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The European Journal for the Informatics Professional
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Vol. XII, issue No. 5, December 2011

Farewell Edition

- 3 Editorial. CEPIS UPGRADE: A Proud Farewell
— *Nello Scarabottolo, President of CEPIS*

ATI, *Novática* and CEPIS UPGRADE
— *Dídac López-Viñas, President of ATI*

Monograph

Risk Management

(published jointly with *Novática**)

Guest Editor: *Darren Dalcher*

- 4 Presentation. Trends and Advances in Risk Management
— *Darren Dalcher*
- 10 The Use of Bayes and Causal Modelling in Decision Making, Uncertainty and Risk — *Norman Fenton and Martin Neil*
- 22 Event Chain Methodology in Project Management — *Michael Trumper and Lev Virine*
- 34 Revisiting Managing and Modelling of Project Risk Dynamics - A System Dynamics-based Framework — *Alexandre Rodrigues*
- 41 Towards a New Perspective: Balancing Risk, Safety and Danger
— *Darren Dalcher*
- 45 Managing Risk in Projects: What's New? — *David Hillson*
- 48 Our Uncertain Future — *David Cleden*
- 55 The application of the 'New Sciences' to Risk and Project Management — *David Hancock*
- 59 Communicative Project Risk Management in IT Projects
— *Karel de Bakker*
- 67 Decision-Making: A Dialogue between Project and Programme Environments — *Manon Deguire*
- 75 Decisions in an Uncertain World: Strategic Project Risk Appraisal — *Elaine Harris*
- 82 Selection of Project Alternatives while Considering Risks
— *Marta Fernández-Diego and Nolberto Munier*
- 87 Project Governance — *Ralf Müller*
- 91 Five Steps to Enterprise Risk Management — *Val Jonas* **..**

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<http://cepis.org/upgrade>

Vol. XII, issue No. 5, December 2011

Farewell Edition

Cont.

UPENET (UPGRADE European NETWORK)

- 99 From **inforeview** (JISA, Serbia)
Information Society
Steve Jobs — *Dragana Stojkovic*
- 101 From **Informatica** (SDI, Slovenia)
Surveillance Systems
An Intelligent Indoor Surveillance System — *Rok Piltaver, Erik Dovgan, and Matjaz Gams*
- 111 From **Informatik Spektrum** (GI, Germany, and SI, Switzerland)
Knowledge Representation
What's New in Description Logics — *Franz Baader*
- 121 From **ITNOW** (BCS, United Kingdom)
Computer Science
The Future of Computer Science in Schools — *Brian Runciman*
- 124 From **Mondo Digitale** (AICA, Italy)
IT for Health
Neuroscience and ICT: Current and Future Scenarios
— *Gianluca Zaffiro and Fabio Babiloni*
- 135 From **Novática** (ATI, Spain)
IT for Music
Katmus: Specific Application to support Assisted Music
Transcription — *Orlando García-Feal, Silvana Gómez-Meire, and David Olivieri*
- 145 From **Pliroforiki** (CCS, Cyprus)
IT Security
Practical IT Security Education with Tele-Lab — *Christian Willems, Orestis Tringides, and Christoph Meinel*

CEPIS NEWS

- 153 Selected CEPIS News — *Fiona Fanning*

Decisions in an Uncertain World: Strategic Project Risk Appraisal

Elaine Harris

This article is developed from the author's book on strategic project risk appraisal [1] and her special report on project management for the ICAEW [2]. The book is based on over eight years of research in the area of risk and uncertainty in strategic decision making, including a project funded by CIMA [3] and explores the strategic level risks encountered by managers involved in different types of project. The special report classifies these using the suits from a pack of cards. This article illustrates the key risks for three types of project including IT projects and suggests how managers can deal with these risks. It makes a link between strategic analysis, risk assessment and project management, offering a new approach to thinking about project risk management.

Keywords: Decisions, Managerial Judgement, Project Appraisal, Risk, Uncertainty.

1 Investing in Projects in an Uncertain World

Projects are often thought of as a sequence of activities with a life cycle from start to finish. One of the biggest problems at or before the start is being able to foresee the end, at some time in the future. Uncertainty poses a range of issues for project planning and risk assessment. If we think of projects as temporary endeavours, not all outcomes may be measurable by the end, where lasting benefits may be desirable. This provides the problem of how we judge projects to be successful. Performance of projects has typically been measured by the three constraints of time, money and quality. Whilst it may be easy to ascertain whether a project is delivered on time and within budget, it is harder to assess quality, especially when a project is first delivered. Many projects, even those that were famously late and well over budget like the Sydney Opera House, can become icons in society and be perceived as very successful after a longer period of time. The classic issue in project management is that only a small minority of projects achieve success in all three measures, so academics have been searching for better ways to measure the success of projects, which involves unpicking 'quality', and in whose eyes projects are perceived to succeed or fail [2].

All strategic decisions that select which projects an organisation should invest in are taken without certain knowledge of what the future will hold and how successful the

“ This article illustrates the key risks for three types of project including IT projects and suggests how managers can deal with these risks ”

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project will be. Faced with this *uncertainty*, we can attempt to predict the factors that can impact on a project. Once we can identify these factors and their possible impacts we can call them *risks* and attempt to analyse and respond to them. Risks can be both positive, such as embedded opportunities, perhaps to do more business with a new client or customer in future, or negative, things that can go wrong, and those indeed require more focus in most risk management processes. Project risk assessment should begin before the organisation makes its decision about whether to undertake a project, or if faced with several options, which alternative to choose.

One common weakness in the approach that organisations take to project risk management is the failure to identify the sources of project risk early enough, before the organisation commits resources to the project (appraisal stage). Another is not to share that risk assessment information with project managers so that they can develop suitable risk management strategies. Through action research in a large European logistics company, a new project risk assessment technique (*Pragmatix*[®]) has been developed to overcome these problems. It provides an alternative method for risk identification, ongoing risk management, project review and learning. This technique has been applied to eight of the most common types of projects that organisations experience.

Type of project	Characteristics	Suit
1. IT/systems dev't	Advanced technology manufacturing or new information systems	
2. Site or relocation	New building or site, relocation or site development	
3. Business acquisition	Takeovers and mergers of all or part of another business	
4. New product dev't	Innovation, R & D, new products or services in established markets	
5. Change e.g. closure	Decommissioning, reorganisation or business process redesign	
6. Business dev't	New customers or markets, may be defined by invitation to tender	
7. Compliance	New legislation or professional standards, e.g. health & safety	
8. Events	Cultural, performing arts or sporting events, e.g. Olympics	

Table 1: Types of Projects. (Source: [2, p. 4].)

2 Project Typology

Whilst the definition of a project as a temporary activity with a start and finish implies that each project will be different in some way from previous projects, there are many which share common characteristics. Table 1 shows the most commonly experienced projects, informed by finance professionals in a recent survey. Each is marked with a suit from a pack of cards which attempts to classify projects as follows:

- Hearts – need to engage participants hearts and minds to succeed
- Clubs – need to work to a fixed schedule of events
- Diamonds – products need to capture the imagination and look attractive in the marketplace
- Spades – physical structures e.g. buildings, roads, bridges, tunnels

This article features three types of project (1, 2 and 6) shown in Table 1 to give a flavour of the research findings.

3 Project Appraisal and Selection

In order to generate a suitable project proposal for this purpose, the project needs to be scoped and alternative options may need to be developed from which the most suitable option may be selected. The way the project is defined and described in presenting a business case for investment can influence decision makers. It is important for senior managers, both financial and non-financial to understand the underlying psychological issues in managerial judgement, such as heuristics (using mental models, personal bias and rules of thumb), framing (use of positive, negative or emotive language in the presentation of data) and consen-

sus (use of political lobbying and social practice to build support for a case). These behaviours can be positively encouraged to draw on the valuable knowledge and experience of organisational members, or impact negatively, for example status quo bias creating barriers to change [3].

In many organisations it is possible to observe bottom-up ideas being translated into approved projects by a team at business unit level working up a business case to justify a proposal using standard capital budgeting templates and procedures for group board approval (Figure 1). There are feedback loops and projects may be delayed while sufficient information is gathered, analysed and presented. This process can take days (for example corporate events), months (for example new client or business development) or even years (for example new products where health and safety features in approval such as drugs or aeroplanes). Where delay is feasible, where the opportunity will not be lost in competitive market situations, a real options approach is possible. The use of the term real options here is an approach or way of thinking, not a calculable risk as in derivatives. It simply means that there is an option to delay, disaggregate or redefine the project decision to maximise the benefit of options, for example to build in embedded opportunities for further business. This may be more important in difficult economic times as capital may be rationed.

However, where projects are initiated by senior management in a top-down process, the usual steps in capital investment appraisal may not be followed, as there may be external pressure brought to bear on a chief executive or finance director, for example in business acquisitions, strategic alliances etc. Appraisal procedures may be over-rid-

“ Performance of projects has typically been measured by the three constraints of time, money and quality ”

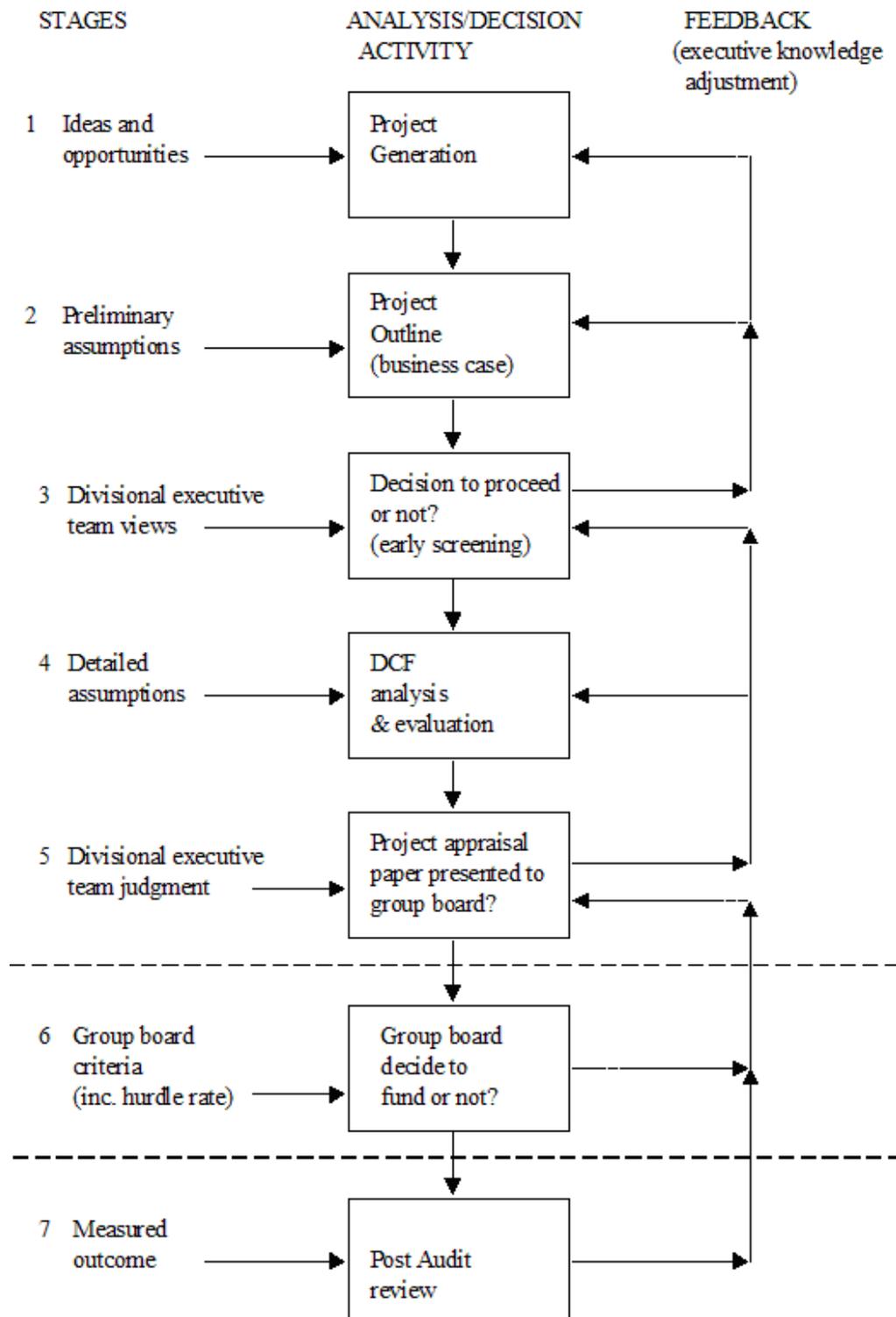


Figure 1: IT Project Risk Map. (Source [4].)

PROJECT RISK ATTRIBUTES	Brief Definition
CORPORATE FACTORS: Strategic fit Expertise Impact	Potential contribution to strategy Level of expertise available compared to need Potential impact on company/brand reputation
PROJECT OPPORTUNITY: Size Complexity Planning timescale Quality of customer/supplier	Scale of investment, time and volume of work Number of and association between assumptions Time available to develop proposal pre-decision Credit checking etc. added during version 4 updates
EXTERNAL FACTORS: Cultural fit Quality of information Demands of customer(s) Environmental	Matching set of values, beliefs & practices of parties Reliability, validity & sufficiency of base data Challenge posed by specific customer requirements Likely impact of PEST factors, inc. TUPE
COMPETITIVE POSITION: Market strength Proposed contract terms	Power position of company in contract negotiations Likely contract terms and possible risk transference

Table 2: Project Risk Attributes for Business Development Projects. (Source: adapted from [4].)

den or hi-jacked in such cases, with often negative consequences in terms of shareholder value. The justification for such projects is often argued on a financial basis, but evidence shows that the target company shareholders make more money out of these than those in the bidding company. This is a key risk that may be picked up by internal audit.

4 Risk Analysis

There is a common risk management framework in business organisations that can be applied to projects as well as continuing operations. The number and labelling of steps might differ, but the process usually involves:

1. Identify risks (where will the risk come from?)
2. Assess or evaluate risks (quantify and/or prioritise)
3. Respond to risks (take decisions e.g. avoid, mitigate or limit effect)

“ A new project risk assessment technique (*Pragmatix*[®]) has been developed to overcome these problems ”

4. Take action to manage risks (adopt risk management strategies)
5. Monitor and review risks (update risk assessment and evaluate risk strategies)

Linking these to the project life cycle, steps 1 and 2 form the risk analysis that should be undertaken during the project initiation stage, step 3 links to the planning stage, and steps 4 and 5 should occur during project execution. Risks should also be reviewed as part of the project review stage to improve project risk management knowledge and skills for the future [2].

Evidence from practice suggests that steps 1 and 2 are rarely carried out early enough in the project life cycle, step 5 monitoring is often undertaken in a fairly mechanical way, and comprehensive review at project level is hardly found to occur at all after the project has ended, especially in non-project based organisations.

The difficulty in identifying the risks relating to projects, especially at an early stage when the project may not be well defined, is that no two projects are exactly the same. However, using the project typology in box 1 it can be seen that headline or strategic risks are likely to be similar for projects of a similar type. In [9] a range of qualitative methods for project risk identification is presented, including cognitive mapping, and examples are given for several types of project.

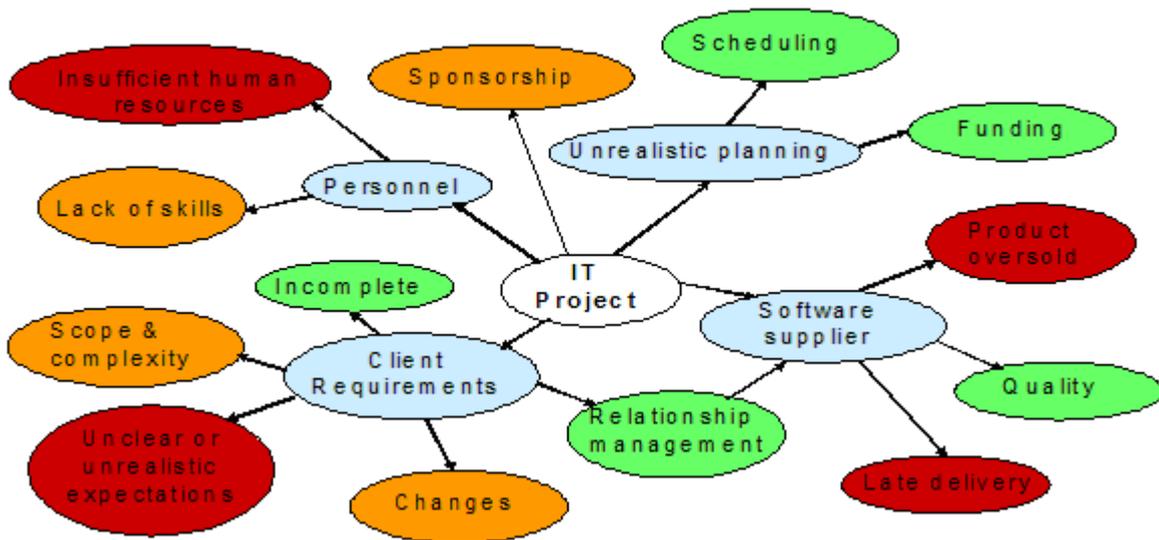


Figure 2: IT Project Risk Map.

Knowledge of where the risks are likely to come from is usually developed intuitively by managers through their experience in the organisation and industry. Advanced methods used in the research reported here included repertory grid¹ and cognitive mapping² techniques to elicit this valuable knowledge. However common risks may be found in projects of a similar type, and up to half may be identified by applying common management techniques. These are explained for the three project examples presented.

¹ Repertory grid technique (RGT) is a method of discovering how people subconsciously make sense of a complex topic from their range of experience. This was used to identify the project risk attributes in Table 2.

² Cognitive mapping uses a visual representation of concepts around a central theme. This was used to display risk attributes in a project risk map in figure 2.

Source of Risk	Mitigating actions
Employees Loss of staff Loss of expertise Effect on morale Poor local labour market	Offer positive and consistent benefits package Negotiate key employees benefits package to encourage move Good communications with staff & transparency of business case Establish good market intelligence (before choice of location)
Management Leadership	Establish dedicated project management team with strong leader
Continuity Current projects	Maintain extra resources during move Flex project schedules for projects spanning relocation period
Organisational impact Culture Business procedures	Use relocation as a catalyst for change, improve existing culture Requires a development plan
Infrastructure Office equipment Capacity	Transport all office equipment from current site, reduce need for new Determine capacity required and ensure building completed in time

Table 3: Mitigating Actions. (Source: adapted from unpublished MBA group coursework with permission.)

Example 1: Business Development Projects (BDP)

These projects involve securing new customers and markets for existing products or services. The strategic analysis of the organisational and environmental context for a BDP can help to generate several possible risks. The analysis of strengths, weaknesses, opportunities and threats (SWOT) can identify risk areas for the organisation (corporate factors in table A), and help to analysis the strategic fit of the project. Then a more detailed analysis of the external factors, political, economic, social, technical, legal and environmental (PESTLE) can identify further risk areas (external and market factors in Table 2). The invitation to tender might also help to identify risks in a BDP project, for example the ‘demands of the customer’ in Table 2.

Example 2: Systems Development or IT Projects

For an IT project, which is essentially a supply problem, the chain from software supplier to client (users) via sponsor (owner) can reveal at least half of the sources of risk. The functional requirements of the system are defined by the client, and the risks here may determine whether the client will be satisfied that the system does what it is supposed to do. Internal clients in IT projects may be more demanding than external clients in BDP projects.

Figure 2 shows a typical project risk map for an IT project. The figure shows the high risk areas shaded darker and the lower risk areas lighter. The key to managing these risks is understanding and responding to stakeholder motivations and expectations.

Example 3: New Site or Relocation Projects

A new site may involve the choice of location, acquisition, construction or refurbishment of buildings. In a relocation project, stakeholder analysis can reveal key groups of people who need managing closely. The employees are the principal group, followed by management and customers (continuity). Infrastructure risks (geographic factors) may be revealed by PESTLE analysis. Table 3 shows how risk management strategies can be developed to mitigate these risks.

The final section of this article shows the analysis of 100 risk management strategies into six categories, and draws conclusions for the use of a strategic approach to project risk identification, assessment and management [1].

“Project reviews are recommended to evaluate how well risk management strategies have worked”

“The final section of this article shows the analysis of 100 risk management strategies into six categories”

5 Risk Management Strategies

For each type of project covered in the research a set of risk management strategies like those shown in Table 3 were identified. These totalled 100 and the following six categories emerge from their analysis, in the order of frequency of observation:

1: Project Management (23%)

This category includes the deployment of project management methodologies such as work breakdown structure, scheduling, critical path analysis etc. and the establishment of a project leader and project team, as found in the PM body of knowledge. The most observations for this type of risk management strategy were in IT projects, relocation and events management, where timing is critical.

2: Human Resource Management (21%)

This category includes recruitment, training and development of personnel, including managers and the management of change in work practices. This type of strategy featured most strongly in acquisitions, IT projects and relocation.

3: Stakeholder Management (19%)

This category includes stakeholder analysis and management through consultation, relationship management and communications. It featured most strongly in systems development projects, NPD projects and events management, which are necessarily customer-focussed. In IT projects and events management there are many more stakeholder groups with diverse interests to manage.

4: Knowledge Management (18%)

This category includes searching for information, recording, analysing, sharing and documenting information, for example in market research and feasibility studies. It features most strongly in BDP and NPD projects and in acquisitions. It is closely related to training and development, so overlaps with that aspect of human resource management.

5: Financial Management (10%)

This category includes credit checking of suppliers and customers, financial modelling and budget management as well as business valuation, pricing strategies and contract terms. It is no surprise that it features most in business acquisitions, where a high level of financial expertise is required, and next in BDPs where terms are agreed and new customers vetted.

6: Trials and Pilot Testing (9%)

This category includes testing ideas at the feasibility study stage, testing possible solutions and new products. This could be clinical trials in pharmaceuticals, tasting panels with new food products or system testing in IT products, so features most strongly in IT and NPD projects.

Project reviews are recommended to evaluate how well risk management strategies have worked and to identify how risk management can be improved as part of organisation learning. The evaluation of *Pragmatix*[®] for risk identification, assessment and management revealed important benefits for the case organisation, not least the opportunity to link risk assessment to later project management and post audit review of projects. This joined up thinking links strategic choice to strategy implementation through project management.

In conclusion, the identification of likely risks at an early stage helps managers make better decisions in the face of uncertainty. However, unless these risks are fully appraised and communicated to those responsible for managing the implementation of the project and monitoring the risks, the full benefits of risk appraisal will not be realised.

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