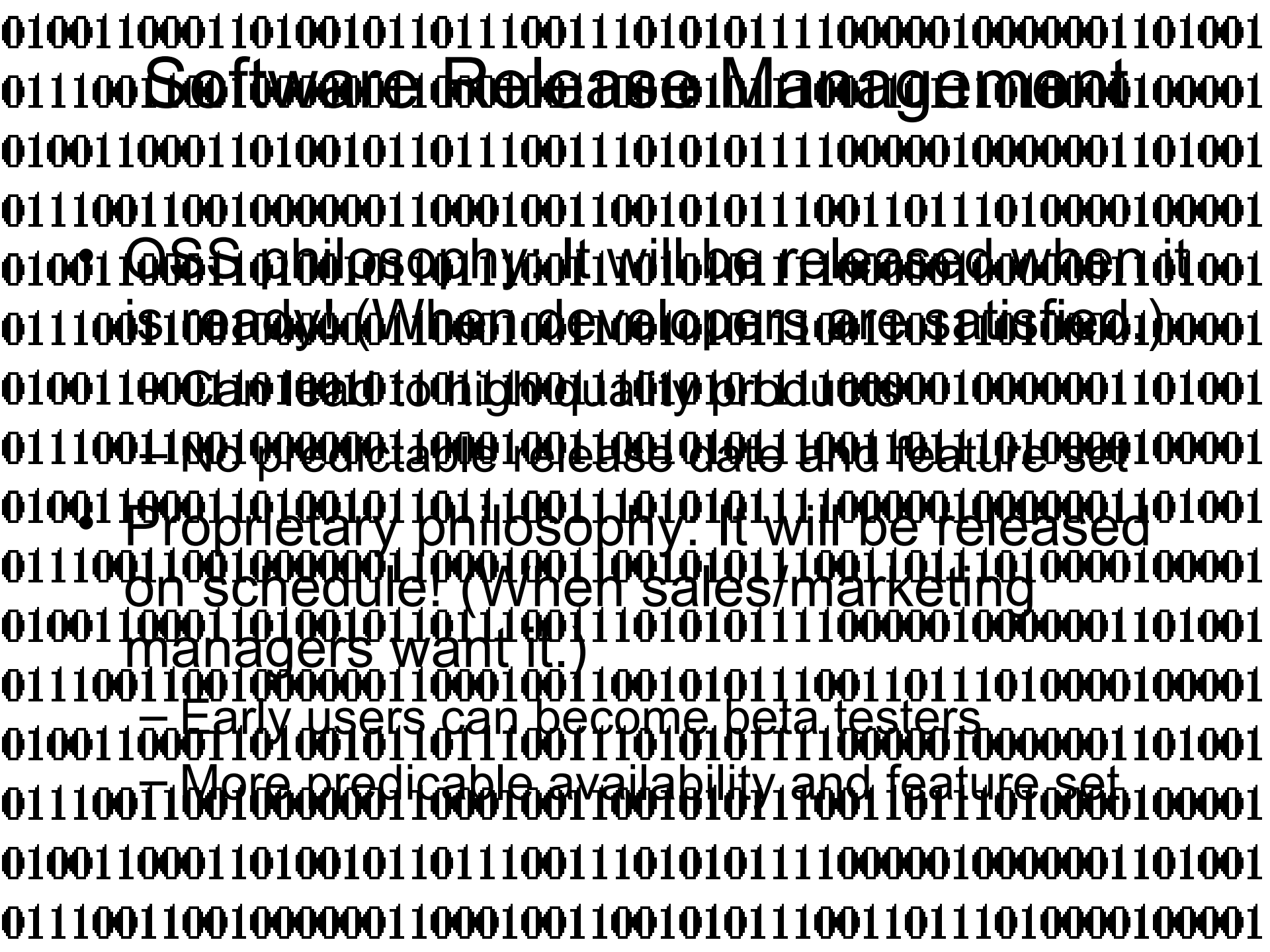


CI/CD Software Development and Release Management

CI/CD 2006 Workshop

T1: CI/CD, T2: QR, T3: QR



Software Release Management

– Open philosophy. It will be released when it is ready. (When developers are satisfied)

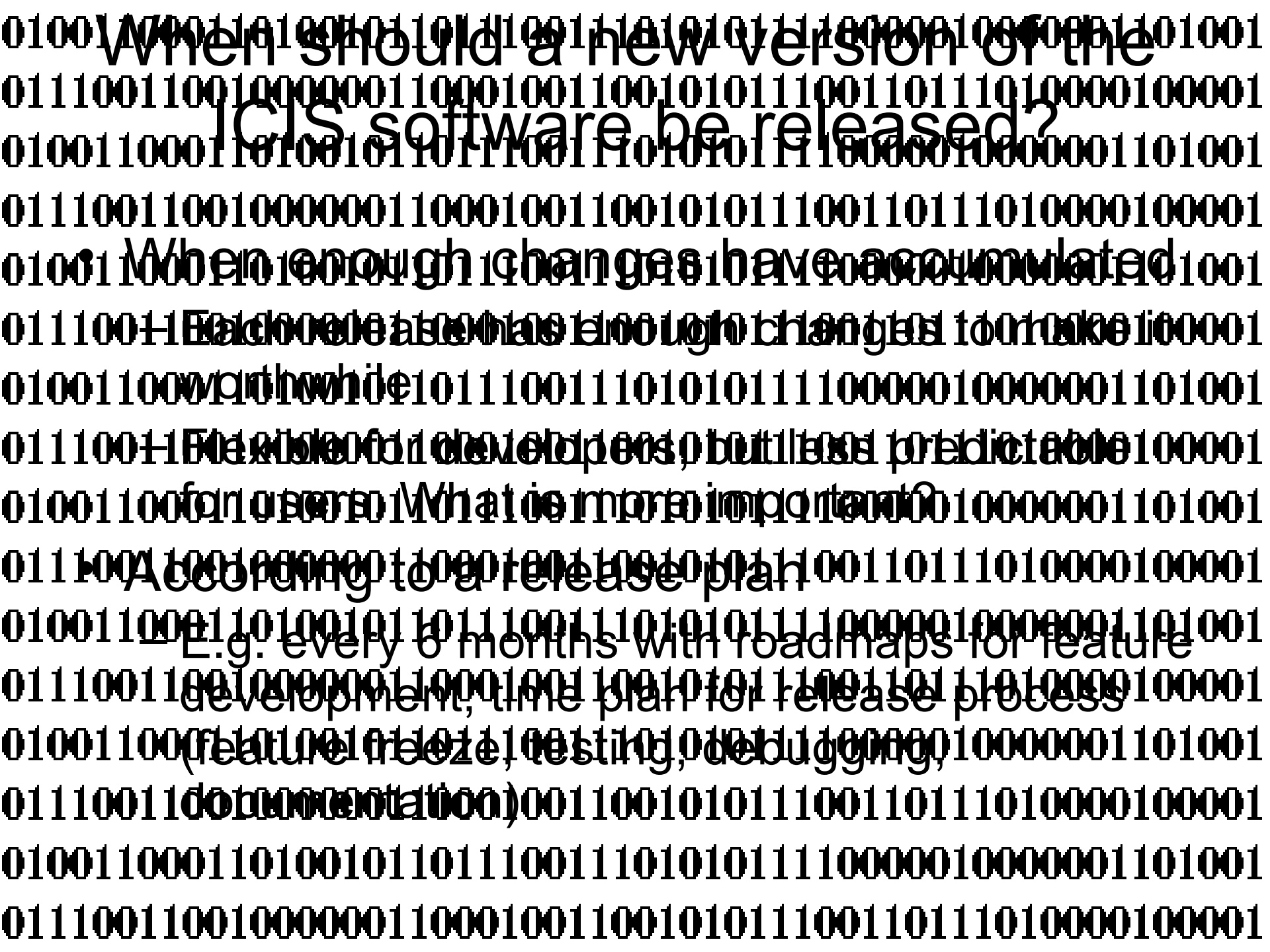
– Can lead to high quality products

– 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 predicabile availability and feature set



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

When enough changes have accumulated

Each release has enough changes to make

worthwhile

Expected 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)

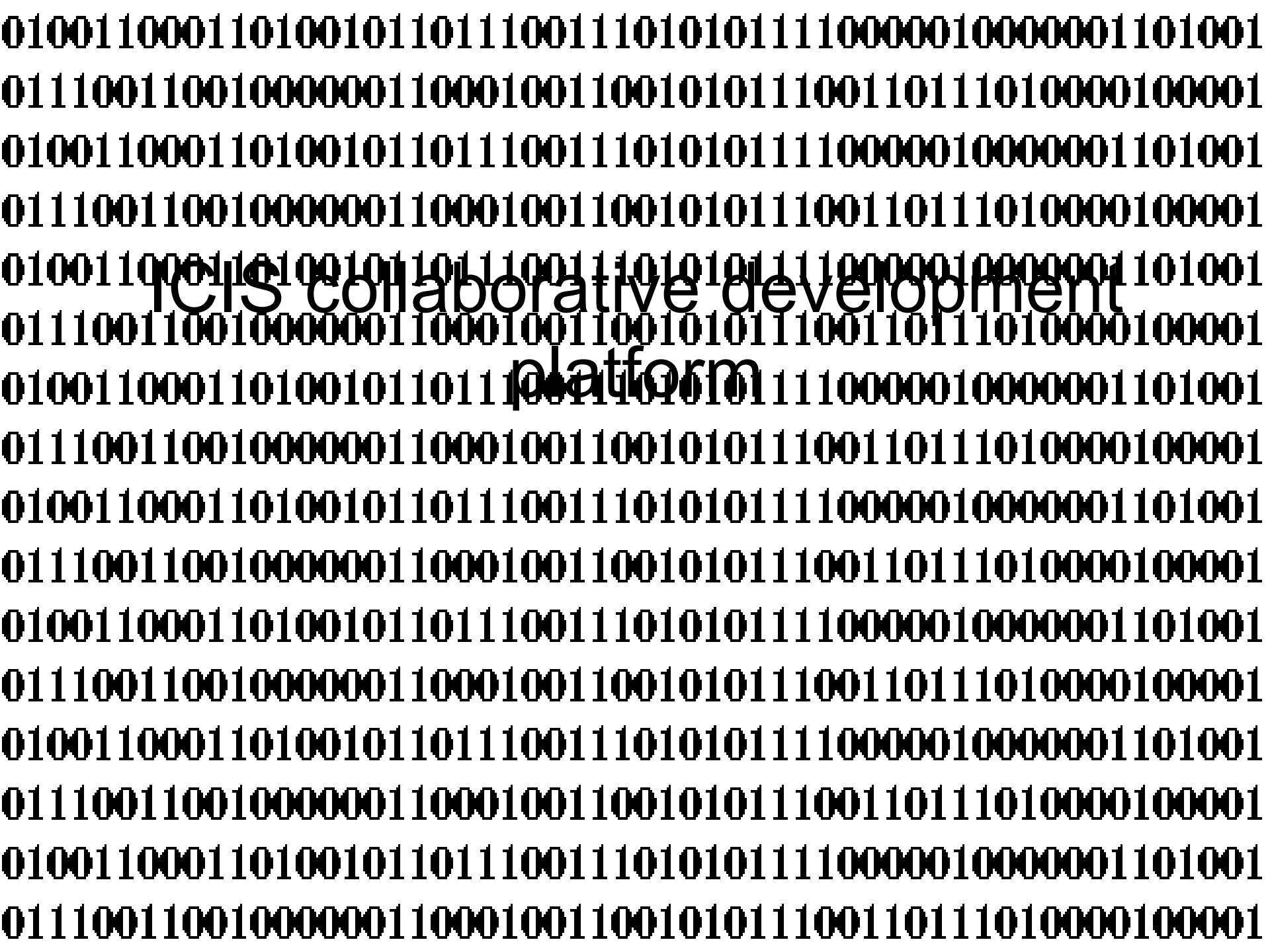
CMS should be released according
to a formal release plan.

Formal release management can scale up

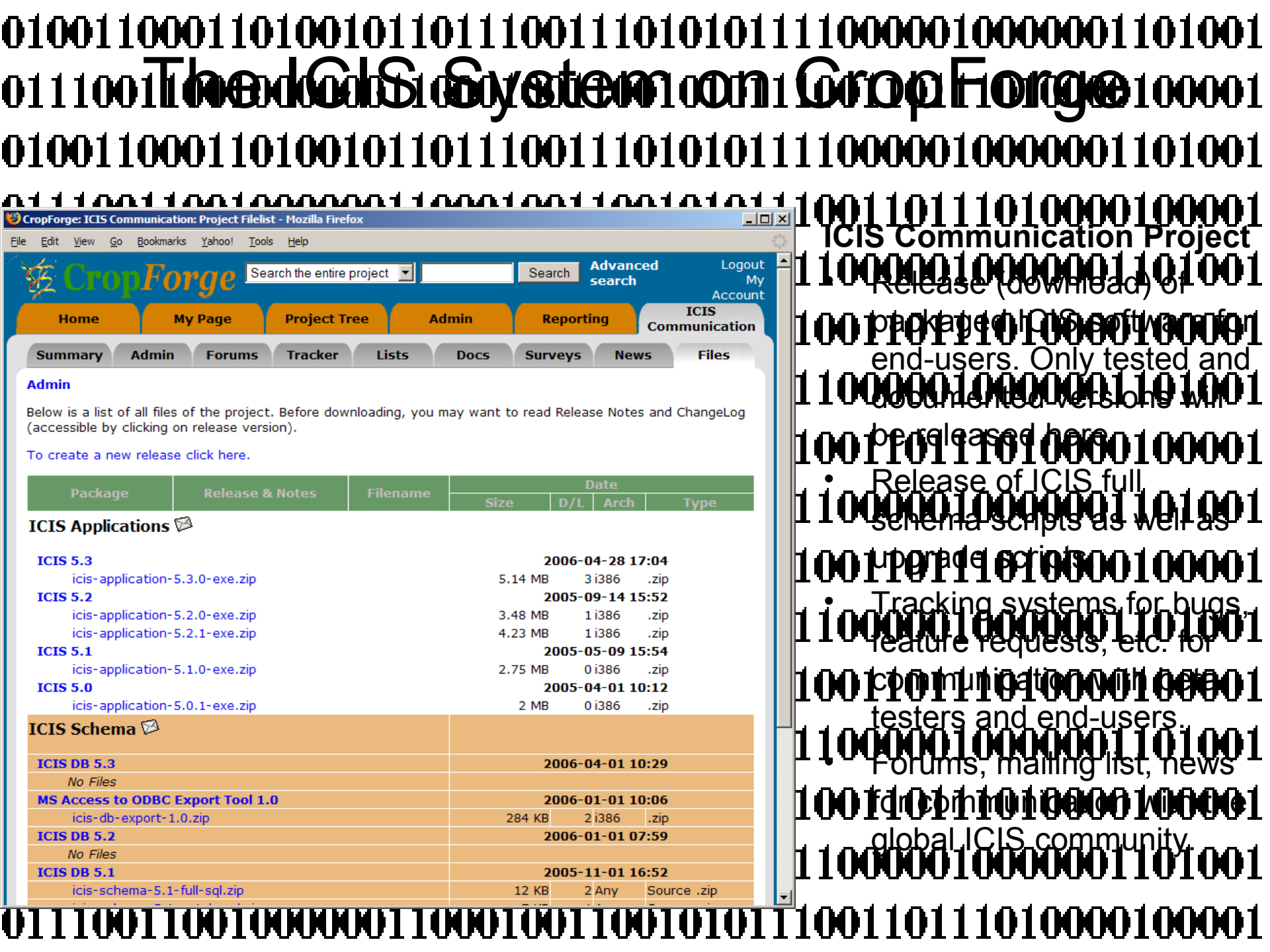
More developers, more locations,
Database / module interdependencies,
Documentation & training materials.

- Users can plan for upgrading / training
- Aim: Distributed development & global user community

Is there an alternative to formal release management?



ICPS collaborative development
platform



The ICIS System on CropForge

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

testers and end-users.

Forums, mailing list, news

for community.

global ICIS community.

The GFS System on CropForge

CropForge: Search - Mozilla Firefox












File Edit View Go Bookmarks Yahoo! Tools Help

CropForge Software/Group Search Logout My Account

Home My Page Project Tree Admin Reporting

Software/Group Search

Search results for **ICIS**

 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.

Managed by
IRRI
International Rice Research Institute
Powered by **GForge**

ICIS Development Projects

Projects per programming language with separate modules per projects. Each module represents a different module (e.g. SetGen, GMSSearch).

Source code repository (GMS/SVN) with read-only permission for developers and read-only (anonymous) address to everyone.

Support provided for global ICIS developer community.

- Lead developers are project administrators.

Beta versions of applications will be released here.

CropForge Development Project (ICIS)

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

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Summary Admin Docs SCM Files

Admin

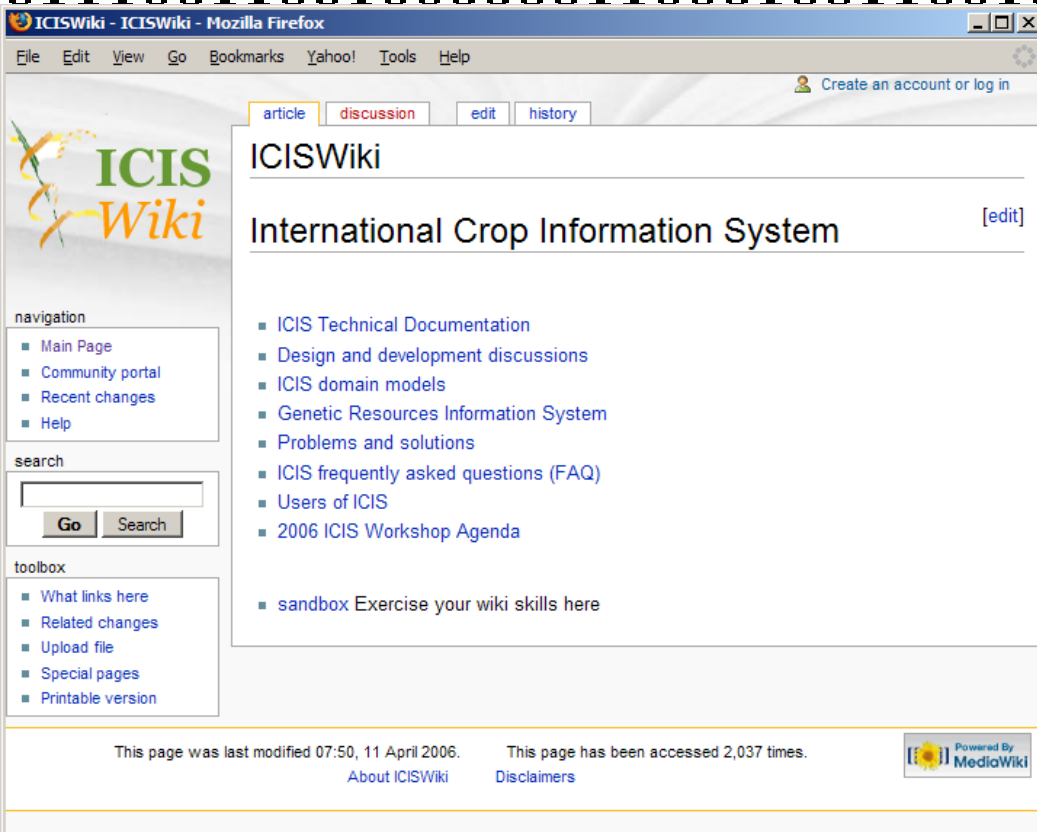
Below is a list of all files of the project. Before downloading, you may want to read Release Notes and ChangeLog (accessible by clicking on release version).

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

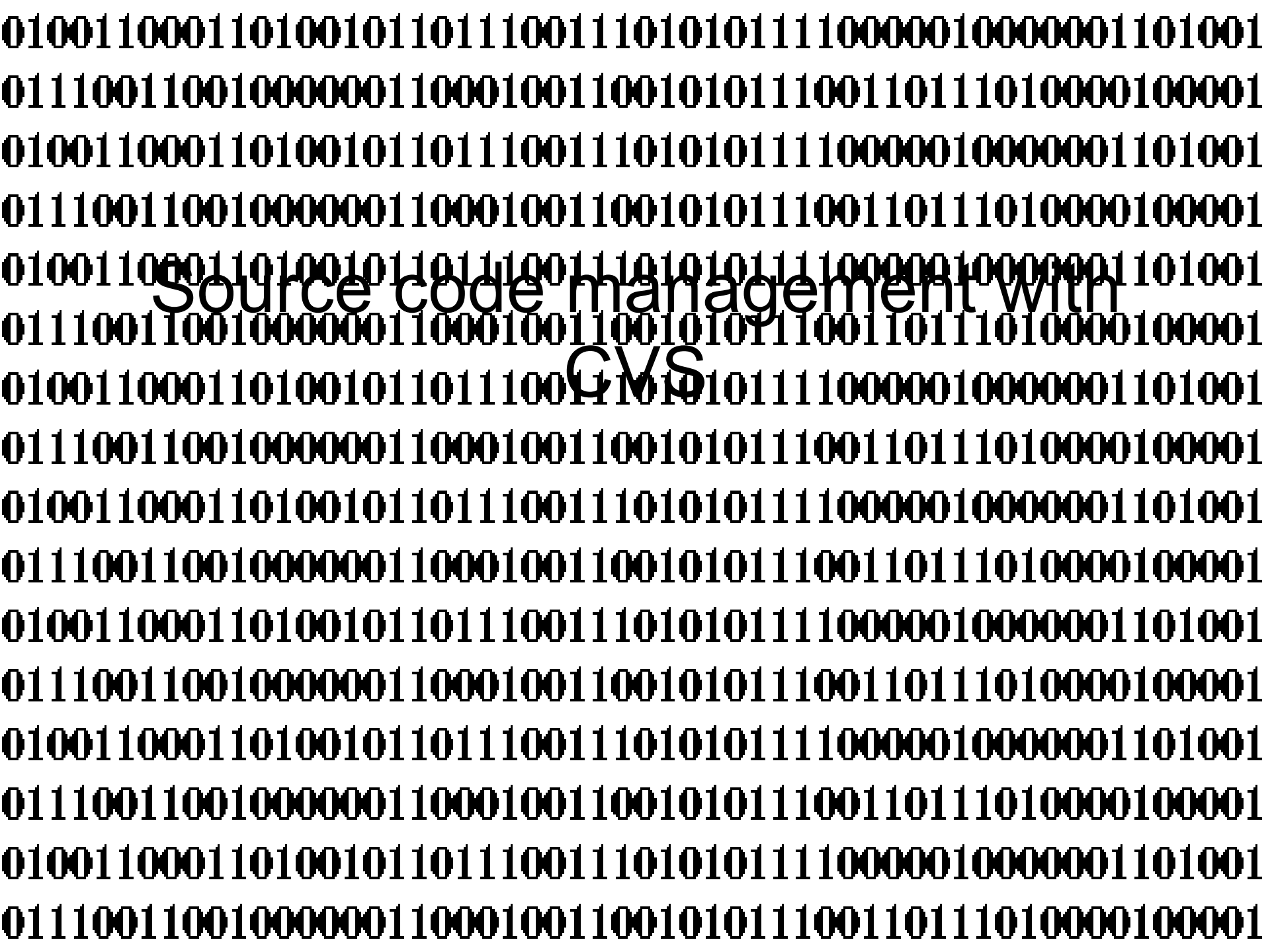
Package	Release & Notes	Filename	Date			
			Size	D/L	Arch	Type
iciswinapi	ICIS32DLL_Code_v5_0_01					
	icis32DLL_Code_V5_0_1.zip		567 KB	12 i386		.zip
Project totals		1	1	567 KB	12	

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International Rice Research Institute
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The Role of GSV Wiki



Existing technical documentation
Existing training materials
Existing development documentation
Existing development documentation
(GRMS)
Community documentation
New?
ICIS release plan
Mobile applications



Source code management with
CVS


CVS client-server architecture



CVS server - CropForge

CropForge: ICIS WINAPI: SCM Repository - Mozilla Firefox

File Edit View Go Bookmarks Yahoo! Tools Help




















 **CropForge** [Login](#) [New Account](#)

Home **My Page** **Project Tree** **ICIS WINAPI**

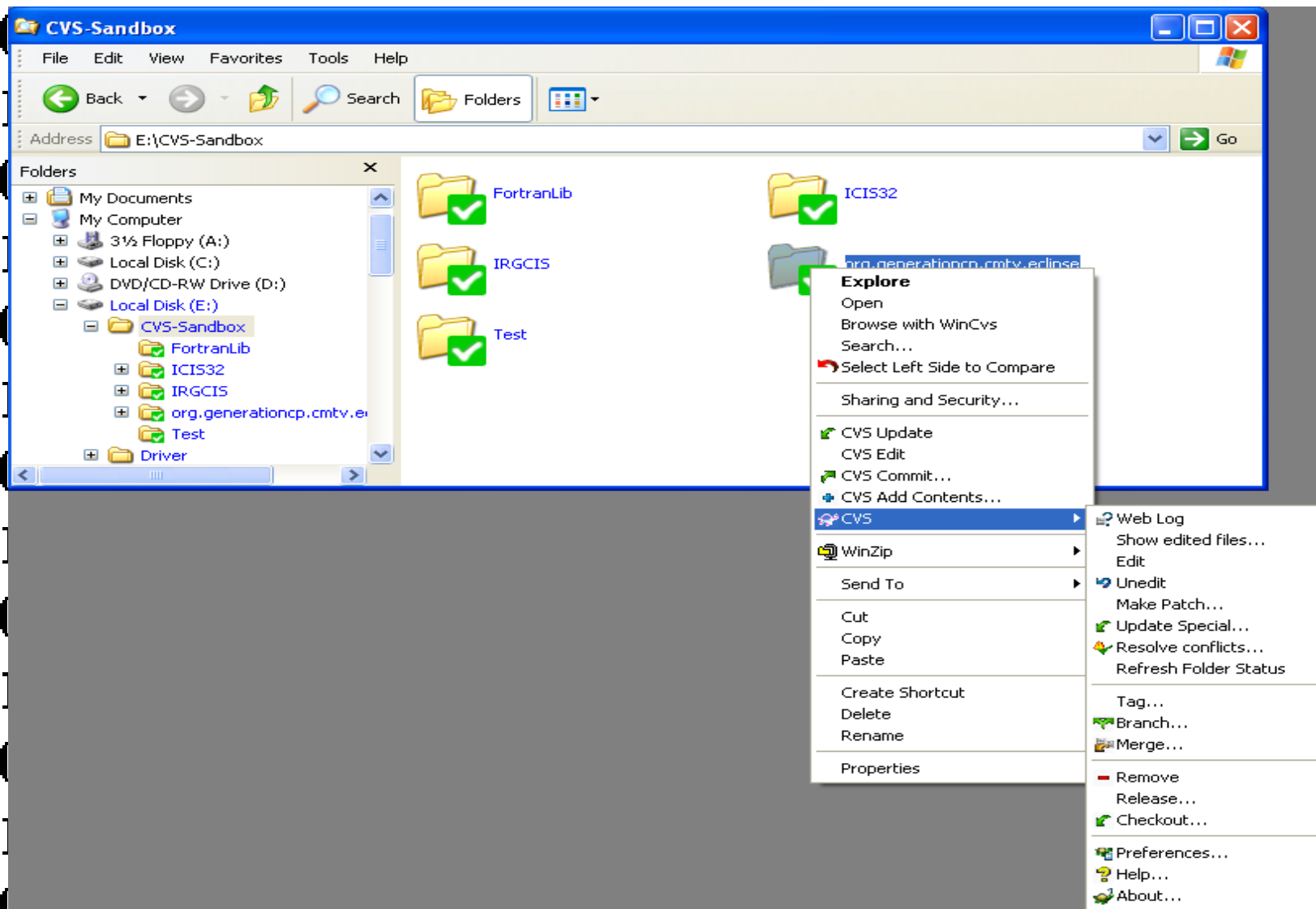
Summary **Docs** **SCM** **Files**

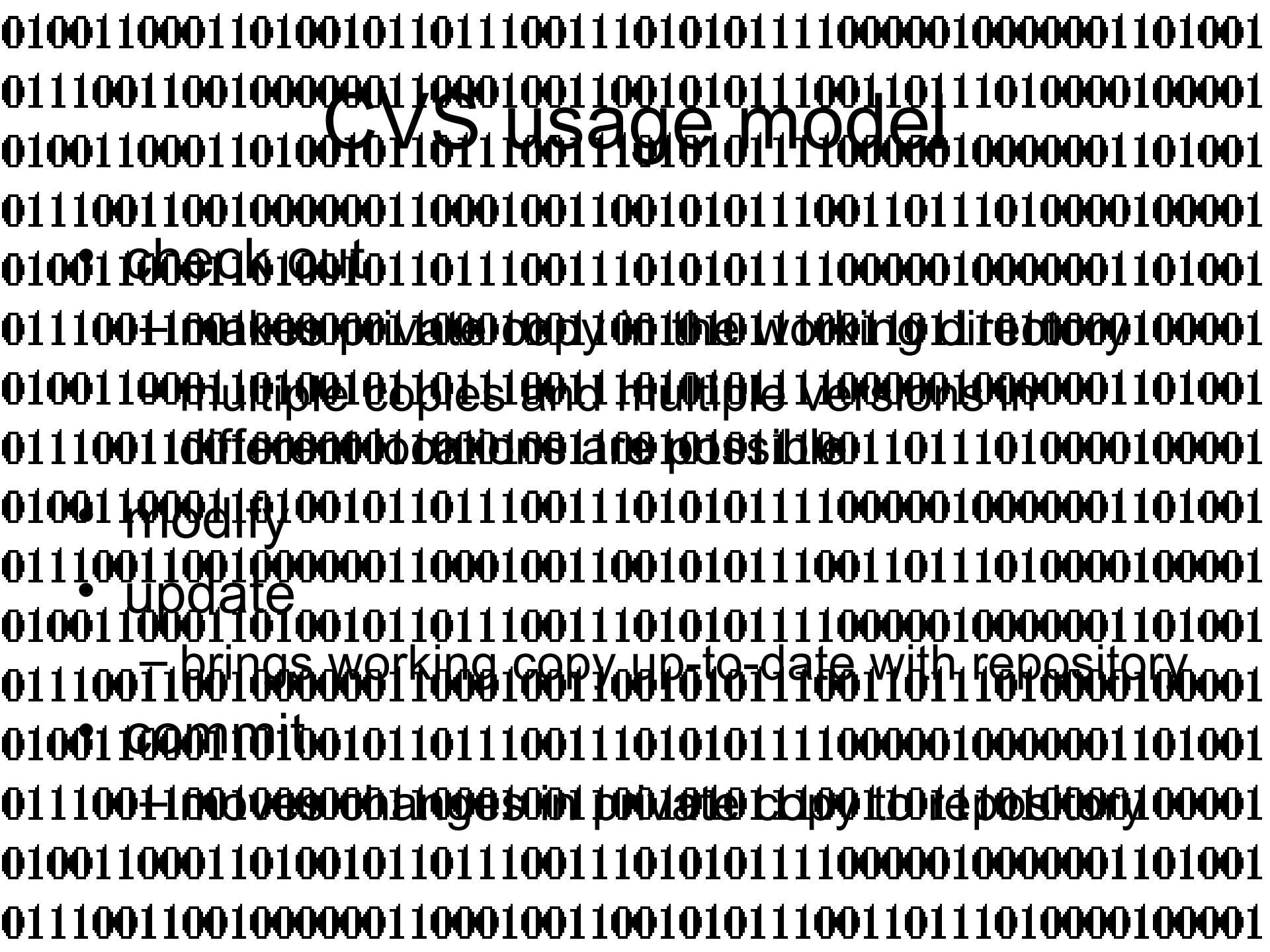
Click on a directory to enter that directory. Click on a file to display its revision history and to get a chance to display diffs between revisions.

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

• checkout

• `cvs -d /usr/local/cvs co /usr/local/cvs/project`
- makes private copy on the working directory

• `cvs -d /usr/local/cvs up`
- multiple copies and multiple versions in

• `cvs -d /usr/local/cvs up -d`
- difference and isolate possible

• modify

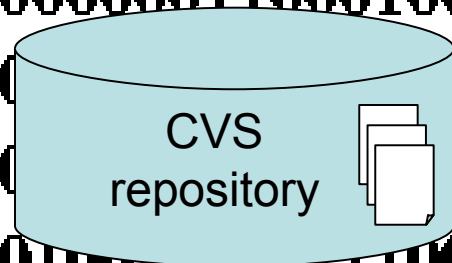
• update

- brings working copy up to date with repository

• commit

• `cvs -d /usr/local/cvs ci`
- moves changes in private copy to the public

CVS principles



check out

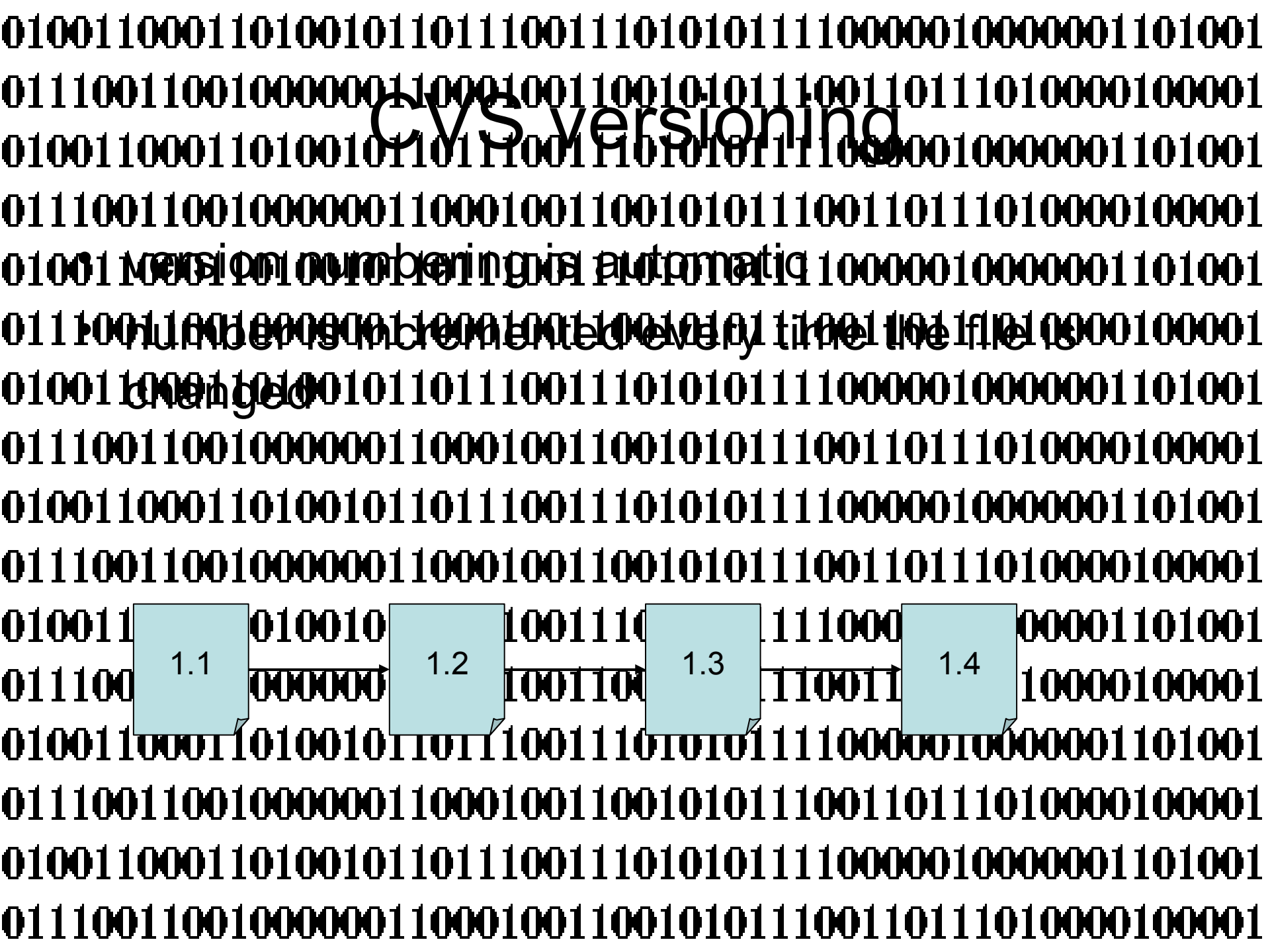


Edit



commit



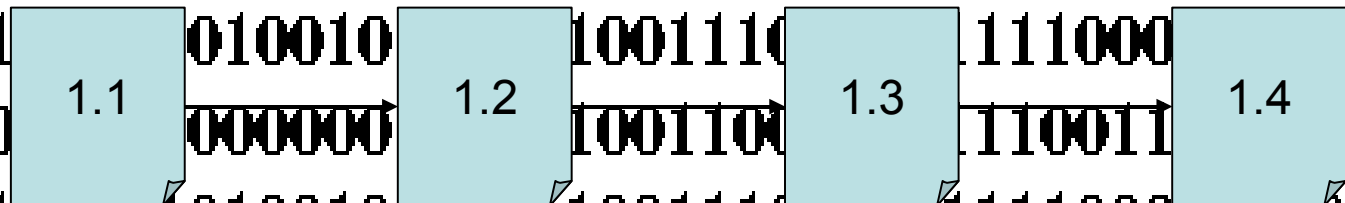


CVS versioning

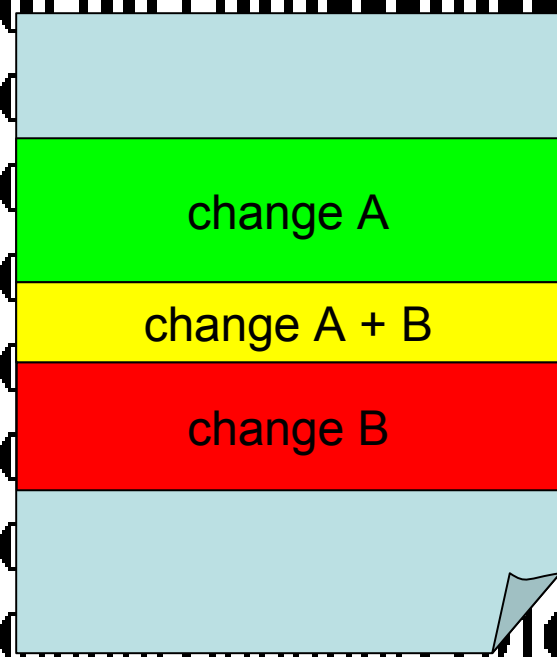
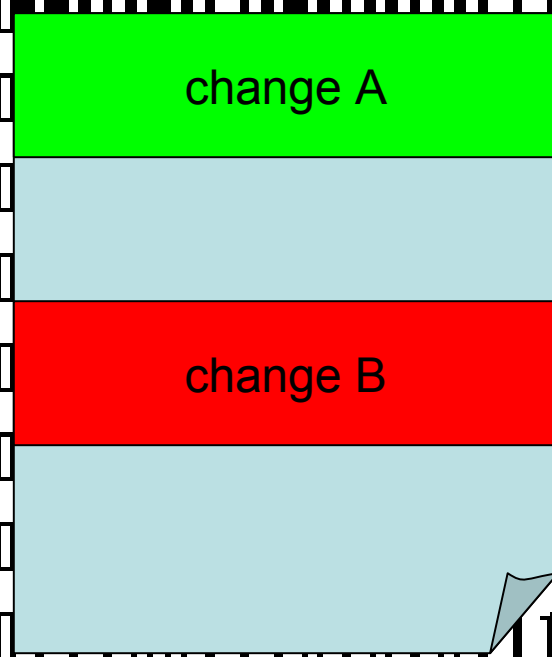
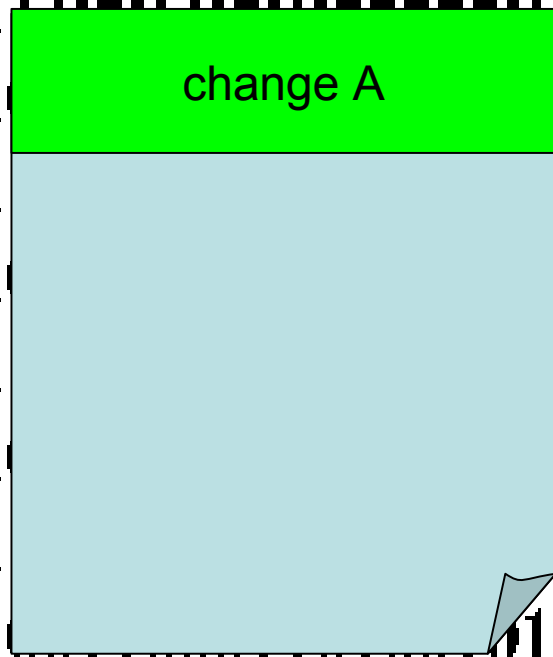
version numbering is automatic

number is incremented every time the file is

changed



CVS principles

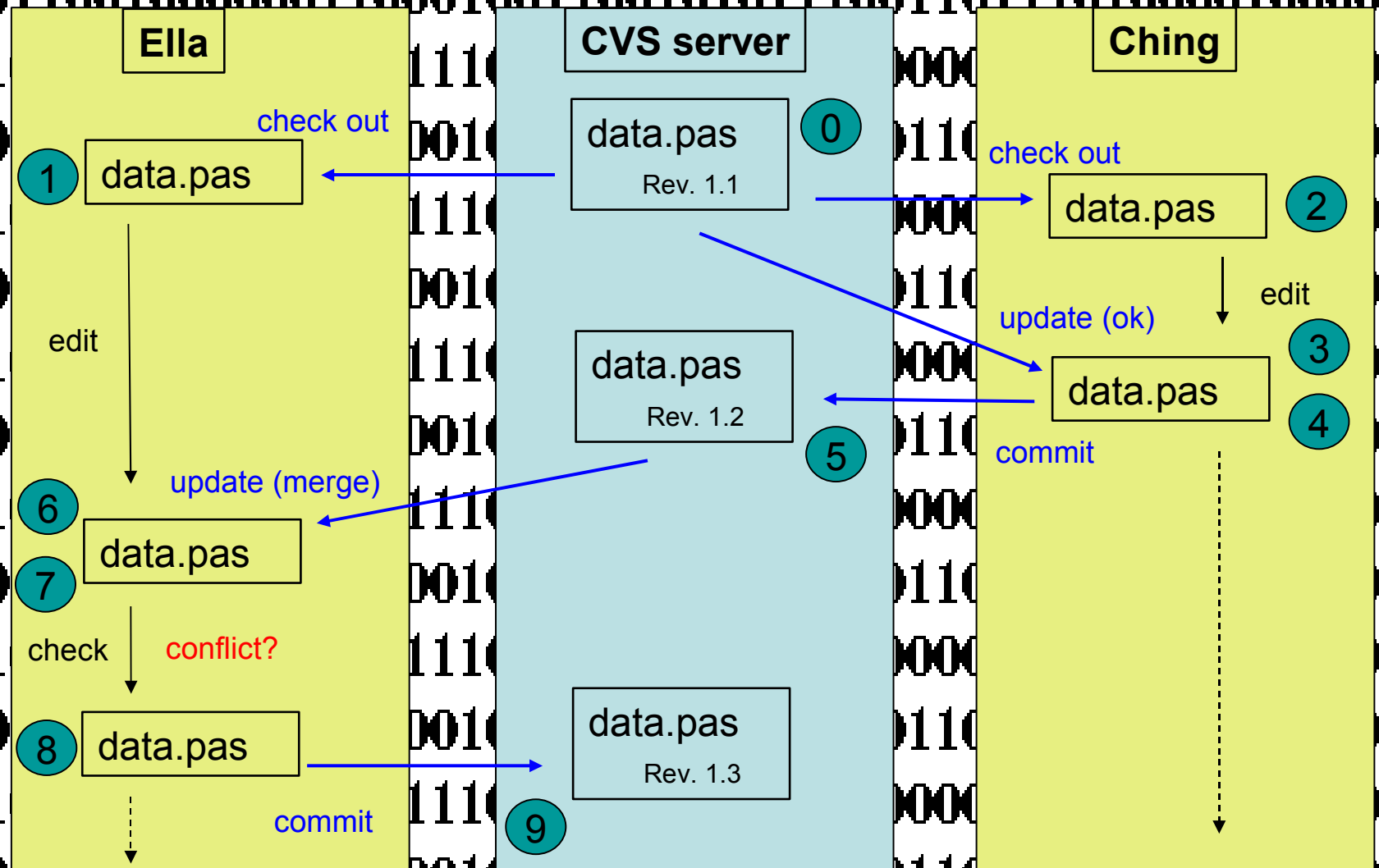


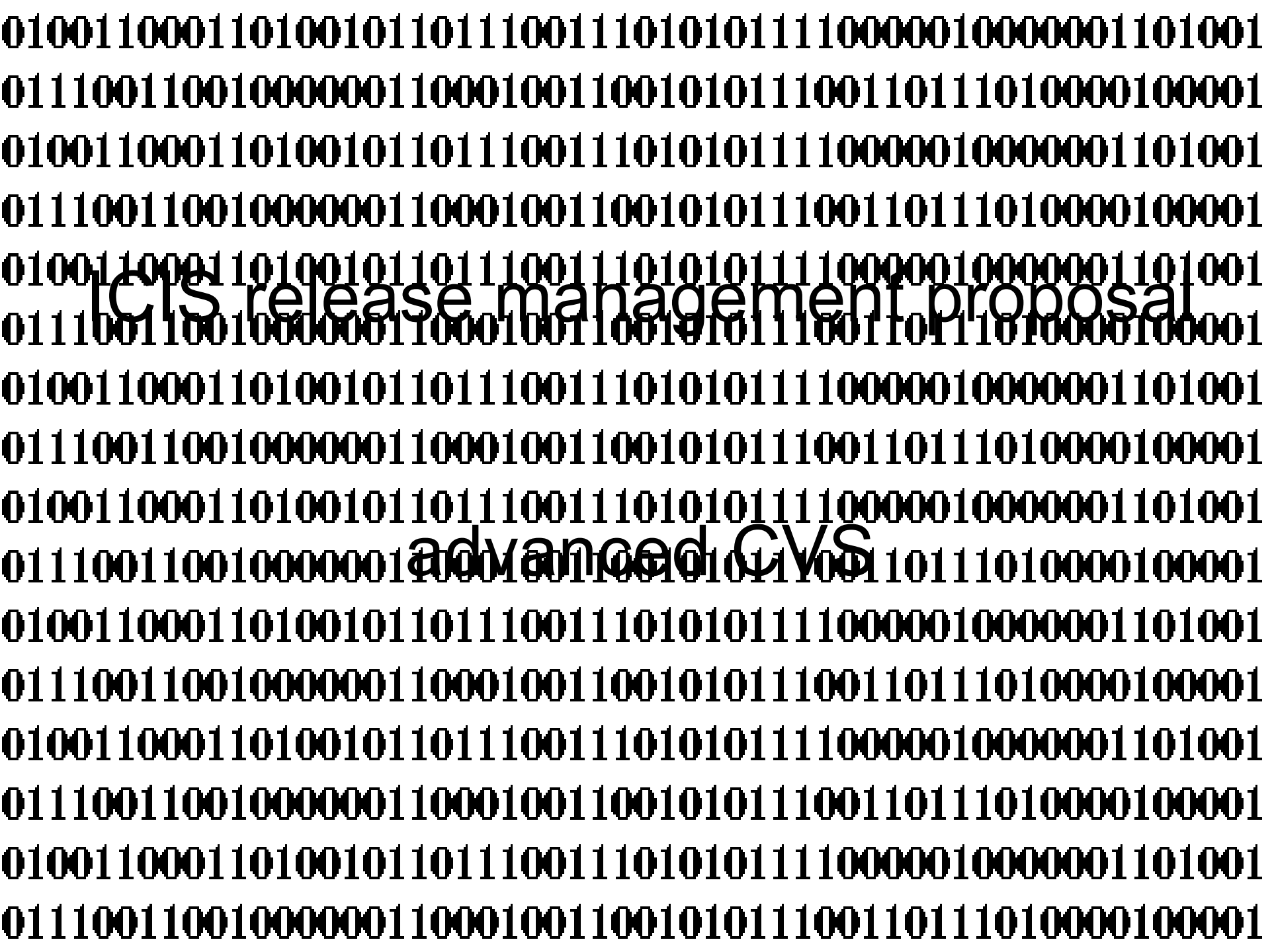
one developer
- single change
- commit

two developers
- separate changes
- merge
- commit

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

CVS principles by example

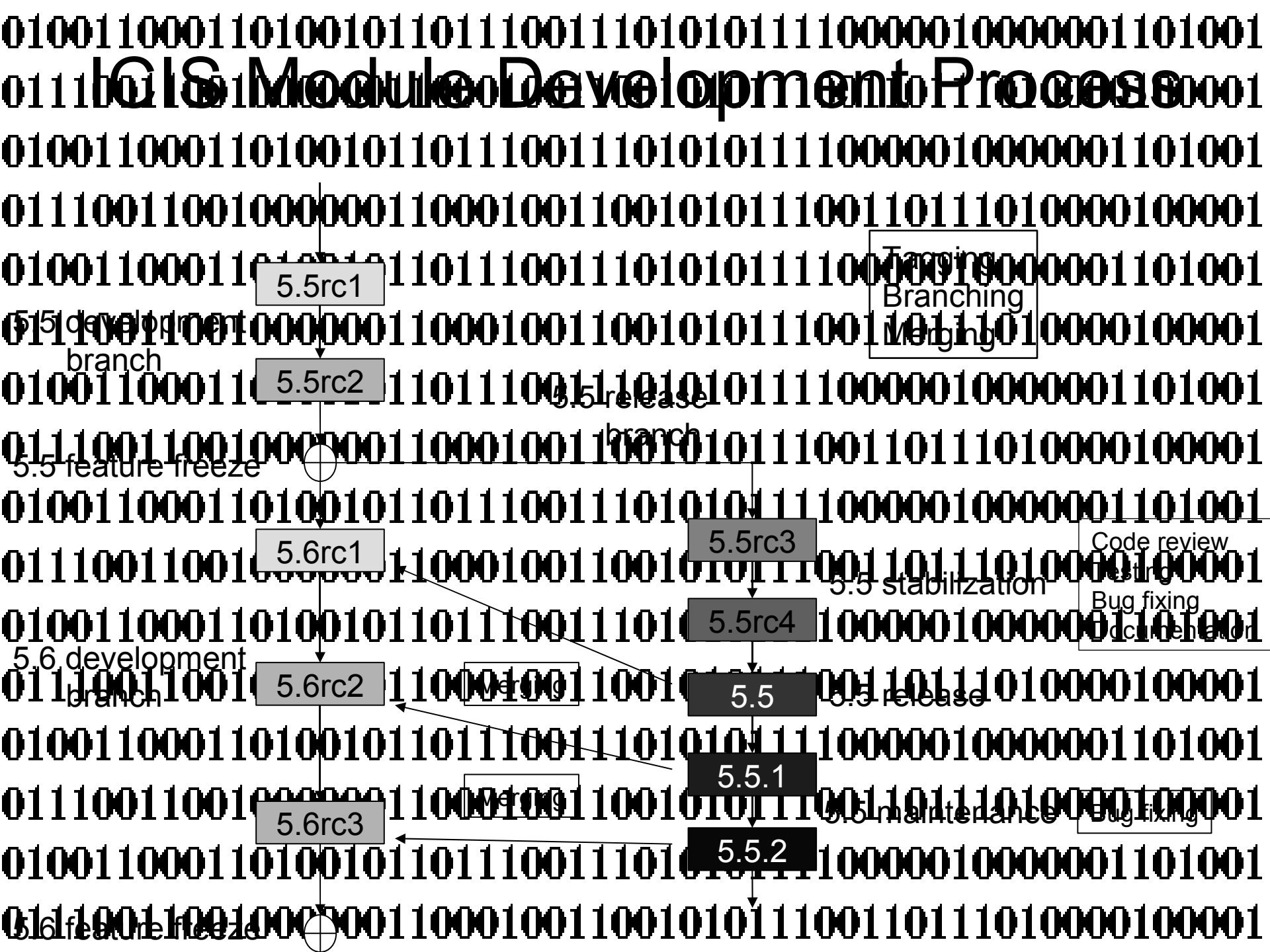




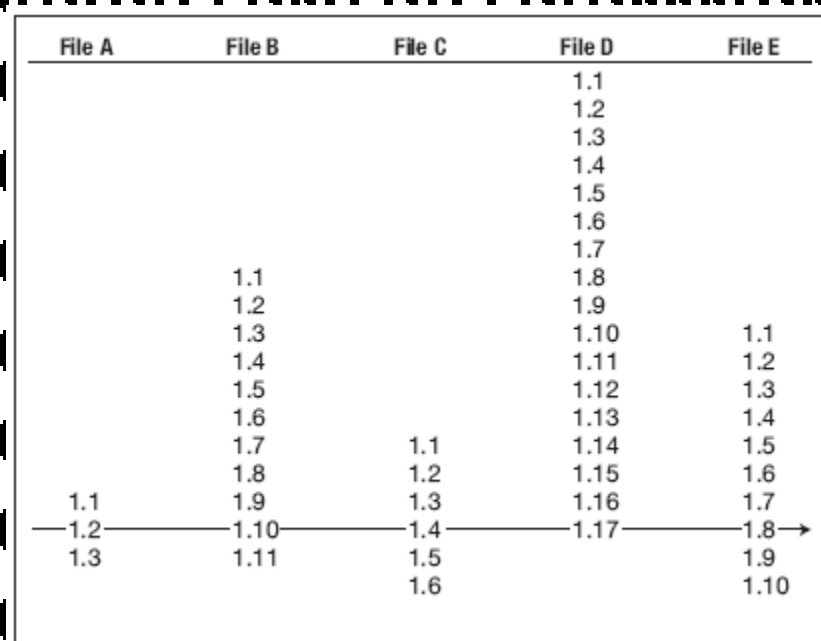
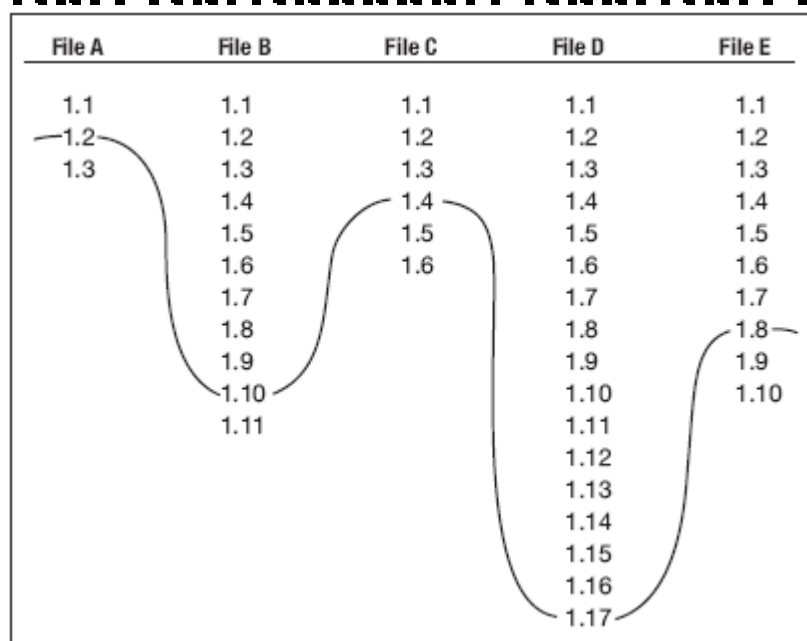
CVS release management proposal

advanced CVS

March 19, 2004



Tagging marking a moment in time

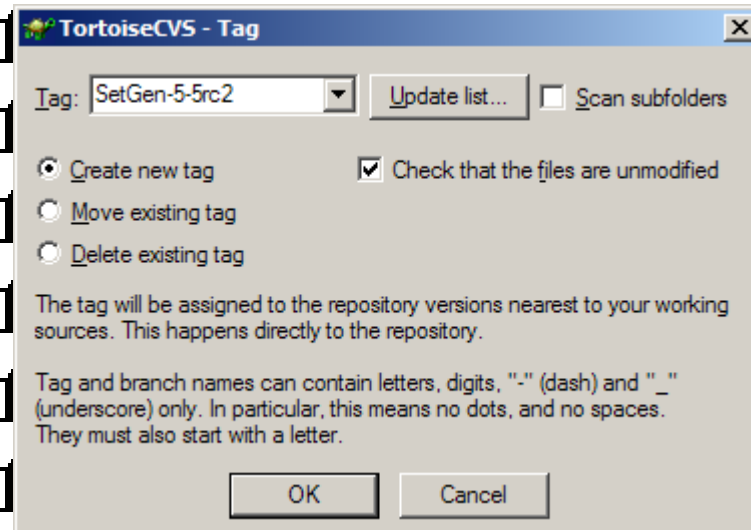
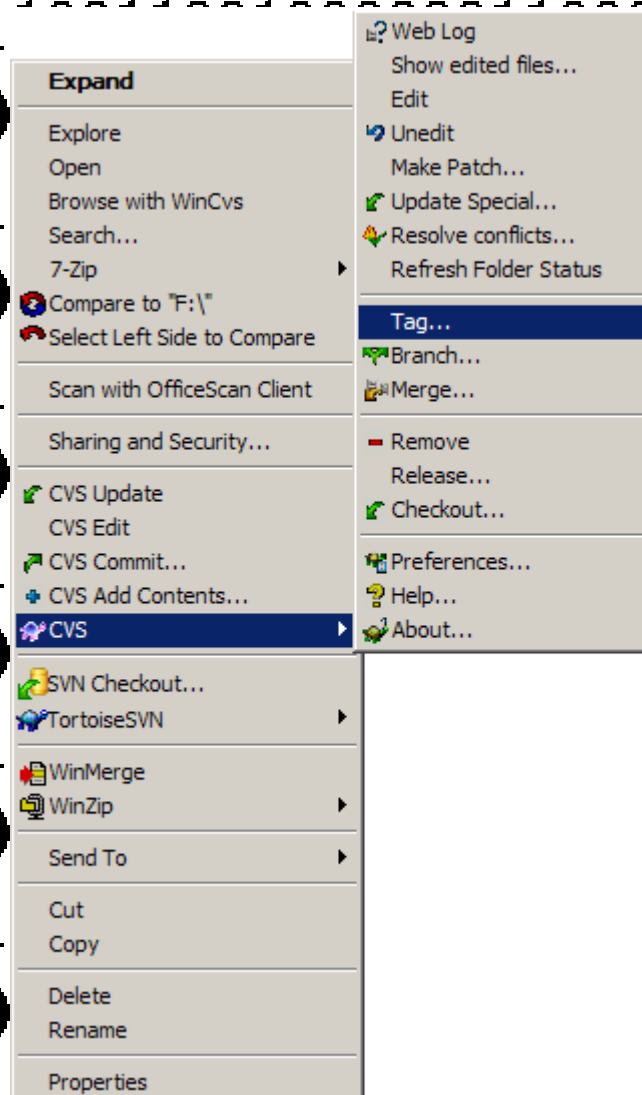


Source: Open Source Development with CVS, Karl Fogel, ISBN: 4-932111-81-6

Attaches a label to the collection of revisions of one or more files and code (the working copy should be completely up to date so the tag name is attached to the latest revisions in the repository).

Fig. 36.15.4. Set Gen 1.5
The source code can be checked out by tag.

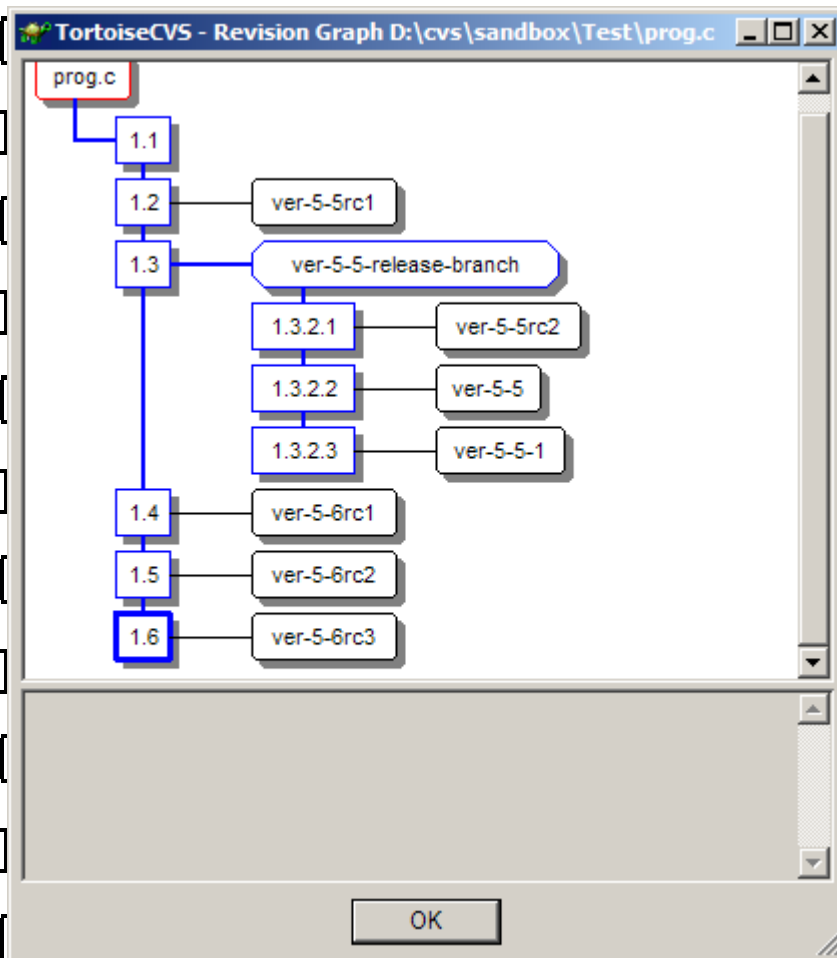
Tagging with TortoiseCVS



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

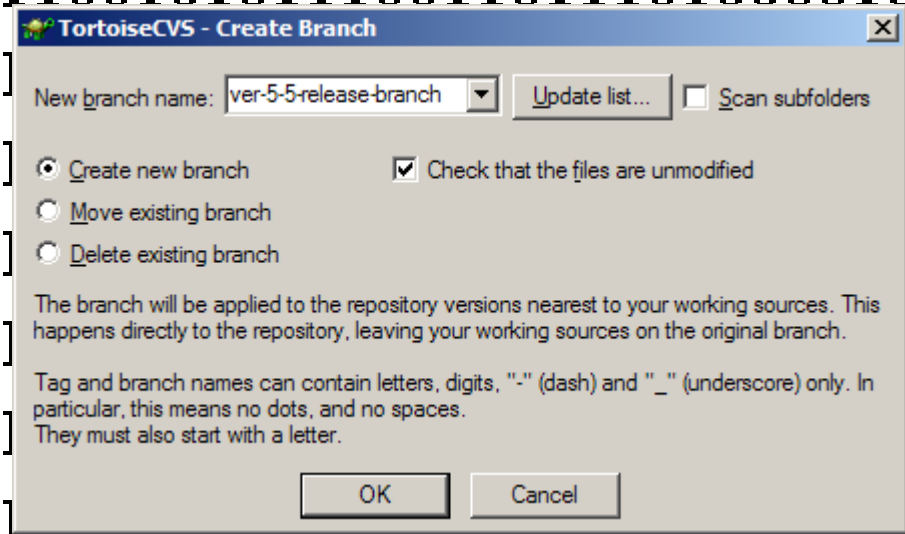
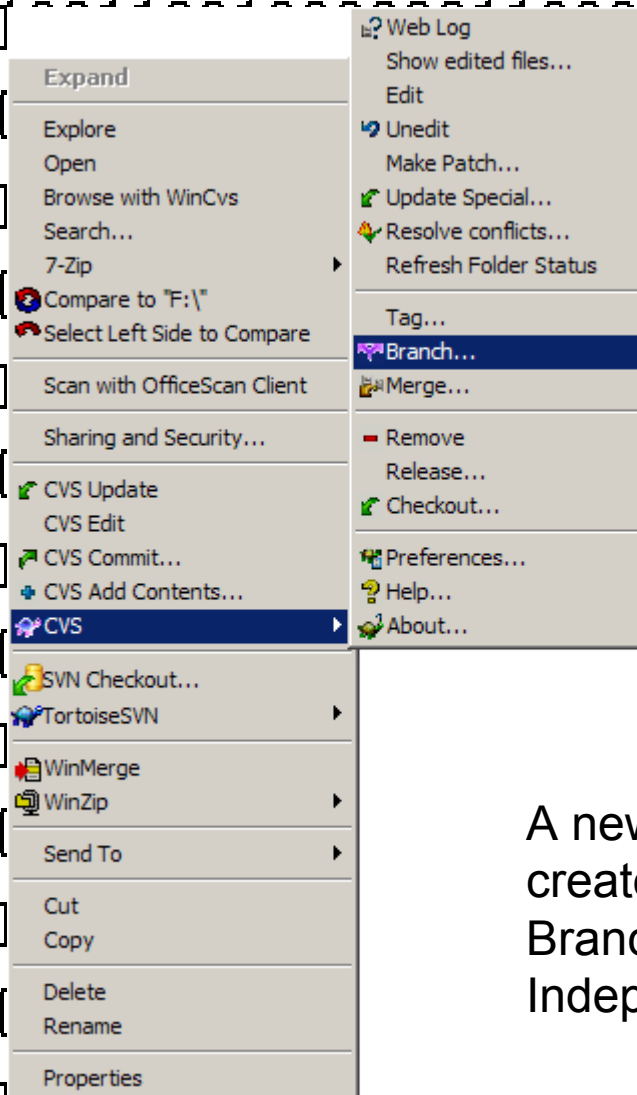


CVS can do a branch to create a separate line of development (=branch).

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 has been created using the Branch command. Branches of source code can be maintained independently.

Switching between tags/branches

01001100011010010110111001110101011110000010000001101001

011100110011010010110111001110101011110000010000001101001

01001100011010010110111001110101011110000010000001101001

011100110011010010110111001110101011110000010000001101001

01001100011010010110111001110101011110000010000001101001

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01001100011010010110111001110101011110000010000001101001

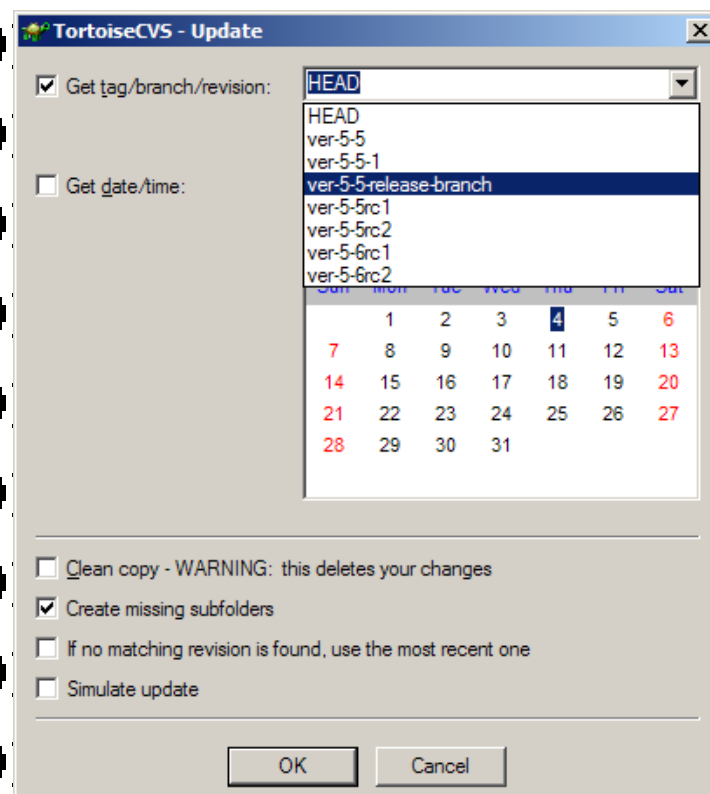
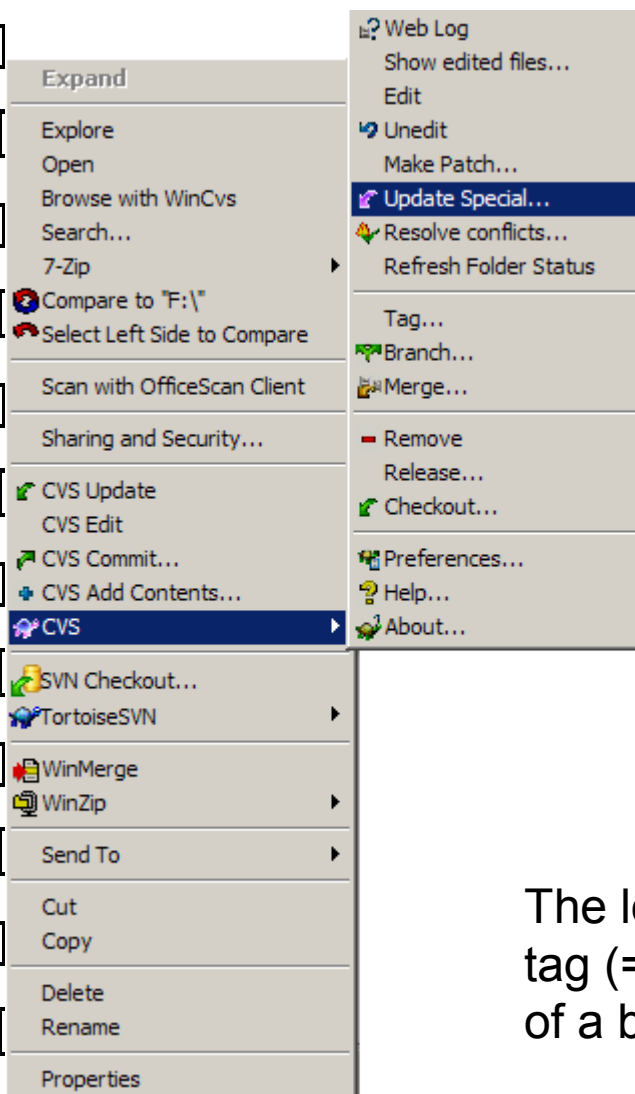
011100110011010010110111001110101011110000010000001101001

01001100011010010110111001110101011110000010000001101001

011100110011010010110111001110101011110000010000001101001

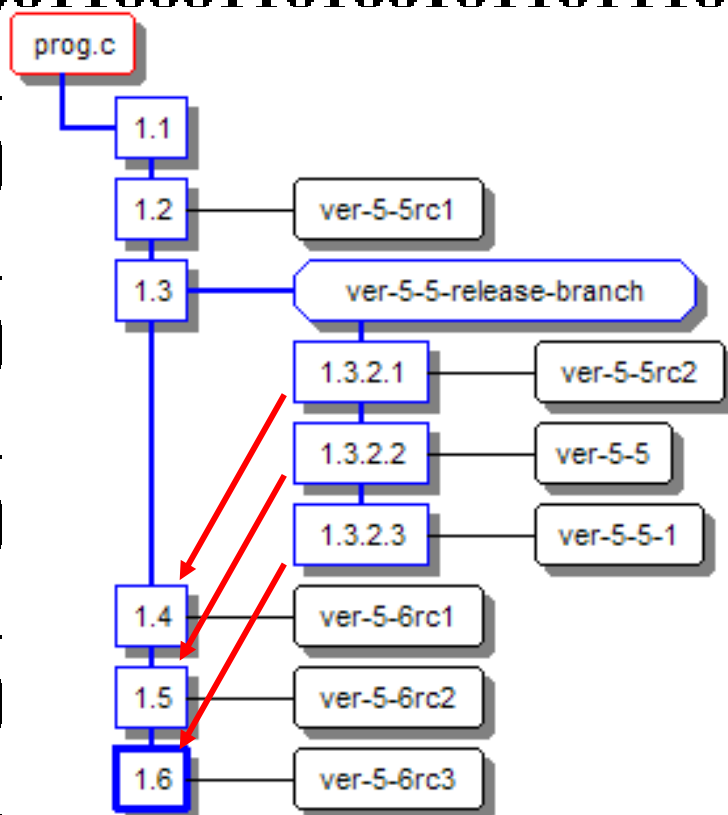
01001100011010010110111001110101011110000010000001101001

011100110011010010110111001110101011110000010000001101001



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 existing channels

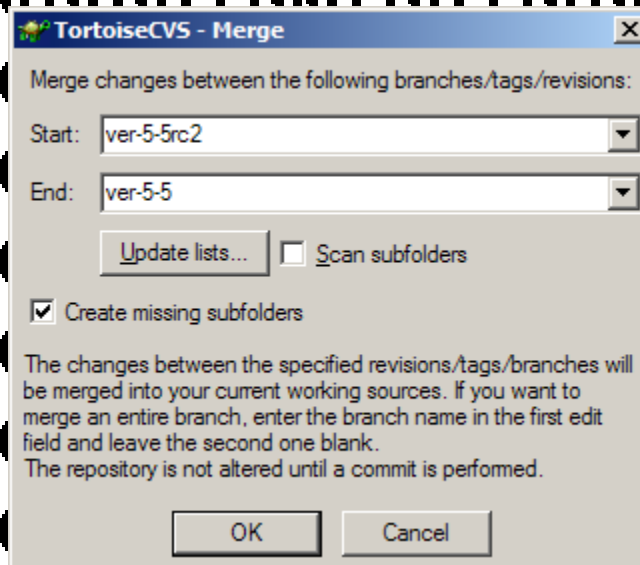
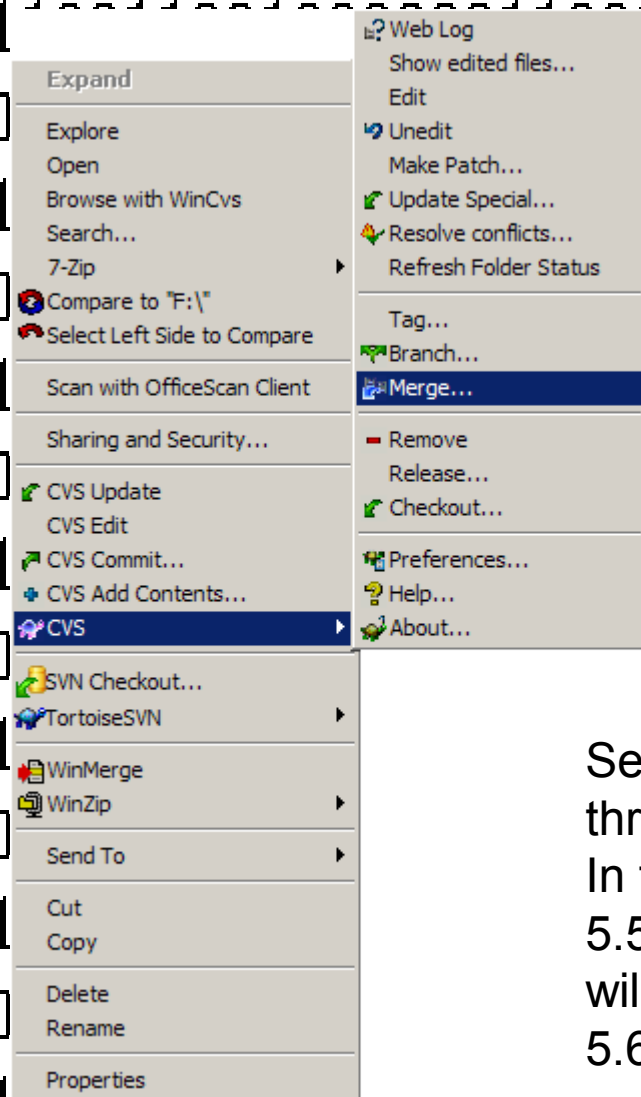


(e.g. bug fixes) may need to be applied to another branch.

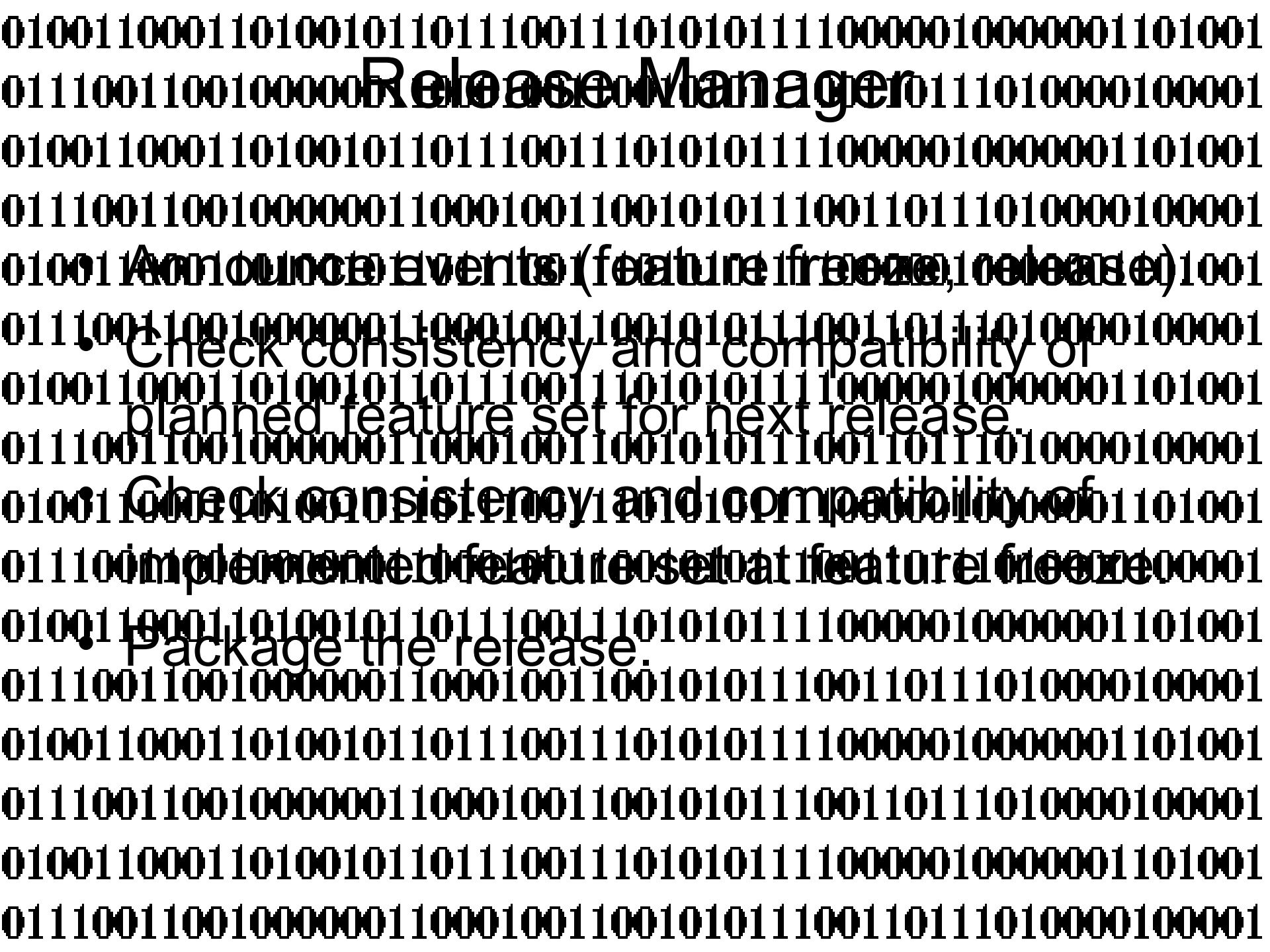
Merging between branches will transfer such changes, e.g. from a tag (snapshot) in the release branch to the current version of the development branch.

Merging can be done for files,
directories, and 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.



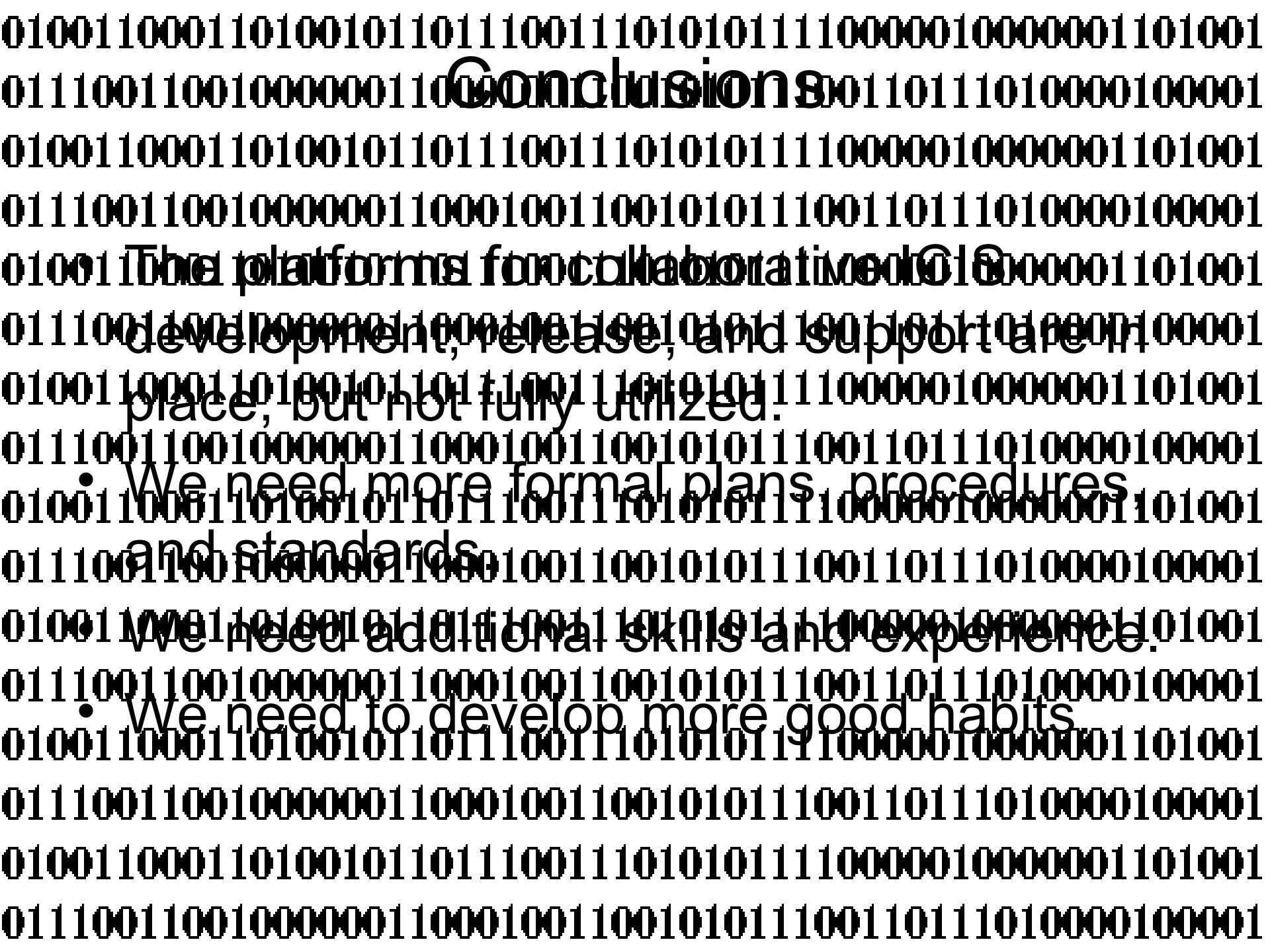
Release Manager

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 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.

Reference

Producing Open Source Software, Karl Fogel, 2006

Creative Commons License

<http://www.producingoss.com/producingoss.pdf>

Open Source Development with CVS, Per Fredrik Bengtsson, 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.tortoisecvs.org>

http://www.cvsnt.org/CVS_Administration_Guide.pdf