System Administration

Change management

http://courses.cs.ut.ee/2012/syshald/
Outline

• About tests
  - Graded, in my bag, grades not filled in to ŌIS

• Change management
  - Planning
  - Risk management
  - Testing
  - Implementing
  - Post-Event Analysis

• Additional topic?
Change Management

• objective of the change management process is to ensure that changes are made to the system using efficient, standardized procedures and to minimize the impact upon service quality
Change Management (2)

- Change management is
  - Planning
  - Risk Management
  - Testing
  - Implementing
  - Post-Event Analysis
Change Management (3)

Planning

Risk Management

Testing

Implementing

Operations
Change Management (4)

• Planning
  - process of thinking about how to achieve goals
  - the formal process of creating and maintaining a plan
  - planning is one of the fundamental properties of intelligent behavior
Planning

I. determine:
- current state
- problems
- facilities
- goals

II. consider the steps towards the goal, compile a plan

III. execute the plan
- review
Planning (2)

I. determine:
- current state
- problems
- facilities
- goals

III. execute the plan
- review
Planning (3)

I. determine:
- current state
- problems
- facilities
- goals

III. execute the plan
- review

concrete, atomic task
Planning (4)

- good goals and sub-goals:
  - concrete, specific
  - measurable
  - acceptable
  - realistic
Planning (5)

- plans must be in accordance with the goals of the organisation (systems, users)
- it is much easier to plan when the organisation has well-defined goals
Planning (6)

- backup plan, plan B

- back-out plan
Planning (7)

- under-planning
  - goals are not clear, specific
  - incomplete overview of the current state
- result
  - unexpected events during the implementation
  - we're there! where?!
Planning (8)

- over-planning
  - overdetailed goals
  - too much detail in description of current state

- result
  - the process will be too time-consuming and labour-intensive in relation to the expected results
  - the target is reached later or not at all
  - difficult to change the plan
Planning. New vs. Old

implementing a new system
- feed-back is important in the early stages
  - plan the communication
- need for flexible schedule
- expect the unexpected
- set mile-stones

changing the old system
- mitigate the risks
  - backup
  - back-out plan
- have precise schedule
  - realistic estimates!
- communicate!
Planning: New vs. Old (10)

implementing a new system
- feed-back is important in the early stages
  - plan the communication
- need for flexible schedule
- expect the unexpected
- set mile-stones

changing the old system
- mitigate the risks
  - backup
  - back-out plan
- have precise schedule
  - realistic estimates!
- communicate!
Tools for Planning

• depending on the level or domain
  - physical diagrams
  - logical diagrams
  - dependency graphs
  - decision graphs
  - time-lines
Output of Planning

- clear, specific goals
- overview of the facilities
- overview of the possible problems
- plan: list of consecutive steps to move towards goal
- criteria, upon which to review the execution
- criteria, upon which to assess whether the goal is achieved
Risk Management

- Risk Management is the process of identifying, assessing and prioritizing the risks with the intention to avoid them.
Risk Management

● does the change meet a business need?
● when should the change be implemented?
● how to test for the success?
● how to back out of the change?
● when to back out?
● how to minimize negative impact of the change?
Testing

- Testing is the process of validating and verifying that the system meets our requirements (functionality, performance, etc).
Testing

borrowed from software engineering:

- system test
- black box testing
- validation
- white box testing
- regression testing
- verification
Testing

black box
• specification testing
• fictive users

white box
• static testing
• fictive modules
Testing

- testing in Change Management process
- regular testing in Monitoring process
Performance Testing

- simulating the every-day load
  - record & replay
  - “artificial” load
- measuring load is a complicated task
- goals
  - measuring the impacts of changes
  - locating bottlenecks
  - future prognosis
Test Plan

• consists of:
  - test input
  - test steps/stages (sometimes scenario)
  - expected output
    • functional
    • non-functional (performance)
Testing & Security

- system may have unwanted functionality
- black or white box?
- specified unwanted functionality
  - design- and configuration flaws
- non-specified unwanted functionality
  - programming errors
Implementing

- Implementing the change is based on the output of planning, testing and risk management.
- The goal is to execute the change plan, following it precisely, while supporting the whole process with communication.
Communicating the Change

• communicating within the team
  - implementers must have consensus
  - “outsiders” must keep an eye on their systems

• inform the customers
  - what is being done?
  - who is responsible?
  - who will be affected, and how?
  - where to get extra information?
Scheduling the Change

• routine change
  - invisible to user base
  - no need to schedule (but do not get carried away)
Scheduling the Change (2)

- major change
  - will affect many systems or users, outages
  - off-peak (off-work) times, maintenance windows
Scheduling the Change (3)

- sensitive change
  - could cause outage when something goes wrong
  - off-peak
“the Real Deal”

- after all this planning, testing, communicating, changing, etc. -- you must implement the actual change!
- have plans ready
  - change plan
  - back-out plan
  - plan B?
- keep an eye on the schedule
- do not hesitate to back out when the plan says so
Organizational Measures

- non-technical, but essential part of the change
- system and actual business processes have to be in alignment
  - change the system
  - change the business processes
- some people's duties will change
- use training before and after the change
  - normal working order must be restored ASAP
  - untrained staff will resist changes
Post-Event …

- review
  - did we meet the goals?
  - how to perform better next time?

- system is in working order

- system is compliant with organizational rules & regulations & business processes

- operations phase will take over
  - maintenance and monitoring
  - incident and problem management
Activity in teams of 5-7 (20 min)
• You are a group of system administrators for a small company with 200 employees.
• As the company wants to support home office work and wants to cut budget on local hardware and their maintenance they open the strategy to move all their services to the cloud
• Select a domain, describe, and plan the change management for this company. Compile half to one pages of keywords
• Present!
Questions?