Migration from CVS to SubVersion (SVN)

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Why to migrate

- G4 cvs repository hosted by CERN/IT cvs/lcg service
  - Service provided by CERN/IT
  - CERN/IT runs two services, cvs/general and CVS/lcg
  - Strong push to migrate to SVN

Overview

- What is SVN
- Current status
- What needs to be done
- Documentation links

What is Subversion (SVN)

"Subversion

- was designed to be a successor to CVS
- its originators set out to win the hearts of CVS users in two ways
  - by creating an opensource system with a design (and "look and feel") similar to CVS,
  - by attempting to avoid most of CVS's noticeable flaws.
- Subversion *is very powerful, very usable, and* very flexible."

from Suvbersion book, Preface

SVN differs from CVS

"Subversion tracks tree structures, not just file contents. It's one of the biggest reasons Subversion was written to replace CVS."

from SubVersion book, App. B

SVN concepts

- SVN versions everything
  - Including directories
  - Allows to keep under ‘revision’ control the renaming, move, or deletion of files or directories
  - Revisions IDs are not per file, but on repository tree
  - Commits are transactions
  - No notion of Tag
  - Branch, which is a named copy, places Tag

SVN features

- SVN has several modules to help users and admin
  - svn, the command line client
  - svnversion, reporting the state (in terms of revisions of the items present) of a working copy
  - svnlook, inspecting a Subversion repository
  - ...
- SVN is modular
  - Interface for client apps
  - Interface to repository DB
- access to repository via
  - Svn, also over ssh,
  - dav(http or https)
  - local

CURRENT STATUS

First attempts

- **Use cvs2svn to convert parts of G4 to svn**
  - **Sucessfully converted 2-3 subdirectory trees with differing complexity**
    - Source/global
    - Source/processes/electromagnetic
    - Source/processes/hadronic
  - **Only Few problems with corrupt files**
    - Corrupt since before 2000

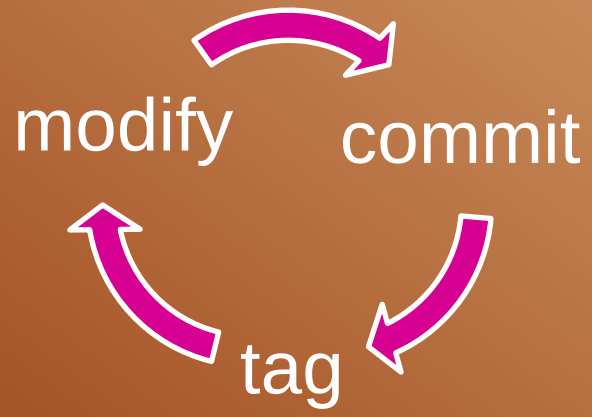
WHAT NEEDS TO BE DONE

Experience, so far..

- **Repository layout**
  - **Svn convention for repository layout is**
    - Trunk
    - Branches
    - Tags
  - **All tags from all levels in directory tree collected in Tags**
    - Does not work for G4
- **Alternatives for layout exist**
  - **Need to understand needs**
    - Of developers
    - Release manager
    - Testing

Geant4: cvs use by developer

- Developer checks out a reference tag
- Updates files in partial directory tree to head,



- Tags are not changed after creation
- See differences to previous versions, log files,...

CVS use by testing or release manager

- Checkout reference tag
- Update list of dirs to more recent tag
  - Global to global-V09-02-02
  - Particles to ...
  - ...
- Frequent need to move tag prior to release
  - Release manager

Next steps

- Explore possible directory layouts
  - Developer
  - Testing & release preparation
- Gain experience with smaller setup
  - Web pages
- Documentation for developers
- Adapt G4 procedures/tools to SVN
  - Bonsai tags collection
  - Bonsai DB?
  - Testing – update tools used to obtain “taglist”
  - Release preparation

Re-organization Clean-up?

- Chance to re-organize repository
  - Several directories probably not in best place
  - But SVN supports fully support move, so can be done in transparent way later
- Clean-up
  - No longer needed or (near-)duplicate directories
- But do we want to break possibility to go back?

Timescale of migration

- Understanding of SVN is superficial
- Need to identify directory layout
  - Developers
  - Testing and Release management
- Performance needs to be checked
- Prepare
  - Documentation
  - G4 tools: tag collection, bonsai DB, STT tools (checkout)
  - Tools to prepare and build release
- Migrate repository

References

- SVN home page:
  - http://subversion.tigris.org/
- Ben Collins-Sussman, Brian W. Fitzpatrick, C. Michael Pilato
  "Version Control with Subversion",
  - O'Reilly: http://www.oreilly.com/catalog/0596004486/
  - Online version of book: http://svnbook.red-bean.com/
- cvs2svn home page
  - http://cvs2svn.tigris.org/cvs2svn.html
- SVN service at CERN:
  - http://cern.ch/svn

Summary

- Geant4 will migrate to SVN in 2010
  - Developers need to learn basic use of svn commands
  - Tools need adaption or re-write
  - Unless we fail to
- SVN solves a few cvs shortcomings
  - Can move directories keeping history