PXL – IT
42TIN1280 Software Analysis - Introduction

Week 01 – semester 01

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Content

- **The essential software requirement**
- What are requirements?
- Levels and types of requirements
- Best practices: international standards – ISO
- SMART requirements
- Requirements development and management
- Brief history of requirements methods & modeling
- The role of the analyst + recap case
- Questions & Answers


The essential software requirement

The essential software requirement

- Why do we need requirements? Group exercise ➔ for discussion
  - As a group describe (using your experience of project 1TIN)
    - in one or two keywords the important (requirements) problems from your projects / organizations,
    - what resulted from these problems (consequences) and
    - any ideas for improvement you can think of (solutions).
  - Give examples, explain the examples, write down per group, discussion afterwards

	(Requirements) problem	Consequence	Solution
1.			
2.			
3.			

The essential software requirement

- Why do we need requirements? (Model solution 01)
  - The project's business objectives, vision, and scope were never clearly defined.
  - Customers were too busy to spend time working with analysts or developers on the requirements.
  - Your team could not interact directly with representative users to understand their needs.
  - Customers claimed that all requirements were critical, so they didn't prioritize them.
  - Developers encountered ambiguities and missing information when coding, so they had to guess.

The essential software requirement

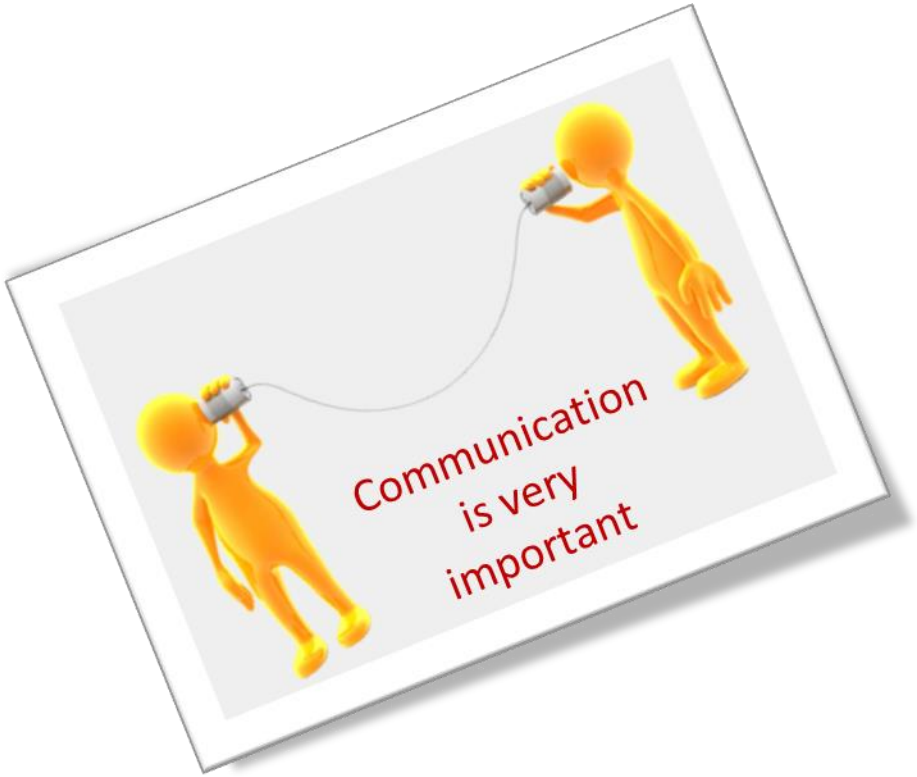
- Why do we need requirements? (Model solution 02)
  - Communications between developers and stakeholders focused on user interface displays or features, not on what users needed to accomplish with the software.
  - Your customers never approved the requirements.
  - Your customers approved the requirements for a release or iteration and then changed them continually.
  - The project scope increased as requirements changes were accepted, but the schedule slipped because no additional resources were provided and no functionality was removed.

The essential software requirement

- Why do we need requirements? (Model solution 03)
  - Requested requirements changes got lost; no one knew the status of a particular change request.
  - Customers requested certain functionality and developers built it, but no one ever uses it.
  - At the end of the project, the specification was satisfied but the customer or the business objectives were not.

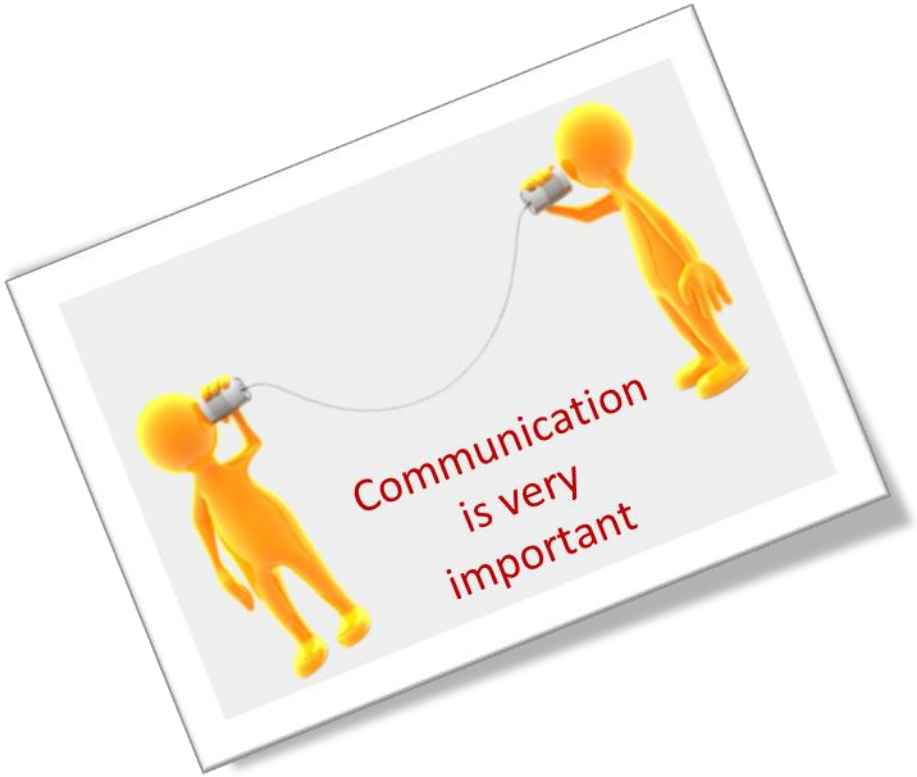
  - **Communication is very important. Check next slides!!!**

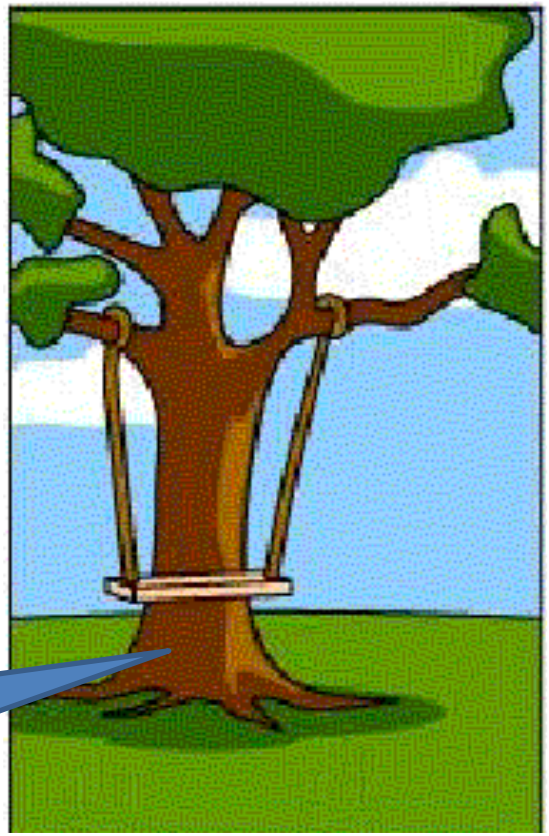
The essential software requirement



How the customer explained it …

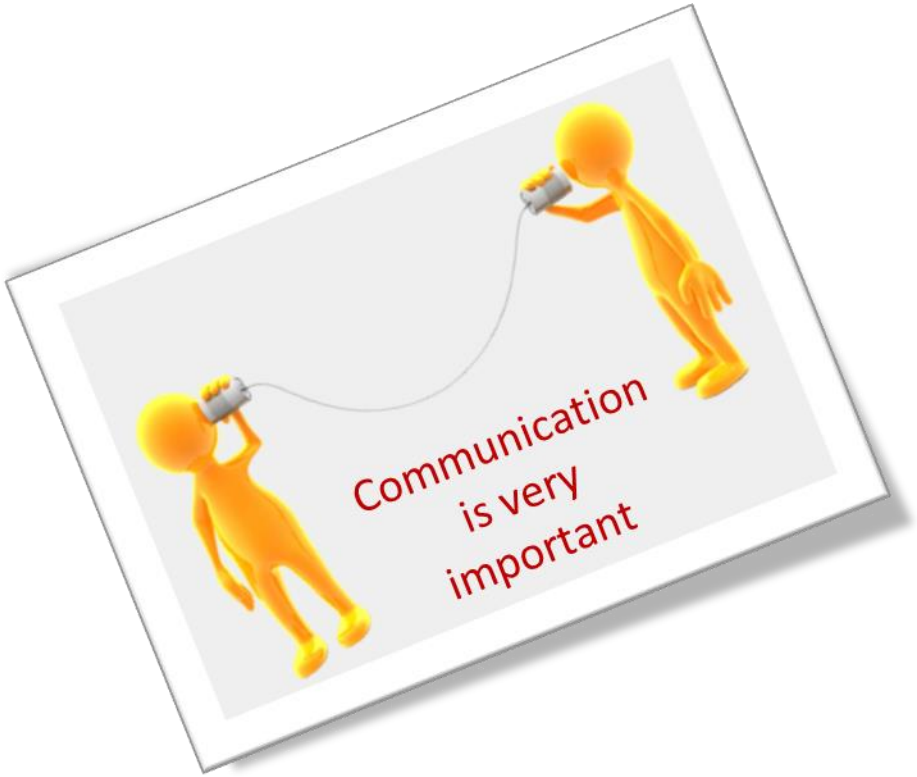
The essential software requirement





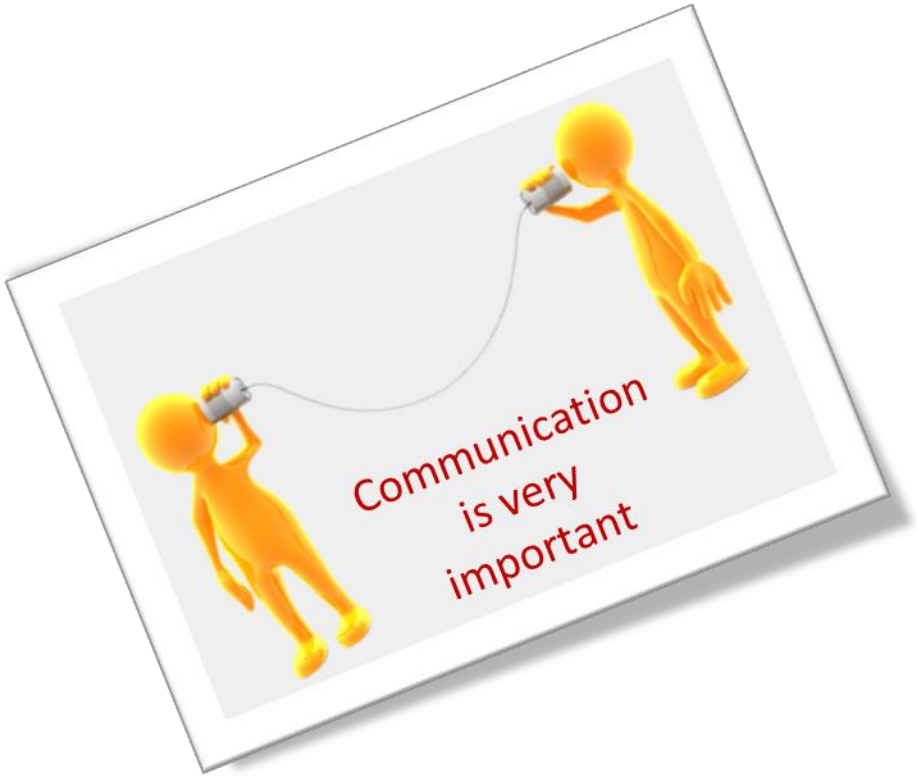
How the project leader understood it …

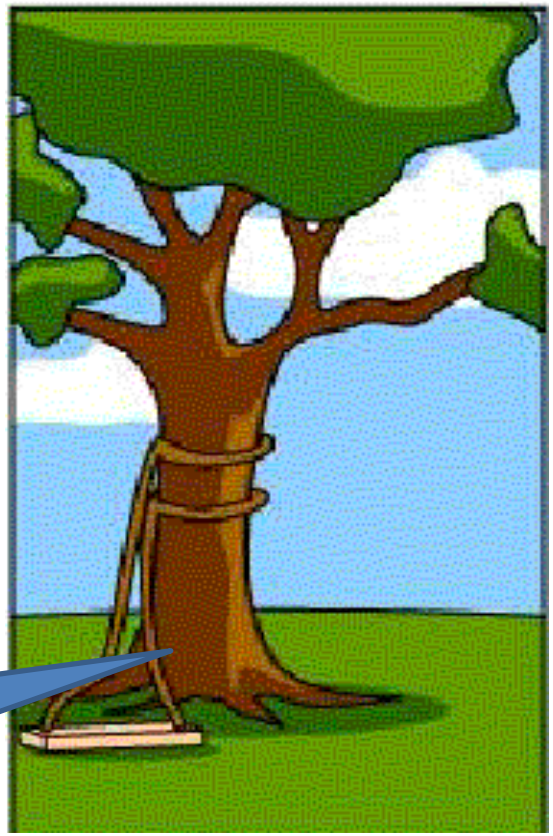
The essential software requirement



How the analyst designed it …

The essential software requirement





How the programmer coded it ...

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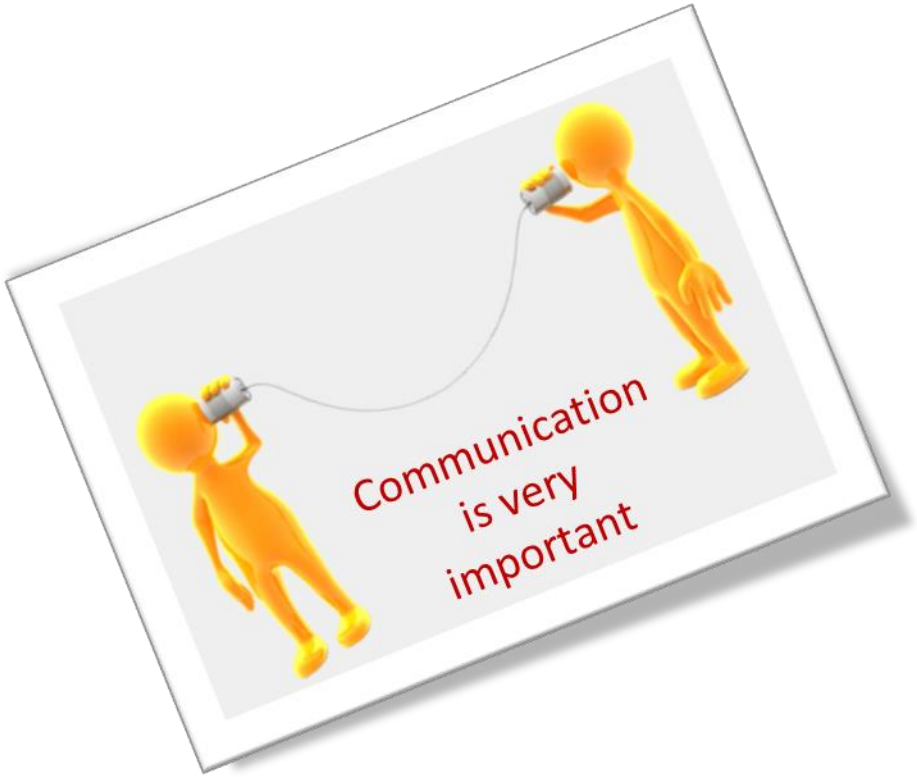
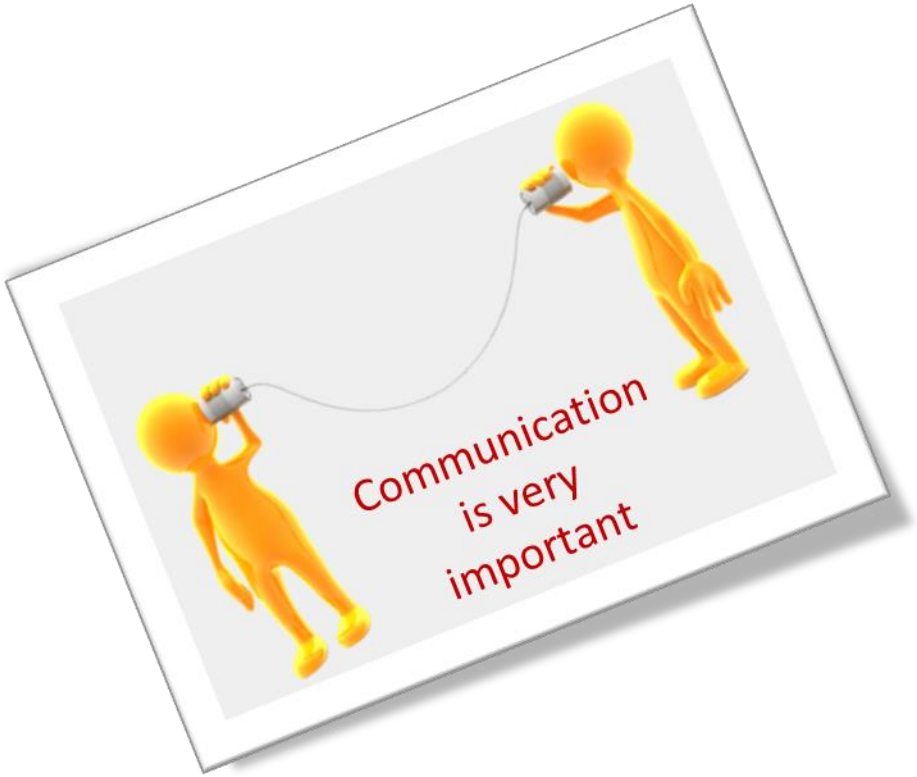
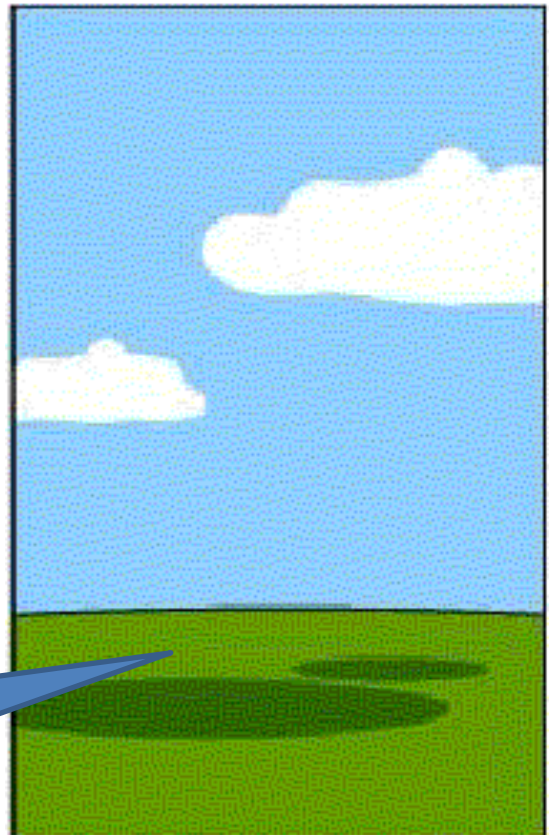


How the business consultant described it …

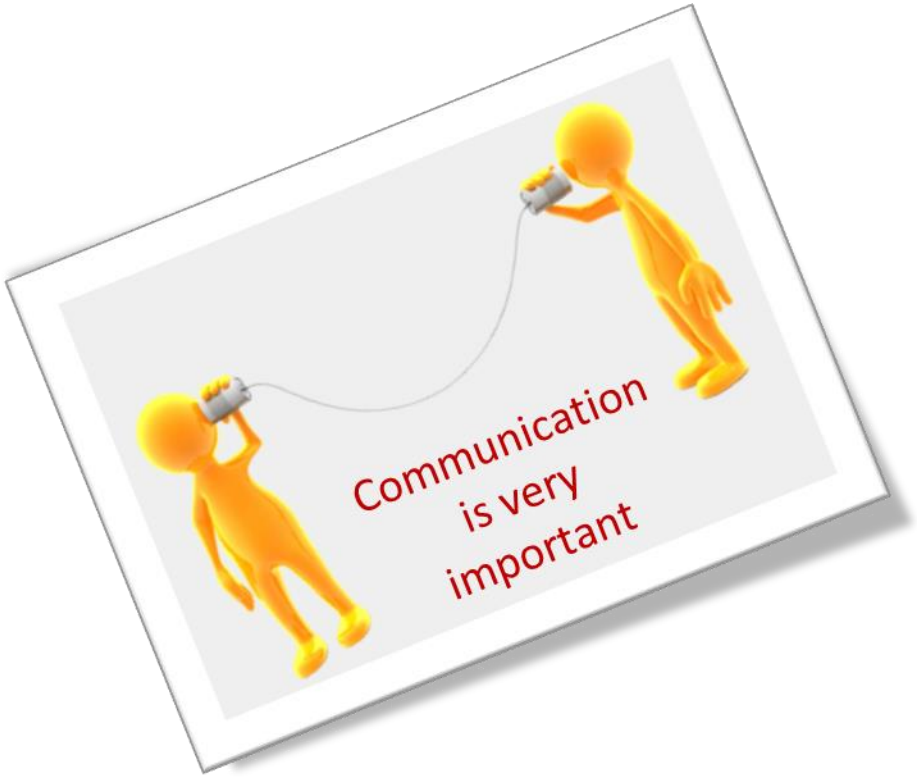
The essential software requirement

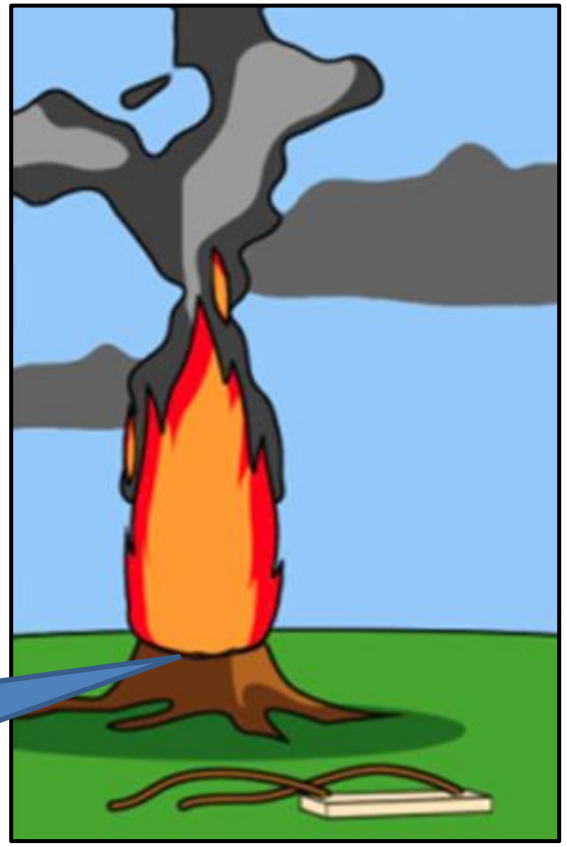




How the project was documented …

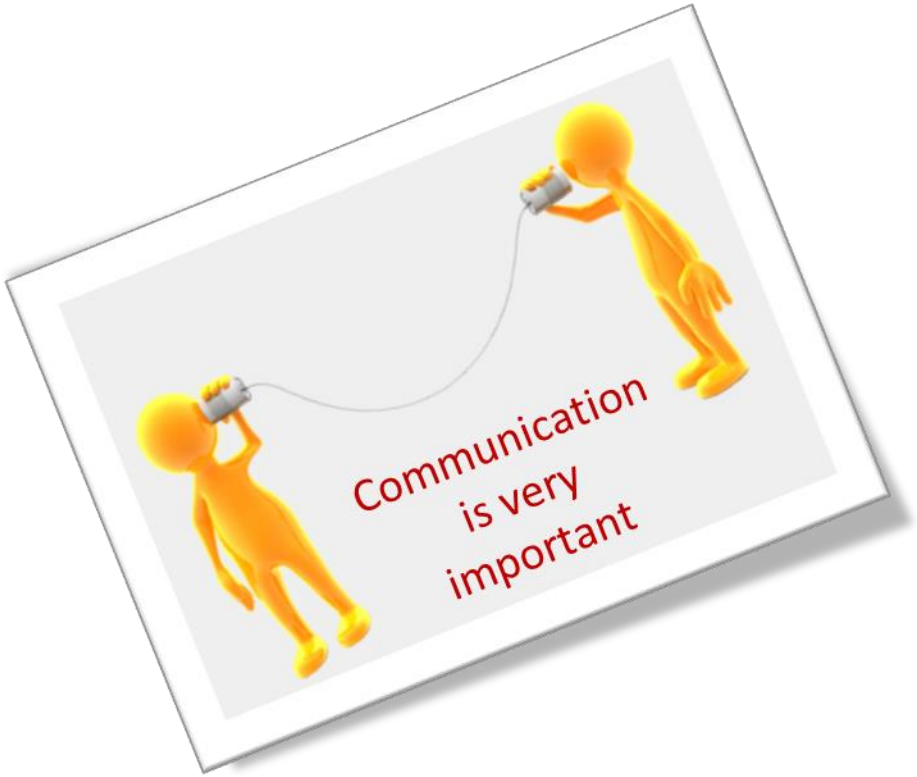
The essential software requirement

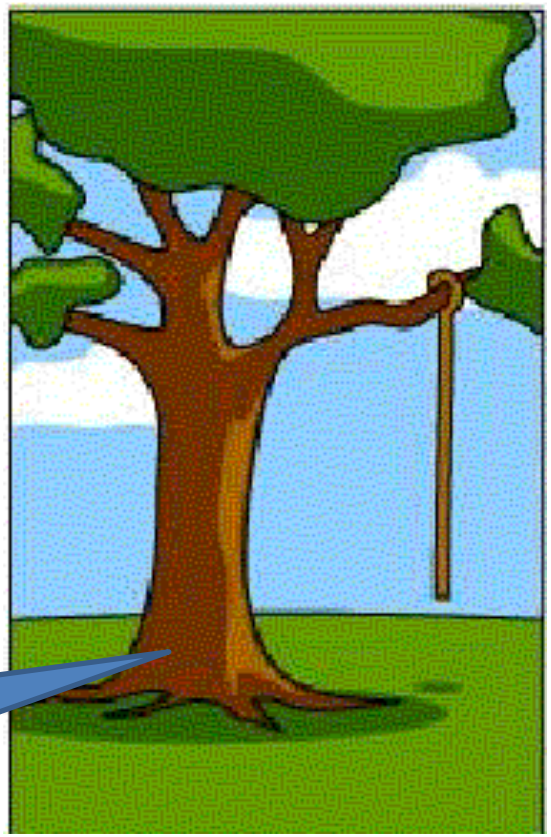




How the testers verified it …

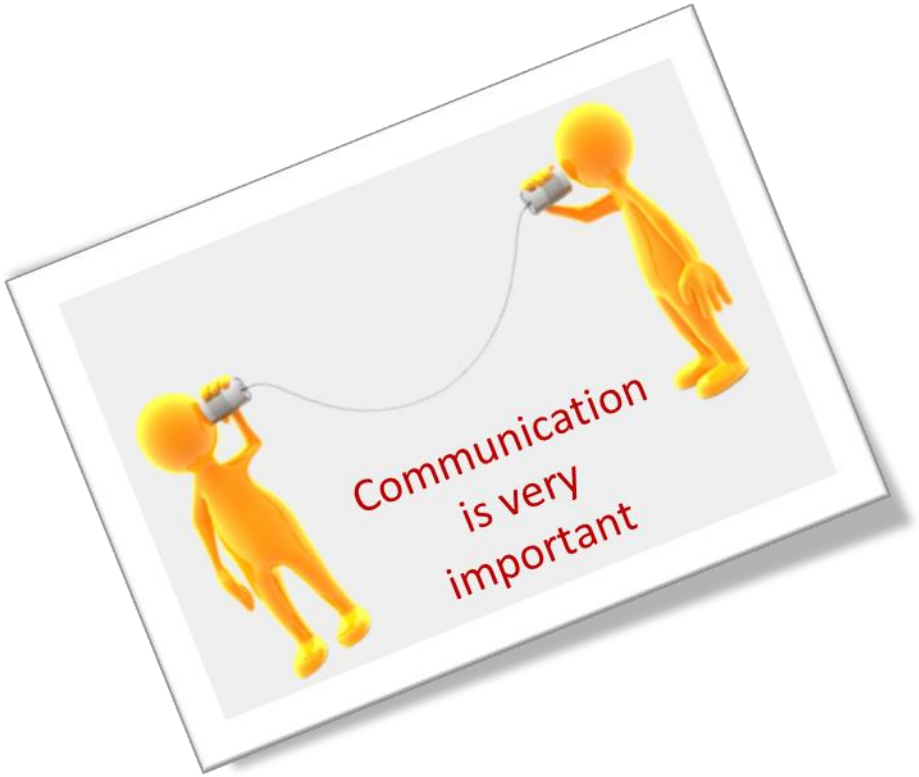
The essential software requirement

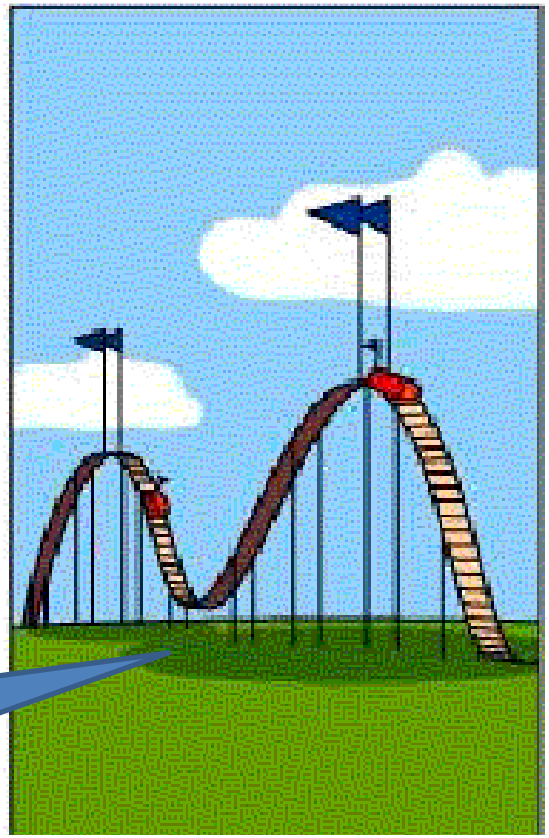




What operations installed …

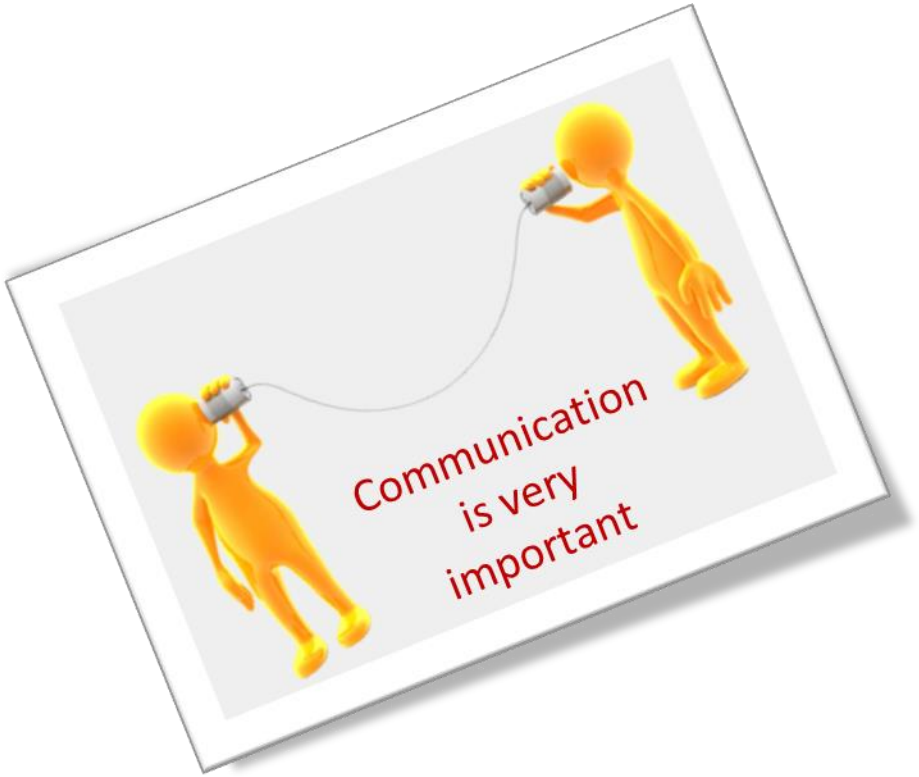
The essential software requirement

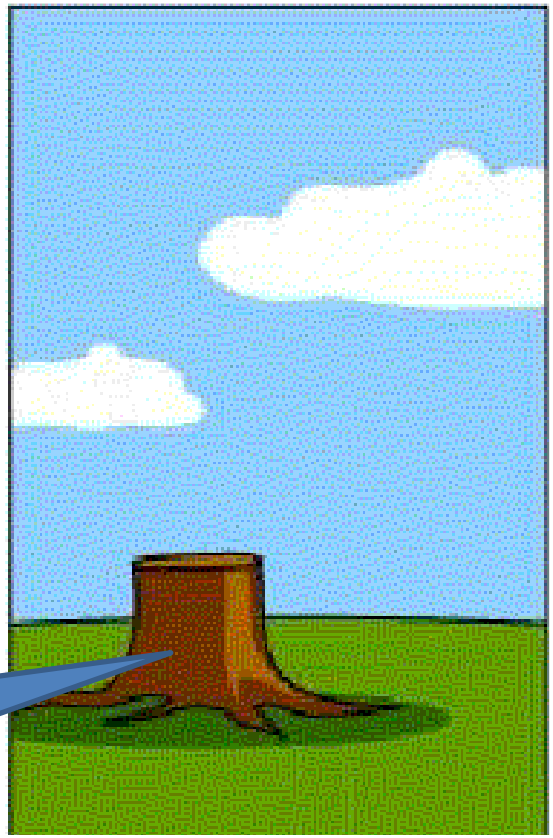




How the customer was billed …

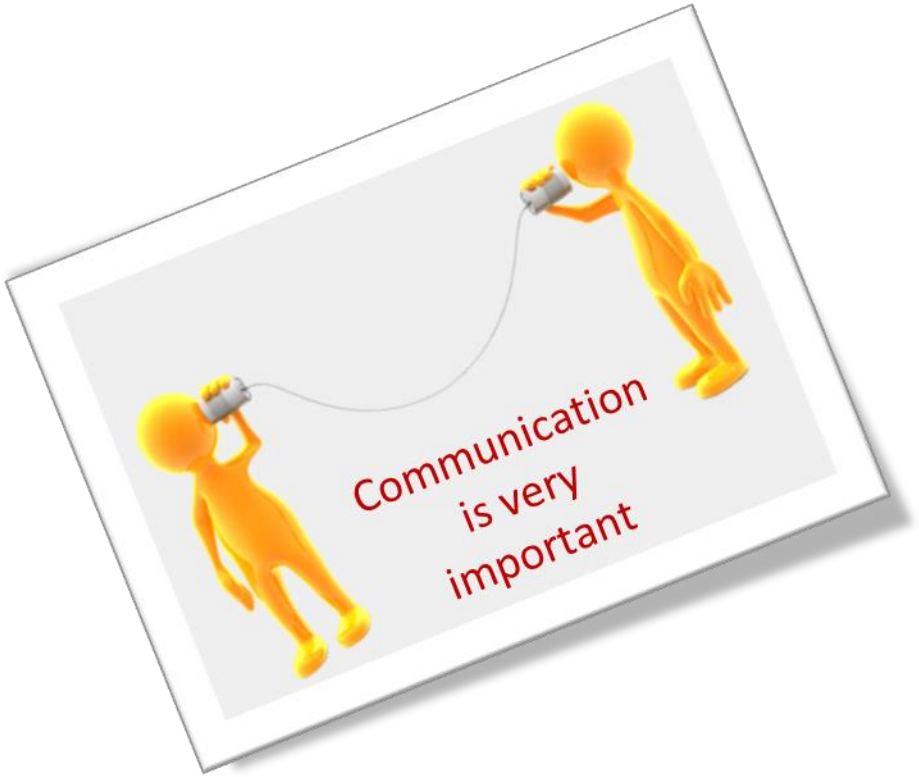
The essential software requirement

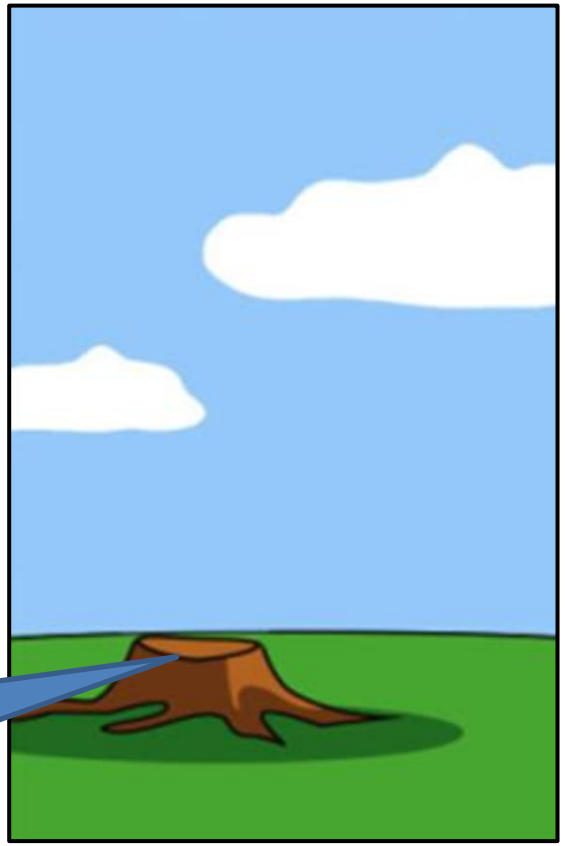




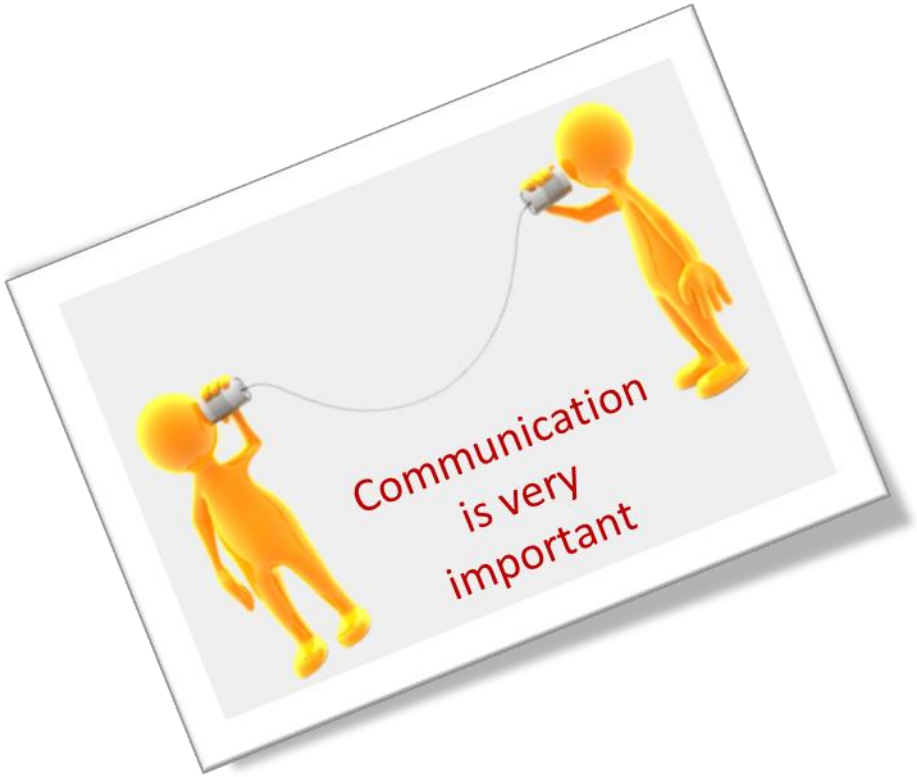
How it was supported …

The essential software requirement



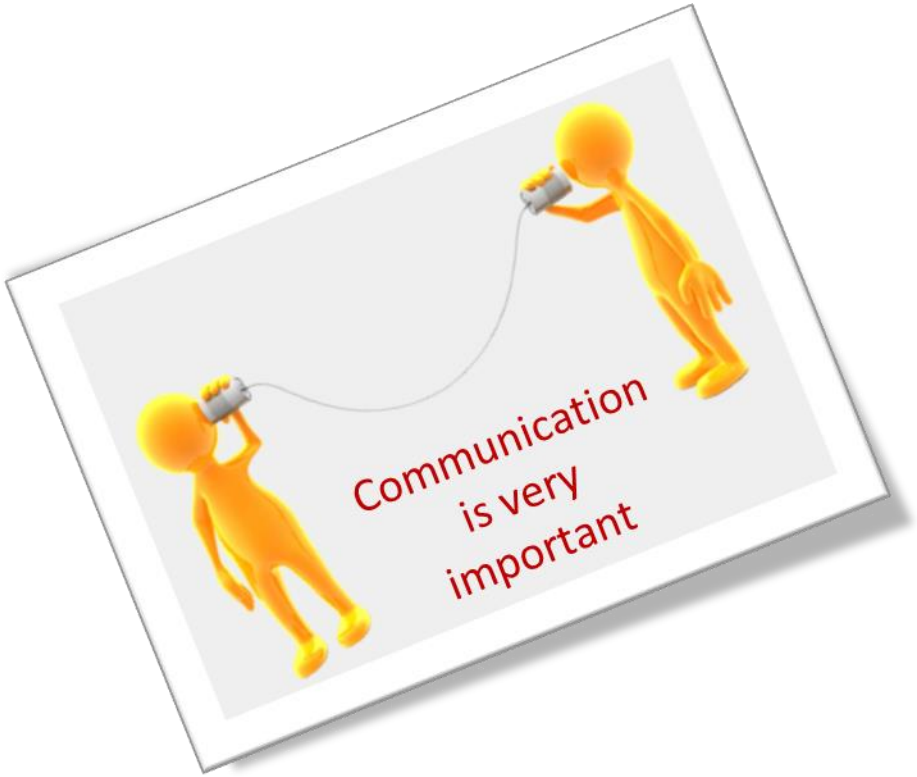


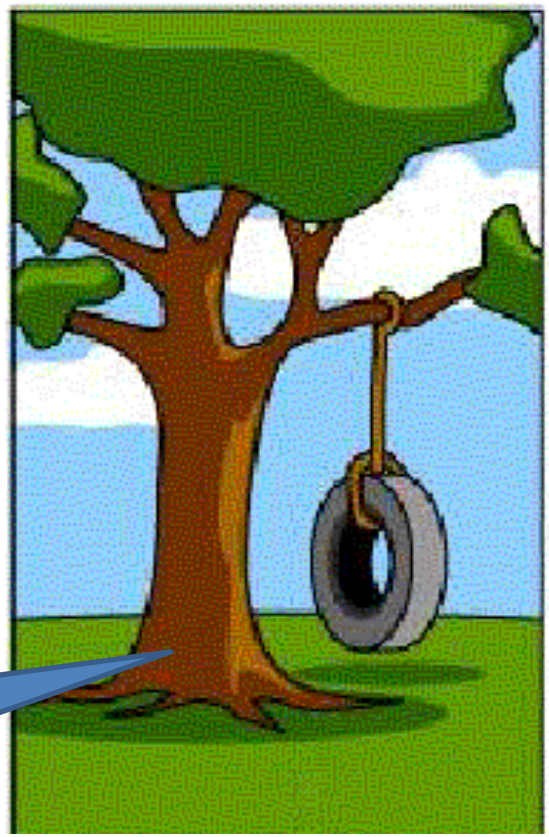
The essential software requirement



A few known issues …

The essential software requirement





What the customer really needed …

The essential software requirement

- To capture the need or problem ***completely*** and ***unambiguously*** without resorting to specialist jargon, thus ***understandable*** to our customer
- They form the basis for:
  - Project planning
  - Trade-off
  - Risk management
  - System & Acceptance testing
  - Change control

The essential software requirement

- Why? Facts and figures …
  - Most significant contributors to ***project failure*** (Standish Group CHAOS report 2014)

Success/Failure Profiles

The most important aspect of the research is discovering why projects fail. To do this, The Standish Group surveyed IT executive managers for their opinions about why projects succeed. The three major reasons that a project will succeed are user involvement, executive management support, and a clear statement of requirements. There are other success criteria, but with these three elements in place, the chances of success are much greater. Without them, chance of failure increases dramatically.

Project Success Factors	% of Responses
1. User Involvement	15.9%
2. Executive Management Support	13.9%
3. Clear Statement of Requirements	13.0%
4. Proper Planning	9.6%
5. Realistic Expectations	8.2%
6. Smaller Project Milestones	7.7%
7. Competent Staff	7.2%
8. Ownership	5.3%
9. Clear Vision & Objectives	2.9%
10. Hard-Working, Focused Staff	2.4%
Other	13.9%

The essential software requirement

- Why? Facts and figures …
  - Most significant contributors to ***project failure*** relate to ***requirements*** (Standish Group CHAOS report)

The survey participants were also asked about the factors that cause projects to be challenged.

Project Challenged Factors	% of Responses
1. Lack of User Input	12.8%
2. Incomplete Requirements & Specifications	12.3%
3. Changing Requirements & Specifications	11.8%
4. Lack of Executive Support	7.5%
5. Technology Incompetence	7.0%
6. Lack of Resources	6.4%
7. Unrealistic Expectations	5.9%
8. Unclear Objectives	5.3%
9. Unrealistic Time Frames	4.3%
10. New Technology	3.7%
Other	23.0%

The essential software requirement

- Why? Facts and figures …

Opinions about why projects are impaired and ultimately cancelled ranked incomplete requirements and lack of user involvement at the top of the list.

Project Impaired Factors	% of Responses
1. Incomplete Requirements	13.1%
2. Lack of User Involvement	12.4%
3. Lack of Resources	10.6%
4. Unrealistic Expectations	9.9%
5. Lack of Executive Support	9.3%
6. Changing Requirements & Specifications	8.7%
7. Lack of Planning	8.1%
8. Didn't Need It Any Longer	7.5%
9. Lack of IT Management	6.2%
10. Technology Illiteracy	4.3%
Other	9.9%

The essential software requirement

- Why? Facts and figures …

Another key finding of the survey is that a high percentage of executive managers believe that there are more project failures now than five years ago and ten years ago. This despite the fact that technology has had time to mature.

	Than 5 Years Ago	Than 10 Years Ago
Significantly More Failures	27%	17%
Somewhat More Failures	21%	29%
No Change	11%	23%
Somewhat Fewer Failures	19%	23%
Significantly Fewer Failures	22%	8%

The essential software requirement

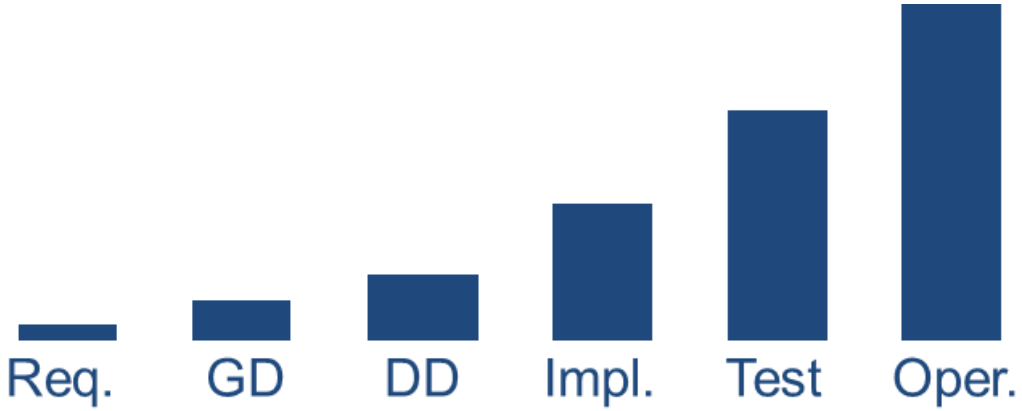
- Why? Facts and figures …
  - Most frequently named cause of total project failure: ***changing requirements*** (Study Computer Industry Daily of 500 IT managers USA &UK)
  - ***Requirements Management*** seen as biggest problem in software development processes (EU Survey)
  - Investing less than 5% in gathering and processing requirements will lead to ***budget overruns*** of approximately 80% - 200%
  - 50% of the ***defects*** reported during dynamic testing can be traced to requirements engineering and/or requirements management

The essential software requirement

- Why? Facts and figures …
  - Requirements defects are the most important
  - Defects have the characteristic to multiply themselves top-down
  - Costs of rework rise exponentially

Example (Intel):

Req.	$200
Test	$6,000
Field	$18,000



The essential software requirement

- Who needs requirements - and why?
  (Think of your experience 1TIN)
  - ….
  - ….
  - ….
  - ….
  - ….

The essential software requirement

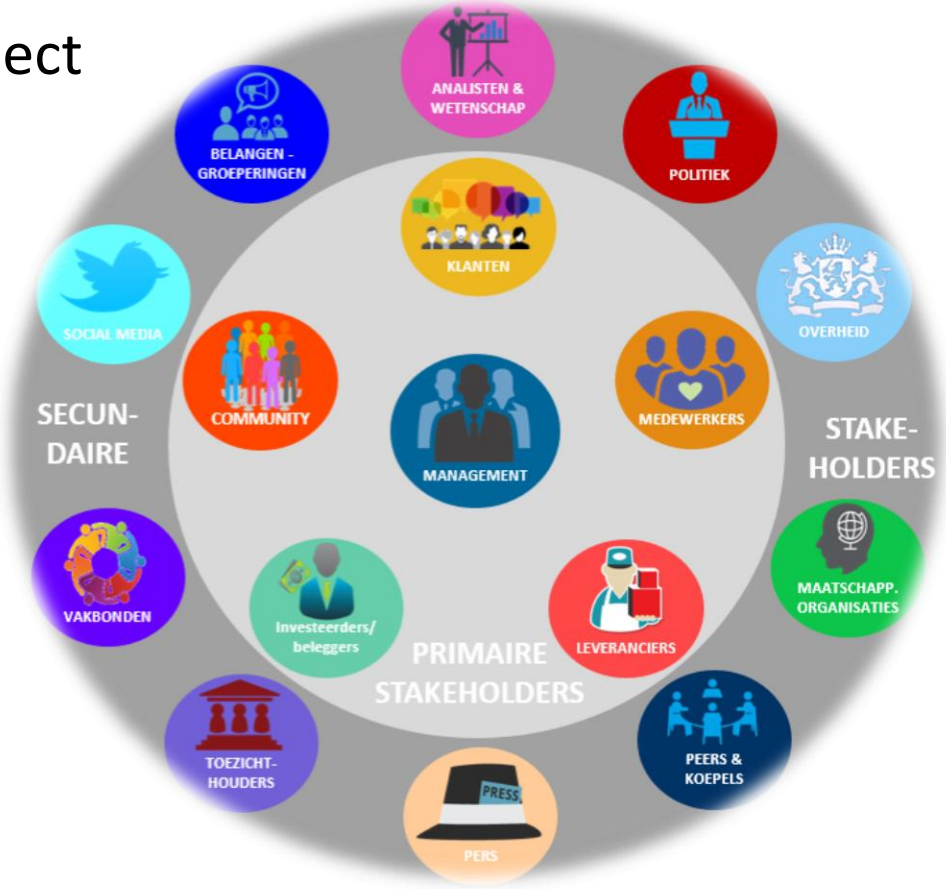
- Who needs requirements - and why?
  (Think of your experience 1TIN)

The collective term =

STAKEHOLDER

The essential software requirement

- Stakeholder(s)
  - A person (individual), group or organization that has interest or concern in an organization / project
  - Stakeholders can affect or be affected by the organization's actions, objectives and policies.
  - What is a stakeholder?
  - Stakeholder roles



The essential software requirement

- **Case ➔ group exercise**
  - Suppose the PXL direction decides to move all activities & personnel of building D to the Corda Campus
  - Which user categories or stakeholders are involved?
  - What are their requirements needs?
  - Be as specific/detailed as possible!

- **User categories**
  - ….
  - ….
  - ….

Requirements needs

…

…

…

The essential software requirement

- Who needs requirements - and why?

- **Conclusion**
  - Without this, how can we run a project?
  - Requirements have a direct influence on the success of the development project!!

Questions & Answers