



UNIVERSITY  
OF WOLLONGONG  
AUSTRALIA

## **PROJECT RISK MANAGEMENT**

Group ID: 01

**Date: 08/09/2020**

Document History			
Version	Date	Editor	Comment
0.1	08/09/2020	Yusai	Create the document
0.5	02/10/2020	Kyle	Finish the first edition, waiting the review
1.0	05/10/2020	Kyle	Finish the correct

Contents

Risk Identification .....3

Risk analysis and prioritization .....4

Risk Planning.....5

Risk Monitoring .....10

# Risk Identification

## Actors

- Personnel shortfalls  
some team members may not have the experience or skills for some of the tasks to complete in a timely manner possible impacts include
  - tasks become delayed
  - Project becomes over budget and over time
- Development technically too difficult  
Development team taking on tasks that they might be outside of their skill set and not be able to complete on time because of a lack of experience or technical knowledge possible impacts include
  - Project tasks take longer
  - Project takes longer
  - Project becomes over budget and over time
- Staff sickness  
Team members having to take time off work in account of falling sick  
Or potentially multiple team members falling sick at the same time possible impacts include
  - Delays in project tasks
  - Project becomes over budget and over time

## Structure

- Unrealistic time and cost estimates  
Time and cost estimates by the project team for project and tasks are too optimistic and potentially not achievable possible impacts include
  - Project becomes over budget and over time
- Late changes to requirements  
Any changes by the client to the requirements in the late stages of the project possible impacts include
  - Project becomes over budget and over time
- Theft of data  
Loss of project data to theft due to lack of system security possible impacts include
  - Loss of work
  - Project becomes over budget and over time
- Natural disaster  
In the event of a natural disaster such as earthquake or tsunami at the geographical location of project possible impacts include
  - Project becomes over budget and over time
  - Loss of hardware and data

## Tasks

- Developing the wrong user interface  
Where the development team creates a user interface that does not match the specification because they do not understand the requirements regarding the user interface possible impacts include  
→ Project becomes over budget and over time
- Developing the wrong software functions  
The development team do not have a clear understanding of the requirements for software functions possible impacts include  
→ Project becomes over budget and over time
- Gold plating  
Development team adding in functionality to the system that stakeholders did not ask for or need possible impacts include  
→ Project becomes over budget and over time

## Technology

- Real time performance problems  
Performance problems with the use of the system, slow to respond, hangs at tasks or crashes possible impacts include  
→ Project task take longer  
→ Project becomes over budget and over time

## Risk analysis and prioritization

- R1. Real time performance problems
  - $(450,000) * (0.60) = 270,500$
- R2. Late changes to requirements
  - $(390,000) * (0.60) = 234,000$
- R3. Gold plating
  - $(380,000) * (0.60) = 228,000$
- R4. Development technically too difficult
  - $(430,000) * (0.40) = 172,000$
- R5. Developing the wrong software functions
  - $(425,000) * (0.40) = 170,000$
- R6. Developing the wrong user interface
  - $(420,000) * (0.40) = 168,000$
- R7. Unrealistic time and cost estimates
  - $(400,000) * (0.40) = 160,000$
- R8. Personnel shortfalls
  - $(385,000) * (0.35) = 134,750$
- R9. Staff sickness
  - $(385,000) * (0.25) = 96,520$

R10. Theft of data

- $(480,000) * (0.20) = 96,000$

R11. Natural disaster

- $(500,000) * (0.05) = 25,000$

Budget = 375,000

impact	High	R11,			
	Significant		R10,		R1,
	Moderate			R4, R5, R6,	
	Low		R9,	R7, R8,	R2, R3,
		Low	Moderate	Significant	High
Probability					

<i>Probability level</i>	<i>Range</i>
High	Greater than 50% chance of happening
Significant	30-50% chance of happening
Moderate	10-29% chance of happening
Low	Less than 10% chance of happening

<i>Impact level</i>	<i>Range</i>
High	Greater than 30% above budgeted expenditure
Significant	20 to 29% above budgeted expenditure
Moderate	10 to 19% above budgeted expenditure
Low	Within 10% of budgeted expenditure.

## Risk Planning

Risk Acceptance

Risk Avoidance

Risk reduction

R2 Late changes to requirements

Some risk reduction measures include Implement change control, agree and sign off on agreed requirements early

Risk exposure before: this risk has a 60% chance of occurring at a potential cost of \$390000

Risk exposure after: implementation of the measures to solidify the user requirements would reduce the chance to 20% at an additional cost of \$2500

$$RRL = (((60*390000)/100)-((20*390000)/100))/2500 = 62.4$$

RRL > 1 therefore worth implementing

### R3 Gold plating

Some risk reduction measures include Requirements scrubbing, prototyping, design to cost, stockholder approval

Risk exposure before: 60% chance of gold plating with potential cost of \$380,000

Risk exposure after: with additional prototyping and time spent with stockholders to establish requirements at a cost of \$1000 reduces the chance to 20%

$$RRL = (((60*390000)/100)-((20*390000)/100))/1000 = 156$$

RRL > 1 therefore worth implementing

### R5 Developing the wrong software functions

Some risk reduction measures include Improved software evaluation; formal specification methods; user surveys; prototyping; early user manuals

Risk exposure before: 40% chance of the wrong software functions being developed with a potential cost of \$425,000

Risk exposure after: with additional time spent to document and establish specific requirements for functions from clients would reduce the chance of occurring to 20% at a cost of \$1000

$$RRL = (((40*425000)/100)-((20*425000)/100))/1000 = 85$$

RRL > 1 therefore worth implementing

### R6 Developing the wrong user interface

Some risk reduction measures include Prototyping, user involvement

Risk exposure before: there is a 40% chance of developing the wrong user interface with a potential cost of \$420000

Risk exposure after: with additional time spent prototyping the project and having users involved in the project would cost \$1500 and reduce the chance of this risk to 15%

$$RRL = (((40 \times 420000)/100) - ((15 \times 420000)/100))/1500 = 70$$

RRL > 1 therefore worth implementing

#### R7 Unrealistic time and cost estimates

Some risk reduction measures include the uses of multiple techniques for estimations; design to cost; incremental development; analysis of past projects.

Risk exposure before: there is a 40% chance of this risk occurring with a potential cost of \$400,000

Risk exposure after: with additional time spent on analysis of past projects and the use of multiple estimating techniques and the use of incremental development costing \$2000 and reducing the chance to 30%

$$RRL = (((40 \times 400000)/100) - ((30 \times 400000)/100))/2000 = 20$$

RRL > 1 therefore worth implementing

#### R8 Personnel shortfalls

Some risk reduction measures include job matching, asses team members and utilize their skills; teambuilding and training; early scheduling of key personnel.

Risk exposure before: with a 35% chance of this risk occurring with a potential cost of \$385,000

Risk exposure after: with additional time spent on selecting and hiring the right team member for the right tasks based on their strengths and skill sets, training team members that may be lacking skills, with a potential cost of \$10,000 would reduce the chance of this risk to 10%

$$RRL = (((35 \times 385000)/100) - ((10 \times 385000)/100))/10000 = 9.6$$

RRL > 1 therefore worth implementing

#### R10 Theft of data

Some risk reduction measures include Implement back ups off site and increase security protocols in servers and physical security on site.

Risk exposure before: this risk has a 20% chance of occurring with a potential cost of \$480000



Risk exposure after: implementing off site backups and upgraded security would cost \$20000 and reduce the risk to 5%

$$RRL = (((20*480000)/100)-((5*480000)/100))/20000 = 3.6$$

$RRL > 1$  therefore worth implementing

## Risk transfer

### R11 Natural disaster

Some risk reduction measures include implementation of buck ups off site and across multiple geographical locations to third party companies

Risk exposure before: this risk has a 5% chance of occurring with a potential cost of \$500000

Risk exposure after: implementing off site backups to third party companies across multiple geographic locations would reduce the risk of losing data to this risk to 1% at a cost of 40000

$$RRL = (((5*500000)/100)-((1*500000)/100))/40000 = 0.5$$

$RRL < 1$  therefore not worth implementing

## Risk mitigation

### R1 Real time performance problems

Some risk reduction measures include Testing, prototyping and get end user input

Risk exposure before: this risk has a chance 60% of occurring with a potential cost of \$450000

Risk exposure after: with time taken to perform proper testing and communication with users to catch these issues early in the development would reduce the potential impact to \$395000 at an additional cost of \$5000

$$RRL = (((60*450000)/100)-((40*450000)/100))/5000 = 6.6$$

$RRL > 1$  therefore worth implementing

### R4 Development technically to difficult

Some risk reduction measures include Technical analysis, prototyping, training

Risk exposure before: this risk has a 40% chance of occurring with a potential cost of \$430000

Risk exposure after: with some additional time taken to perform technical analysis of the project, prototyping and additional training for team members would reduce the impact cost to \$385000 with an additional cost of \$8500

$$RRL = (((40*430000)/100)-((40*385000)/100))/8500 = 2.1$$

RRL > 1 therefore worth implementing

#### R9 Staff sickness

Some risk reduction measures include Implementation of critical chain buffer in scheduling

Risk exposure before: this risk has a 25% chance of occurring with a potential cost of \$385000

Risk exposure after: with some additional time spent on scheduling to include critical chain buffer to account for staff sickness would cost an additional \$600 and would reduce the potential cost impact to \$379000

$$RRL = (((25*385000)/100)-((25*379000)/100))/600 = 2.5$$

RRL > 1 therefore worth implementing

# Risk Monitoring

## Risk Register

Risk record					
Risk ID	R1	Risk title	Real time performance problems		
Owner	Kyle murphy	Date raised	2/10/20	status	
Risk description Performance problems with the use of the system, slow to respond, hangs at tasks or crashes					
Impact description The impact of this could cause project delays as development team will need to search the system to find why, and fix the issue, this could be hardware or software. Costing money and time to find and fix.					
Recommended risk mitigation Test regularly and in depth, run prototypes and get users input often, To catch and performance issues early.					
Probability/impact values					
	probability	Impact			
		Cost	Duration	quality	
Pre-mitigation	60%	390,000			
Post-mitigation	20%	390,000			
Incident/action history					
Date	Incident/action	Actor	Outcome/comment		

Risk record				
Risk ID	R2	Risk title	Late changes to requirements	
Owner	Kyle murphy	Date raised	2/10/20	status
Risk description Any changes by the client to the requirements in the late stages of the project				
Impact description This could cause the project to be delayed with the add requirements And cost more to implement.				
Recommended risk mitigation Implement change control and agree and sign off on all requirements early in the project				
Probability/impact values				
	probability	Impact		
		Cost	Duration	quality
Pre-mitigation	60%	390,000		
Post-mitigation	20%	390,000		
Incident/action history				
Date	Incident/action	Actor	Outcome/comment	

Risk record				
Risk ID	R3	Risk title	Gold plating	
Owner	Kyle murphy	Date raised	2/10/20	status
Risk description Development team adding in functionality to the system that stakeholders did not ask for or need				
Impact description The impact is that the development team waist time and effort on this unwanted functionality.				
Recommended risk mitigation Make sure that all team members are aware of the requirements asked for by the client and keep track of what requirements check list				
Probability/impact values				
	probability	Impact		
		Cost	Duration	quality
Pre-mitigation	60%	380,000		
Post-mitigation	20%	380,000		
Incident/action history				
Date	Incident/action	Actor	Outcome/comment	

Risk record					
Risk ID	R4	Risk title	Development technically to difficult		
Owner	Kyle murphy	Date raised	2/10/20	status	
Risk description Development team taking on tasks that they might be outside of their skill set and not be able to complete on time because of a lack of experience or technical knowledge					
Impact description This can cause tasks to be delayed and potentially the entire project. Costing more and taking longer					
Recommended risk mitigation Perform technical analysis of the project, prototype the project.					
Probability/impact values					
	probability	Impact			
		Cost	Duration	quality	
Pre-mitigation	40%	480,000			
Post-mitigation	40%	385,000			
Incident/action history					
Date	Incident/action	Actor	Outcome/comment		

Risk record					
Risk ID	R5	Risk title	Developing the wrong software functions		
Owner	Kyle murphy	Date raised	2/10/20	status	
Risk description The development team do not have a clear understanding of the requirements for software functions					
Impact description The impact is that the client could end up with system that is not what they had indented to be made					
Recommended risk mitigation formal specification methods of the requirements of the functions, prototyping and early user manuals to help find these issues early in the development					
Probability/impact values					
	probability	Impact			
		Cost	Duration	quality	
Pre-mitigation	40%	425,000			
Post-mitigation	20%	425,000			
Incident/action history					
Date	Incident/action	Actor	Outcome/comment		

Risk record					
Risk ID	R6	Risk title	Developing the wrong user interface		
Owner	Kyle murphy	Date raised	2/10/20	status	
Risk description Where the development team creates a user interface that does not match the specification because they do not understand the requirements regarding the user interface					
Impact description A user interface could be created that the client did not ask for. This can cause the team to completely redo the interface costing time and money, can cause project delays and spending over budget to complete					
Recommended risk mitigation formal specification methods of the requirements of the user interface, prototyping and client approval of designs					
Probability/impact values					
	probability	Impact			
		Cost	Duration	quality	
Pre-mitigation	40%	420,000			
Post-mitigation	15%	420,000			
Incident/action history					
Date	Incident/action	Actor	Outcome/comment		



Risk record					
Risk ID	R7	Risk title	Unrealistic time and cost estimates		
Owner	Kyle murphy	Date raised	2/10/20	status	
Risk description Time and cost estimates by the project team for project and tasks are too optimistic and potentially not achievable					
Impact description The project could take longer and cost more than first estimated.					
Recommended risk mitigation With the use of multiple estimations techniques to cross reference and analysis of past project that are similar as a base line, incremental development techniques and design to cost.					
Probability/impact values					
	probability	Impact			
		Cost	Duration	quality	
Pre-mitigation	40%	400,000			
Post-mitigation	30%	400,000			
Incident/action history					
Date	Incident/action	Actor	Outcome/comment		

Risk record				
Risk ID	R8	Risk title	Personnel shortfalls	
Owner	Kyle murphy	Date raised	2/10/20	status
Risk description some team members may not have the experience or skills for some of the tasks				
Impact description causing delays in task completion and potentially the entire project.				
Recommended risk mitigation Assess all team members and utilize their strengths for tasks, schedule key personal to tasks early, and training of team members that may need it.				
Probability/impact values				
	probability	Impact		
		Cost	Duration	quality
Pre-mitigation	35%	385,000		
Post-mitigation	10%	385,000		
Incident/action history				
Date	Incident/action	Actor	Outcome/comment	

Risk record					
Risk ID	R9	Risk title	Staff sickness		
Owner	Kyle murphy	Date raised	2/10/20	status	
Risk description Team members having to take time off work in account of falling sick Or potentially multiple team members falling sick at the same time					
Impact description This can cause task delays in the project potentially causing the project to run over time					
Recommended risk mitigation Schedule early and implement critical chain buffer to allow for any time delays in critical path					
Probability/impact values					
	probability	Impact			
		Cost	Duration	quality	
Pre-mitigation	25%	385,000			
Post-mitigation	25%	379,000			
Incident/action history					
Date	Incident/action	Actor	Outcome/comment		

Risk record				
Risk ID	R10	Risk title	Theft of data	
Owner	Kyle murphy	Date raised	2/10/20	status
Risk description Loss of project data to theft due to lack of system security				
Impact description With the loss of project data can cost the project a lot of money and time to recover the lost data causing delays in the project and costing the company money and intellectual property				
Recommended risk mitigation Implement tighter system security protocols in the server and use off site back ups of project data and use physical security measures for on site security				
Probability/impact values				
	probability	Impact		
		Cost	Duration	quality
Pre-mitigation	20%	480,000		
Post-mitigation	5%	480,000		
Incident/action history				
Date	Incident/action	Actor	Outcome/comment	

Risk record					
Risk ID	R11	Risk title	Natural disaster		
Owner	Kyle murphy	Date raised	2/10/20	status	
Risk description In the event of a natural disaster such as earthquake or tsunami at the geographical location of project					
Impact description This can cause massive loss of data and hardware and cost the company money to recover these and cost a lot of time to recover the lost data and hardware					
Recommended risk mitigation Implement off site backups across multiple sites					
Probability/impact values					
	probability	Impact			
		Cost	Duration	quality	
Pre-mitigation	5%	500,000			
Post-mitigation	1%	500,000			
Incident/action history					
Date	Incident/action	Actor	Outcome/comment		