What Happens with Good Requirements Practices

Ivy Hooks
RE’01
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Why do we focus on failure?

• It’s part of our culture
• Examples are easy to find
• Successes are less obvious
What is success?

- Finishing products on time and schedule
- Satisfied customer
- Happy developers
- A new way of doing business
Requirements Definition  Design  Build  Test  Operations

YO! Over here!

Product Quality
Issues

Too many projects --

• Take too long to complete
• Cost too much
• Are never released
• Are never used
• Fail
Why aren’t we all doing it right?

• Fear of change

• Misconception that what I am doing is right -- I’m successful -- and I should keep doing the same thing

• We don’t like to do things right, we like to fix things
WHAT DO YOU WANT ON YOUR TOMBSTONE?

JOSEPH HEATHER -

CHINK!

CHING!

CHIP!

CHUNK!

- TON.

TA-DA!

THUD!

WHUMP!

TON

JOSEPH HEATHERING
What We Must Change

• How to write requirements
  – Have a process
  – Follow that process

• How to manage
  – Ensure discipline
  – Provide the right resources at the right time
  – Hold people accountable
  – Use metrics
Shuttle Orbiter Upgrade

• Trained the Crew Avionics Upgrade (CAU) team *Could all speak the same language*

• Took on those who normally resisted until CDR *Would rather complain, now held accountable*

• Got operational concepts from every one *People who can’t write requirements -- can define their operational concepts*

• Fought out issues before writing requirements *Couldn’t do it all, couldn’t do all in first release Had to determine priorities*
Shuttle Orbiter Upgrade

• Got more review comments than expected -- 900 +
  Large team - because all felt responsible

• Tried electronic comments
  Everyone logged on at once - system failed

• Uncovered 15 important requirement changes
  Cheaper to identify now than later

• Set standards for others to follow
  Success leads others to want to follow
  Used template for data collection
  Used process for coordination and cooperation
Caterpillar Paving Products

• Trained the entire product team
  Everyone could speak the same language

• Insisted on sticking to the process
  Insisted on right resources + strict discipline,

• Interviewed manufacturing -- a first
  Found lots of important information to build a less expensive product and new ways to “document”

• Interviewed customers and users
  Got lots of surprises
  Identified process problems
Caterpillar Paving Products

- For the first time started tooling before the first prototype
  - Gained manufacturing's trust
- Used process to control change
  - Maintained priorities
  - Kept management from changing the rules
- Preliminary design mock-ups shown to customers
  - Found some problems they needed to know about
  - Can’t find all requirements by sitting around thinking
- Everyone knows what everyone knows
  - Emphasized the power of shared vision
Unidentified Aerospace Company

- Did it wrong three times in a row
  *No good product, lots of money and time wasted*

- Truly started from scratch
  *Created a Requirements White Paper*

- Created Use Cases
  *Drove architecture and top level design*
  *Used to write software requirements*

- Made the IPT responsible for their requirements
  *No one to blame but themselves*
Unidentified Aerospace Company

• Success
  - On budget, within one week of schedule
  - Contained ALL the functionality

• Compressed IPT activity
  - Faster development / late start/too thin resources

• Testers as requirements authors
  - Great for knowledge exchange / Poor writers

• White paper to capture work
  - Helpful / Too unstructured

• Requirements review and top level design review
  - Signatures worked / Different formats
What You Need to Know

• You don’t have to do everything at once
• Model projects are a great way to lead into change
• Everyone won’t love you but they will love the results
• It doesn’t matter if it is hardware or software or both
• It doesn’t matter if it a six months or six year project
• It doesn’t matter if it is complex or simple project
• It does take effort, commitment, and discipline to change
In Conclusion

• If you don’t have a process -- put one in place
• If you can’t get your organization to change -- change your approach
  – Get management commitment at the highest level possible
  – Show success on a project and parlay that success to other projects
• Measure where you are -- and set goals for where you want to be
In Conclusion

• Too many people are spending too much time and money looking for magic
• Good requirements take hard work and discipline
• Work on better communication
• Keep an open mind

Think
Recommended Reading

- **Corporate Lifecycles**, Ichak Adizes, Prentice Hall, 1990
  - How and why corporations grow and die and what to do about it


  - The seven cultural forces that define Americans

- **Customer Centered Products**, Ivy F. Hooks & Kristin A. Farry, Amacom, 2001
  - Creating successful products through smart requirements management
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