



Module 4:

Analyze the Problem

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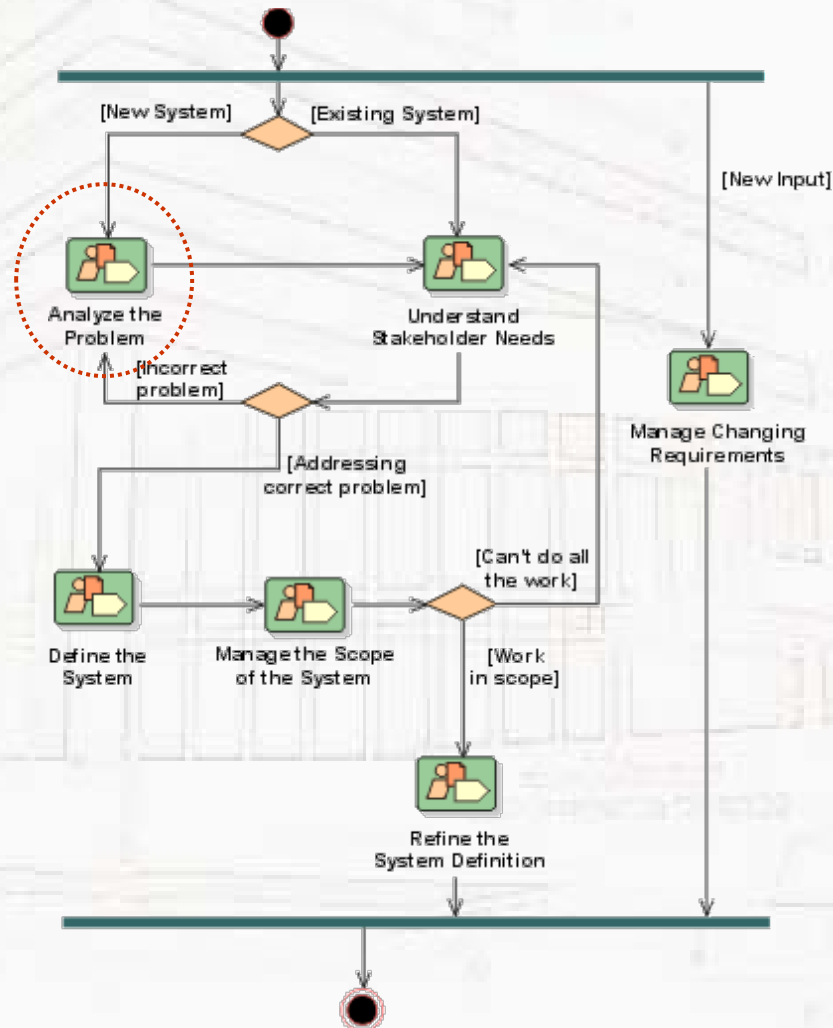


Objectives: Analyze the Problem

- Describe the activities in problem analysis
 - Gain agreement on the problem
 - Identify the stakeholders
 - Find actors and define system boundaries
 - Define a problem statement
 - Identify constraints on the project
 - Establish common vocabulary
 - Start development of the project Vision
 - Draft a Requirements Manage Plan

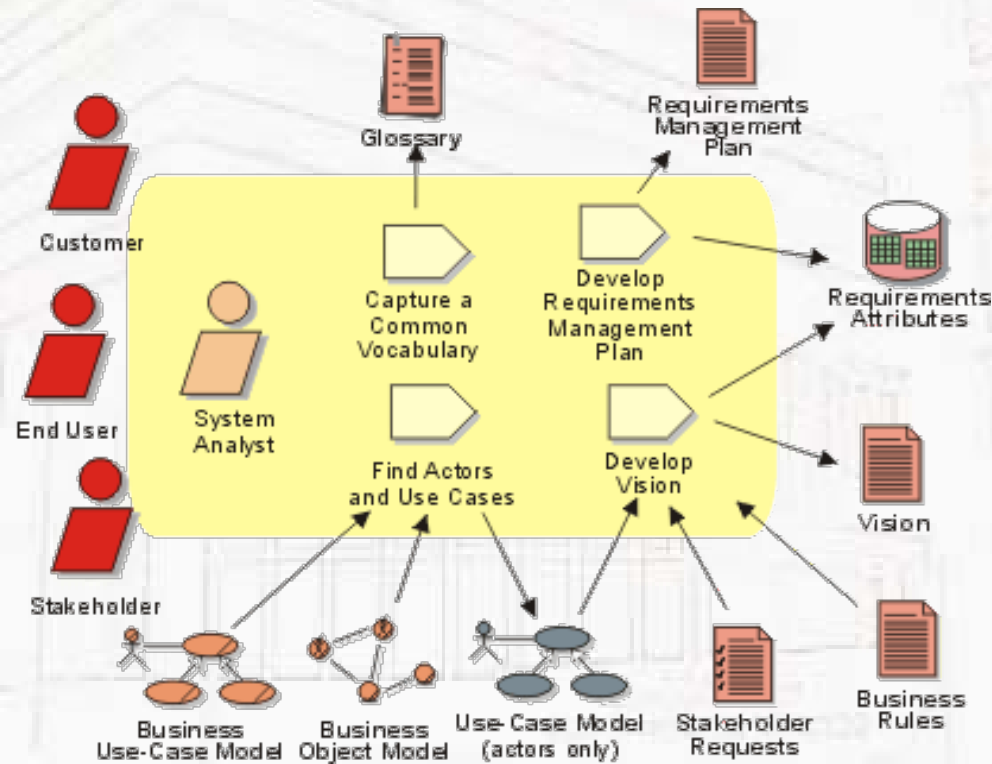


Where Are We in the Requirements Discipline?





Analyze the Problem: Activities and Artifacts





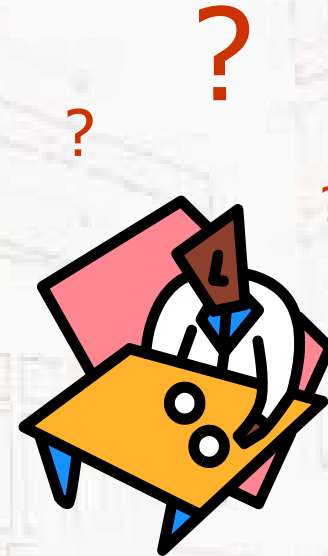
Problem Analysis

- What is it?
 - The process of understanding real-world problems, user's needs, and proposing solutions to meet those needs.
- What is the goal?
 - Gain a better understanding before development begins
 - Identify root causes
 - Help formulate the business requirements
 - Help find the right solution



Why Is Analyzing the Problem Important?

- To
 - Avoid the “Yes...but...”
 - Minimize extra work
 - Understand requirements
 - To find the right solution



What is the problem really?



Definition of a Problem

“A problem can be defined as the
Difference between



things as
perceived

{problem}



things as
desired”

and



Problem Analysis Activities

- Gain agreement on the problem definition
- Understand the root causes
- Define the business requirements
- Identify the correct solution
- Identify stakeholders
- Define the solution system boundary
- Identify constraints on the system or project



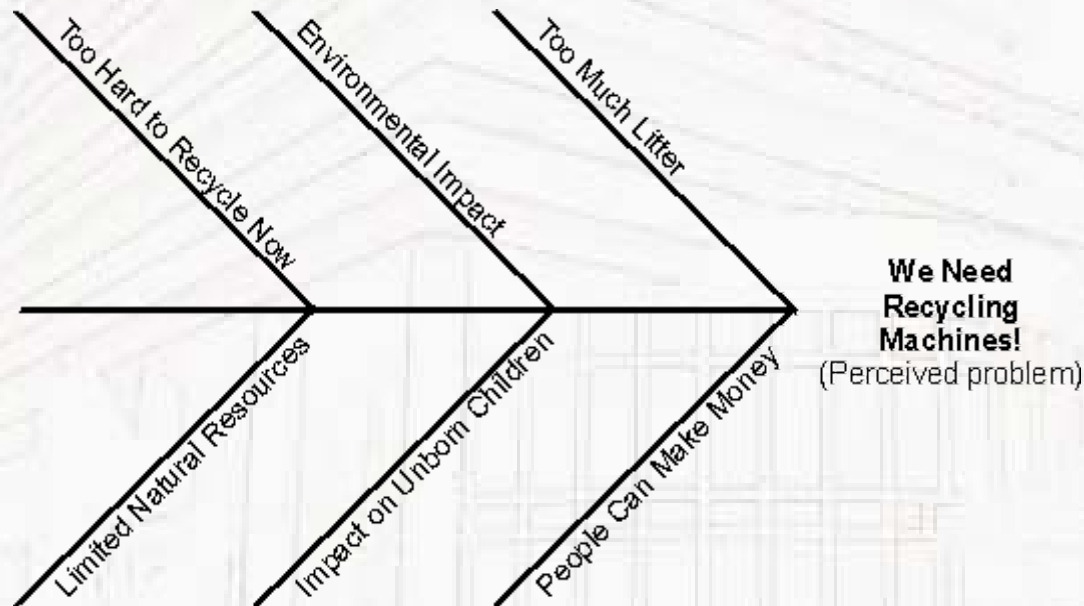
Gain Agreement

- What is the problem?
 - Understand customer's perspective
 - Document customer perspective
 - Gain agreement on it
- What is the problem. Really?
 - Search for root causes
 - Address the root causes



What Is the Problem Behind the Problem?

Fishbone Diagram: One method for Root-Cause Analysis



What the customer believes to be the problem

customer are dissatisfied with our service

List contributing causes to the identified problem.

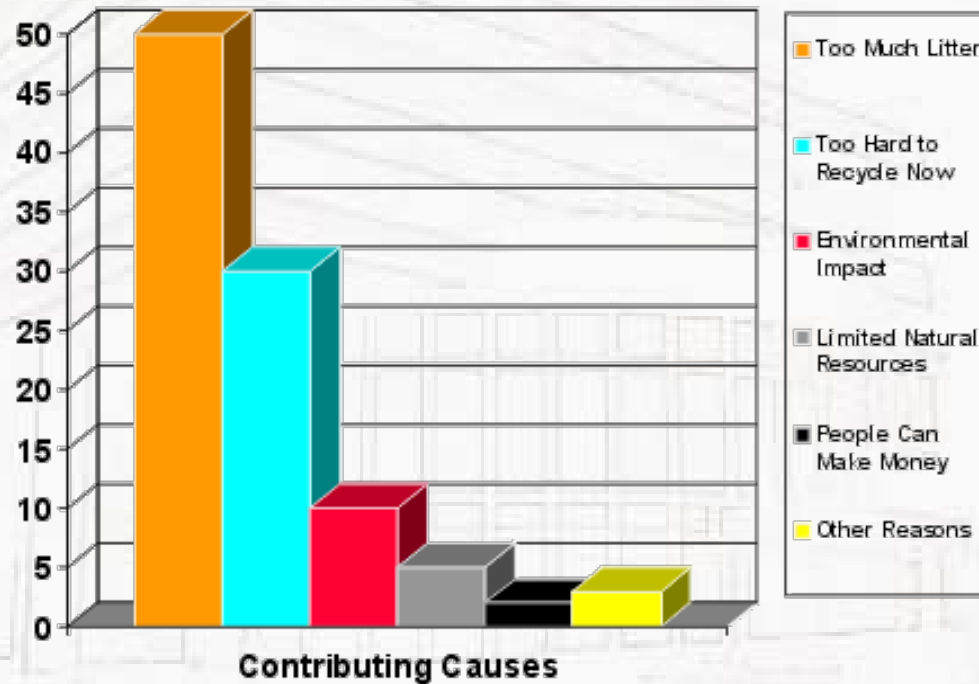
Keep asking "Why?" (expand each rib).

How much does each contribute?



Focus on the Largest Contributors

Pareto Diagram



Rank in order and use the 80-20 Rule to focus on the top contributing causes to address the greatest portion of the problem.



Exercise 4.1 :

The Problem Behind the Problem

- Discuss the class project
- Identify and weight root causes
 - Fishbone diagram
 - Pareto diagram



Formulate the Business Requirements

- Business requirements should address the root causes
- Specify the current situation
- Specify the desired business situation
- Be measurable



Identify the Business Solution

- Analyze the business requirements
- Identify a number of solutions
 - Technical or non-technical, or both
- Choose the one(s) that best meet the business requirements
- Start a project to implement the solution



Business Models

- Model organization structure and dynamics

Business processes

Products

Organization structure

Deliveries

Role and responsibilities

Events

- Visualize the organization and its processes
- Help understand current problems
- Identify potential improvements
- Derive and validate system requirements needed to support the organization



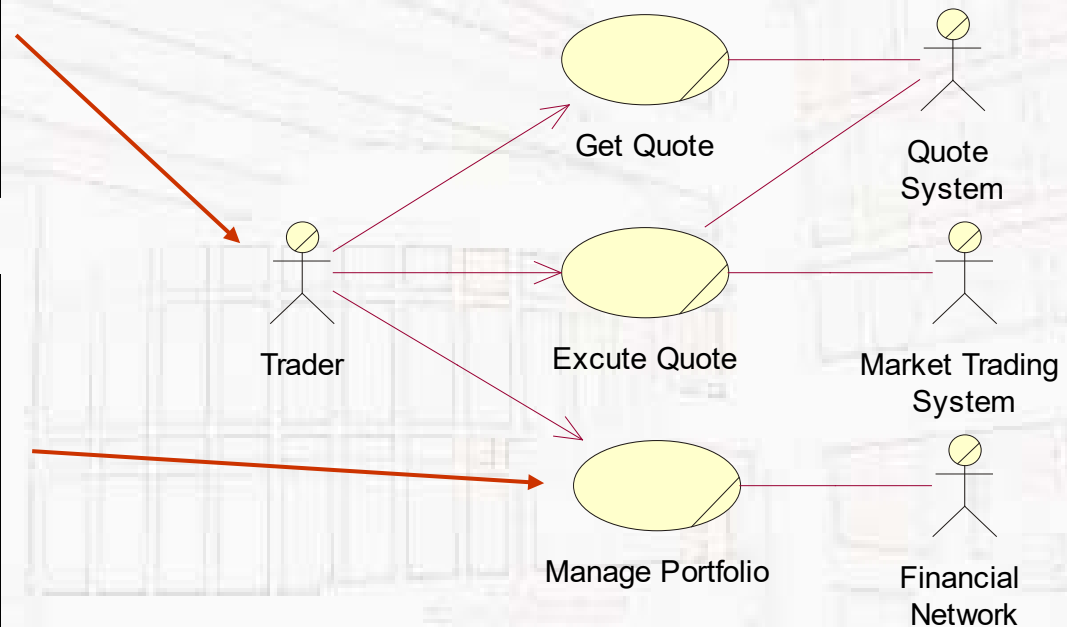
Business Use-Case Model

Business actor:

Someone or something outside the business that interacts with the business.

Business use case:

A sequence of actions a business performs that yields an observable result of value to a particular business actor.





Identify the Project Stakeholders

- A stakeholder is anyone who is materially affected by the outcome of the system.

Who are some of the stakeholders for your projects?



Identify the Project Constraints



Environmental



Political



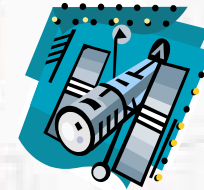
Economic



Technical



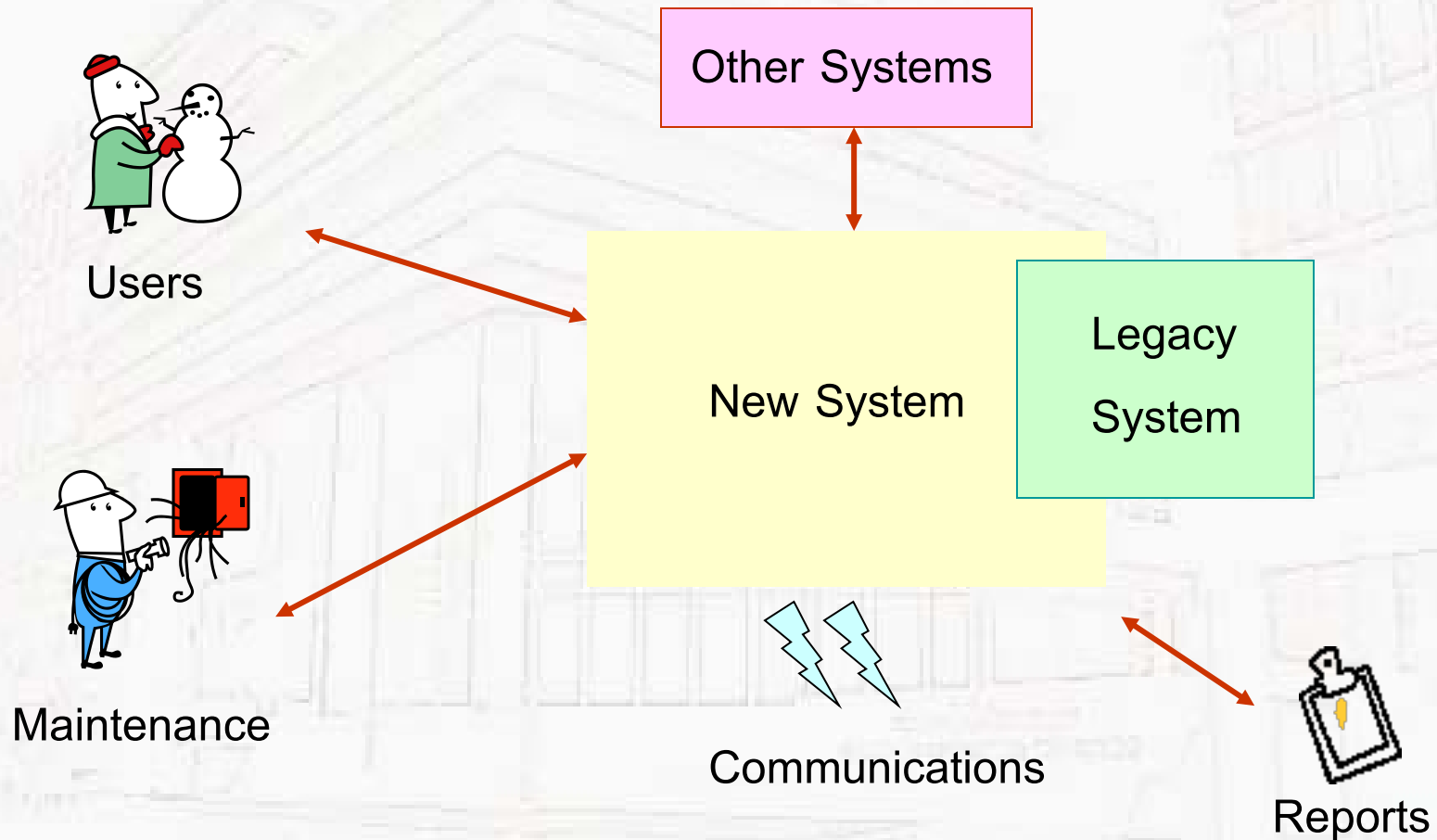
System



Feasibility

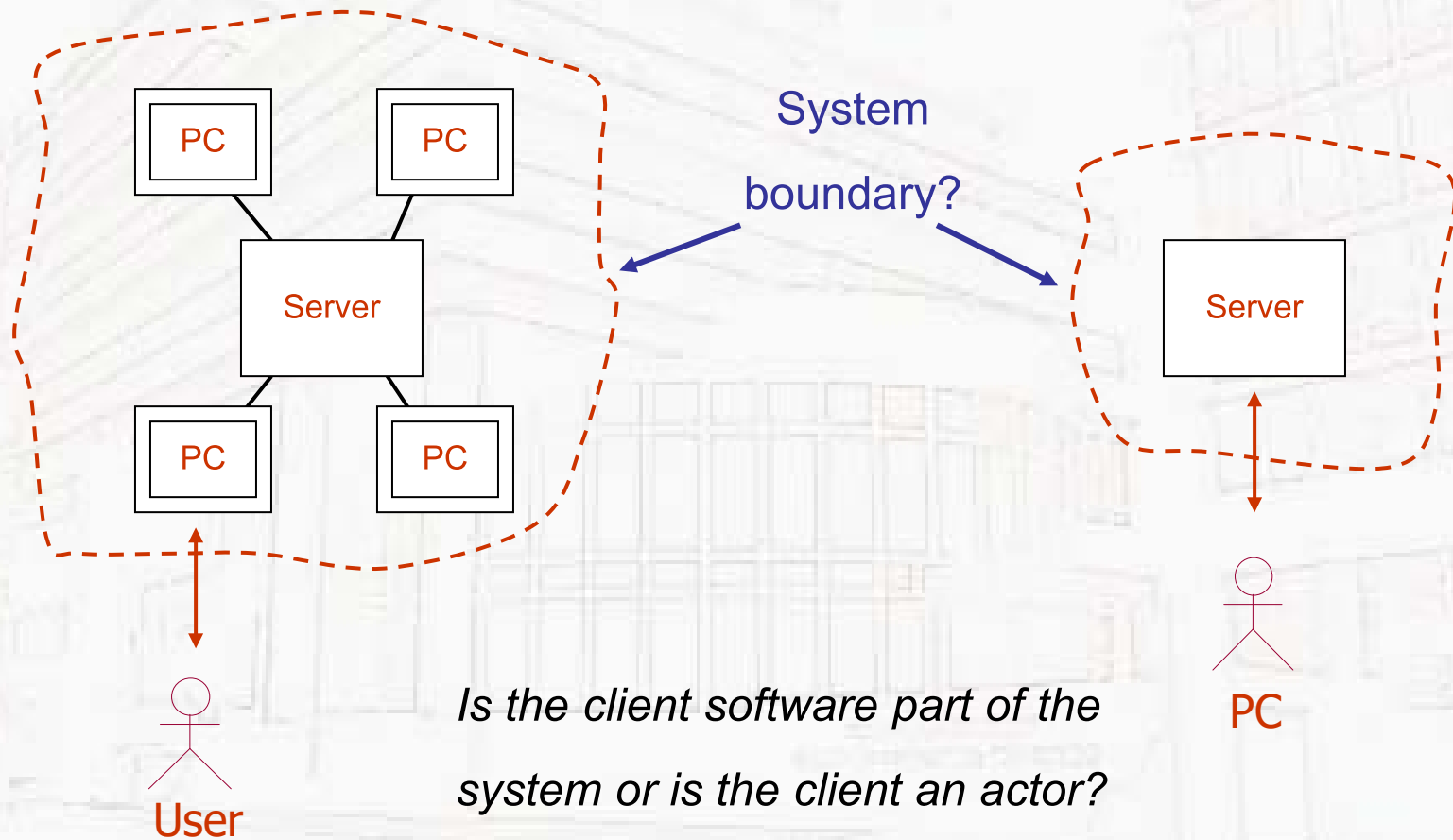


Define the Solution System Boundary





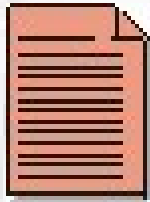
Actors Help Define System Boundaries





Capture a Common Vocabulary

- Define terms used in the project
- Help prevent misunderstandings



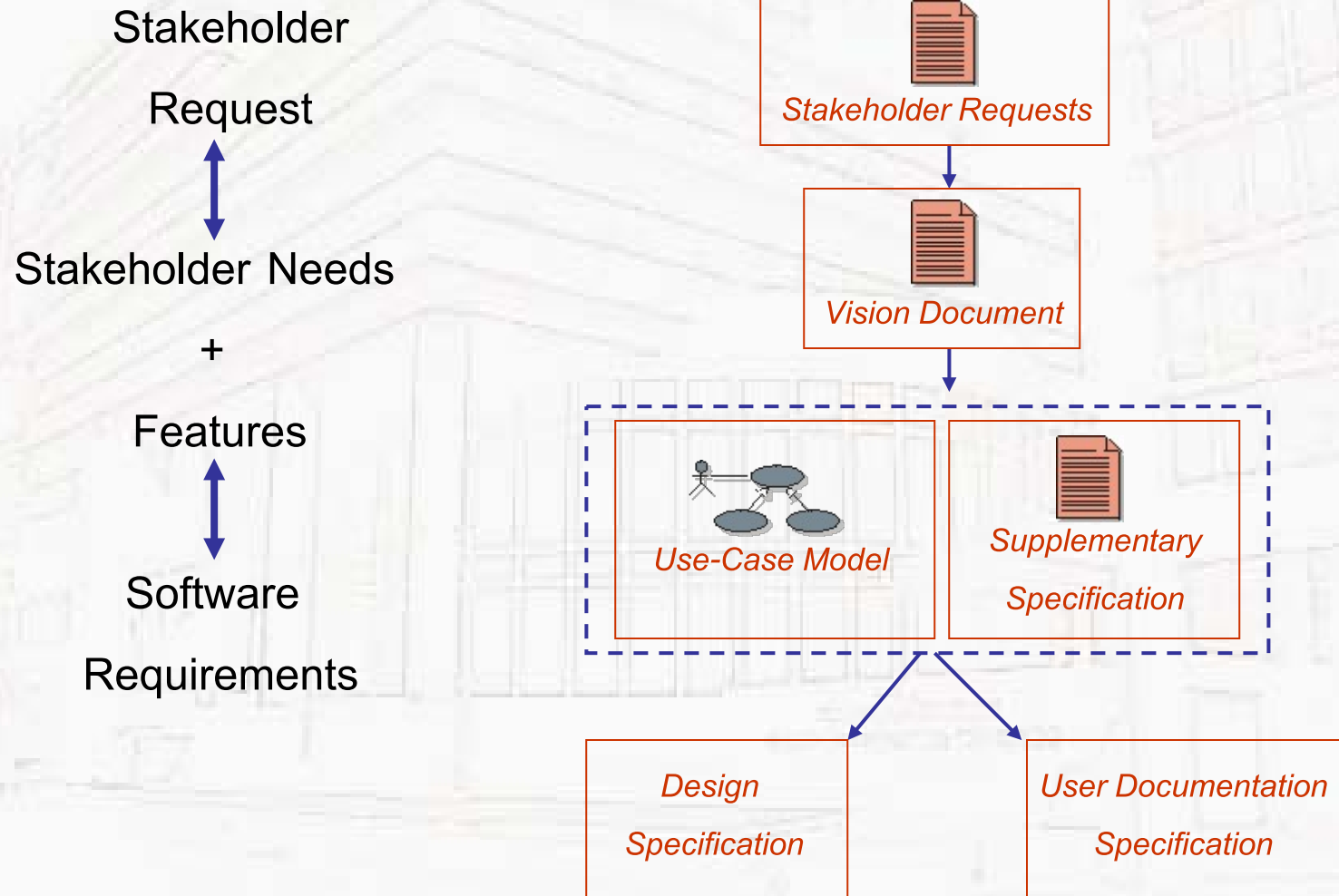
Glossary

Capture common vocabulary

- *Start as soon as possible*
- *Continue throughout the projects*



Artifacts: Focus on Vision





Vision Document

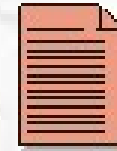
- Communicate between management, marketing, and the project team
- Provide for initial customer feedback
- Foster general understanding of the product
- Establish scope and priority of high-level features

*A document that gets
“all parties working from the same book.”*



Vision Document (cont.)

- System-level document that describe the “What” and “Why” of the product or application
- Focus
 - User needs
 - Goals and objectives
 - Target markets
 - User environments and platforms
 - Product features



*Vision
Document*



Vision Document Outline

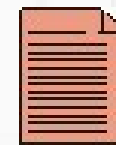
1. Introduction
2. Positioning
3. Stakeholder and User Descriptions
4. Product Overview
5. Product Features
6. Constraints
7. Quality Ranges
8. Precedence and Priority
9. Other Product Requirements
10. Documentation Requirements
11. Appendix 1 – Feature Attributes



Formulating the Problem Statement

Problem Statement

The problem of	(describe the problem)
Affects	(the stakeholders affects by the problem)
The impact of which is	(what is the impact of the problem)
A successful solution would	(like some key business benefits of a successful solution)



Vision



Exercise 4.2: Analyze the Problem

- Formulate the business requirements
- Identify the right solution
- Start Vision
 - Identify project stakeholders
 - Identify constraints on the project
 - Formulate a problem statement
- Find actors and system boundaries



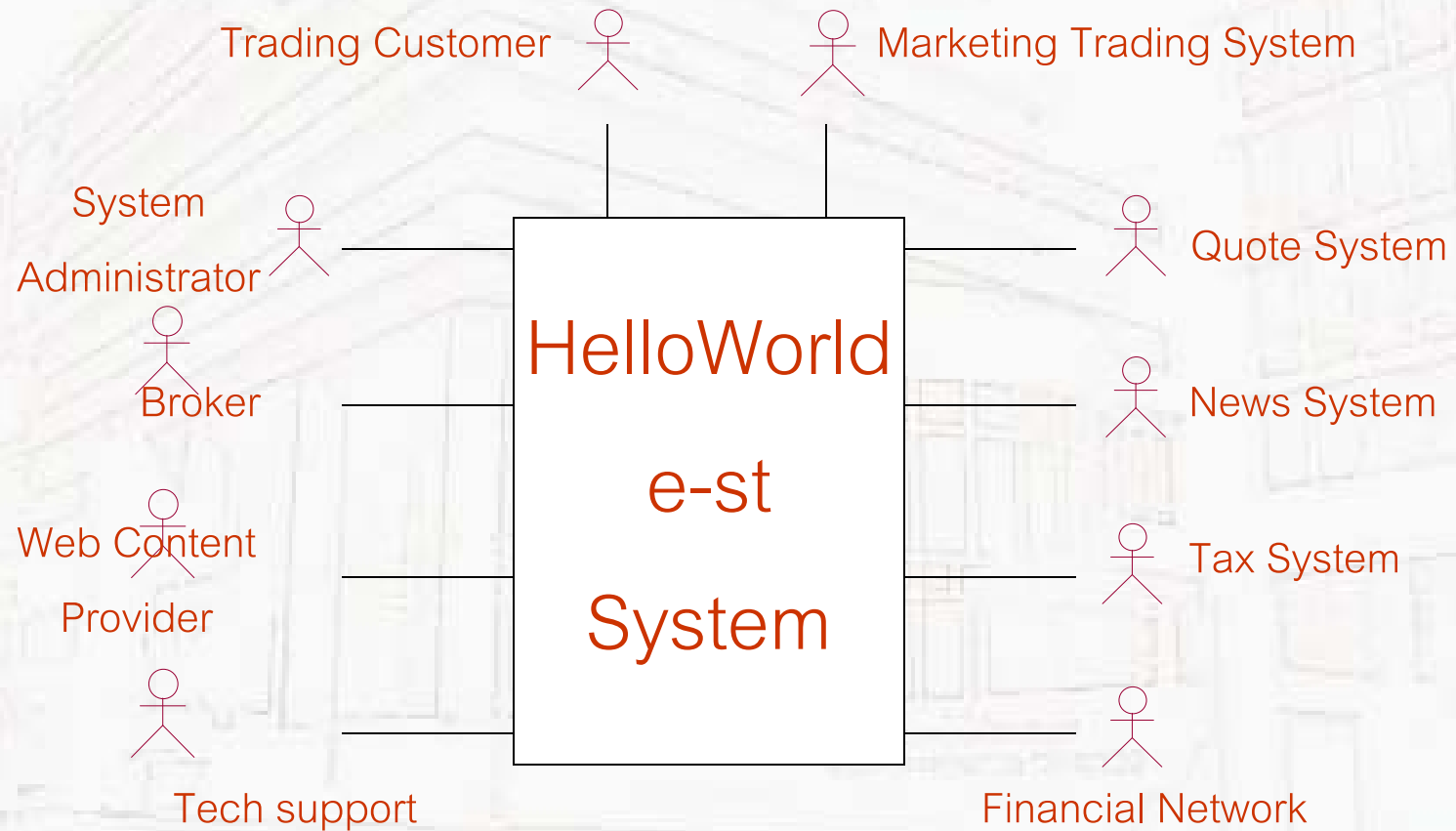
Sample Solution: Identify Stakeholders

- Trading Customers
- HelloWorld company
 - Board of directors
 - Marketing Dept.
 - Engineering Dept.
 - Tech support
 - Developers



Sample Solution:

Identify Actors and Boundaries





Sample Solution: Identify Constraints

- Tax laws
- Federal Trade Commission (FTC) rules
- Securities and Exchange Commission (SEC) rules
- Project schedule
- Project budget
- Security for financial information
- Legacy interfaces
- Web-based interface constraints



Sample Solution: Problem Statement

The problem of	HelloWorld Company losing customers at a rate of 100 per month
Affects	HelloWorld Company
The impact of which is	Loss of revenue and profitability for HelloWorld Company
A successful solution would	<ul style="list-style-type: none"> • allow customers to trade at any time • ensure that callers could get through to telephone operators • reduce the trading fees • not increase the operating costs for HelloWorld Company



Develop Requirements Management Plan

- What is in a Requirements Management Plan?
 - Types of requirements to collect
 - Types of attributes to track
 - Types of requirements to trace
 - Types of documents to produce
 - Management guidelines



RM Plan



Sample Requirement Attributes

Attribute





Description

Rationale	Reason for the requirement
Customer priority	Customer's priority for development
Status	Proposed, Approved, Incorporated, Validated
Risk	Probability of adverse projects Impact: schedule, budget, technical
Safety/Criticality	Ability to affect user health or welfare
Responsible Party	Pull-down list
Origin	Source of requirement
Stability	Probability that the requirement will not change



Management Uses for Requirement Attributes

Attributes link project elements!

	<i>status</i>	<i>Risk</i>	<i>Priority</i>	<i>Effort</i>	<i>Cost</i>
<i>Feature</i> <i>Req. 10</i>	Approved	Low Risk	High ✓ Priority		\$\$\$
<i>Feature</i> <i>Req. 15</i>	Proposed	Med. Risk	Low Priority		\$\$
<i>Feature</i> <i>Req. 40</i>	Approved ✓	High Risk ✓	Mandatory ✓ 		\$

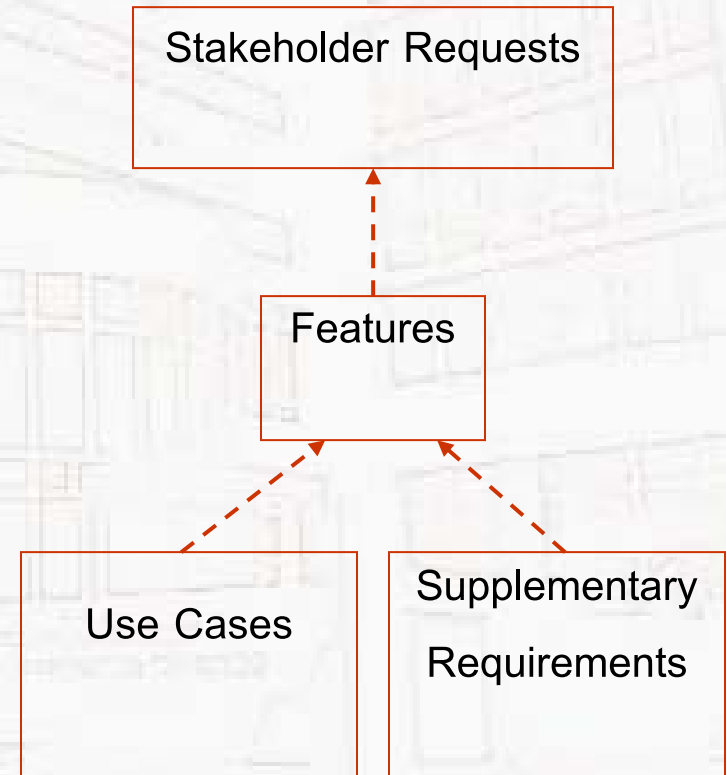


HelloWorld e-st

Requirements Management Structure

Requirement Types	Document Types
Stakeholder Requests	Stakeholder Requests
Feature	Vision
Use Cases	UC Specs.
Supplementary	Supplementary Specification
Terms	Glossary

Traceability Criteria





Organizing Project Artifacts

- Develop or adopt stand templates
- Record your standards in RM Plan
- Benefits of standardization
 - Leverage the work of others
 - Quick start, avoid reinventing the wheel
 - Make sure things don't fall through the cracks
 - Centralize information
 - Consistency in documents
 - Appear familiar and not intimidating
 - Are easier to read



What Artifacts Are Used to Manage Requirements?

Where do we document
our requirements process?



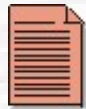
RM Plan

Where do we list the
stakeholders and users?



Vision

Where do we
define the problem?



Vision

Where do we maintain the use cases?



UC Specs

Where do we identify
the environments
and platforms?



Vision

Where do we maintain
common terminology?



Glossary



Review: Analyze the Problem

1. What are the activities in problem analysis?
2. How do you gain agreement on the problem?
3. Why do you write business requirements?
4. Who are the stakeholders in your project?
5. What determines the boundaries of a system?
6. How can actors be used to help determine the boundaries of a system?
7. Why is it important to establish a glossary?
8. What should be included in a problem statement?
9. What is in a Requirements Management Plan?



Question ? ? ?

