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### Experiences using case studies to teach risk

A. Fuller

*University of Wollongong, annef@uow.edu.au*

Khin Than Win

*University of Wollongong, win@uow.edu.au*

L. Dei

*University of Wollongong*

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## Experiences using case studies to teach risk

### Abstract

Most software development projects today are facing increased risks. Despite this risk management planning is virtually nonexistent, as managers have not been trained in risk management. Few current software engineering curricula provide comprehensive coverage of risk, nor any practical experience in risk assessment. In this paper we discuss our experience using case studies to teach risk as part of a final year course in software process management with a view to determining the effectiveness of the particular case studies. This experience will be used as a foundation for implementing the full semester course in 2003.

### Disciplines

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## EXPERIENCES USING CASE STUDIES TO TEACH RISK

Anne Fuller<sup>1</sup>, Khin Than Win<sup>2</sup> and Limei Dei<sup>3</sup>

**Abstract** — Most software development projects today are facing increased risks. Despite this risk management planning is virtually non-existent, as managers have not been trained in risk management. Few current software engineering curricula provide comprehensive coverage of risk, nor any practical experience in risk assessment.

In this paper we discuss our experience using case studies to teach risk as part of a final year course in software process management with a view to determining the effectiveness of the particular case studies. This experience will be used as a foundation for implementing the full semester course in 2003.

**Index Terms** — software engineering education, Computer Science education, risk management

### INTRODUCTION

Many current Software Engineering curricula focus on the monolithic model of software development that assumes development by large corporations. Yet by far the majority of software development is undertaken by Small to Medium Enterprises. Software development is inherently risky, however the need to adapt processes intended for larger organisations introduces a new element of risk. In addition, the nature of many new software products can be described as “critical” and therefore should undergo a formal risk assessment procedure [1].

We have previously suggested that risk be repositioned in the software engineering core body of knowledge, and proposed requirements for a one semester course on risk [2]. As experience is considered an essential element of successful risk assessment, a feature of the course is the use of case studies based on real projects to simulate an historical perspective for students [3].

### PROCEDURE

The traditional assessment methods for risk and hazard analysis [4][5] all rely on people making judgments based on their experience. Without an understanding of history or direct experience for a given application then more is unknown and hence the risks are higher [6].

Clearly the importance of relevant experience to successful risk assessment is a problem for undergraduate teaching. Many students lack such experience and it can easily become a paper exercise of little direct relevance to them at this stage. We used three case studies, based on the

history of real projects, as a mechanism whereby this lack of experience can be addressed. The case studies were drawn from industry and students were asked to perform risk assessments based on data that was available at certain times throughout the project [3].

### RESULTS

We were initially disappointed when responses to the first case studies indicated students did not have a clear understanding of risk concepts as they affect a software project. However, answers for the second case study showed an improved ability to identify risks and perform qualitative risk assessment. These two case studies addressed common business and project risks. (See [3] for details of the cases.)

The third case study involved the assessment of safety hazards. The concepts involved appeared less well understood. Grades awarded for this case study were on average lower than for the other two.

### CONCLUSION

We are encouraged by the increase in the students' grasp of risk assessment techniques shown between case study 1 and 2. Although this improvement did not continue into the third case study, this may be attributed to the different nature of the risks being assessed.

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<sup>1</sup> Anne Fuller, University of Wollongong, annef@uow.edu.au

<sup>2</sup> Khin Than Win, University of Wollongong, win@uow.edu.au

<sup>3</sup> Limei Dei, formerly University of Wollongong