Using Subversion

for Source Code Control

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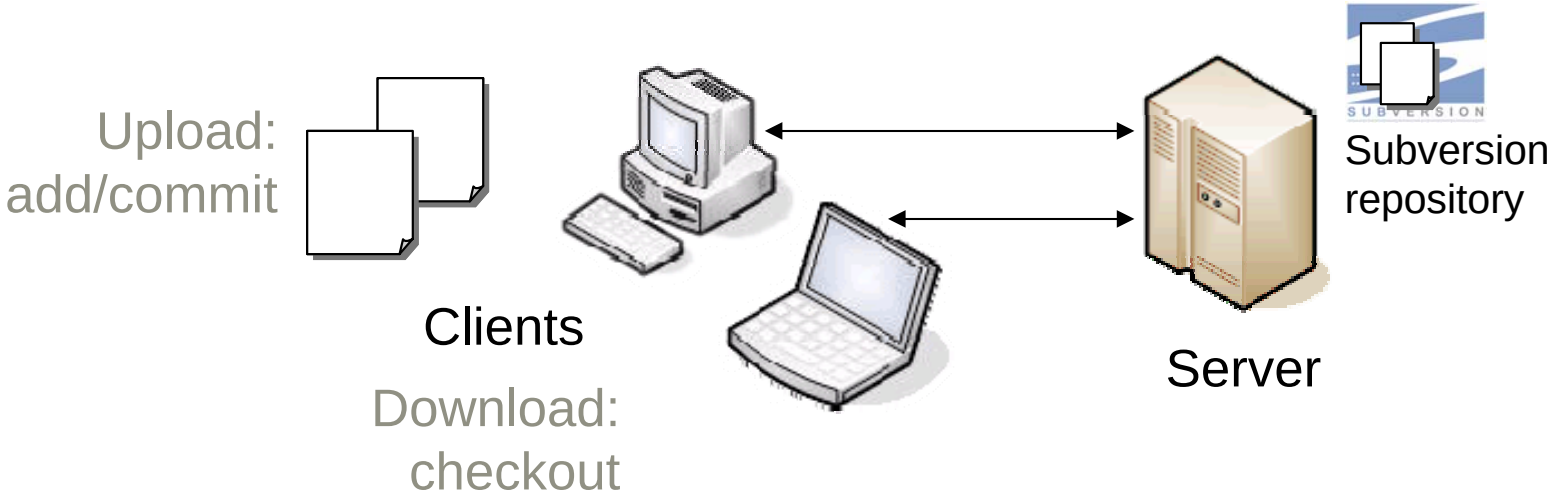
What is Subversion?

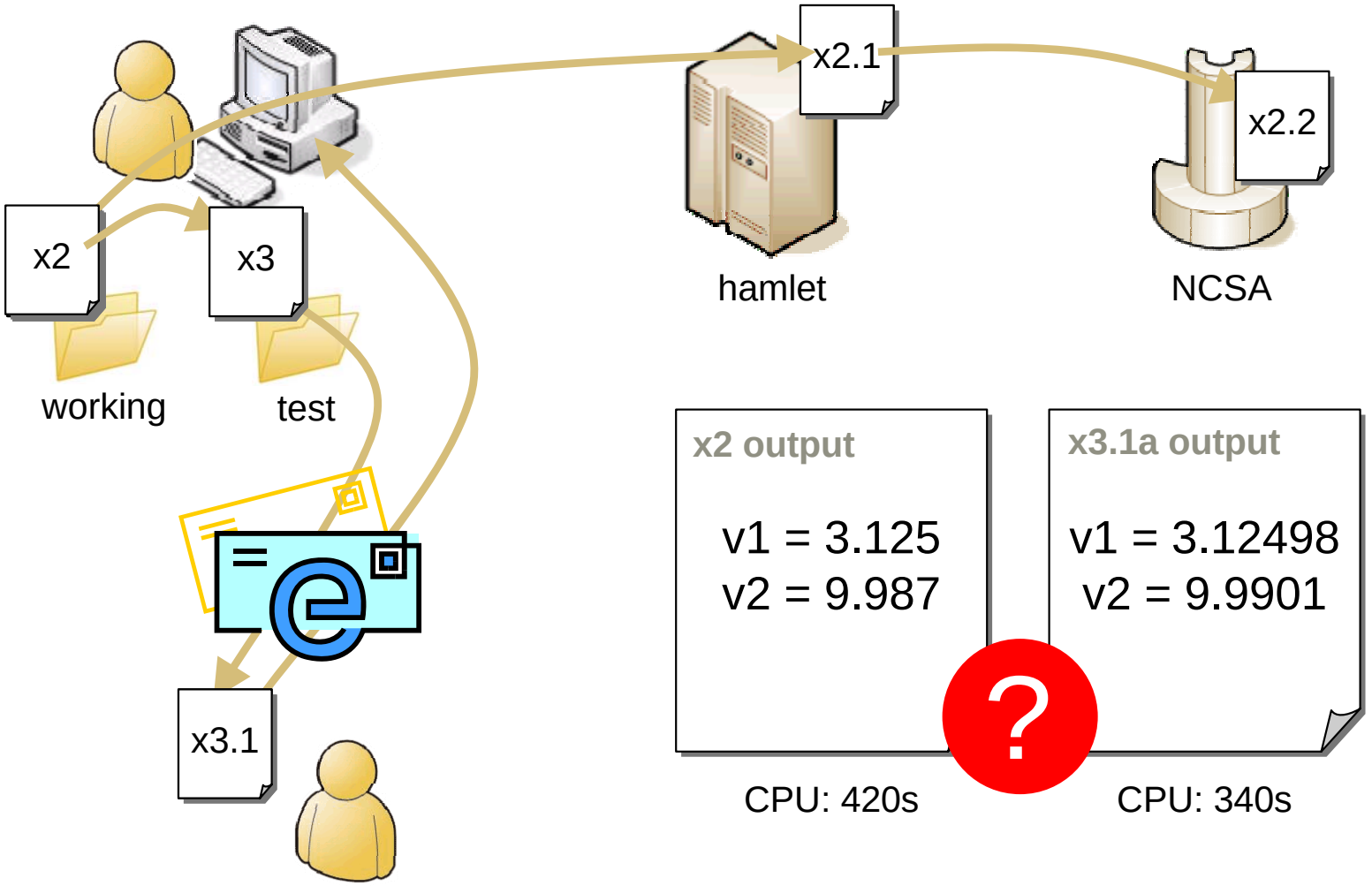
- CVS on steroids
- Created by developers at CollabNet
- In development since 2000
- In production (version 1.0) since Feb 2004
- Open source (Apache/BSD-style license)
- Unix/Linux, Win32, BeOS, OS/2, MacOS X
- Home page: http://subversion.tigris.org/

Client/Server model:



Why bother with Subversion?

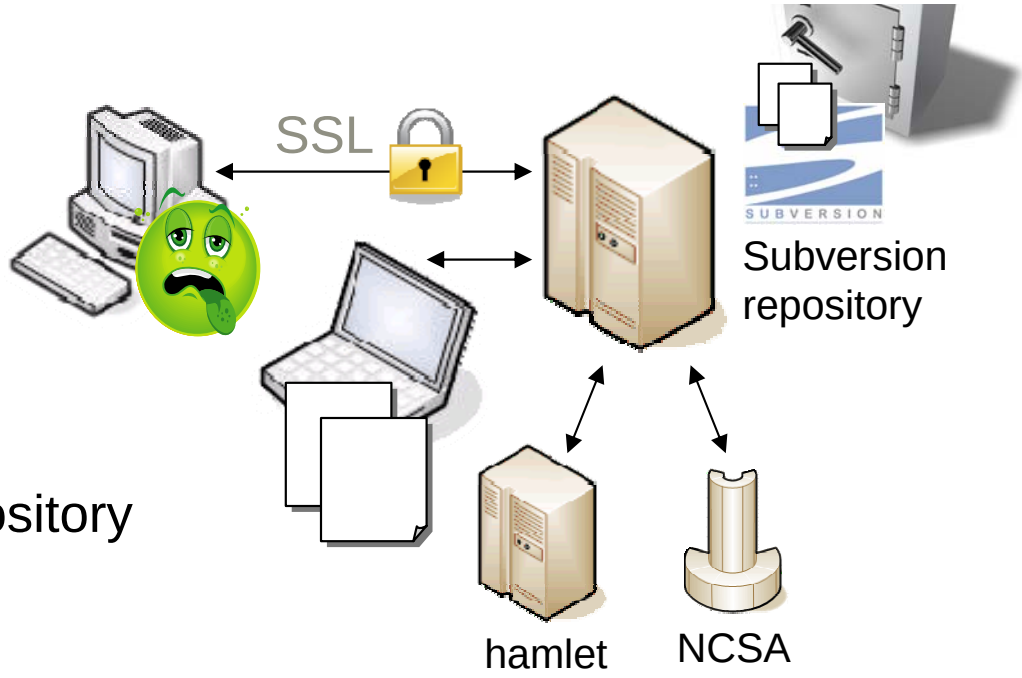
Does this sound familiar?



Top 5 reasons why you should use Subversion

- It's better than CVS
  svn commands are nearly identical to cvs
- You'll feel more secure
  SSL transport between client/server; repos
- Where did I put that…
  It's in the repository
- Who broke the build?
  Look at the revision history
- Your hard drive just died
  No problem, your code is in the repository

Date	Rev	Chgset	Author	Log Message
03/14/06 09:56:01	8	8	clarksm	Modified to faciliate d
02/20/06 13:03:51	7	7	clarksm	Fixed make install, cle
09/26/05 21:56:42	6	6	mmc	Fixed the tool explana
09/09/05 14:19:59	5	5	clarksnano	Added missing vtk to
09/09/05 12:06:43	4	4	mmc	- Fixed the labeling o
09/07/05 14:05:59	3	3	clarksnano	Moved direct VNC inv
08/31/05 18:45:48	2	2	clarks	Added Rappture GUI .
08/31/05 17:39:13	1	1	clarks	Initial PUNCH version



If you're using Subversion on your own machine…

- Get your files together

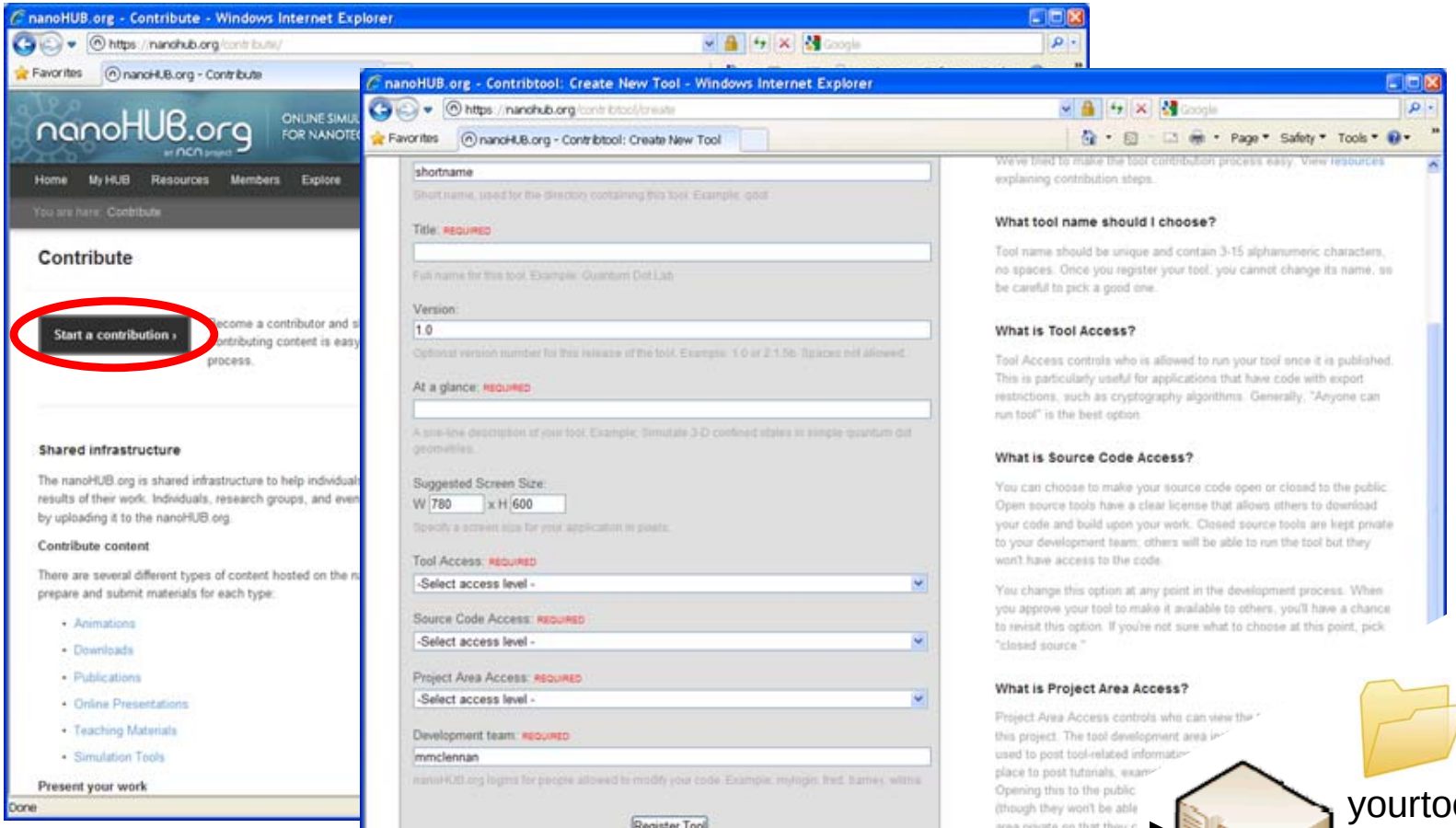
```
mkdir initial
mkdir initial/trunk
mkdir initial/branches
mkdir initial/tags
mv /home/src/*.c initial/trunk
```

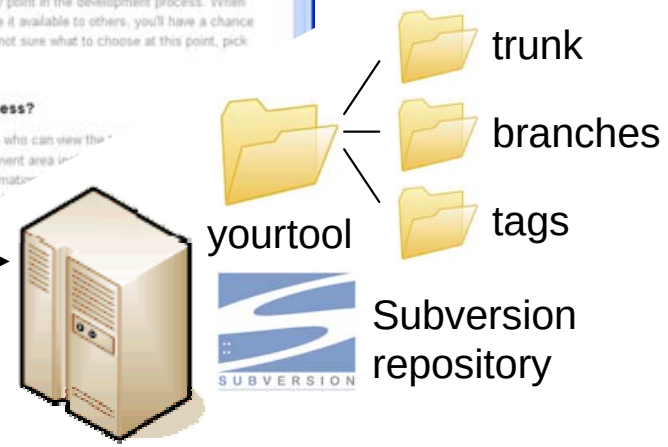
← put all of your files in the trunk

- Create a repository and import your files

```
svnadmin create --fs-type fsfs /usr/local/svn/repo
svn import initial file:///usr/local/svn/repo -m "initial content"
```

Getting Started... the nanoHUB way





Once you register your tool,
your repository is created automatically

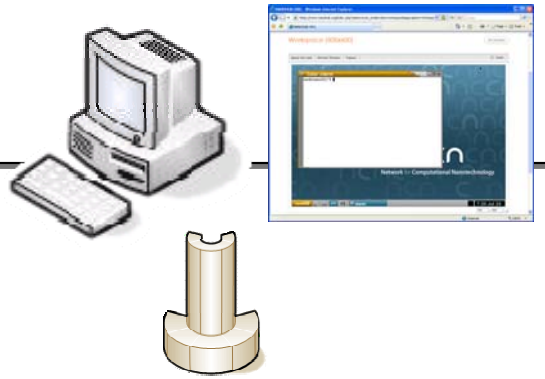
Check out your code

```
svn checkout https://nanohub.org/tools/yourtool/svn/trunk yourtool
A    yourtool/rappture
A    yourtool/doc
A    yourtool/src
A    yourtool/bin
A    yourtool/data
A    yourtool/middleware
A    yourtool/examples
Checked out revision 1.

mkdir examples/ex1
vi examples/ex1/README

svn add examples/ex1
A    examples/ex1
A    examples/ex1/README
```

From any machine…



Instructions in your project area at wiki/GettingStarted

Commit your changes

```
cd yourtool
```
← commit at the top level, so you don't miss anything

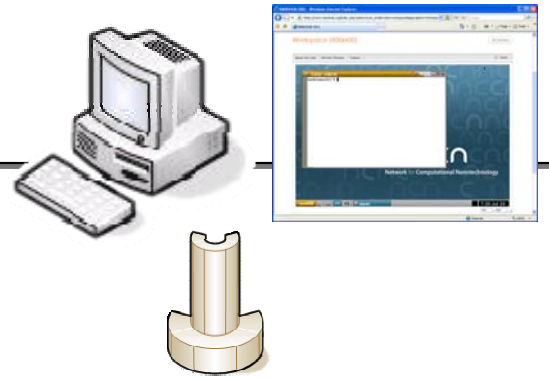
```
svn status
A     examples/ex1
A     examples/ex1/README
?     a.out
```

brings up your favorite editor:

```
Created ex1 directory and added the README file.
A     examples/ex1/README
```

Date	Rev	Chgset	Author	Log Message
07/25/07 21:31:14	2	2	mmc	Created ex1 directory and added the README file.
07/25/07 21:23:09	1	1	root	initial directory structure

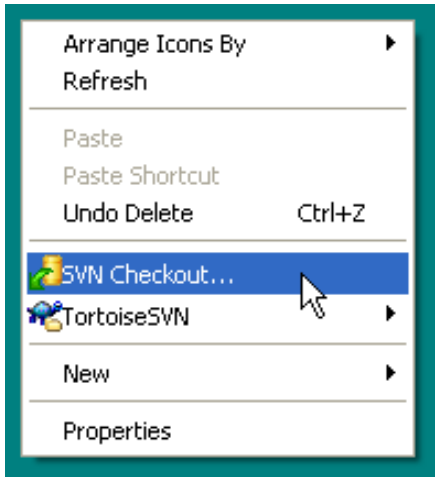
```
svn commit
Adding         examples/ex1
Adding         examples/ex1/README
Transmitting file data .
Committed revision 2.
```



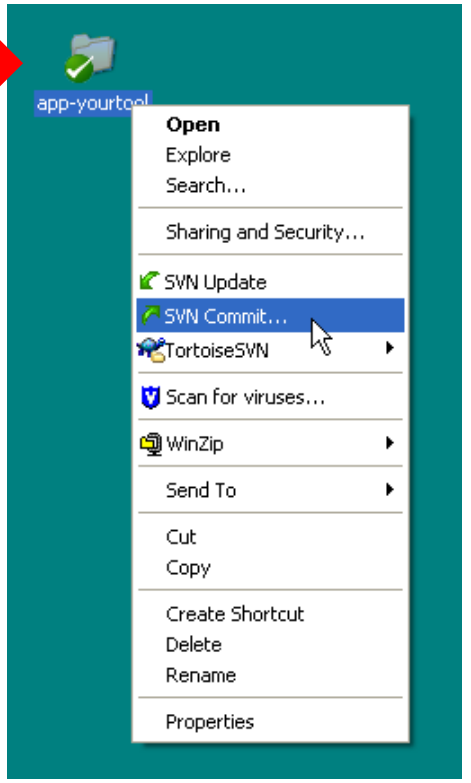
Instructions in your project area at wiki/GettingStarted

More info:
http://tortoisesvn.tigris.org/

Puts svn commands onto the right-mouse-button menu:



Like any other file on your Desktop, but icon shows Subversion control



TortoiseSVN

More info:
http://tortoisesvn.tigris.org/

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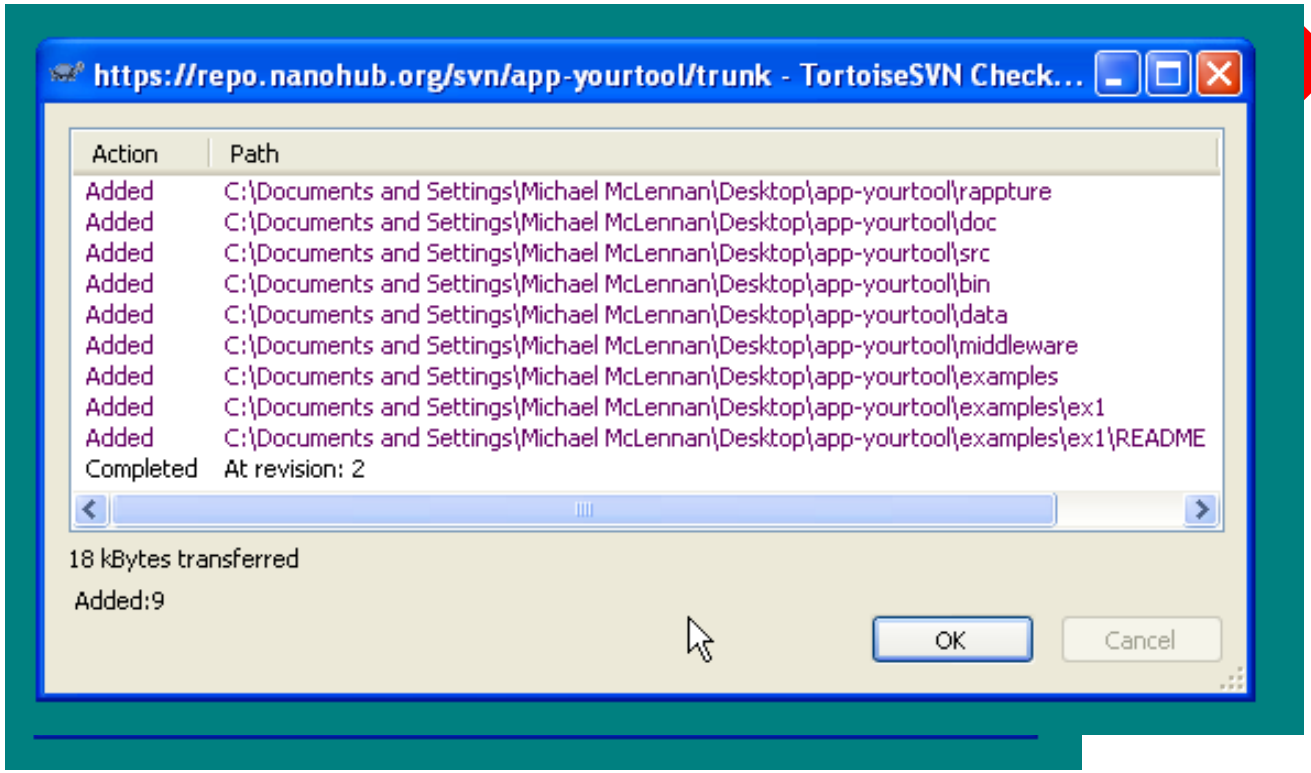
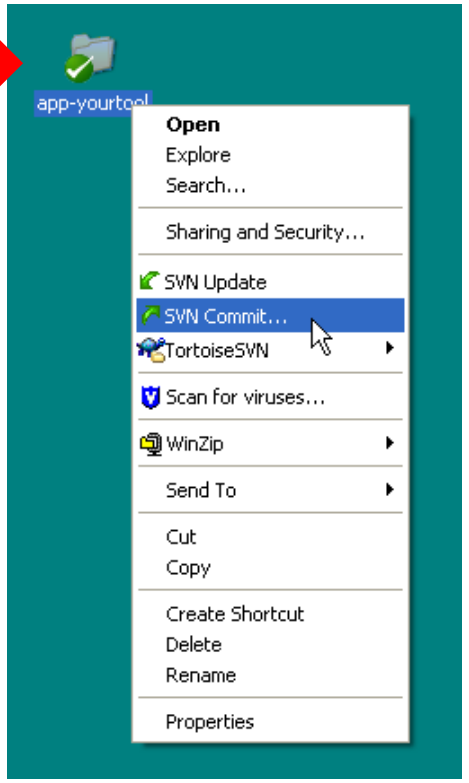


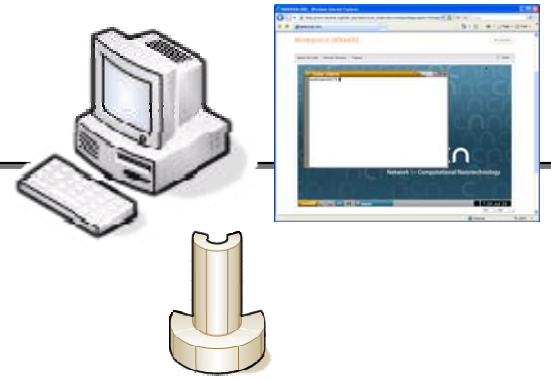


```
cd examples/ex1
svn mv README README.txt
A     README.txt
D     README

cd ../..
svn delete doc
D     doc

svn status
D       doc
A  +    examples/ex1/REA
D       examples/ex1/README

svn commit
```

brings up your favorite editor:

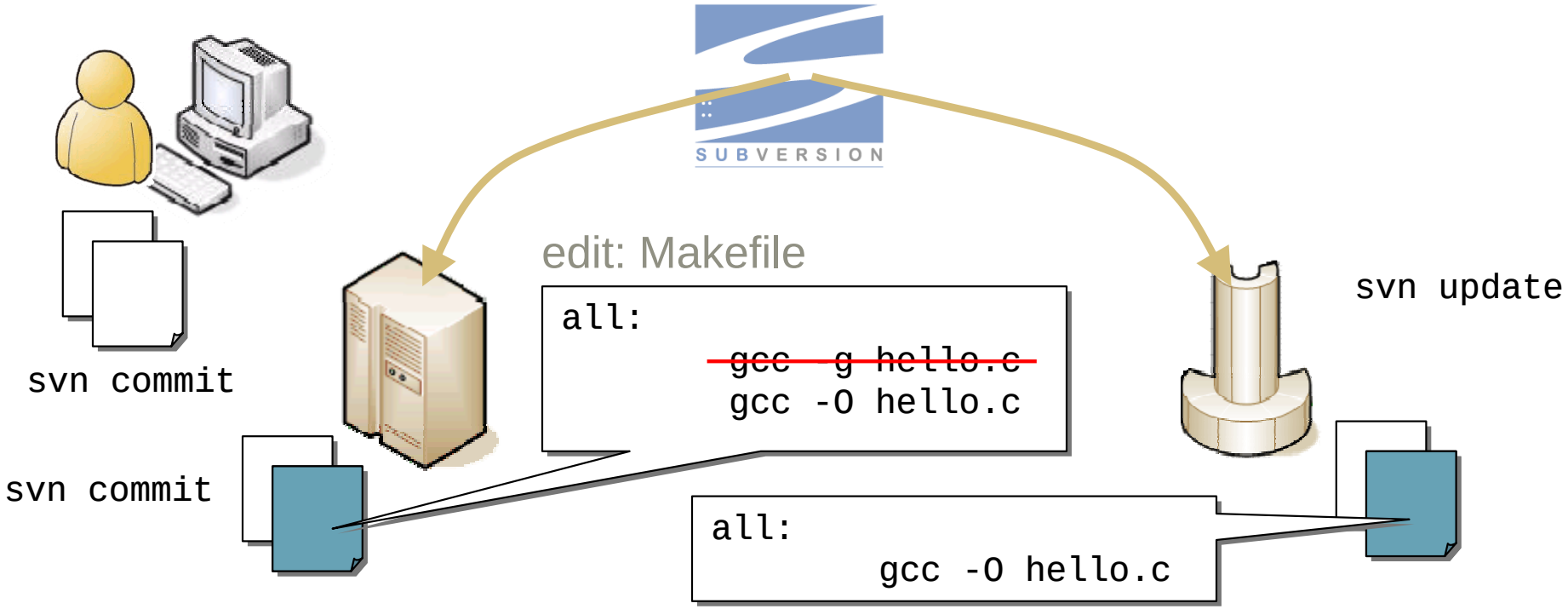
```
Moved some files around.
```

Date	Rev	Chgset	Author	Log Message
07/26/07 09:46:35	3	3	mmc	Moved some files around.
07/25/07 21:31:14	2	2	mmc	Created ex1 directory and added the README file.
07/25/07 21:23:09	1	1	root	initial directory structure



What are these secret codes? See this page.

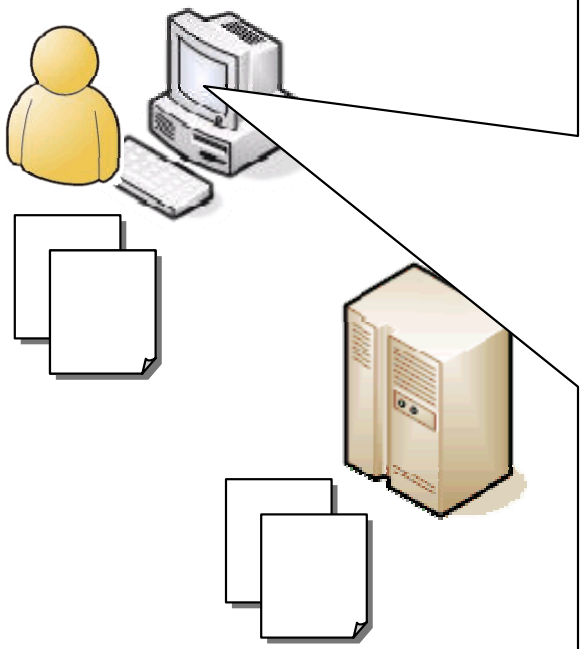
Editing and updating




```
svn checkout https://nanohub.org/tools/yourtool/svn/trunk yourtool
```

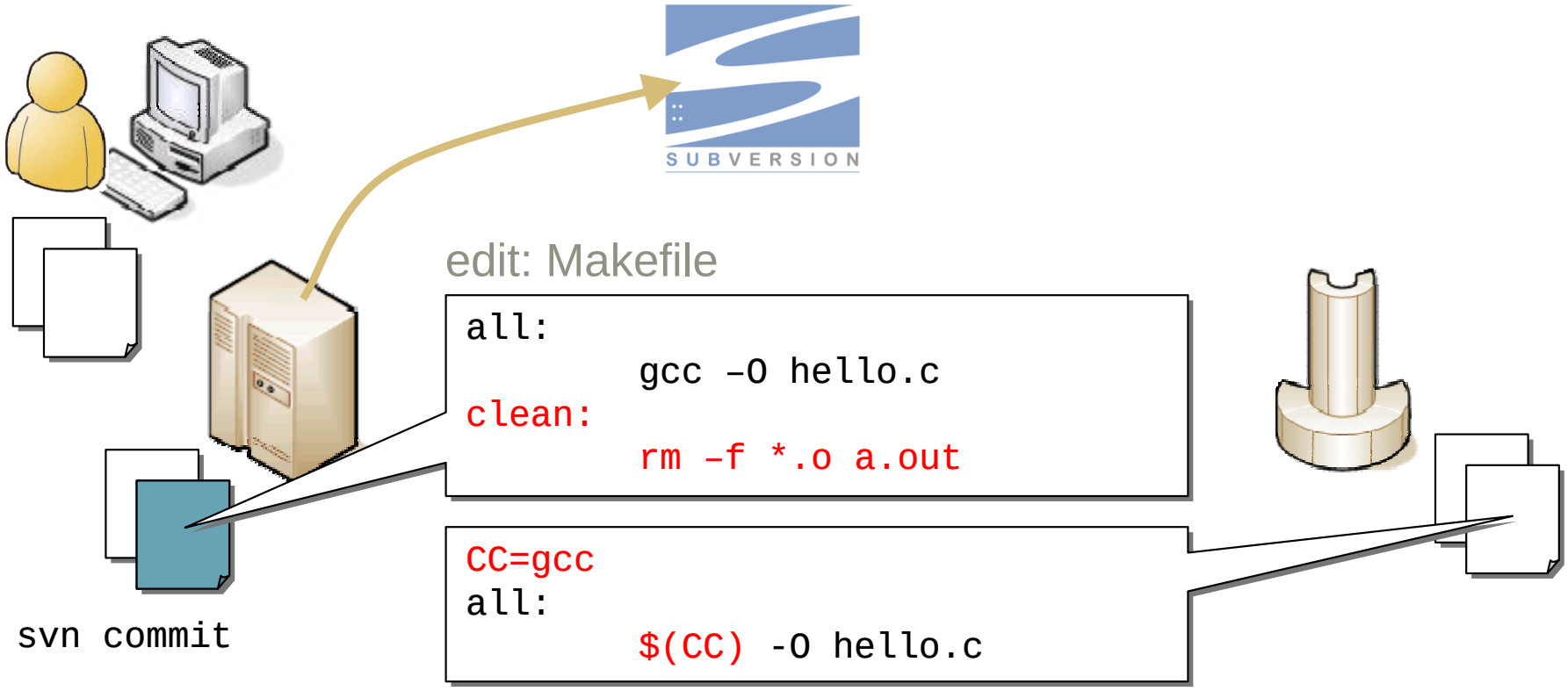
- ~~Copy code around~~
- Move code to new machines with “svn checkout”
- Move changes around with “svn commit” and “svn update”

Looking for differences and reverting

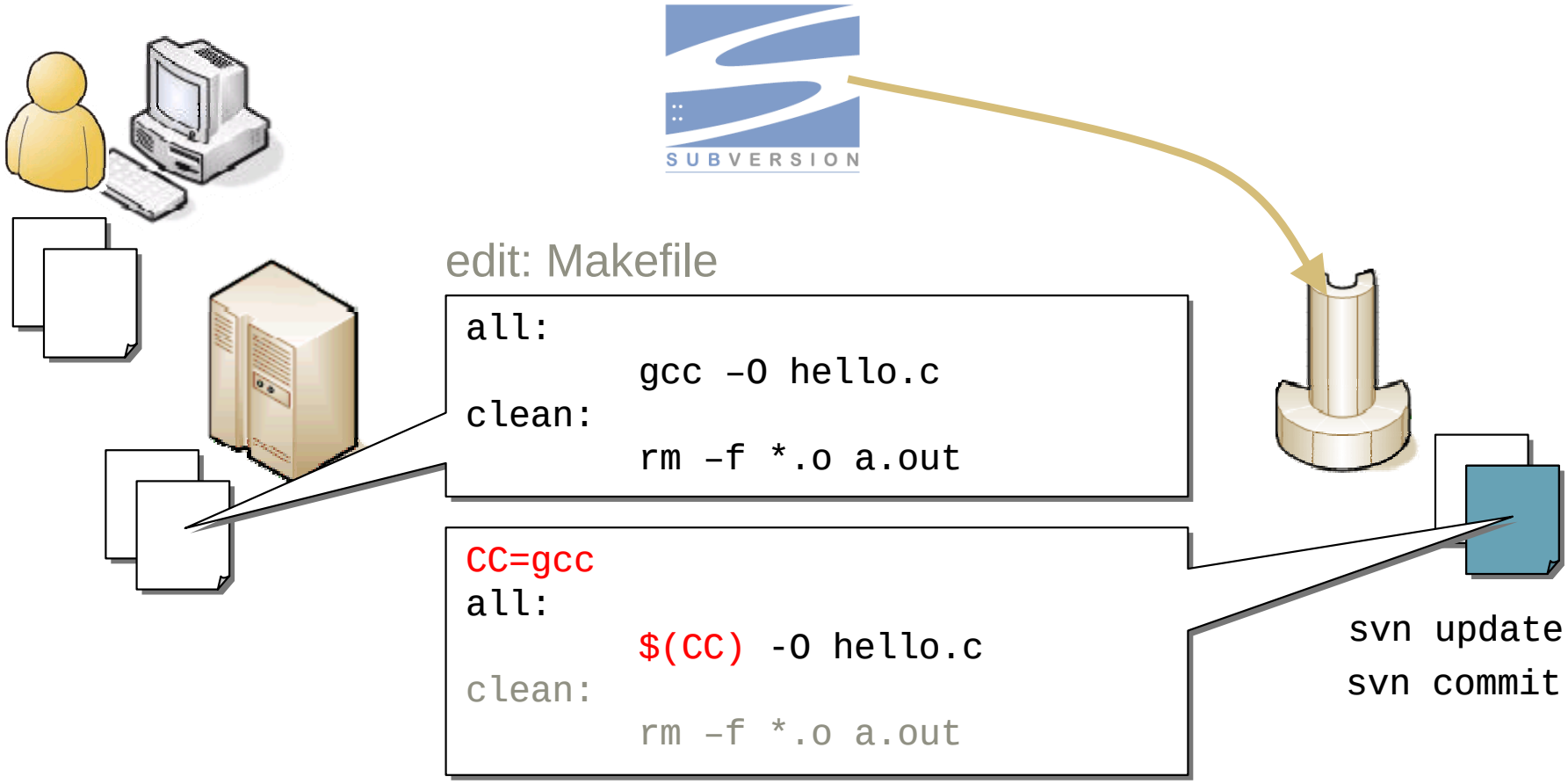


```
svn status
M       src/hello.c
svn diff src/hello.c
Index: src/hello.c
===================================================================
--- src/hello.c     (revision 4)
+++ src/hello.c     (working copy)
@@ -4,6 +4,7 @@
 int
 main(int argc, char **argv)
 {
-    printf("Hello, World!\n");
+    /* say hello to everyone */
+    printf("Hello, Universe!\n");
     exit(0);
 }
svn revert hello.c
Reverted 'hello.c'
```

Can also revert directory changes (adding/deleting files)

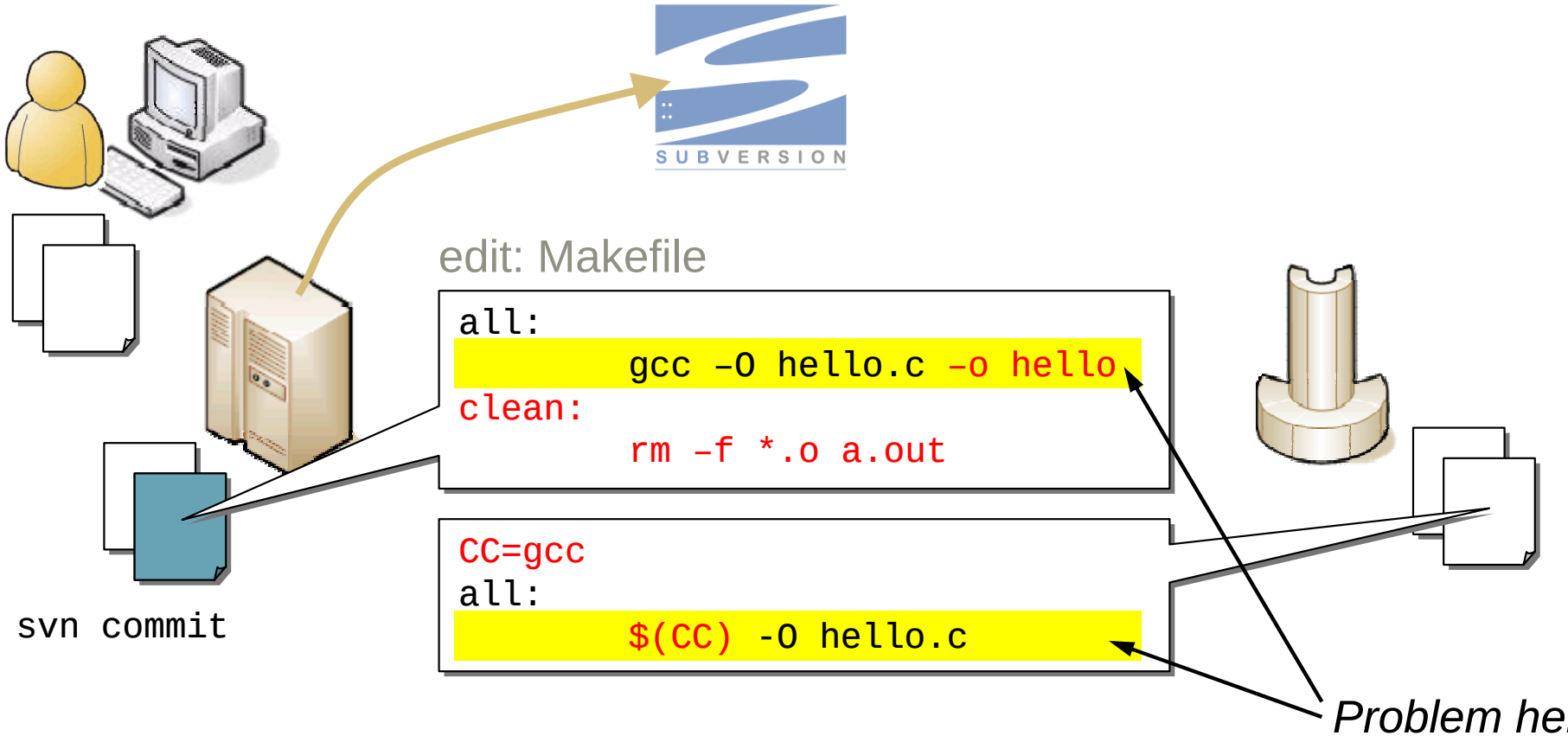


- Whoever checks in first has no problem
- Next “svn update” integrates compatible changes



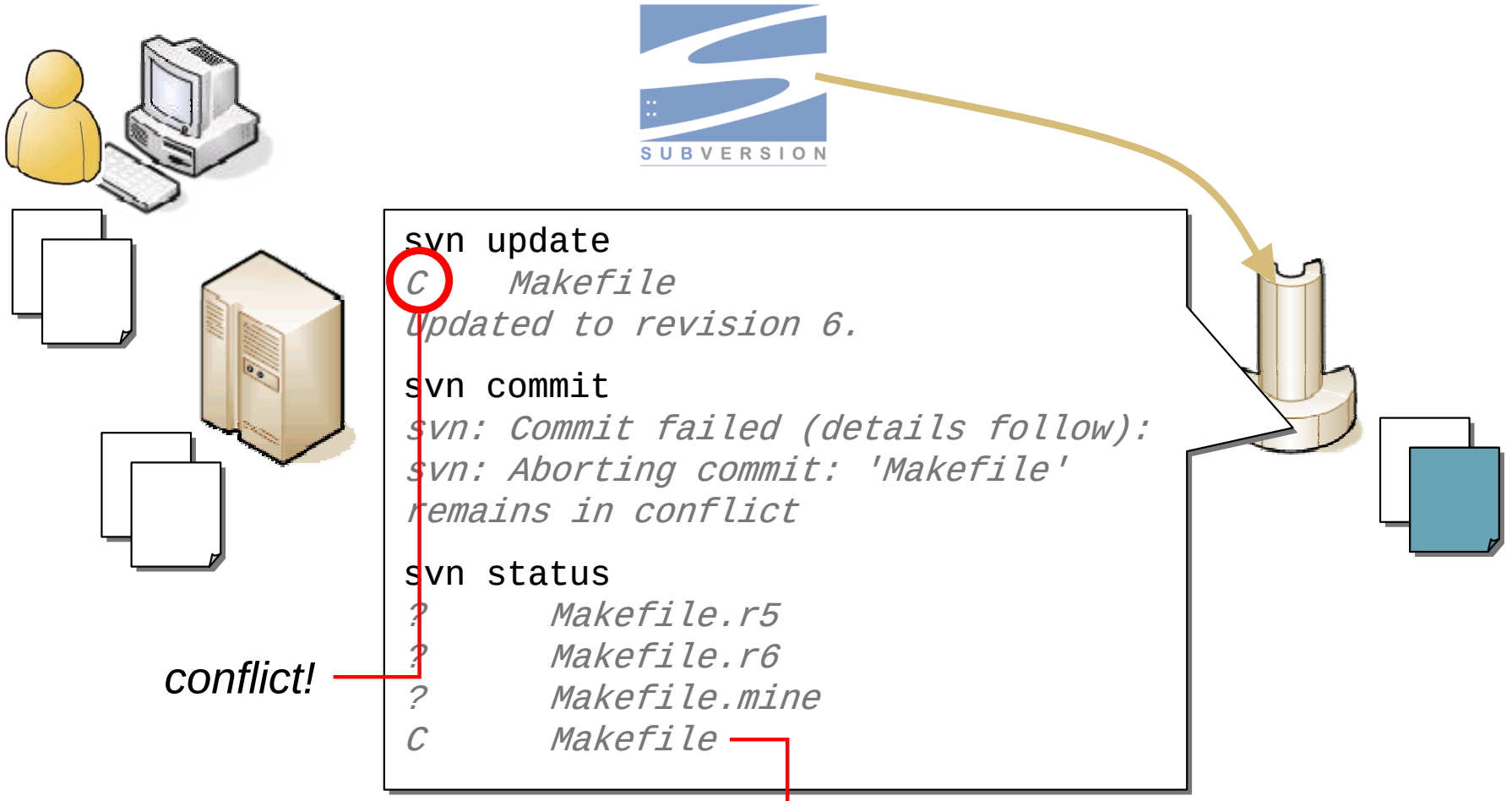
- Whoever checks in first has no problem
- Next “svn update” integrates compatible changes
- Use “svn commit” to commit the merged changes

Resolving merge conflicts



- Whoever checks in first has no problem
- Next “svn update” integrates changes

Resolving merge conflicts



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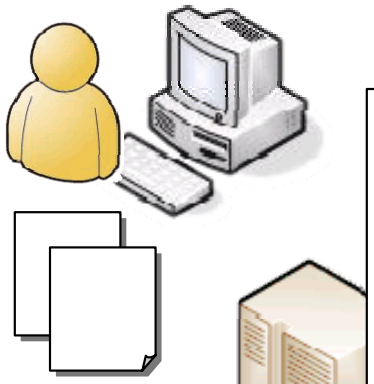
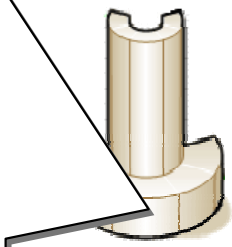
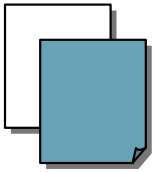


vi Makefile

```
CC=gcc
all:
        $(CC) -O hello.c -o hello
clean:
        rm -f *.o a.out
```





```
svn resolved Makefile
Resolved conflicted state of 'Makefile'

svn commit
Sending        src/Makefile
Transmitting file data .
Committed revision 7.
```

Retrieving an old version

- Get the whole distribution

```
svn checkout -r 3 https://nanohub.org/tools/yourtool/svn/trunk yourtool
```

get revision 3

- Get a particular file

```
svn cat -r 5 Makefile
```
show me revision 5

```
svn cat -r 5 Makefile > Makefile
```
replace current file with revision 5

- Which revision?

```
svn log Makefile
```
show me revisions for this file

```
svn log
```
show me revisions for current directory

Good defaults. Subversion usually does the right thing:

```
cp diagram.jpg examples

svn add examples/diagram.jpg
A  (bin)  examples/diagram.jpg

svn commit
Adding  (bin)  examples/diagram.jpg
Transmitting file data .
Committed revision 8.
```

Recognized as a binary file:
- no CR/LF translation
- no merges, only replacements

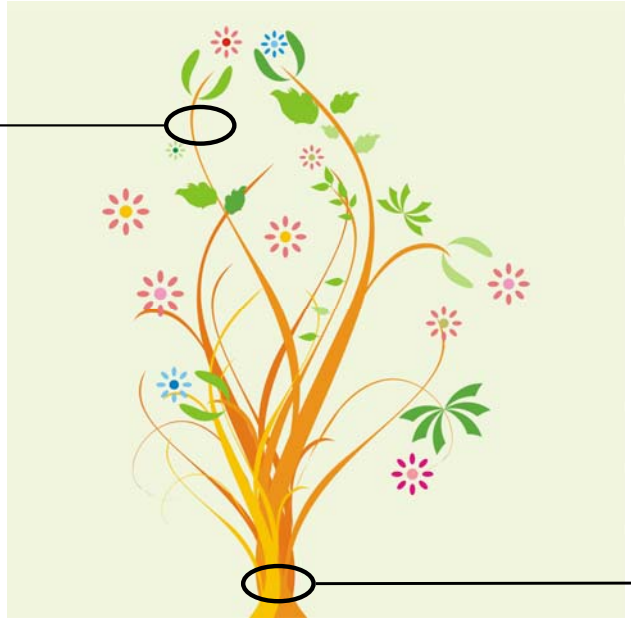
When it fails, set properties yourself:

```
cp demo.dat examples

svn add examples/demo.dat
A         examples/demo.dat

svn propset svn:mime-type application/octet-stream examples/demo.dat
svn propdel svn:eol-style examples/demo.dat
```

more about properties on this page



trunk

Think of your source code repository as a tree…

Tag important versions:

```
svn copy trunk tags/release1.0
```

Merging between branches is a pain!
If you need that, use svk.

Create a branch:

```
svn checkout https://nanohub.org/…/svn yourtool-all
cd yourtool-all
svn copy trunk branches/mclennan
svn commit –m “created private branch for mclennan”

svn checkout https://nanohub.org/…/svn/branches/mclennan yourtool-mcl
```

no `/trunk`

instead of `/trunk`

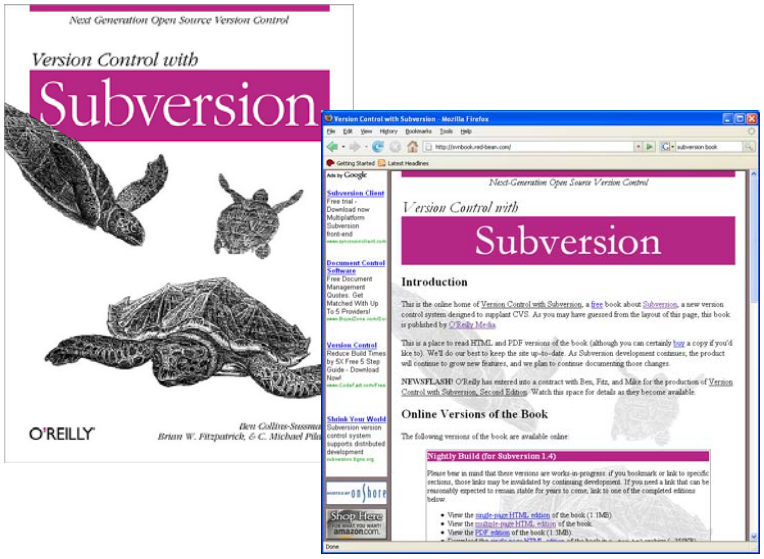
Web site: http://subversion.tigris.org/

Subversion Book

From O'Reilly & Associates, and also online

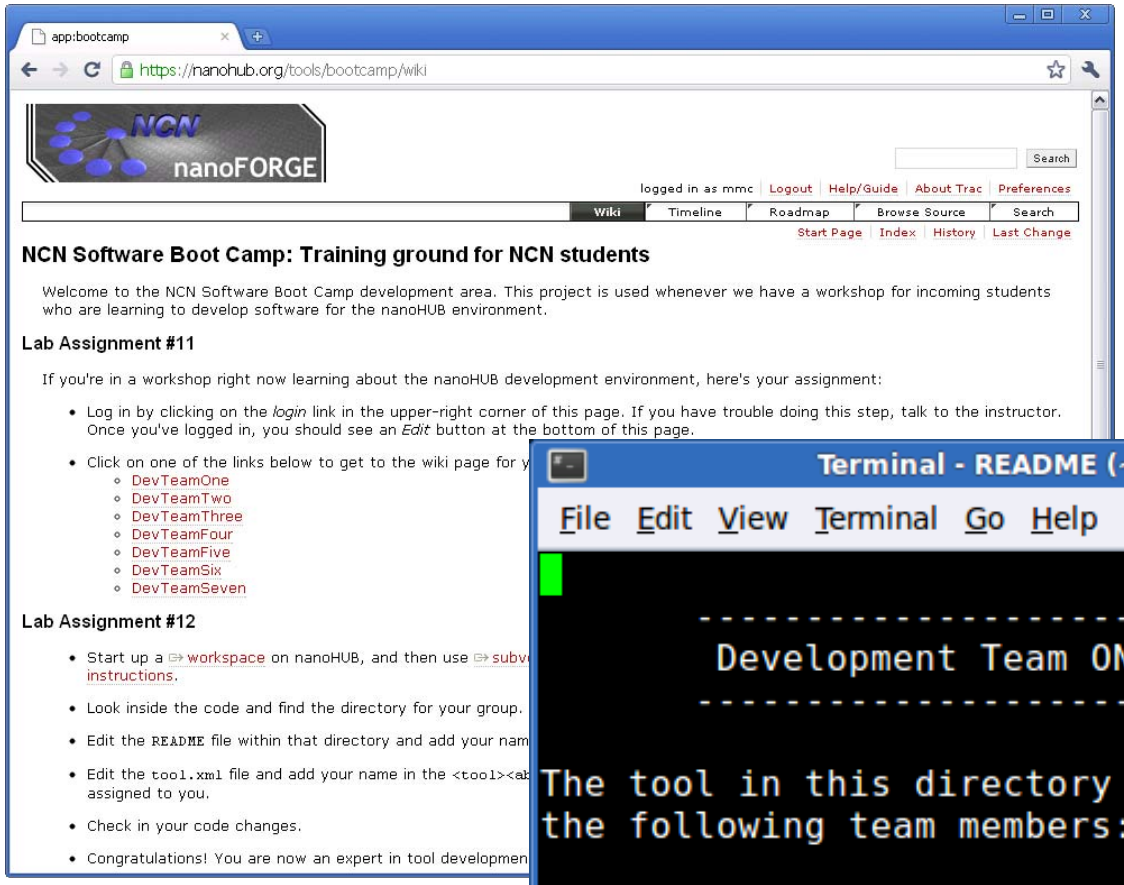
Quick-start guide for your project:

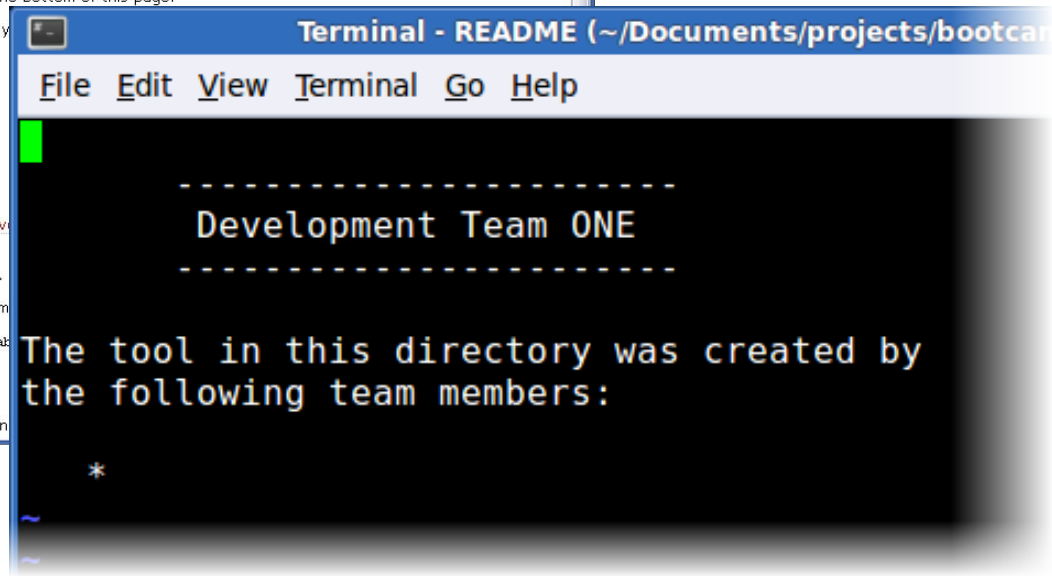
https://nanohub.org/tools/yourtool/wiki/GettingStarted



Assignment #12: Add to the "bootcamp" project

`https://nanohub.org/tools/bootcamp/wiki`





- Work in teams
- Use subversion to check out the source code
- Add your name to the README
- Check in your changes