CSCI375 Opportunities for Improvement

Review

Six Core Processes

Six Day blitz

Exercise

Six Core Processes

1. Identify problem and obtain approval
2. Plan and monitor project
3. Discover and understand details
4. Design system components
5. Build, test, integrate system components
6. Complete system tests and deploy solution

Overview

Review of some key concepts and terms

Opportunities for Improvement

- What if we're not developing from scratch?

First look at assessing risk and potential

App vs. Information System

What is the difference between:

- an application and
- an information system?

Activity

Describe all the things an online grocery store needs to be able to do

Systems Analysis: The What

These are the steps and activities that let you:

- understand a system
- specify a system's capabilities

1. You actually need to *understand it*
2. You have to be able to share this understanding in a clear way

Activity

Describe how an online grocery store's components work together to complete a transaction

- what are the components?

Systems Design: The How

All the parts involved in describing (in detail):

- how the system will work
- all the components of the system
- how the components interact

Information Systems Development Process

Information systems are often:

- complicated
- hard to understand
- hard to plan for
- hard to execute

ISDP is a process used to develop a particular information system

Used to solve organizational problems

One well known ISDP is Agile Development

Overview of systems analysis

In the rest of this lecture we'll quickly go over what is involved

Motivating examples

Think of this as: Opportunities for Improvement

- create a better solution
- create a new solution
- take advantage of new technologies...

Stages of Systems Analysis

1. Understanding the existing system
2. Identifying improvement opportunities
3. Developing and modeling the proposed system

Gathering information

Gather requirements from existing users of the system

Model the system’s process

Model the system’s data

Understanding the existing system

Once we understand the system we can create:

- process model
- data model

Models describe the system in a useful way

- helps us build the system
- helps us document the process
  - in case we don't get it right
  - to share the information with other teams
  - for maintenance/upkeep

Understanding the system

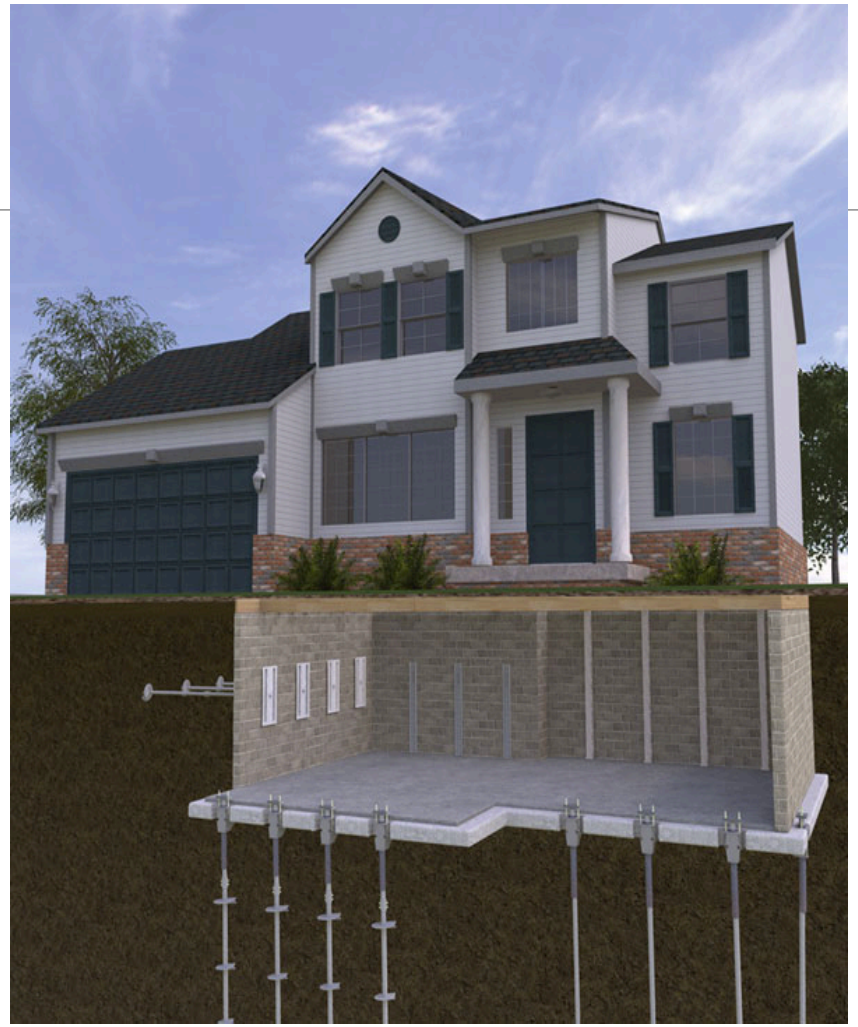
In the Systems Analysis stage, we build a foundation

How does the user's understanding differ from *the actual system/problem*?

How does what the system do differ from what *it should do*?

Need to create a thorough understanding of the system

https://pastorjackliberal.files.wordpress.com/2011/06/bad-foundation.jpg



Identify Improvement Opportunities

Do more requirements gathering
- user recommendations
- observations

Work with models of system

Identify ways system can be improved
- client proposed or otherwise

What is technically feasible?

A solid understanding of business domain is vital
- need to be able to talk to people in the industry
- what do they really mean?

Develop and model the proposed system

We start with a collection of improvement ideas and suggestions

Need to revise and refine them

Determine how they can be added to existing models

It is always best to come up with a few alternate systems

- recommendations
- evaluations
- pros/cons

Let the client make an informed choice

Business Processes

Most projects will involve business processes

We consider 3 different approaches:

- Business Process Automation
- Business Process Improvement
- Business Process Re-engineering

Business Process Automation

Business Process:

- The way an organization operations

Business Process Automation:

- we leave the processes unchanged
- introduce new systems to make them more efficient
- may involve:
  - replacing manual steps with computerized steps
  - adding computer support
  - improving existing computer systems

Business Process Automation

1. Understanding the system
2. Identifying the improvement opportunities
   - Problem Analysis
   - Root Cause Analysis
3. Developing and modeling the proposed system

Business Process Improvement

Unlike Business process automation, we improve the process

- add features
- make things more seamless

Business Process Improvement

1. Understanding the existing system
2. Identifying the improvement opportunities
   - Duration analysis
   - Activity-based costing
   - Informal benchmarking
   - Formal benchmarking
3. Developing and modeling the proposed system

Business Process Re-engineering

Make substantial changes to the processes themselves

May be a full re-do of the system

Most risky

Most time-consuming

Most expensive

Business Process Re-engineering

1. Understanding the existing system
   - little time and effort needed here
   - may use existing system as a tool to extract info from users
2. Identifying the improvement opportunities
   - Outcome analysis
   - Breaking assumptions
   - Technology analysis
   - Activity elimination
   - Proxy benchmarking
   - Process simplification
3. Developing and modeling the proposed system
   - extensive revisions needed

Trade-offs

What is the potential business value of:

- Business process automation
- Business process improvement
- Business process re-engineering

Trade-offs

What is the potential cost of:

- Business process automation
- Business process improvement
- Business process re-engineering

Trade-offs

What is the breadth of analysis of:

- Business process automation
- Business process improvement
- Business process re-engineering

Feasibility Study

Before we proceed with anything, we need to determine if the project is feasible

Assess:

- strengths and weaknesses
- opportunities and threats
- resources needed to proceed
- prospects for success

Compare:

- cost to value to be gained

Feasibility Study

Kinds of feasibility:

- Technical feasibility
- Legal feasibility
- Operational feasibility
- Schedule feasibility

Cost-benefit analysis

A way to determine how best to approach the project

Is the investment sound?

How does the project compare to alternatives?

Cost-benefit Analysis

1. Identify and list alternative projects
2. List all stakeholders
3. Measure all cost and benefit elements
4. Predict future costs and benefits
5. Convert costs and benefits to common currency
6. Apply discount rate
7. Compute present value of project options
8. Do sensitivity analysis
9. Adopt recommended choice

Cost-benefit analysis

Evaluate the cost (positive or negative)

- effects on users
- effects on non-users
- effects on people outside the system
- social benefits

Readings

Chapter 10: Approaches to System Development

http://www.wikihow.com/Take-Minutes

https://www.youtube.com/watch?v=X8BkGpi_skQ

https://truss.works/blog/2017/2/3/well-met-the-software-engineering-meetings-you-actually-need

http://www.wikihow.com/Run-an-Effective-Meeting

https://www.linkedin.com/pulse/software-project-team-rolescontinuing-writing-editing-farhana-sharmin