Capturing Requirements Meeting Customer Intent: A Structured Methodological Approach

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Problem Statement

How does one evolve requirements meeting the customer’s intent?

Solution Approach

Indoctrination
Preparation Elicitation Evaluation
Requirements Capturing
Requirements Analysis

Iteration
Concept Definition
Requirements Definition

Bring into focus the distinct components and their role within requirements generation

Outline

- Definitions
- Indoctrination
- Requirements Capturing
- Requirements Management
- Work to be Completed & Schedule

Definitions

- Guidelines – are suggestions or recommendations that offer support by serving in an advisory capacity

- Protocols – are rules that
  - establish boundaries through pre-defined constraints, and
  - impose operational, goal oriented actions through mandates

Definitions (cont.)

- Procedures – a series of steps followed in a regular definite order
- Methods – one or more actions focused on achieving specific objective(s)
- Methodology – set of procedures and methods where the procedures indicate when and which method to apply
Definitions (cont.)

- **Monitoring Methodology** – a methodology where procedures are
  - continuously applied to monitor activities within the requirements elicitation process to detect irregularities and
  - indicate methods to correct those irregularities

Requirements Definition Framework

A framework of an established sequence of interdependent phases and a set of structuring components* supporting the requirements definition process.

That sequence of interdependent phases consists of
1. An indoctrination phase ….., and
2. a requirements capturing phase …..

*The set of structuring components is composed of guidelines, protocols, and a monitoring methodology that identify and direct activities within and among the various phases.

Indoctrination

- **Indoctrination** – governs all preparation activities up to and including the initial meeting between the customer and the requirements engineer

  - Objectives:
    - to introduce the customer to the requirements definition process,
    - to provide the requirements engineer with an overview of the customer’s problem domain and needs, and
    - to describe the participants’ tasks and responsibilities in the requirements definition process

Indoctrination

Educate Customer

- Describe product lifecycle
  - Objectives of each phase
  - Role of customer

- Outline requirements engineering process
  - What are requirements? What they are NOT!
  - Relationship between customer and requirements engineer

- Provide overview of requirements elicitation framework

Responsibility – Requirements Engineer

Indoctrination

Educate Requirements Engineer

- Introduce current system (What does it do?)
  - Objectives, Needs fulfilled, Purpose

- Introduce current environment
  - Discuss, Show
  - Software, Hardware
  - Humans

- Describe need for change
  - Motivation
  - Purpose
  - 4. Scope
  - 5. Stakeholders
  - Objectives

Responsibility – Customer
**Indoctrination**

**Responsibilities and Preparation**

- Discuss responsibilities/involvement
  - Requirements engineer: ensures adherence to process
  - Customer: ensures the needs & intent are adequately captured
- Prepare for initial meeting
  - Establish objectives & agenda
  - Identify participants
  - Identify & resolve impeding issues

**Requirements Capturing**

**Preparation**

- Review issues stemming from indoctrination or evaluation
- Resolve those issues
  - Consult experts/documentation for answers
- Arrange interaction meeting
  - Confirm participants and their roles
  - Set meeting time/place
  - Send meeting notice
- Keep communication channels open to achieve
  - Successful preparation
  - Resolution of identified issues
  - Timeliness

**Requirements Capturing**

**Elicitation**

- Enable requirements engineer to accurately identify and record software requirements as expressed by the customer
  - Impose protocols
    - structure processes (constraints)
  - Constrain meeting level and subject
    - overview, detail, refinement
    - issues identified
  - Control interaction
    - constant monitoring/sampling
    - problem resolution

**Requirements Elicitation**

**Evaluation**

- Conduct requirements review
- Determine if objectives of immediately preceding interaction session are met
  - Are requirements adequate (i.e., understandable, complete, accurate, testable, feasible)
  - Were all topics covered
  - Have all TBDs or unresolved issues been satisfactorily addressed?
- Check if Exit Criteria are met:
  - Has Requirements Review/Resolution taken place for each iteration?
  - Is the interpretation of ALL requirements consistent between customer and requirements engineering?
  - Are all TBDs or unresolved issues satisfactorily addressed?
- Has adequacy of all requirements been resolved?
- No, Iterate

**Requirements Management**
Requirements Management must pervade requirements capturing

- Introduction: Determine tool to use, define necessary databases
- Preparation: Use tool for reporting issues to participants
- Elicitation: Use necessary RM components to ensure “minimal” requirements elicitation
- Evaluation: Commit captured requirements to RM, conduct requirements review

Requirements Management Tools
- DOORS
- Caliber RM
- ReQuisit

Use RM tool to help determine requirements status:
- Complete - advance to requirements analysis phase
- Incomplete - iterate through requirements elicitation at least 1 more time

Validation of Goodness of Work:

Hypothesis 1
Projects using the framework to capture customer intent decrease project completion date slippage.

- Five Milestones tracked – Definition, Design, Construction, Roll-Out, Closure
- Dates tracked – original (planned), current, actual

Hypothesis 2
Projects using framework should exhibit less requirements change stemming from late discovery

- Track number of unexpected changes/challenges due to undiscovered requirements
- Status change indicator
  - Green -> Yellow, Green -> Red, Yellow -> Red
- Risk item entry

Hypothesis 3
Projects using framework should have customer satisfied greater percentage of time throughout project to closure

- Tracking of customer frustration level
  - How: Project status change
  - When: Milestone achievement

Validation of Goodness of Work: Work to be Completed

- Select projects for data collection
- 2 projects using framework (large/small)
- 2 control projects of similar complexity (large/small)
- Collect data
- Analyze data

Evaluation: Requirements Review

R.E. creates issues list

Customer creates "clean" electronic USRL

Combined Prioritized Issues List

R.E. & Customer identify Participants/issues

Next Meeting

Participants/Issues List:

R.E. & Customer combine issues lists

Customer sends list to R.E.