





Knowledge
Lecture
 Risks and uncertainties
 Readings
 0502 Systems Engineering (SE) Chapter 7 An introduction to managing risk and uncertainty over the project life cycle
 0503 FUSE Chapter 10, Systems engineers are from Mars, software engineering are from Venus. How easy it is to miscommunicate and not realize it
 0504 SE Chapter 19, Jumping to the wrong conclusions: A case study on optimizing a postgraduate learning environment. How easy it is to go wrong
0505 Malotaux N., Controlling project risk by design, Aug 2018, https://www.malotaux.eu/doc.php?id=5
 0506 Barnard A., Reliability Engineering: Value, Waste, and Costs, INCOSE International Symposium, 2016, posted with permission
(https://www.researchgate.net/publication/308092972 Reliability Engineering Value Waste and Costs)
 Exercises
Creating Outstanding Systems Engineers 5-4



Deci	sion table f	or known outcome	es of actions*	
	Certain	Uncertain	Certain	
Probability of occurrence	0% (will never happen)	< 100% (might happen)	100% (will always happen)	
Desired	Need to conceptualize an alternative action	Opportunity that <u>should</u> be planned for, depending on probability of occurrence	Preferred outcome	
Don't care	Ignore	Opportunity that might be considered depending on probability of occurrence	Opportunity that could be taken advantage of	
Undesired	Can be ignored	Risk that <u>should</u> be mitigated depending on probability of occurrence and severity of consequences	Outcome that <u>must</u> be prevented or mitigated depending on severity of consequences	
* HT Table 8.1	Desired =	= opportunity; undesired =	risk	
	Cre	ating Outstanding Systems Engineers		5-1

#	Projects	Last time	Current Next		Next
			Expected	Actual	
1	Project Ho-hum	Green	Green	Green	Green
2	Project Oh oh	Yellow -PB	Green	Yellow -P	Red -P
3	Project Catching up	Yellow -P	Yellow -P	Yellow -P	Green
4	Project Replace manager	Red -BS	Red -BS	Red -BS	Red -BS
5	Project Very happy customer	Green	Blue	Blue	Blue
6	Project Completed	Green	Green	Green	N/A
7	Project Promote manager	Red -P	Yellow -P	Green	Green
8	Project Watch this person	Yellow –BS	Green	Green	Blue
9	Project No risk management	Green	Red -P	Red-P	Red -P
10	Project Took course in risk management	Green	Green	Green	Yellow -P
11	Project Manager doing risk management	Yellow -P	Yellow -P	Yellow-P	Yellow -P
* (Colours are labelled for educati	onal purpose	es (book is	in black ar	nd white)

Creating Outstanding Systems Thinkers

5-18

	Stages of risk-based analysis	
1.	Risk identification	
	1) Identify potential risks and their effects.	
	■ Failures (internal or externally induced)	
-	■ Product and process domains.	
2.	Risk analysis and classification	
	1) Assess the probability of occurrence and severity of each risk.	
3.	Risk elaboration	
	1) Elaborate risks to discover their potential root causes.	
4.	Risk reduction assessment	
	1) Define what must be done to eliminate or reduce each risk when the risk is identified.	
	Creating Outstanding Systems Engineers	5-21

		Exercise 5-12 knowledge reading	J
1. F	Prepare	e a brief on two main points in reading 0502 (< 5min)	
2. F	Presen	tation to contain	
	1.	Formulated problem per COPS problem formulation template	
	2.	A summary of the content of the reading (<1 minute)	
	3.	The compliance matrix	
	4.	This slide and the version number of the session	
	5.	A list of the two main points	
	6.	The two briefings	
	/.	Reflections and comments on reading (<2 minute)	
	8. 0	Comparisons of content with other readings and external knowledge	
	9. 10	Wily you think the reduing was assigned to the module	tc (~2
	10.	Lessons learned from module and source of learning e.g. redulings, exercise, experience, e	ac. (<2
З	Save	as a PowerPoint file as Exercise5-12-abcd pptx	
4	Post/	email presentation as when and where instructed	
5	Brief	on one main point	
5.	Dife		
		Creating Outstanding Systems Engineers	5-3

