


# Risk Management In Software Intensive Projects

---

## Lecture 2 –Risk Management Process

9/12/2005
© Gil Taran, 2005
1



# Agenda

---

- The Risk Management Process
- A Picture of success
  - Building one
  - Fixing one
- Risk Identification
  - Reasoning
  - Risk statements
  - Exercise
- Risk Analysis
  - Risk Attributes
  - Evolution
  - Classification
  - Prioritization

9/12/2005
© Gil Taran, 2005
2




# The Risk Management Process

---



<http://www.sei.cmu.edu/programs/sepm/risk/paradigm.html>


9/12/2005
© Gil Taran, 2005
3



# Picture of Success

---

9/12/2005
© Gil Taran, 2005
4




# Reasoning

---

- Why would you want to define one?
- Explicit or implicit
- Term?
- Characteristics?
- Measurements?
- Evaluation

9/12/2005
© Gil Taran, 2005
5




# Building One

---

- A **minimum** set of conditions, that must be met for your project members to consider the project a "success"
- Set for a specific time in the future
- Must be agreed to and measurable
- Building one:
  - Put yourself at the end of the project
  - List those things that would make you believe this was a success
  - Convert those into success statements (e.g We have done X or have shown that our product has met at least Y)
  - Stay within a one slide limit with 4-5 main ones

9/12/2005
© Gil Taran, 2005
6

## Some More To Think About




- A picture of success is not the teams goals
  - It is tied in to the risk management process
  - Goals may or may not be met
  - Goals may be prioritized
- In case you can't come up with one, try thinking of a picture of failure and just reverse it...BUT BE CAREFUL – It isn't exactly the same.

---

9/12/2005 © Gil Taran, 2005 7

## Picture of Success Exercise




*Examine the following statements.  
Good? Bad? In need of a quick fix?*

---

9/12/2005 © Gil Taran, 2005 8

## Picture Of Success




- We have communicated effectively with the client to come up with a common vision for the project -- finding a subset solution that both parties has agreed upon -- and have built a good foundation (i.e., architecture) for future development.
- We have built the target system as a team (and not just a set of individuals) because we learned to communicate effectively where we were clear on our roles and responsibilities and followed our defined software process.

---

9/12/2005 © Gil Taran, 2005 9

## Picture Of Success - Rephrased




- We deliver the "must have" requirements as agreed by us and the client by the end of the summer semester with the levels of quality specified by the client.
- The team shares the workload evenly and collaboratively throughout the project and resolves conflict through timely team communication.
- We have a designated process that is thoroughly documented and followed throughout the project.
- We periodically, at a minimum once a semester, review our actions and processes so as to identify actions that get implemented in the next phase.
- We are able to articulate core principles in the areas of people, process, and technology, and reflect on having used them in our Studio project so as to understand our successes and failures and react accordingly.

---

9/12/2005 © Gil Taran, 2005 10


## Risk Statements



---

9/12/2005 © Gil Taran, 2005 11

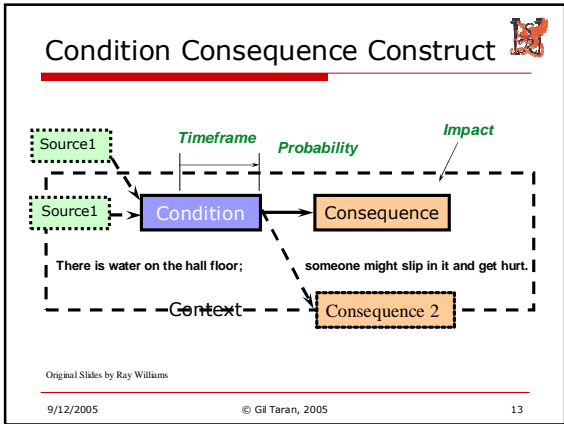
## Some Questions



- Why keep track of risks in a statement format?
- What would you want such a risk statement to contain?
- Why is the "IF...THEN" construct a little problematic?

---

9/12/2005 © Gil Taran, 2005 12



## Summary

- A standard format for risk statements provides
  - clarity
  - consistency
  - a basis for future risk processing
- A good statement is
  - Fact based
  - Actionable
  - Brief

9/12/2005 © Gil Taran, 2005 14

## Risk Statements Exercise

*Turn these into risk statements*

9/12/2005 © Gil Taran, 2005 15

## Statement #1

- Most of our team members work very late hours. They don't sleep well at night worrying about the work they did not complete and when they come to work next morning they are usually tired. Their families are also upset with them and so the overall morale in the team is down

9/12/2005 © Gil Taran, 2005 16

## Statement #2

- We don't know what to do about our client. He still has not seen our prototype and we need the feedback to continue working on the prototype

9/12/2005 © Gil Taran, 2005 17

## Risk Analysis

9/12/2005 © Gil Taran, 2005 18

## Risk Attributes

- Understand risk better by determining its impact, probability and time frame.
  - Generate values for:
    - Impact – The potential loss or the effect on the project if the risk occurs
    - Probability – The likelihood that this risk would occur
    - Time Frame – The period of time left until this risk should be addressed.

9/12/2005

© Gil Taran, 2005

19

## Various Levels of Evaluation

Level	Impact	Probability	Timeframe
Binary	Significant Insignificant	Likely Not likely	Significant Insignificant
3-Level	High Moderate Low	High Moderate Low	Near Mid Far
5-Level	Very High High Moderate Low Very Low	Very High High Moderate Low Very Low	Imminent Near Mid Far Very Far
N-Level	N- levels of impact	N- levels of probability	N- levels of timeframe

SEI – CRM Course 4-11

9/12/2005

© Gil Taran, 2005

20

## Risk Exposure

Stop Light Depiction

		Probability		
		Frequent	Probable	Improbable
Impact	Catastrophic	High	High	Moderate
	Critical	High	Moderate	Moderate
	Marginal	Moderate	Moderate	Low
	Negligible	Moderate	Low	Low

Air force Systems command/logistics command Pamphlet 800-45, 1988

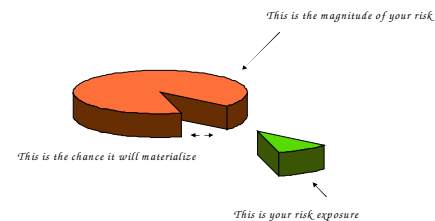
9/12/2005

© Gil Taran, 2005

21

## Risk Exposure

$$RE = \text{probability} \times \text{cost}$$



Waltzing with Bears, P. 66, 1985

9/12/2005

© Gil Taran, 2005

22

## Possible Definitions

- Impact
  - Catastrophic
    - Schedule slip >20%, Cost overrun >25%
  - Critical
    - Schedule slip 10-20%, Cost overrun 10-25%
  - Marginal
    - Schedule slip 5-10%, cost overrun 5-10%
- Probability
  - Very likely >70%
  - Likely ~50%
  - Not likely <30%
- Timeframe
  - Near term – Within a month or so
  - Mid term – within three months or so
  - Long term – within six months or so

9/12/2005

© Gil Taran, 2005

23

## Risk Classification

- Why classify risks?
  - To look at how risks relate to one another
  - To sort through large quantities of data
  - Eliminate any duplicates
  - Use resources more efficiently
- Two general options exist
  - Self organized structure
    - Example – Affinity Grouping
  - Predefined structure
    - Software development risk taxonomy

9/12/2005

© Gil Taran, 2005

24

## Affinity Grouping

Continues Risk Management

9/12/2005 © Gil Taran, 2005 25

## Risk Taxonomy Grouping

9/12/2005 © Gil Taran, 2005 26

## Risk Prioritization

- Figuring out which ones are most important
- Establishing which risks should be dealt with first
- Possible techniques
  - Pareto top N risks
  - Multivoting
  - Comparison risk ranking

9/12/2005 © Gil Taran, 2005 27

## Risk Prioritization

### Pareto Top N

- Calculate Risk Exposure
- Rank all the risks
- Decide on a cut-off mark
- This method is
  - Easy
  - Straightforward
  - Not resource intensive

9/12/2005 © Gil Taran, 2005 28

## Risk Prioritization

### Multi-voting

- When to use:
  - When you have a large number of risks
  - To limit the number of risks
- Advantages
  - Quick
  - Straightforward
  - Easy to use

9/12/2005 © Gil Taran, 2005 29

## Risk Prioritization

### Comparison Risk ranking (CRR)

Comparison question → Which Risk is more important for the Project?

Use for:

- Small number of risks
- No need for degree of preference
- Note that this is time consuming

9/12/2005 © Gil Taran, 2005 30

## Summary



- Start your project with defining a picture of success
- When creating risk statements, remember that good ones contain
  - Condition, consequence (at least one of each)
  - Are clear, concise, fact based and actionable
- Don't forget the risk statement context
  - It provides relevant additional information
  - It keeps the original intent of the risk so that others can understand it if need be later on
- Select relevant levels of attributes for your project
- Classify and prioritize risks to
  - Better understand the risks
  - Understand what needs immediate attention
- Communication is essential to facilitate identification, classification and prioritization

# Questions?

