Universitas Esa Unggul

Smart, Creative and Entrepreneurial

CCA220-Analisis dan Perancangan system Informasi

Dosen Pengampu :

5165-Kundang K Juman, Ir, MMSI

Prodi Teknik Informatika dan Sistem Informasi - Fakultas Ilmu Komputer

www.esaunggul.ac.id

Chapter 6
Prototyping, RAD, and Extreme Programming

Systems Analysis and Design
Kendall & Kendall
Sixth Edition

Major Topics

- Prototyping
- Rapid application development (RAD)
- Extreme Programming (XP)

Prototyping

- Prototyping is an information-gathering technique.
- Prototypes are useful in seeking user reactions, suggestions, innovations, and revision plans.
- Prototyping may be used as an alternative to the systems development life cycle.

Four Kinds of Prototypes

The four conceptions of prototypes are :

- Patched-up prototype.
- Nonoperational scale model.
- First-of-a-series.
- Prototype that contains only some of the essential system features.

Patched-up Prototype

- This is a working model with all the features but is inefficient.
- Users can interact with the system.
- Storage and retrieval of data may be inefficient.
- May contain only basic features.

Nonoperational Scale Models

- A nonoperational scale mode is one that is not operational, except for certain features to be tested
- Prototype input and output

First-of-a-Series Prototype

- Pilot system is created.
- Prototype is an operation model.
- Useful when many installations of the same information system are planned.
- An example is a system to be installed in one location, tested and modified as necessary, and later implemented in other locations.

Selected Features Prototype

- An operational model includes some, but not all, of the final system features.
- With the acceptance of these features, later essential features are added.
- Some menu items are available.
- System is built in modules.
- These are part of the actual system.

Prototyping As an Alternative to the Systems Life Cycle

- Two main problems with the SDLC:
  - Extended time required to go through the development life cycle.
  - User requirements change over time.
  - Prototyping may be used as an alternative.

Prototype Development Guidelines

Guidelines for developing a prototype are:

- Work in manageable modules.
- Build the prototype rapidly.
- Modify the prototype in successive iterations.
- Stress the user interface.

Prototype Disadvantages

- Managing the prototyping process is difficult because of its rapid, iterative nature.
- Incomplete prototypes may be regarded as complete systems.

Prototype Advantages

- Potential for changing the system early in its development
- Opportunity to stop development on an unworkable system
- Possibility of developing a system that closely addresses users needs and expectations

Prototype Evaluation – The User's Role

- The user's role is honest involvement.
- Three ways the user is involved:
  - Experimenting with the prototype.
  - Giving open reactions to the prototype.
  - Suggesting additions to and/or deletions from the prototype.

Rapid Application Development (RAD)

RAD, or rapid application development, is an object-oriented approach to systems development that includes a method of development as well as software tools.

RAD Phases

- The three broad phases to RAD are :
  - Requirements planning.
  - RAD design workshop.
  - Implementation.

RAD Phases

Insert Figure 8.7 here

NOTE: Confirm with author which figure should be inserted!

Requirements Planning Phase

- Users and analysts meet to identify objectives of the application or system
- Oriented toward solving business problems

RAD Design Workshop

- Design and refine phase.
- Use group decision support systems to help users agree on designs.
- Programmers and analysts can build and show visual representations of the designs and workflow to users.
- Users respond to actual working prototypes.
- Analysts refine designed modules based on user responses.

Implementation Phase

- As the systems are built and refined, the new systems or partial systems are tested and introduced to the organization.
- When creating new systems, there is no need to run old systems in parallel.

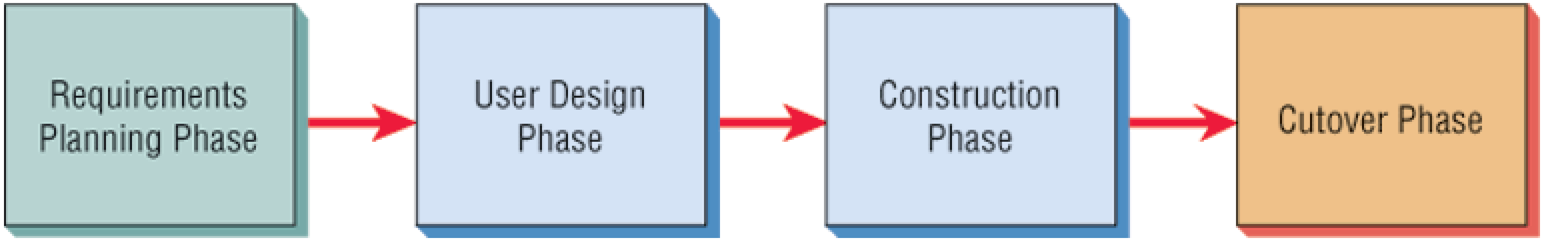
Martin Approach to RAD

The Martin approach to RAD includes four phases:

- Requirements planning.
- User design.
- Construction.
- Cutover.

Martin Approach to RAD

Figure 6.5 Martin's phases of RAD.



Requirements Planning Phase

User Design Phase

Construction Phase

Cutover Phase

RAD and the SDLC

- RAD tools are used to generate screens and exhibit the overall flow of the application.
- Users approve the design and sign off on the visual model.
- Implementation is less stressful because users helped to design the business aspects of the system.

When to Use RAD

RAD is used when:

- The team includes programmers and analysts who are experienced with it.
- There are pressing reasons for speeding up application development.
- The project involves a novel ecommerce application and needs quick results.
- Users are sophisticated and highly engaged with the goals of the company.

Disadvantages of RAD

- May try and hurry the project too much
- Loosely documented

Extreme Programming (XP)

Extreme programming (XP) takes good systems development practices to the extreme.

Four Values of Extreme Programming

The four values of extreme programming are:

- Communication.
- Simplicity.
- Feedback.
- Courage.

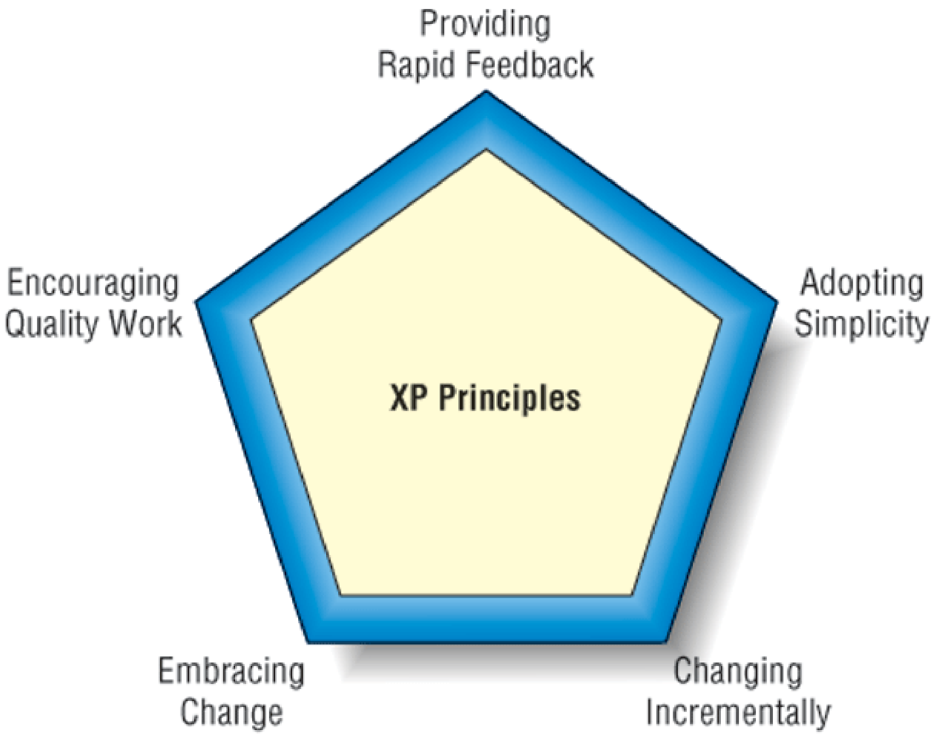
Five XP Principles

The five XP principles are:

- Providing rapid feedback.
- Assuming simplicity.
- Changing incrementally.
- Embracing change.
- Encouraging quality work.

Five XP Principles

Figure 6.8 Five XP principles guide the systems analyst through a successful XP project.



© 2005 Pearson Prentice Hall

Four Basic Activities of XP

The four basic activities of XP are:

- Coding.
- Testing.
- Listening, to the programming partner and customer.
- Designing.

Four XP Resource Control Variables

The four resource control variables in XP are:

- Time.
- Cost.
- Scope.
- Quality.

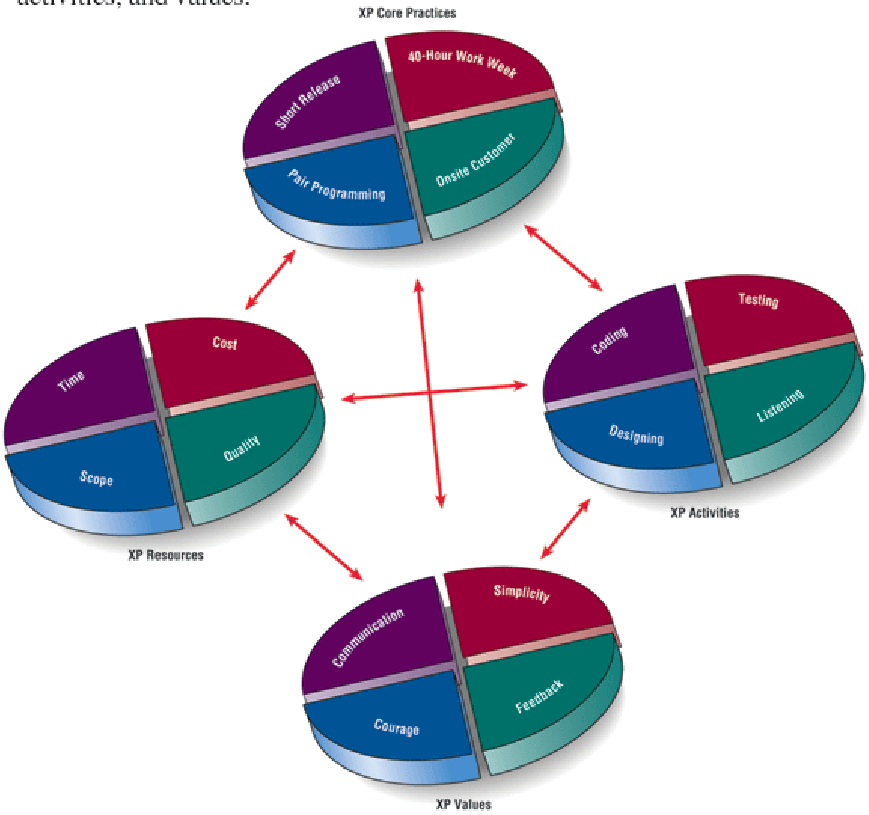
Four XP Core Practices

The four XP core practices are:

- Short releases, work with the most important features first.
- Having a 40-hour work week.
- Having an onsite customer.
- Pair programming with another programmer.

XP Relationships

Figure 6.10 The XP core practices are interrelated with XP's resources, activities, and values.



XP Development Process

The phases of the XP development process are:

- Exploration.
- Planning.
- Iterations to the first release.
- Productionizing.
- Maintenance.

XP Stories

- XP stories are a spoken interaction between developers and users.
- It is not written communication.
- The goal is prevention of misunderstanding or misinterpretations of user requirements.

XP Lessons

The six lessons that can be drawn from the XP development approach are:

- Short releases allow the system to evolve.
- Pair programming enhances overall quality.
- Onsite customers are mutually beneficial to the business and the XP team.

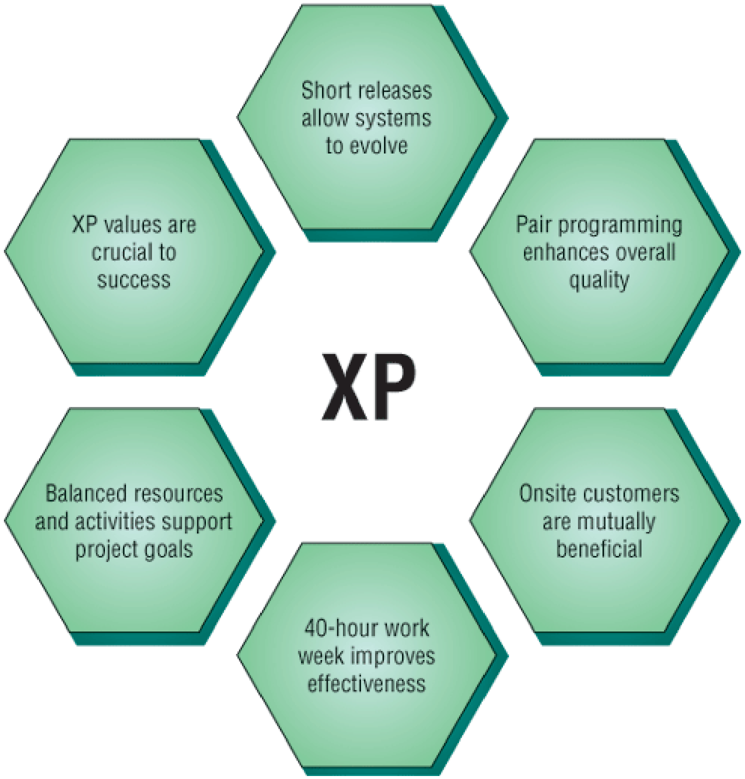
XP Lessons

The six lessons that can be drawn from the XP development approach (continued)

- The 40-hour work week improves worker effectiveness.
- Balanced resources and activities support project goals.
- XP values are crucial to success.

XP Lessons

Figure 6.12 There are six vital lessons that can be drawn from the XP developmental approach to systems.


Short releases allow systems to evolve
Pair programming enhances overall quality
Onsite customers are mutually beneficial
40-hour work week improves effectiveness
Balanced resources and activities support project goals
XP values are crucial to success
XP

Agile Modeling

- Agile modeling is similar to XP.
- In addition to the values of communication, simplicity feedback and courage, has a fifth value of humility.

Agile Modeling (Continued)

- Agile modeling process is:
  - Listen to user stories.
  - Draw a logical workflow model.
  - Create new user stories based on the workflow.
  - Develop some prototypes.
  - Use feedback from the prototypes and logical workflow to create physical model.

Scrum

- Scrum is an Agile approach that has an emphasis on teamwork.
- Team success is of primary importance.
- Individual success is secondary.
- The team works within a strict time frame.
- The project leader has some but not much influence on detail.