



NORTHROP GRUMMAN

How Project Managers Will Benefit By Paying Attention to Requirements

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My Goals For This Presentation

- **To provide you at least three ideas for doing something differently concerning requirements**
- **Create with you an enjoyable time together and a valued learning opportunity**

Question:

In your opinion and experience, what hinders our ability to provide better service and products to our customers?



Some Typical Project Management Issues Concerning Requirements

- There are different ideas and opinions as to what the real requirements are.
 - We don't know what the real requirements are.
 - We initiate other technical work prematurely—the result: rework (40-50% of costs).
- There is lacking an effective mechanism to control changes to requirements and new requirements during the development process.
- There is no documented requirements process, or it's not used, or it doesn't support the needs of the project and the customer/users.
- Methods, techniques, tools, mechanisms are not familiar, proven, or effective.
- There is no zeal for or commitment to continuous improvement.
- Requirements analysts could benefit from more training and knowledge.
- A project risk management process is not used effectively to identify, analyze, prioritize, and mitigate project risks.



Some Suggestions Concerning Management Commitment for Effective Requirements Engineering

- 1. Invest of 8-14% of project costs in the system life-cycle requirements process (the industry average is 3%)**
- 2. Sponsor formal training for requirements analysts**
- 3. Use effective requirements practices**
- 4. Strengthen teamwork, emphasize continuous improvement, and work toward a "quality culture"**
- 5. Foster effective communication**
- 6. Avoid blame**



Effective Project Practices

Commit to the approach.

Establish and utilize a Joint Team to be responsible for the requirements.

Define the *real* customer needs.

Use a requirements process and continually improve it.

Iterate the system requirements and the system architecture repeatedly.

Use a mechanism to maintain project communication between and among all engineering groups throughout the development effort.

Select familiar methods and maintain a set of work products that collectively comprise the current requirements specification.

Perform requirements verification and validation.

Provide an effective mechanism to accommodate changes in requirements during system life cycle development.

Perform the development effort using known familiar proven industry, organizational, and project best practices.



Some Recommended Requirements Gathering Practices

- 1. Write and iterate a project vision and scope document.**
- 2. Initiate a project glossary that provides definitions of words that are acceptable to and used by customers/users and the developers, and a list of acronyms to facilitate effective communication.**
- 3. Evolve the real requirements via a *joint* customer/user and developer effort. Focus on product benefits (necessary requirements), not features. Address the minimum and highest priority requirements needed to meet real customer and user needs.**
- 4. Document the rationale for each requirement (*why* it is needed).**

Recommended Requirements Gathering Practices - continued

- 5. Provide training for requirements analysts and selected customer/user representatives that explains:**
 - The role of the requirements analyst (e.g., to evolve real requirements working with customers and users, not to invent requirements independently or to “gold plate”).
 - How to write good requirements.
 - The types of requirements errors and how these can be reduced.
 - The value of investing more in the requirements process.
 - The project and/or organization’s “Requirements Process.”
 - Overview of the methods and techniques that will be used.
 - How to use the project’s automated requirements tool.
 - The role of validation and verification during requirements definition.



Recommended Requirements Gathering Practices - continued

- 6. Establish a mechanism to control changes to requirements and new requirements.**
- 7. Prioritize the real requirements to determine those that should be met in the first release or product and those that can be addressed subsequently.**
- 8. When the requirements are volatile (and perhaps even when they aren't), consider an incremental development approach. This acknowledges that some of the requirements are "unknowable" until customers and users start using the system.**
- 9. Use peer reviews and inspections of all requirements work products.**
- 10. Use an industry-strength automated requirements tool.**
 - Assign attributes to each requirement.**
 - Provide traceability.**
 - Maintain the history of each requirement.**

Recommended Requirements Gathering Practices - continued

- 11. Use requirements gathering techniques that are known, familiar, and proven in the organization such as requirements workshops, prototyping, and storyboards.**
- 12. Provide members of the project team (including requirements analysts) who are domain/subject matter experts.**
- 13. Evolve a project and organizational approach based on successful use of policy, process, methods, techniques, and tools. Provide a mechanism such as working groups to share information and “best practices” among projects.**
- 14. Establish a continuous improvement ethic, teamwork approach, and a quality culture.**
- 15. Involve customers and users throughout the development effort.**
- 16. Perform requirements validation and verification activities in the requirements gathering process to ensure that each requirement is testable.**

The PM as “Coach”

- 1. Clarify the scope of the effort.**
- 2. Set expectations.**
- 3. Identify risks and unknowns.**
- 4. Facilitate the project in reusing artifacts.**
- 5. Envision a growth path.**
- 6. Facilitate discussions and mediate conflicts.**
- 7. Study the domain of the area in which the system or software is being used.**

Summary

- **The Project Manager has a huge impact**
- **Developers need to be empowered**
- **Use of effective practices helps**
- **Hopefully, our time together has given you some ideas**
- **We must change some things to improve what we're doing**