



# A Risk Register Database System to aid the management of project risk

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## Abstract

This paper presents a Risk Register Database System, which incorporates a Risk Register and a Risk Assessment Tool which have been used to aid the management of project risk within an automotive company. The Risk Register is primarily a tool which has enabled the risks within a project to be documented and maintained irrespective of geographical location, and has provided the platform for the reduction and mitigation plans to be developed for the high level risks within the project. The Risk Assessment Tool uses the information documented within the Risk Register to enable the overall riskiness of a project to be reported on a regular basis and as such, track the effectiveness of utilising a Project Risk Management Methodology throughout the lifespan of a project. © 2002 Published by Elsevier Science Ltd and IPMA.

*Keywords:* Project risk management; Risk Register Database System; Risk register; Risk Assessment Tool; Qualitative Assessment

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## 1. Introduction

One of the fundamental philosophies behind Project Risk Management is that the information which is generated through its use is applied within the project. To allow this, a Risk Register tool is generally used as a means of recording and documenting the information generated through the use of Project Risk Management. The Risk Register itself is an extremely effective tool to enable everyone involved in the project to consciously evaluate and manage the risks as part of the decision making process. It also provides a platform on which the mitigation actions and decisions can be made in the future, through ensuring a greater understanding and acceptance of the visible risks. However, more importantly, the Risk Register enables the risk reduction and mitigation plans within the project itself to be documented.

This documentation of information is of extreme importance, as not only can information gained through the process of risk management be shared with others, it also provides the means of audit and maintaining historical data for a project. This in turn can enable clear and concise communication to take place, both within and external to the project, which could result in an increase in the success of meeting the project's objec-

tives, especially in relation to quality, cost and time [1]. Chapman and Ward back up this thinking and include other aspects such as enabling new team members to be quickly brought up to speed on the project, as well as a method to start the process of risk management, through the documentation of unambiguous information [2].

The assessment of risk has tended to comprise of many different techniques developed for specific applications [3]. These techniques are designed to assist the user in understanding and identifying the critical risks within the system, as well as assist in the development of the product in the future. However, many of these techniques within Project Risk Management tend to focus on assessing or analysing the entire project, to determine increases in time or cost overrun. Although these are important aspects to appreciate within a project, these types of assessment and analysis tools often rely on a detailed and accurate map of the project being constructed. These types of detailed planning tend to take place primarily in industries where the penalties of late delivery of a project are built into contracts and where the risks are built into the plan. The construction industry and the MOD are prime examples of this, and as such have tended to use and build upon these type of assessment techniques [4]. However, projects undertaken by the Automotive Manufacturing Industry tend

not to be managed to such tight planning activities, with the overall project management being undertaken by professional engineers and not professional project managers [5]. Therefore, risk assessment and analysis activities, undertaken at the beginning of the project and based on the project management material, are not always as applicable to the Automotive Manufacturing sector.

This paper will describe the design and construction of the Risk Register Database System which was developed for use within a Risk Management Methodology [4]. The Risk Register Database System incorporates both a Risk Register and a Risk Assessment Tool. To aid this description, a brief outline of the Risk Management Methodology will be given as well as an explanation of where the Risk Register and Risk Assessment Tool fits into this process. A description of how the database system has been used in practice and the benefits of its use will also be given.

### 1.1. The Risk Management Methodology

The Risk Management Methodology, given in Fig. 1, was designed specifically for use within the Automotive Manufacturing Industry [4]. However, there is scope for it to be extended to other industrial sectors and used as a Project Risk Management Methodology for product and process development and the design and manufacture of products. The methodology is a cyclic process which is initiated at the risk identification stage. It comprises of five stages, and consists of various tools, techniques and methods underlying the process. The focus of this paper will however be primarily on two stages; Risk Assessment and Risk Reduction and/or Mitigation. The Risk Register Database System is constructed within the ‘Risk Reduction and/or Mitigation’ stage, on the first cycle of the Risk Management Methodology. Within this stage, the Risk Register is constructed, each of the risks ranked in order of priority,

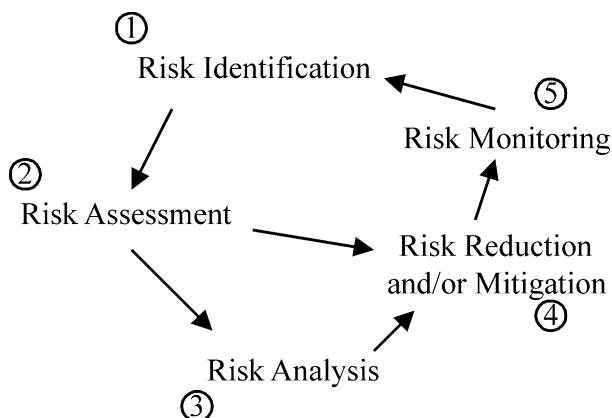


Fig. 1. The Risk Management Methodology.

the risk reduction and mitigation plans developed and put into action within the project. The Risk Register therefore provides a formal mechanism to document the identified risks, their associated probability and impact values as well as their ranking in the project [6].

As the Risk Management Methodology is cyclic, the Risk Register should be updated as an ongoing and dynamic process, in which the monitoring and application of the information which it contains must be continual. The Risk Register therefore provides the platform from which the reduction and/or mitigation plans can be developed for each of the active risks within the methodology.

The Risk Assessment Tool utilises the information held within the Risk Register to enable the level of risk within the project to be determined as well as tracked over the lifespan of the project.

## 2. The ‘Risk Register’

Even though various authors discuss ‘risk registers’ within their work, very little has been written about their development and construction [2,4,7–9]. However, what is evident is that many organisations store their risks in undisclosed forms of ‘registers’ [10]. Research conducted by the Design Information Group at Bristol University found that 67% of questionnaire respondents documented their risks on either a paper or computer-based risk register [10]. A majority of the computer based risk registers were, however, developed within the individual organisations, giving rise to the conclusion that each organisation made their own decisions as to the style and design of their individual ‘risk registers’.<sup>1</sup> However, no information was given on the form, construction or origins of these registers and the types of systems on which they were developed.

### 2.1. The role of the ‘Risk Register’

There are various statements in the literature describing the role of a ‘risk register’. Williams states that ‘*the risk register. . . . has two main roles. The first is that of a repository of a corpus of knowledge. . . . The second role of the risk register is to initiate the analysis and plans that flow from it*’ [11]. As such, the risk register should be used to keep track of the risks to the project [12]. Chapman and Ward state that, to enable the documentation of the sources of the risk and their responses, as well as their classification, ‘*the (risk) register identify phase involves compiling a list, log or register*’ [2]. Within this, they identify that the documentation

<sup>1</sup> From the questionnaire results, 78% of Risk Register computer systems were developed in-house, i.e. within the organisation.

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