

ICIS Software Development and Release Management

ICIS 2006 Workshop

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Software Release Management

- OSS philosophy: It will be released when it is ready! (When developers are satisfied.)
 - Can lead to high quality products
 - No predictable release date and feature set
- Proprietary philosophy: It will be released on schedule! (When sales/marketing managers want it.)
 - Early users can become beta testers
 - More predictable availability and feature set

When should a new version of the ICIS software be released?

- When enough changes have accumulated
 - Each release has enough changes to make it worthwhile.
 - Flexible for developers, but less predictable for users. What is more important?
- According to a release plan
 - E.g. every 6 months with roadmaps for feature development, time plan for release process (feature freeze, testing, debugging, documentation)

ICIS should be released according to a formal release plan

- Formal release management can scale up
 - More developers, more locations.
 - Database/module interactions.
 - Documentation & training materials.
- Users can plan for upgrading / training
- Aim: Distributed development & global user community
 - Is there an alternative to formal release management?

ICIS collaborative development platform

The ICIS System on CropForge

Admin

Below is a list of all files of the project. Before downloading, you may want to read Release Notes and ChangeLog (accessible by clicking on release version).

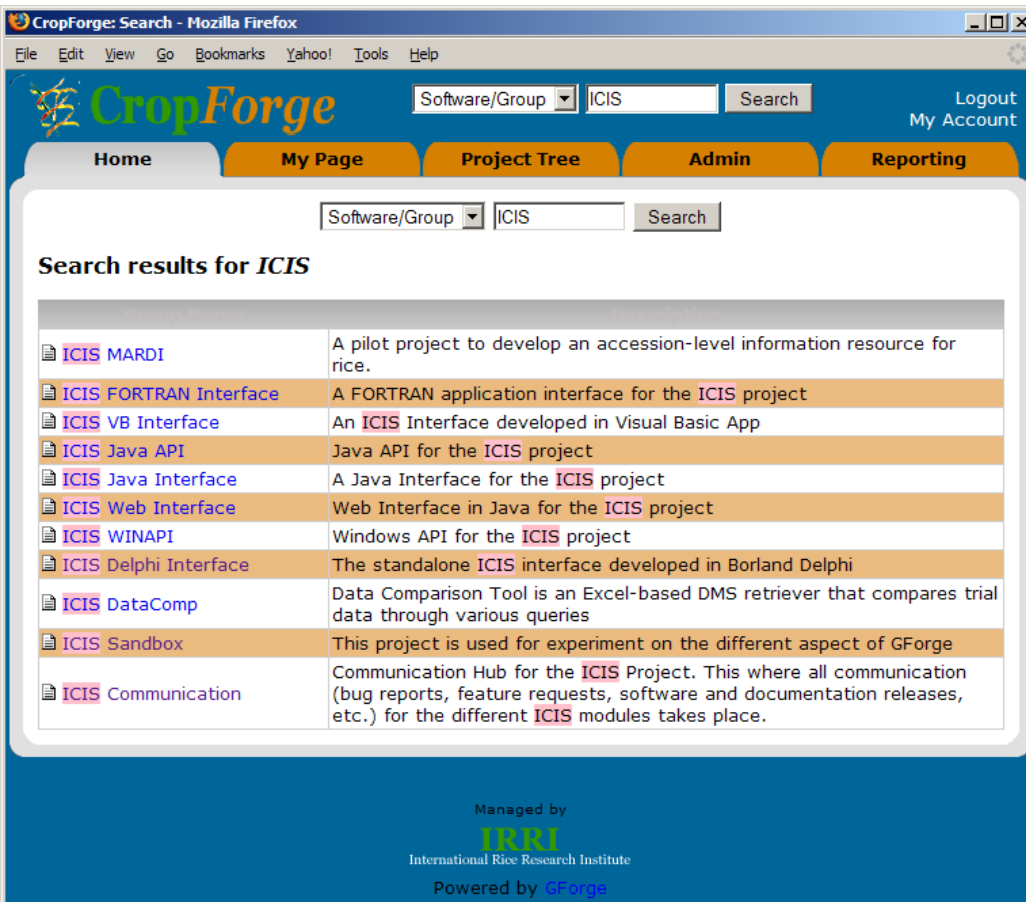
[To create a new release click here.](#)

Package	Release & Notes	Filename	Date			
			Size	D/L	Arch	Type
ICIS Applications						
ICIS 5.3			2006-04-28 17:04			
icis-application-5.3.0-exe.zip			5.14 MB	3	i386	.zip
ICIS 5.2			2005-09-14 15:52			
icis-application-5.2.0-exe.zip			3.48 MB	1	i386	.zip
icis-application-5.2.1-exe.zip			4.23 MB	1	i386	.zip
ICIS 5.1			2005-05-09 15:54			
icis-application-5.1.0-exe.zip			2.75 MB	0	i386	.zip
ICIS 5.0			2005-04-01 10:12			
icis-application-5.0.1-exe.zip			2 MB	0	i386	.zip
ICIS Schema						
ICIS DB 5.3			2006-04-01 10:29			
<i>No Files</i>						
MS Access to ODBC Export Tool 1.0			2006-01-01 10:06			
icis-db-export-1.0.zip			284 KB	2	i386	.zip
ICIS DB 5.2			2006-01-01 07:59			
<i>No Files</i>						
ICIS DB 5.1			2005-11-01 16:52			
icis-schema-5.1-full-sql.zip			12 KB	2	Any	Source .zip

ICIS Communication Project

- Release (download) of packaged ICIS software for end-users. Only tested and documented versions will be released here.
- Release of ICIS full schema scripts as well as upgrade scripts.
- Tracking systems for bugs, feature requests, etc. for communication with beta-testers and end-users.
- Forums, mailing list, news for communication with the global ICIS community.

The ICIS System on CropForge



The screenshot shows the CropForge web application interface. At the top, there is a navigation bar with the CropForge logo and a search bar containing 'ICIS'. Below the navigation bar, there are tabs for 'Home', 'My Page', 'Project Tree', 'Admin', and 'Reporting'. The main content area displays search results for 'ICIS' in a table format. The table has two columns: the project name and a brief description. The projects listed are: ICIS MARDI, ICIS FORTRAN Interface, ICIS VB Interface, ICIS Java API, ICIS Java Interface, ICIS Web Interface, ICIS WINAPI, ICIS Delphi Interface, ICIS DataComp, ICIS Sandbox, and ICIS Communication. At the bottom of the page, it is noted that the system is managed by IRRI (International Rice Research Institute) and powered by GForge.

Project Name	Description
ICIS MARDI	A pilot project to develop an accession-level information resource for rice.
ICIS FORTRAN Interface	A FORTRAN application interface for the ICIS project
ICIS VB Interface	An ICIS Interface developed in Visual Basic App
ICIS Java API	Java API for the ICIS project
ICIS Java Interface	A Java Interface for the ICIS project
ICIS Web Interface	Web Interface in Java for the ICIS project
ICIS WINAPI	Windows API for the ICIS project
ICIS Delphi Interface	The standalone ICIS interface developed in Borland Delphi
ICIS DataComp	Data Comparison Tool is an Excel-based DMS retriever that compares trial data through various queries
ICIS Sandbox	This project is used for experiment on the different aspect of GForge
ICIS Communication	Communication Hub for the ICIS Project. This where all communication (bug reports, feature requests, software and documentation releases, etc.) for the different ICIS modules takes place.

ICIS Development Projects

- Projects per programming language, with separate modules per projects. Each module represents a different application (e.g. SetGen, GMSSearch).
- Source code repository (CVS/SVN) with update permission for developers and read-only (anonymous) access for everyone.
- Support provided for global ICIS developer community.
- Lead developers are project administrators.
- Beta versions of applications will be released here.

ICIS Development Project (DLL)

CropForge: ICIS WINAPI: Project Info - Mozilla Firefox

File Edit View Go Bookmarks Yahoo! Tools Help

CropForge Search the entire project Search Advanced search Logout My Account

Home My Page Project Tree Admin Reporting ICIS WINAPI

Summary Admin Docs SCM Files

Windows API for the ICIS project

- Category: [ICIS - International Crop Information System](#)
- Development Status: [3 - Beta](#)
- Environment: [Win32 \(MS Windows\)](#)
- License: [Public Domain](#)
- Operating System: [Windows 95/98/2000](#)
- Programming Language: [C++](#)

Registered: 2005-02-07 04:47

Developer Info

Project Admins:
[Arlet Portugal](#)

Developers:
[Gerard Sylvester](#)
[Michael Jonathan Mendoza](#)

[\[View Members\]](#)
[\[Request to join\]](#)

Latest File Releases

Package	Version	Date	Notes / Monitor	Download
iciswinapi	ICIS32DLL_Code_v5_0_01	April 6, 2005	-	Download

[\[View All Project Files\]](#)

Public Areas

- [Project Home Page](#)
- [DocManager: Project Documentation](#)
- [SCM Repository \(CVS: 19 commits, 2 adds\)](#)

CropForge: ICIS WINAPI: Project Filelist - Mozilla Firefox

File Edit View Go Bookmarks Yahoo! Tools Help

CropForge Search the entire project Search Advanced search Logout My Account

Home My Page Project Tree Admin Reporting ICIS WINAPI

Summary Admin Docs SCM Files

Admin

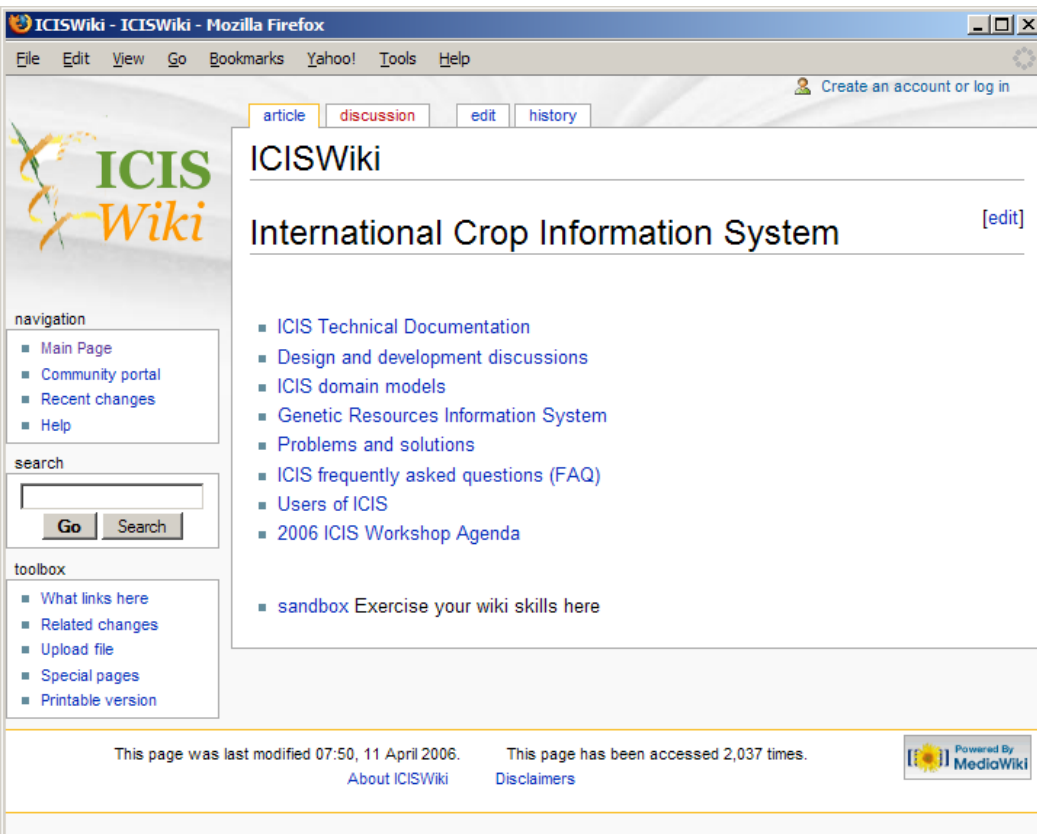
Below is a list of all files of the project. Before downloading, you may want to read Release Notes and ChangeLog (accessible by clicking on release version).

[To create a new release click here.](#)

Package	Release & Notes	Filename	Date			
			Size	D/L	Arch	Type
iciswinapi	ICIS32DLL_Code_v5_0_01 icis32DLL_Code_V5_0_1.zip		567 KB	12 i386		.zip
Project totals		1	567 KB	12		

Managed by
IRRI
International Rice Research Institute
Powered by [GForge](#)

The Role of ICISWiki



Existing

- Technical documentation development
- Training materials development
- Development documentation (GRIMS)
- Community documents

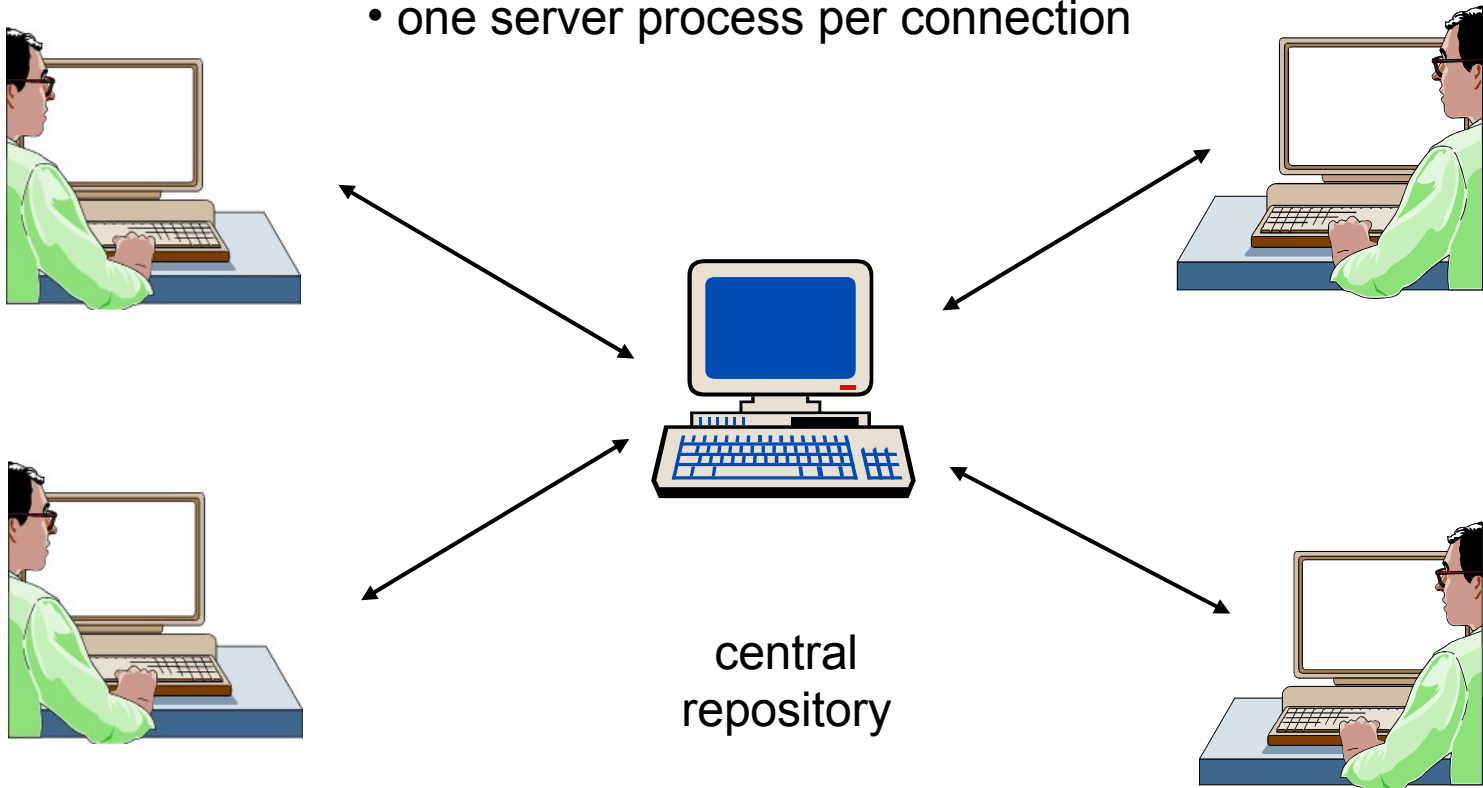
New?

- ICIS release plan
- Module roadmaps

Source code management with CVS

CVS client-server architecture

- separate server
- no shared file systems
- one server process per connection



CVS server - CropForge

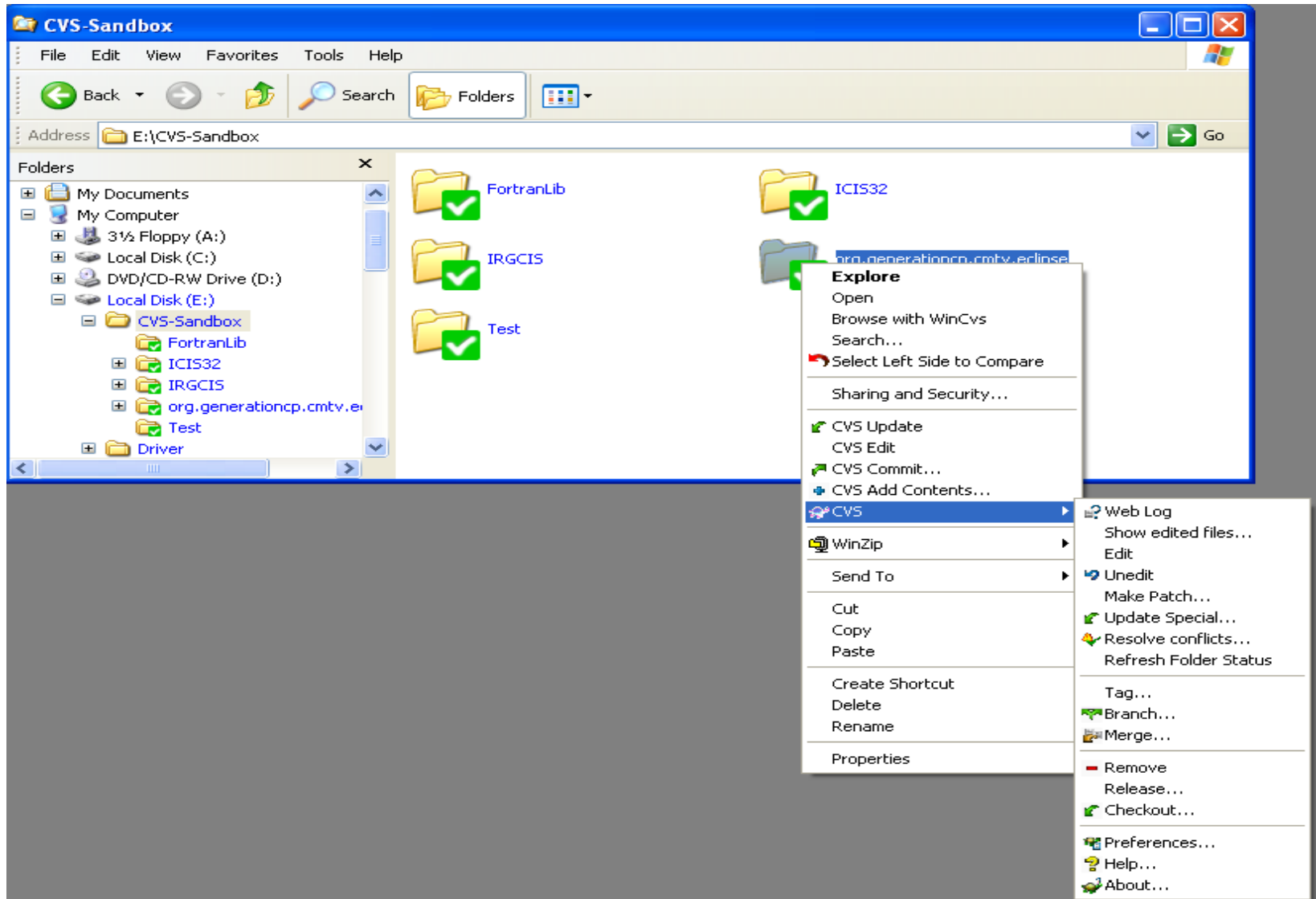
The screenshot shows the CropForge web interface in a Mozilla Firefox browser window. The page title is "CropForge: ICIS WINAPI: SCM Repository". The interface includes a navigation menu with "Home", "My Page", "Project Tree", and "ICIS WINAPI". Below this is a sub-menu with "Summary", "Docs", "SCM", and "Files". A search bar is located at the top right, and there are links for "Login" and "New Account".

Click on a directory to enter that directory. Click on a file to display its revision history and to get a chance to display diffs between revisions.

Current directory: [\[GForge-CVS:iciswinapi\]](#) / [ICIS32](#) / [DMS](#)

File	Rev.	Age	Author	Last log entry
Parent Directory				
Data.cpp	1.5	3 weeks	aportugal	ICIS 5.3
Data.h	1.2	7 months	aportugal	no message
Factor.cpp	1.5	3 weeks	aportugal	ICIS 5.3
Factor.h	1.2	7 months	aportugal	no message
Interface.cpp	1.2	7 months	aportugal	no message
Interface.h	1.2	7 months	aportugal	no message
Level.cpp	1.5	3 weeks	aportugal	ICIS 5.3
Level.h	1.2	7 months	aportugal	no message
Persons.cpp	1.2	7 months	aportugal	no message
Persons.h	1.2	7 months	aportugal	no message

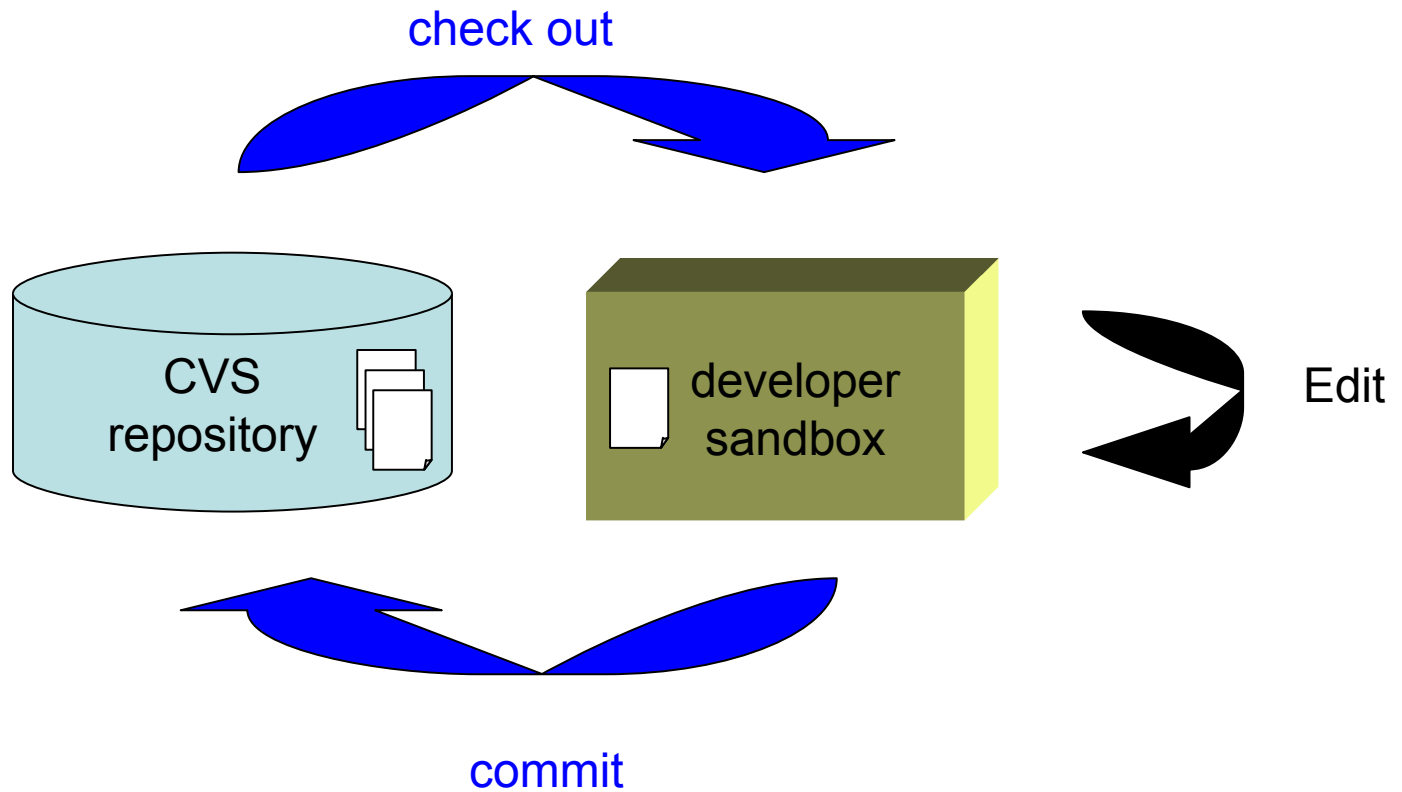
CVS client - TortoiseCVS



CVS usage model

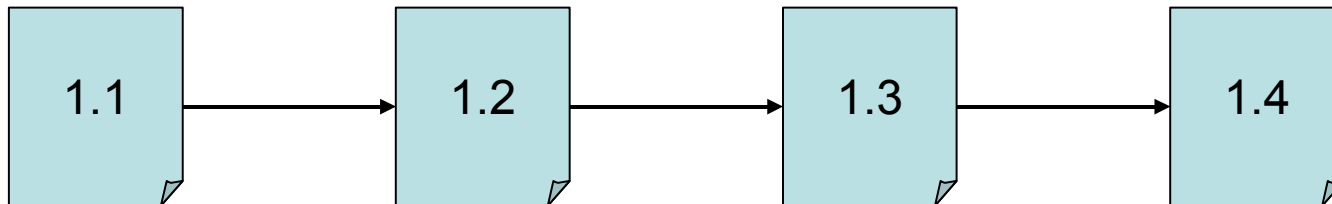
- check out
 - makes private copy in the working directory
 - multiple copies and multiple versions in different locations are possible
- modify
- update
 - brings working copy up-to-date with repository
- commit
 - moves changes in private copy to repository

CVS principles

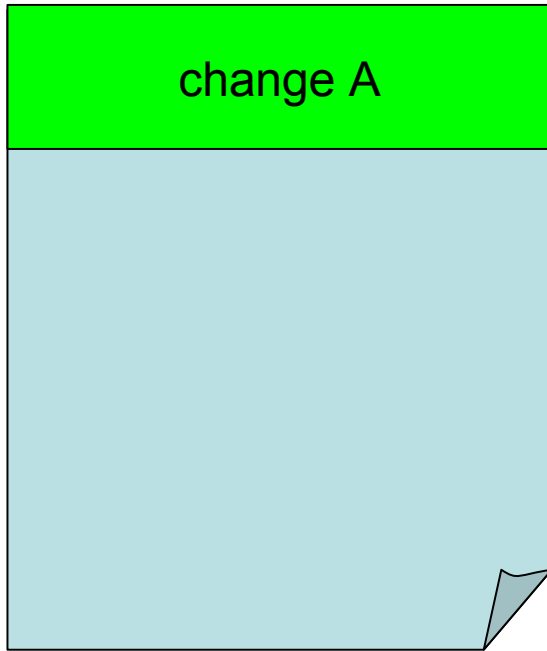


CVS versioning

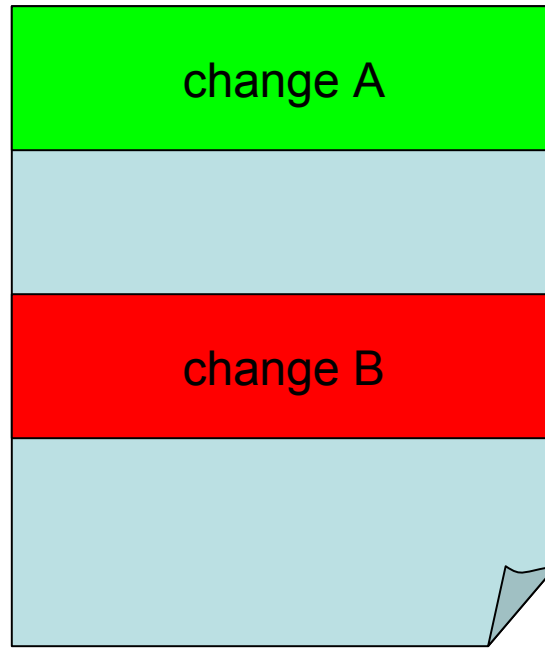
- version numbering is automatic
- number is incremented every time the file is changed



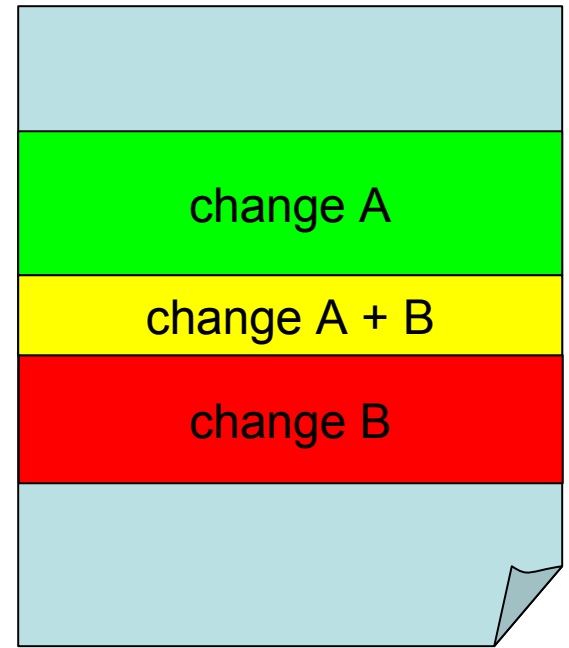
CVS principles



- one developer
- single change
- commit

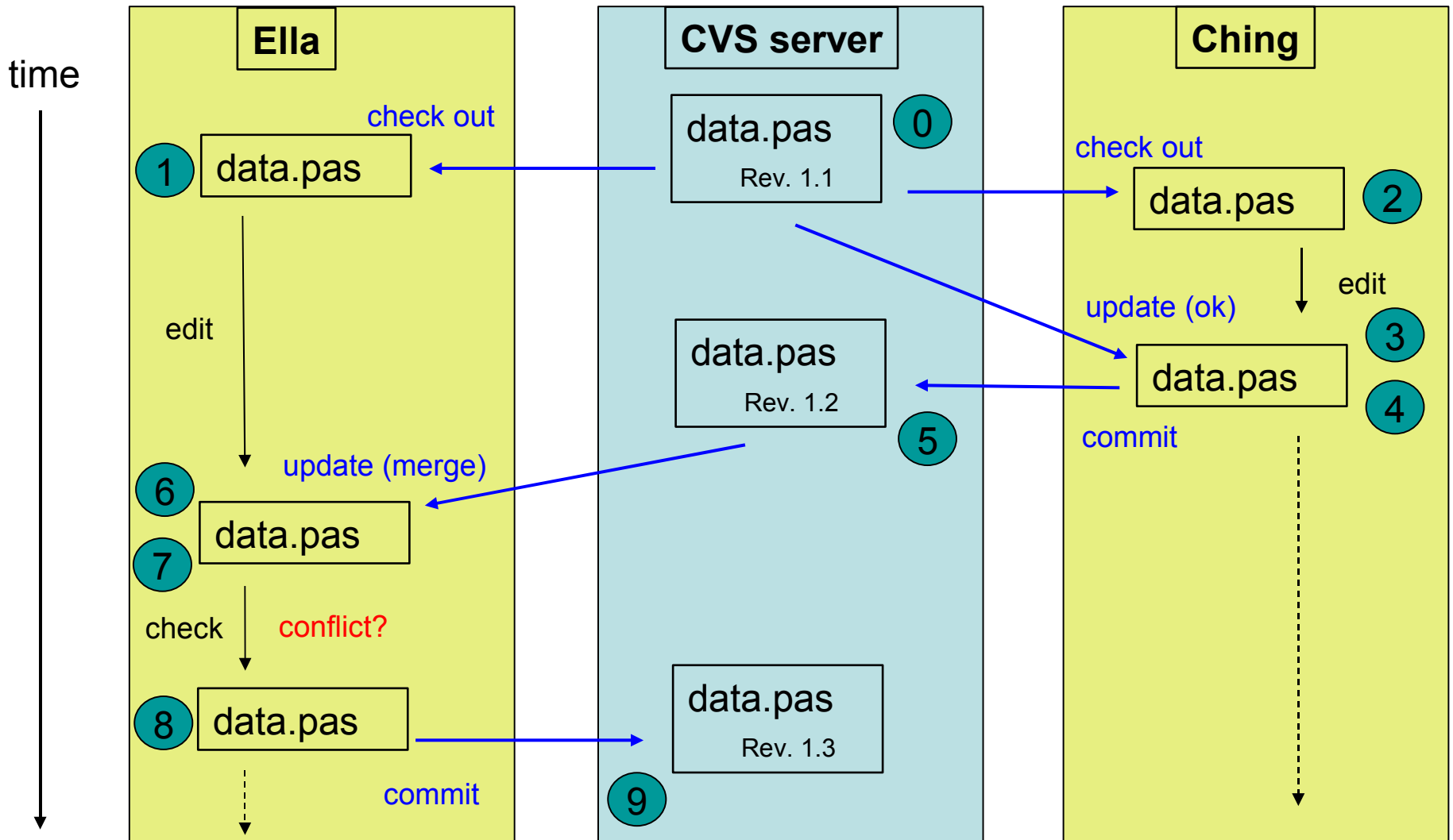


- two developers
- separate changes
- merge
- commit



- two developers
- overlapping changes
- merge
- conflict resolution
- commit

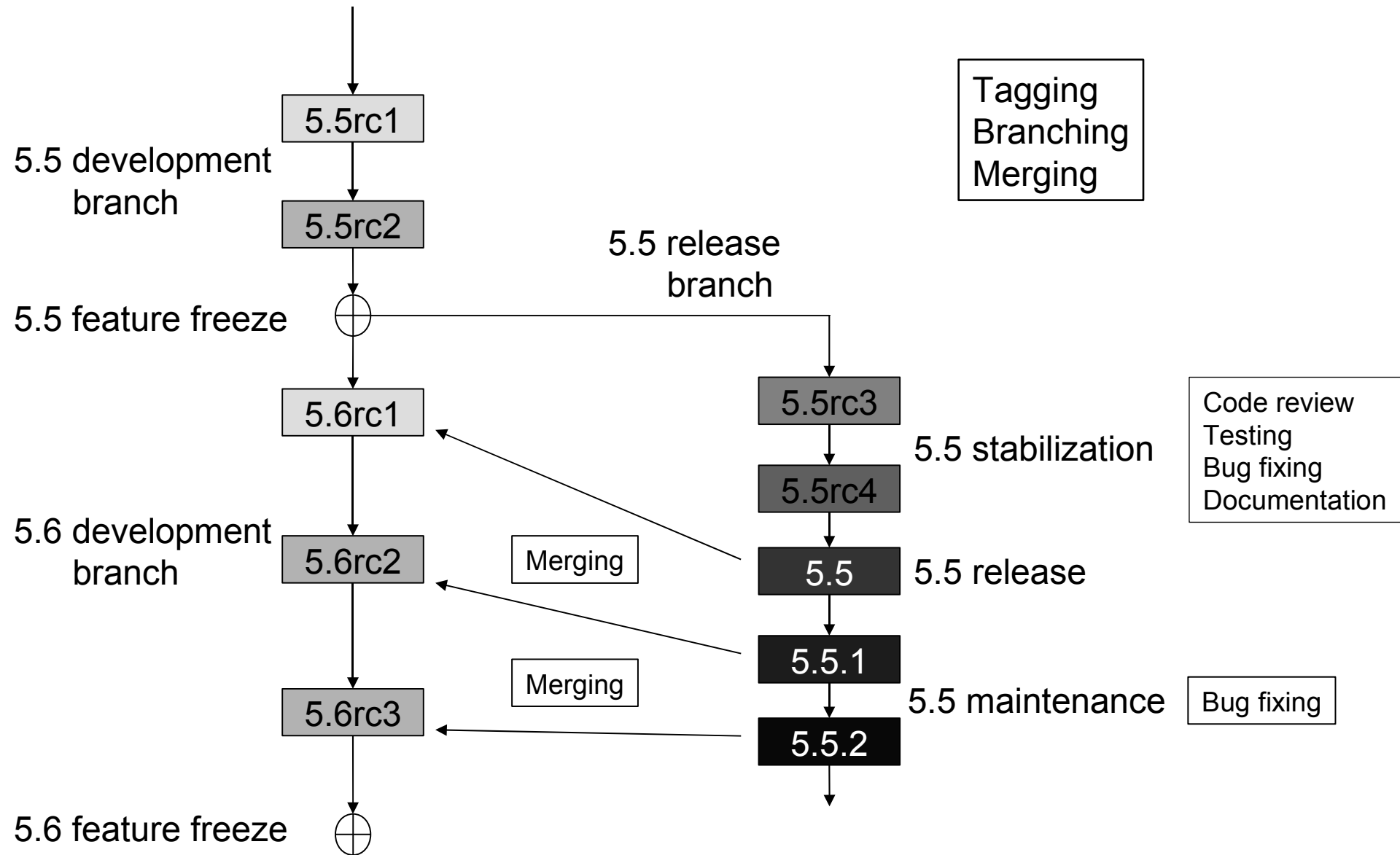
CVS principles by example



ICIS release management proposal

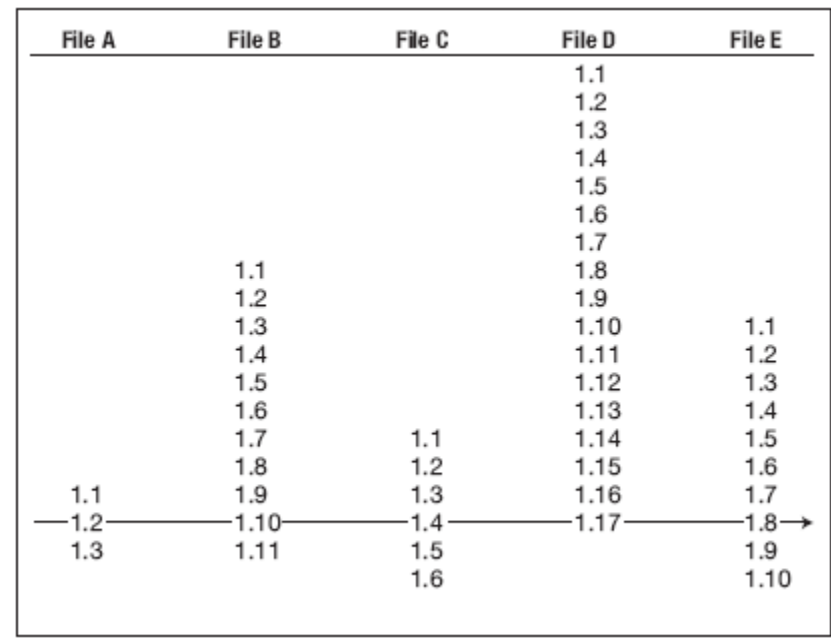
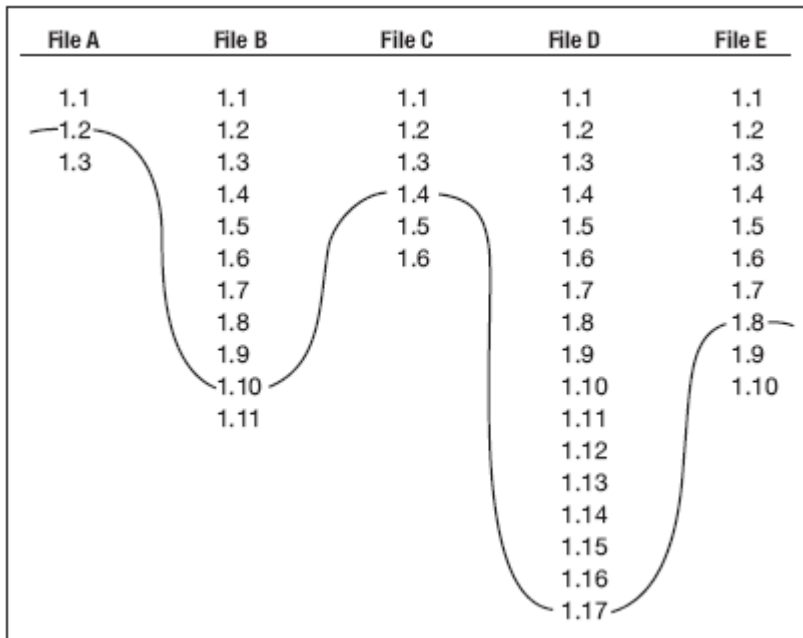
advanced CVS

ICIS Module Development Process



Tagging

- marking a moment in time -



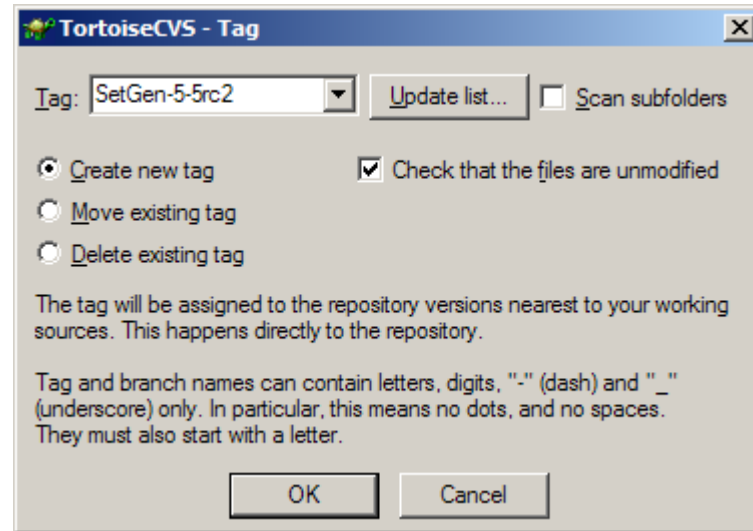
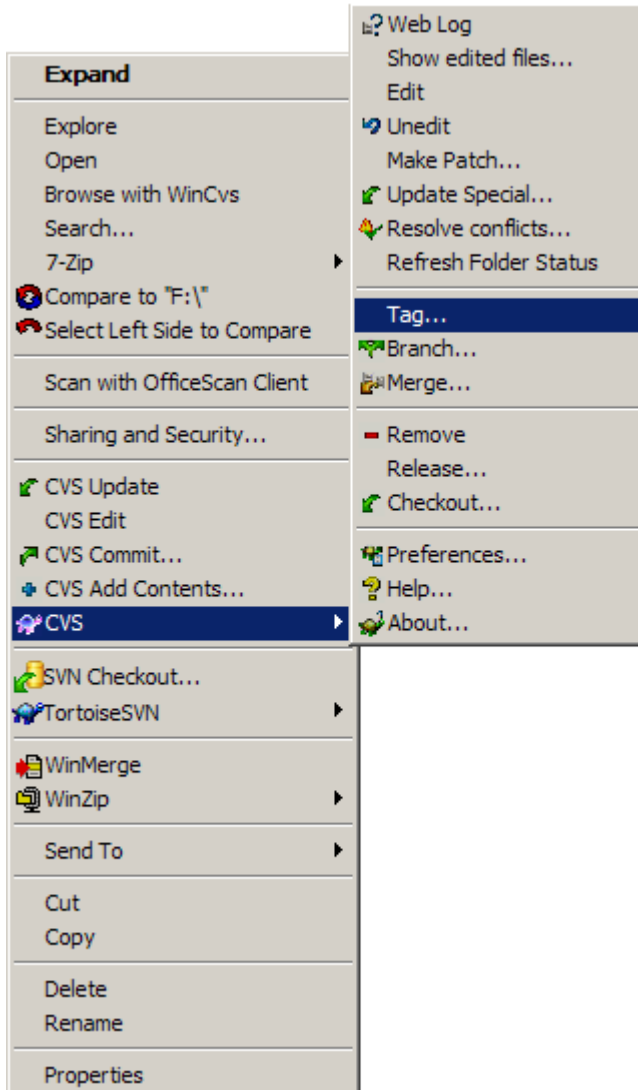
Source: Open Source Development with CVS, Karl Fogel, ISBN: 1-932111-81-6

A tag gives a label to the collection of revisions of one developer's working copy (the working copy should be completely up to date so the tag name is attached to the latest revisions in the repository).

E.g. SetGen-5.5rc2, SetGen-5.5, SetGen-5.5.1

The source code can be checked out by tag.

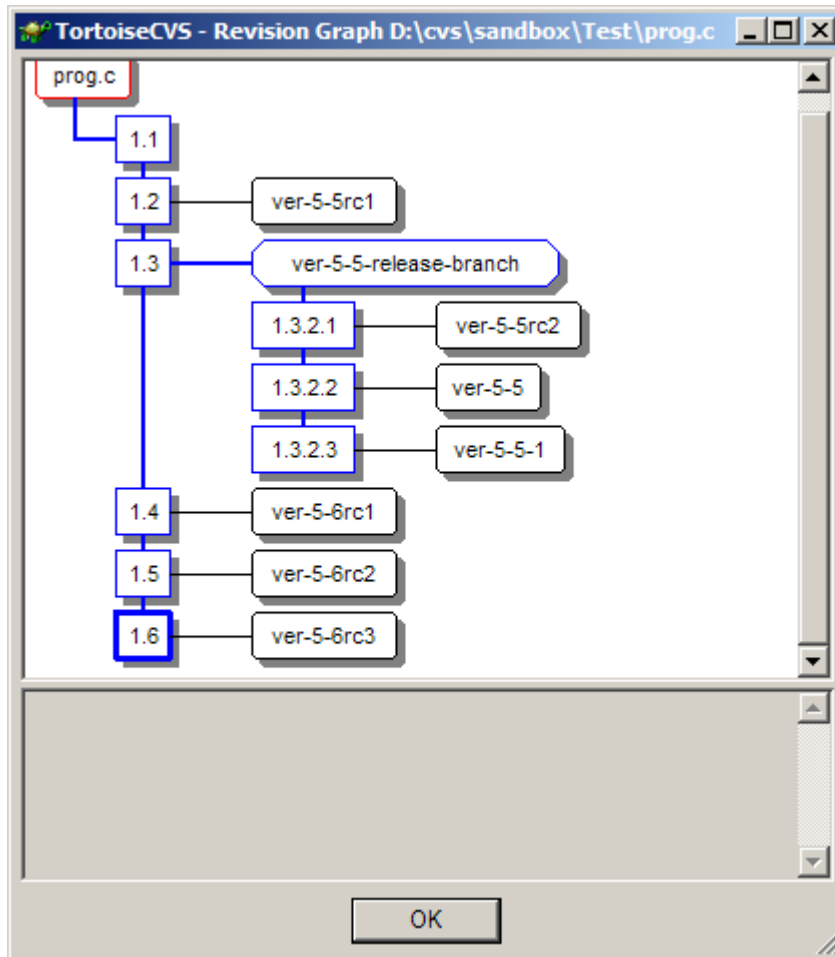
Tagging with TortoiseCVS



In the Tag Dialog you can enter a label in the Tag field. A tag must start with a letter, and may contain letters, digits, "-" (dash) and "_" (underscore) only (no dots, no spaces). When pressing the OK button the tag is immediately applied to the repository, and no commit is required.

Branching

- separate lines of development -

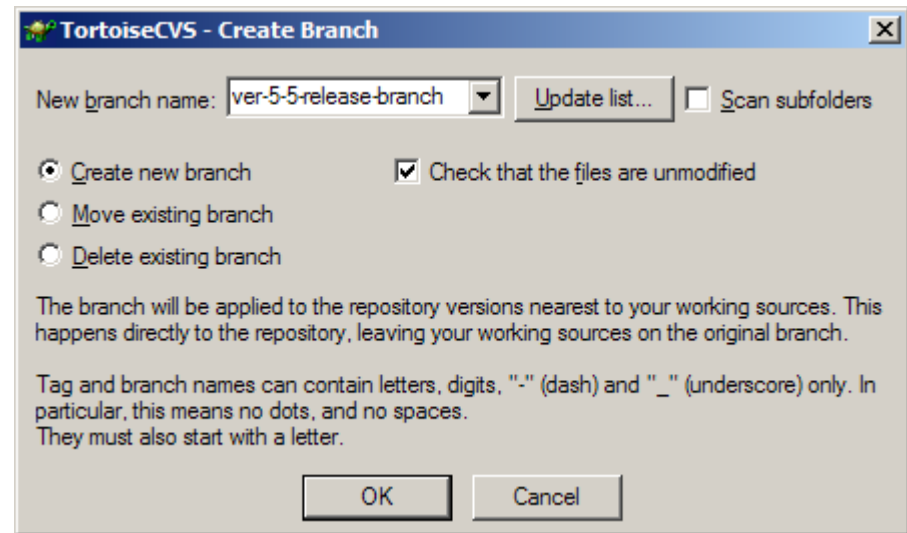
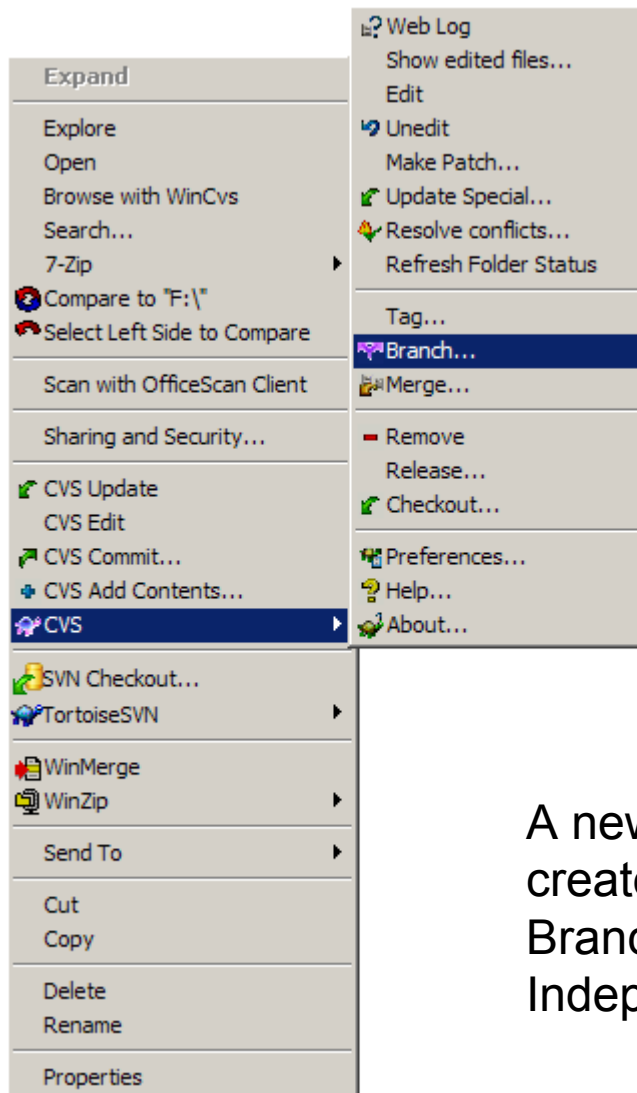


CVS can isolate changes onto a separate line of development (=branch).

The local sandbox can be switched between branches (update special) without maintaining multiple versions of the source code.

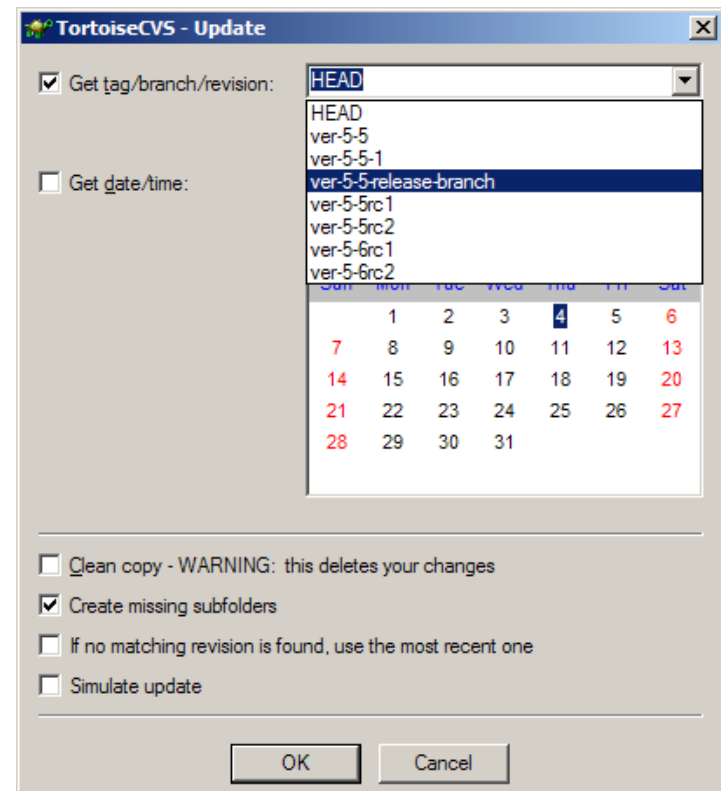
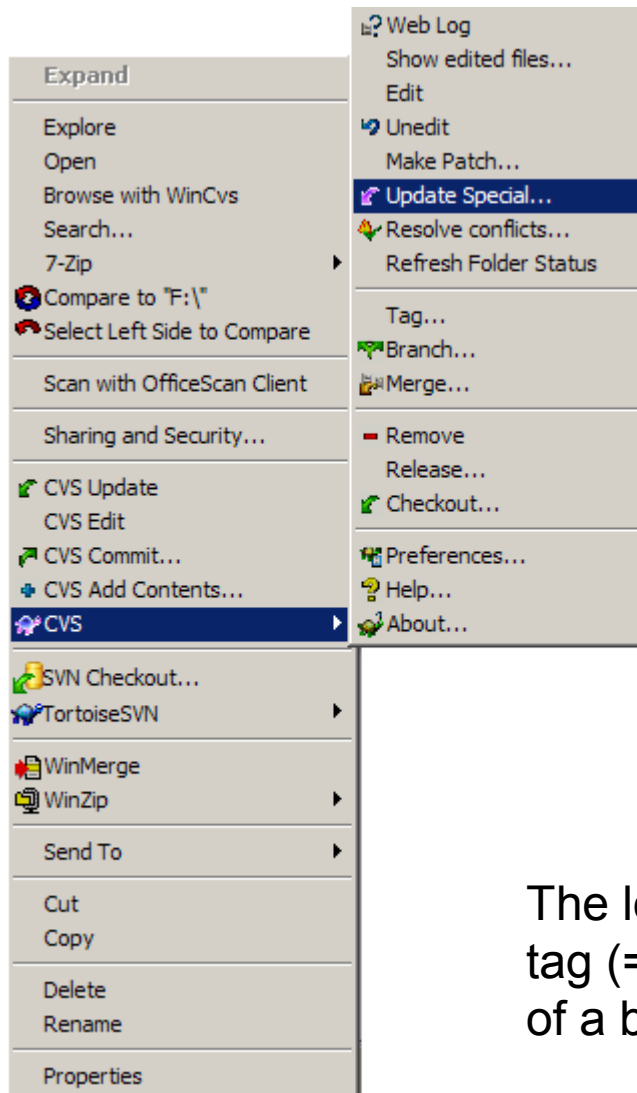
Changes (commit) made to one branch do not affect other branches.

Branching in TortoiseCVS



A new branch of the source code of a module can be created using the Branch command. Branches of source code can be maintained Independently.

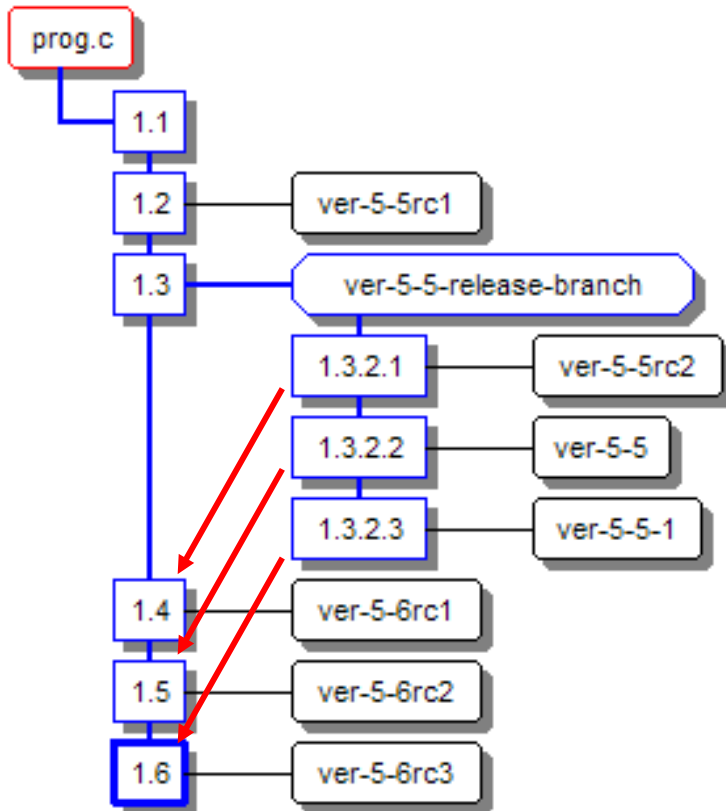
Switching between tags/branches



The local sandbox will be “converted” to a selected tag (=snapshot) of the code, or to the last version of a branch by using the Update Special command.

Merging

- migrating changes -

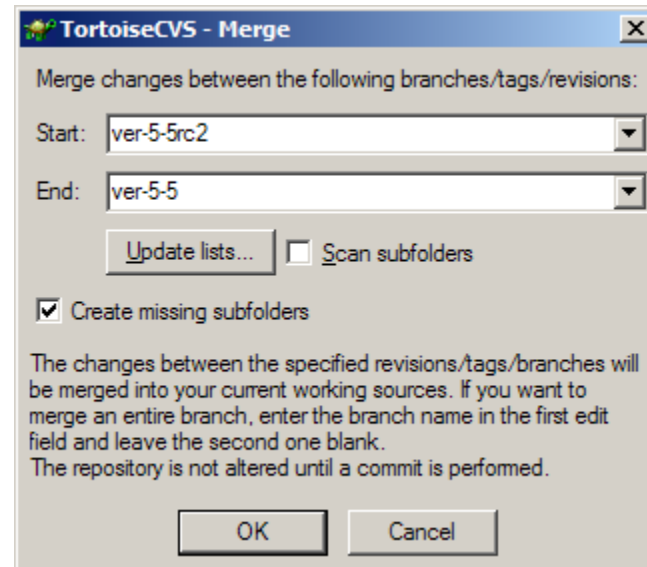
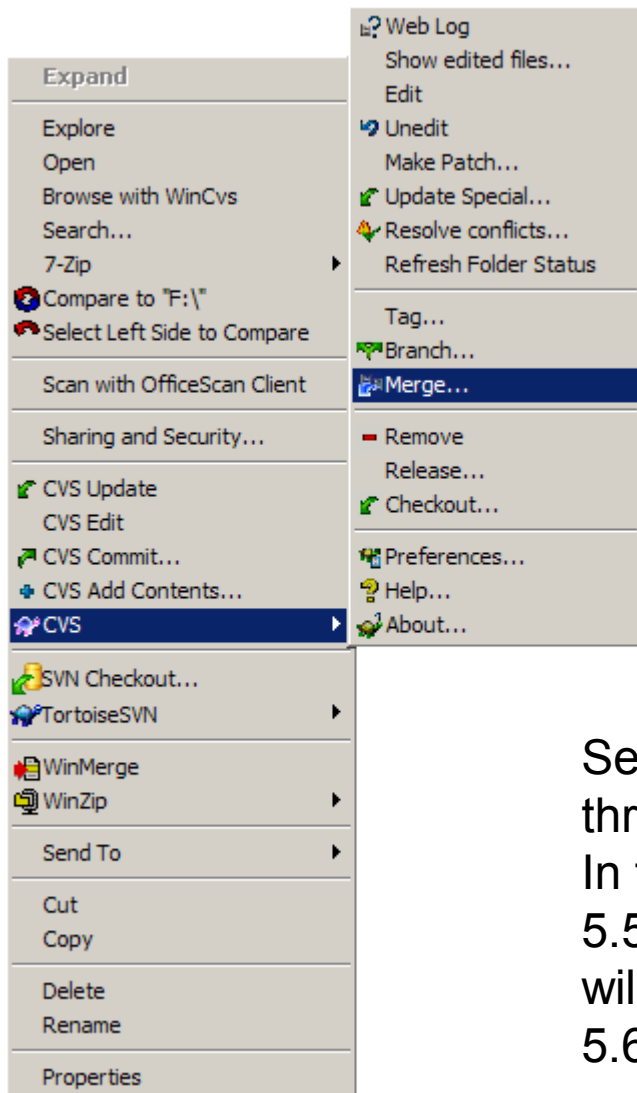


Changes made in one branch (e.g. bug fixes) may need to be applied to another branch.

Merging between branches will transfer such changes, e.g. from a tag (snapshot) in the release branch to the current version of the development branch.

Merging can be done for files, directories, or entire branches.

Merging in TortoiseCVS



Set the current branch (e.g. HEAD) and then go through the Merge dialog.

In the above selection, the changes made to the 5.5 release branch between ver-5-5rc2 and ver-5-5 will be merged into the current version of the 5.6 development (HEAD) branch.

Release Manager

- Announce events (feature freeze, release).
- Check consistency and compatibility of planned feature set for next release.
- Check consistency and compatibility of implemented feature set at feature freeze.
- Package the release.

Conclusions

- The platforms for collaborative ICIS development, release, and support are in place, but not fully utilized.
- We need more formal plans, procedures, and standards.
- We need additional skills and experience.
- We need to develop more good habits.

References

- Producing Open Source Software, Karl Fogel, 2006.
Creative Commons License
<http://www.producingoss.com/producingoss.pdf>
- Open Source Development with CVS, Karl Fogel, 2003.
General Public License
http://cvsbook.red-bean.com/OSDevWithCVS_3E.pdf
- Version Management with CVS, Per Cederqvist, 2005.
Free Software Foundation Open Content License
<http://ftp.gnu.org/non-gnu/cvs/source/stable/1.11.21/cederqvist-1.11.21.pdf>
- TortoiseCVS – software, online help, admin guide
General Public License
<http://www.tortoise cvs.org>
http://www.cvsnt.org/CVS_Administration_Guide.pdf