



GOVERNMENT OF ANDHRA PRADESH COMMISSIONERATE OF COLLEGIATE EDUCATION



SOFTWARE PROCESS MODELS - EVOLUTIONARY PROCESS MODELS

Software Engineering
Computer Science

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Objectives

- Explore the need of evolutionary model.
- Describe various types of evolutionary models.
- Discuss their advantages and disadvantages.

Need of Evolutionary Models

- These models are iterative in nature.
- Develop complete versions of the software.
- When are we going to use evolutionary models.
 - Minimal version of the software is not required.
 - Requirements are not clear.
 - When you want to build more complete version of the software.

Types of Evolutionary Models

- Prototyping model
 - When requirements are not clear use prototyping model.
- Spiral model
 - When we want to build more complex systems.

Prototyping Model

- Prototyping is best suited
 - When customer state the problem in broad terms and does not clearly identify requirements.
 - Developer unsure of efficiency of the algorithms, human machine interaction and development environment.
- Prototype is mainly used to elicit requirements from customer.
- It can serve as “*First system*” being developed.
- Customers quickly gets actual feel of the system.
- Developers like this model as something gets implemented quickly.
- Some prototypes are “*Through Away*” , once requirements are freeze.

Prototyping Model

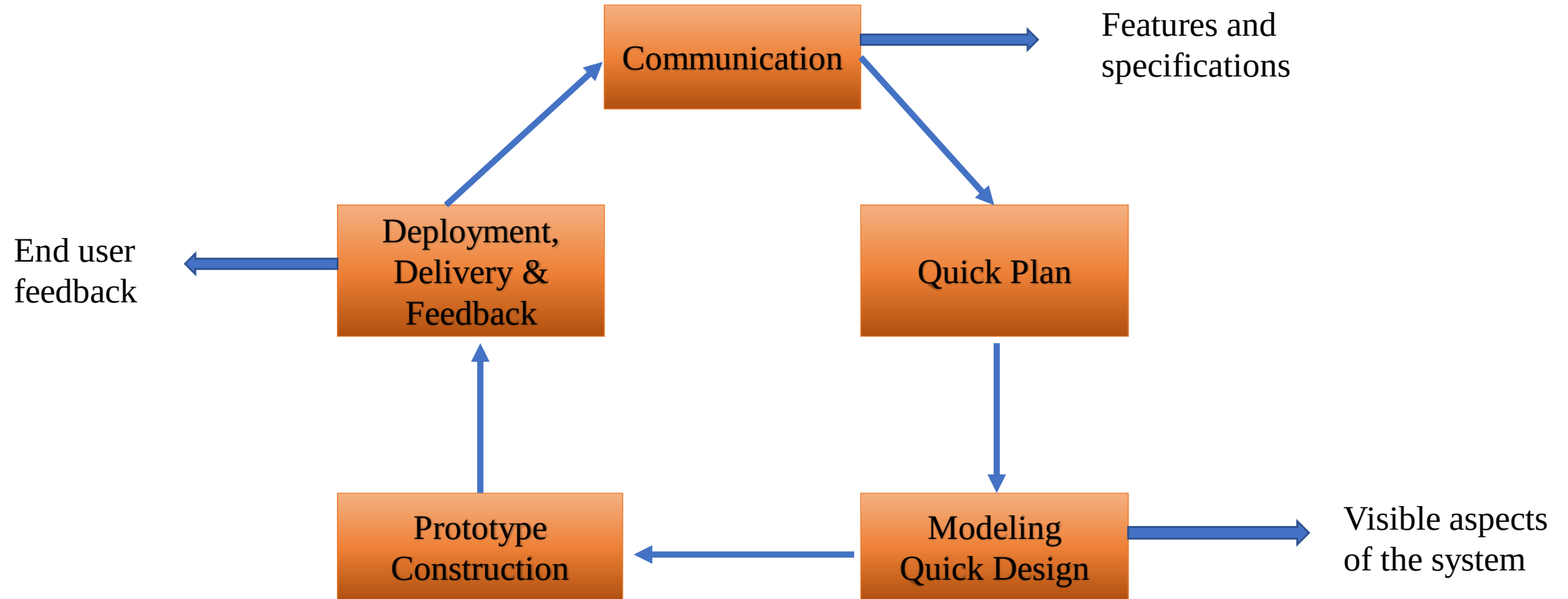


Figure: Prototyping Model

Prototyping Model

- Advantages

- Users get better understanding of the system being developed.
- Easy to identify missing features.
- Quick user feedback leads to better solution.

- Disadvantages

- Quality compromises take place.
- Implementation compromises are often taken place to get quick working version of the software.

Spiral Model

- Mimics iterative nature of prototyping and systematic aspects of waterfall model.
- Software is developed in series of evolutionary releases.
- Early iterations might result a model or prototype.
- More complete versions of software developed in later iterations.
- First circuit around spiral might result product specification.
- Next circuit might result prototype.
- As we move outwards more and more sophisticated versions of software developed.

Spiral Model

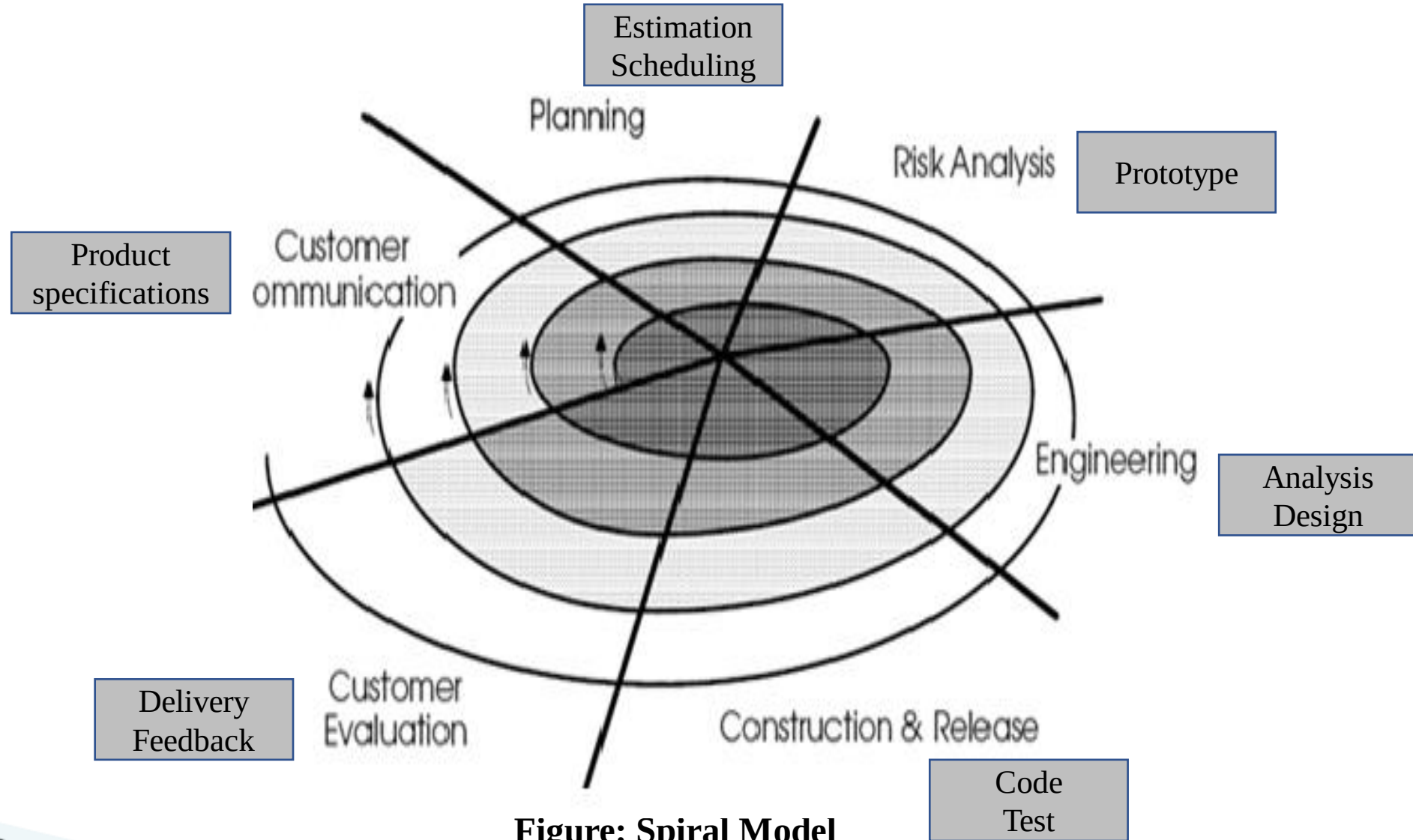


Figure: Spiral Model

<https://images.app.goo.gl/c9TJtajtyzgrLo1i6>

Spiral Model

- Advantages

- It can be applied throughout the life of the software.
- Effective risk management takes place.
- Changes can be easily accommodated even in later stages.
- More realistic are the cost and schedules.

- Disadvantages

- Model may be uncontrollable.
- Cost of this approach may be high.
- Expertise required in risk handling.
- If the risk is not discovered early, it may become major risk in later stages.
- Rules and protocols must be followed very strictly to implement the approach.

Summary

- Need of evolutionary models.
- Prototyping model and its pros and cons.
- Spiral model and its pros and cons.

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Thank You



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