SCM Metrics

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Software products

- Code
- Requirements
- Documentation
- Models
- Tests
- Final product

Common tools

- Version Control System (VCS)
    - Controls versions and revisions of software products
    - CVS, SVN, Mercury, GNU Arch
- Task Management System (TMS)
    - Controls developers' tasks
    - Trac, SourceForge, Savane

Cost Metrics

- Measurable
  - Tool costs
  - Licenses and maintenance costs
  - Training costs
  - Added work associated with the new SCM tasks
- Partially measurable
  - Change process may be more complicated
  - Loss time for doing status accounting reports
- Not measurable
  - Fear of new procedures

Benefit Metrics

- Measurable
  - Decrease of the external reported defects
  - Less time per bugfix
  - Ability to trace the original product through its development
  - Save time with automatic software builds
  - Manage versions, parallel work, automatic merges
  - Traceability implies less time for V&V and testing

Benefit Metrics

- Partially measurable
  - Decrease of number of staff changes / help to integrate new employees (less cost of training a new employee
  - Allow to handle very complex activities (variation of a product)
  - Reusing existing code and reducing repetitive development efforts
  - Gain factor fixing bugs in different variants
  - Helps maintenance
  - Changes are planned, their impact is assessed
  - Reducing the number of errors

Benefit Metrics

- Not measurable
  - Employees are happier
  - Provides for coordination and communication in the group
  - Working from home and distributed development
  - Ability to bring out the product earlier
  - Provides visibility to the project
  - Achieves a sense of organisation and control instead of chaos

IEEE SCM standard

- Configuration status accounting activities record and report the status of project CIs.

- Minimum data elements

  - initial approved version (VCS)

  - the status of requested changes (TMS)

  - the implementation status of approved changes (TMS)

Automatic metrics

- Products status
    - date, version, number of changes
- Tasks status
    - fixed, assigned, postponed, scheduled, complete, percentage, hold

Easily calculable metrics

- Mean time to accept a a change

- Mean time to complete a change

- Percentage of accepted changes

- Percentage of completed changes

Metrics proposal

- Change complexity

- Impact analysis accuracy

Estimations

- Time to make a change based on its impact analysis
- Mean time to failure for risk management

Conclusions

- SCM metrics it's a low explored field

- Exist automated tools that provide simple and direct metrics

    - This metrics don't offer to much without a defined process

- We could obtain interesting estimations from SCM metrics

    - This estimations would be based on business facts rather than experience from others

Questions please

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