

Survival Mode: The Stresses and Strains of Computing Curricula Review

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Executive Summary

In an ideal world, review and changes to computing curricula should be driven solely by academic concerns for the needs of students. The process should be informed by industry accreditation processes and international best practice (Hurst et al., 2001). However, Australian computing curricular review is often driven by the need for financial viability of programs with declining student numbers as much as concerns for academic merit.

Worldwide there remains a strong job market and high demand for computing professionals (Melymuka, 2006; Liu, 2007) which predicates an impending IT workforce shortage. However, computing programs currently do not attract students due to perceived problems of the inadequacy of courses to prepare students sufficiently: to cope with the practical challenges in current technologies adoption, to acquire strong communication skills and business aptitude (Taft, 2007), to foster problem solving skills, and to find the relevance of program contents to specific occupations. Therefore, computing curricula wishing to attract students need to have specialized studies that are of industrial strength that are updated regularly to reflect the progress in the discipline (Finkelstein & Hafner, 2002; Lui, 2007). Yet the challenge for universities is to weigh this need against preparing students to be universal and lifelong learners.

Given the impetus to be financially independent, the greatest challenge since 2004 for the School of Computer Science and Mathematics at Victoria University, Melbourne, has been the steady decline in both local and international student numbers. In response, between 2004 and 2006 the School underwent various restructurings, reviews and assessments to meet government legislative requirements, professional accreditation needs and to capture new market share. In 2007, continued poor enrolment numbers threatened the School's long term sustainability necessitating urgent strategic analysis and decision making surrounding the future of computing programs. It was decided that a new and innovative program embracing emerging computing paradigms was needed to attract potential students. The proposed program structure would be based upon input from industry representatives, senior academics and government reports whilst operating within existing budget constraints. Essentially, existing programs were to be condensed into a core offering with six specializations in a) Interactive Digital Media and Game Development b) Web Technologies and Mobile Computing c) IT Security d) Computational Finance e) Business Intelligence and Service Computing and f) Aviation Technology. The choice of specializations was made to firstly incorporate the major characteristics and paradigm shifts in the ICT industry, secondly to cater for the broad diversity of student interests and thirdly to capitalize on historical strengths. Through these specializations, the program offers prospective students the necessary skills needed for future predicted employment shortages. With adequate marketing, it is hoped that the proposed new structure will allow for quick responses to external positive changes in demand and thus attract student interest.

Keywords: computing education, IT education, academic review, curriculum development.