



 POLITECNICO DI MILANO

Dipartimento di
Elettronica e Informazione

Planning and Managing Software Projects 2012-13
Session 12

Change Management

Emanuele Della Valle
<http://emanueledellavalle.org>

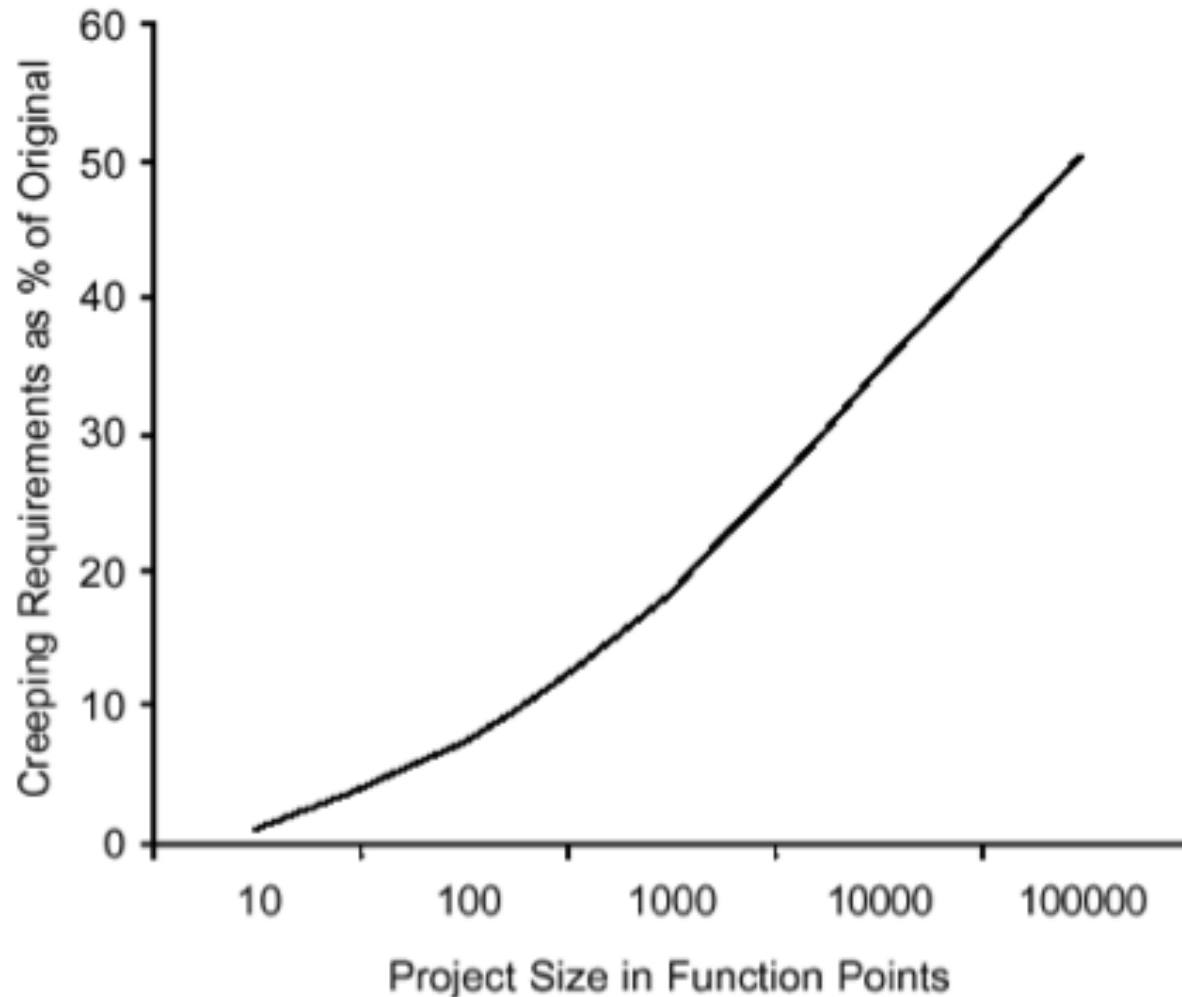
- These slides reuse concepts presented in Prof. John Musser class notes on “Principles of Software Project Management”
 - Original slides are available at <http://www.projectreference.com/>
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Today

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- The Feature-Creep Phenomenon
- Feature Set Control
- Project Recovery

- Avg. project has 25% change in requirements during development



- Sources of change
 - Marketing: want to meet customer's check-list
 - Developers: want to perfect r1 deficiencies
 - Users: want more functionality or now 'know' what they want
- They will all try to 'insert' these during dev.

- The devil is in the details
- McConnell's example: "trivial" feature can have +/- weeks of impact
- Developers can insert things when you're not looking
- No specification can cover all details. You must specify!
- Programmer ideal: flip switch
- Up to 10-1 differences in program size with the same specifications

- It is a classic mistake avoidance technique
- Early Stages
 1. Minimal Specification
 2. Requirements Scrubbing
 3. Versioned Development
- Mid-Project
 - Effective change control
- Late-Project
 - Feature cuts (and if needed project recovery)

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Traditional Specs

- Drive for “traditional” specs
 - Necessity
 - Downstream cost avoidance
 - Full control over all aspects

- As McConnell notes:
 - “But the goal is not to build exactly what you said you would at the beginning. It is to build the best possible software within the available time.”
 - Idealistic but worth remembering

- Tradition spec. issues
 - Wasted effort
 - Too much detail
 - Obsolescence
 - Lack of efficacy -- details do not guarantee success
 - Overly constrained design
 - User assumption that costs are equal (UI ex.)

- Benefits
 - Improved morale and motivation
 - Opportunistic efficiency
 - Shorter requirements phase

- Costs and Risks
 - Omission of key requirements
 - Unclear or impossible goals
 - Gold plating
 - Used for the wrong reasons
 - Lazy substitute for doing good requirements

- Success Factors
 - Used only when requirements are flexible
 - Capture most important items
 - Involve key users

- This is not XP (extreme programming)
- In XP Requirements are
 - expressed as automated acceptance tests rather than specification documents
 - defined incrementally, rather than trying to get them all in advance
- XP has broader goals
 - An attempt to reconcile humanity and productivity
 - A mechanism for social change
 - A path to improvement
 - A style of development
 - A software development discipline

Requirements Scrubbing

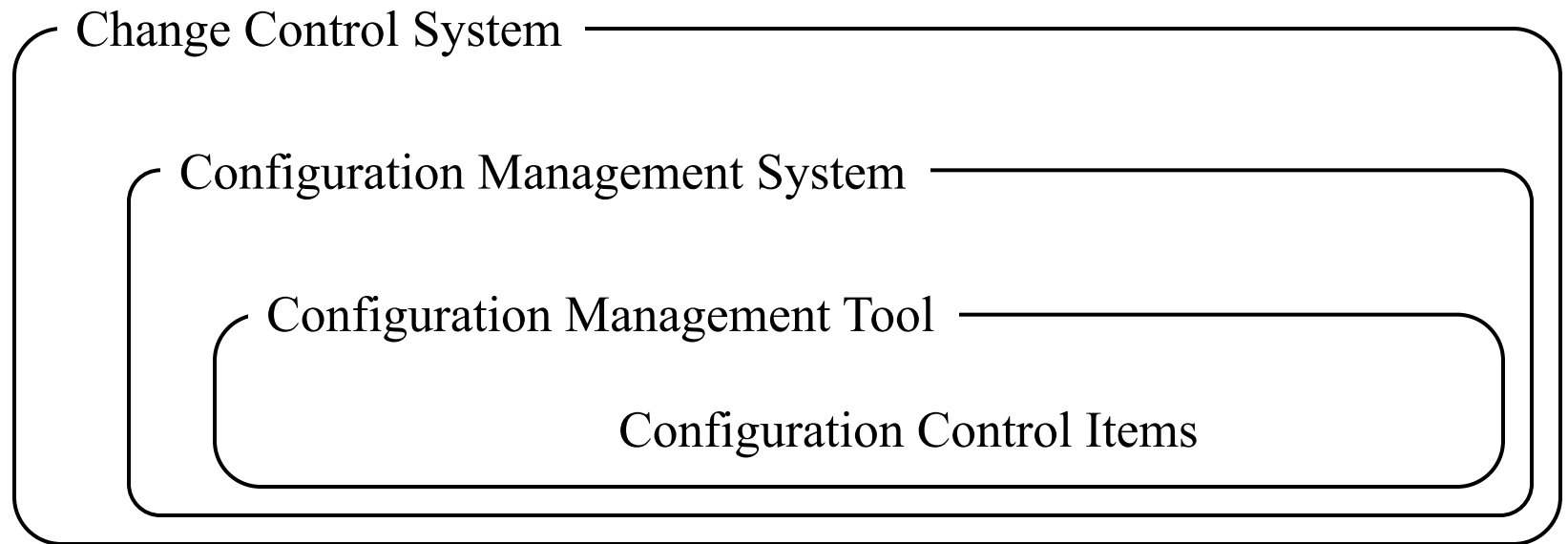
- Removing a feature from the product
 - Eliminates all effort: spec., design, dev., test, doc.
 - The earlier the better
 - Typically done during or right after Requirements
- Less risky than minimal specification
- Aims
 - Eliminate all but absolutely necessary requirements
 - Simplify all complicated requirements
 - Substitute cheaper items

Versioned Development

- Eliminate them from the current version
- “Let’s put it in release 1.1”
 - You’re still saying “Yes”, not “No”
- By next rev. the list has changed anyway
- My favorite ;-)

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- A set of fully fledged methods and tools is available

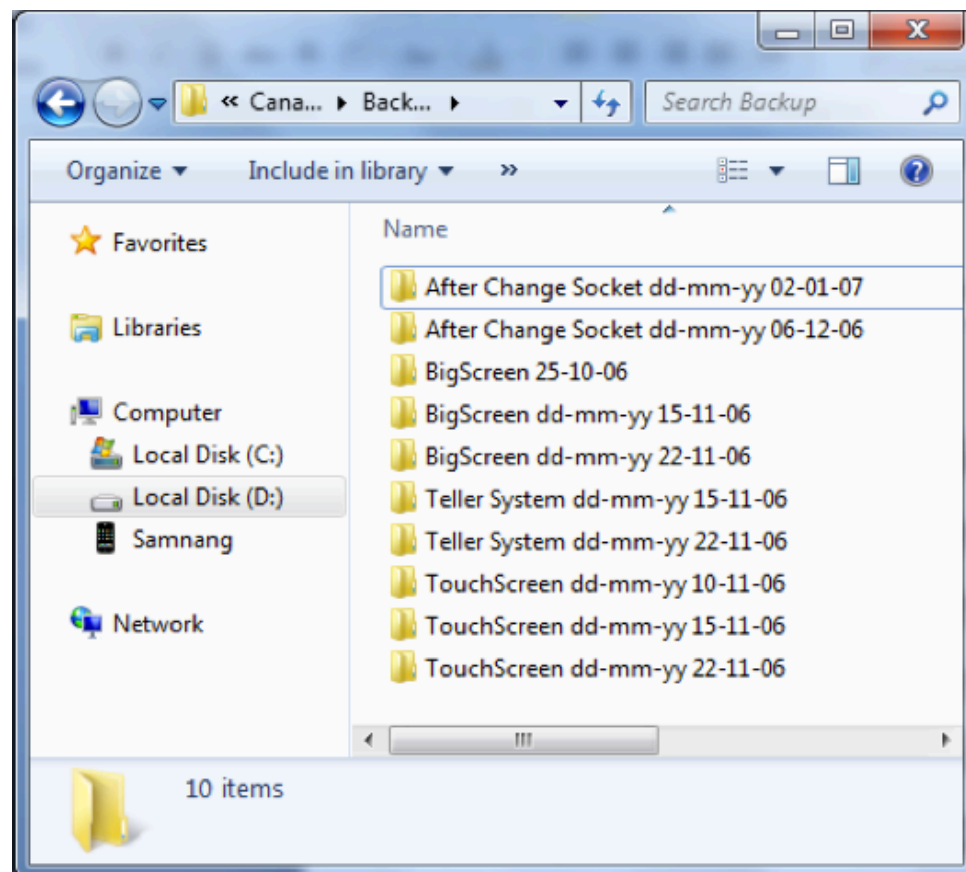


- Configuration Control Item (CCI)
 - Anything suitable for configuration control
 - Source code, documents, diagrams, etc.
- Configuration Control Tool (CCT)
 - Any support for managing CCIs
- Configuration Control
 - process of evaluating, approving and disapproving, and managing changes to CCIs using CCTs
- Change Control
 - process of controlling changes
 - typical steps
 - Proposal, evaluation, approval, scheduling, implementation, tracking

The Configuration Control Problem 1/2

Working alone without Configuration Control

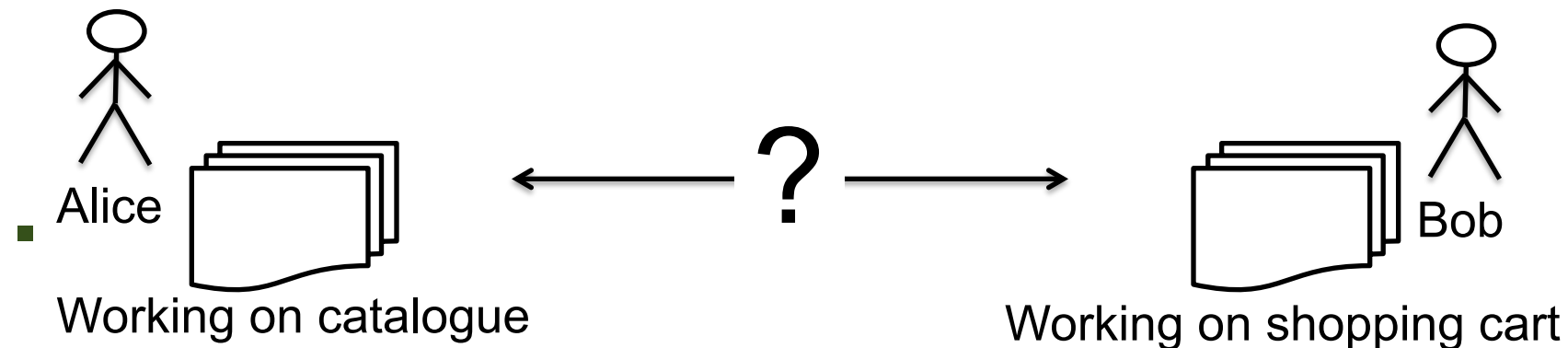
- Which version works?
- Which versions have bug X?
- Which versions have feature X?
- What's the different between certain versions?



The Configuration Control Problem 2/2

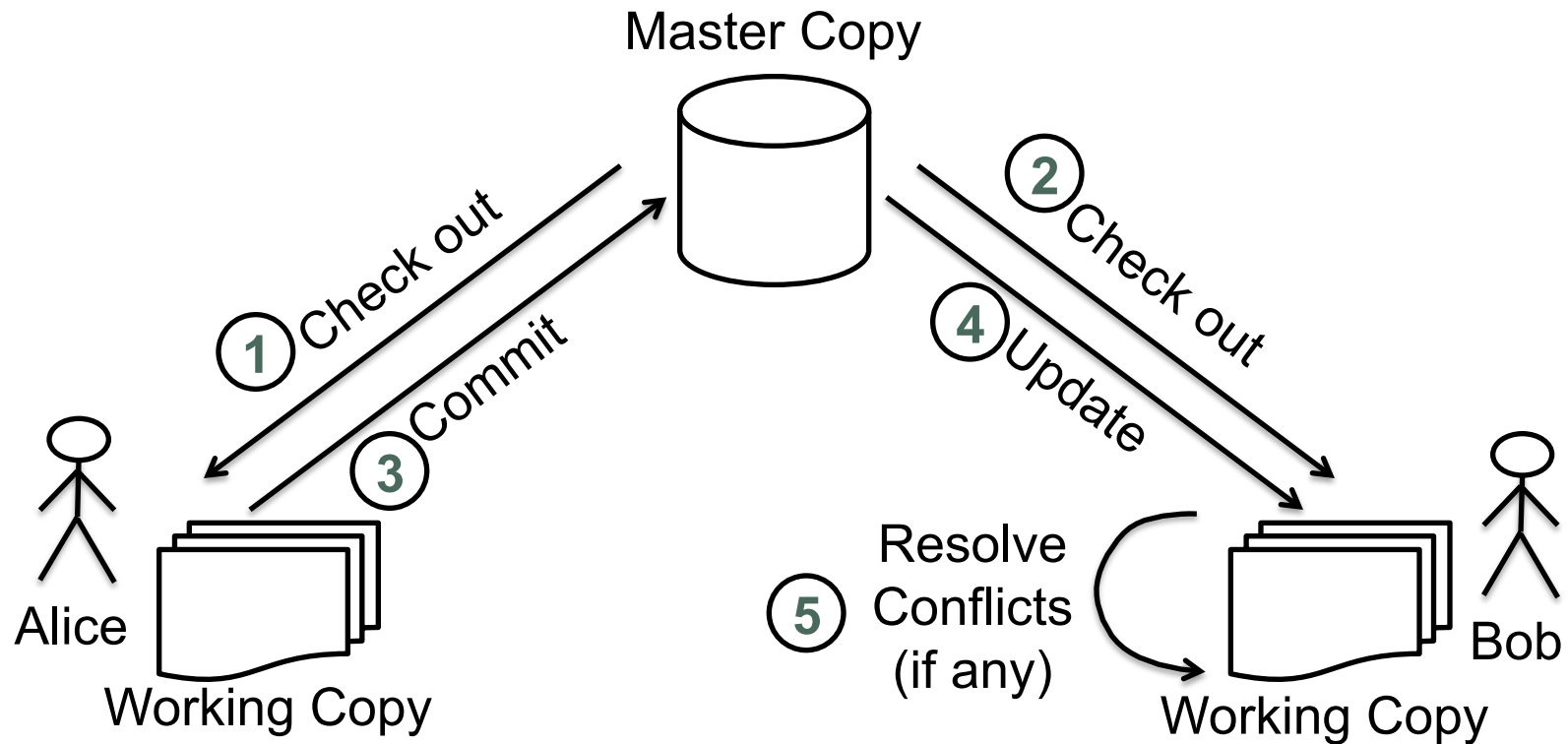
Working with others without Configuration Control

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- Who is responsible on keeping the latest version?
- How to combine independently developed versions into one working program?

- The Working Cycle



- Tools that support this working cycle
 - CSV, SVN, Git, etc.
- Hands on in Class 13

Configuration Control – Why?

- Backup & Restore
- Synchronization
- Short-Term Undo
- Long-Term Undo
- Track Changes
- Track Owner
- Branching & Merging

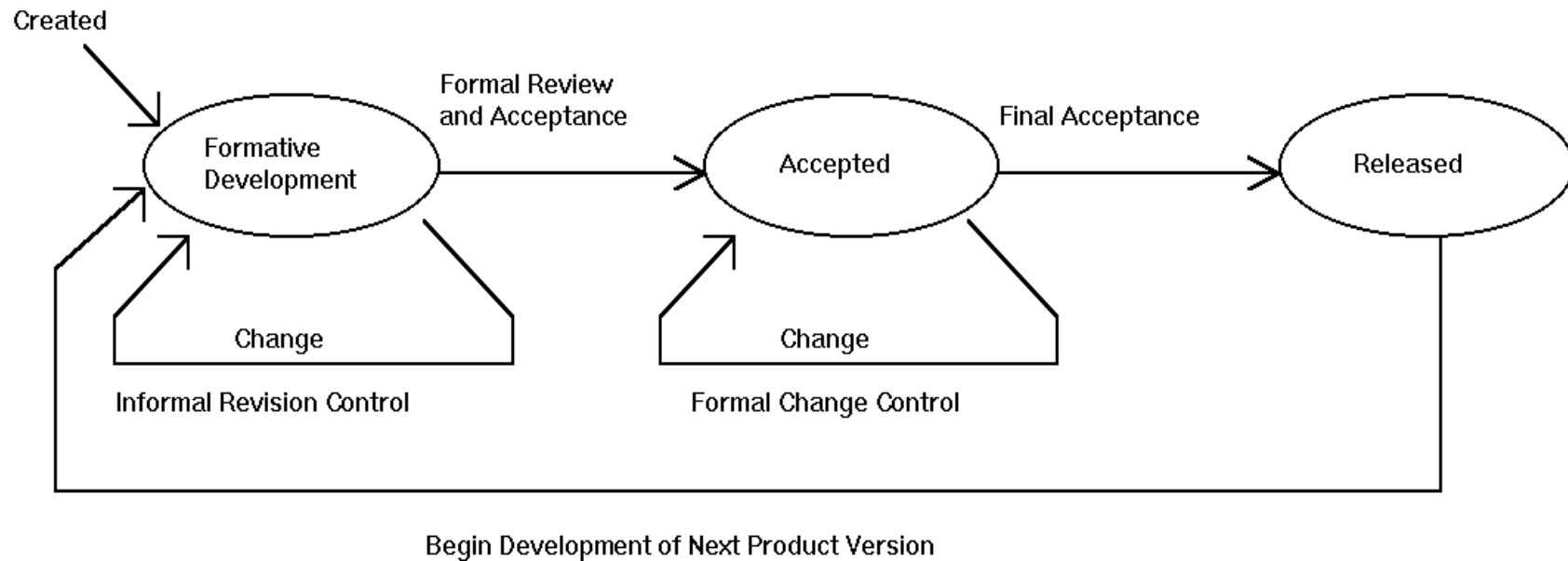
Configuration Control

- A management support function
- Includes
 - Program code changes
 - Requirements and design changes
 - Version release changes
- Essential for developed items
 - Code, documentation, etc.

Configuration Control Needs

- Establish clearly defined management authority
- Setup control standards, procedures and guidelines
 - All team members must be aware of these
- Requires appropriate tools and infrastructure
- Configuration Management Plan must be produced during planning phase

- Must be produced during planning phase
- Often part of Software Development Plan
- Example of Change Control Procedure



- Cached version available
 - http://www.emanueledellavalle.org/slides/P&MSP2013_12b_Change-Procedure-by-McConnel.pdf

Change Control Board (CCB) 1/2

- McConnell “best practice” (see Ch. 17)
- Structure: representatives from each stakeholder party
 - Dev., QA, Marketing, Mgmt., Customer support
- Perform “change analysis”
 - Importance, priority, cost, benefit

Change Control Board (CCB) 2/2

- **A CCB is similar to a triage***
 - Allocating scarce resources
 - Some will not receive treatment
 - Life-critical to the project
- CCB will say “No” more than “Yes”
- Watch for bureaucracy

* a term from emergency medicine that refers to the activity of sorting injured people into groups so that the people who will most benefit from medical treatment receive it first

CONTAMINATED

EVIDENCE

Personal Property Receipt
Evidence Tag *413730*

Destination _____
Via _____

TRIAGE TAG *413730*

S L U D G E
Solution Laceration Sprinkler Decontamination G.I. Distress Emission

AUTO INJECTOR 1 2 3 4 5

Tra No Cross Decon
Tra No Secondary Decon

Solution

Blunt Trauma
Burn
C-Spine
Cardiac
Crushing
Fracture
Laceration
Penetrating Injury

Age _____
 Male Female

Other: _____

VITAL SIGNS

Time	B/P	Pulse	Respiration

Time	Drug Solution	Dose

MORGUE Pulseless/Non-Breathing *413730*

IMMEDIATE Life Threatening Injury *413730*

DELAYED Serious, Non Life Threatening *413730*

MINOR Walking Wounded *413730*

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Feature cut

- Stabilize the requirements
 - No more change requests will be accepted
- Trim the feature set
 - Determine priorities
 - cut the low ones

- How to save a “drowning project”
- 3 Approaches
 1. Cut the size of the software
 2. Increase process productivity
 3. Slip the schedule, proceed with damage control
- Opportunity for decisive leadership action
- Not a time to ‘just cut corners’
 - Be realistic (not foolish)
- Timing: politically important
 - Not too early, not “too” late

- Assess situation
 - Is there a hard deadline, what's negotiable, etc.
- Don't do what's been done already
- Ask team what needs to be done

- Restore morale
 - Sacrifice a sacred cow
 - Dress code, off-site, catered meals, etc
 - Cleanup personnel problems
- Focus people's time
 - Remove non-essential work

- Fix classic mistakes
 - Inadequate design, shortchanged activities, etc?
- Create “Miniature Milestones”
 - Small (in day(s)), binary, exhaustive
 - Boosts morale: getting things done!
- Track progress meticulously
- Recalibrate after a short time
- Manage risk painstakingly

- Stabilize the requirements
- Raise the bar on change requests
- Trim the feature set
 - Determine priorities, cut the low ones
- “Take out the garbage”
 - Find error-prone modules; re-design
- Get to a known, stable state & build from there

- “Quality Software Project Management”, Futrell, Shafer, Shafer
 - Preview available on Google Books Search
<http://books.google.com/books?id=8GqC7xHTwGsC>

Questions?