial location, financial models and range of degrees.

   Action planned: This is an important issue that the School will address. It is also related to the strategic direction of the School and is something that a Development Board could assist with. It will be addressed in the context of those initiatives.

4. Recommendation: The Review Group notes the School plan is to expand to 40 academic staff by 2011, and recommends that when making appointments, attention is paid to the current demographic structure among academic staff, where currently all staff are between the ages of 31-62. The Review Group recommends that this demographic fact be considered in recruitment planning. Where possible, appointments should also address gaps in the research base.

   Action planned: The School will strive to follow this important and constructive advice. Thematic appointments need to be considered as well as the importance of excellence in teaching and learning combined with excellence in research. There is also a clear need to encourage the recruitment of more female staff. However, as of November 2008, given the difficult financial situation that faces UCD, funding further expansion will be very challenging for the School.

5. Recommendation: The Review Group recommends that the School explore the levels of degree awards that are available. Currently, students who achieve a passing grade in their final year are awarded a Pass in an Honours programme. This seems an inadequate award for four years work since it will be indistinguishable from that given by other HEIs at the completion of three-year Pass programmes.

   Action planned: This issue has been addressed by the University. Our graduate students receive Level 8 qualifications (Honours degree).

6. Recommendation: Due to its diverse intake of students in addition to quite specific core skills, (i.e. computer programming), the School should consider the need for specific admission criteria/assessment to its postgraduate programmes. This might prevent potential difficulties that some PG students may have with these specific core skills.

   Action planned: The taught Master's programmes already have a number of specific admission criteria, that differ from programme to programme. For instance, the MSc in Computational Science requires evidence of mathematical competence as well as computer science competence. Similarly, the MSc in Forensic Science has very specific admission criteria. It is of course hoped that filtering at the admission stage prevents students

who cannot cope with the programme from being admitted to the programme. Indeed, already not all students who satisfy the minimum admission requirements are offered places on the programmes and much effort is made to ensure that they understand what the programme will entail. Nevertheless, occasionally, some students who cannot cope with the programme get through this filtering process.

The challenge which we believe this recommendation specifically alludes to, is how to fill the knowledge gaps in a multidisciplinary Master's programmes, where students from different backgrounds are likely to have different gaps on joining the programme. A potential solution is to provide specific 'catch-up' modules to fill these knowledge gaps, but these can only be provided sparingly, since they use up space on the timetable for the advanced topics which form the core of the programme. Another approach is to provide different streams through a programme for students from different backgrounds but streaming is only possible in a limited way if class sizes are already small. The curriculum review will consider this issue and the potential solutions. We would expect to have formed a clear decision on how to deal with this issue by the end of the detailed review being carried out by the Teaching and Learning Committee (exp. end of semester 1, 2009). Category 1(b):rec 4 for further details.

7. Recommendation: The School recommended that a member of staff be appointed as a quality support officer but asked the Review Group for advice on this issue. The Review Group would recommend that this activity is embedded into the activities of the various groups already in existence in the School. For example, that the Head of the School's Teaching and Learning committee would lead regular quality reviews of their domain to both ensure the quality of the educational provision and to generate the evidence to validate the quality.

Action planned: The School agrees with the Review Group that quality monitoring can be effectively handled by our already existing internal committees (e.g., Teaching & Learning, Research & Innovation, Support, etc) reporting to the HoS and staff plenary sessions.

8. Recommendation: The Review Group recommends that the budgetary implications of the balance between investment in academic and support staff be monitored regularly, taking account of changes in School needs and individual career development.

Action planned: The School executive will look at this issue on an annual basis. As mentioned above, the School is facing difficult challenges in staff recruitment and has lost 1.5 staff since the review with no prospect of replacements in the short term. This is very worrying given the already low level of technical and administrative support in the School when compared to peers (see Category 3(c):Rec4).

Category 1(d)

Recommendations which will not be implemented

1. Recommendation: The School should consider fully the rationale and implications of an extended industrial placement before committing to its introduction.

   Reason for not implementing: Having consulted other Schools with such programmes, and taken advice from the PRG, it is now clear that the amount of work involved in implementing such a programme outweighs its advantages, especially given the low level of support that is currently available.

2. Recommendation: The Review Group supports the introduction of a 'pre-grant application process' (p41 SAR) for reasons of potential resource implications. The School might consider whether the strategic alignment of each proposal should also be considered at this stage, before submission.

   Reason for not implementing: Upon reflection and more extensive feedback gathering amongst staff the School does not support the idea of restricting academic freedom by requiring strategic alignment of each proposal. However, the school has established a process whereby the school's research officer and senior academics are available to provide feedback and assistance with the development of grant proposals.

Category 2: Recommendations concerning shortcomings in services, procedures and facilities which are outside the control of the unit

Category 2(a)

Recommendations already implemented

1. Recommendation:

   Action taken:

Category 2(b)

Recommendations to be implemented within one year

1. Recommendation: The Review Group also recommends that University Senior Management engage with the School to develop a better understanding of computing science indicators of research excellence.

   Action planned: The School welcomes the opportunity to engage with senior management on this topic. In line with our School Plan key objectives for CSI include:

   (a) The development and enhancement of the research profile of the School in priority research areas where critical mass and international recognition already exists, and

   (b) Demonstration of leadership in the promotion of innovation and knowledge transfer through collaboration and engagement with other Schools, Universities, industrial partners and major centres of established research excellence.

   Over the last 4 years, CSI has won over €20 million in research funding and authored more than 1,000 unique research publications. CSI has also lead a number of high profile research initiatives – including the €25 million National Digital Research Centre (NDRC), the €16.5 million CLARITY SFI CSET, and UCD CASL. At the local level the School plans to continue to place high emphasis on the publication of research and attainment of funding and related awards (e.g., SFI PI Investigator Awards). In addition, the School has recently carried out an externally evaluated research assessment exercise (Oct 2008).

   A growing concern for the School is how publications, in particular, are considered in promotion rounds. The School is currently discussing the value of preparing an internal reference document for publication targets and indicators of research excellence (e.g., papers accepted to conferences/journals with high impact factors, conference papers with citation counts that are far above the norm, etc). A final decision is expected to be made on this by end of Feb 2009. If the decision is to proceed, the School would be very agreeable to the sharing this information with University Senior Management in advance of subsequent promotion rounds.

In brief, the School agrees with this recommendation by the PRG and would like very much for University Senior Management to engage with them to gain a better understanding of research excellence indictors in computer science. It would be ideal if this channel of communication were entered into as soon as possible (e.g., 1st quarter 2009).

Category 2(c)

Recommendations to be implemented within five years

1. Recommendation: The relationship between CSI and CASL needs to be nurtured and developed carefully. The Review Group agrees with the proposal to bring CASL under the organisational umbrella of the College.

    Action planned: [see also Category 1(a) – recommendation 13]. Plans for the Science Centre are almost complete and CSI welcomes the provisions that have been made to re-house CASL in this project. This is the only real solution here. The School have already made University Senior Management and the project planning committee aware of the critical need to put in place a long-term solution here as a matter of urgency. The completion of the Science Centre building and facilities will take place in a sequence of phases. It is expected that the one wing will be prioritised as phase 1 (due to commence 1st quarter of 2009) and will take 15-20 months to complete. The School eagerly awaits confirmation on this, which will ultimately rests with University Senior Management (exp. confirmation before end of 2008).

Category 2(d)

Recommendations which will not be implemented : None

Category 3: Recommendations concerning inadequate staffing, and/or facilities which require recurrent or capital funding

Category 3(a)

Recommendations already implemented

1. Recommendation: While the Review Group appreciates that there is no viable, short-term solution to the split site for CSI, the University is encouraged to ensure ongoing dialogue with the School with respect to space and to develop at least suitable laboratory space for the forensic research activity.

    Action taken: The School has already temporarily re-housed the Centre for CyberCrime Investigation in Block A of the Centre for Computer Science and Informatics building. Previously this space functioned as a computer laboratory for final year computer science students. A refurbishment of two

of the Schools undergraduate computer labs is currently underway in view of accommodating these additional student numbers. Specifically, our recently established laptop programme has resulted in the majority of our undergraduates owning their own laptops. As such, many of the desktop PCs and oversized benches are no longer necessary. It is anticipated that by restructuring these areas appropriately more effective use of the space can be achieved. It is not ideal that each undergraduate year does not have a designated computer lab, as was the norm up to now. However, this seems to be the best compromise while we wait for a more long-term solution to the space problem. The manager of the CSI technical support team and the HoS are responsible for this action. It is anticipated that these renovations will be complete by Jan'09 (i.e., the start of semester 2).

Category 3(b)

Recommendations to be implemented within one year

1. Recommendation: The School held its first "Away Day" this year; the School is strongly encouraged to hold such an event on an annual basis. This is an ideal forum to reflect upon strategic goals and developments, School strategies and structures and to develop shared identity and collective strategic thinking.

   Action planned: Cat 1(b): recommendation 12 mentions that the School will plan a further "Away Day" in early 2009. An associated cost estimate for this is provided in Section 3.

2. Recommendation: The Review Group recommends that the School should identify which of its many international links are strategically significant, and they should focus on developing these further.

   Action taken: Cat1(a):12 mentions that the School would like to develop the existing UCD/DCU undergraduate "Odysses" exchange programme in line with this recommendation. This will require funding to offer 4-5 places on this programme to international undergraduate (est. annual cost estimates are provided in section 3).

Category 3(c)

Recommendations to be implemented within five years

1. Recommendation: Plagiarism can be a serious problem in CS departments and the increasing use of continuous assessment makes it even more important to detect and curtail it. The Review Group strongly recommends that the School adopts some of the available software services that are available for plagiarism detection. This might be done initially on a pilot basis to establish the scale of the problem. The Review Group also recommends a more rapid and definitive disciplinary action than is currently, apparently, permitted by the University.

   Action planned: The Teaching and Learning Committee are planning to select a number of modules to participate in a pilot review of plagiarism

software (noting costs, copyright/privacy issues, etc) over the next academic year. The following options will be evaluated:

- Safe Assign
    - Included with Blackboard.
    - http://www.safeassign.com/
    - http://www.ucd.ie/itservices/teachingandlearningit/elearning/safe.html
- TurnItIn
    - Stg£882 per year (School license, based on 700 students)
    - Can be integrated with moodle.
    - http://www.northumbrialearning.co.uk/turnitinmoreinfo.php
- CopyCatch
    - Stg£750 per year (School license)
    - http://www.copycatchgold.com/

The Technical Manager will work will the Teaching and Learning Committee on this action.

2. Recommendation: The relationship between CSI and CASL needs to be nurtured and developed carefully. The Review Group agrees with the proposal to bring CASL under the organisational umbrella of the College.

Action planned: [see also Category 1(a): rec 13, and Category 2(b): rec 1]. Plans to re-house CASL in the Science Centre project will require capital funding. A major concern for CSI here is that University Senior Management might neglect to prioritise the nurturing and development of CSI and CASL by funding the cost of building other phases first. The School has every reason to assume that its case for space will prevail here and expect that the appropraite wing will be scheduled as phase 1 (due to commence 1st quarter of 2009) and will take 15-20 months to complete. The School eagerly awaits confirmation on this, which will ultimately rests with University Senior Management (exp. confirmation by early Jan 2009).

Meanwhile, the School feels that it is important to be proactive in facilitating student engagement both at the undergraduate and postgraduate student levels, as well as at the staff level. Sadly many of our postgraduates do not know each other primarily due to the distributed nature of CSI accommodation. Ideally, the School would cover the cost of having 3-4 student engagement lunchtime events throughout the academic year.

3. Recommendation: The School should participate fully in any national or regional initiatives to promote knowledge of, and interest in, computing at second level.

Action planned: Cat 1(a): recommendation 4 outlines the action already taken and future plans at the School level to appropriately address this recommendation. Examples of related recurrent costs here include the continuation of the employment contract for the School's purposely employed Retention Officer, the costs associated with the production of

promotional materials, and attendance at regional outreach events. Cost estimates are provided in section 3 of this response.

4. Recommendation: The Review Group recommends that the School might give some thought to implementing internal measures that would assist staff in their promotion applications, such as the peer review of teaching and ongoing mentoring of its junior lecturing staff.

Action planned: Cat 1(a): recommendation 10 outlines the action already taken and future plans at the School level to appropriately address this recommendation. Provision of adequate support facilities is crucial here. Relevant recurrent costs are:

(1) continuation of the employment contract for the School's purposely-employed Research Officer, and

(2) the hiring of further support resources to ensure that the School can continue to designate a specific point of contact for matters related to research accounts and budgets within the CSI administration office. Since the PRG site visit in May 2008 the School's support team has been seriously compromised by the loss of staff positions, which the university does not intend to resource. At the May'08 PRG site visit it was agreed that there was a clear case to increase the respective sizes of the admin and technical support teams based on comparisons with other external Computer Science units and Schools within UCD.

For instance, the UCD School of Electrical, Electronic and Mechanical Engineering has 39 academic staff supported by 18 technical staff (i.e., ratio 2:1). Similarly, the academic/technical staff for the UCD School of Physics is 3:1. Computer Science units in Trinity College Dublin (TCD) and Queens University Belfast (QUB) are also in a better position here with ratios of 3.3:1 and 2.3:1 respectively. Despite the fact CSI staff and student number increases over the past eight years the number of posts in our technical team has remained constant. A draft proposal (2005) for the expansion of the Technical Support team to fill current "skill-gaps" (e.g., databases, programming) and offer CSI staff and students the levels of necessary support across our distributed locations is was attached as Appendix S8 of the School Self Assessment Report. To date, however, resource limitations have prevented the implementation of this proposal. CSI see this as a major weakness. We also discussed at the site-visit how similar trends have been experienced by our administration resources. The situation here has only worsened in recent months. Since the site visit our School administration team has now been reduced by a further two. This is something that the School is very worried about.

Recommendation: The Fudan link has clearly been fruitful and stimulating for all those involved. However, it may now be time for the School to reflect on the costs – including opportunity costs of this relationship.

Action planned: Cat 1(a): recommendation 11 outlines the action already taken and future plans at the School level to appropriately address this recommendation. The School also feels that it would be very worthwhile for UCD to establish an annual Research Scholarship Award that can to be

offered to high-quality Fudan students who come to continue their postgraduate studies at UCD. This would cover the cost of their fees and provide a reasonable level of financial support for the duration of the 3-4 years they are studying at UCD.

5. Recommendation: The promotion process is a vital motivation mechanism for staff. The Review Group recommends that the School gain a better understanding of how to demonstrate excellence in teaching (perhaps by consulting with the UCD Centre for Learning and Teaching).

Action planned: Cat 1(b): recommendation 1 outlines the action planned at the School level to appropriately address this recommendation. The School is currently in the process of refurbishing its largest laboratory space in view of establishing an Active Learning Centre that is tailored to the technological needs of computer science students and staff. This provides CSI staff with a unique opportunity to demonstrate excellence in teaching, as this is the first active-learning environment of its kind that will be established in UCD. Alongside appropriate consultation from CTL, the HoS will be encouraging staff to document their subsequent "active" teaching experiences and lessons learned. Estimates for financial resource requirements here are listed in Section 3. In addition to funds to complete the active-learning project the School hopes to be able to fund staff attendance at relevant teaching conferences (e.g., AISHE) and encourage staff to publish in this area.

6. Recommendation: An area, not mentioned in the SAR that might be worth considering, is the gathering of feedback at programme and stage level to help clarify and validate the overall quality of the programme.

Action planned: Cat 1(b): recommendation 10 outlines the action the School will take here that does not require additional funding. A further relevant and planned action is the installation of an interactive feedback response system in our lecture theatre. This system would facilitate feedback gathering from students during the giving of lectures. Essentially, it would be a "clicker system" similar to that used by the audience on the popular TV programme "Who Want's to be a Millionaire". A cost estimate is provided in Section 3 based on the "Qwizdom" clicker sets purchased by the UCD School of Physics recently.

Note: The Quality Improvement Plan should be used at School and College level academic and resource planning activities, to inform funding allocation decisions.

3.   Prioritised Resource Requirements

This section should only contain a list, prioritised by the Quality Improvement Committee, of recommendations outlined in the Review Group Report, which require additional resources.

No.	Rel. Recs[1]	Planned Action	€ Cost (est.)
1	Cat 3(c):4	Staff support services (i.e., Administration & Technical resources).	260 k annual
2	Cat 1(b):8 Cat 1(b):11	Extension of the contract for the CSI Student Advisor.	250K annual
3	Cat 1(a):4	Extension of the contract for the CSI Student Retention officer.	
4	Cat 1(b):10	Extension of the contract for the CSI Co-ordinator of the CPSC.	
5	Cat 1(a):7 Cat 1(a):10 Cat 3(c):4	Extension of the contract for the CSI Research Officer.	
6	Cat 3 (c):5	Re-furbishment of existing 1st year computer lab as an Active Learning Centre.	100 k once-off
7	Cat 1(a):4 Cat 1(a):11 Cat 1(b):4 Cat 3(c):3	Development and design of appropriate marketing materials for attracting potential students to study computer science at UCD.	2 k annual
8	Cat 1(b):8 Cat 3(c):2	Towards the hosting of student engagement events (necessary to often be held at lunchtime). Usually undergraduate events are held for incoming undergraduate students at the beginning of the academic year. More frequent postgraduate events would be ideal to encourage greater communication between students in CSI and CASL.	1 k annual
9	Cat 3(c):6	Installation of an appropriate classroom response system to capture student feedback and encourage interactive learning.	8 k once-off
10	Cat 1(b):4	Preparation of marketing materials for postgrad courses.	500 annual
11	Cat 3(c):4	Establishment of an International Research Scholarship Award, initially targeted at students enrolled in the Fudan BSc Programme to continue their postgraduate studies at UCD.	25 k annual
12	Cat 1(a):4 Cat 3(c):3	Hosting of Outreach and Transition Year workshops.	4 k annual
13	Cat 1(b):8 Cat 1(b):11	Toward the cost of providing advisors/demonstrators to support postgraduate students through the CPSC.	5 k annual
14	Cat 3(c):1	The licensing of appropriate plagiarism software and assignment checking procedures.	1 k annual
15	Cat 3(b):2	Extension of the Odysses programme to cover a further 3-4 students to be afforded to international universities.	6 k annual
16	Cat 3(b):1	Towards the organization of School strategic thinking and collective development events (e.g., follow-up Away-Day).	3 k annual
17	Cat 1(a):4 Cat 3(c):3	Hosting of a national programming competition for undergraduate and postgraduate students.	1 k annual

[1] Category of recommendation followed by the related recommendation number reference.