Subversion 1.9 for Developers

Introduction

Outline

Introduction

—Version control

—Parallel development

—Subversion

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Version control

The purpose of version control:

- To record and track changes to a collection of files and directories.
    - History – who / did what / to what / when / why

- To enable parallel development, which could include:
    - Multiple independent efforts (e.g. maintenance on prior release while building the next).
        - Branching handles this type of parallel development.
    - Multiple people on one line of development (i.e., collaborative editing and sharing of data).
   - Solutions discussed on the next few slides.

> Version control is **a part** of software configuration management.
> - There are many different definitions of Software Configuration Management (SCM). Beyond version control, they typically include; build management, release management, defect tracking, configuration management and process automation.

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# Parallel development on one line of development

A fundamental challenge version control systems have to solve is: how to work in parallel while preventing one user from overwriting the work of another.

- Two solution flavors:
  - copy-modify-merge (default)
  - lock-modify-unlock

- Subversion supports both.
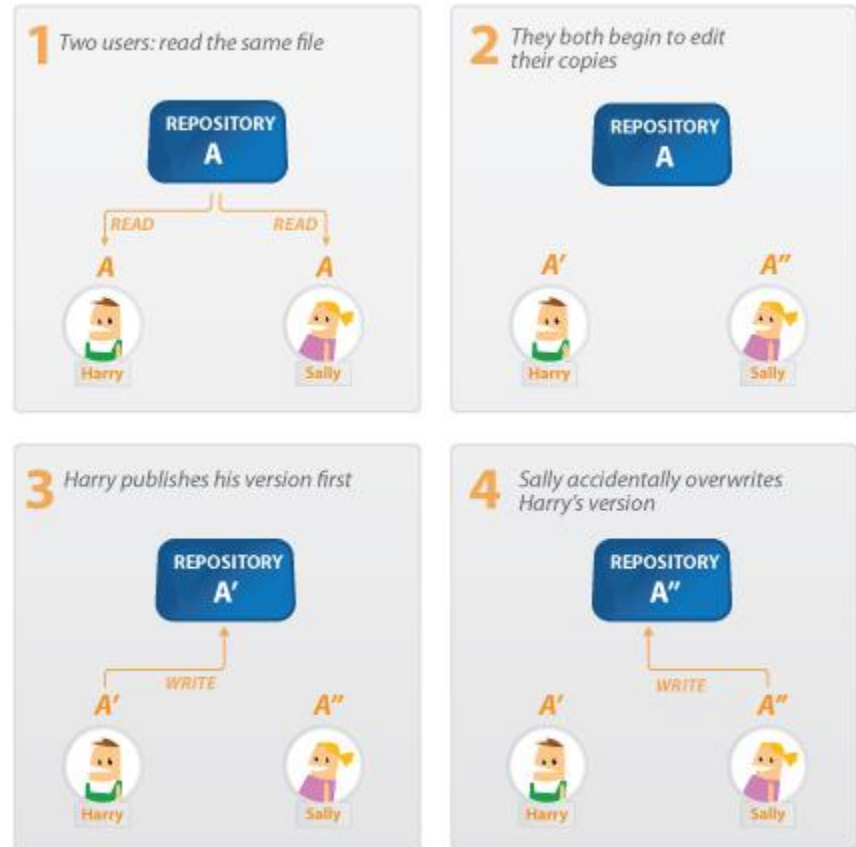
Lock – modify – unlock

- Needed for file formats without a merge algorithm.

- Serializes access to a versioned object.

- Pro:
  - Approach works for all file formats.

- Cons:
  - Serialization is at too high a level of granularity preventing people from working on different parts of the same file.
  - High priority work can be delayed and even forgotten.
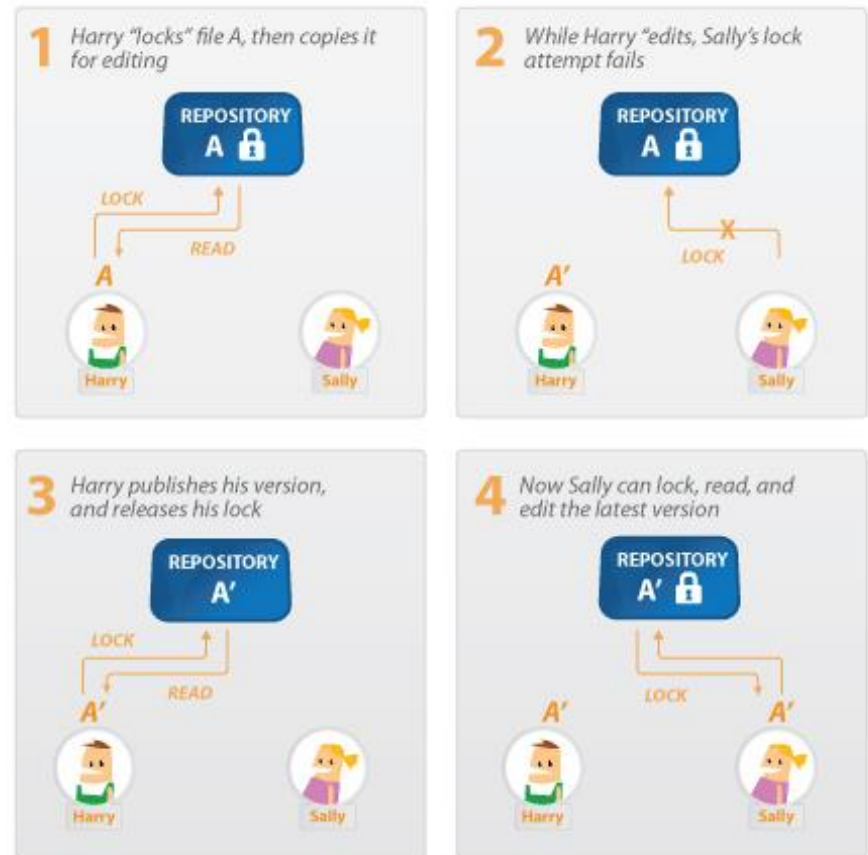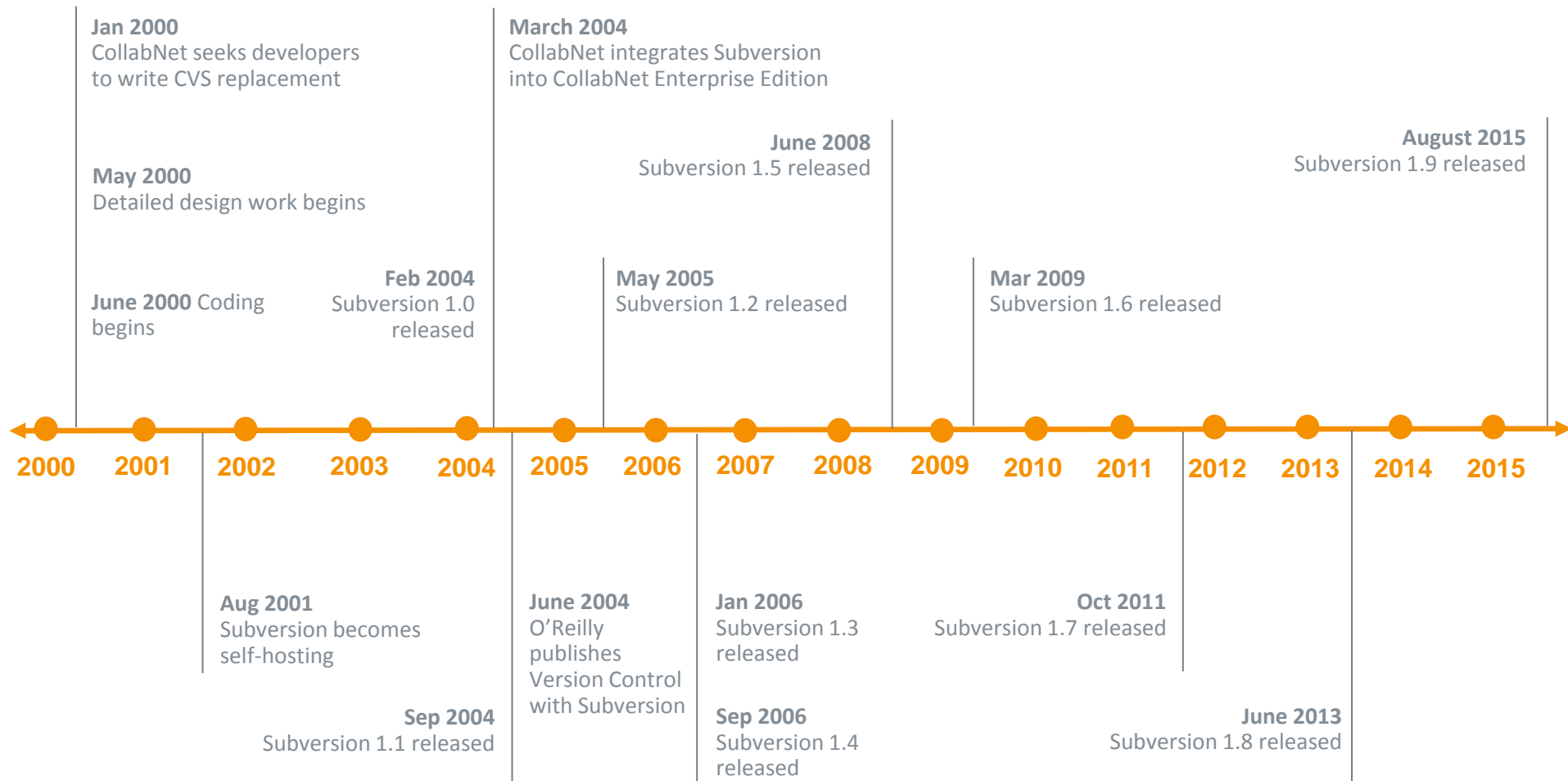
Copy – modify – merge

- Not possible for formats without an available merge algorithm.
- Best suited for collaborative, distributed projects.
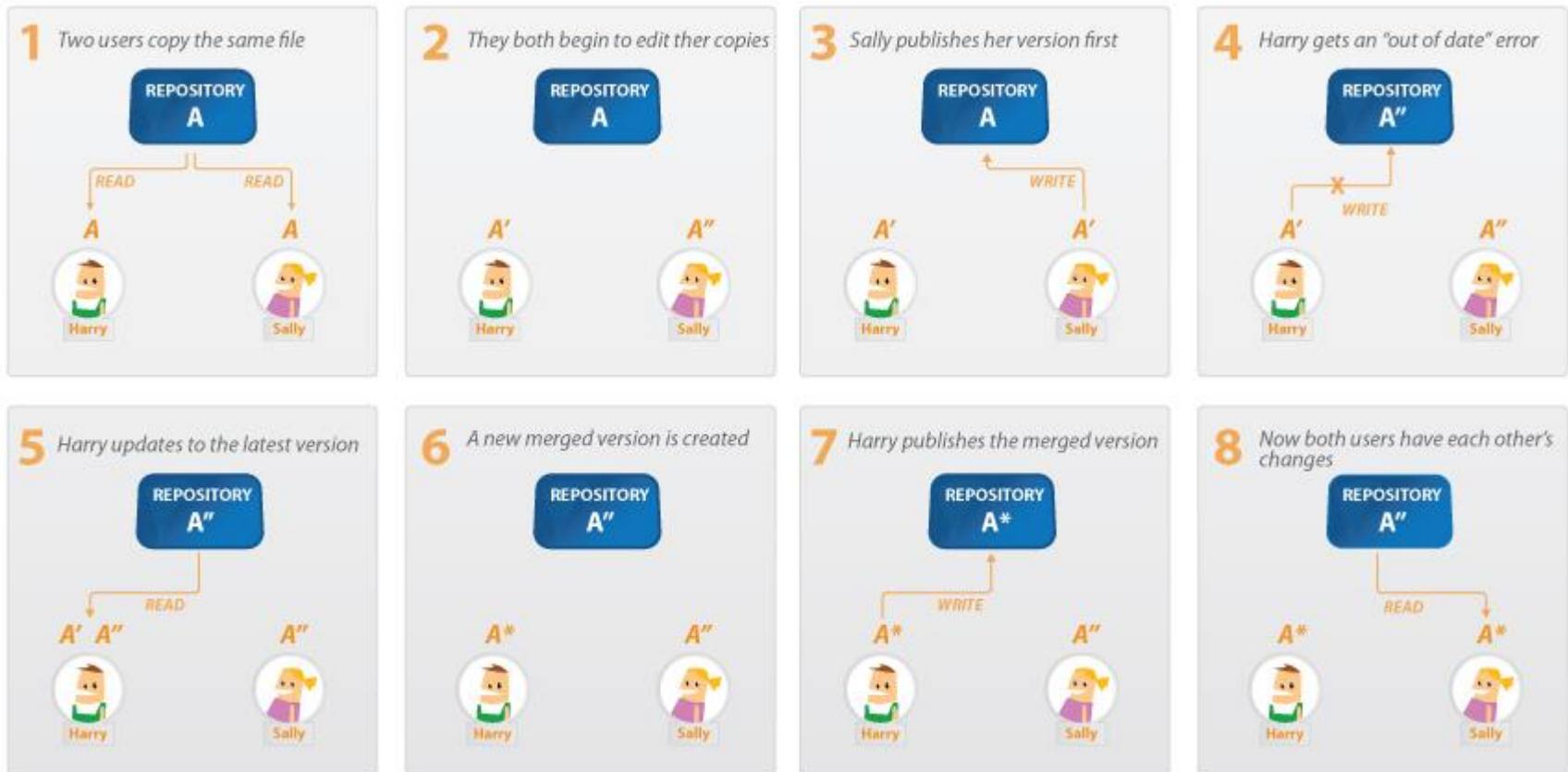
What is Subversion?

- Subversion is a state-of-the-art version control system.
  - Built from scratch.
  - Utilizing some of the best concepts of previous systems.
  - Addressing some of the common issues in previous systems.
  - Designed for WAN.

- Subversion is open source.
  - Anyone can download, modify, and redistribute Subversion as they please without the need for permission from anyone.
  - Propagation of use and use cases happens much sooner than with proprietary tools.
  - See: http://subversion.apache.org/.

- Subversion has a large, diverse developer community.

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History

Jan 2000
CollabNet seeks developers
to write CVS replacement

March 2004
CollabNet integrates Subversion
into CollabNet Enterprise Edition

June 2008
Subversion 1.5 released

August 2015
Subversion 1.9 released

May 2000
Detailed design work begins

Feb 2004
Subversion 1.0
released

May 2005
Subversion 1.2 released

Mar 2009
Subversion 1.6 released

June 2000 Coding
begins

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015

Aug 2001
Subversion becomes
self-hosting

June 2004
O'Reilly
publishes
Version Control
with Subversion

Jan 2006
Subversion 1.3
released

Oct 2011
Subversion 1.7 released

Sep 2004
Subversion 1.1 released

Sep 2006
Subversion 1.4
released

June 2013
Subversion 1.8 released

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Subversion's client-server model

- Developers that work on a project share a repository on a Subversion server.

- Subversion client:
  - Manages working copies and caches authentication credentials on disk.
  - Accesses the repository by a URL.

- Subversion server:
  - Stores the data in a repository on the server.
  - Manages authentication, authorization, and client requests.

- Network layer:
  - Uses bandwidth efficiently by transmitting diffs in both directions.

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Some key features

- Versioned directories & renames

- Versioned meta data

- Atomic commits & change sets

- Global revisions

- Merge tracking

- Wide area network design

- Efficient handling of binary files (transfer and storage)

- Branching and tagging are cheap (time and space)

- Easy integration with other systems, e.g. defect tracking systems

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Terminology

Term	Description
repository	Master copy with full history, lives on the server
path	Location of a file/directory within the repository or working copy
revision	Numbered snapshot of the full repository tree after a commit (i.e., change set)
working copy	Tree checked out from the repository onto your local (client) machine; changes are 'committed' from here to the repository
URL	Path to the repository or a working copy (or within either of them)
tag	A human friendly name for a particular repository tree
branch	A line of development that starts out as a copy of a repository tree and then develops independently (but can be merged)
trunk	The main development line
HEAD	The latest revision on any branch (or tag or path)

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Clients & platforms

- Graphical Clients
  - TortoiseSVN (MS Windows)
  - SCPlugin, svnX (Mac OS X)
  - RapidSVN (multi-platform)

- IDE Integration
  - Eclipse: Subclipse
  - CollabNet Desktop – Eclipse Edition
  - Microsoft Visual Studio .NET: AnkhSVN
  - CollabNet Desktop – Visual Studio Edition
  - Netbeans
  - JDeveloper
  - JBuilder
  - IntelliJ IDEA

- Command-line Client
  - Portable
  - Human readable and automatically parseable output

- Web Interfaces
  - Read-only, browser-based
  - Good for ad-hoc examination of repository
  - ViewVC

- Generic WebDAV Access
  - Extends Subversion to business users
 - Limited client functionality

Links & resources

- Communities & Documentation
  - CollabNet Subversion community:
    http://www.collab.net/community/subversion
  - Multiple discussion forums:
    http://forums.open.collab.net/
  - Blog:
    http://blogs.collab.net/subversion/
  - Development project:
    http://subversion.apache.org
  - Users' list:
    users@subversion.apache.org

- Books
  - Ben Collins-Sussman, Brian W. Fitzpatrick, and C. Michael Pilato, **Version Control with Subversion**, O'Reilly, September 2008.
    http://svnbook.red-bean.com
  - Garrett Rooney, Daniel Berlin, **Practical Subversion**, Apress, November 2006.
  - Mike Mason, **Pragmatic Version Control Using Subversion**, Pragmatic Bookshelf, May, 2006

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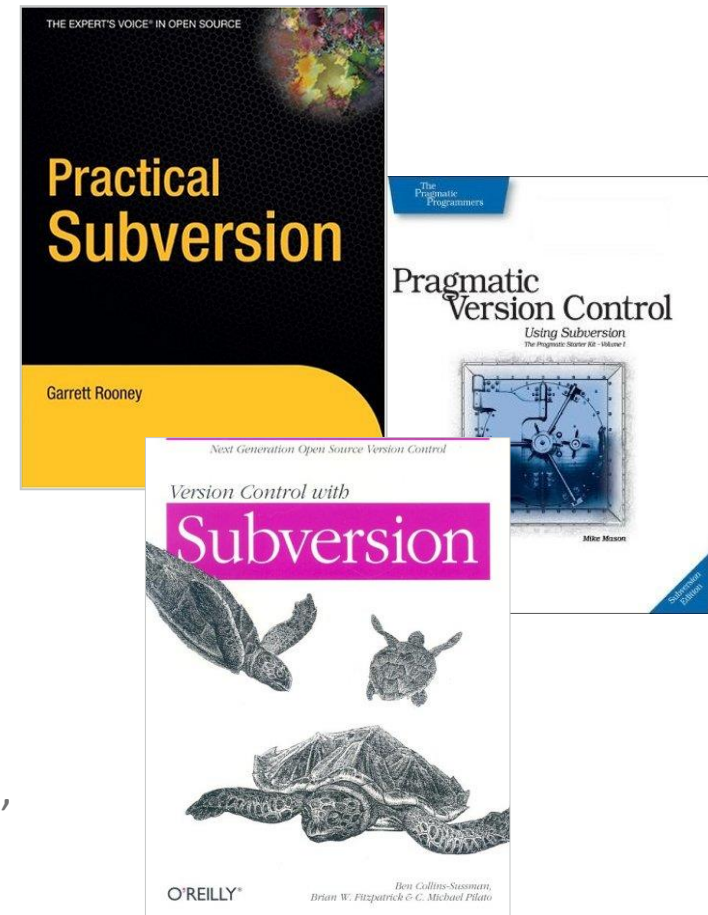
Thank You

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About CollabNet

CollabNet is a leading provider of Enterprise Cloud Development and Agile ALM products and services for software-driven organizations. With more than 10,000 global customers, the company provides a suite of platforms and services to address three major trends disrupting the software industry: Agile, DevOps and hybrid cloud development. Its CloudForge™ development-Platform-as-a-Service (dPaaS) enables cloud development through a flexible platform that is team friendly, enterprise ready and integrated to support leading third party tools. The CollabNet TeamForge® ALM, ScrumWorks® Pro project management and SubversionEdge source code management platforms can be deployed separately or together, in the cloud or on-premise. CollabNet complements its technical offerings with industry leading consulting and training services for Agile and cloud development transformations. Many CollabNet customers improve productivity by as much as 70 percent, while reducing costs by 80 percent.

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