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**SWP 24/92 ASSESSING AND MANAGING THE RISKS OF
IS / IT INVESTMENT**



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ASSESSING AND MANAGING THE RISKS OF IS/IT INVESTMENTS

(by John Ward: Cranfield Working Paper, 1992)

INTRODUCTION

An earlier paper by the author (Ward, 1990) described a portfolio approach to evaluating and prioritising IS/IT investments. The approach identified three key aspects of the IS/IT investment decision making process:

- what it is most important to do
- what is capable of being done
- what is likely to succeed
- benefits to be gained
- resources to be used
- risks to be dealt with.

The portfolio considered IS/IT investments in four categories - Strategic, Key Operational, Support or High Potential. Given the different nature of the business contribution expected from each of the four types of IS investment and the different approaches needed to supplying the systems, the risks will also vary. This paper builds on the earlier article and specifically considers how the risks of all IS/IT projects can be assessed and how the different risks inherent in each segment of portfolio can be understood and managed. The approach described in detail below is based on considering the key factors which have to be dealt with in order to minimise the risks of:

- a) not achieving the desired benefits
- b) not achieving the necessary timing
- c) using more resources than needed.

The effects of b & c will not only reduce the net benefits of the particular project, but also reduce the ability to gain the total benefits expected from all projects in the overall plan.

In considering how the benefits arise in the different segments of the application portfolio they are summarised as follows:

- a) Strategic Systems - the benefits are the result of innovation and change in the conduct of business to gain a competitive edge. This normally requires restructuring of some business processes and/or changing the relationships with trading partners.

- b) Key Operational Systems - the benefits result from carrying out business processes more effectively overall, and normally result from rationalisation, integration or re-organisation of existing processes. The main objective is to avoid business disadvantages.
- c) Support Systems - the benefits mainly come from carrying out business tasks more efficiently by removing them, or by automation to reduce the cost of carrying them out.

High Potential projects do not actually deliver finished, operational systems and hence real benefits and are dealt with as "high risk" by treating them as R & D projects. Therefore they are not considered in more detail here.

In considering the factors that affect the delivery of the required benefits of any IS/IT project, three are obviously key to its success.

- a) Time - when the business needs it.
- b) Quality - a system that does what it should.
- c) Cost - that was worth incurring.

(See Figure 1)

In an ideal world all three should be achieved - a perfect system, when needed, at the optimum cost. However, being realistic, it is difficult to achieve all three on any IS/IT project. The evidence from the past is that in some 50% of IS/IT projects none of the three is achieved! That is mainly due to the risks being misunderstood and partly due to not understanding which of the three variables - Time, Quality, Cost - was critical to the particular system's success. The criticality of each will vary in the different segments of the matrix as depicted in Figure 1. If perfection in all three is not achievable then for strategic projects TIME is often the most critical, otherwise the window of opportunity may be lost and associated business changes are infeasible or difficult: cost is less critical to overall success. That is not to say that cost should be ignored! Equally in the other two segments: QUALITY is most critical for Key Operational systems to avoid them failing the business and COST is most critical in Support systems, if economic benefits are to be maximised.

The method described below weights the risk factors differently in the three segments, in order to accommodate the different impact they are likely to have on overall success.

Much of the basic research and groundwork for the method described was done by David Bentley as part of an MBA project in 1991 at Cranfield School of Management. The Author acknowledges the valuable contribution of that work to the concepts and process described in this paper.

OVERVIEW OF THE APPROACH

David Bentley's extensive literature search identified a number of major risk factor categories and within these a list of specific factors that can be demonstrated to reduce the likely success of IS/IT projects. These are discussed. The potential impact of the factors is then considered against the key success factors for the different types of applications - Strategic, Key Operational and Support based the effect they have on the balance of the Time, Quality and Cost parameters.

Figure 1

BALANCE OF GENERIC CSFS FOR DIFFERENT APPLICATIONS

STRATEGIC	HIGH POTENTIAL
TIME Quality Cost	(R + D PROJECTS)
Time QUALITY Cost	Time Quality COST
KEY OPERATIONAL	SUPPORT

Therefore risk factors must be considered in the context of how they affect

	STRATEGIC	KEY OPERATIONAL	SUPPORT
TIME	***	**	*
QUALITY	**	***	**
COST	*	**	***

A simple impact assessment approach is used.

- VH - Very High Risk - will make the project unviable if the risk applies.
- H - High Risk - the project is unlikely to succeed unless action is taken to deal with the risk before the project starts.
- M - Medium Risk - contingencies need to be considered in case the risk leads to project problems.
- L - Low Risk - should have no affect in normal circumstances.

In order to determine if a risk applies and what its affect might be a questionnaire is suggested which helps uncover the potential impact. The questions are the same for all projects - but the "scores" derived from the questions are different for Strategic, Key Operational and Support projects according to the nature of benefits required and the parameters affecting success.

Having determined the scores at:

- a) individual risk factor level
- and
- b) risk factor category level
- and
- c) overall

a rationale for the action to be taken to deal with specific and overall project risks is explained. The specifics of the methodology - the weighting, questions and scoring system may require adaptation for use in specific organisations. However, using the method as detailed here a number of organisations have found it immediately helpful in diagnosing risks and defining how to tackle them.

RISK CATEGORIES, FACTORS & POTENTIAL IMPACT

The research uncovered some 24 different risk factors associated with IS/IT projects which are classified into six main categories.

1. People Issues - which relate to obtaining the appropriate commitment and involvement of senior management, ensuring the project team includes the right mix of business and technical skills, and that the communication between business users and system deliverers is effective. Weaknesses in any of these areas can cause misunderstandings at the earliest stages of projects which lead to major problems later. As can be seen from Table 1.1 each factor has a different potential impact especially the first two: Senior management involvement in Strategic projects is essential, but can lead to confusion and unnecessary interference in Support projects.
2. Project Size. It is almost self evident that large projects are more difficult to manage than small ones, and since large projects are normally expected to deliver large benefits the consequences of failure are far more significant. Size can be best expressed as the number of total man years work required, but the problem is compounded by both the number of different individuals involved and the elapsed time taken - more things change over a longer time period including the project personnel. The definition of large or small projects will depend on the organisation - in the questionnaire some suggestions are made as a starting point.

3. Control of the Project is a set of factors which describe how rigidly the Time, Quality and Cost aspects of the project are to be controlled in terms of milestones standards, methodology, budgets and change management processes.

To succeed with Strategic projects requires a degree of flexibility in how things are done in order to achieve early delivery of the system, whereas for Key Operational systems Quality should not be compromised for expediency. Support systems deliver mainly economic benefits, so managing expenditure is important, but timing of delivery is less critical - economic benefits are always available.

4. Complexity - again it is obvious that the more complex the problem the more difficult it is to ensure a good solution. Complexity can arise in both the business and the technology and this is usually compounded by the number of different business functions who need the new system and the number of other systems with which it must be integrated or interface. As with the other categories the potential impact of complexity varies around the matrix. In the Support segment achieving simplicity of systems functions will lead to low cost solutions. In the other two complexity will exist and must be accommodated in the timing and method of quality control.

5. Novelty. This concerns both the amount of business change needed to obtain the benefits and the novelty of the technical solution proposed. If both apply the risks become very high but in many cases, other than Support systems, change or technical novelty are an essential ingredient if the benefits are to be obtained.

6. Stability of Requirements. Again the more certain the future is, the easier it is to ensure the system will deliver the benefits. By careful definition of the project scope, certainty can be increased by tackling more stable areas and leaving others for later. However, other aspects of the business may be changing which could have a direct or indirect effect on the system. These need to be considered.

The brief overview above is intended to summarise the risk factors and categories. Detailed arguments about the rationale for each would take many more pages. The basis of the impact assessment is summarised in Tables 1.1 to 1.6. It is based on the literature research and modified to map onto the matrix, by consideration of the nature of each type of application development.

Table 1.1

RISK FACTOR CATEGORY A: PEOPLE ISSUES

<u>FACTORS</u>	<u>POTENTIAL IMPACT</u>		SUPPORT
	STRATEGIC	KEY OPERATIONAL	
i) Senior Management Involvement	VH	M	L
ii) Business Understanding in the project team	VH	M	L
iii) Technical skills in the project team	M	H	M
iv) Co-ordination between Technical and Business people	H	M	M
v) Level of experience of project team	M	H	M

Table 1.2

RISK FACTOR CATEGORY B: PROJECT SIZE

<u>FACTORS</u>	<u>POTENTIAL IMPACT</u>		SUPPORT
	STRATEGIC	KEY OPERATIONAL	
i) Number of man years effort involved	H	H	VH
ii) Number of different people involved	H	H	VH
iii) Elapsed time for project	VH	M	H

Table 1.3

RISK FACTOR CATEGORY C: CONTROL OF THE PROJECT

<u>FACTORS</u>	<u>POTENTIAL IMPACT</u>		SUPPORT
	STRATEGIC	KEY OPERATIONAL	
i) Project Control Systems	M	H	M
ii) Testing Procedures	M	H	M
iii) Implementation Control	M	VH	H
iv) Conformance to Development Methodology	L	H	L
v) Technical Standards	M	H	H
vi) Budgetary Control	L	M	H
vii) Constraints on Development team regarding innovation	H	L	L

Table 1.4

RISK FACTOR CATEGORY D: COMPLEXITY

<u>FACTORS</u>	<u>POTENTIAL IMPACT</u>		SUPPORT
	<u>STRATEGIC</u>	<u>KEY OPERATIONAL</u>	
i) Business Complexity	M	L	H
ii) Cross Functional Business Issues	M	H	H
iii) Technical Complexity	H	M	H
iv) Number of System Interfaces	M	H	H

Table 1.5

RISK FACTOR CATEGORY E: NOVELTY

<u>FACTORS</u>	<u>POTENTIAL IMPACT</u>		SUPPORT
	<u>STRATEGIC</u>	<u>KEY OPERATIONAL</u>	
i) Novel Technology	H	VH	H
ii) Novel Business practices	L	H	H
iii) New User Organisation	M	H	VH

Table 1.6

RISK FACTOR CATEGORY E: STABILITY OF REQUIREMENTS

<u>FACTORS</u>	<u>POTENTIAL IMPACT</u>		SUPPORT
	<u>STRATEGIC</u>	<u>KEY OPERATIONAL</u>	
i) Clear definition of system boundaries	M	H	VH
ii) Rate of change of business environment (related to scope of system)	L	H	H

ESTABLISHING THE APPLICABILITY AND EFFECT OF EACH RISK ON A PARTICULAR PROJECT

A questionnaire has been developed to help the project manager consider the risks that apply to the development. By giving each answer a score from 0 to 5 the potential impact of that risk on the project success can be assessed. Obviously the questions have to be answered as honestly as possible and ideally a consensus answer should be arrived at by considering the user and IT viewpoints. The questions and hence scores may need to be modified for a particular organisation's approach to IS/IT developments, for instance if outside suppliers are normally used. This version assumes that the IT department reports through a different management line from the majority of its user/client departments, as is often the case, especially where central IT supports a number of businesses or functions.

In order to test the validity of the questions etc in a particular organisation and thence adjust or adapt them as necessary, it would probably be worth trying the process out on a few recently completed projects. In particular Questions 5, 6, 7, 8 & 19 will probably need adjustment based on the scale of IS/IT activity in an organisation.

In the discussion below it is assumed that the essence of the questions is generally applicable in most companies.

Table 2 is the Questionnaire proposed and Tables 3.1 to 3.3 show the scores attributable to each of the answers, in the different contexts of Strategic, Key Operational and Support systems. If any question is clearly not relevant a score of 0 should be given. The questions are structured to align with the risk factors listed in Tables 1.1 - 1.6.

Table 2

MANAGEMENT OF RISK IN IS/IT PROJECTS

- QUESTIONNAIRE

A) PEOPLE ISSUES

1. What is the position of the senior business managers of the organisation with respect to this development?
 - a) They are not aware of the development
 - b) They are aware of the development but not very interested
 - c) They are supportive of the development but not involved
 - d) They are supportive and involved in the project
2. How good is the business knowledge of the area to be covered in the project within the project team?
 - a) Excellent
 - b) Good
 - c) Adequate
 - d) Poor
 - e) None
3. What level of relevant technical skills exist in the project team?
 - a) Excellent
 - b) Good
 - c) Adequate
 - d) Poor
 - e) None
4. What is the relationship between the IT and business staff on the project?
 - a) No separate groups exist - an integrated business/IT team is in place
 - b) Separate groups exist but they work very closely together
 - c) Separate groups exist and they work together as necessary
 - d) Separate groups exist and there is occasionally conflict between the two
5. What is the average experience level of people involved in the project?
 - a) Less than 1 year in the organisation
 - b) Between 1 year and 3 years in the organisation
 - c) Between 3 years and 5 years in the organisation
 - d) More than 5 years in the organisation

B) PROJECT SIZE

6. What proportion of the IT development staff of the organisation will be involved in the project?
 - a) Less than 1%
 - b) Between 1% and 5%
 - c) Between 5% and 10%
 - d) More than 10%
7. How many people are likely to be involved in the project?
 - a) 3 or less
 - b) Between 4 and 6 people
 - c) Between 7 and 15 people
 - d) More than 15 people
8. How long is the project likely to last?
 - a) Less than 3 months
 - b) Between 3 month and 6 months
 - c) Between 6 months and 1 year
 - d) More than 1 year

C) CONTROL SYSTEMS

9. What level of management control will be exercised over the project?
 - a) Formal project planning and control procedures with regular management review
 - b) Formal control procedures with some flexibility allowed to individuals
 - c) Informal control procedures with some management reporting as necessary during the project
 - d) Control delegated entirely to the project team
10. What level of testing will be carried out prior to implementation of the development?
 - a) Some testing of key elements as developers see fit
 - b) 'Reasonable' user acceptance testing
 - c) Exhaustive technical and user acceptance testing including parallel runs and formal user acceptance of test output.
11. Will formal review and pre-implementation sign-off procedures be used on the project?
 - a) No sign-off procedure will be used
 - b) Informal review and sign-off routines will be developed by the project team
 - c) A formal review and sign-off routine will be developed and used by the project team
 - d) A formal organisation wide sign-off procedure will be used
12. Has a formal development methodology such as structured systems analysis or Information Engineering been considered for this project?
 - a) Not considered
 - b) Considered but rejected
 - c) Considered and will be partially used
 - d) Considered and will be used for the entire project

13. Will rigid programming and development standards be used on this project?
- a) No standards will be used
 - b) Choice of standards will be left to individuals
 - c) Informal standards will be developed and used for this project
 - d) Formal and rigorous standards will be applied
14. Has a development budget been set for this project?
- a) Budget set and will be rigorously enforced
 - b) Budget set but some flexibility will be allowed
 - c) Budget set for guidance only
 - d) No budget set
15. Does the development team have the freedom to define new business practices?
- a) The team has authority to implement new business practices
 - b) The team can suggest new business practices but need authority to implement
 - c) The team has no authority to define new business practices

D) COMPLEXITY

16. How complex do you believe the business area to be covered by this development to be?
- a) Highly complex
 - b) Complex
 - c) Moderate
 - d) Simple
17. Does this project involve links and co-ordination between other business areas either inside or outside the organisation?
- a) Several complex links
 - b) One complex link
 - c) One or more trivial links
 - d) No links
18. How complex do you believe the technology employed on this project to be?
- a) Highly complex
 - b) Complex
 - c) Moderate
 - d) Simple
19. How many interfaces to current computer systems is this development likely to have?
- a) None
 - b) Between 1 and 4
 - c) 5 or more

E) NOVELTY

- 20. Is the technology being employed on this project new to the organisation?
 - a) The technology is entirely new
 - b) The technology has been used before but never in this way
 - c) The technology has been used in a very similar way before
- 21. Will any practices change as a result of the implementation of this project?
 - a) Major changes to business practice
 - b) Minor changes to business practice
 - c) No change to business practice
- 22. Will any re-organisation of people and job functions be necessary as a result of the implementation of this project?
 - a) Major re-organisation
 - b) Minor re-organisation
 - c) No re-organisation

F) STABILITY OF REQUIREMENTS

- 23. How well defined is the precise business area to be covered by this project?
 - a) Well defined and precisely understood by everyone concerned
 - b) Defined in outline, to be 'fleshed out' as the project proceeds
 - c) Poorly defined and likely to change
- 24. How much change is the business area covered by this project likely to experience?
 - a) Subject to constant and rapid change
 - b) Subject to periodic but predictable change
 - c) Subject to little change

Table 3.1 RISK ASSESSMENT: STRATEGIC APPLICATION

A People		B Size		C Control		D Complexity		E Novelty		F Stability	
Q1	a) 5* b) c) d)	Q6	a) 0 b) 1 c) 2 d) 4	Q9	a) 1 b) 0 c) 1 d) 3	Q16	a) 3 b) 1 c) 0 d) 0	Q20	a) 4 b) 2 c) 0	Q23	a) 0 b) 0 c) 3
Q2	a) 0 b) 1 c) 2 d) 3 e) 5*	Q7	a) 0 b) 1 c) 2 d) 4	Q10	a) 3 b) 1 c) 0	Q17	a) 3 b) 1 c) 1 d) 0	Q21	a) 2 b) 0 c) 1	Q24	a) 2 b) 0 c) 0
Q3	a) 0 b) 0 c) 1 d) 2 e) 3	Q8	a) 0 b) 1 c) 3 d) 5*	Q11	a) 3 b) 2 c) 0 d) 1	Q18	a) 4 b) 2 c) 0 d) 0	Q22	a) 3 b) 1 c) 0	Subtotal	(Max 5)
Q4	a) 0 b) 1 c) 3 d) 4	Subtotal	(Max 13)	Q12	a) 2 b) 1 c) 0 d) 0	Q19	a) 0 b) 1 c) 3	Subtotal	(Max 9)	Summary	Subtotals
Q5	a) 3 b) 1 c) 0 d) 0			Q13	a) 3 b) 2 c) 0 d) 0	Subtotal	(Max 13)			A	
Subtotal	(Max 20)			Q14	a) 4 b) 2 c) 0 d) 0					B	
				Q15	a) 0 b) 2 c) 4					C	
				Subtotal	(Max 22)					D	
										E	
										F	
										TOTAL	
										(OUT OF MAX. 82)	

Table 3.2

RISK ASSESSMENT: KEY OPERATIONAL APPLICATION

A People			B Size			C Control			D Complexity			E Novelty			F Stability		
Q1	a) b) c) d)	3 2 1 0	Q6	a) b) c) d)	0 1 2 4	Q9	a) b) c) d)	0 2 3 4	Q16	a) b) c) d)	2 1 0 0	Q20	a) b) c)	5* 3 0	Q23	a) b) c)	0 3 4
Q2	a) b) c) d) e)	0 0 1 2 3	Q7	a) b) c) d)	0 1 2 4	Q10	a) b) c)	4 3 0	Q17	a) b) c) d)	4 2 1 0	Q21	a) b) c)	4 2 0	Q24	a) b) c)	4 1 0
Q3	a) b) c) d) e)	0 1 2 3 4	Q8	a) b) c) d)	0 0 1 3	Q11	a) b) c) d)	5* 4 2 0	Q18	a) b) c) d)	3 1 0 0	Q22	a) b) c)	4 2 0	Subtotal _____ (Max 8)		
Q4	a) b) c) d)	0 0 1 3	Subtotal _____ (Max 11)			Q12	a) b) c) d)	4 3 2 0	Q19	a) b) c)	0 3 4	Subtotal _____ (Max 13)			Summary Subtotals		
Q5	a) b) c) d)	4 2 1 0				Q13	a) b) c) d)	4 3 2 0	Subtotal _____ (Max 13)						A		
						Q14	a) b) c) d)	2 0 2 3							B		
						Q15	a) b) c)	2 0 1							C		
Subtotal _____ (Max 17)						Subtotal _____ (Max 26)									D		
															E		
															F		
															TOTAL _____		
															(OUT OF MAX. 88)		

Table 3.3

RISK ASSESSMENT: SUPPORT APPLICATION

A People			B Size			C Control			D Complexity			E Novelty			F Stability		
Q1	a)	1	Q6	a)	0	Q9	a)	1	Q16	a)	4	Q20	a)	4	Q23	a)	0
	b)	0		b)	2		b)	0		b)	3		b)	3		b)	4
	c)	0		c)	3		c)	1		c)	1		c)	0		c)	5*
	d)	2		d)	5*		d)	3		d)	0						
Q2	a)	0	Q7	a)	0	Q10	a)	3	Q17	a)	4	Q21	a)	4	Q24	a)	4
	b)	0		b)	1		b)	1		b)	2		b)	2		b)	2
	c)	0		c)	3		c)	0		c)	1		c)	0		c)	0
	d)	1		d)	5*					d)	0						
	e)	2				Q11	a)	4	Q18	a)	4	Q22	a)	5*	Subtotal		
Q3	a)	0	Q8	a)	0		b)	3		b)	3		b)	3	(Max 9)		
	b)	0		b)	1		c)	0		c)	1		c)	0	Summary		
	c)	1		c)	2		d)	0		d)	0				Subtotals		
	d)	2		d)	4	Q12	a)	2	Q19	a)	0	Subtotal					
	e)	3					b)	0		b)	2	(Max 13)					
Q4	a)	0	Subtotal				c)	0		c)	4				A		
	b)	0	(Max 14)			Q13	a)	4	Subtotal						B		
	c)	1					b)	3	(Max 16)						C		
	d)	3					c)	2							D		
Q5	a)	2					d)	0							E		
	b)	1				Q14	a)	0							F		
	c)	0					b)	2									
	d)	0					c)	3									
Subtotal							d)	4									
(Max 12)						Q15	a)	1							TOTAL		
							b)	0									
							c)	1							(OUT OF MAX. 85)		
						Subtotal											
						(Max 21)											

INTERPRETATION OF THE RESULTS

The results need to be considered at three levels.

1. Specific Risk Level

If the answer to any question is 5, implying a Very High (VH) impact the project should not be allowed to proceed further until specific action has been taken to address the risk. That action should effectively reduce the 'score' to 3 or less.

Where the score is 4 specific action to address the risk must be agreed and responsibility clearly allocated. The action may be taken immediately or as the project proceeds, but when it is due to be completed should be included as an overt project activity. The project should not proceed beyond the "action date" without further review of the risk. If at all possible the approach to the project should be changed immediately to reduce the risk.

Where the score is 3 it is still likely to cause serious problems later if not dealt with at an appropriate time. Therefore it is sensible to include time, cost or resource contingencies in the project plan to resolve problems. Alternatively the approach to the project should be changed immediately to reduce the risk.

In general some action should be taken to remove 3s, 4s and 5s from the project score and the earlier in the project life the action is taken the greater the risk prevention.

Any questions with a score of 1 or 2, imply relatively low risk - but it is always worth considering if any action can be taken to eliminate the risk altogether.

2. At Risk Category Level

This assessment considers the inter-related nature of some of the risks by summing the scores within each of the six risk categories.

Three levels of impact are considered.

1. **UNACCEPTABLE RISK**, implying that because of the cumulative risks in that category the project will almost certainly fail.
2. **MANAGEABLE RISK** which recognises that some risk factors exist which may cause failure, but provided action is agreed and taken to address the risks during the project it should succeed.
3. **LOW RISK** implying that the project should succeed if the risk assessment has been carried out objectively.

The range of scores which determine the level of impact for each risk category vary slightly depending on whether it is a Strategic, Key Operational or Support application. The ranges for each are shown in Table 4.1, where the variations can be seen.

The implications of the scores at risk category level are as follows, in terms of the actions that need to be taken.

If for the category the score implies Unacceptable Risk, then each risk factor must be reviewed again to identify how changes can be made or action taken to reduce sufficient of the factors to reduce the overall score to Manageable Risk or less. The project should not proceed further until these actions are defined, agreed and preferably carried out, but at least a clear date by which it will be done must be determined.

For a category score of Manageable Risk, again each factor which noticeably contributes to that risk (score of 3 or more) must be addressed as described earlier. Low Risk as a score implies few, if any, of the specific risk factors apply - but any that do (score of 3 or more) should be addressed as above.

3. At Overall Project Risk Level

The "bottom up" process for addressing the risks should, when completed, mean that the project overall should not have a total score that implies Unacceptable Risk. The risks have to be dealt with at a lower level but in terms of overall management control an appreciation of the total project risk is important, in particular when comparing risks across projects. In the earlier chapter on Evaluating and Priority Setting it was explained why projects should be prioritised based on the benefits to be obtained from the best use of available resources. However, that priority may need to be modified by the probability of achieving success. Obviously those that, based on the risk assessment, are clearly Low Risk are most likely to succeed whilst those deemed to have Manageable Risks may still fail. Hence the project plan needs to be balanced to include some low risk investments along with more ambitious projects. The worst situation is that no projects succeed.

The scoring system can be used more sensitively at this level for project comparison. Those projects scoring at the lower end of the Manageable Risk range do have less chance of failure than those close to the Unacceptable Risk boundary. Likewise very Low Risk scores are better than scores close to the Manageable Risk figure. So projects can be ranked in more detail within the broader categories at the overall score level.

(Note - the totals in Table 4.1 may appear odd. In each range the lower figure is based on the higher figure in the previous column - given a risk base point 1 above the top of the previous scale, eg. for Strategic Systems Manageable Risk starts at 29 - 1 greater than the maximum figure for Low Risk. It is not the sum of each of the lower scores by risk category. Similarly throughout the tables. It is logical and avoids gaps in the range of total scores!)

Table 4.1

ASSESSMENT OF SCORES

STRATEGIC SYSTEMS

	<u>Low Risk</u>	<u>Manageable Risk</u>	<u>Unacceptable Risk</u>
A PEOPLE ISSUES	7 or less	8-11	12 or more
B PROJECT SIZE	3 or less	4-7	8 or more
C PROJECT CONTROL	8 or less	9-17	18 or more
D COMPLEXITY	4 or less	5-9	10 or more
E NOVELTY	4 or less	5-6	7 or more
F STABILITY OF REQUIREMENTS	2 or less	3	5
Totals	28 or less	29-53	54 or more
	MAX 82		

KEY OPERATIONAL SYSTEMS

	<u>Low Risk</u>	<u>Manageable Risk</u>	<u>Unacceptable Risk</u>
A PEOPLE ISSUES	6 or less	7-11	12 or more
B PROJECT SIZE	3 or less	4-6	7 or more
C PROJECT CONTROL	9 or less	10-15	16 or more
D COMPLEXITY	4 or less	5-8	8 or more
E NOVELTY	4 or less	5-6	7 or more
F STABILITY OF REQUIREMENTS	1 or less	2-3	4 or more
Totals	27 or less	28-49	50 or more
	MAX 88		

SUPPORT SYSTEMS

	<u>Low Risk</u>	<u>Manageable Risk</u>	<u>Unacceptable Risk</u>
A PEOPLE ISSUES	4 or less	5-8	9 or more
B PROJECT SIZE	4 or less	5-7	8 or more
C PROJECT CONTROL	7 or less	8-14	15 or more
D COMPLEXITY	5 or less	6-9	10 or more
E NOVELTY	3 or less	4-7	8 or more
F STABILITY OF REQUIREMENTS	2 or less	3-4	5 or more
Totals	25 or less	26-49	50 or more
	MAX 95		

SUMMARY AND CONCLUSIONS

IS/IT projects are notoriously risky - some fail completely, many others do not deliver the expected benefits or exceed their cost or time targets. The value to the business of the IS/IT applications varies and the portfolio approach helps management understand the different contributions of the investments and hence how they should be appraised and managed in different ways. Equally the risks associated with the different investments vary, and it makes sense to assess the risks as they affect the achievement of the required contribution.

Risks need to be assessed at two levels - for each individual project, to identify factors which may lead to failure and hence address them - and at a management level to compare the risks of different investments in a consistent way in order to minimise the risk of failure across the whole portfolio.

The approach developed here satisfies these two requirements in a structured way, based on research of the factors which most often lead to project failure. It allows those risks to be assessed in the context of how they affect the key success factors of each segment of the portfolio, but also enables comparisons across the segments. Whilst this approach is clearly not the only way this can be achieved, it provides a basic structure and process which can be adapted by organisations to fit their particular IS/IT circumstances. There is no substitute for specific knowledge of why projects do not always succeed in any particular organisation. Whilst this approach is generalised, it will almost certainly lead to greater understanding of the risks involved and enable them to be addressed in a consistent way in all types of project and by all the parties involved.

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