Version Control and Subversion

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Outline

- What is Version Control?
- Why use it?
- Using Subversion (SVN)

What is Version Control?

- Alphabet Soup
  - VCS, CVS, SVN, RCS
- A versioned backup system
  - Restore project to a previous, working state
- A synchronized control system
  - You can't edit the same files I am editing
  - Well, not without making sure it works

Intelligent Backups

- **Reverse-Delta format**
  - **Compression Scheme**
    - Stores only differences (diff, patch)
  - **Most Recent Version is fastest retrieval**
    - Applies patches to get old versions
- **Attributes**
  - Who to blame / give credit
  - Named Versions

Synchronized Control

- One person can edit a "file" at a time
- Check-out/Check-in Model
  - Nobody actually uses that (SourceSafe)
  - Dangling Check-out
- Check-in / Merge Model
  - Make your changes
  - Fix Conflicts
- Fork Model

Subversion Specifics

- Subversion fixes CVS problems
  - Moving files to different directories
  - Atomic commits
  - Versioned Metadata

Why?

- Can you think of any reason why not?

Typical Subversion Uses

- Create a repository (once)

- Import or Checkout repository (once)

- Update and Checkin

- Merge

- Label

Create a Repository

- Determine Structure
- Determine Permissions

Import or Checkout

- Import - I have the files and I want to put them into the initial repository
- Checkout - I want to start working on an existing repository

Update and Check-in

- Update - Updates the local files to match the central repository
- Check-in - Update the central repository to match your local files
- Always update before checking in (svn enforces this)
- Always test with the latest update before checking in (not enforced)

Merge

- We both update the same file at the same time. What happens?
- Update tells me there is a conflict
  - You checked yours in first
- I have to merge the two updates together.
  - Before checking in

Label a Version

- Interim Releases
  - AKA - Hey, this one works!
- How do you maintain releases?

Infrequent Uses

- Blame
- Fork
- Roll back

Example Uses

- svn help import
- svn import final-paper http://192.168.1.102:8888/svn/xcp -m "Initial Import"
- svn checkout http://192.168.1.102/svn/re
- svn status
- svn up
- svn add foo.c
- svn ci -m "Program now cures cancer"
- svn resolved conflictedfile.cpp

Additional Help

- The Subversion book
  - http://svnbook.red-bean.com/
- The Subversion website
  - http://subversion.tigris.org/
- Tortoise svn client (Windows)
  - http://tortoisesvn.tigris.org/