

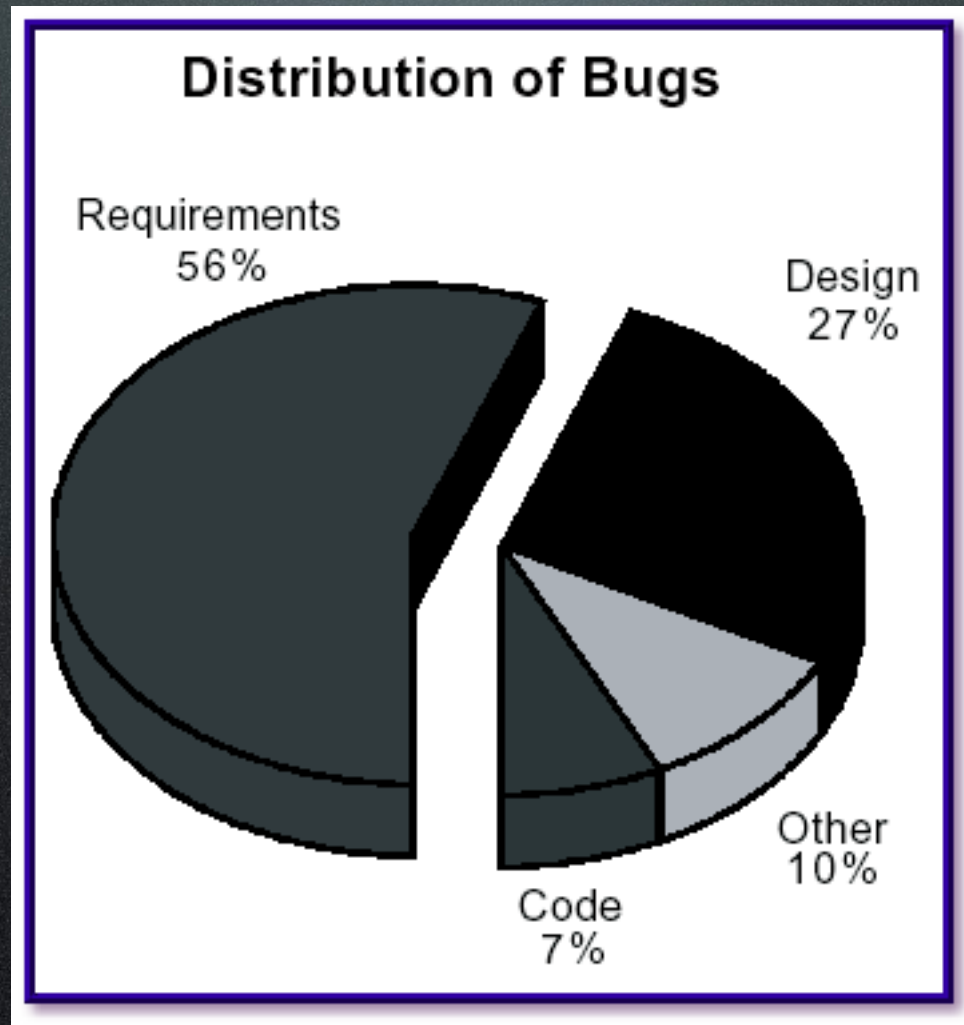
Requirements Engineering with the Customer

A short glimpse of what it is all
about to wet your appetite

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Why this topic is very important?



Req modeling in a SW development lifecycle

- Where does it situate in a sw development process? What kind of processes are there?
- Modern AGILE(ish) – mainly internal or open source development (a product, an internal solution)
- Traditional WATERFALL(ish) – yes, still existing and mainly because of contractual reasons

Who gathers requirements?

- A systems analyst is responsible for researching, planning, coordinating and recommending software and system choices to meet an organization's business requirements
- A successful systems analyst must acquire four skills: analytical, technical, managerial and interpersonal

(source of these golden words: wikipedia)

Bear in mind that analyst works at the front line and represents your entire development organization!

Systems analyst performs these tasks:

- Interacts with the customers (normal people) to know their requirements
- May be responsible for feasibility studies of a computer system before making recommendations to senior management
- Interacts with architects/developers (techies) to represent the customer's idea of the software
- Performs system testing with sample/live data with the help of testers
- Usually trains the main users of new system, helps with deployment

What kind of methods do you use to model software?

- object-oriented analysis and design - you try to generalize ie more like a bottom up approach, try to encapsulate things for reusability
- structured analysis (do not design like that) - you try to grasp the big picture first ie more like top down approach, you basically do not encapsulate anything
- What about requirements? How to model these? What do you think?

What are the notations you are going to use to describe requirements?

- structural view - class/object diagram, component/package/deployment diagram
- behavioral view - use case diagram, activity diagram, state machine diagram
- interactional view - sequence diagram, communication diagram, etc
- structural view - organizational hierarchy, function hierarchy, entity-relationship diagram
- behavioral/interactional view - context/dataflow diagram, process diagram

What kind of input would you like to get as an architect from a business/system analyst?

Sources of information

- Going through existing documentation - both publicly available and confidential
- Observation of the process/system
- Interviewing the experts
- Organizing a meeting - brown paper method, role playing, storyboarding
- Distributing a questionnaire - formally structured or “just write an essay”
- Prototyping
- Let’s point out all pros and cons of each!

Modeling

- Very important aspect to set at first is whether you are going to model as-is (tänane) or to-be (homne) situation!
- Modeling notation does not matter so much. You basically just have to master them all 😊
- Let's discuss, how to model requirements?

Types of requirements

- functional requirements – what the product should do? How it should do all that?
- non-functional requirements – ease of use, performance, etc

Requirements process

- gathering (interviewing, role-playing, lots of reading, brainstorming, inventing)
- analysing (checking for completeness and consistency, correcting, filling the gaps)
- documenting (drawing, describing, presenting)
- verification and customer sign-off!

Requirements management software

- The main idea is to prioritize reqs and create a traceability matrix
- Traceability - to link reqs, design and tests together
- Usually, what I have personally seen so far is that reqs are documented as tasks/enhancements/bugs in a bug tracking system...
- ... but there are myriad of different sw tools to manage req's

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- List all active tickets by priority.
- Color each row based on priority.
- If a ticket has been accepted, a '*' is appended after the owner's name

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Ticket	Summary	Component	Version	Milestone	Type	Owner	Created
#770	Ü... ki... ed on	Raamatupidamine	None		defect		02.09.2008
#771	V...		ine	None	defect		03.09.2008
#775	V...			None	defect		06.10.2008
#809	Pr...		e	None	defect		04.02.2009
#48	U...				enhancement		04.11.2005
#383	Ar... äev				enhancement		03.04.2006
#543	K...			None	enhancement		15.02.2007
#683	V... tele			None	enhancement		20.09.2007
#757	Ra... ku...		ine	None	enhancement		18.06.2008
#758	Pä...		ine	None	enhancement		25.06.2008
#782	K... ne			None	enhancement		20.11.2008
#747	Ra...		ine	None	problem		04.04.2008
#166	ID...				task		29.12.2005
#267	Li...				task		03.02.2006
#314	M... pä...	amise			task		27.02.2006
#632	Li...			None	task		22.05.2007
#743	V...		ine	None	task		31.03.2008
#759	Li...		ine	None	task		25.06.2008

Requirement name

Module

Name

Working example in Trac

More expensive and sophisticated tools

- INCOSE Requirements Management Tools Survey

<http://www.paper-review.com/tools/rms/read.php>

- Rational RequisitePro (IBM)
- Telelogic DOORS (IBM)
- CaliberRM (Borland)
- ...

A real world example and an
exercise for you

The first e-mail from
client

We basically want an internet based system that allows people input key information on a daily basis and for the system to present it as we want. Our processes are

1. Production – Amount of material & cost to produce material
2. Transport – Amount of material and costs of transport
3. Marine Jetty
 - a. Amount of material and cost delivered to our jetty
 - b. Amount of material and cost in stock
 - c. Amount of material loaded onto our tugs & Barges
4. Marine Costs
 - a. Costs associated with all our tug & Barge fleet (Mostly Static data)
 - b. Variable costs for each trip
 - c. Profit per trip
5. Marine Jetty – Qatar (Same as Marine Jetty Fujairah except it is discharged)
6. Customer
 - a. Sales price
 - b. Profit per customer
 - c. ETC
7. General & Administration – cost centre

Please come back to me with any questions you may have.

Please make an offer
and a time calculation
for Requirements phase

My offer was one person during four weeks

- onsite week (the first week)
- offsite discussions between analyst, architect and the team (the second week)
- onsite week going into details (the third week)
- review and finalisations (the fourth week)

During that time

- A little trip in the mine and back-office, take photos, chat to people
- Whatever information gathering method works there, I just do not imagine
- Provide a vision, context, documented process, documented conceptual data model with terminology, must-have and nice-to have functionality list including reports, any non-functional requirements
- Try to prototype with some main forms, go through the whole process with those

The answer from that
client having seen my
offer

I am having a bit of trouble getting that amount approved for the analysis stage. Can I try and summarize the project for you and please remember that we essentially have one process

1. Frequency of all data is daily, weekly, monthly, quarterly, annual for five years is required, it will have to be physically entered daily and will require verification that data is both entered correctly and entered every day
2. Email notification will be required for any alerts
3. Every figure will have a target, actual and variance
4. Report will be required to be defined as part of the analysis
5. Like EIQA we will want a contacts and customers section and financial information which will come from raise invoices
6. Ideally we would also like a purchase order system
7. No direct link to our finance system is required

To our process

8. We blow up mountains and produce grades of aggregate and rock (the cost is only know at the end of each month), We also buy from 3rd parties.
9. We then transport it to a locations (cost again only known at the end of the month and will be manually entered as a price per Metric Tonne). We also use 3rd party transport suppliers.
10. We receive it on our marine jetty (stock input)
11. We then stevedore it or in English put it on a marine asset
12. We then transport it via a marine asset
13. We then stevedore it or in English take it off the marine asset and we have stockpiles of material on the marine jetty
14. We then transport it to the client
15. We then get paid by the client

I have four general managers (Production & Export), (Marine) (Projects) and (Finance) and about 8 key managers that will give input, no other input will be required.

Some more real world
historical examples

...

Where do you want to go from here?

- http://www.jiludwig.com/RM_Links.html
pointing to



JUST PURE GOLD (in my opinion)

Those guys don't joke there 😊

Just some headings from the links provided

- Good Practices in Developing User Requirements
- RM as a Matter of Communication
- Lessons Learned from Implementing Traceability
- Doing Requirements Right the First Time
- Role of Human Emotions in RM



The end