GORE/KAOS in the industry:

Some lessons learnt

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  – KAOS method: overview
  – KAOS in practice (elicitation, modeling, validation, documentation)

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  – Requirements Document
  – Requirements Model

• Conclusion
Respect-IT: **REquirements & SPECification Techniques for Information Technology**

- Spin-out of **UCL** (University of Louvain – Belgium)

- Scientific advisor: Prof. A. van Lamsweerde

- Main activities:
  - Consultancy services in GORE
  - Tool editor
Goal Orientation

• A RE method focusing on
  – the objectives
    • strategical
    • business
    • technical
    + relationships
  – the agents
    • in the system
    • in the environment
    ➔ Responsibilities, Scope, Interfaces
  – the risks (obstacles, threats, …)

  to build consistent and complete sets of requirements
  to think & communicate about requirements

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Requirements Document: Process

1. Interviews
2. Existing systems
3. Documents
4. Modeling
5. Validation
6. Generating
7. Web doc
8. Requirements document

 KAOS model

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Goal Orientation (KAOS)

- Goal modeling
  - GOAL
  - OBSTACLE
  - DOMAIN PROPERTY
  - EXPECTATION
  - REQUIREMENT
  - ENTITY
  - N-ARY ASSOCIATION

- Object modeling
  - ON WHAT?
  - ENTITY
  - Attribute: Type
  - Link
  - Binary Association
  - Aggregation
  - ISA

- Operation modeling
  - OPERATION
  - EVENT
  - Input
  - Output
  - Cause
  - Perform
  - Monitor
  - Control

- Responsibility modeling
  - AGENT
  - Who?
  - Responsibility

- Operationalization
  - What to do?
  - When?

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On the other hand, some doctors will be reluctant to use prescription software only to be complaint with the law. The software must also provide functionalities that will: doctors need to be aware about undesired interaction between prescribed drugs; they need to know what are the drugs that comply with the hospital standards defined by the hospital pharmacy; they need to be warned about “out of bounds” amount of drugs prescribed and so on. Additionally, you must know that our hospital is near the border; we have a lot of patients coming from the other side of the border and the drugs are completely different there. The software must therefore be capable of managing the drug classifications of both countries and of converting drugs into their equivalents in the other country (it is very useful for the prescription of the exit treatment that the patient has to follow at home after having left the hospital)...

- Doctors assisted to prescribe drugs
- Be warned about “out of bounds” amount of drugs prescribed
- Drug classification of Belgian and French countries available
- Drugs converted into their equivalent
Requirements Modeling
Requirements Validation

Review note
The system shall provide assistance to the doctors during the prescription process:

- doctors must be informed about out of bounds descriptions.
- they must be assisted when they prescribe drugs for foreign patients going back into their countries.
B1  **Doctors assisted to prescribe drugs**

The system shall provide assistance to the doctors during the prescription process:

- doctors must be informed about out of bounds descriptions
- they must be assisted when they prescribe drugs for foreign patients going back into their countries

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**Notes**

G2  [Assistance to prescriptions in multinational drug systems](#) (page 6)

**List of Requirements**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Agent</th>
<th>Page</th>
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<tbody>
<tr>
<td>E-1. Be warned about “out of bounds” amount of drugs prescribed</td>
<td>Prescription Assistant</td>
<td></td>
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GORE: Lessons learnt (I)

- fills the gap between business & IT
- improves the understanding among the stakeholders
- provides reasoning continuity
  
  \[ pb_1 \rightarrow sol_1 = pb_2 \rightarrow sol_2 = pb_3 \rightarrow sol_3 = \ldots \]  

- connect business goals to technical requirements
- anchors the requirements into the problem definition
GORE: lessons learnt (II)

- Produces open-minded, **problem-oriented** requirements document (RD)
  
  *Ideal RD: problem description + constraints on any solution + project desiderata*

- Building a RD with GORE is like assembling a **jigsaw puzzle**: systematic but not rigid method
GORE: Lessons learnt (III)

• Model benefits
  – A lot of **by-products** (traceability matrices, queries & checks, document generation, ...)
  – Goal model understandable by business people; most solution-oriented models not
  – help specify the problem **correctly & completely**
  – can be used in **waterfall SLC** or in **agile SLC**

• Model drawbacks
  – More difficult to elaborate (investigate behind the scene)
  – Takes time
Perception on the maturity level in RE

- Ad Hoc
- Process - & Template-based
- Model-based
  - Solution
  - Problem

Formal Methods

GORE/KAOS/Objectiver
Conclusion

Goals: Keystone for RE

- Use cases
- Processes
- Ontology
More information...

KAOS method

www.objectiver.com