Lecture-14

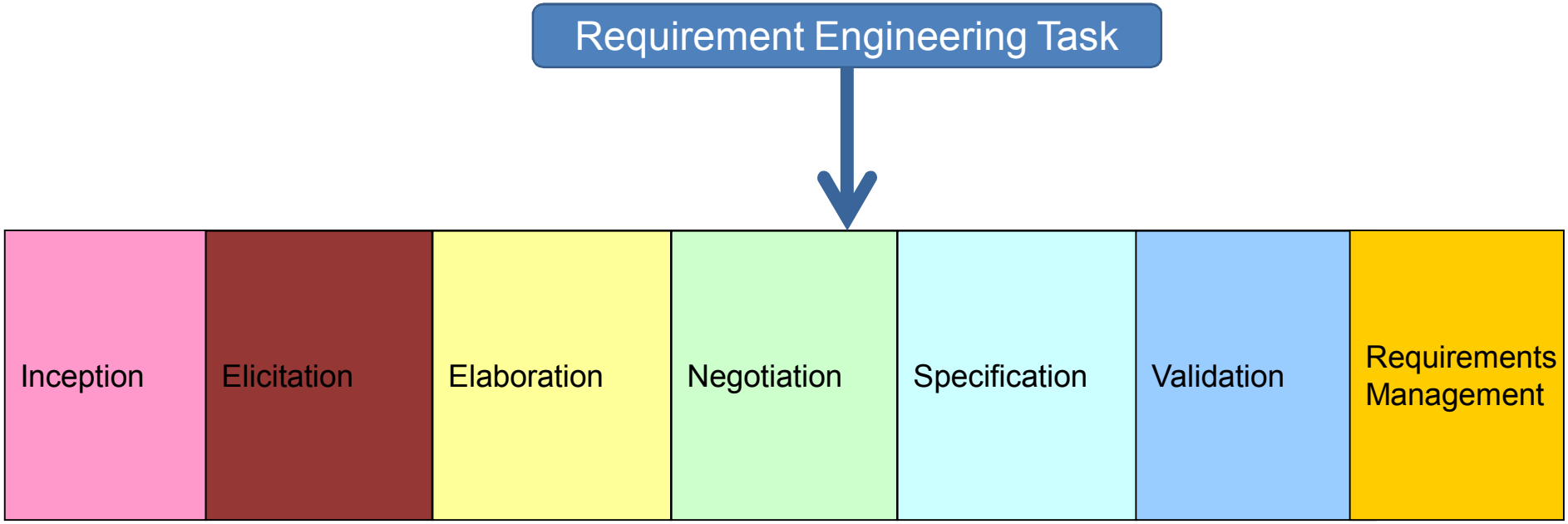
Requirement Engineering (cont……)

Dronacharya College of Engineering

Requirement Engineering Task

- *Inception*
- *Elicitation*
- *Elaboration*
- *Negotiation*
- *Specification*
- *Validation*
- *Management*

Requirement Engineering Task



RE Task :3. Elaboration

- Expand requirement into analysis model
- Elements of the analysis model
  - Scenario-based elements
    - Functional—processing narratives for software functions
    - Use-case—descriptions of the interaction between an "actor" and the system
  - Class-based elements
    - Implied by scenarios
  - Behavioral elements
    - State diagram
  - Flow-oriented elements
    - Data flow diagram

RE Task :4. Negotiation

- agree on a deliverable system that is realistic for developers and customers
- SW team & other project stakeholders negotiate the priority, availability, and cost of each requirement
- The Process are :
  - Identify the key stakeholders
    - These are the people who will be involved in the negotiation
  - Determine each of the stakeholders “win conditions”
    - Win conditions are not always obvious
  - Negotiate
    - Work toward a set of requirements that lead to “win-win”

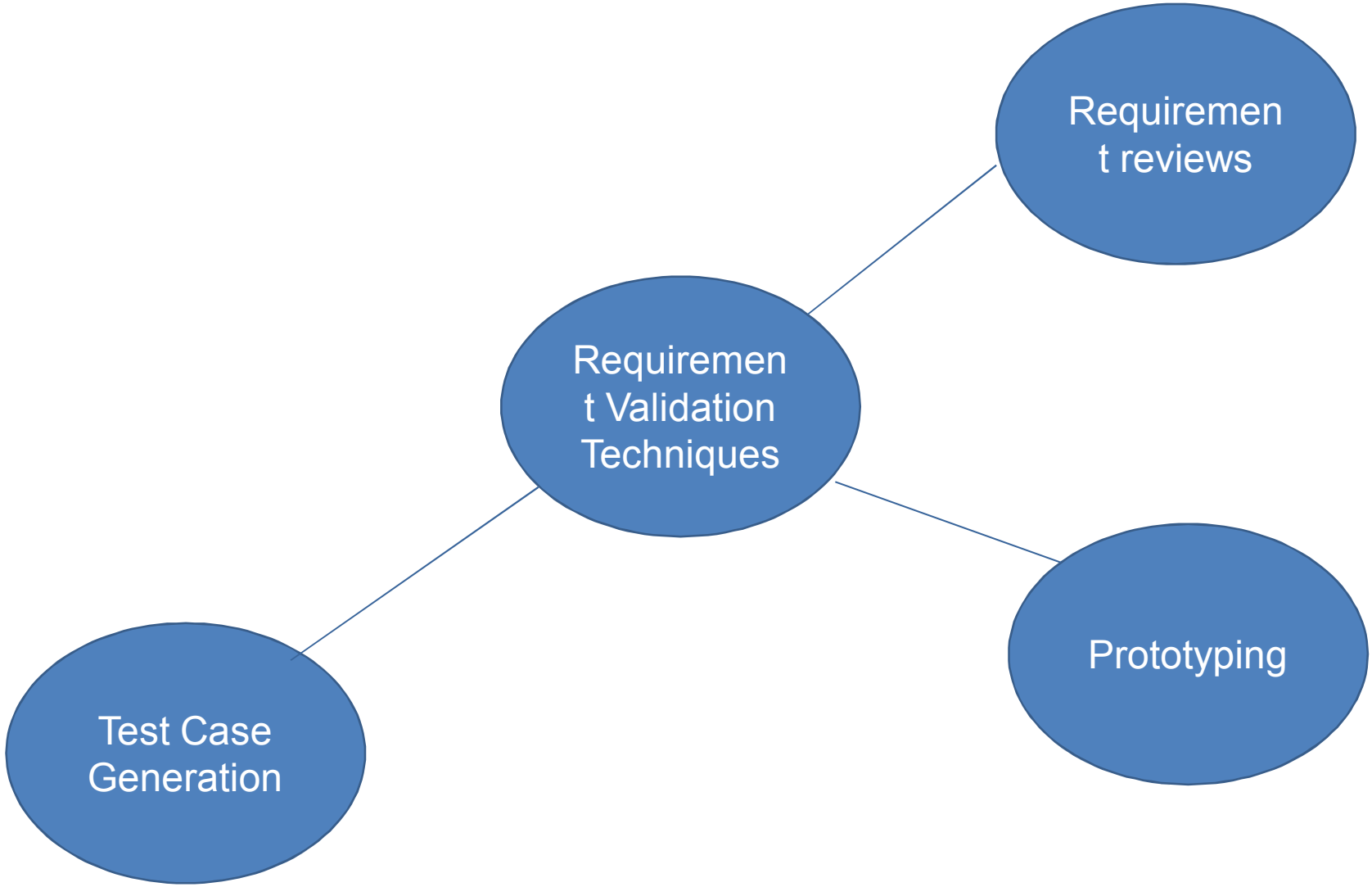
RE Task :5. Specification

- Final work product produced by requirement engineer.
- Can be any one (or more) of the following:
  - A written document
  - A set of models
  - A formal mathematical
  - A collection of user scenarios (use-cases)
  - A prototype

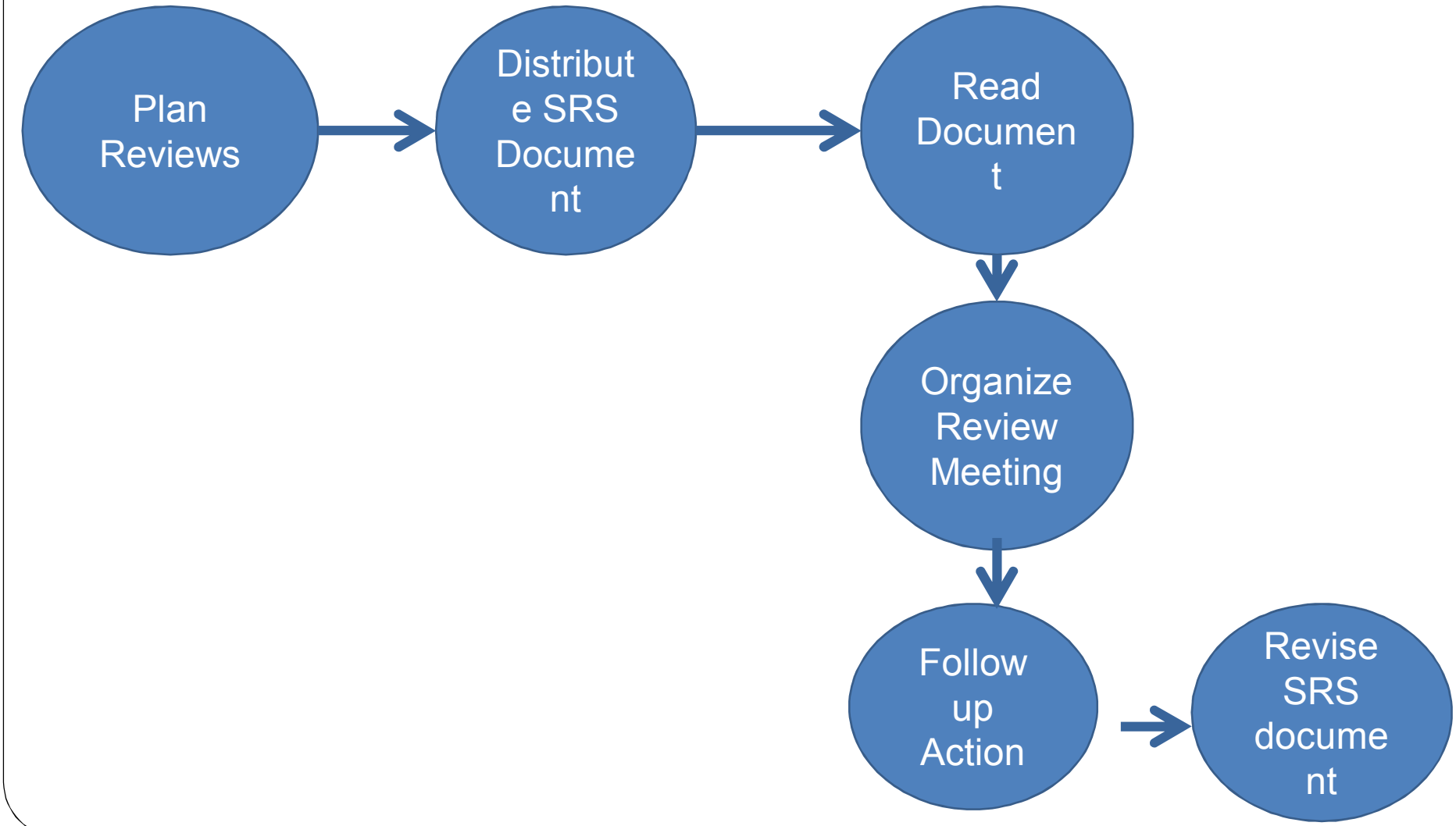
RE Task :6. Validation

- examine the specification to ensure that SW requirement is not ambiguous, consistent, error free etc
- a review mechanism that looks for
  - errors in content or interpretation
  - areas where clarification may be required
  - missing information
  - inconsistencies (a major problem when large products or systems are engineered)
  - conflicting or unrealistic (unachievable) requirements.

Requirements Review Process



Requirements Validation Techniques



RE Task : Validation (cont.)

- A review of the analysis model addresses the following question :
  - Is each requirement consistent with the overall objective for the system/product?
  - Have all requirements been specified at the proper level of abstraction? That is, do some requirements provide a level of technical detail that is inappropriate at this stage?
  - Is the requirement really necessary or does it represent an add-on feature that may not be essential to the objective of the system?
  - Is each requirement bounded and unambiguous?
  - Does each requirement have attribution? That is, is a source (generally, a specific individual) noted for each requirement?
  - Do any requirements conflict with other requirements?

RE Task : Validation (cont.)

- Is each requirement achievable in the technical environment that will house the system or product?
- Is each requirement testable, once implemented?
- Does the requirements model properly reflect the information, function and behavior of the system to be built.
- Has the requirements model been “partitioned” in a way that exposes progressively more detailed information about the system.
- Have requirements patterns been used to simplify the requirements model. Have all patterns been properly validated? Are all patterns consistent with customer requirements?

RE Task : 7.Requirement Management

- Set of activities that help the project team identify, control and track requirement and changes
- Use Traceability table :

FIGURE 10.4 Generic traceability table

Requirement	Specific aspect of the system or its environment								
	A01	A02	A03	A04	A05				Aii
R01			✓		✓				
R02	✓		✓						
R03	✓			✓					✓
R04		✓			✓				
R05	✓	✓		✓					✓
Rnn	✓		✓						

Review

- Requirement Engineering Task
  - Inception
  - Elicitation
  - Elaboration
  - Negotiation
  - Specification
  - Validation
  - Requirement Management