

Lecture # 5

# Processes and Process Models



# Process - 1

- ◉ A process is an organized set of activities, which transforms inputs to outputs
- ◉ We can use synonyms of process such as: procedure, method, course of action, etc.
- ◉ Processes are essential for dealing with complexity in real world



# Process - 2

- Processes document the steps in solving a certain problem
- They allow knowledge to be reused
- They Allow people to apply the process in their peculiar but similar problems



# Examples of Processes - 1

- ◉ An instruction manual for operating a microwave oven
- ◉ An instruction manual for assembling a computer or its parts
- ◉ A procedure manual for operating a motor vehicle radio and CD player



# Examples of Processes - 2

- A quality manual for software development.

Such a manual describes the processes, which should be used to assure the quality of the software



# Software Processes

- Software engineering, as a discipline, has many processes
- These processes help in performing different software engineering activities in an organized manner



# Software Processes

- ◉ Requires creativity
- ◉ Provides interactions between a wide range of different people
- ◉ Helps in engineering judgment
- ◉ Requires background knowledge



# Examples of Software Processes

- ◉ Software engineering development process (SDLC)
- ◉ Requirements engineering process
- ◉ Design process
- ◉ Quality assurance process
- ◉ Change management process





# Software Requirements Engineering Process

- Before discussing different aspects of requirements engineering process, let us discuss the concept of process models



# Process Models

- ◉ A process model is a simplified description of a process presented from a particular perspective
- ◉ There may be several different models of the same process
- ◉ No single model gives a complete understanding of the process being modeled



# Variations in Process Models

- A process model is produced on the anticipated need for that model. We may need
  - > A model to help explain how process information has been organized
  - > A model to help understand and improve a process
  - > A model to satisfy some quality management standard



# Types of Process Model

- ◉ Coarse-grain activity models
- ◉ Fine-grain activity models
- ◉ Role-action models
- ◉ Entity-relation models



# Coarse-grain Activity Model

- ◉ This type of model provides an overall picture of the process
- ◉ Describes the context of different activities in the process
- ◉ It doesn't document how to enact a process

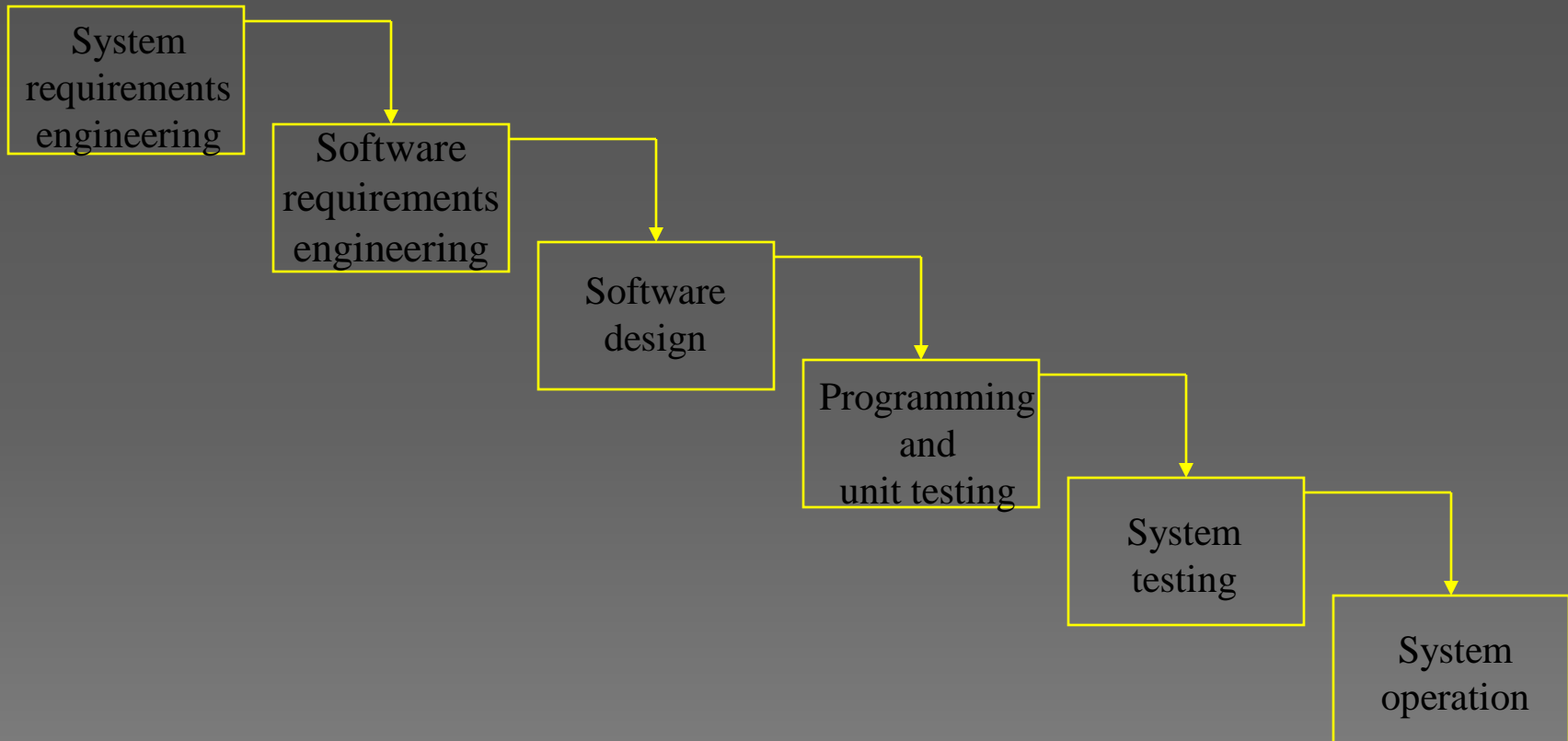


# Context of Requirements Engineering

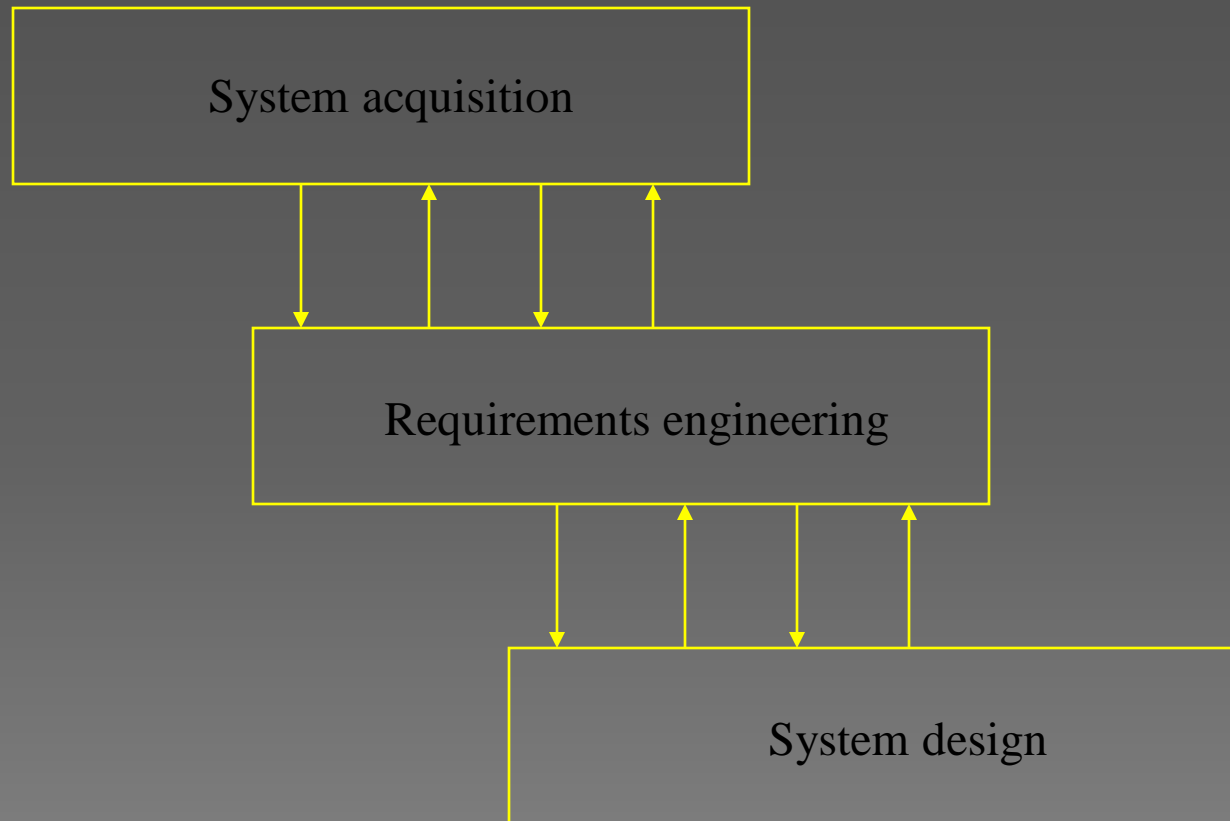
- Software requirements follow the “system requirements” and “system design”
- The primary goal is understanding
- Software requirements are followed by software design in a software development life cycle



# Context of RE Process in Waterfall Model



# Another Perspective on Context of RE Process





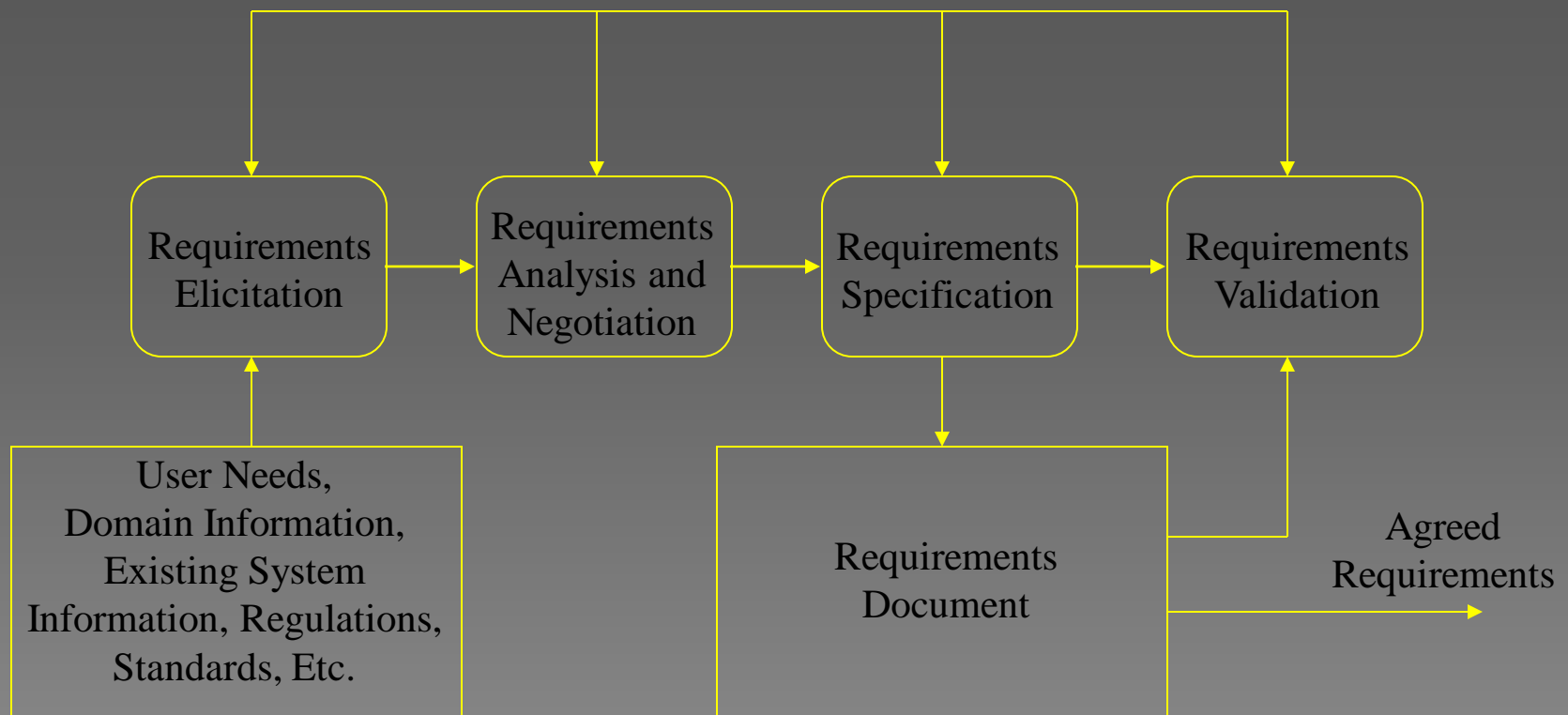
# Coarse-grain Activity Model of the Requirements

## Engineering Process

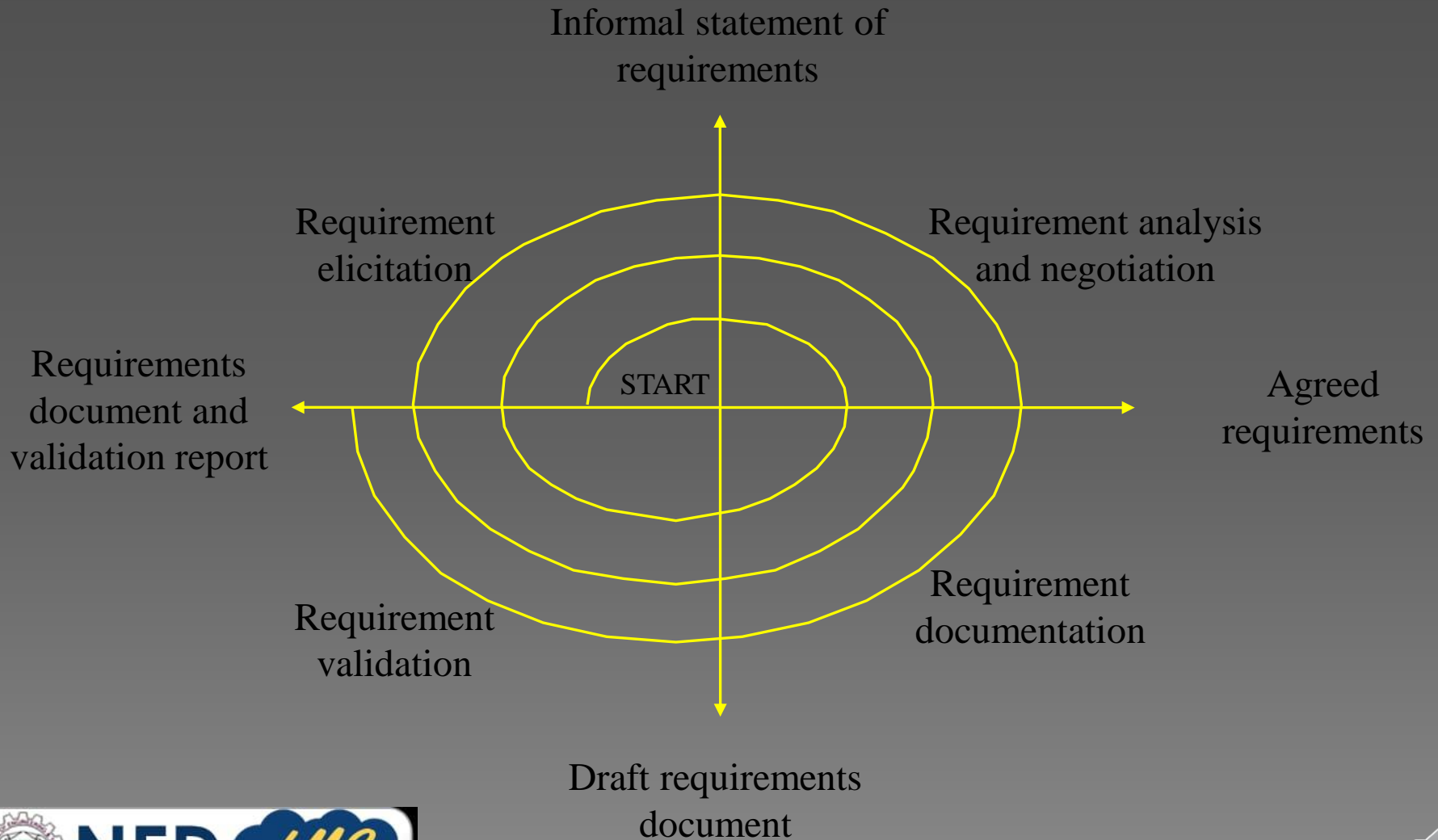
- Requirements engineering process is an example of coarse-grain activity model



# Coarse-grain Activity Model of the Requirements Engineering Process



# Spiral Model of RE Process



# Fine-grain Activity Models

- These are more detailed models of a specific process, which are used for understanding and improving existing processes
- We'll discuss some fine-grain processes within the general requirements engineering processes in later lectures



# Role-action Models

- These are models, which show the roles of different people involved in the process and the actions which they take
- They are useful for process understanding and automation



# Entity-relation Models

- The models show the process inputs, outputs, and intermediate results and the relationships between them
- They are useful in quality management systems



# Summary

- A process is an organized set of activities which transforms inputs to outputs, and they help in coping with complexity in the world
- Differences between these processes usually emerge at the level of detailed description
- A process model is a simplified description of a process presented from a particular perspective

