

ESD264/1.264

Lecture 5 case studies

Fall, 2013

Upload your discussion to course Web site by Friday noon

1. Chemical inventory system

Chris was in charge of version 1 of MIT's chemical inventory system, MITCIS. With higher security required these days, MIT realized that its decentralized system of ordering, delivering and disposing of chemicals had to change. Chris had a general idea of the capabilities necessary from his past experience and from the first meeting of the MIT steering committee for the project. Dave was the head of the committee. "Chris, how long is MITCIS going to take, he asked?"

"I think it will take about 9 months, but that's just a rough estimate at this point," Chris said.

"That's not going to work," Dave said. "I was really hoping you'd say 3 or 4 months. We absolutely must have MITCIS within 6 months; we can't tolerate our security exposure any longer than that, at the absolute worst. You know how serious this problem is, don't you? Can you do it in 6 months?"

"I'm not sure," Chris said honestly. "I'd have to look at the project more carefully, but I can try to find a way to get it done in 6."

"Treat 6 months as a goal, then," Dave said. "That's what it's got to be, anyway." The rest of the committee agreed.

By week 5, additional work on the system requirements had convinced Chris that the project would take closer to the initial 9-month guess than to 6 months, but he thought that with some luck he might still be able to complete it in 7 or 8 months. He didn't want to be labeled a troublemaker or uncooperative, and he wanted to stay in the good graces of the committee, since it would heavily influence his promotions and future assignments.

Chris' team made steady progress but requirements analysis took longer than they had hoped. Every lab and department had a different way of doing things, and it took a long time to reach agreement on a common approach. They were now almost 3 months into what was supposed to be a 6-month project. "There's no way we can do the rest of the work we have to do in 3 months," he told Dave. He told Dave he needed a 2-month extension and rescheduled the project to take 8 months. He felt it could be done in 9 or 10 months, realistically, but he didn't feel he could present those times to the committee.

A few weeks later, Chris realized that the designs for the database, Web pages and program weren't proceeding as quickly as he had hoped either. "Implement the parts you can do easily," he told the team. "We'll worry about the rest of the parts when we get to them."

Chris met with the MIT steering committee. "We're now 7 months into our 8-month project. Detailed design is almost complete, and we're making good progress but we can't complete the project in 8 months." Chris announced his second schedule slip to 10 months. Dave grumbled and asked Chris to find a way to bring the schedule back to about 8 months.

At the 9-month mark, the team had completed detailed design, but program development had still not begun on some parts of the system. It was clear that the team couldn't make the 10-month schedule either. Chris announced the third schedule slip, to 12 months. Dave's face turned red when Chris announced the slip, and the pressure from the MIT committee became more intense. Chris began to feel his job was on the line.

Coding proceeded fairly well, but a few areas needed redesign and recoding. The team hadn't coordinated design details among the Web page, database and Visual Basic sub-teams well, and some of the implementations conflicted. At the 11-month steering committee meeting, Chris announced the fourth schedule slip, to 14 months. Dave became livid. "Do you have any idea of what you're doing?" he yelled. "You obviously don't have any idea when the project is going to be done! I'll tell you when the project will be done! It's going to be done by the 12-month mark, or you're going to be out of a job! You and your team are going to work 80 hours per week until you deliver!" Chris felt his blood pressure rise, especially since Dave had backed him into an unrealistic schedule in the first place. But he knew that with four schedule slips, he had no credibility left.

Chris told his team about the meeting. They worked hard and managed to deliver the software in just over 13 months.

- a. List at least 5 errors made by this development team in their execution of this project. Be prepared to discuss them in class.**

- b. Outline the key steps in the resource estimation that the team should have used to avoid these errors/problems. List at least 5 steps; describe each in 1-2 sentences or phrases. Be prepared to discuss them in class.**

- c. Outline the key steps in the software development process that the team should have used to avoid these errors/problems. List at least 5 steps; describe each in 1-2 sentences or phrases. Give a rough timeline to reach a shippable system at the 6 month point. Be prepared to discuss them in class.**

2. Warehouse management system

Your management has asked you to extend its current warehouse management system to receive input from RFID tags and readers for high value electronic equipment. This equipment, such as automated fareboxes, passenger counters, and train control systems, is sold by manufacturers to public transportation operators. There are many models and variations of each item; large numbers of spare items are carried in inventory in your warehouse and shipped overnight to public transit operators when a unit fails. Some inventory owned by the manufacturers is also kept at public transportation operator facilities for rapid replacement of failed units. It is very difficult to keep track of this expensive inventory. While all inventory is supposed to be barcode scanned monthly, this is a low priority task for the staff, and many expensive units are lost or otherwise written off. Also, with poor data on what the inventory levels are, much more inventory is held than needed to support the service levels and repair times promised by the manufacturers.

RFID tags are electronic transponders that can be read automatically by an RFID reader, without human intervention. The RFID-enabled warehouse will read all tags every few minutes, 24 hours per day, to provide continuous data on inventory levels. The warehouse is run by your organization, who acts as a third party logistics provider for 20 manufacturers of these devices. Each public transit operator who is a customer of yours will be required to place all manufacturer-owned inventory in a room also equipped with an RFID reader that, again, will automatically read inventory every few minutes.

RFID technology is somewhat untested in this environment. The functional needs of the manufacturers, your company and the public transportation operators are not well understood: the inventory levels, ownership, business terms, data flows and overall use of the new system are not well understood, since it will create substantial changes from current practice.

You have been asked by your management to provide a short discussion of the system development/acquisition/customization approach you would take, as follows:

a. What lifecycle model would you use, and why? Also name at least two lifecycle models you would not use, and say why. Be prepared to discuss this in class.

b. Your management asked how long it would take to prepare a first release of the system. Briefly describe how you would estimate this time. Be prepared to discuss this in class.

c. List at least four major risks in this project, and how you lessen them. Be prepared to discuss this in class.

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