

SubVersionN – the new Central Service at DESY

by Marian Gawron



What is Subversion?

- Revision Control System
- made to replace CVS





SVN Basics

● Client Options

- Command line client
- Different GUIs for Windows, Linux and Mac
- Web access

● Svnserve

- Integrated server communicates over TCP/IP
- Tunnel mode (e.g. ssh)

● Apache based Web Server

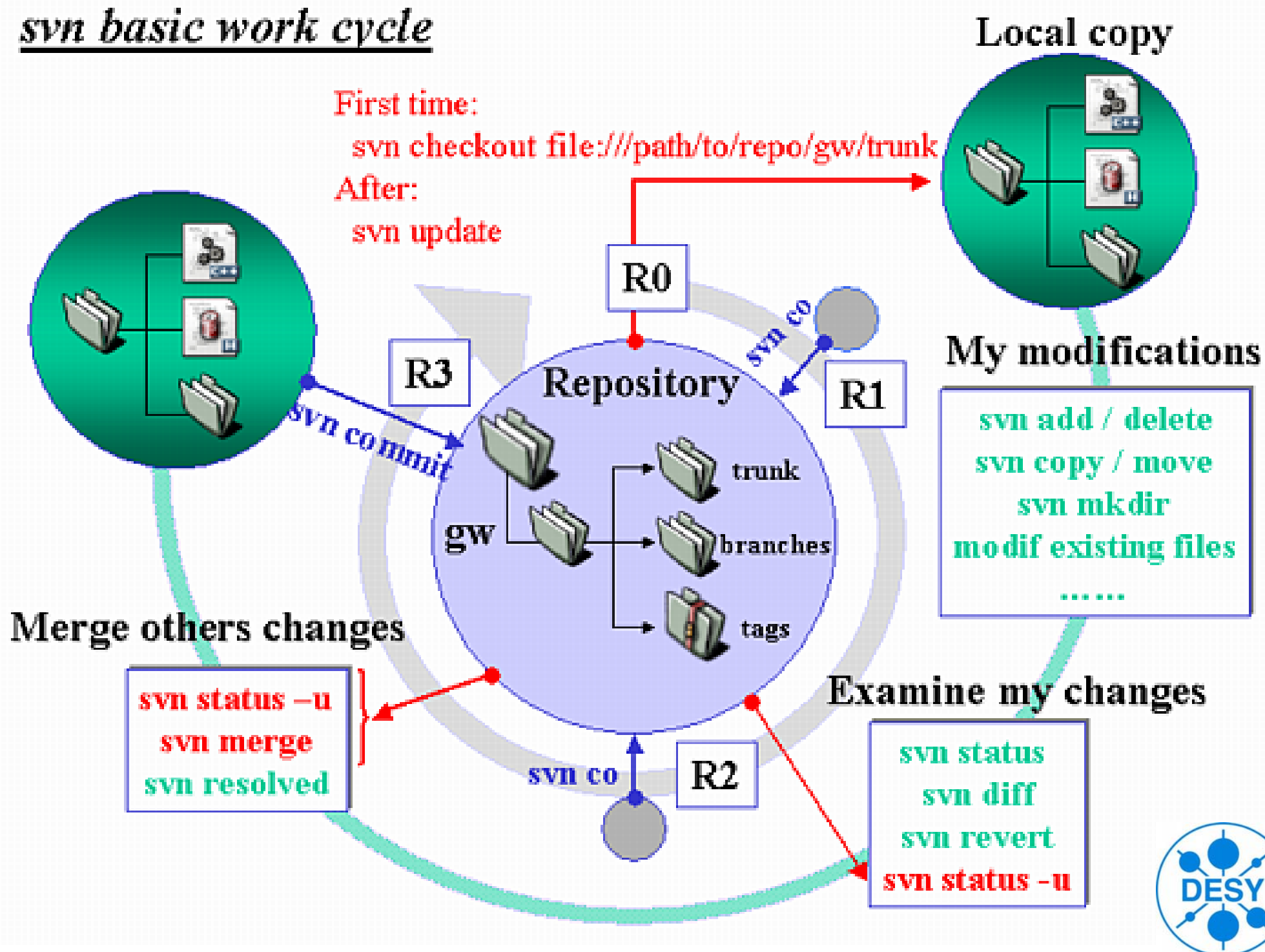


Introducing SVN work cycle

- Checkout a working copy at the beginning (one time)
- afterwards **update** the local working copy (very often)
- SVN remembers the path to the repository and looks for changes itself
- Work on this copy: make and test changes
 - Use **svn add** to add various files or directories
 - **svn move** to move files or directories
 - or **svn delete** to delete files or directories
- **Before every commit update** your copy again maybe there are some conflicts
- **Commit** changes to the central project



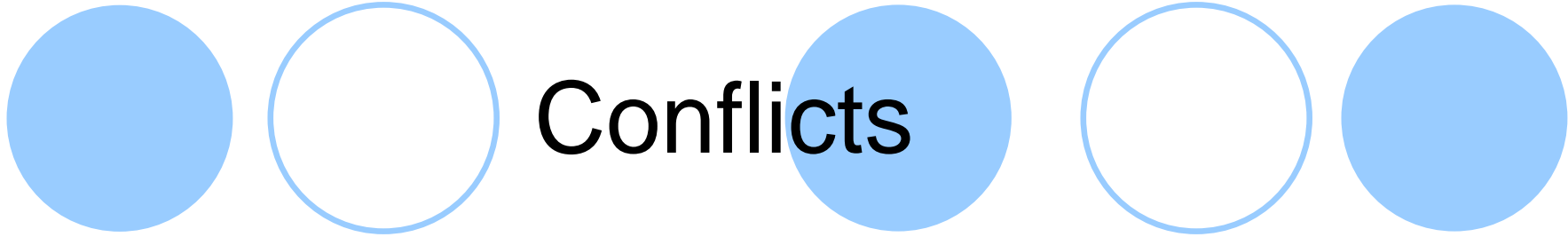
svn basic work cycle



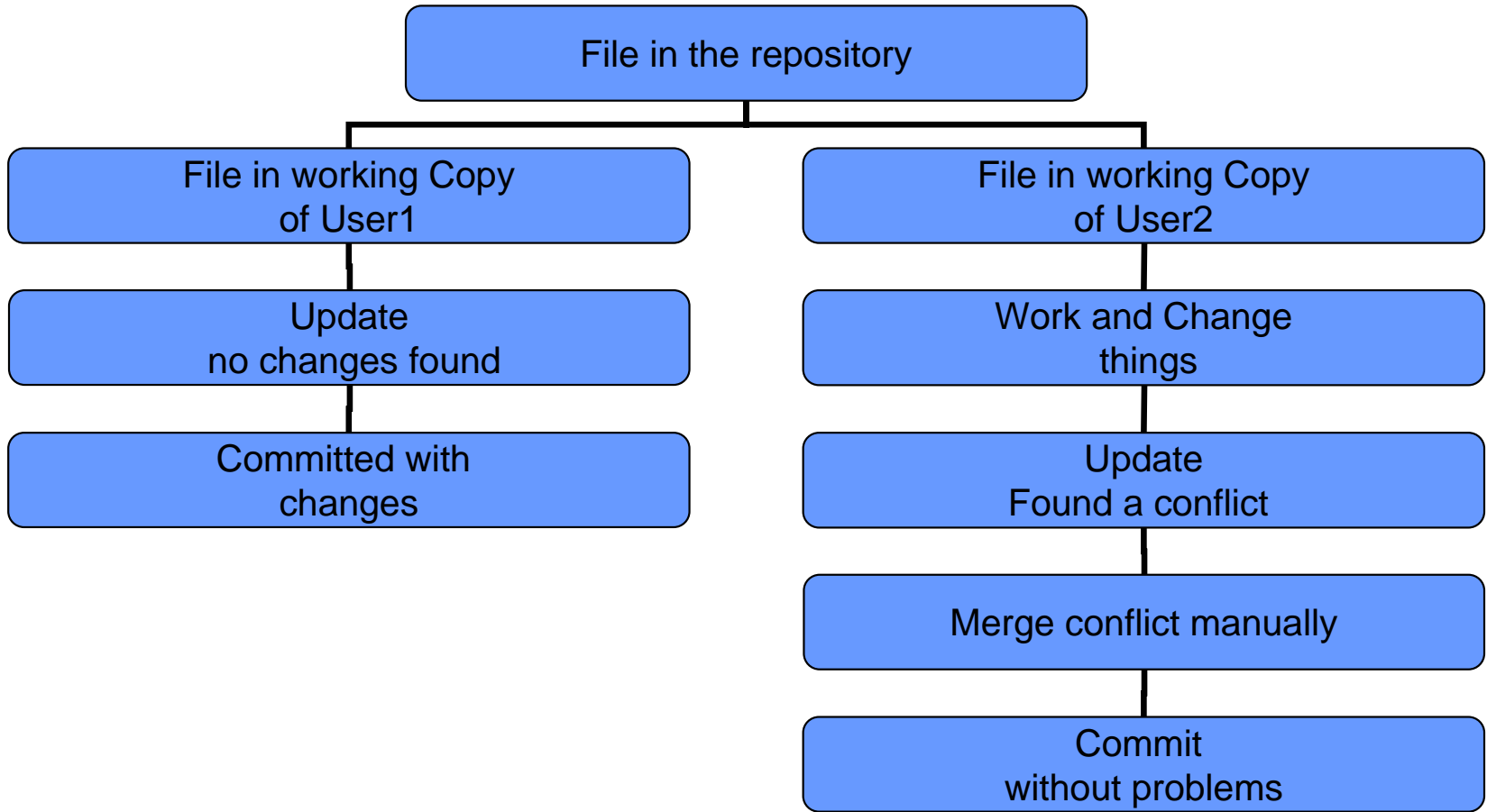
Conflicts in SVN

- can happen that another developer works on the same file like you and he commits his work earlier
- because you know it could happen update your local working copy again before commit
 - svn update
- You see symbols in front of each file a change was made with (e.g. A(dd), M(odified), D(eletion) or C(onflict))
- We got a “C” in front of our working file
 - e.g. C branches/file.cgi
- Merge Conflicts by hand: look in the file
 - the conflict part is surrounded by “<<<<<<” and “>>>>” the own part is on top if a line like “====” in the middle edit this file as you want
 - Afterwards run svn resolved and commit the file





Conflicts





File of a Conflict

```
<html>
<head>
<title>SVN Index</title>
</head>
<body bgcolor=yellow>
<center><b><u><font color=dodgerblue>
<<<<<<<< .mine
Code Management
=====
Management of Source Code
>>>>>>>> .r4
</font></u></b>
</center>
<br><br>
Welcome to the new SVN Server of DESY
<br><br>
```

Basic SVN Commands

- **svn checkout (co)**
 - only first time after one checkout for each project SVN knows where to find it
- **svn update (up), info, log**
- **svn add, delete(del, rm), copy(cp), move(mv)**
 - Working commands on working copy only
- **svn status(st), diff, revert**
 - Commands to test changes or undo them
- **svn merge, resolved**
 - Commands to find a solve conflicts
- **svn commit (ci)**



Differences between CVS & SVN

- Similar to CVS in many ways
 - Commands like checkout, add, commit
- New useful features and commands
 - Merge, resolved, mkdir, copy, move
- SVN works faster
- SVN has no direct rollback function



Differences between CVS & SVN in detail

● Revision numbering

- Each revision
 - is a timestamp for one commit
 - defines a whole tree not only one file

● Commits

- In SVN a commit is done all at once
- better if there is a network problem SVN repository is save

● Binary Files

- Take less space in SVN (algorithm Vdelta)



Differences between CVS & SVN in detail

- Directories

- Changes to directories are tracked in SVN

- Renaming Files

- possible in SVN with “svn move” without losing history

- Repository

- With URL [https://svnsrv.desy.de/....](https://svnsrv.desy.de/)
- Local access <file:///home/usr/repo>
- same as an array of trees



Differences between CVS & SVN in detail

● Branching Tagging

- not generated automatically in SVN but
- easier to handle with copy function (including history)
- expensive operation in CVS but a normal operation in SVN cause no difference between a normal directory and the directories “branches” or “tags”
- tag names could be converted completely
SVN and CVS same format

● Creating a tag

- svn copy <https://svnsrv.desy.de/svn/afsadmin/trunk> \
https://svnsrv.desy.de/svn/afsadmin/tags/version_1.00 \
-m “tagging the 1.00 release of afsadmin”





Viewing repositories

- Online tool : ViewVC
 - Only for viewing, downloading, reading
 - No write permissions in ViewVC for anybody

- <https://svnsrv.desy.de/viewvc>





Index of /

Files shown: 0

Directory revision: [2199](#) (of [2199](#))Sticky Revision: Set

File ▲	Rev.	Age	Author	Last log entry
CondDB MySQL/	1499	16 months	poeschl	Fix to prevent condbview.tcl from crashing, # added to print statement
calice/	299	2 years	poeschl	Update
calice_cddata/	1769	10 months	lima	GL: update to TCMT strip ordering wrt Hcal coords
calice_lcioconv/	1860	9 months		This commit was manufactured by cvs2svn to create tag 'v04-02-06'.
calice_maps/	2046	4 months	magnan	correct exit behaviour
calice_monitor/	1252	21 months		This commit was manufactured by cvs2svn to create tag 'v01_00'.
calice_online/	1864	9 months		This commit was manufactured by cvs2svn to create tag 'v04-05'.
calice_reco/	2196	2 months		This commit was manufactured by cvs2svn to create tag 'v04-06-mc02'.
calice_sim/	2199	2 months		This commit was manufactured by cvs2svn to create tag 'v01-00'.
calice_userlib/	2185	2 months		This commit was manufactured by cvs2svn to create tag 'v04-10-mc03'.
lcsoft/	58	3 years	gmavroma	removed

[Download GNU tarball](#)[ViewVC Help](#)



Internal Structure

● A Look in a Repository

- /conf directory containing repository configuration files
- /dav directory for communication with apache
- /db main directory with all stored files of the repository
- format a file which contains values like version number of the repository
- /hooks directory with scripts which SVN will execute if an action is made
- /locks directory with locking data of SVN

Never change things manually!!! If you are not sure



Authentication and Authorization to Web Server

● Anonymous

- all repositories are readable to everybody
- Location “public”
- e.g. <https://svnsrv.desy.de/public/marlin>

● Via SSL

- write permission is given to users with valid certificates
- Location “svn”
- e.g. <https://svnsrv.desy.de/svn/marlin>

● Via Kerberos

- write permission is given to users with valid DESY account
- Location “desy”
- e.g. <https://svnsrv.desy.de/desy/marlin>





Authentication with Apache

- Basic realm is global and exists for all pages
- Only necessary for writing permission (Limits)
- protects Location “public”, with User rights and permissions
- Successful authentication only in other Locations when server sends request for Username of Certificate or Kerberos name
- FakeBasicAuth important
- Apache does Authentication and a general Authorization

Authentication and Authorization in SVN

- Via SVN authorization file

- Gets Username from apache
- File where Administrators can give read/write permissions of their projects and subprojects
- Easy to handle and clear structure in the file

- example:

[repository:/...]

User 1 = rw

User 2 = r





Administration

- After registration: maintainer is administrator of own projects
 - Maintainer has the rights to add / delete members or to create new subprojects
-
- **Online Interface for Administration**
 - <https://svnsrv.desy.de/admin/desy> for Kerberos based Authentication
 - <https://svnsrv.desy.de/admin/svn> for SSL based Authentication



Hello Marian Gawron

You are a registered user (ID 3)

<https://svnsrv.desy.de/admin>

Details of the Person you want to add or modify

Name(full DN-String of Certificate if exists)*

DESY account name

E-Mail*

Write access to Project

Commit-Mails yes no

(data (fields with * are required) or form contents

You are allowed to administer all projects except global
You are member of global, afsbackup and afsadmin

Members of global

DN-String	DESY account	E-mail	Delete?
/O=GermanGrid/OU=DESY/CN=Wolfgang Friebel	friebel	wolfgang.friebel@desy.de	<input type="checkbox"/> delete
/O=GermanGrid/OU=DESY/CN=Frank Gaede	gaede	gaede@mail.desy.de	<input type="checkbox"/> delete
/C=DE/O=GermanGrid/OU=DESY/CN=Marian Gawron	mgawron	mgawron@ifh.de	<input type="checkbox"/> delete

Members of afsbackup

DN-String	DESY account	E-mail	Delete?
/O=GermanGrid/OU=DESY/CN=Wolfgang Friebel	friebel	wolfgang.friebel@desy.de	<input type="checkbox"/> delete
/C=DE/O=GermanGrid/OU=DESY/CN=Marian Gawron	mgawron	mgawron@ifh.de	<input type="checkbox"/> delete

Members of afsadmin

DN-String	DESY account	E-mail	Delete?
/O=GermanGrid/OU=DESY/CN=Wolfgang Friebel	friebel	wolfgang.friebel@desy.de	<input type="checkbox"/> delete
/C=DE/O=GermanGrid/OU=DESY/CN=Marian Gawron	mgawron	mgawron@ifh.de	<input type="checkbox"/> delete

PROJECT CREATION AREA

Name of the new Project

REQUESTS

User	requested Membership in	Status	action
friebel	lccd		<input type="radio"/> reject <input type="radio"/> accept
gellrich	ilctools		<input type="radio"/> reject <input type="radio"/> accept

request(s) or form contents

- add new members
- change own membership
- change own user information
- delete group members
- reject/accept requests



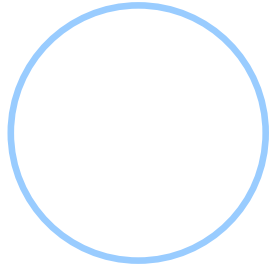
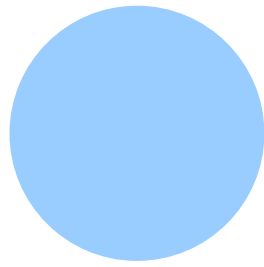
Online Interface for Administration

- everybody with a valid certificate or a valid DESY account has access to the interface:
- an authenticated user not yet registered in SVN has the rights to:
 - create request for creating new projects
 - generate or change membership
 - change their user's details
- registered users can do all these things too and according to their role a little more

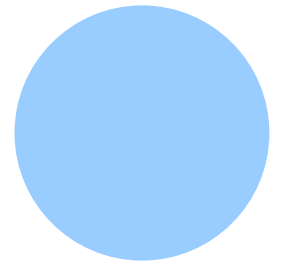
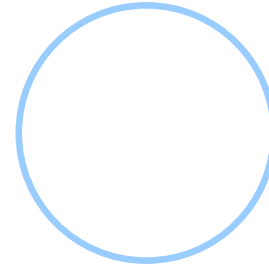
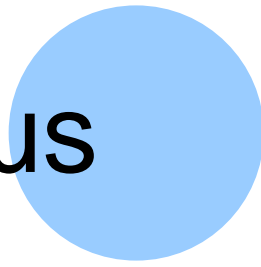
CVS2SVN – useful feature



- good option to convert repositories from CVS to SVN
- could only be used by server administrators
- whole CVS repository needed to convert it
- conversion of subprojects possible
- but overwriting of old tags could happen
- history of subprojects converted too



Status



- SVN server is working
 - svnsrv.desy.de
 - Intro: <http://svnsrv.desy.de>
- All DESY groups have access to server
- Repositories available and updated to current status in CVS soon
- Work on Online Administration Interface finished soon



Sources



- SVN manual like on

- <http://svnbook.red-bean.com/en/1.4/index.html>

- “Apache Webserver 2” by Sebastian Wolfgarten