If You Think Requirements Engineering is Just for the IT Folks…Well…You Better Think Again

John H. Capron, CPIM

Alexander Woollcott: *All the things I really like to do are either illegal, immoral, or fattening.*

Why is Doing a Better Job with Requirements Important?

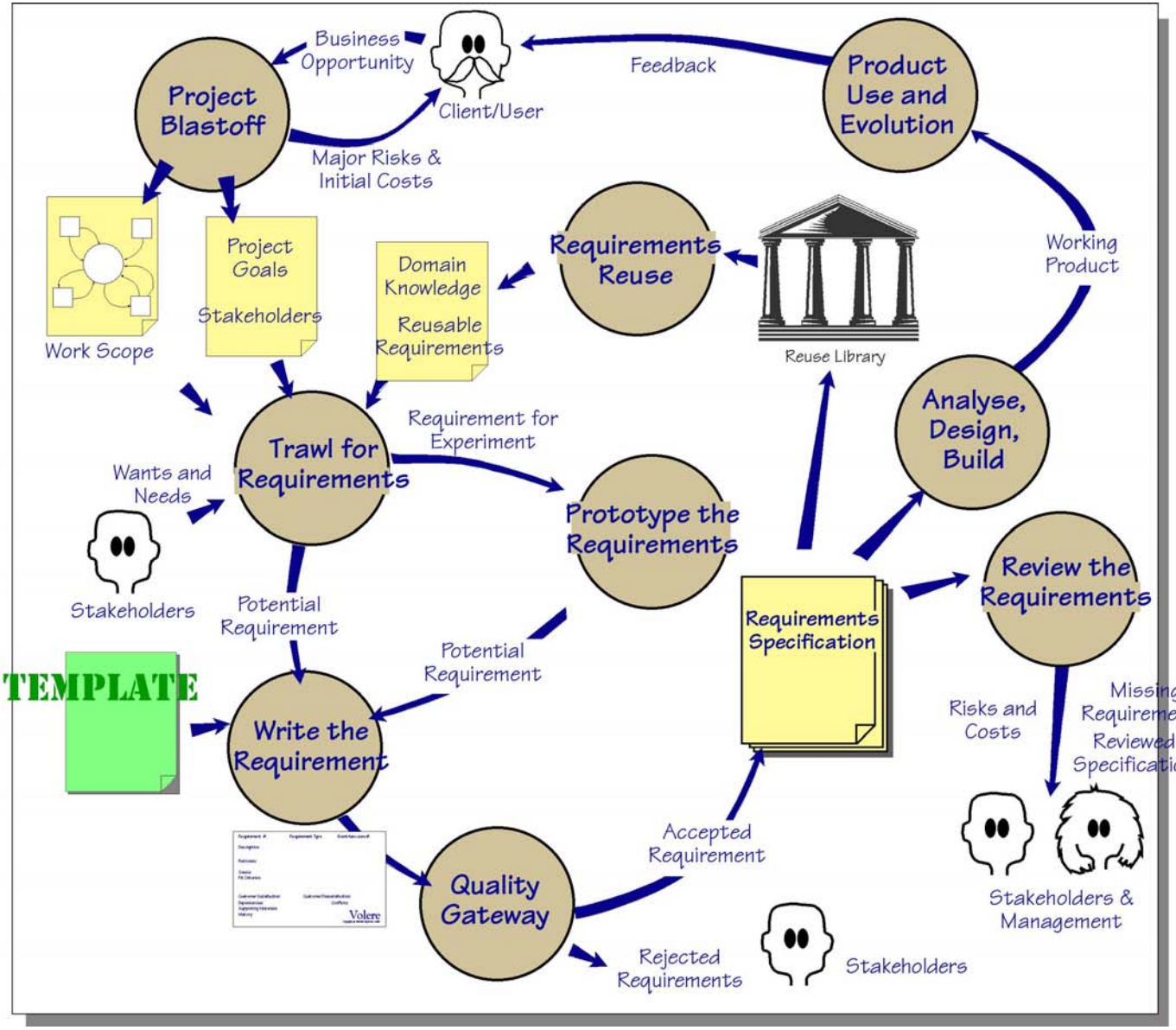
- 60-80% of IT budgets consumed with maintenance
- "The earlier an error is discovered, the cheaper it is to correct."
  - "The cost of repairing an error increases each time the development effort reaches a new phase. A requirements error that might cost $1 to correct during the requirements activity might cost up to $100 during implementation, and even ten times more if the error is not detected and corrected until the product is in the field."

What We Will Discuss

- A requirements engineering model
- The requirements shell
- Reference links

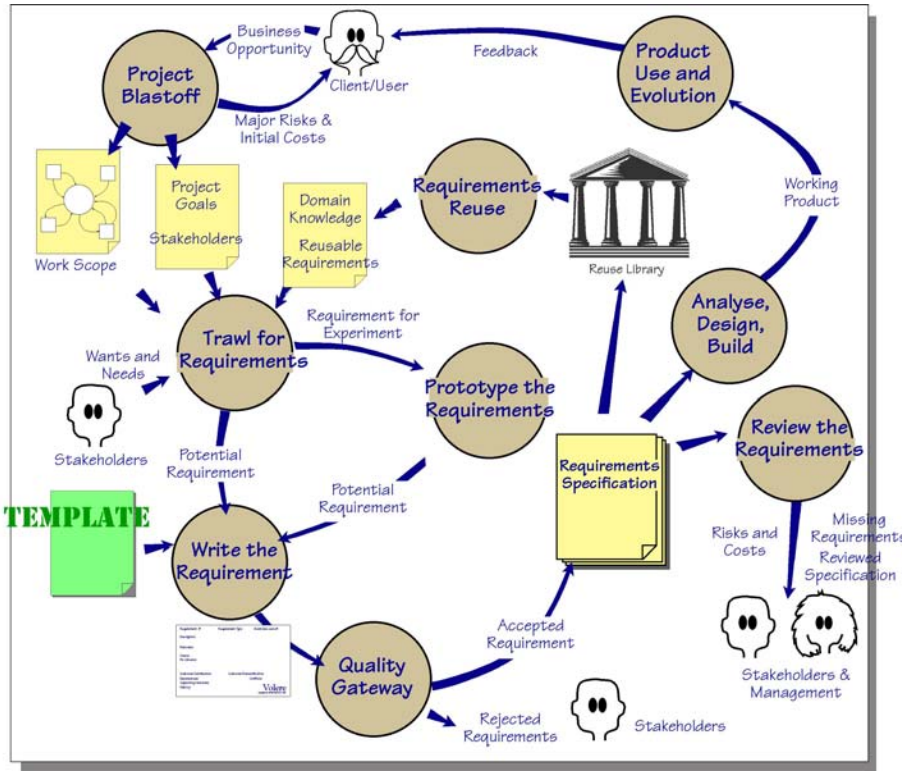
Volere Requirements Process

- Developed by James and Suzanne Robertson
- It's a process for:
  - Discovering requirements
  - Verifying requirements
  - Documenting requirements
- I have been given permission by the authors to freely use text and diagrams from their book: *Mastering the Requirements Process, Second Edition*


Business Opportunity
Client/User
Feedback
Project Blastoff
Product Use and Evolution
Major Risks & Initial Costs
Work Scope
Project Goals
Stakeholders
Domain Knowledge
Reusable Requirements
Requirements Reuse
Reuse Library
Working Product
Analyse, Design, Build
Requirement for Experiment
Trawl for Requirements
Wants and Needs
Stakeholders
Prototype the Requirements
Potential Requirement
Requirements Specification
Review the Requirements
TEMPLATE
Potential Requirement
Write the Requirement
Risks and Costs
Missing Requirements
Reviewed Specification
Accepted Requirement
Quality Gateway
Stakeholders & Management
Rejected Requirements
Stakeholders

Project Blastoff

Establishes a solid foundation for the requirements, and gets everyone on the same page

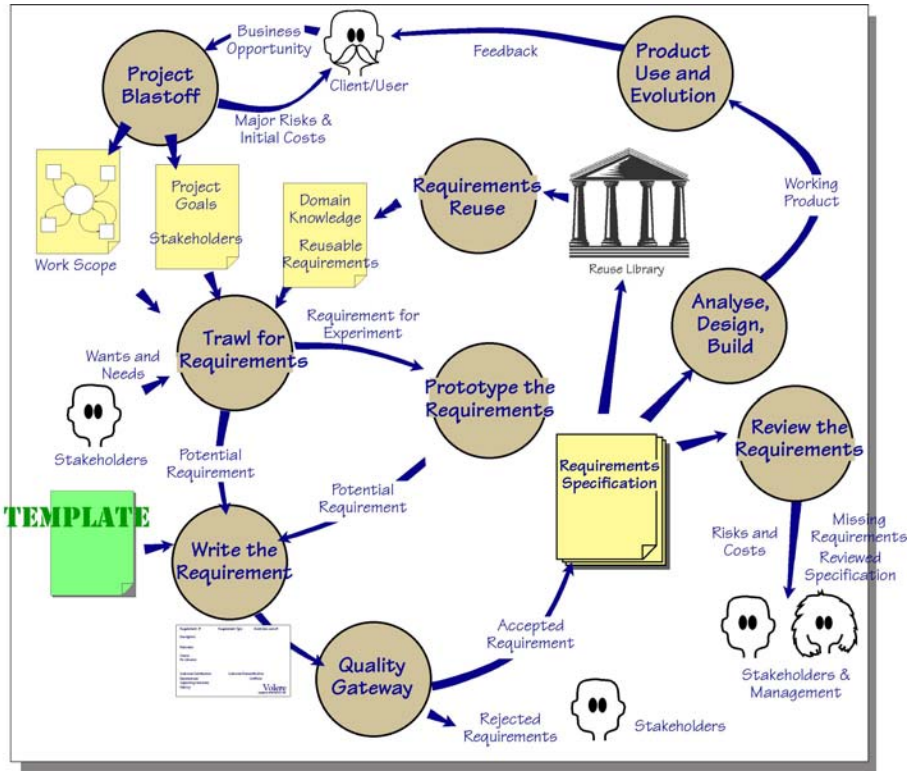


Elements of Project Blastoff

- Scope
- Stakeholders
  - Client (bill payer)
  - Customer (revenue)
  - Users
  - Consultants
  - Management
  - SMEs
  - Core team
  - Inspectors
  - Marketing
  - Legal
  - Negative stakeholders
  - Industry standard setters
  - Public opinion
  - Government
  - Special interest groups
  - Technical experts
  - Cultural interests
  - Adjacent systems
- Goals
- Solution constraints
- Project constraints
- Naming conventions/defintions
- Cost of project
- Risks
- Go/No Go

Trawling for Requirements

Like a fishing net trawling for fish, we are trawling for requirements



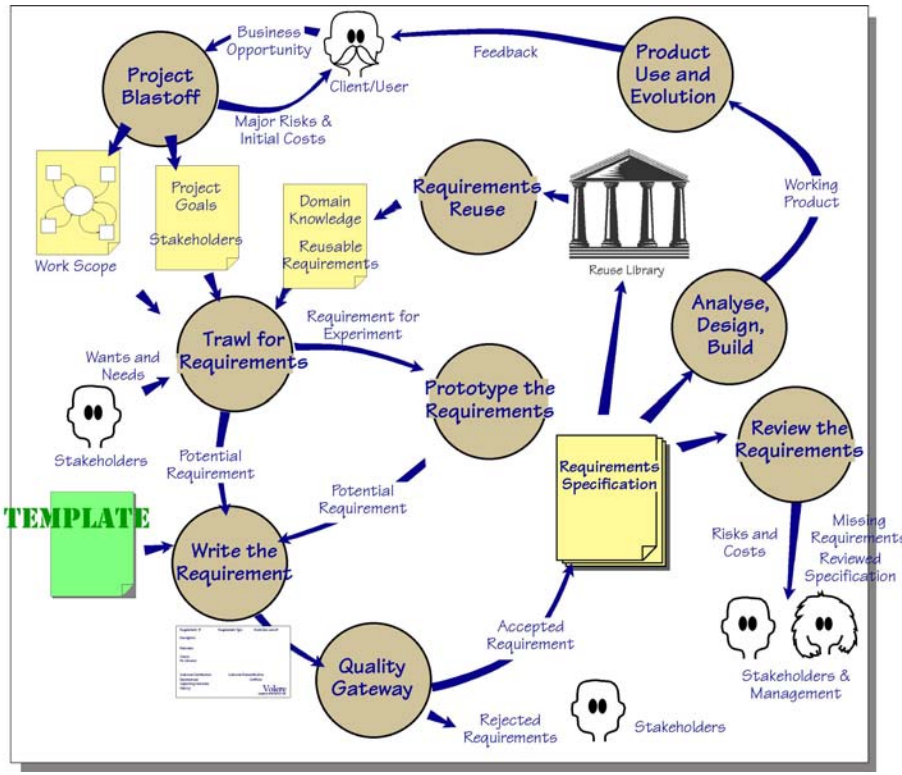
Trawling Techniques

- Business events
- Current situation modeling
- Apprenticing
- Structures & patterns
- Business use case workshops
- Creativity workshops
- brainstorming
- Personas
- Mind mapping
- Wikis
- Scenarios
- Low-fidelity prototypes
- High-fidelity prototypes
- Document archeology

Write the Requirements

This is putting the requirements into written form

Functional Requirements



Nonfunctional Requirements

Functional Requirements

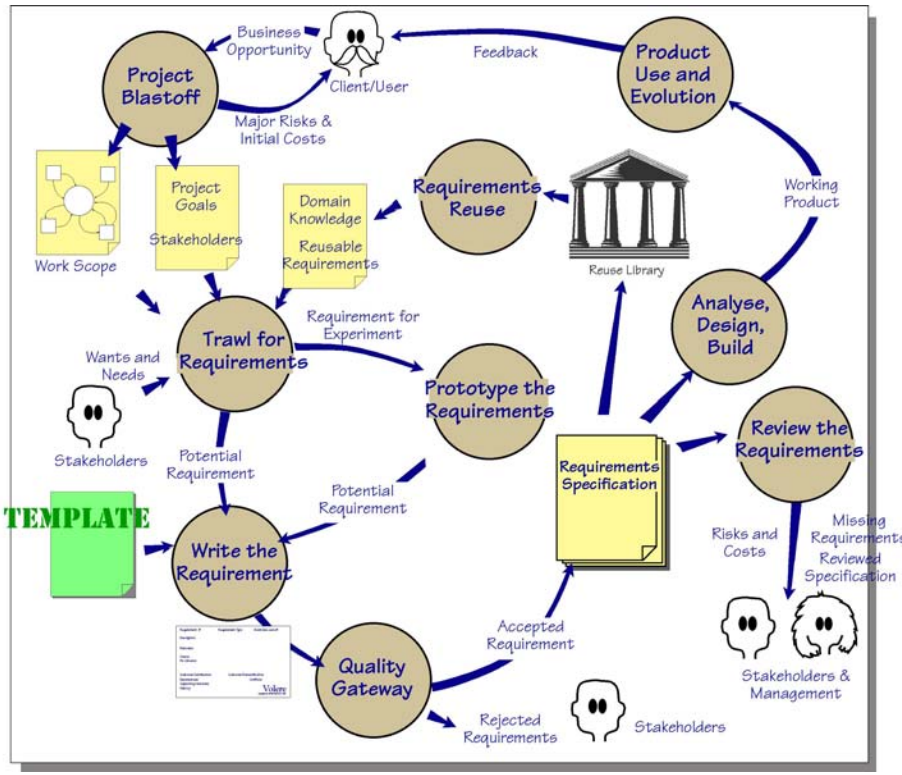
- These are the requirements that make a product do something

Nonfunctional Requirements

- These are the requirements that will layout how well the product does what it does
  - Look & feel
  - Usability & humanity
  - Performance
  - Operational & environmental
  - Security
  - Cultural & Political
  - Legal

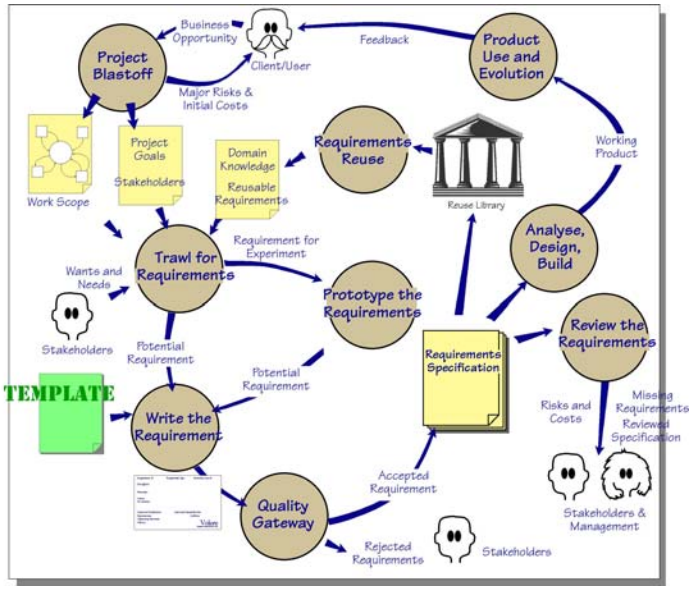
Quality Gateway

It is here where each requirement is tested to make sure that it's clear, complete & unambiguous



Prototyping the Requirements

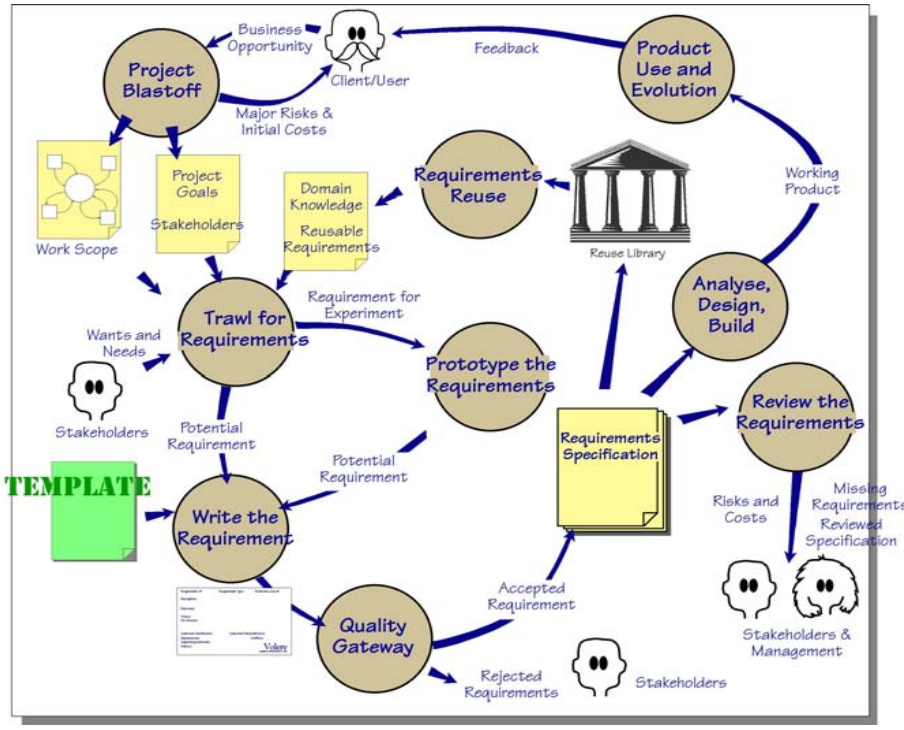
- This is where we exercise simulations to help locate additional requirements
  - Low-fidelity prototypes
  - High-fidelity prototypes
  - Storyboards
  - Object life history



Reusing Requirements

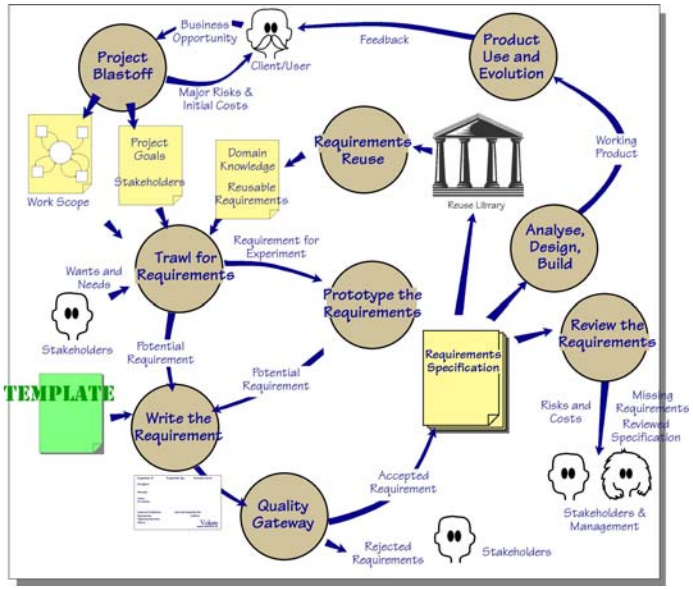
Simply put, we are looking for requirements that have already been written and trying to figure out how to reuse them

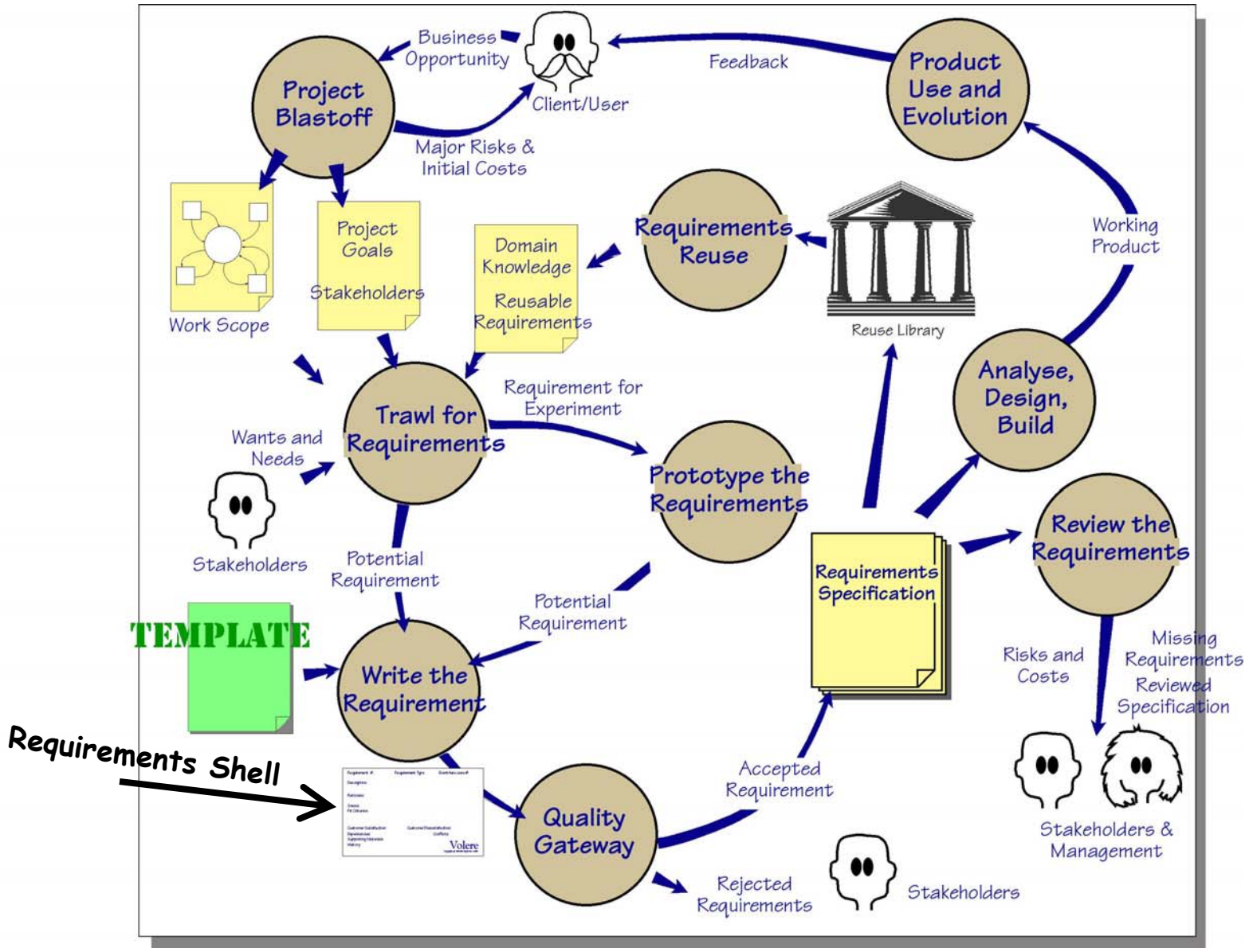
Avoid Reinvention!



Reviewing the Specification

- This is where we decide if our specification is correct and complete, and where we set the priorities of the requirements
  - Find missing requirements
  - Have all business use cases been discovered?
  - Customer value
  - Prioritizing the requirements
  - Conflicting requirements




Business Opportunity
Client/User
Feedback
Product Use and Evolution
Project Blastoff
Major Risks & Initial Costs
Work Scope
Project Goals
Stakeholders
Domain Knowledge
Reusable Requirements
Requirements Reuse
Reuse Library
Working Product
Analyse, Design, Build
Requirement for Experiment
Trawl for Requirements
Wants and Needs
Stakeholders
Potential Requirement
Prototype the Requirements
Requirements Specification
Review the Requirements
Risks and Costs
Missing Requirements
Reviewed Specification
Stakeholders & Management
TEMPLATE
Potential Requirement
Write the Requirement
Requirements Shell
Volere
Quality Gateway
Accepted Requirement
Rejected Requirements
Stakeholders

Requirements Shell

Functional Requirement

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

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

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

Originator: **Arnold Snow - Chief Engineer**

Fit Criterion: **The recorded treated and untreated roads shall agree with the drivers' road treatment logs.**

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

Priority: Conflicts:

Supporting Materials:

History: **Created February 29,2006**

Volere

Copyright © Atlantic Systems Guild

Requirements Shell

Nonfunctional Requirement

Requirement #: **110** Requirement Type: **11** Event/use case #: **6,7,8,9,10**

Description: **The product shall be easy for the road engineers to use.**

Rationale: **It should not be necessary for the engineers to attend training classes in order to be able to use the product.**

Originator: **Sonia Henning, Road Engineering Supervisor.**

Fit Criterion: **A road engineer shall be able to use the product to successfully carry out the cited use cases within 1 hour of first encountering the product.**

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

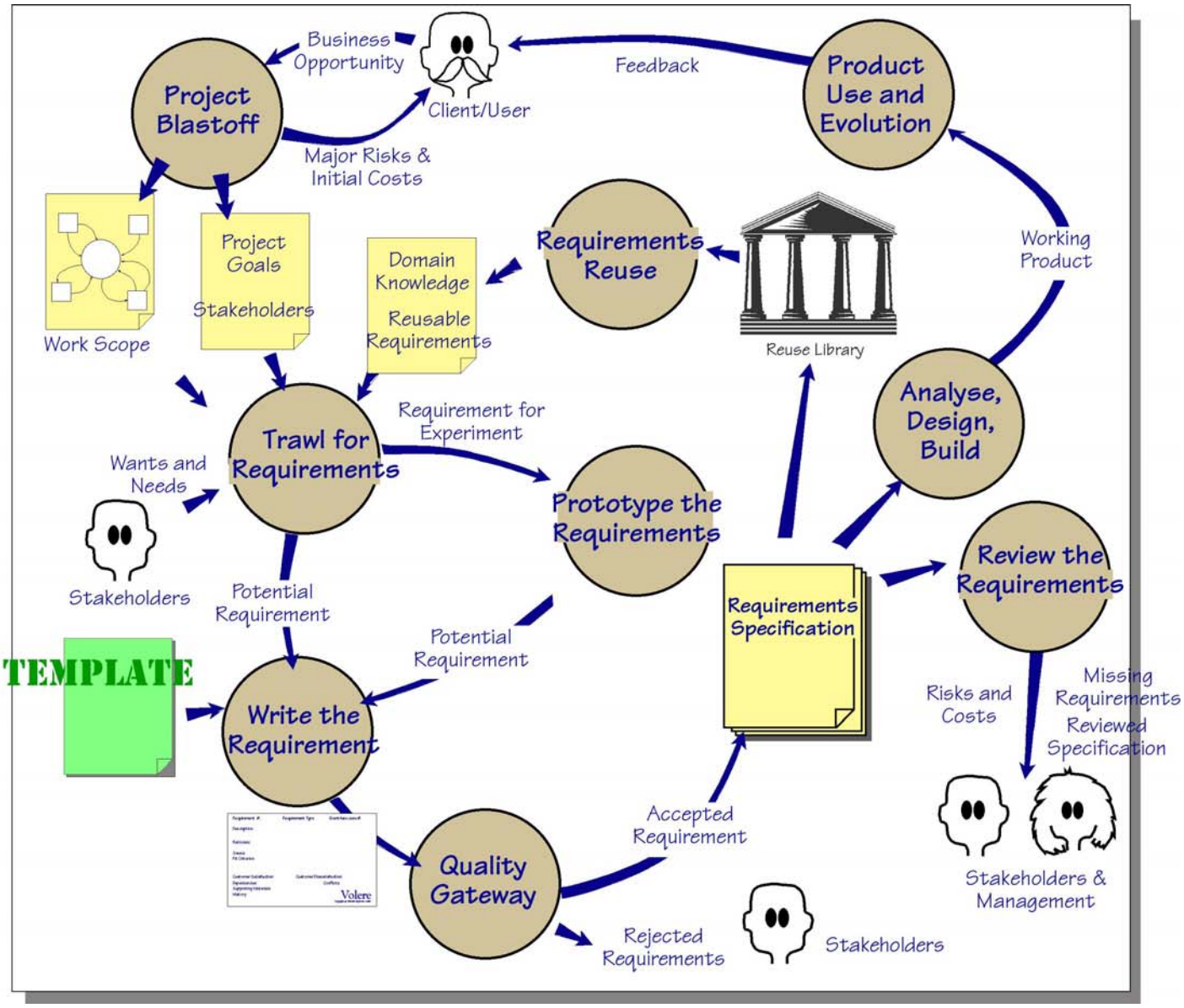
Priority: **Next release** Conflicts: **None**

Supporting Materials:

History: **Raised by AG. 25 Aug 05.**

Volere

Copyright © Atlantic Systems Guild


Business Opportunity
Client/User
Feedback
Project Blastoff
Product Use and Evolution
Major Risks & Initial Costs
Work Scope
Project Goals
Stakeholders
Domain Knowledge
Reusable Requirements
Requirements Reuse
Reuse Library
Working Product
Analyse, Design, Build
Requirement for Experiment
Trawl for Requirements
Wants and Needs
Stakeholders
Potential Requirement
Prototype the Requirements
Requirements Specification
Review the Requirements
TEMPLATE
Potential Requirement
Write the Requirement
Risks and Costs
Missing Requirements
Reviewed Specification
Accepted Requirement
Quality Gateway
Stakeholders & Management
Rejected Requirements
Stakeholders

Reference Links

- *Mastering the Requirements Process – 2nd Edition; Suzanne & James Robertson:* http://www.amazon.com/Mastering-Requirements-Process-Suzanne-Robertson/dp/0321419499/ref=sr_1_1?ie=UTF8&s=books&qid=1286734019&sr=8-1
- *The Volere Requirements Specification Template:* http://www.volere.co.uk/
- *Complete Systems Analysis: The Workbook, the Textbook, the Answers; Suzanne & James Robertson: http://www.amazon.com/Complete-Systems-Analysis-Workbook-Textbook/dp/0932633501/ref=sr_1_3?ie=UTF8&s=books&qid=1286737163&sr=1-3-spell*
- *The Mind Map Book: How to Use Radiant Thinking to Maximize Your Brain's Untapped Potential; Tony & Barry Buzan: http://www.amazon.com/Mind-Map-Book-Thinking-Potential/dp/0452273226/ref=sr_1_1?s=books&ie=UTF8&qid=1286737525&sr=1-1*
- *The Atlantic Systems Guild:* http://atlanticsystemguild.businesscatalyst.com/home.htm
- Mind Mapping Software: http://www.mindjet.com/
- Websphere Business Modeler: http://www-01.ibm.com/software/integration/wbimodeler/advanced/

What We Discussed

- A requirements engineering model
- The requirements shell
- Reference links

THANK YOU