SENG2130 – Week 11
Post-Delivery
Project Management
Ethics

SENG2130 – Systems Analysis and Design

University of Newcastle

THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

Overview

- Post-Delivery Maintenance
- Project Management and Risk Management
- Ethical Considerations

Postdelivery Maintenance

Definition

- Classical Postdelivery Maintenance
  - All changes to the product once the product has been delivered and installed on the client's computer and passes its acceptance test.
- Modern Maintenance (or just maintenance)
  - Corrective, perfective, or adaptive activities performed at any time.

Why is post delivery maintenance necessary?

- **Corrective maintenance**
  - To correct residual faults
    - Analysis, design, implementation, documentation, or any other type of faults
- **Perfective maintenance**
  - Client requests changes to improve product effectiveness
    - Add additional functionality
    - Make product run faster
    - Improve maintainability
- **Adaptive maintenance**
  - Responses to changes in the environment in which the product operates
    - The product is ported to a new compiler, operating system, and/or hardware
    - A change to the tax code
    - 9-digit ZIP codes

What Is Required of Post Delivery Maintenance Programmers?

- At least 67% of the total cost of a product accrues during post delivery maintenance
- Maintenance is a major income source
- Nevertheless, even today many organizations assign maintenance to
  - Unsupervised beginners, and
  - Less competent programmers

What Is Required of Post Delivery Maintenance Programmers?

- Post delivery maintenance is one of the most difficult aspects of software production because
  - Postdelivery maintenance incorporates aspects of all other workflows

What Is Required of Post Delivery Maintenance Programmers?

- Suppose a defect report is handed to a maintenance programmer
  - Recall that a “defect” is a generic term for a fault, failure, or error

- What is the cause?
  - Nothing may be wrong
  - The user manual may be wrong, not the code
  - Usually, however, there is a fault in the code

Corrective Maintenance

- A maintenance programmer must have superb debugging skills
  - The fault could lie anywhere within the product
  - The original cause of the fault might lie in the (by now) non-existent specifications or design documents
- Problem:
  - How to fix it without introducing a regression fault

Corrective Maintenance

- How to minimize regression faults
  - Consult the detailed documentation for the product as a whole
  - Consult the detailed documentation for each individual module

- What usually happens
  - There is no documentation at all, or
  - The documentation is incomplete, or
  - The documentation is faulty

Corrective Maintenance

- The programmer must deduce from the source code itself all the information needed to avoid introducing a regression fault

- The programmer now changes the source code

Corrective Maintenance

The programmer now must

- Test that the modification works correctly
  - Using specially constructed test cases
- Check for regression faults
  - Using stored test data
- Add the specially constructed test cases to the stored test data for future regression testing
- Document all changes

Adaptive and Perfective Maintenance

- The maintenance programmer must go through the
  - Requirements
  - Specifications
  - Design
  - Implementation and integration

Adaptive and Perfective Maintenance

- When programs are developed
  - Specifications are produced by analysis experts
  - Designs are produced by design experts
  - Code is produced by programming experts

- But a maintenance programmer must be expert in all three areas, and also in
  - Testing, and
  - Documentation

Conclusion

- Is a task for an unsupervised beginner? or
- Should be done by a less skilled computer professional ?

- Managers must assign maintenance to their best programmers

Project Management

Background: What is project management?

- Who, what, when and why for projects
  - A defined and sponsored project scope
  - A roadmap for deliverables
  - Documented roles and responsibilities
  - A common language for communication relative to project phases, tracking and reporting
  - Processes to enable communication, accomplish the work, facilitate issue resolution and risk mitigation

Background: Why project management?

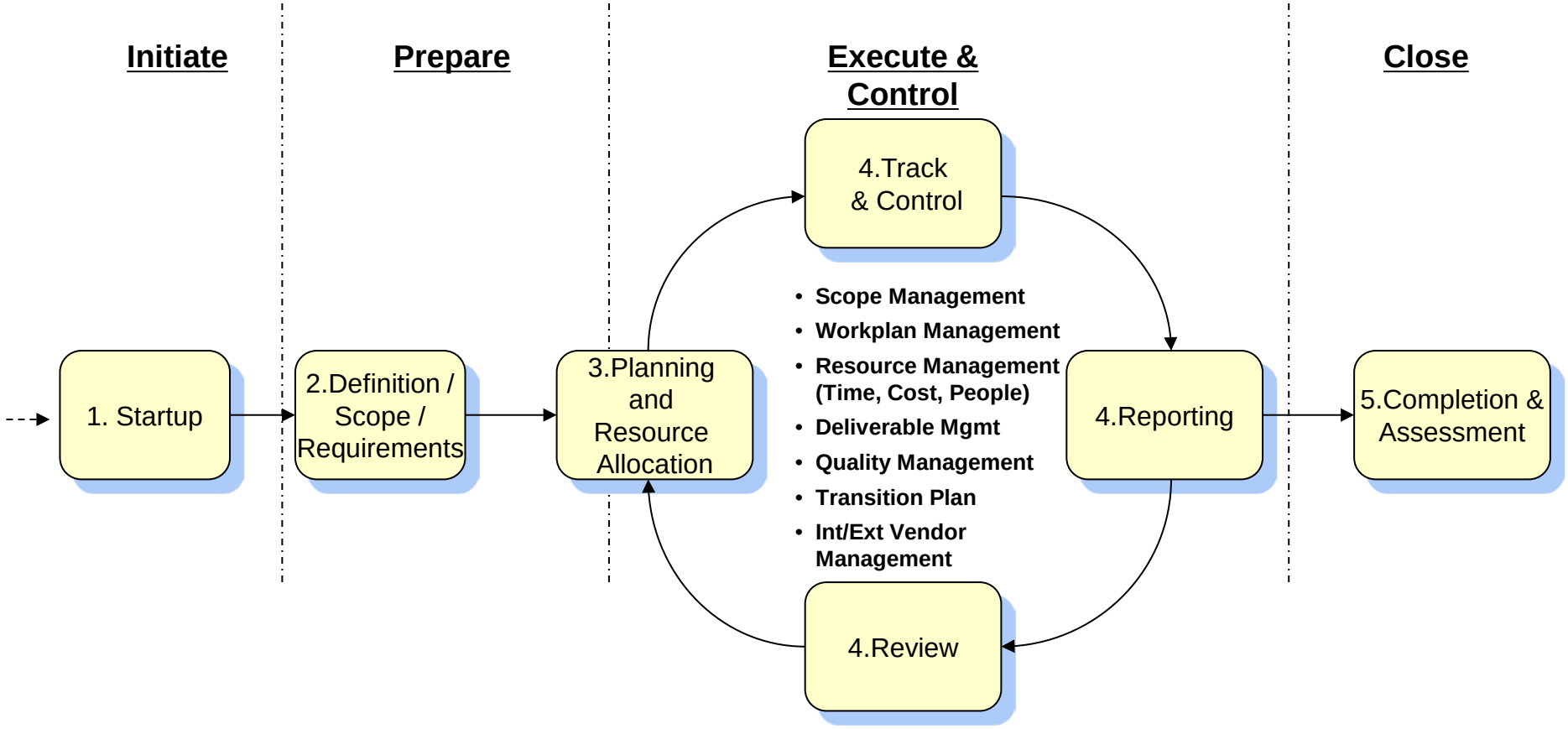
- More projects are requiring client involvement
- Resources are constrained
- Combination of these factors makes the control and management of the various project initiatives more difficult than in the past
- A consistent approach to manage scope, resources, time and cost enables project management effectiveness

Background: Why project management?

Project Management is a way of doing business for all project team members

- ✓ Provide project managers easy-to-use checklists and templates that target the fundamental concepts of project management
- ✓ Utilization of the tools will increase the probability of project success
- ✓ Provide all project team members and stakeholders with a road map of the project, defined roles and expectations

Basic Project Management: Five Steps



Step 1: Startup

As you engage potential team members and stakeholders, project initiation activities establish the scope, goals and preliminary plan.

- Key Activities
  - Document and/or confirm scope and assumptions
  - Confirm sponsorship and funding
  - Draft high level plan
  - Identify who needs to provide input into plan and resources
- Checklists to consider
  - Project Startup and Sponsor
- Templates to consider
  - Project Scope, Gantt Chart and Resource Planning
  - Project role descriptions

Step 2: Confirm Scope and Define Requirements

Engage your sponsor and business stakeholders to confirm the project scope and clarify business requirements. It is also the time to identify the technical requirements with the appropriate IS&T providers (as necessary).

- Key Activities
  - Confirm baseline project scope with Sponsor
  - Define, document and confirm business and technical requirements
  - Identify impact on business processes
  - Identify what's not in scope
- Checklists to consider
  - Sponsor
- Templates to consider
  - Project Scope

Step 3: Develop Plan and Secure Resources

The initial detailed project plan will provide a project roadmap and baseline for all team members and stakeholders. As the project evolves, the plan may need to refined.

- Key Activities
  - Identify who needs to provide input into plan
  - Develop preliminary detailed plan based on scope, requirements, etc.
  - Identify skills sets needed to accomplish tasks
  - Develop communication plan
  - Identify and secure resources
  - Conduct pre-kickoff meeting with Sponsor
  - Conduct kick-off meeting
  - Conduct risk assessment with team members
  - Identify the criteria for stopping the project
  - Update detailed plan and get buy-in from team and Sponsor

Step 3: Develop Plan and Secure Resources (cont.)

- Checklists to consider
  - Project Planning
  - Deliverable and Quality Assurance
  - Transition

- Templates to consider
    - Activity list
    - Detailed project plan
    - Project Resource Plan
    - Communication matrix
    - Project Risk Assessment

Step 4: Track, Control, Reporting and Review

Once you kick off the project, the track, control, reporting and review activities will be iterative and comprise the bulk of the project management tasks.

- Key Activities
  - Implement communication plan
    - Hold regular team meetings to:
      - share progress/status
      - identify/resolve issues
    - Hold formal sponsor updates
    - Keep your manager informed
    - Keep stakeholders informed
  - Monitor progress and report status
  - Monitor risks and take action as necessary
  - Identify and manage issues
  - Manage scope and track changes
  - Update plan as needed

Step 4: Track, Control, Reporting and Review (cont.)

- Checklists to Consider
  - Sponsor
  - Transition

- Templates to Consider
  - Project scope change
  - Communication matrix
  - Project status snapshot
  - Detailed Project Plan
  - Risk Assessment
  - Issue Log

Step 5: Completion and Assessment

The following activities will help to ensure a smooth transition and leverage lessons learned for future projects.

- Key Activities
  - Develop a cutover plan or checklist, if applicable
  - Complete documentation, training, and knowledge transfer
  - Conduct final project review
  - Conduct sponsor sign-off
  - Transition to support/service organization or next project team
  - Close-out final tasks and issues
  - Conduct lessons learned
  - Celebrate success

Step 5: Completion and Assessment (cont.)

- Checklists to consider
  - Transition
  - Project Closeout

- Templates to consider
  - Issue log
  - Detailed project plan
  - Communications Matrix

Basics of Project Management: Common Obstacles

Common obstacles you may face include:

- Unclear scope and business need
- Uncommitted sponsor
- Uncommitted resources
- Other?

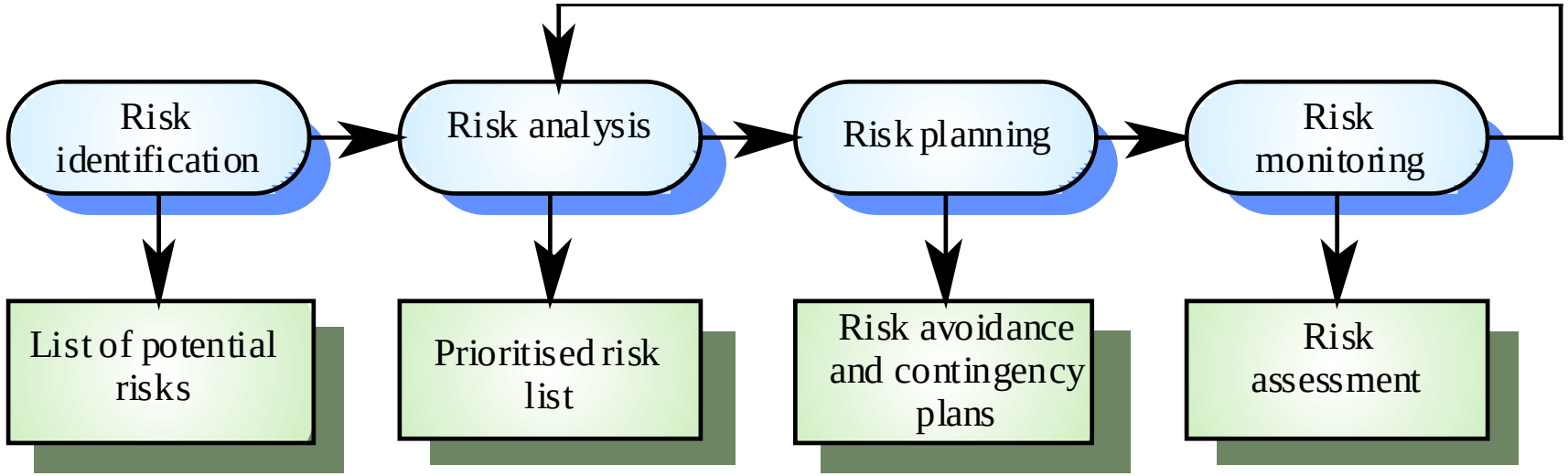
Risk Management

- Risk management is concerned with identifying risks and drawing up plans to minimize their effect on a project.
- A risk exists when there is a probability that some adverse circumstance will occur.
  - Project risks affect schedule or resources.
  - Product risks affect the quality or performance of the software being developed.
  - Business risks affect the organization developing or procuring the software.

Software risks

Risk	Risk type	Description
Staff turnover	Project	Experienced staff will leave the project before it is finished.
Management change	Project	There will be a change of organisational management with different priorities.
Hardware unavailability	Project	Hardware which is essential for the project will not be delivered on schedule.
Requirements change	Project and product	There will be a larger number of changes to the requirements than anticipated.
Specification delays	Project and product	Specifications of essential interfaces are not available on schedule
Size underestimate	Project and product	The size of the system has been underestimated.
CASE tool under-performance	Product	CASE tools which support the project do not perform as anticipated
Technology change	Business	The underlying technology on which the system is built is superseded by new technology.
Product competition	Business	A competitive product is marketed before the system is completed.

The risk management process



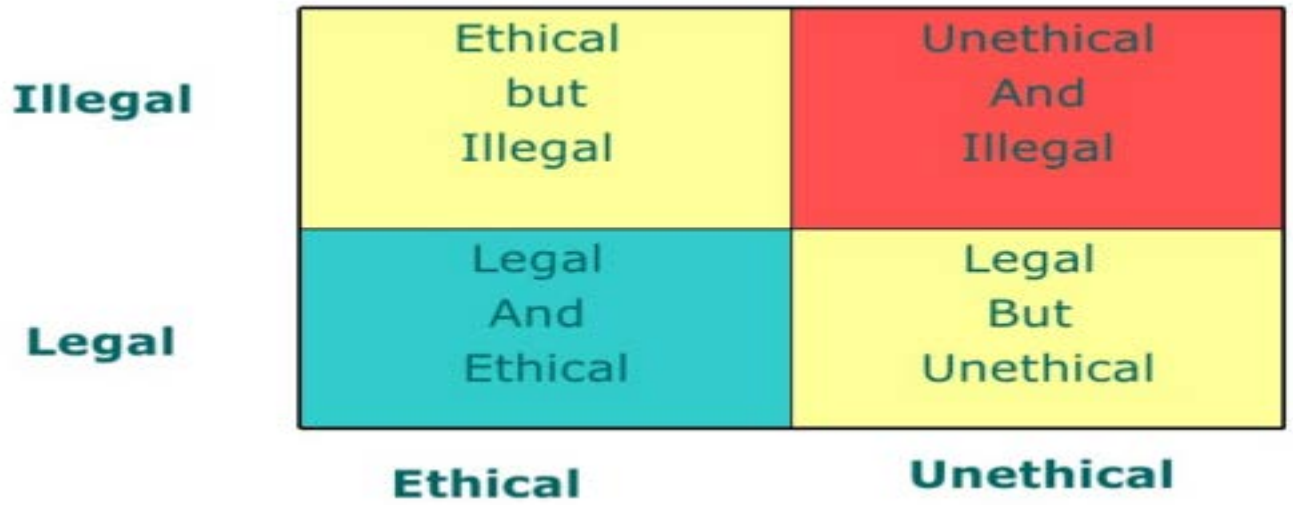
- Risk **identification** – *identify* project, product and business risks
- Risk **analysis** – assess the *likelihood* and *consequences* of these risks
- Risk **planning** – draw up *plans to avoid or minimise* the effects of the risk
- Risk **monitoring** – *monitor* the risks throughout the project

Ethical Considerations

Ethics

- A branch of philosophy dealing with what is considered to be right or wrong
- Unethical ?? illegal

An employee who has access to a company's financial records, such as a bookkeeper or accountant, could use her/his access to embezzle company funds.



Ethics

- Unethical can depend upon
  - Organization
  - Country
  - Culture
  - Value systems
  - Circumstances at the time

Can humans be ethical in one environment and unethical in another environment?

Gifts???

Ethics – computer

- Walter Maner in the 1970s decided to use the term “computer ethics”
- Ethics are a set of moral principles that govern an individual or a group on what is acceptable behaviour while using a computer.
- One of the common issues of computer ethics is violation of copyright issues.

5 Basic Ethical Concepts

1. Ethics
2. Responsibility
3. Accountability
4. Liability
5. Due process

5 Basic Ethical Concepts

1. Ethics

- Principles of right & wrong used by free individuals and organizations to make choices in their behavior

5 Basic Ethical Concepts

2. Responsibility

- As free moral agents, individuals, organizations, and societies are responsible for the actions they take
- Accepting potential costs, duties, and obligations for their decisions
- **The Internet: Power Without Responsibility?**
  - *Spider-Man* (2002): "With great power comes great responsibility.“
- if Internet users abandon moral rules -- if it becomes a moral wilderness -- that will destroy the trust required for its operation. It will become useless.

5 Basic Ethical Concepts

3. Accountability

- Mechanisms for identifying responsible parties
  - Ways of assessing responsibility for decisions made and actions taken
- Determining who should take responsibility for decisions and actions
  - Who will be held accountable if harm is done
  - Who is to be held responsible for faulty computers? Software?

5 Basic Ethical Concepts

4. Liability

- A feature of political systems in which a body of law is in place that permits individuals to recover the damages done to them by other actors, systems, or organizations
- Legally placing responsibility with a person or organizations
- Permits individuals and organizations to recover damages done to them by others

5 Basic Ethical Concepts

5. Due process

- Is fair procedures for making decisions
  - An individual is treated fairly and uniformly at all times with basic rights protected
- Is a related feature of law-governed societies
- is a process in which laws are known and understood
- there is an ability to appeal to higher authorities to ensure that the laws are applied correctly

5 Basic Ethical Concepts

5. Due process

- not only provides guidance for good conduct but also administratively and legally punishes misconduct
- Process must be fair & follow established procedures.

5 Basic Ethical Concepts

- Example: ChoicePoint.com is a leading provider of decision-making information to businesses and government agencies that helps reduce fraud and risk. It lost to criminal business firms 130,000 personal records of California residents in February 2005. This loss may result in the victims losing credit, being denied an apartment, losing employment, or experiencing an identity theft.

- What are the issues of Ethics, Responsibility, Accountability, Liability and Due process

Accepting

Who?

to recover damages

Fair?

Summary

- Post Maintenance
  - Managers must assign maintenance to their best programmers
  - Corrective, perfective, adaptive
- Project management 5 steps
  - Start up
  - Confirm Scope and Define Requirements
  - Develop Plan and Secure Resources
  - Track, Control, Reporting and Review
  - Completion and Assessment
- Risk management
  - Identification, analysis, planning, monitoring
- Ethics
  - Ethics, responsibility, accountability, liability, due process