

# Requirements: Bridging the Communication Gaps

**Web Seminar for UML China**

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**Presented by  
Suzanne Robertson  
The Atlantic Systems Guild Ltd**

**[suzanne@systemsguild.com](mailto:suzanne@systemsguild.com)  
<http://www.systemsguild.com>  
<http://www.volere.co.uk>**

# Requirements?

The product shall calculate the cheapest price

The product shall be usable by calibration engineers

The product shall run on our current systems architecture

The product shall be red

The product shall check that the screen is illuminated

The product shall be implemented using SAP

# Agenda:

1. What is a requirement?
2. Organising and communicating your requirements knowledge
3. The SGS cycle - Stakeholders, Goals, Scope
4. Your Requirements Process

# What is a requirement?

- A requirement is some aspect of a product's content or behaviour, which is necessary or desired
- Functional requirements are things the product must do
- Non-functional requirements are properties that the product must have
- A constraint is a restriction on the scope or design of the product
- Technological requirements are introduced as part of the design

# A requirement has more than one attribute

*Requirement #:* 157 *Requirement Type:* 9 *Event/use case #:* 3

*Description:* **The product shall verify all credit card transactions with the issuer.**

*Rationale:* **To prevent fraudulent credit card use.**

*Source:* **Sarah Maitland, Finance Department.**

*Fit Criterion:* **At completion, all credit transactions shall have the card issuer's authorization number .**

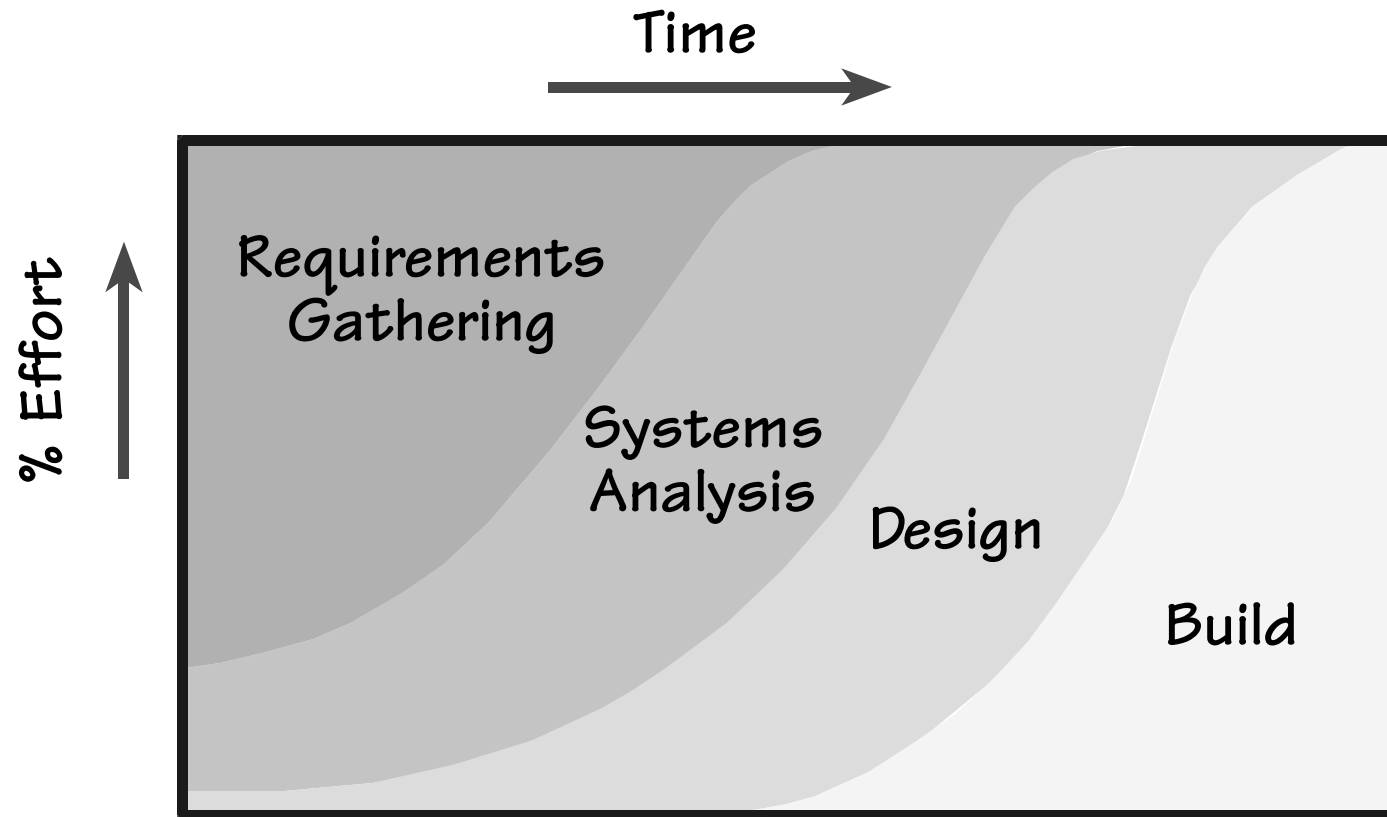
*Customer Satisfaction:* **4**

*Customer Dissatisfaction:* **5**

*Dependency:* **Other requirements concerned with credit cards.**

*Supporting Materials:* **Maitland interview notes.**

# Requirements and analysis



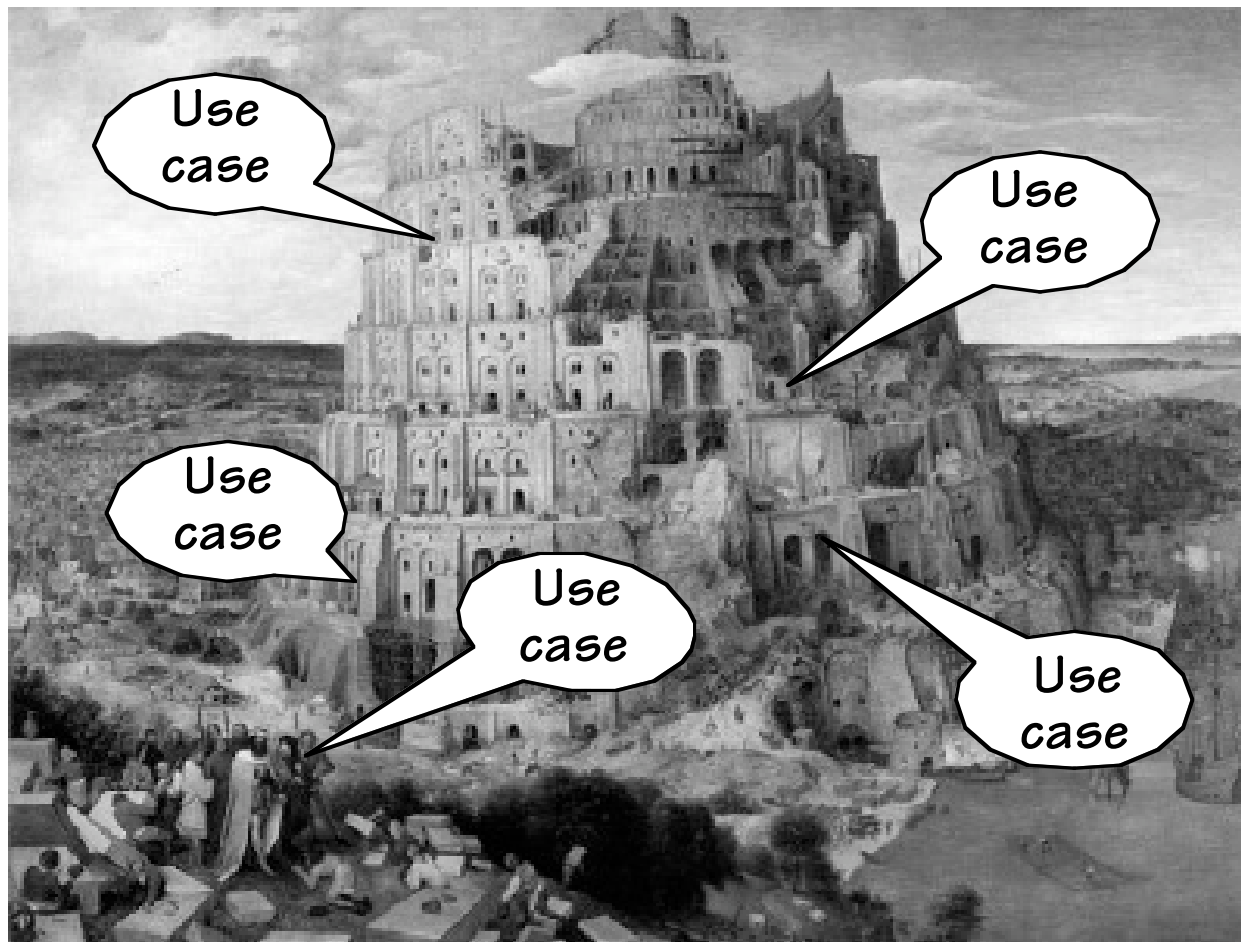
- The development activities overlap
- When is the best time for you to publish your requirements specification?

# Organising and Communicating Requirements Knowledge

- Develop linguistic integrity
- Make your requirements traceable



# What do you mean?





# Develop linguistic integrity

Do you have any elaaaaaaastic terms?

*System*

*Use Case*

*Subsystem*

*Component*

*Module*

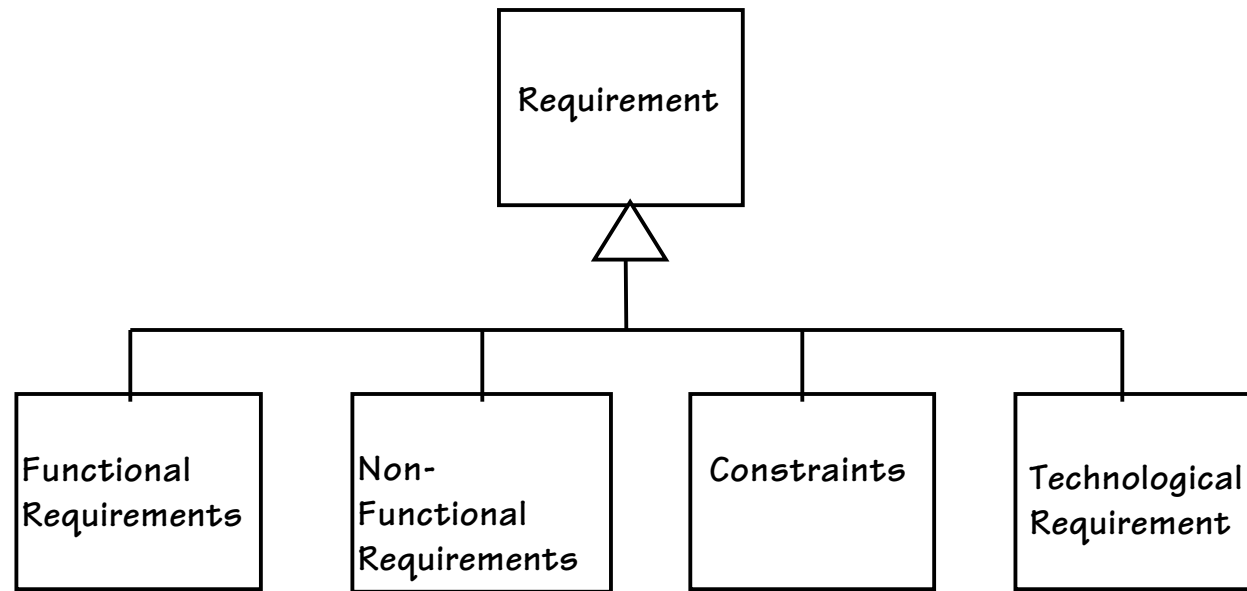
*Feature*

*Requirement*

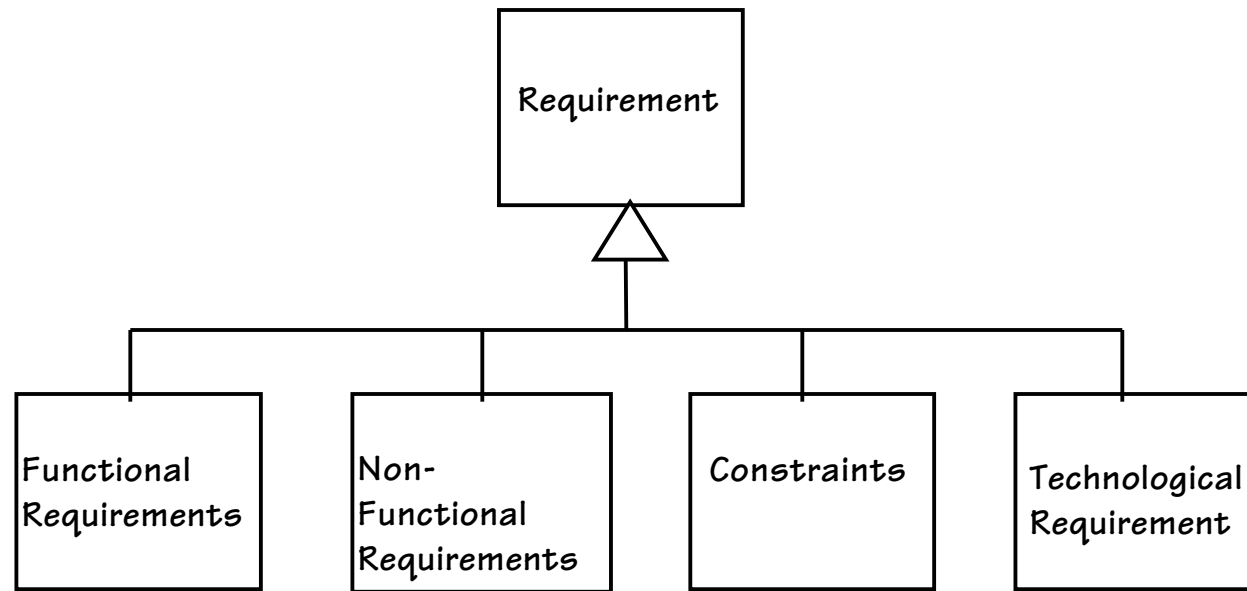
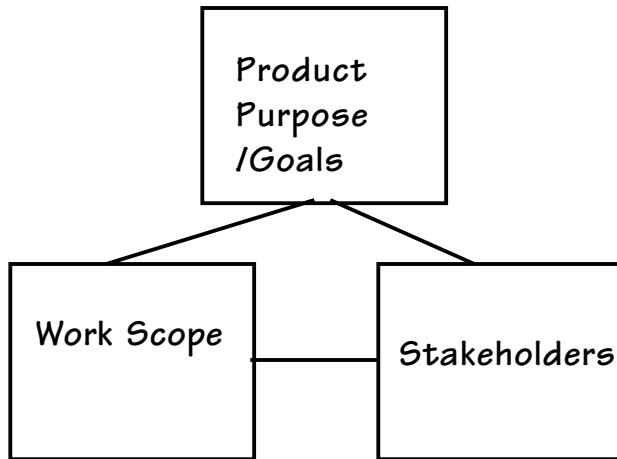
*Product*

*Programme*

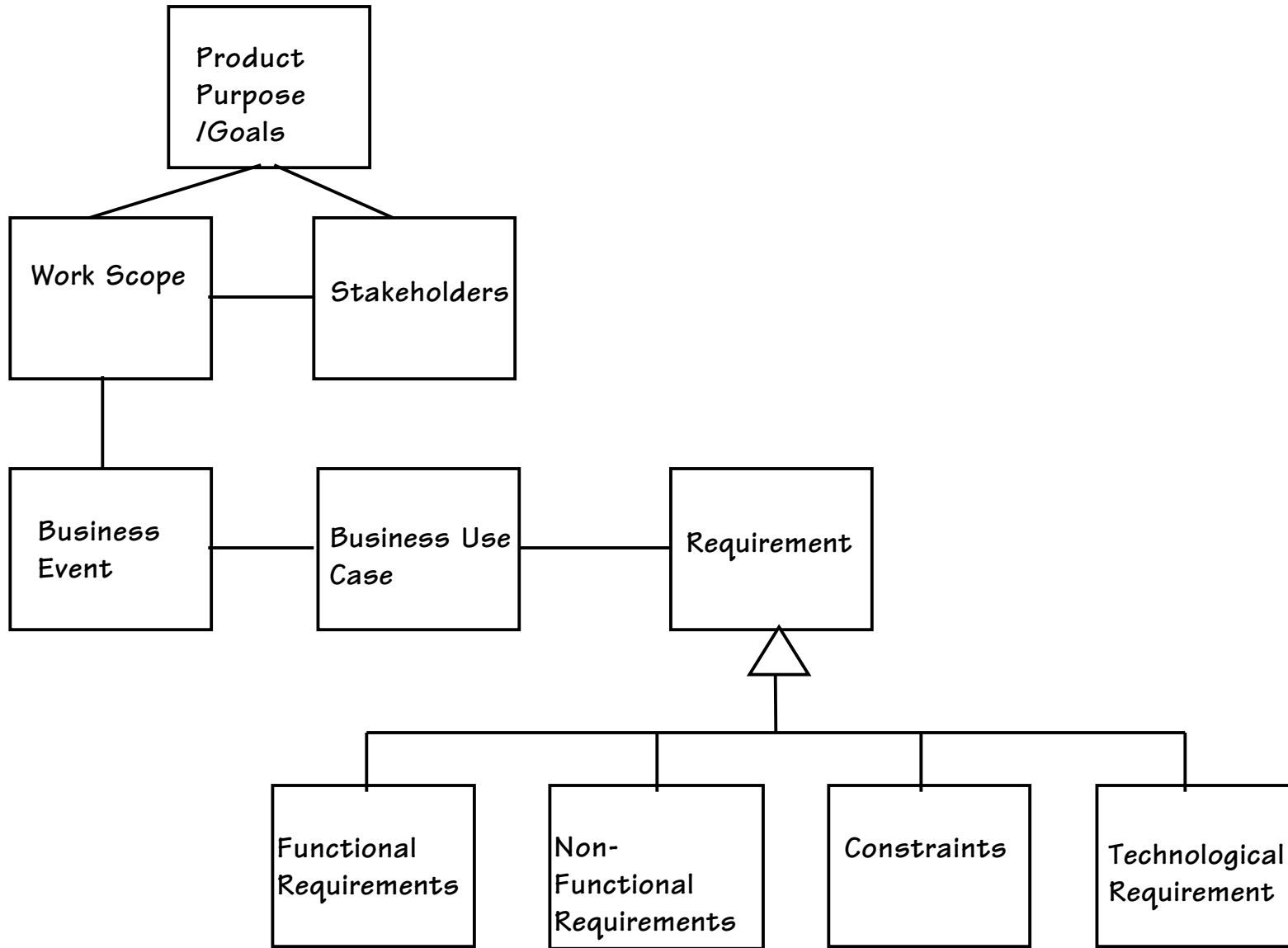
# Requirements knowledge model 1



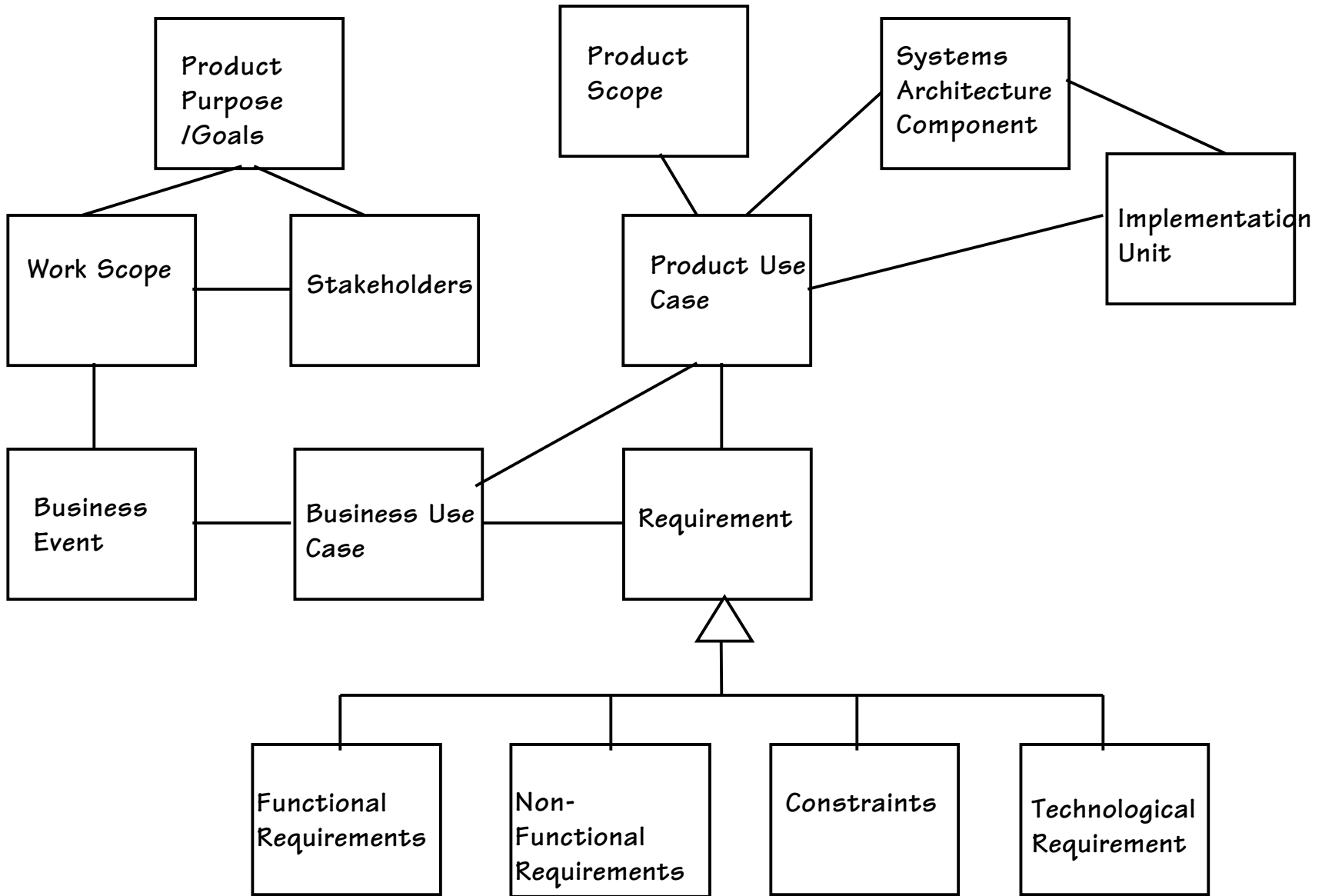
# Requirements knowledge model 2



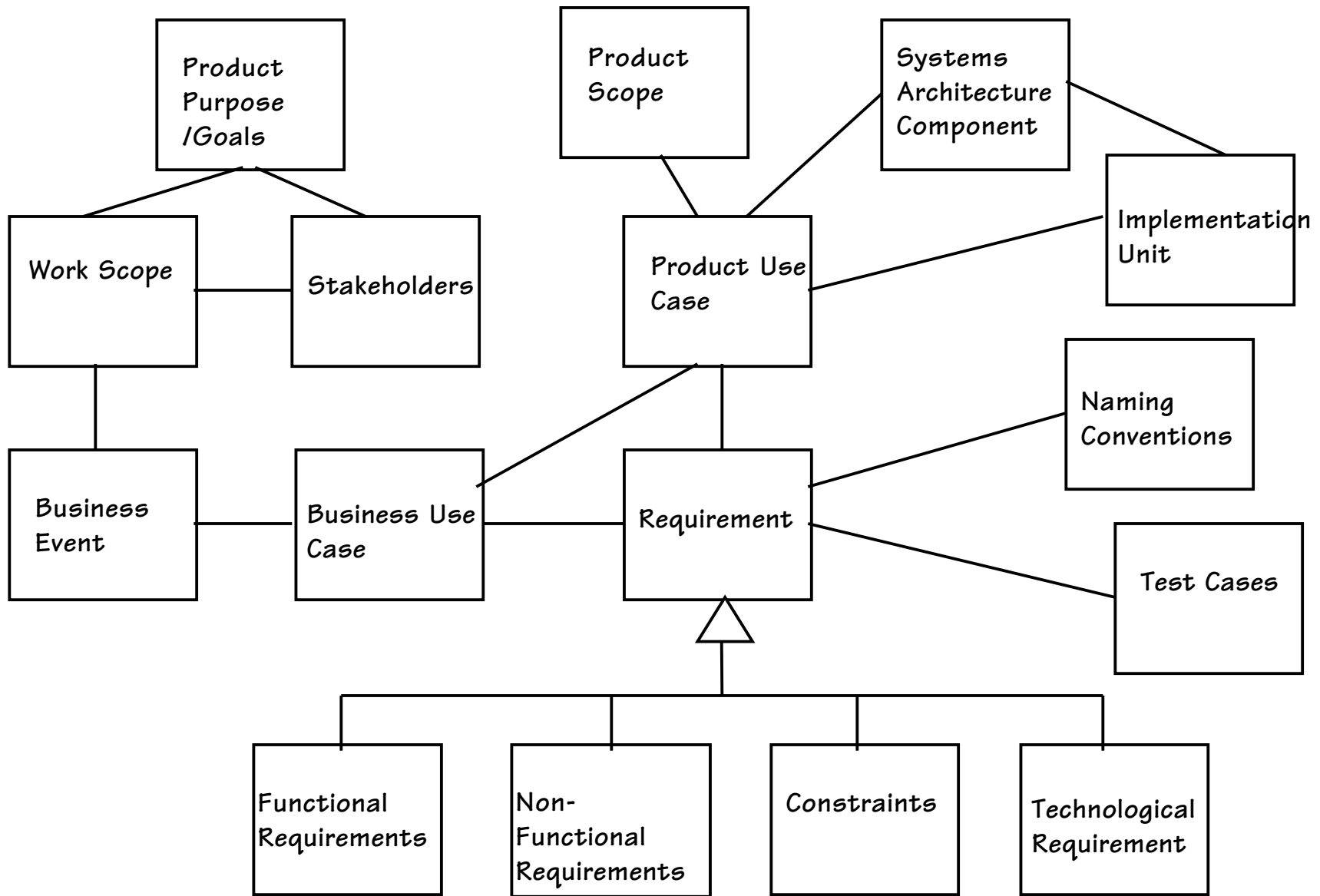
# Requirements knowledge model 3



# Requirements knowledge model 4



# Requirements knowledge model 5



# Volere **TEMPLATE**

## **PROJECT DRIVERS**

- 1. The Purpose of the Product**
- 2. Client, Customer, other Stakeholders**
- 3. Users of the Product**

## **PROJECT CONSTRAINTS**

- 4. Mandated Constraints**
- 5. Naming Conventions and Definitions**
- 6. Relevant Facts and Assumptions**

## **FUNCTIONAL REQUIREMENTS**

- 7. The Scope of the Work**
- 8. The Scope of the Product**
- 9. Functional and Data Requirements**

## **NON-FUNCTIONAL REQUIREMENTS**

- 10. Look and Feel Requirements**
- 11. Usability Requirements**
- 12. Performance Requirements**
- 13. Operational Requirements**
- 14. Maintainability Requirements**
- 15. Security Requirements**
- 16. Cultural and Political Requirements**
- 17. Legal Requirements**

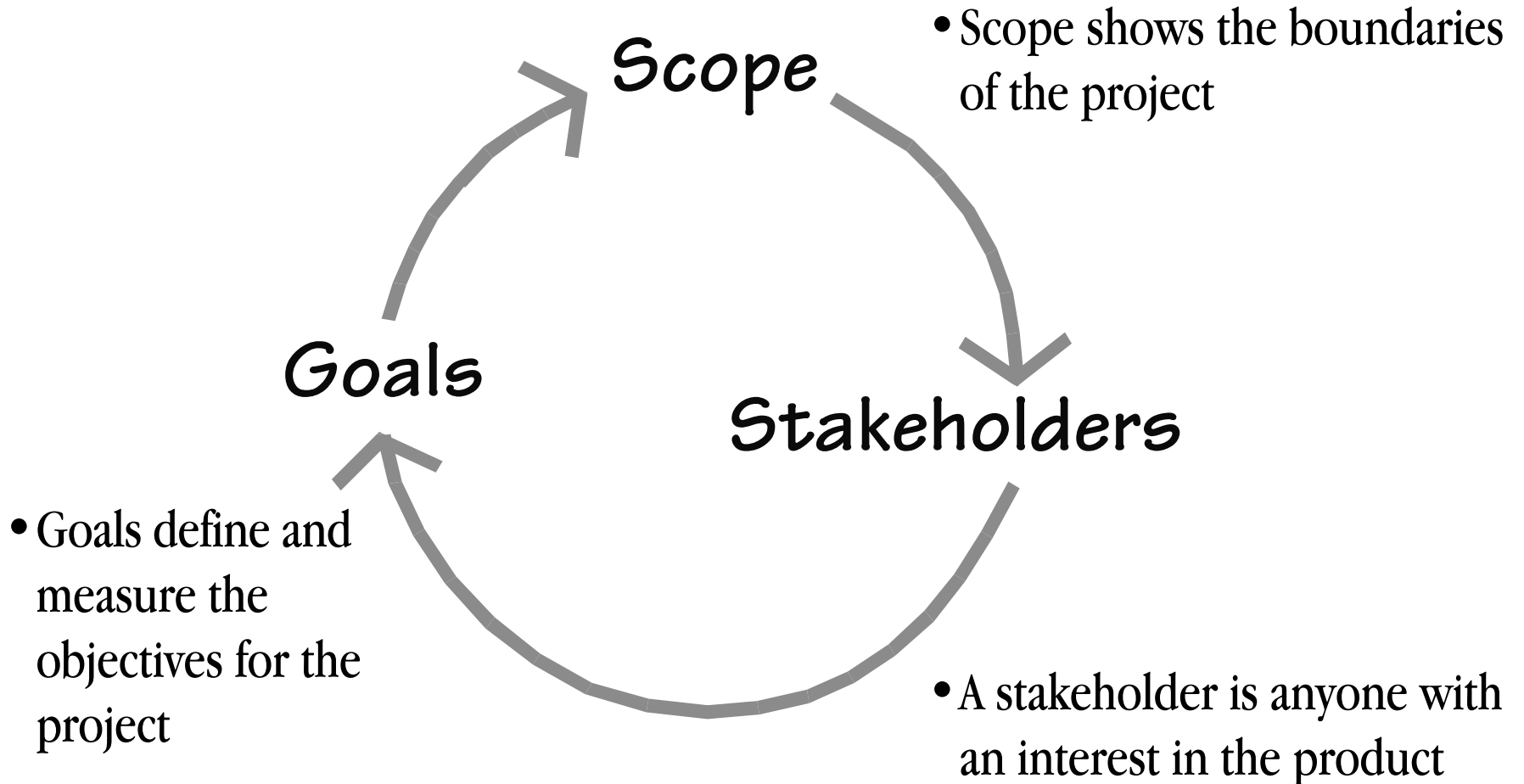
## **PROJECT ISSUES**

- 18. Open Issues**
- 19. Off-the-Shelf Solutions**
- 20. New Problems**
- 21. Tasks**
- 22. Cutover**
- 23. Risks**
- 24. Costs**
- 25. User Documentation and Training**
- 26. Waiting Room**
- 27. Ideas for Solutions**

- Drivers and constraints apply to the whole product. They are mandated at the outset of the project
- Functional requirements are what the product must do
- Non-functional requirements are properties that the product must have
- Project issues are raised from time to time during the project

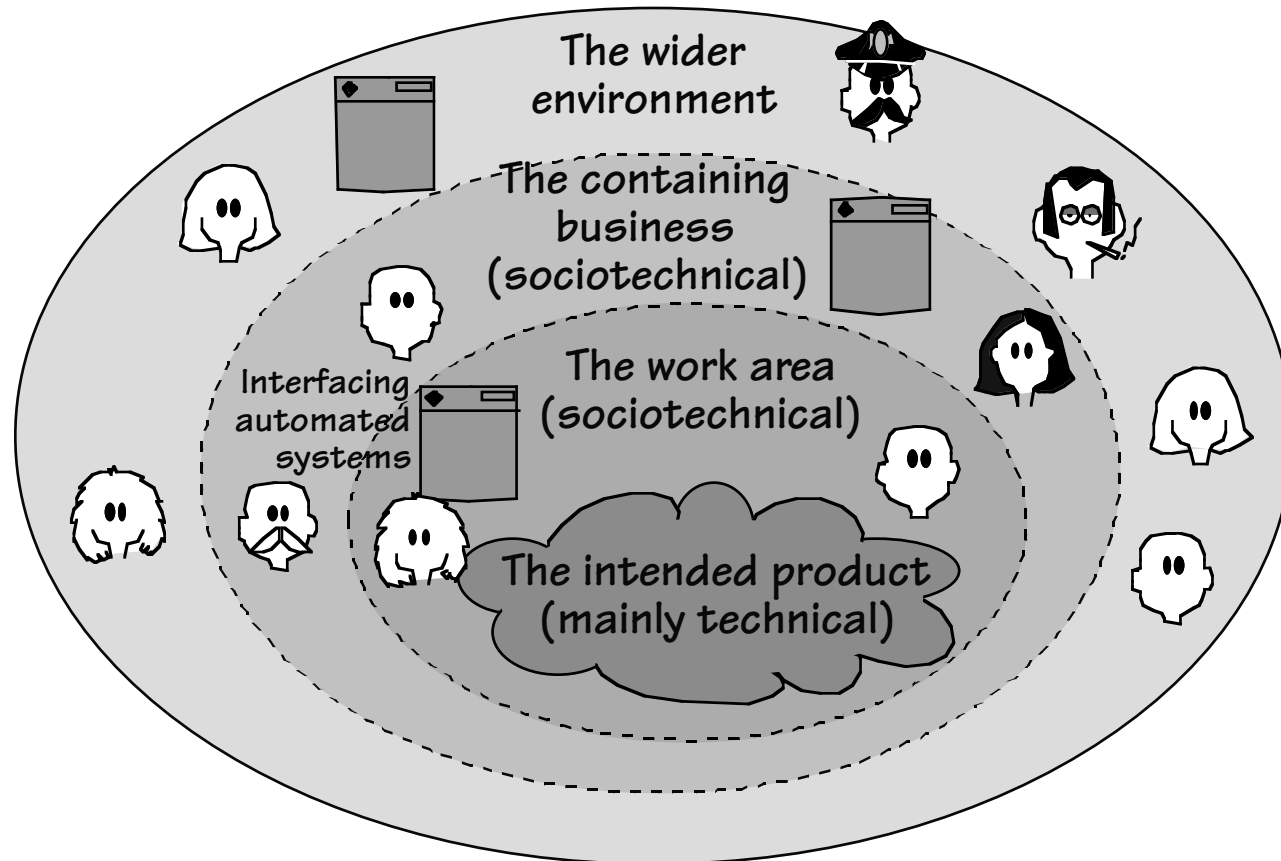
*The template is downloadable at  
[www.systemsguild.com](http://www.systemsguild.com) and [www.volere.co.uk](http://www.volere.co.uk)*

# The foundation for the requirements



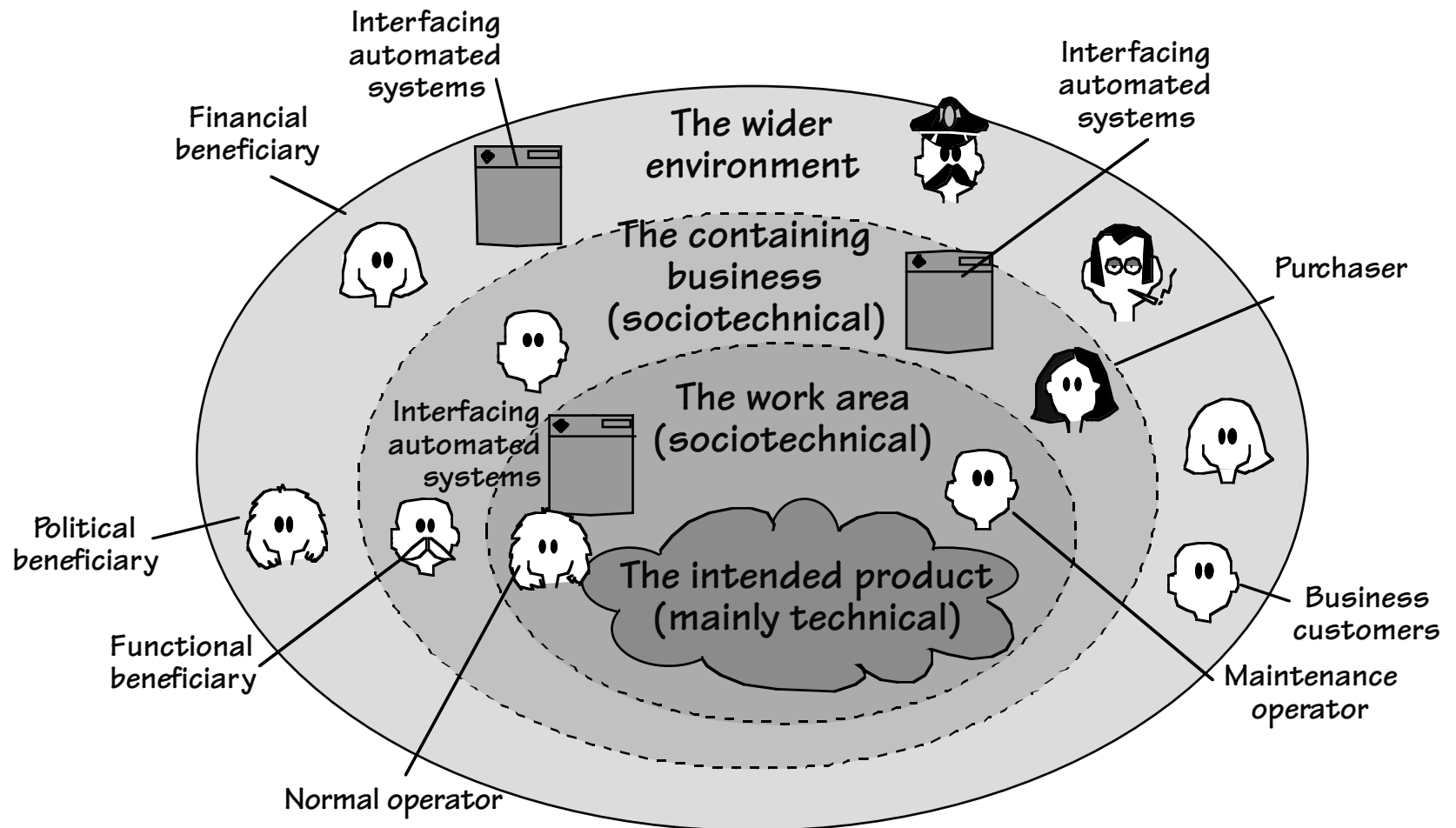


# Stakeholder map 1



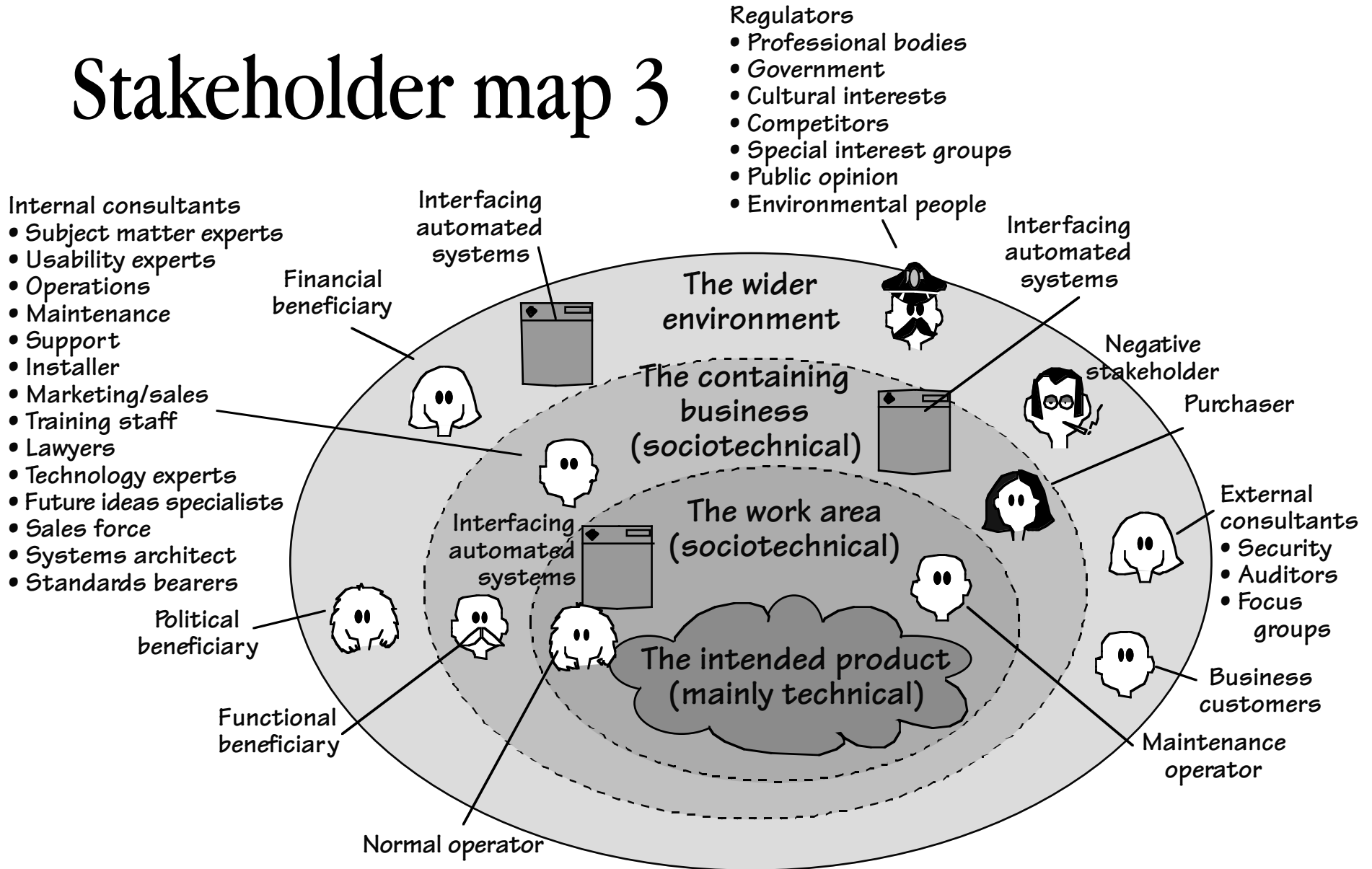
Ref: Understanding Project Sociology by Modelling Stakeholders.  
Ian Alexander & Suzanne Robertson. IEEE Software, Jan 2004

# Stakeholder map 2



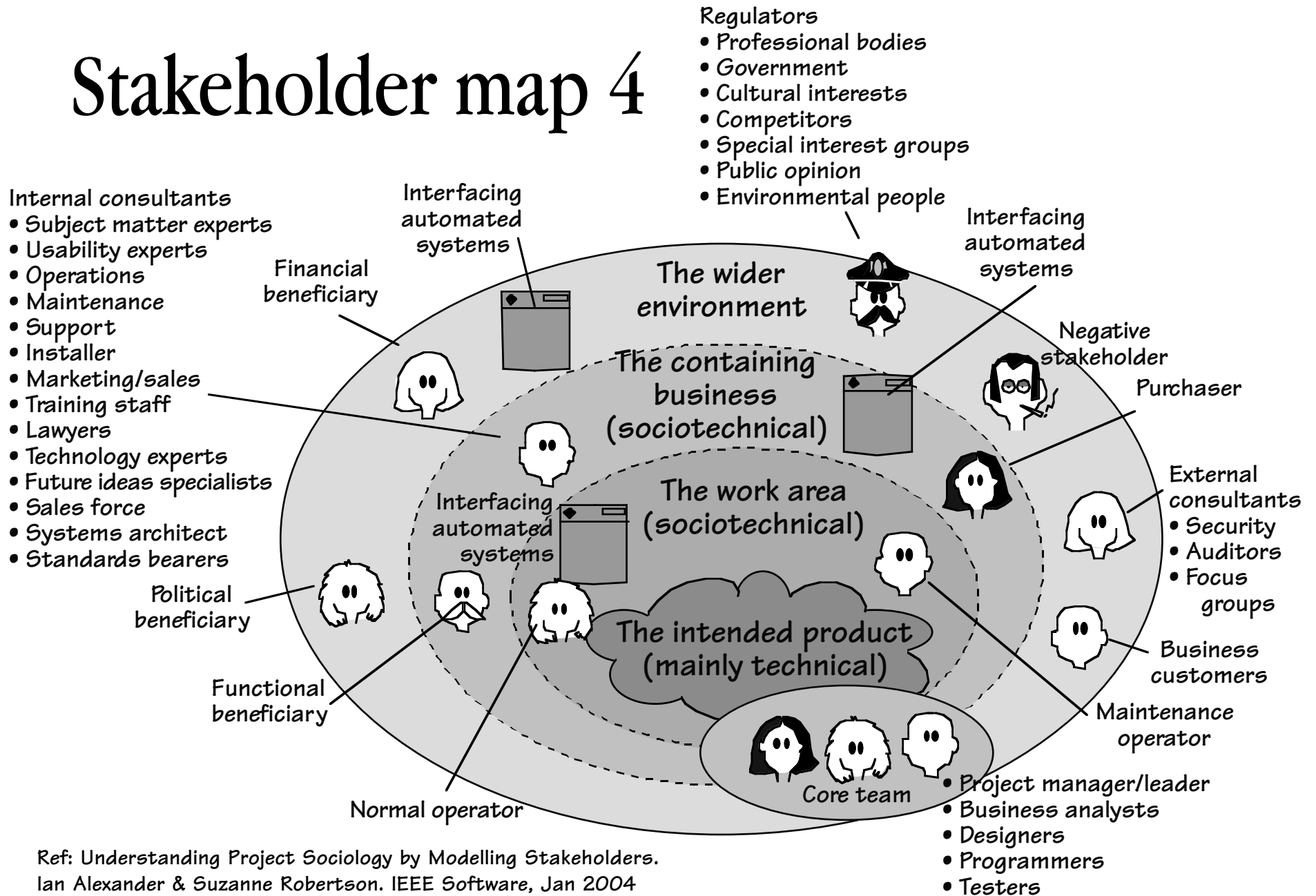
Ref: Understanding Project Sociology by Modelling Stakeholders.  
Ian Alexander & Suzanne Robertson. IEEE Software, Jan 2004

# Stakeholder map 3



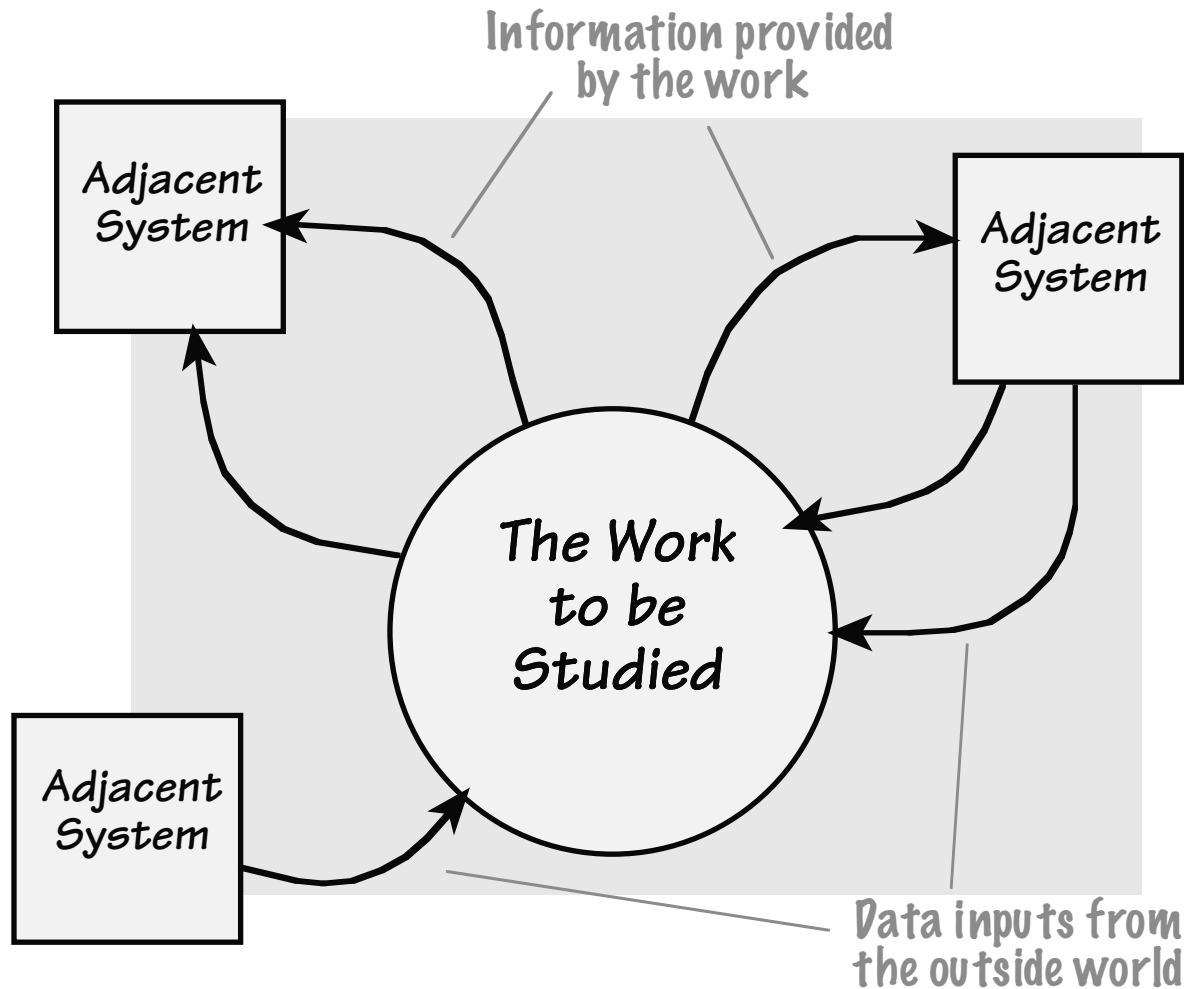
Ref: Understanding Project Sociology by Modelling Stakeholders.  
 Ian Alexander & Suzanne Robertson. IEEE Software, Jan 2004

# Stakeholder map 4



Ref: Understanding Project Sociology by Modelling Stakeholders.  
 Ian Alexander & Suzanne Robertson. IEEE Software, Jan 2004

# The Context Model



- We are about to study the work and its connections with the adjacent systems
- The context diagram defines the extent of the work area, and thus your study
- The work is the part of the business that has some interest in the product to be built

# Basis for collaboration

Unique identifier      Business description      Tagged to events and use cases

Requirement #: **75**      Requirement Type: **9**      Event/use case #: **7,9**

Description: **The product shall record all the roads that have been treated**      Reason for the requirement

Rationale: **To be able to schedule untreated roads and highlight potential**

Source: **Arnold Snow - Chief Engineer**      Owner of requirement

Fit Criterion: **The recorded treated roads shall agree with the drivers road treatment logs and shall be up to date within 30 minutes of the completion of the road's treatment**      Negotiation and acceptance criteria

Customer Satisfaction: **3**      Customer Dissatisfaction: **5**

Dependencies: **All requirements using road and scheduling data**      Conflicts: **105**

Supporting Materials: **Work context diagram, terms definitions in section 5**

History: **Last modified Feb. 28, 2003**

Expectation management and basis for prioritisation

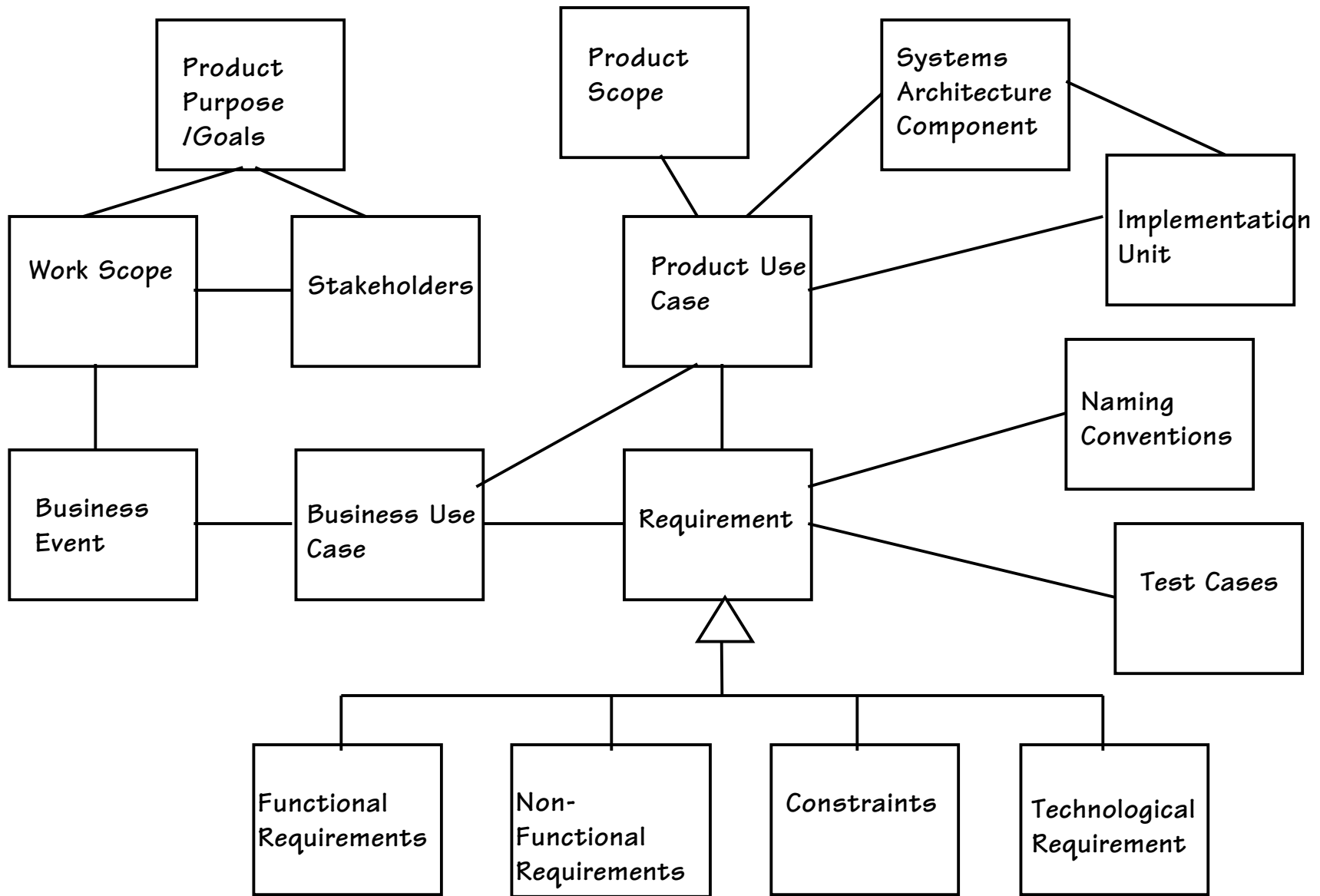
**Volere**  
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- A requirement is more than a “shall” statement

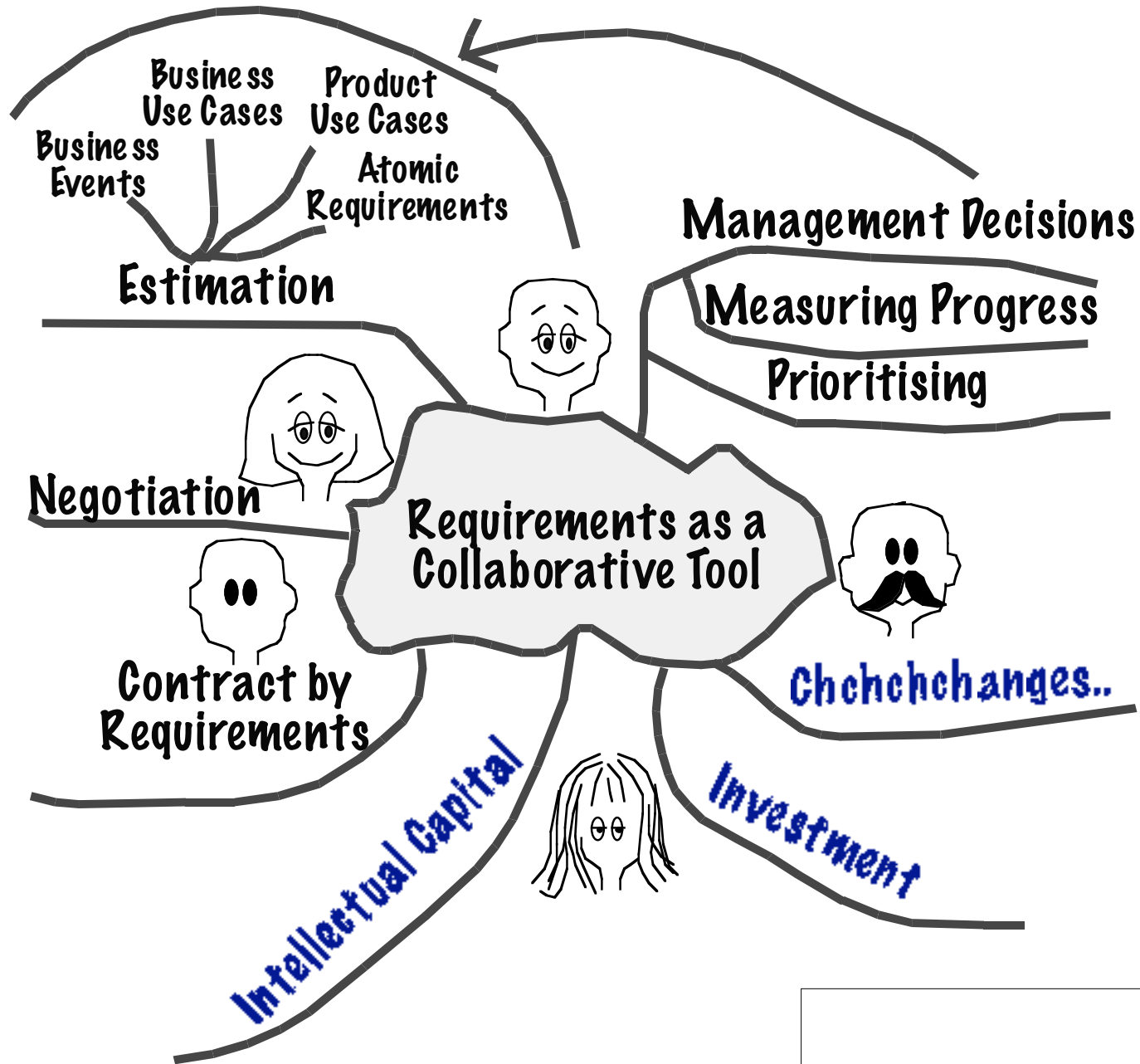
# Your requirements process

- Is specific to your organisation/project
- Specifies who is responsible for producing which items of requirements knowledge
- Specifies which documents are produced when
- Specifies how you will carry out quality reviews

# Requirements knowledge model

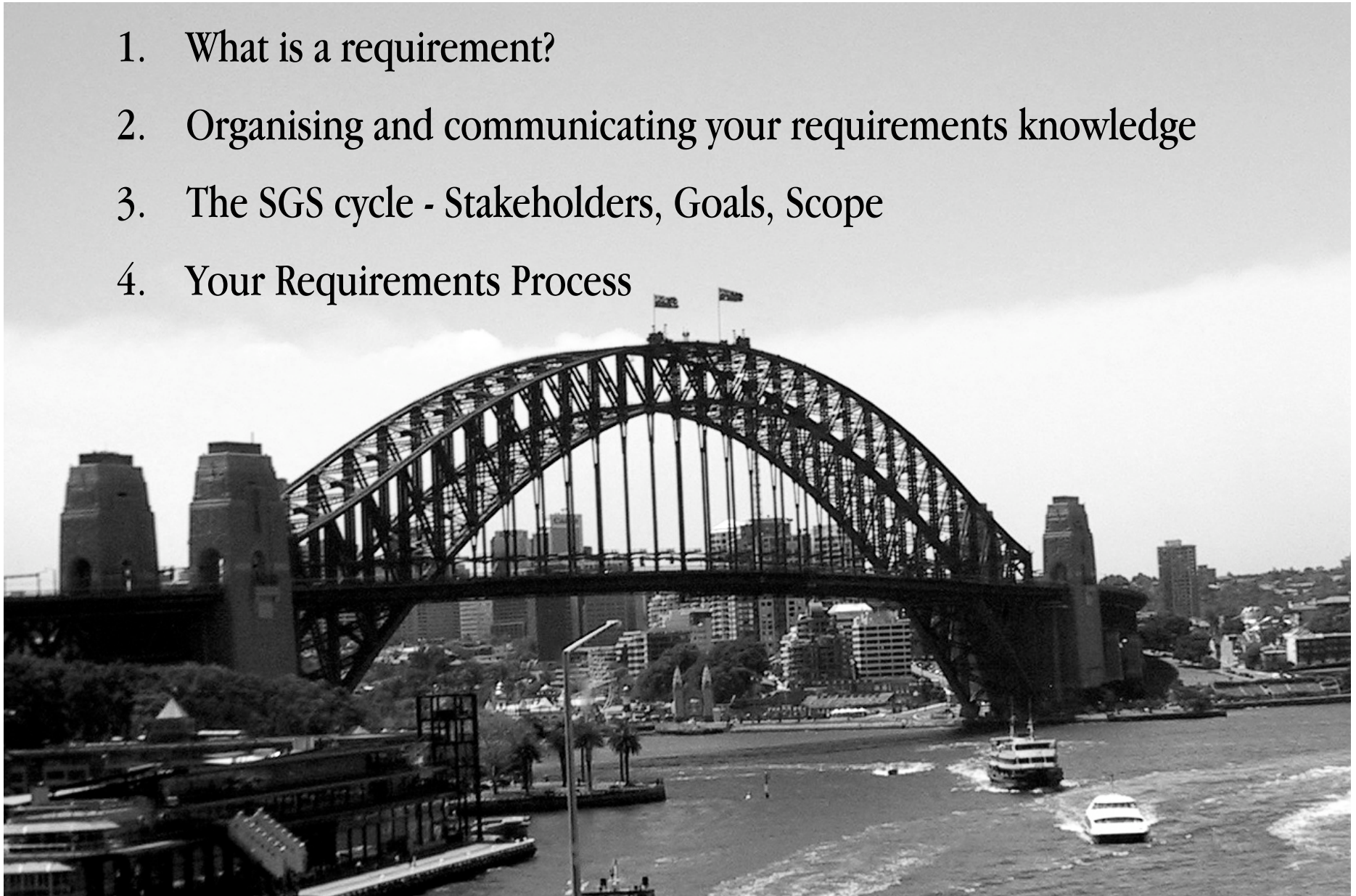






# Summary

1. What is a requirement?
2. Organising and communicating your requirements knowledge
3. The SGS cycle - Stakeholders, Goals, Scope
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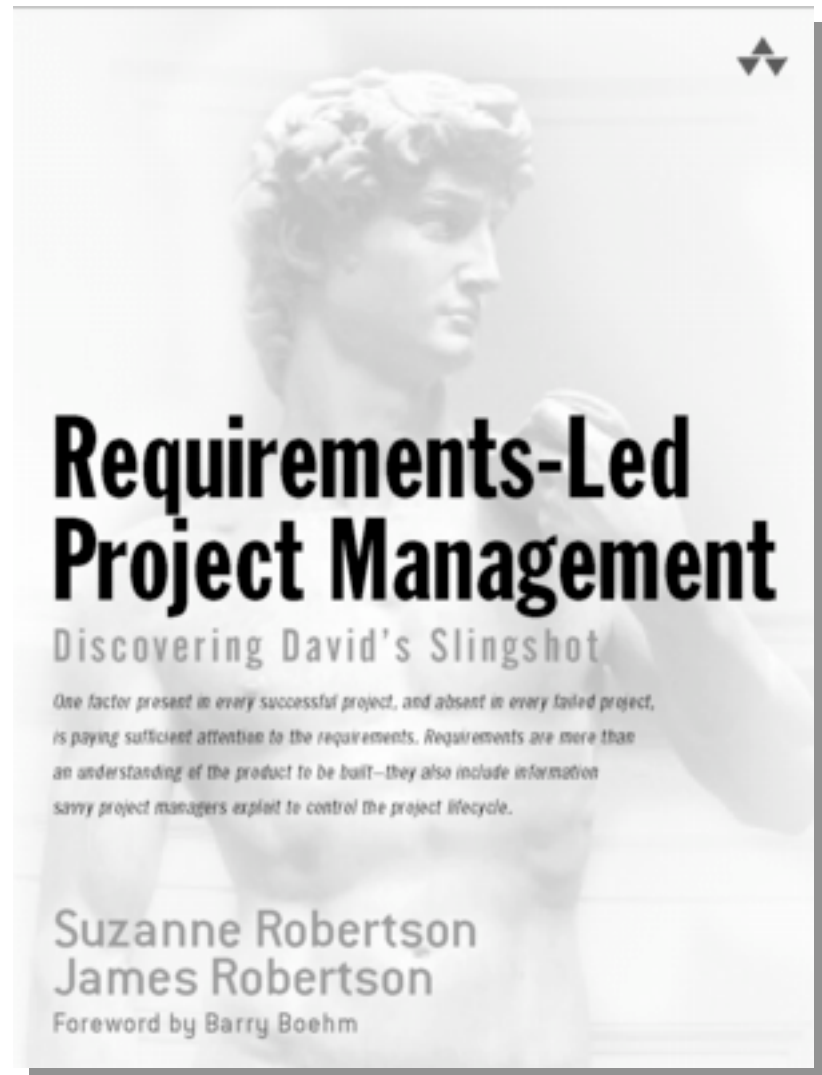


# Resources

[www.systemsguild.com](http://www.systemsguild.com)

[www.volere.co.uk](http://www.volere.co.uk)

- Volere requirements specification template
- Requirements bibliography
- Pointers to other sites
- Book reviews
- Stakeholder analysis
- Articles on systems engineering
- Project management scenarios





**James and Suzanne Robertson** are founding partners of the Atlantic Systems Guild. The Guild is a New York and London based think-tank producing some of the most innovative ideas for today's systems. Together with their fellow Guild partners Tom De Marco, Peter Hruschka, Tim Lister, Steve McMenamin and John Palmer, Suzanne and James have produced books and seminars that are among the most successful in systems development history.

Suzanne and James are co-authors of *Complete Systems Analysis: the Workbook, the Textbook, the Answers* (Dorset House, 1994), *Mastering the Requirements Process* (Addison Wesley, 1999), *Requirements-Led Project Management* (Addison Wesley, 2005).

Their broad experience with their worldwide client base has resulted in *Volere*. This includes the popular Requirements Specification Template, the Volere Requirements Process, training courses and requirements gathering aids. Parts of Volere can be seen and downloaded from

<http://www.volere.co.uk>

<http://www.systemsguild.com>

James and Suzanne live in London and Chamonix, France.