They Wanted WHAT?!?!?

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My Promise

• How to turn stakeholder wants into clear, precise, executable project requirements.

• Three critical steps to understanding what stakeholders want from your project.

• How clear requirements increase project success by speeding implementation, saving money, and increasing stakeholder acceptance.
Agenda

- Projects & Requirements
  - What they are
  - Why you care
- Three Keys to Great Requirements
- Great Requirements Are…
- Tips From The Pros
- Resources
Projects & Requirements

- PROJECT: A temporary endeavor undertaken to create a unique product, service, or result.

- PROJECT: A one-time, multitask job that has clearly defined starting and ending dates, a specific scope of work to be performed, a budget, and a specified level of performance to be achieved.
Projects & Requirements

- REQUIREMENT: A condition or capability that must be met to satisfy some need or desire.
Project Life Cycle

- Discomfort
- Identify Problem
- Describe Problem to Group of Problem Solvers
- Choose Best Solver for Problem

- Describe Problem in Even Greater Detail
- Agree On A Suggested Solution
- Test Solution
- Apply Selected Solution

- Evaluate Solution In Place
- Adjust As Necessary
- Accept Solution
Project Life Cycle

1. Discomfort (Project Charter)
2. Identify Problem (RFP/RFQ)
3. Describe Problem to Group of Problem Solvers (RFP/RFQ)
4. Choose Best Solver for Problem (Contract/SOW)
5. Describe Problem in Even Greater Detail (Detailed Design)
6. Agree On A Suggested Solution (Detailed Design)
7. Test Solution (Test Plan)
8. Apply Selected Solution (Implementation)
9. Evaluate Solution In Place (Acceptance Period)
10. Adjust As Necessary (Change Control)
11. Accept Solution (Final Acceptance)
Requirements are...

- The complete, detailed description of your project’s goals.
- The documentation of stakeholders’ needs and desires.
- The success criteria for your project.
- The foundation for every activity, process, purchase and product your project acquires or produces.
Requirement Roles

- Specification (RFP)
- Contract (SOW)
- Detailed Design
- Testing
- Training
- Success Criteria (Acceptance)
- Closure
Keys to Great Requirements

- Ask
- Write
- Review
Requirements Process

ASK (Business Cases, User Stories)

WRITE ("Good" Requirements)

REVIEW ("Is this what you mean?")

Iteration Is KEY

3rd Party ("What does this say to you?")

OK?

NO

YES

OK?

NO

YES

DONE
ASK

- Seek problems, not solutions
- Ask all stakeholders
- Keep the written requirement in mind
  - How will it be measured?
  - Where does it belong (role)?
- Ask again. And again. **Iteration is KEY.**
Seek Problems, Not Solutions

• *What problems do you encounter with processing 9-1-1 calls?*
• “Well, we definitely need a new phone system.”
• *What about the phone system causes trouble with processing 9-1-1 calls?*
• “The buttons are too small and I hit the wrong ones more often than not.”
• *So bigger buttons would be important in a new system?*
• “Yes.”
WRITE

- Use a standardized format:
  - “The system shall…”
  - “The call receiver shall be able to…”
- Concise
- Modular
- Define terms and roles
  - “There are three user roles: system owner, system administrator, and end user. A system owner is responsible for…”
Should, May, Must & Shall

- Should, may, permissible = OPTIONAL
- Must, Shall = REQUIRED
A Requirement is...

- An accurate, unambiguous, and complete written statement of a condition or capability, the fulfillment of which is the responsibility of a single discipline.
- Here’s what one might look like...

The system shall retain data elements in each data field until explicitly cleared by the user, either in each field individually or by a "Clear All" function. This function shall be configurable (turned on or off) by the end user in the field.
Requirement?

- “The telephone system shall have big buttons.”
- “The keypad buttons shall be of comfortable size and be easily operated.”
- “The telephone system buttons should be user friendly and ergonomic.”
Manually operated contact closure switches shall be actuated by exerting earthward pressure of not more than 3 pounds psi on polycarbonate switch covers, engineered so as to be concave on the uppermost face and exhibiting a machined clearance of not less than .0387 millimeters from all adjacent surfaces, said uppermost face to be not less than .25 inches measured horizontally. Bisected pyramidal or cubic form factors are permissible provided all other dimensional specifications are achieved.”
Great Requirements are...

- Correct
- Complete
- Brief
- Prioritized
- Owned
- Clear
- Consistent
- Role Defined
- Verifiable
- Traceable
- Feasible
- Modular
- Design-free
- Positive
Some Great Requirements

- The system, upon activation of the emergency tone function, shall transmit three consecutive, 1000 Hz tones of .5 seconds each over the radio channel designated as “selected.”
- The system shall operate on 120 VAC drawing not more than 3 amperes at any time during its operating cycle.
- The user shall be able to access the software from any computer connected to the agency local area network.
Avoid These Traps

- Multi-discipline requirements:
  - “The system shall transmit audible tones using a user-selected radio transmitter, and log the date and time of all tones to a printer.”

- Feasible:
  - “The system shall not become obsolete.”
Avoid These Traps

Completeness:

◦ “We should send a guy to the moon, and do it pretty soon.”

◦ “…I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to the earth.” – John F. Kennedy May 25, 1961, Special Message to Congress
The left wall should be painted green.
The south wall shall be painted using Rodda brand “Green Republic”, item number 7676 paint.
The user interface shall be easy to use.
The user shall be able to navigate from any records entry screen to any other records entry screen by clicking a mouse button no more than three times.
Review

- Owner consulted first! (buy-in!!)
- People unconnected to the project are invaluable
- “What does this say?”
- “What does this mean?”
- “How would you meet this requirement?”
- If changed, consult the owner again.
Review

- Track & time reviews
- Interactive OK, but don’t give away anything
- Clear, simple, and retain requirement
- Poke holes!
Secrets of the Pros

- Requirements are not “gathered”
- Elicit, invent
- Goal: The “Heart of the Customer”
- “If I had asked people what they wanted, they would have said faster horses.” – Henry Ford
Use A Standard Format

- [ACTOR] shall be able to [ACT] [ACTION-SUBJECT] while [QUALIFICATION] [QUANTITY] [UNITS].

- [DISPATCHERS] shall be able to [SEE THE CHANNEL IDENTIFIER] [ON THE COMPUTER SCREEN] while [PRESSING] [ONE OR MORE] [TRANSMIT BUTTONS].
Details increase as project progresses

Track requirements

- Spreadsheet
- Dedicated software
- Paper trails (meeting notes, email, etc.)

Formal Process

- ONE keeper of the requirements
- Approval process to add/change/delete requirements
- Stakeholder sign off, literally
Drawing Helps

- DFD, UML, Structured Analysis, Scribbles, Flow charts, mind maps

- References on handout
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Resources & Attributions


ASK


WRITE

- Technical standards organizations are often sources of authoritative definitions and system requirements. APCO (www.apco911.org) and NENA (www.nena.org) cover 9–1–1 and Public Safety Communications. IEEE (www.ieee.org) covers all things electrical and electronic. NFPA is also a valuable source (www.nfpa.org) The International Standards Organization (ISO) website (www.iso.org) lists the more than 17,000 standards published under their authority.
Software

Great for tracking requirements and change management, software can help maintain traceability, ownership, and the review process. For many projects a simple spreadsheet will be fine. For larger, more complex projects (i.e. requirements in the hundreds or more), specialized software can be a key to success.

INCOSE, the International Council on Systems Engineering, maintains a user-driven list of requirements management tools that is a good place to start investigating “heavy duty” tools. It’s available at [http://www.paper-review.com/tools/rms/read.php](http://www.paper-review.com/tools/rms/read.php) or through their main web site at [www.incose.org](http://www.incose.org).
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