

University of Toronto
Department of Computer Science

CSC340F – Requirements Engineering

September 23, 2006
Prof. Steve Easterbrook

Assignment 1: Project Selection and Risk Plan

Due Date: 9:20am, Friday, October 6
(i.e. within 10 minutes of the start of the tutorial)

This assignment counts for 10% of the final grade

Identify an organization that you can work with for the rest of this term, and write an initial statement of the problem that you will analyze for this organization. Identify and measure the project risks. *Note: In subsequent assignments you will go on to perform a feasibility study, analyze the requirements, and finally write a specification for the problem you identify in this assignment.*

The project is to be carried out in teams of four. Each team will submit one report.

I. Doing the Assignment

This assignment has 8 steps. They are:

1. *Select an organisation.* You will need to find an organization that is willing to work with you for the remainder of the term (see below for suggestions).
2. *Make contact with the organization.* Check that you will be able to meet with some of the key people within this organization during the term, to analyze their requirements.
3. *Identify a possible problem to analyze.* What is your initial idea for a problem that this organization has, for which a software intensive system might be designed? In later assignments you will refine your ideas about the nature and scope of this problem – for now you just need a starting point.
4. *Identify the risks that you face in conducting a requirements analysis for this organization.* Anything that might affect your ability to complete the course assignments successfully is a project risk. Use the risk identification tools covered in the lectures to help you identify as many risks as possible.
5. *Assess the risk exposure for each risk you identified, and use this to rank your risks.* Use either a quantitative or qualitative approach – the important thing is to be able to *compare* risks to find the biggest ones.
6. *Draw up a risk management plan for your top ten risks.* For each of your top ten risks, write a brief management strategy, including: (a) any steps you can take to mitigate the risk (b) indicators you can monitor to give you an early warning of things going wrong and (c) a recovery plan to invoke if things do go wrong.
7. *Write a report* that describes your chosen organization and problem, and the results of your risk assessment.
8. *Document your teamwork* and complete a team report (see attached form)

II. What to Hand In

Hand in your report at the start of your tutorial on the due date. *Reports not handed in within the first ten minutes of the tutorial will be treated as late.*

The report should not exceed three (3) pages (not counting cover pages, references, appendices, or forms). It should include the following items:

1. A brief description of the organization you plan to work with, including a rationale for why you chose this organization (no more than ½ page).
2. A brief description of the problem you will analyze for this organization (no more than ½ page).
3. A brief description of the approach you used to assess the project risk (no more than ½ page).
4. The results of your risk assessment, in the form of a list of the top ten risks, with a brief risk plan for each (No more than 1½ pages).

Written Presentation Requirements

Be sure to include a cover page indicating the name of your team, the names of all team members, title of work, course, date and tutor's name. Assignments will be judged on the basis of visual appearance, grammatical correctness and quality of writing, as well as their contents. Please make sure that the text of your report is well-structured, using paragraphs, full sentences, and other features of a well-written presentation. Use itemized lists of points where appropriate. Text font size should be either 10 or 12 point.

III. Suggestions

Finding a Problem

Finding an organization that is willing to provide you with a problem is easier than you think. Of course, someone in that organization will have to spend some time talking to you and giving you information. But then remember that many class projects from this very course actually were adopted by the “customer” organization and were turned into real software development projects!

There are several things you may want to try here. Start by considering previous employers, but also friends, relatives, acquaintances, who may be in a position to give you access to an organization that is willing to have you study one of their systems and prepare a feasibility study for development of a new software system. Ideally, the organization you find will be large with many departments etc. and you will be dealing with a few people in one department. Failing this, you may want to try a small business (e.g., a retail store, a professional office,...).

Other possibilities for feasibility study projects include an information system or web service for public software (e.g., a help facility for Windows or Unix), a public service that you know well, e.g., driver license registration, or one for which there is publicly available information, e.g., OHIP-related information systems. There are also many organizations on campus (e.g. clubs, associations, and the offices of various departments) with which you could work.

In approaching an organization, you should always talk to someone who has the authority to decide to assist you. Remember that this project should be mutually beneficial -- and make sure you tell your “customer” this. In fact, you should offer to present a copy of your final report to your client --- and make sure it is delivered.

What kind of project should you choose? Ideally, the organizational information system you study will have several people involved and possibly could include an existing computer system. The following are examples of typical projects:

- Computerize a given business system (e.g., inventory, sales).
- Computerize a firm (usually small), which currently uses no computers during its daily operations.
- Evaluate an existing computerized business system in order to recommend modifications or even a new system.

Try not to bite off more than you can chew (remember, *this is a course project*). You may find fairly early on that the project you have chosen is too large. In this case, perhaps a subsystem of the original problem can be chosen. Discuss this with the instructor or your tutor.

Assessing the risks

To help you identify, describe and rank risks, you may find the following helpful.

- A *Risk* is a possible future undesirable outcome. For each risk, the *Risk Exposure* is defined as the probability of the undesirable outcome times the size of the loss involved.
- *Risk Mitigation* is the process of reducing risk exposure, either by decreasing the probability of the risk occurring, or by finding ways to reduce the possible impact if it does occur.
- A *Contingency Plan* is a backup plan for use in case the mitigation strategy is ineffective, or only partially effective. It usually describes emergency measures to be used if the undesirable outcome still occurs despite all attempts to prevent it.

Because probabilities are often hard to estimate precisely in the early project planning phases, many projects don't calculate risk exposure explicitly, but rather use a simple scale to compare risks. For example, in its manned spaceflight program, NASA uses a five point scale for assessing loss, in decreasing order of severity: Loss of Human life, Loss of spacecraft, Loss of Mission, Degraded Mission, Minor inconvenience. Loss of mission means that none of the goals of the mission were accomplished, but the spacecraft and crew were safely recovered. Apollo 13 is an example of this kind of outcome. This scale can then be combined with a similar scale for likelihood, to define a number of levels of exposure for risks, using a table similar to this:

		Likelihood of Occurrence		
		Very likely	Possible	Unlikely
Undesirable outcome	(5) Loss of Life	Catastrophic	Catastrophic	Severe
	(4) Loss of Spacecraft	Catastrophic	Severe	Severe
	(3) Loss of Mission	Severe	Severe	High
	(2) Degraded Mission	High	Moderate	Low
	(1) Inconvenience	Moderate	Low	Low

You could apply a similar scheme to your projects, although you would have to adapt the 5-point scale for assessing loss, because there are no human lives or spacecraft at stake in your projects (I hope). However, if you imagine the worst possible outcome (failing the course? not having a project to submit?) as your highest loss, and then define some decreasing levels below it, you can proceed from there. You also need to think carefully about how each square in the matrix should be labeled, as these give you the rankings for comparing risks.

You should also consult the standard software engineering textbooks for hints about likely risks during a software project. For example, Boehm produced a paper surveying a large number of software projects in industry, and drew up a list of the top ten most common risk factors – the top ten risks mentioned in the lectures are taken from Boehm’s list.

IV. Marking Scheme

Your assignment will be marked by your tutor. If you have questions about a marked assignment, you should first ask your tutor before/after a tutorial. If you don’t get satisfactory answers, you should talk to your instructor.

Marks for this assignment will depend on the following factors:

Description of the organization you chose (20%): Did you identify a suitable organization, and make contact with them? Did you explain why you chose this organization? Is your choice sensible?

Description of the problem you will study (20%): Did you identify a suitable problem? Did you discuss this selection with the organization you are working with? Did you provide evidence that this problem is important to the organization you are working with?

Description of your approach to risk assessment (15%): Did you explain the method you used to measure risk exposure? If you adapted a qualitative method, did you explain the adaptations? If you used a quantitative method, did you explain how you measured risk? Did you use appropriate scales to assess probability and potential loss?

Top Ten Risks (15%): Did you identify and rank 10 risks? Are the top ten risks appropriate? Did you miss any obvious major risks from your top ten? Is the ranking sensible?

Risk Mitigation Plans (10%): Did you identify a mitigation plan, a monitoring plan, and an emergency response plan for each of your top ten risks? Do the plans make sense? If implemented, will they help to reduce risk?

Presentation (20%): The style of your presentation, including language, grammar, clarity of the presentation etc. (10% - Language; 10% - Style and clarity)

Team Report Form

(must be submitted with assignment)

Description of roles and contributions of each team member:

Name	% of team Effort	Signature

Date submitted: _____