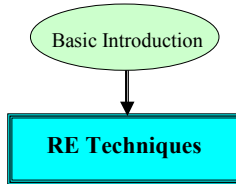
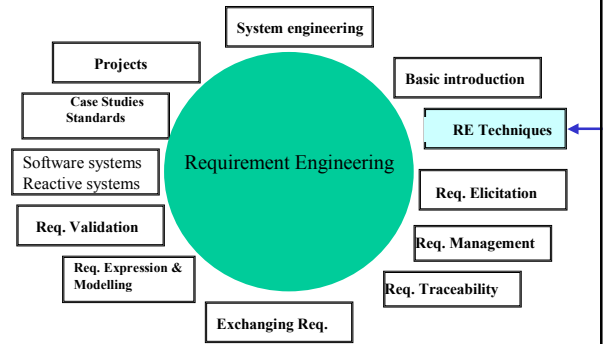


## Overview of RE techniques



## Overview of RE techniques



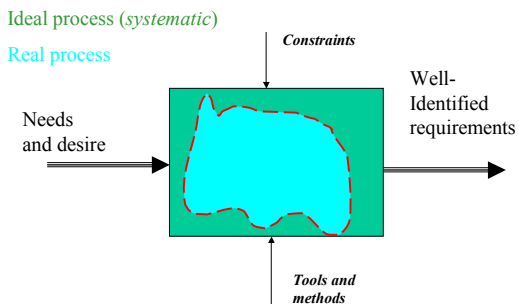
## Overview of RE techniques

- The Process : multi-disciplinary
- Experiences
- Main orientations
- Requirement and concept of operation
- Needs, requirement and specification

## The Process

- Components embedded in the process
  - Expression → linguistics
  - Human interaction → Sociology (*paper reading of J. Goguen : requirement as reconciliation between computer science and sociology*)
  - People from different horizons → Anthropology
  - Difficulty to express needs → Cognitive psychology

## The Process (2)



## The Process (3)

### • Main subprocess

- Elicitation and expression processes : *Get*



- Management process : *Organise and maintain*



- V & V Process : Check

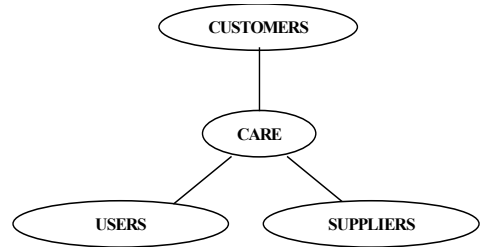


## The Process (4)

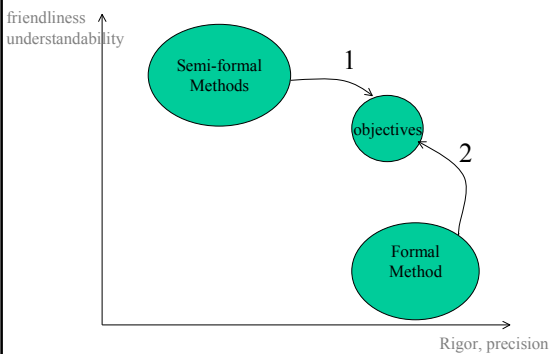
- There is definitive standard process : do it as you feel it depend on company and external context
- Goal driven approach
- Process can complex wrt to system
- Knowledge of main steps
  1. Define system objectives
  2. Elicit and express (modelling)
  3. Manage

## Experiences (CARE)

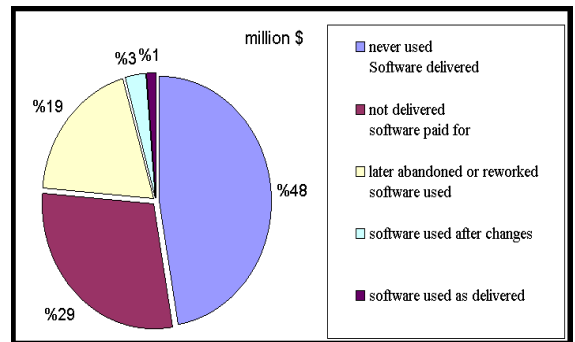
- Common Airbus Requirement Engineering



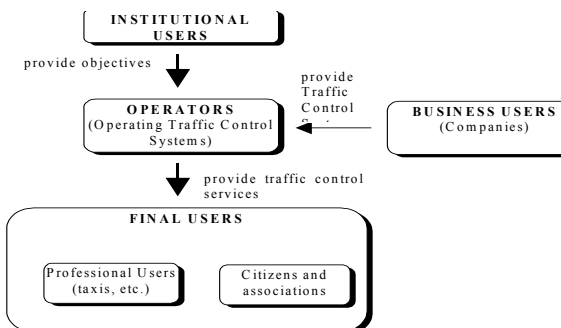
## Experiences (2) : Formal-Semi\_formal



## Experiences (a bad one !!) (NASA)



## Experiences with transport(4)

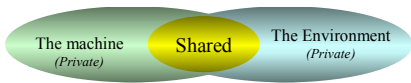


## Main Orientations (1)

- Many views and basic paradigms
  - Jackson-Zave
  - Wiegers and the ten Traps
  - Social issues
  - Management view
  - Traceability view

## Main Orientations (2) : The Jackson View

- A View based on environment and context
  - A machine (system) to be developed
  - Machine interacts with environment
  - User needs make abstraction on system internal
  - The environment exist; the machine to be developed
  - Shared phenomen :



## Main Orientations (3) : The Wiegers view

- The 10 traps to avoid : see paper [www.processimpact.com/articles/reqmapa.html](http://www.processimpact.com/articles/reqmapa.html)
- Share the same vision with the customer
- Use case driven based method
- An intermediate stop between concept of operation and software specification

## Main Orientations (4) : Social

- Each system concern the social world
- It consists of managers, users, ..
- The requirement information comes from the social world
- Social issues are the root of many difficulties
- Novel approaches will be needed
- Natural inreatctions and social context

## Main Orientations (5) Management

- Most RE tools are RE management tools
- Specific orientation for large projects (more 1000 requirements)
- Traceability and organisation capabilities
- Interface with project and quality management

## Main Orientations (6) Traceability

- Requirements seen through a unique view : Traceability : *Requirement Traceability Tools enable the engineer to link requirements to their source, to changes in requirements, and to modeling elements that satisfy the requirements*
- Most important issue in requirement management tools

## Main Orientations (7) : Traceability

- Trace forward and backward : missile example



## Requirement and concept of operation

- A system user operational view
- Concept of Operations as part of the requirements definition activities of a system development program. The ConOps (OpsCon, Operational Concept Document, OCD) provides the context in which the system will be developed, implemented, deployed, supported and disposed. It also defines how the system will be used in its operational and support environment, and by whom.
- The concept is applied to all types of application (legal, technical, business issues)

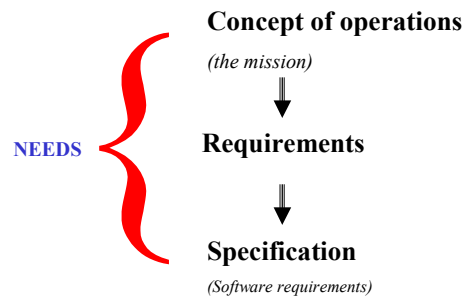
## Requirement and concept of operation (2)

- Software requirements specification can be written. Often this task can be difficult because:
  - The user does not adequately convey their needs to the developer
  - The developer is not an expert in the application area
  - The user or acquirer does not understand the technical requirements
  - The functional requirement does not emphasise the operational needs
  - Multi-users have difficulty stating a common system requirement

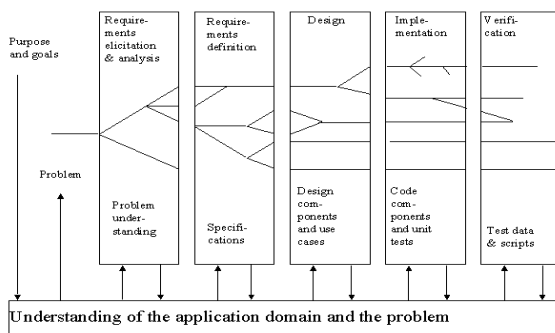
## Requirement and concept of operation (3)

- *The concept of operations (ConOps) document is a bridge between the operational requirements (events occurring over time) and the technical requirements (static, hierarchical description). It is written in narrative prose that is in the user's language. It states priorities, it uses visual images and leads to software requirements.*
- *IEEE Standard 1362, IEEE Guide for Concept of Operations Document, 1998.*

## Needs, requirement and specification

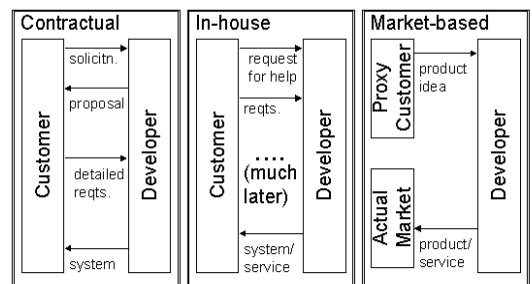


## Needs, requirement and specification (2)



## Needs, requirement and specification (3)

### Customer relationships



## Tutorial

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- Discuss the requirement process for setting up the course on requirement engineering at HPI

*RECURSION !!!* , you said

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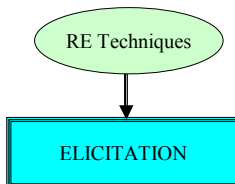
## Conclusion

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- Requirement process is important
  - Experiences were mainly based on
    - Either on V&V
    - Scenario based
    - Structured
  - The context is not Technical Only : so **CARE ABOUT THIS**
  - Link concept of operations to needs
- 

## Next Lecture

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## What to read and assignment

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- To read
    - *See Paper reading list*
    - *J. Hugues, I. Sommerville et al : Presenting ethnography in requirement process. RR SE5,1994*
    - *J. & S. Robertson : Volere requirements specification template. Edition 6.1, 2000.*
    - *I. Hooks : writing good requirements. IncoSE WG on RE, 1996.*
  - Assignment
    - Develop your own view of a requirement process (individual)
    - Develop a group view of a requirement Process
-