**Project Management**

**INLS 582, Systems Analysis**

**Monday, 2/6/12**

**Reading:** Armour, 2002

Iacovou & Dexter, (2005)

Project Management Institute website, <http://www.pmi.org/default.aspx>

 especially "about" http://www.pmi.org/About-Us.aspx and

Certification http://www.pmi.org/Certification.aspx

**Mention Death March, Man-Machine Month**

**Slides:** ProjManage.pptx

**Demo (if time):** MS Project

online training; http://office.microsoft.com/en-us/training/CR102140061033.aspx

**Project Management**

good managers are very valuable

Awareness of current and future concerns overall, in organization, in department, with competition.

awareness, monitoring, protection (of project, staff, resources), encouragement….

**Project Management Institute**

Definitions

Certification as Project Manager

**10 unmyths**

discuss – which ones have students run into in their projects? In other projects?

What to consider in planning, monitoring, and post-project evaluation.

p. 15 “When we estimate a project, we attempt to foretell the future.”

Assumption: Control is only possible if manager is aware of variances, unexpected events (time/resource overruns, problems or roadblocks, etc.)

Project Management info from PMI (slides)

definitions of project, project management

skills needed.

Involves Planning, Monitoring, Adjusting. Essentially, doing the work that allows the project team members to succeed in the project goals.

What needs to be managed: scope and goals, tasks, time, people, money other resources, results, risks.

details on subsequent slides.

Budgeting is often what first comes t mind, so more details on budgets.

**Budgeting**

The project budget derives from the project plan. Recall that we talked about cost-benefit analysis as one means of justifying a project.

**Types of costs: <slides>**

*Direct costs* can be attributed directly to the system, such as development personnel, or new computers for design.

*Indirect costs* are general support of overhead, such as increased utility costs because of more computers (electricity, heating/cooling).

*Fixed costs* occur at one point in time and do not recur. Project costs, such as equipment purchase, are fixed costs.

*Variable costs* vary in proportion to time or system activity. E.g., needing more printer toner and paper with more printing activity.

**Cost categories**: (consider both development costs and operating costs) <slide>

Equipment

Components of a computer system

Hardware: computers, auxiliary storage, printers, etc.

Software and data, e.g., CD-ROM

Including conversion of databases

Including vendor installation of new software

Furniture needed for new equipment, e.g. a printer stand

May be incurred in:

System development, if new tools are needed

System installation, if new equipment is needed for system

Personnel

Salary and wages

Benefits: insurance, vacation, retirement

Can be approximately 50% in addition to salaries

Consultants and external temporaries

May be one-time costs (for development and/or installation) or recurring (for operation and/or maintenance)

Travel

Costs of travel to user sites

Will generally be incurred during development and installation

Supplies

Paper, toner, disks, etc.

Manuals, training tapes, etc.

Other: travel

May be one-time costs or recurring

May be incurred during development, installation, operation, or maintenance

Facilities

Remodeling required because of system changes

Wiring, rearrangement of walls, phone service

Overhead

General support: heat, light, space

Managerial support

Secretarial support

Generally a standard rate for the organization, added to other costs as a percentage of them

Costs of system failures (risk)

What costs will occur if the system crashes?

Loss of business

Repair

What costs are associated with backup systems?

Low end: extra diskettes

High end: duplicate computer center, ready to run

If not included in the cost estimate, then at least include this factor in the risk analysis

ESTIMATING COSTS AND BENEFITS

Break the costs and tasks down into tiny pieces

Mini-specifications or individual methods: how many times is it performed? how much does it cost each time?

Storage space for individual records/files

Estimates are more likely to be accurate for the small pieces

Then they can be summed/aggregated

Frequently, just a few system components account for most of the cost

Watch personnel costs

Look for frequent or complex sequences of activity

Sources of data

History of the system

Use of the old system will provide some quantitative data

Organization-wide overhead rates

Standardized personnel costs

SUMMARY: CONNECTION BETWEEN COST ESTIMATES AND PROJECT MANAGEMENT

Cost estimates include:

Specification of work/effort required to implement the new system

Budget for staff and other expenses

Project management uses this budget to track progress in resource use

If budget slips, it may be due to:

Schedule slip

Too much staff time spent on an activity

Underestimates of other expenses

 Particularly common with new technologies

Poor management/waste

Bad spending decisions

Premise is that control is only possible if manager is aware of variances

**Budget example**

Look at grants.nih.gov/grants/funding/phs398/398\_forms.pdf (p. 7) Compare with Carnegie grant form for students

**Justifying the project: is the project worth the expense? <slide>**

**Return on Investment.**

**Benefit-cost analysis.** The goal is to develop a ratio to compare benefits to costs, that will allow you to compare or prioritize projects. These may be different solutions to the same problem, or may be competing projects. As long as the benefits outweigh the costs (that is, the ratio > 1), then the project is at least nominally worth doing.

Benefits here could be monetary, but could also be quantifications of other kinds of good things the project will contribute. Costs can be direct costs, or could be the costs of secondary problems of issues.

Scope: Who counts as a beneficiary? The client, the client’s workers, the client’s customers, the community, the profession, etc. Similarly, how wide-ranging are the costs that must be included? E.g., direct costs, operating and maintenance costs, opportunity costs. The authors talk about the difficulties in determining these, especially for governmental projects.

Steps: (p. 123 ff)

1. identify the problem (you’ve already done that)

2. explicitly define the set of objectives to be accomplished. You may have done that to some extent.

3. Generate alternatives. Either different solutions, or the low-end/high-end alternatives.

4. Id constraints that may eliminate some alternatives. We’ll talk about risks as well a little later

5. list benefits and costs for each. Start by making the list, then try to quantify them.

* Primary benefits and costs are the most obvious.
* Secondary benefits and costs may be hidden, may occur based on environmental factors, etc.
* External benefits and costs affect those other than the primary client, customers, etc. These may be longer-range, as well.
* Intangible benefits and costs. Important to include these, even if they can’t be quantified. As we look at improving an information system, there may be actual benefits resulting from fewer errors and less time needed to correct them, but also customer goodwill because of fewer errors (translates into lower risk of losing customers, if they have a choice), and happier employees (more interest/efficiency of work, lower turn-over). Some of these are quantifiable (at least to some extent), some aren’t.

6. calculate using some method (may be specified by client, you may want to do several versions to see how robust it is)

**Cost-effectiveness Analysis.** Otherwise known as the “bang for the buck.

How do you define *effectiveness* for your information system? Their example includes efficiency, speed, user friendliness, reliability, expandability. <Others?> You can also weight these – if reliability is crucial (a mission-critical or life-critical system), then it would be more highly weighted than other factors.

**Proposals**

You’re at the point where you are putting together ideas for the new system that will solve the problems. You probably have several alternatives (in fact, in some situations you are required to propose more than one alternative). How do you choose the best? We’ll look at this from two perspectives: the financial and risk, and the impact on the worker and users.

One way to come up with alternatives is to consider three versions of your system:

* a low-end, quick and dirty solution that provides a minimal solution. Advantage – speed of implementation and low cost. Disadvantage – may not be a long-term solution, may not cover all possible aspects of the problem.
* A mid-range solution that provides more features. Advantage – a more thorough solution to the problem, and perhaps related ones. May last longer. Disadvantage – increase time and money.
* A high-end solution that does all that’s necessary and more. It may look to avoid foreseeable related problems for several years. But it costs more and will probably take longer to deploy.

Or, you may be able to stage your project so you solve the most immediate problem quickly in a low-cost way, but you can expand on it in the future, building up to the high-end solution. This won’t always be possible – it depends on the amount of disruption and change your new system requires, and how much you expect the situation to change in the time it would take.

So, we’re looking at various ways of comprehending, quantifying, and comparing benefits, costs, and risks.

**Project Management**

**How do you plan and monitor all the pieces of a project?<slides>**

Tasks: What has to be done

Schedule: When each task has to be done, how long it will take. Dependencies between tasks. Milestones and deadlines. Deliverables. Slack time and crunch time.

Personnel: Who has what skills. How much time they have for the project. What tasks they are assigned to. Preventing over- or under-utilization. Cost of each person.

Resources: Rooms, equipment, training facilities, etc. Who needs what, when, and for what tasks.

**MS Project demo**

Project management software, such as MS Project provides a variety of tools. <as time allows>

Example project

Show project guide,

Explore task, resources, tracking, report options

In general, start by specifying tasks and resources

Format -> timescale

Tools -> change working time

View: calendar, Gantt, network, Resources, Reports

**Iacovou & Dexter, Project Cancellations**

Despite your best planning, sometimes things do go wrong; either failure on the part of the project, or factors outside your control. What do you do? Recommendations of managers aim at fulfilling 3 functions

1. contain the impact; don’t let it spread to all other IT projects and functions, or the organization as a whole

2. Rebuild credibility; of IT department, individuals, and organization

3. Learn from failure.

10 recommendations (p. 85)

1. prepare a communication plan – what is going on, what the impacts are, what is being done, who’s in charge.

2. perform a post-mortem audit – learn from the failure

3. Form a contingency plan – how will the problem be solved now?

4. Modify the current development process to reflect lessons learned. These may even be incremental changes, but if a problem in the processes remains, it will lead to more failures.

5. Reflect on your own role and responsibilities.

6. Ensure continuity of service – don’t let the IT department fall apart because of the failure.

7. Provide staff counselling and appropriate new assignments.

8. Learn from mistakes – take responsibility, be honest.

9. Review related project decisions and long-range IT plans. How does the failure affect other projects? (freed-up resources, project dependencies, revised schedules, etc.)

10. Determine responsibility of vendors.