

# Tools for Requirements Elicitation and Analysis

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# Papers

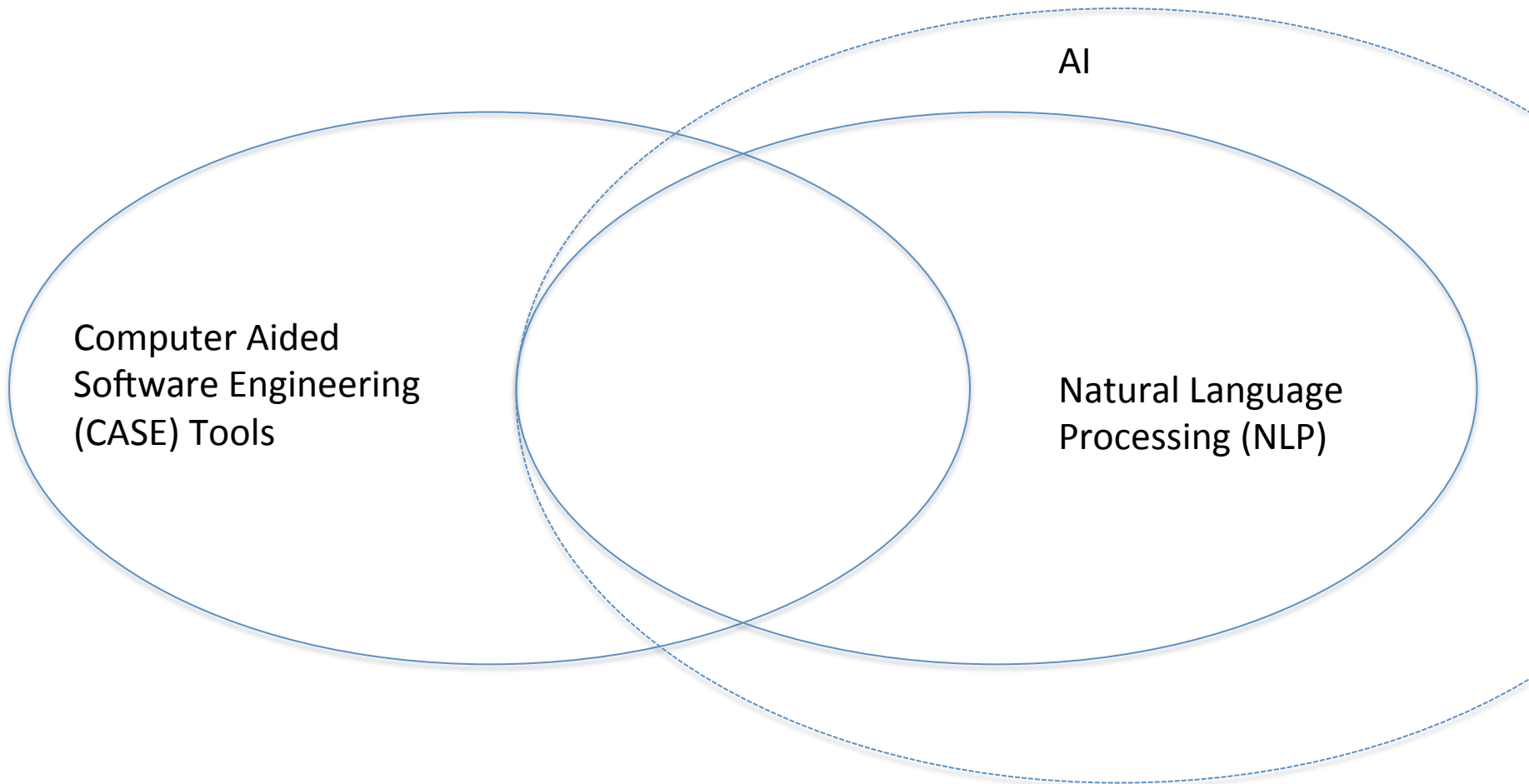
Mich Luisa, Franch Mariangela:

**Market research for requirements analysis using linguistic tools**

Pedro Campos, Nuno Jardim Nunes:

**Practitioner Tools and Workstyles for User-Interface Design**

# Context



# NLP CASE Tools

- The common objective is to carry out a linguistic analysis of requirements documents in order to produce conceptual models of them.

# Characteristics of NLP tools

- How „natural“ is the input language?
- How much intervention by an analyst is needed?

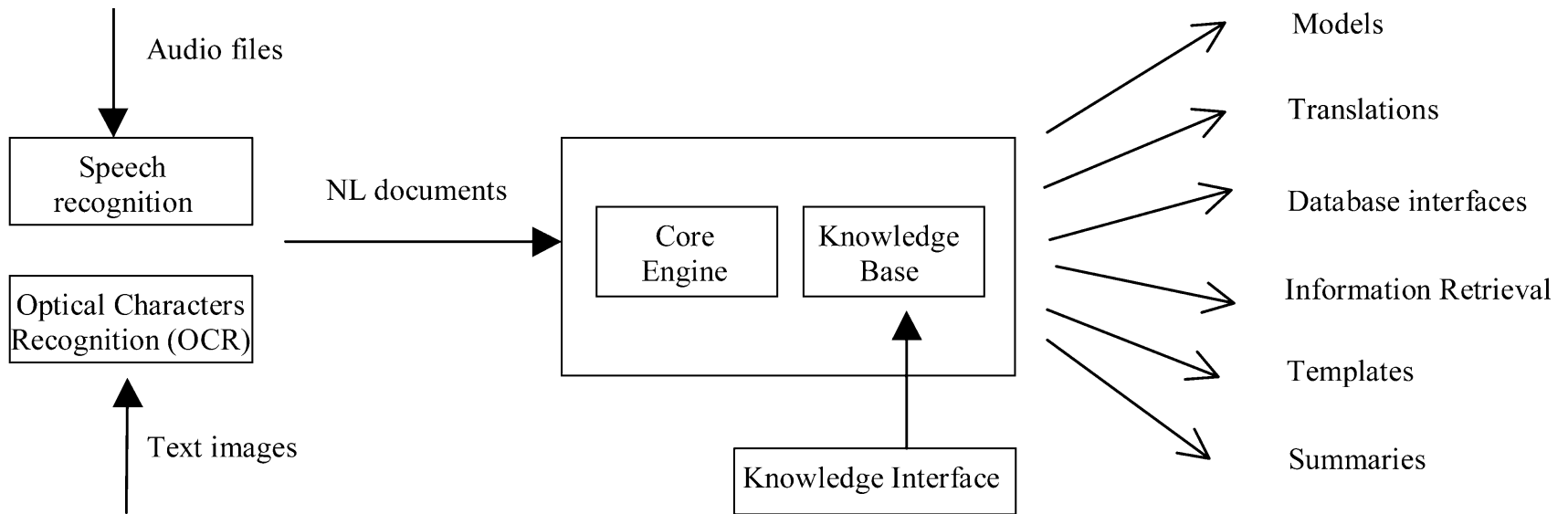
# Basic Problem

- Natural language is linked to application domain
- Application domain might be two-tiered:
  - Software Engineering
  - Domain of developed software

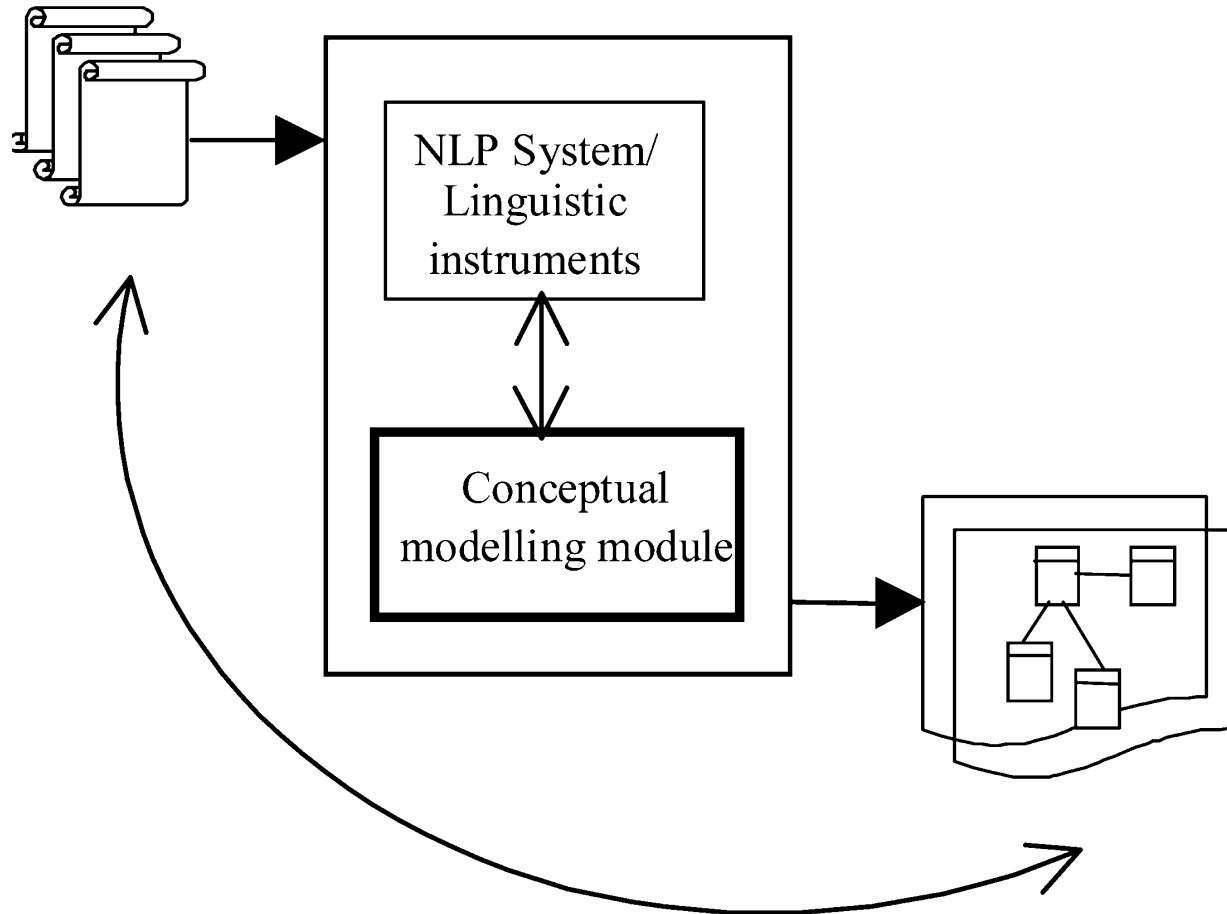
# Benefits

- Concentrate on the problem rather than on the modelling
- Take into account various kinds of requirements
- Traceability from the first document on
- Manage changing user requirements better

# Example Architecture of NLP CASE Tool



# Model generation

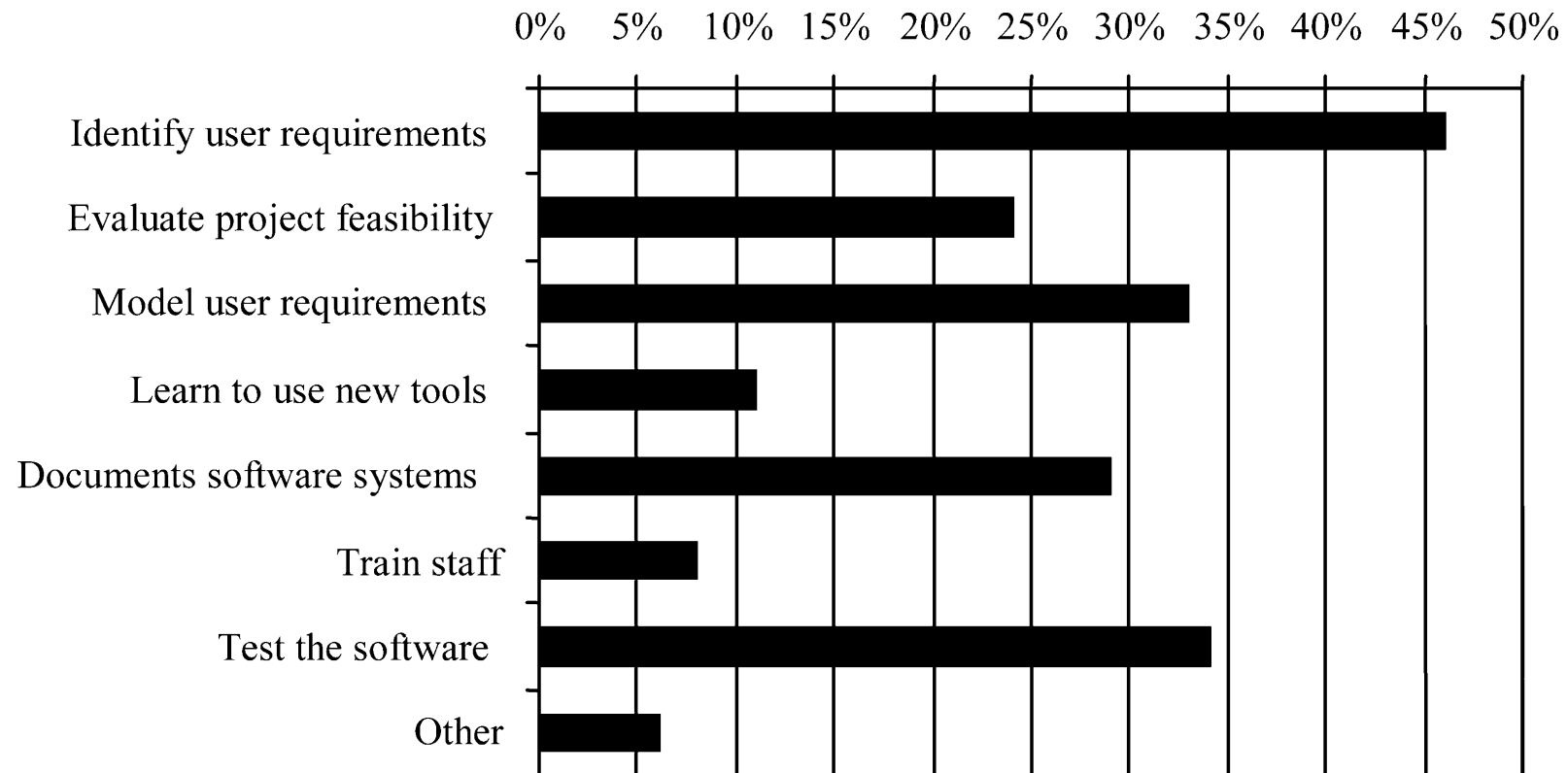


# Application in RE

- Elicitation phase:
  - Digitise requirements documents
  - Reveal ambiguities and contradictions in Documents
  - Verify questionnaires (regarding ambiguities)
  - Automatic analysis of free text answers
- Model requirements by extracting the description of the elements
- Support requirements validation

# Market Research

Which are the two things in your job you would like to do more efficiently?



# Market Research

Which are the two things in your job you would like to do more efficiently?

What would be the most useful thing to improve general day-to-day efficiency?

|                              | Automation | Outsourcing | Internal delegation |
|------------------------------|------------|-------------|---------------------|
| Identify user requirements   | 69%        | 9%          | 22%                 |
| Evaluate project feasibility | 44%        | 12%         | 44%                 |
| Model users requirements     | 75%        | 4%          | 21%                 |
| Learn to use new tool        | 86%        | 0%          | 14%                 |
| Documents software systems   | 71%        | 5%          | 24%                 |
| Train staff                  | 18%        | 0%          | 82%                 |
| Test the software            | 67%        | 4%          | 29%                 |
| Other                        | 43%        | 14%         | 43%                 |

# Which tool(s) do you currently use to perform user interface design?

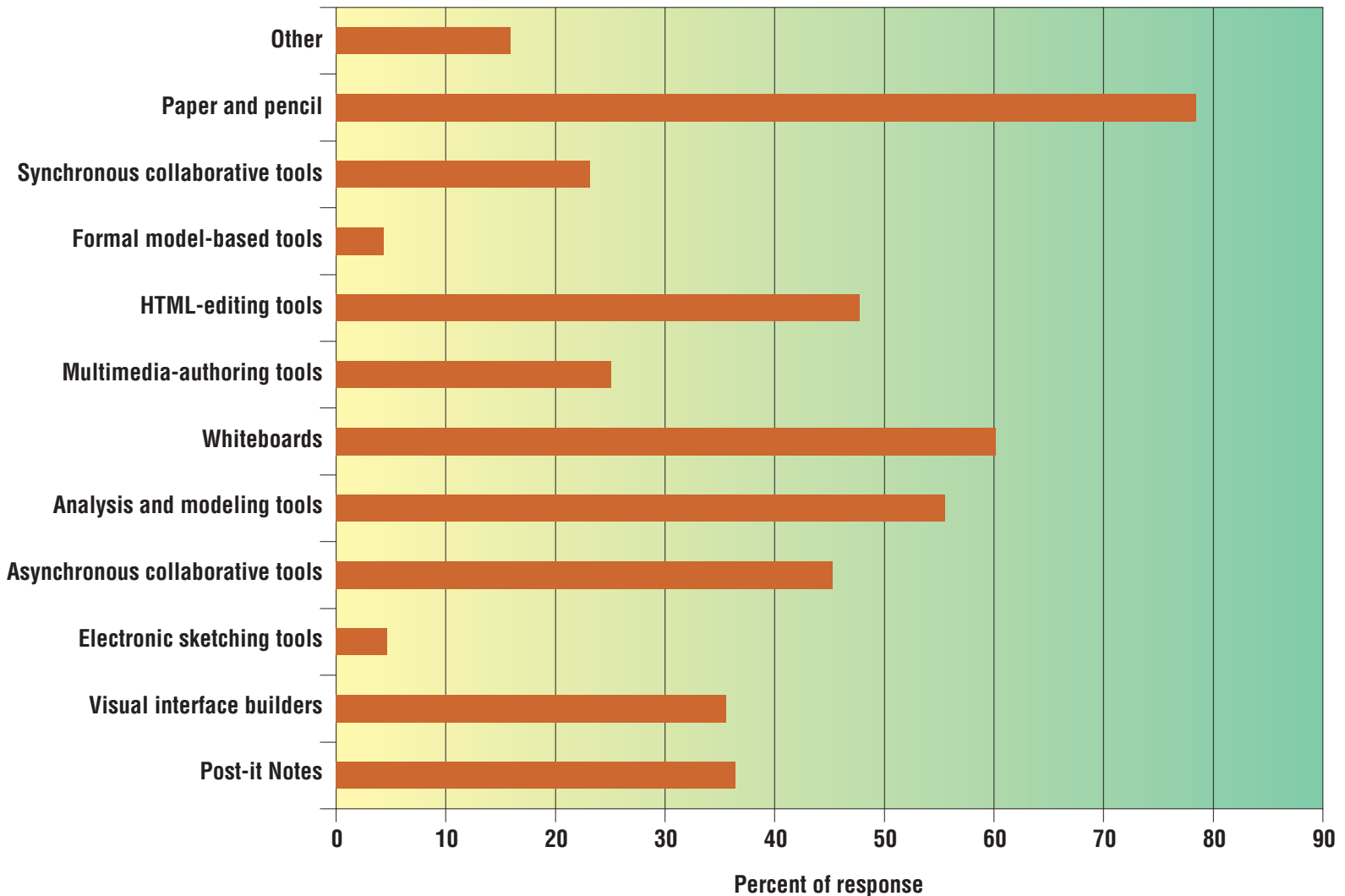


**Table 2****Practitioner tool choices for popular development processes**

| Development process | Type of tool       |                    |             |                   |                  |
|---------------------|--------------------|--------------------|-------------|-------------------|------------------|
|                     | Interface builders | Asynchronous tools | Whiteboards | Synchronous tools | Paper and pencil |
| Just do it          | 39                 | 36                 | 54          | 16                | 59               |
| Spiral              | 34                 | 29                 | 61          | 11                | 82               |
| Prototyping         | 37                 | 45                 | 55          | 23                | 80               |
| Formal methods      | 30                 | 56                 | 47          | 26                | 81               |
| Waterfall           | 46                 | 39                 | 69          | 28                | 80               |

# Workstyle (Transition)

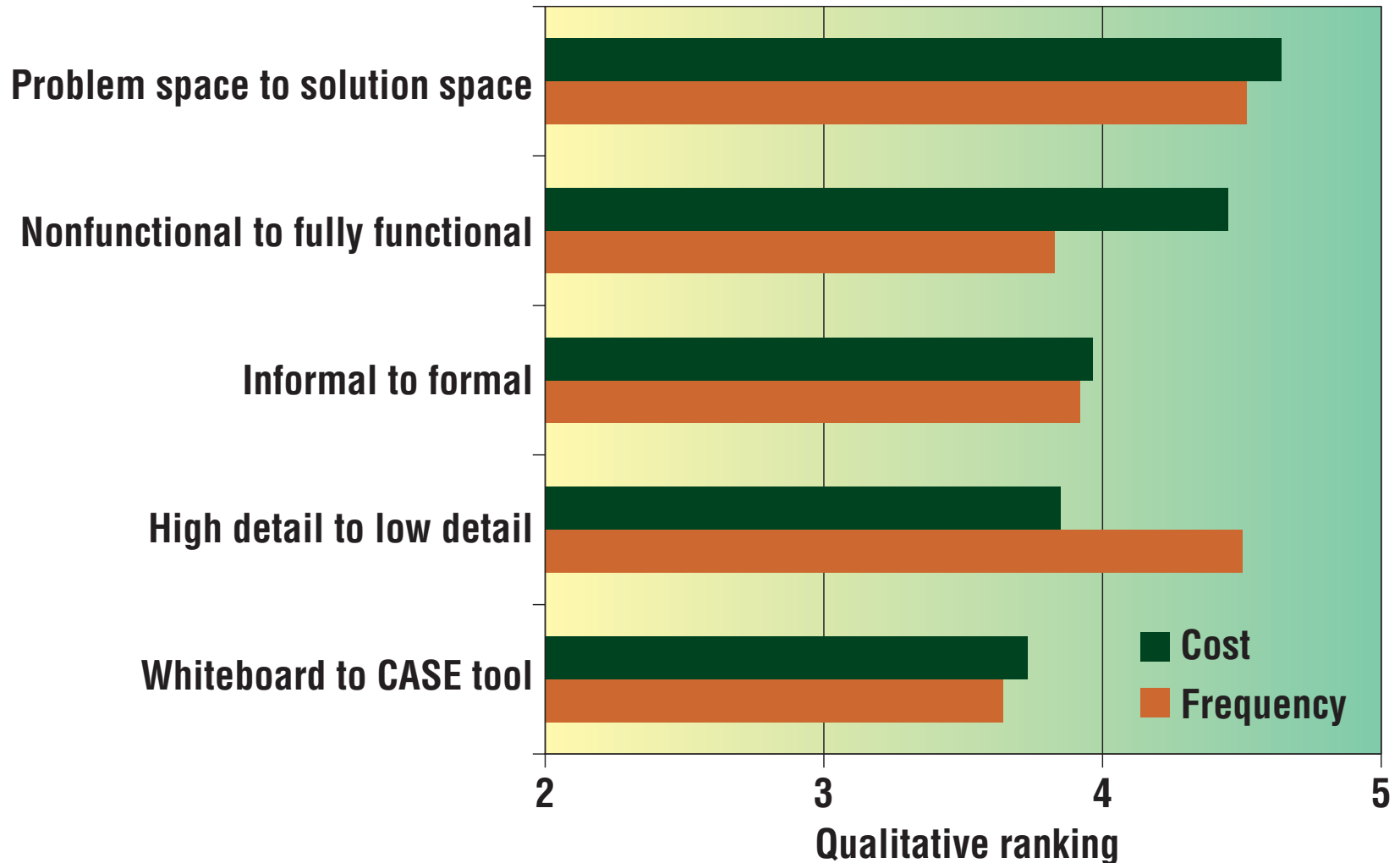
- Workstyle
  - Particular style of work
- Workstyle Transition
  - Several different workstyles involved in activity
  - Frequent switching between workstyles
  - Transitions are expensive:
    - interruptions lead to cognitive breakdown

# Measuring Workstyle Transitions

## Survey:

- Frequency:  
How many times [the respondent] engages and transitions in those workstyles.
- Cost:  
How difficult [the respondent] finds it to perform that transition.

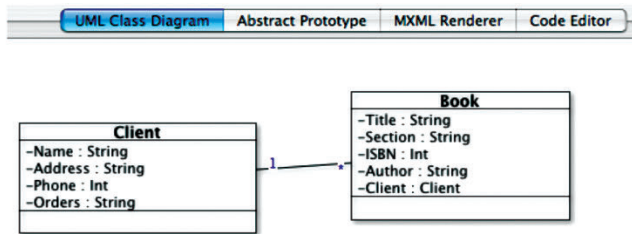
# Workstyle Transition Impact



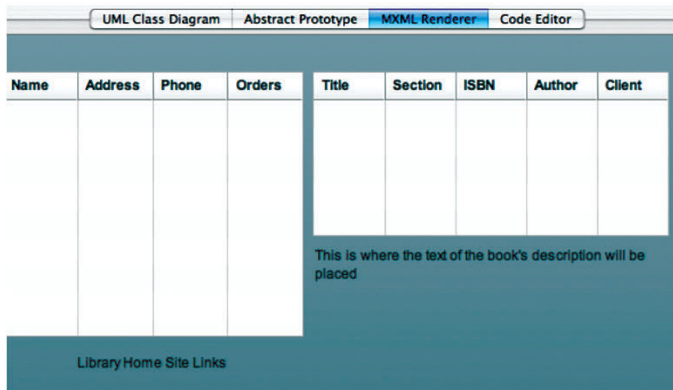
# TaskSketch

- Aim: help designers move from problem space concepts to a final solution design and back
- Designers can smoothly switch between :
  - Participatory view – results from sessions with users
  - a use-case perspective—described as an UML activity diagram
  - a system architecture perspective
- Changes in one perspective are propagated to the semantic equivalent in the other

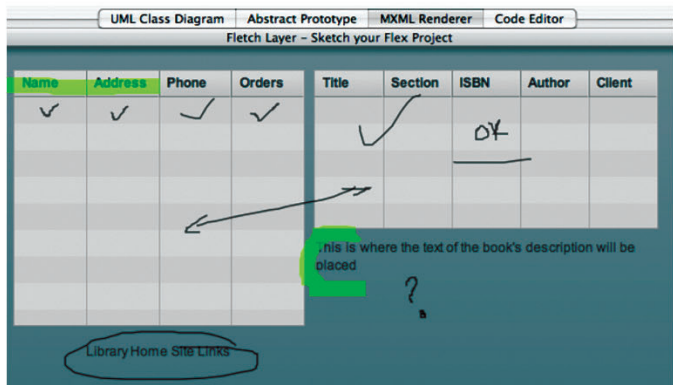
# CanonSketch



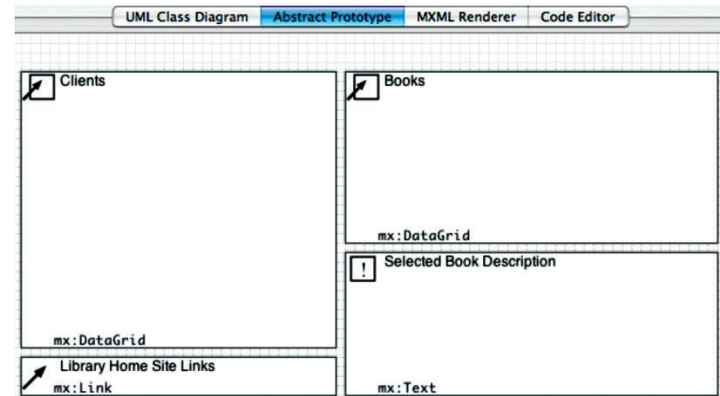
(a)



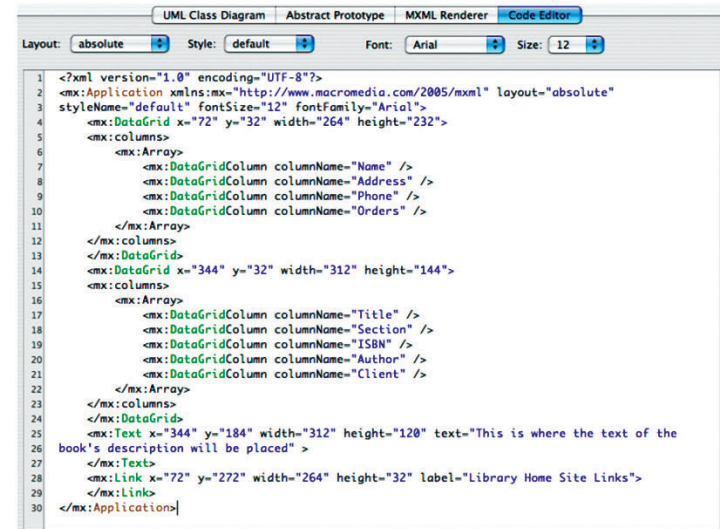
(b)



(c)



(d)



(e)

# Conclusion

- There is demand for tools
- Tools are not widespread
- If the language is controlled, simpler tools can be used
- Domain knowledge needs to be available

# Questions

- Did you perceive transitions as a problem?
- Do you think NLP is a feasible approach in RE?