

# Verzovací systém Subversion

Ladislav Prskavec

[ladislav@prskavec.net](mailto:ladislav@prskavec.net)

<http://blog.prskavec.net>

Twitter: @abtris

# Obsah

## Den 1

- Verzovací systémy
- Instalace serveru
- Instalace klienta
- Administrace serveru
- Práce s klientem
- Migrace
- Doporučené postupy
- Integrace Subversion

## Den 2

- Instalace Apache + SVN
- Hooks prakticky
- Backup a recovery
- XML log
- Synchornizace repository
- LDAP auth (optional)

# Verzovací systémy

- Historie verzovacích systémů
- Základní pojmy
- Architektura systému
- Úvod do systému Subversion

# Source Code Control System

## SCCS (1972)

RCS  
(1981-1995)

CVS  
(1985)

ClearCase  
(1990)  
PVCS  
(1985)  
SourceSafe  
(1991)  
Delta  
(1994)  
VSS  
(1995)

TFVC  
(2005)

## Subversion (2000)

Time Machine  
(2006)

SVK  
(2003-2009)

BitKeeper  
(1998)

GNU Arch  
(2001)

Bazaar  
(2007)

AccuRev  
(2002)

Darcs  
(2003)

Monotone  
(2003)

## Git (2005)

## Mercurial (2005)

Directed acyclic graph (DAG)

Delta compression (merge deltas, separate deltas, xdelta)

1970

1980

1990

2000

2010

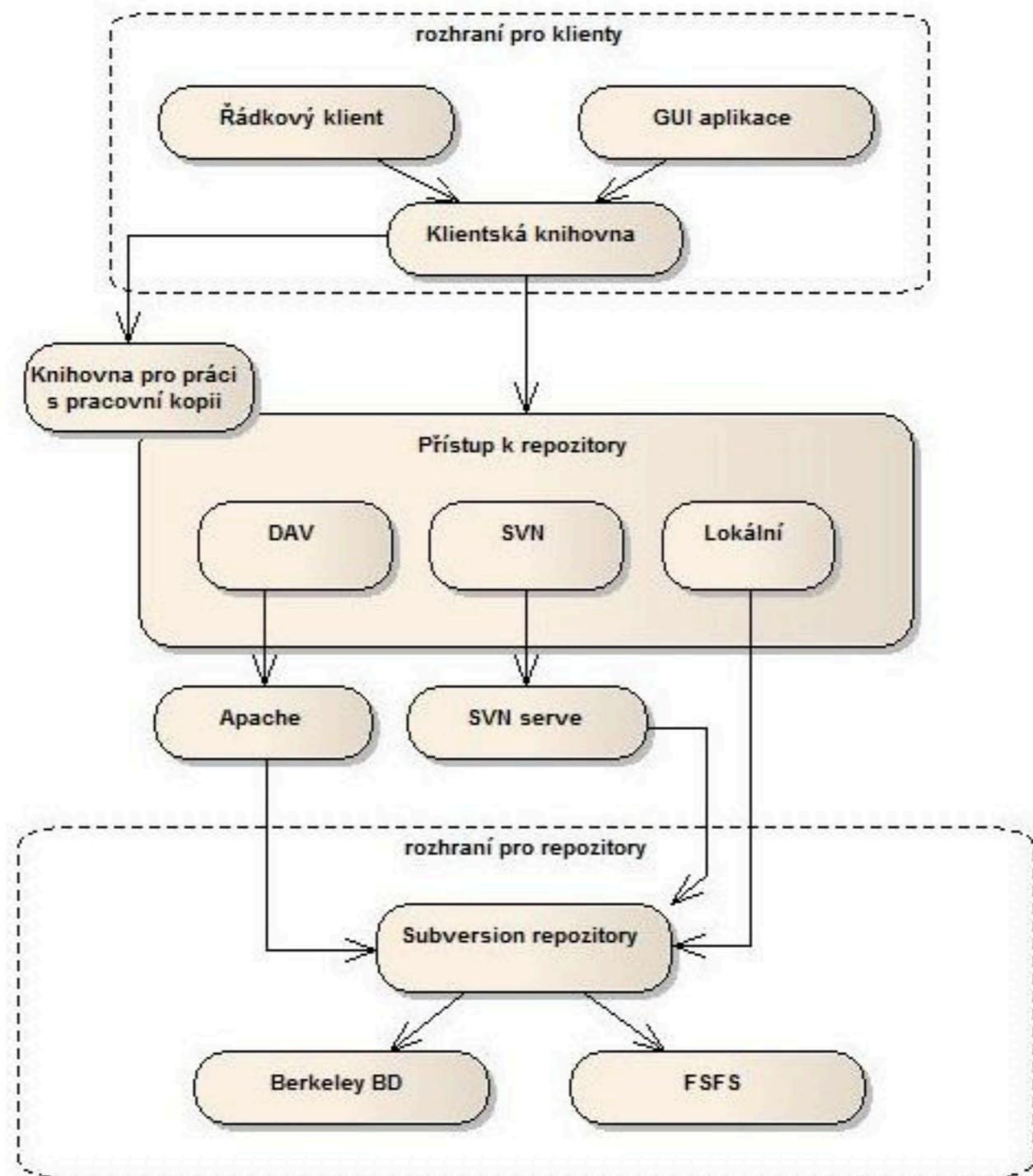


# Verze Subversion

- 1.7.0 - aktuální verze (doporučená)
- 1.6.17 - stable verze (podporovaná)
- 1.5 a nižší - není již podporována

# Základní pojmy

- Repository (repozitář, centrální úložiště)
- Branch (větev)
- Revision (revize)
- Pracovní kopie (working copy)
- Commit
- Konflikt



# Architektura

# Instalace klient & server

# Debian, Ubuntu

> apt-get install subversion

# Fedora, RedHat, CentOS

> yum install subversion

# Mac OS X

> port install subversion

# Windows server (VisualSVNServer)

**VisualSVN Server**

File Action View Help

VisualSVN Server Repositories Users Groups

**Status**  
VisualSVN Server is **running**  
Server URL is <https://prskavec2:8443/svn/>

**VisualSVN Server**

File Action View Help

VisualSVN Server Repositories

- Repositories
  - akce
  - cips
  - ctn-ap

**Properties for /svn/**

Group or user name:

Name	Permissions
guest	Read Only
VIC	Read / Write

Add... Remove

Permissions

- Inherit from parent
- No Access
- Read Only
- Read / Write

OK Cancel Apply

**VisualSVN Server 1.5 Setup**

Custom Setup  
Select the way you want features to be installed.

VisualSVN Right thing. Done right.

Change if necessary VisualSVN Server installation path, Subversion repositories location and port.

Location: C:\Program Files\VisualSVN Server\

Repositories: C:\rootwww\rep\_cvut\

Server Port: 8443  Use secure connection (https://)

Authentication

- Use Subversion authentication  
VisualSVN Server will maintain own users and groups.
- Use Windows authentication  
VisualSVN Server will use Windows users and groups.

Back Next Cancel

# Windows client (TortoiseSVN)

**Log Messages - C:\rootwww\wc\_cvut\akce**

From: 1. 4.2008 To: 1. 7.2008

Revision	Actions	Author	Date	Ticket:	Me
270		xprskave	8:54:15, 1. července 2008		Ad
269		xprskave	15:14:49, 27. června 2008		Ví
268		xprskave	13:02:44, 27. června 2008		Fur
267		xprskave	11:16:07, 27. června 2008		SVI
266		xprskave	14:32:38, 26. června 2008		Up
265		xprskave	13:50:53, 26. června 2008		Phi
264		xnrskave	16:25:51, 5. června 2008		Ad
263					
262					
261					
260					

**https://localhost:8443/svn/akce - Repository Browser**

URL: https://localhost:8443/svn/akce/trunk

Tree View:

- https://localhost:8443/svn/akce
  - branches
    - r10
    - r15
  - tags
    - R2008
  - trunk
    - img
    - inc
    - libs
    - libs2
    - styl
    - templates
    - tests
    - upload

File View:

File	Author	Date	Size	Last Modified
.htaccess	xprskave	18.4.2008	80 bytes	30.11.2007
add.php	xprskave	26.6.2008	1,01 KB	28.5.2008
addevent.php	xprskave	26.6.2008	5,89 KB	3.6.2008
addgroup.php	xprskave	28.5.2008	1,10 KB	28.5.2008
adduser.php	xprskave	28.5.2008	2,52 KB	28.5.2008
auth.php	xprskave	26.6.2008	1017 bytes	26.6.2008
build.properties	xprskave	26.6.2008	269 bytes	27.6.2008
build.xml	xprskave	27.6.2008	2,98 KB	1.7.2008
edituser.php	xprskave	28.5.2008	2,68 KB	28.5.2008
filter.php	xprskave	28.5.2008	978 bytes	28.5.2008
CHANGELOG	xprskave	1.7.2008	64,1 KB	1.7.2008
convert.php	xprskave	28.5.2008	7,72 KB	28.5.2008

**Checkout**

Repository URL of repository: file:///C:/rep/rep\_test

Checkout directory: C:\wc\test

Checkout Depth: Fully recursive

Omit externals:

Revision: HEAD revision (radio button selected)

Show log

OK Cancel Help

Hint: Press F5 to refresh the selected subtree and Ctrl-F5 to load all children too

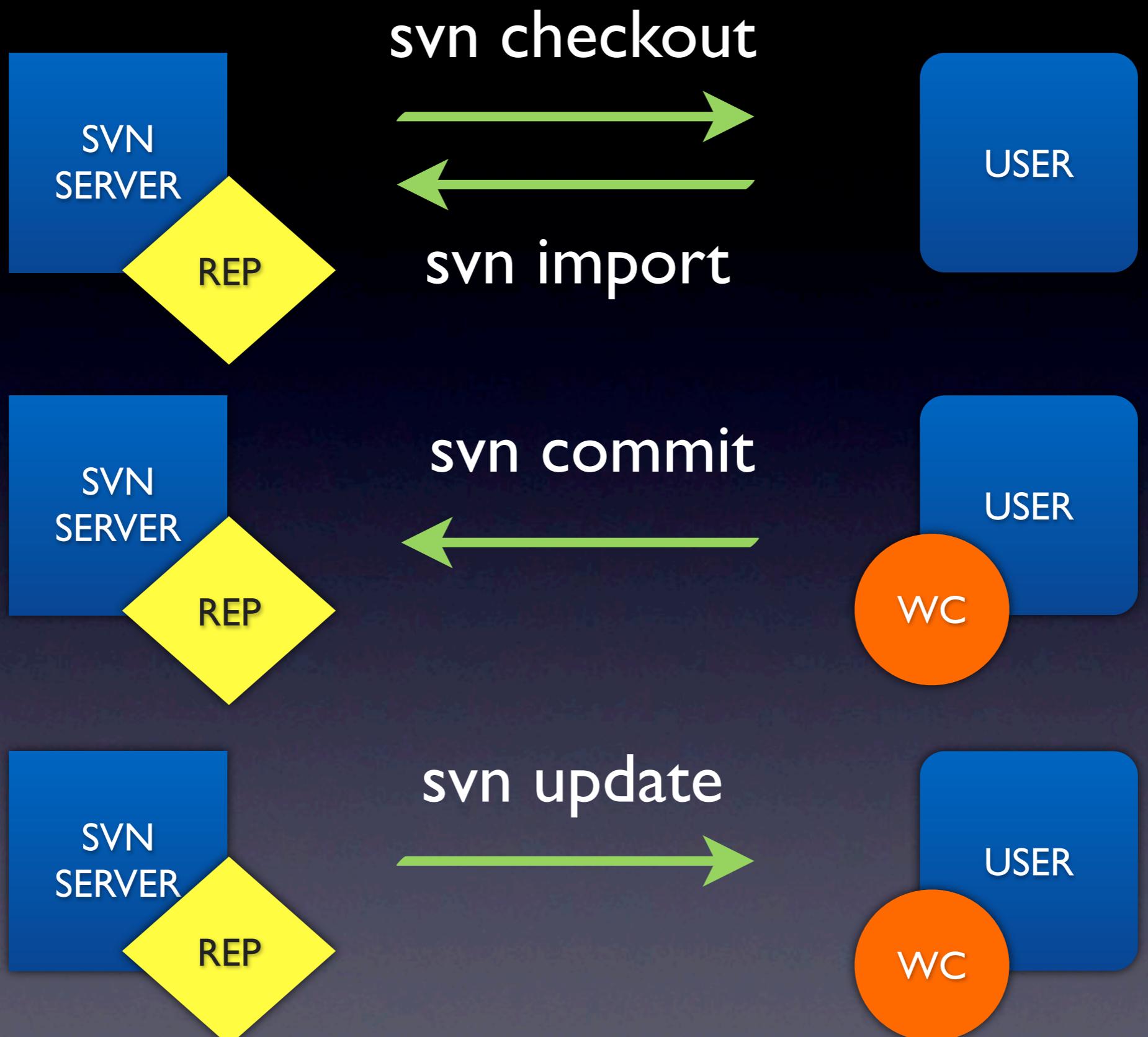
OK Help OK

# DEMO

# Práce s klientem

# Úvod do systému Subversion

- svn checkout
- svn update
- svn commit
- svn log
- svn merge
- svn copy



# Diff & Patch

svn diff, svn patch (1.7)

soubor



Index: README

=====

--- README (revision 3)

+++ README (working copy)

@@ -1,3 +1,2 @@

# README

-Pepa: neco jineho dela

-Eva: Udelala neco

+Eva: Udelala neco zase

revize

hunk



změny



svn patch - v Subversion 1.7

# Revize

Číslo

0-XXXXXX

Datum

{2009-06-18 10:00}

Keyword

HEAD  
BASE  
COMMITTED  
PREV

# SVN URL

http://host/path

https://host/path

svn://host/path

svn+ssh://host/path

file:///path

file://localhost/path

# DEMO

# Vytvoření repository

```
cd /tmp  
mkdir wc repos  
svnadmin create /tmp/repos/test  
cd wc  
mkdir trunk tags branches  
svn import file:///tmp/repos/test
```

# URL = file:///tmp/repos/test

svn cat URL  
svn list URL  
svn copy URL  
svn log URL  
svn move URL  
svn mkdir URL  
svn info URL  
svn delete URL

```
.-- README.txt
-- conf
|-- authz
|-- passwd
`-- svnserve.conf
-- db
|-- current
|-- format
|-- fs-type
|-- fsfs.conf
...
|-- revprops
|-- revs
-- format
-- hooks
|-- post-commit.tmpl
|-- post-lock.tmpl
|-- post-revprop-change.tmpl
|-- post-unlock.tmpl
|-- pre-commit.tmpl
|-- pre-lock.tmpl
|-- pre-revprop-change.tmpl
|-- pre-unlock.tmpl
`-- start-commit.tmpl
-- locks
|-- db-logs.lock
`-- db.lock
```

REP

# DEMO

# Subversion Properties

`svn:keywords`

`svn:mime-type`

`svn:log`

`svn:mergeinfo`

`svn:author`

`svn:date`

`svn:needs-lock`

`svn:eol-style`

`svn propdel`

`svn propedit`

`svn propget`

`svn proplist`

`svn propset`

příkazy pro práci s properties

# svn:ignore

```
svn propset svn:ignore -F .cvsignore .
```

```
svn status --no-ignore
```

# svn:keywords

- Date
- Revision
- Author
- HeadUrl
- Id

```
$Id: calc.c 148 2002-07-28 21:30:43Z sally $
```

# svn:externals

- Externí knihovny

```
$ svn propget svn:externals calc
```

```
third-party/sounds
```

<http://sounds.red-bean.com/repos>

```
third-party/skins
```

<http://skins.red-bean.com/repositories/skinproj>

```
third-party/skins/toolkit -r21 http://svn.red-bean.com/repos/skin-maker
```

před 1.5

```
/svn/Shared/trunk/lib external/lib
```

```
/svn/Shared/trunk/lib-tools external/lib-tools
```

```
svn co $1 trunk
```

```
svn propset svn:externals -F $2 trunk/
```

```
cd trunk
```

```
svn commit -m "Update svn:externals"
```

```
cd ..
```

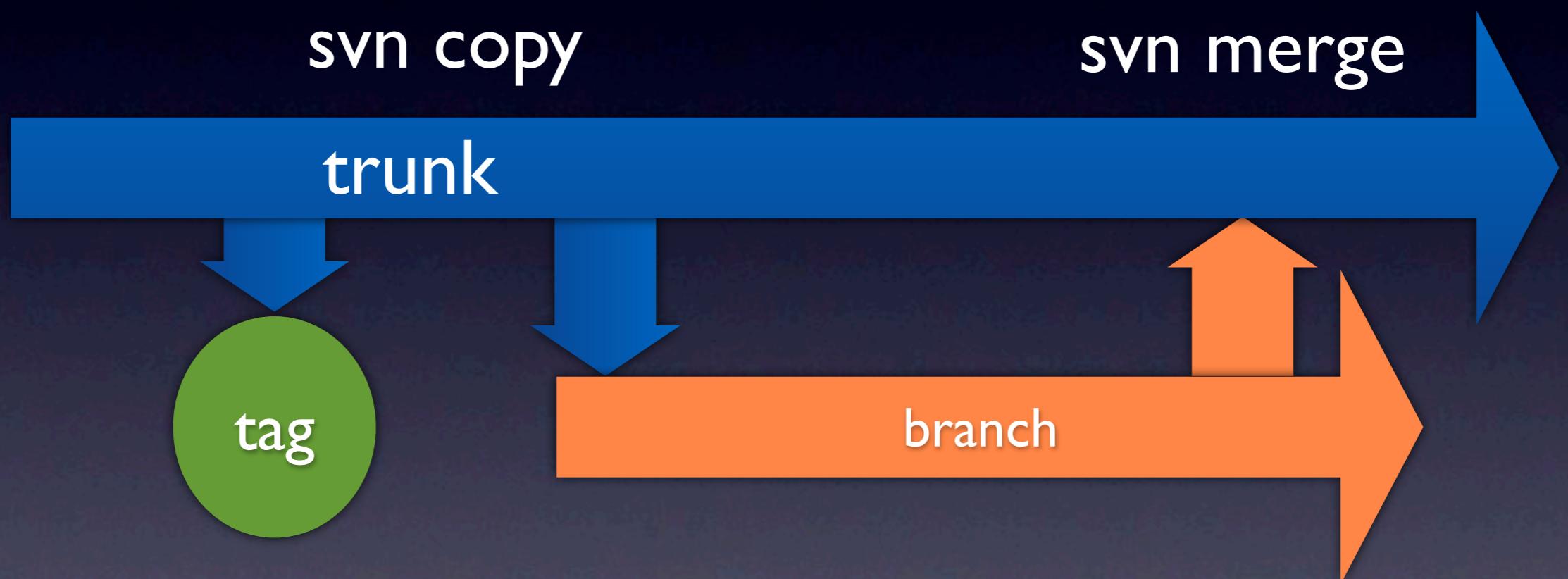
```
svn propget svn:externals trunk/
```

```
rm -Rf trunk/
```

Konfigurace  
pro 1.5 a výše

externals.sh

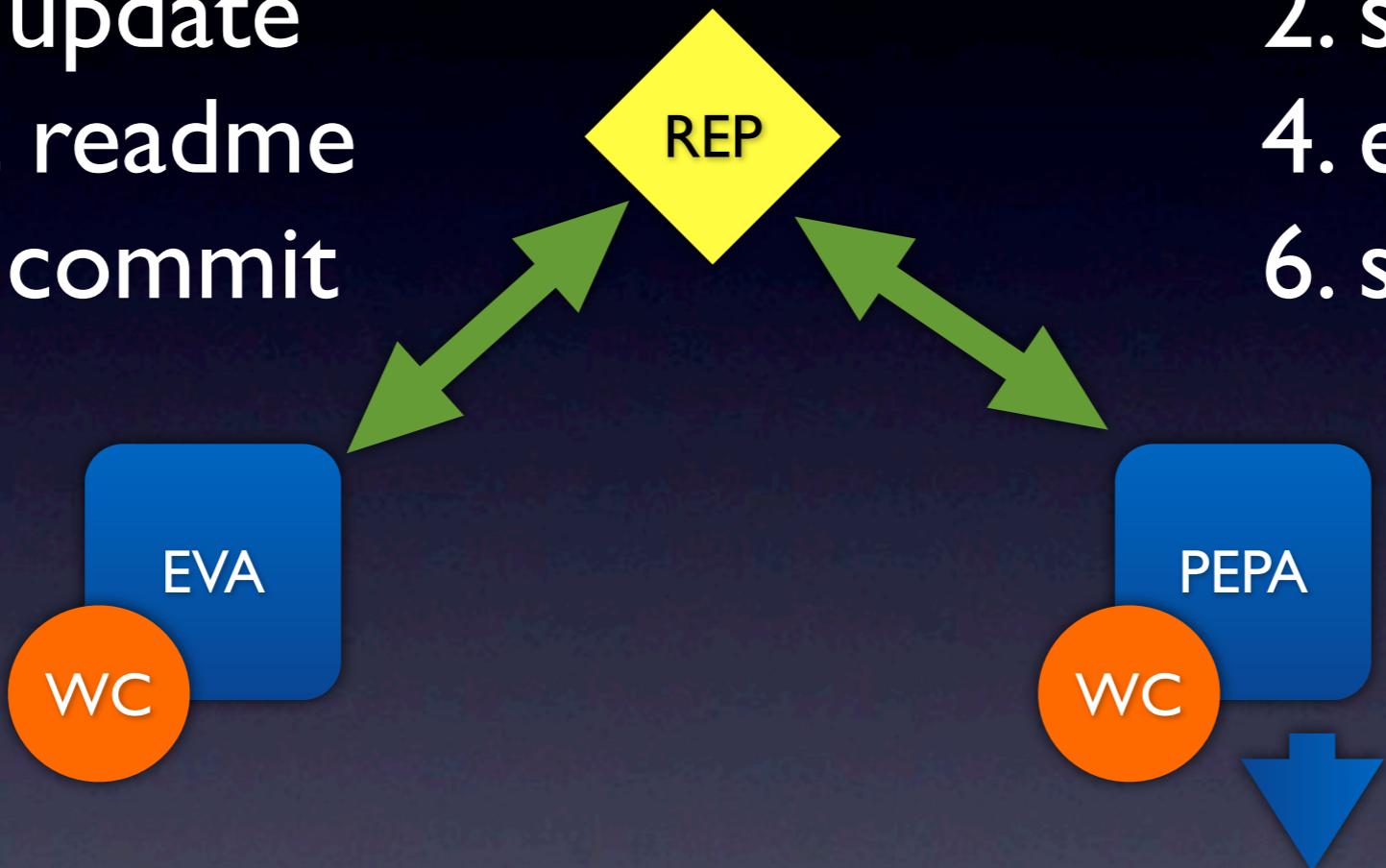
# Větve a tagy



# DEMO

# Vznik konfliktu

1. svn update
3. edit readme
5. svn commit



2. svn update
4. edit readme
6. svn commit

```
Sending README  
svn: Commit failed (details follow):  
svn: File '/README' is out of date
```

# Řešení konfliktu

PEPA

WC

## 7. svn update

Conflict discovered in 'README'.

Select: (p) postpone, (df) diff-full, (e) edit,  
(mc) mine-conflict, (tc) theirs-conflict,  
(s) show all options: e

## 8. edit

```
# README
<<<<< .mine
Pepa: neco jineho dela
=====
Eva: Udelala neco
>>>>> .r2
```

## 10. commit



## 9. resolved

Select: (p) postpone, (df) diff-full, (e) edit, (r) resolved,  
(mc) mine-conflict, (tc) theirs-conflict,  
(s) show all options: r

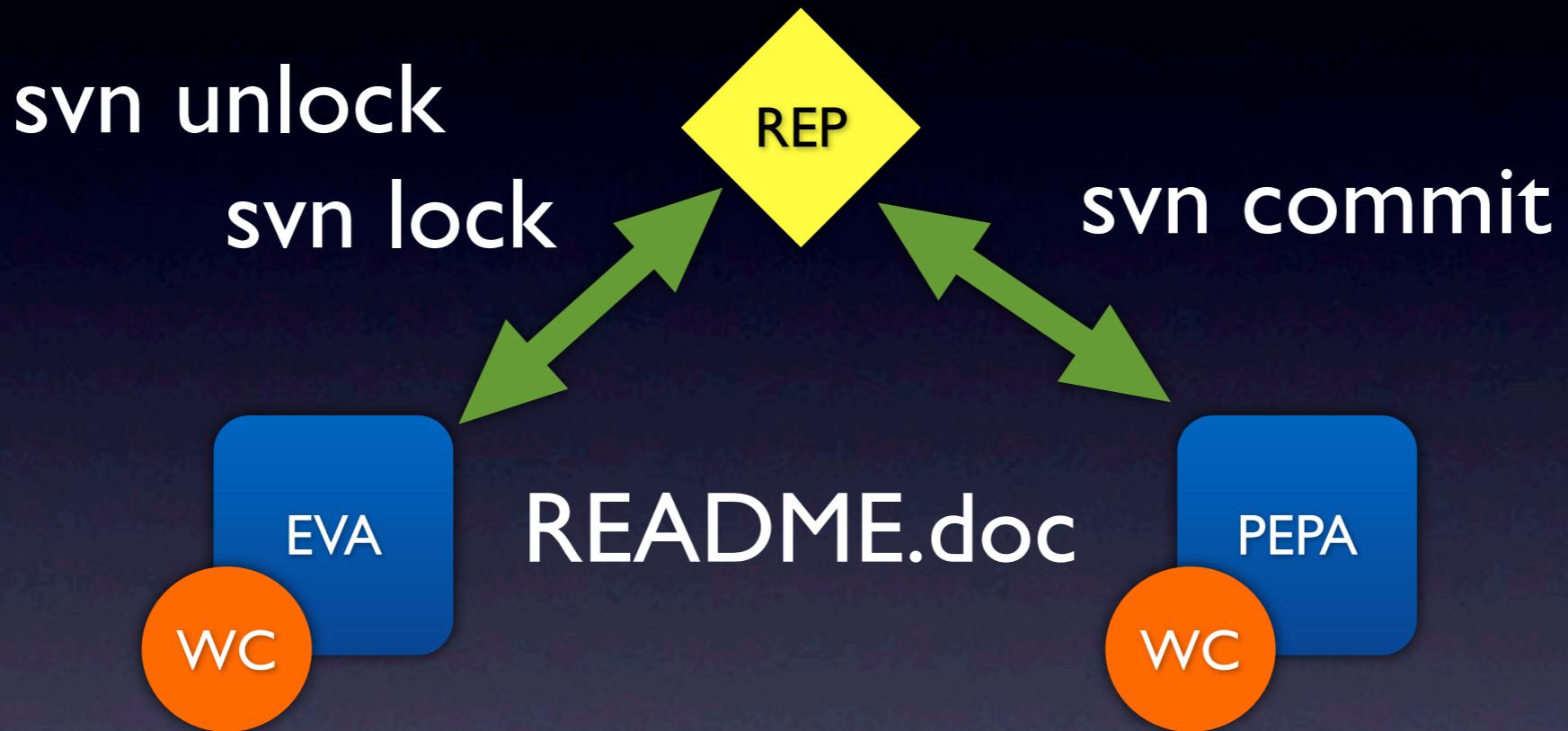
# Řešení konfliktů

Select: (p) postpone, (df) diff-full, (e) edit, (r) resolved,  
(mc) mine-conflict, (tc) theirs-conflict,  
(s) show all options: s

- (e) edit
  - change merged file in an editor
- (df) diff-full
  - show all changes made to merged file
- (r) resolved
  - accept merged version of file
- (dc) display-conflict
  - show all conflicts (ignoring merged version)
- (mc) mine-conflict
  - accept my version for all conflicts (same)
- (tc) theirs-conflict
  - accept their version for all conflicts (same)
- (mf) mine-full
  - accept my version of entire file  
(even non-conflicts)
- (tf) theirs-full
  - accept their version of entire file (same)
- (p) postpone
  - mark the conflict to be resolved later
- (l) launch
  - launch external tool to resolve conflict
- (s) show all
  - show this list

# DEMO

# Zamykání souborů



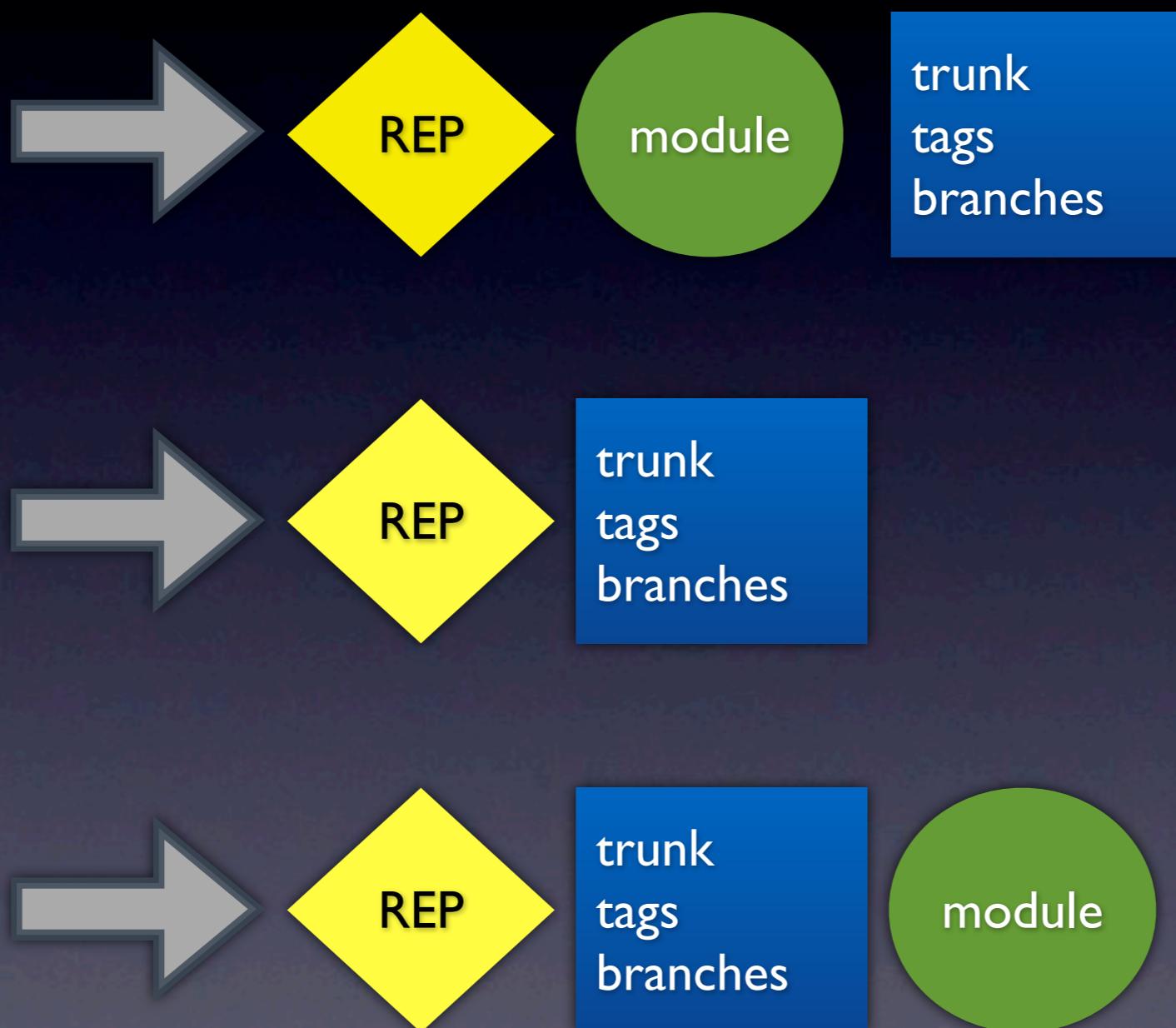
```
Transmitting file data .svn: Commit failed (details follow):  
svn: User root does not own lock on path '/README' (currently  
locked by prskavecl)
```

# Další příkazy

- *svn blame* - zjistíte kdo provedl poslední změnu
- *svn export* - zdrojové kódy bez .svn adresářů, lze dostat stav pro určitou revizi
- *svn cleanup* - vyčištění pracovní kopie
- *svn log* - úkazka (užitečný xml formát)

# Administrace serveru

# Struktura repository



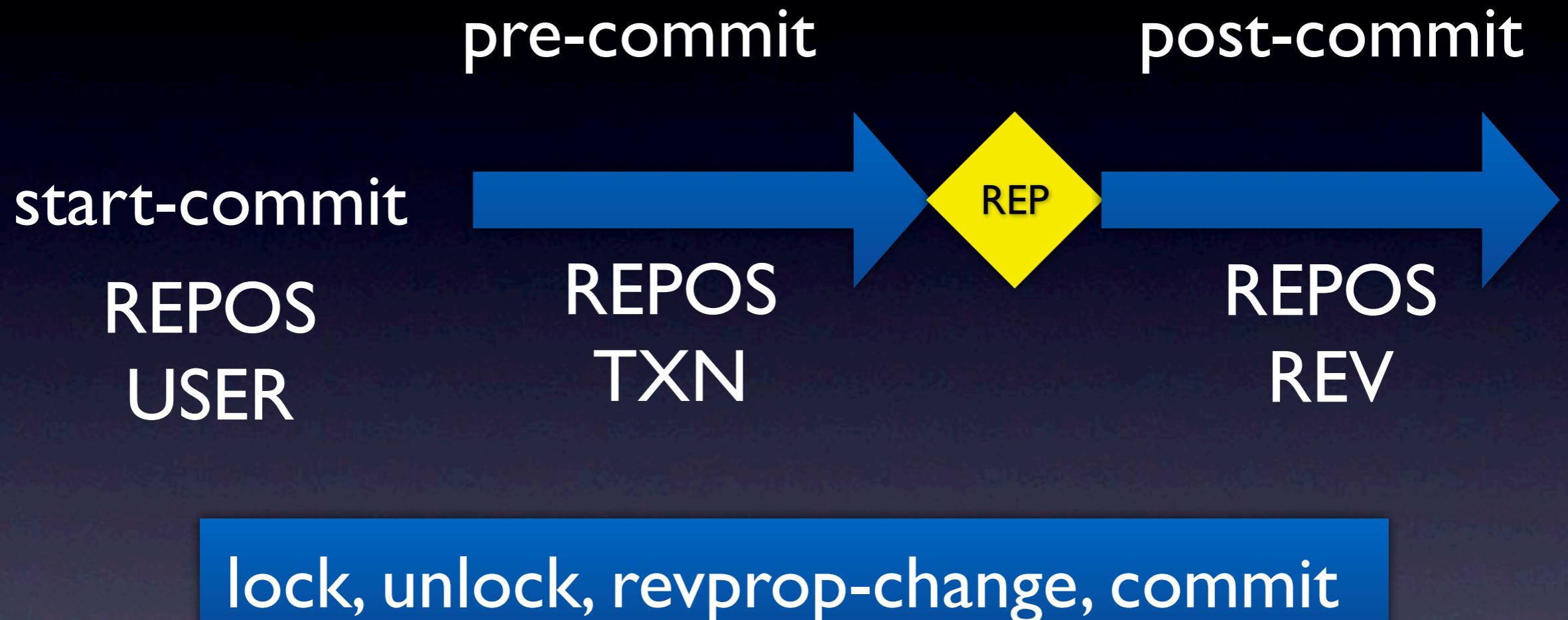
# Repository UUID

- Kontrola uuid
  - svnlook uuid path
- Vytvoření nového uuid
  - svnadmin setuuid path
- Vytvoření repository se starým uuid
  - svnadmin setuuid path uuid

# Práce s svnadmin

- `svnadmin create`
- `svnadmin dump`
- `svnadmin load`
- `svnadmin verify`
- `svnadmin hotcopy`
- `svnadmin pack`
- `svnadmin upgrade`
- `svnadmin lslock`
- `svnadmin rmlock`
- `svnadmin lstxns`
- `svnadmin rmtxns`
- `svnadmin setlog`

# Hooks



# Práva pro přístup

- auth\_access file

```
[groups]
admins = pepa
devs = jara, pepa, iva
[/]
* = r
[sandbox:/]
@devs = rw
[production:/]
@admins = rw
```

# Napojení na LDAP

- na úrovni Apache nebo PAM

```
<Location /svn/>
    DAV svn
    SVNParentPath /srv/svn
    SVNListParentPath on
#    SVNPathAuthz Off
    AuthBasicProvider ldap-alias
    AuthType Basic
    #on pro skupiny, off pro usery
    AuthzLDAPAuthoritative off
    AuthName "Subversion repos over AD"
    AuthzSVNAccessFile /etc/opt/CollabNet_Subversion/conf/extra/.authz_access
    Require valid-user
    Satisfy any
</Location>
```

# Napojení na LDAP II

- Active Directory

```
<AuthnProviderAlias ldap ldap-alias>
    AuthLDAPURL "ldap://host.ad.firma.cz:389/OU=FIRMA
    Users,DC=ad,DC=firma,DC=cz?sAMAccountName?sub?(objectClass=*)" NONE
    AuthLDAPBindDN "alm@ad.firma.cz"
    AuthLDAPBindPassword dfadsfsdfdsfds
</AuthnProviderAlias>
```

# Migrace repository

- Uložení repository do souboru
  - svnadmin dump repos >file
  - svndump (od 1.7)
- Nahrání repository ze souboru
  - svnadmin load repos < file
- Kontrola integrity repository
  - svnadmin verify

# DEMO

# Mirror pomocí svnsync

- Subversion 1.6.3 a více (funkce od 1.4)
- Inicializace
  - svnsync init
- Synchronizace
  - svnsync synchronize

# DEMO

# Migrace z jiného verzovacího systému

# Migrace

- snapshots
- s historií
- CVS, Git, jiné

# Snapshot z CVS

```
module_name = $1
module_name_svn = $2
cvs checkout ${module_name}
find . -depth -name 'CVS' -exec rm -rf '{}' \; -print
cd $module_name
svn import http://svn.server.cz/svn/${module_name_svn}/trunk \
-m "Import from CVS"
cd ..
```

# Historie z CVS

- CVS to svn/git/hg/bzr
- cvs2svn.py - <http://cvs2svn.tigris.org/>
- Python 2.4 a vyšší

```
cvs2svn --svnrepos NEW SVNREP CVSREPO
```

```
cvs2svn --dumpfile DUMPFILE CVSREPOS
```

# Z Gitu do SVN

- Vytvoření prázdného SVN repository
- Clonování Git repository
  - `git svn clone svn://path/to/repo/project --stdlayout`
  - `git remote add origin git://uri/to/git/repo/project.git`
  - `git fetch origin`
  - `git checkout -b old_master origin/master`
  - `git rebase --onto master --root`
  - `git svn dcommit`

# Doporučené postupy

# svnmerge.py

- Merge tracking support (i před 1.5)
- Development, release branches
- List revisions available for merging (revision numbers, logs, or diffs).
- Bidirectional merges

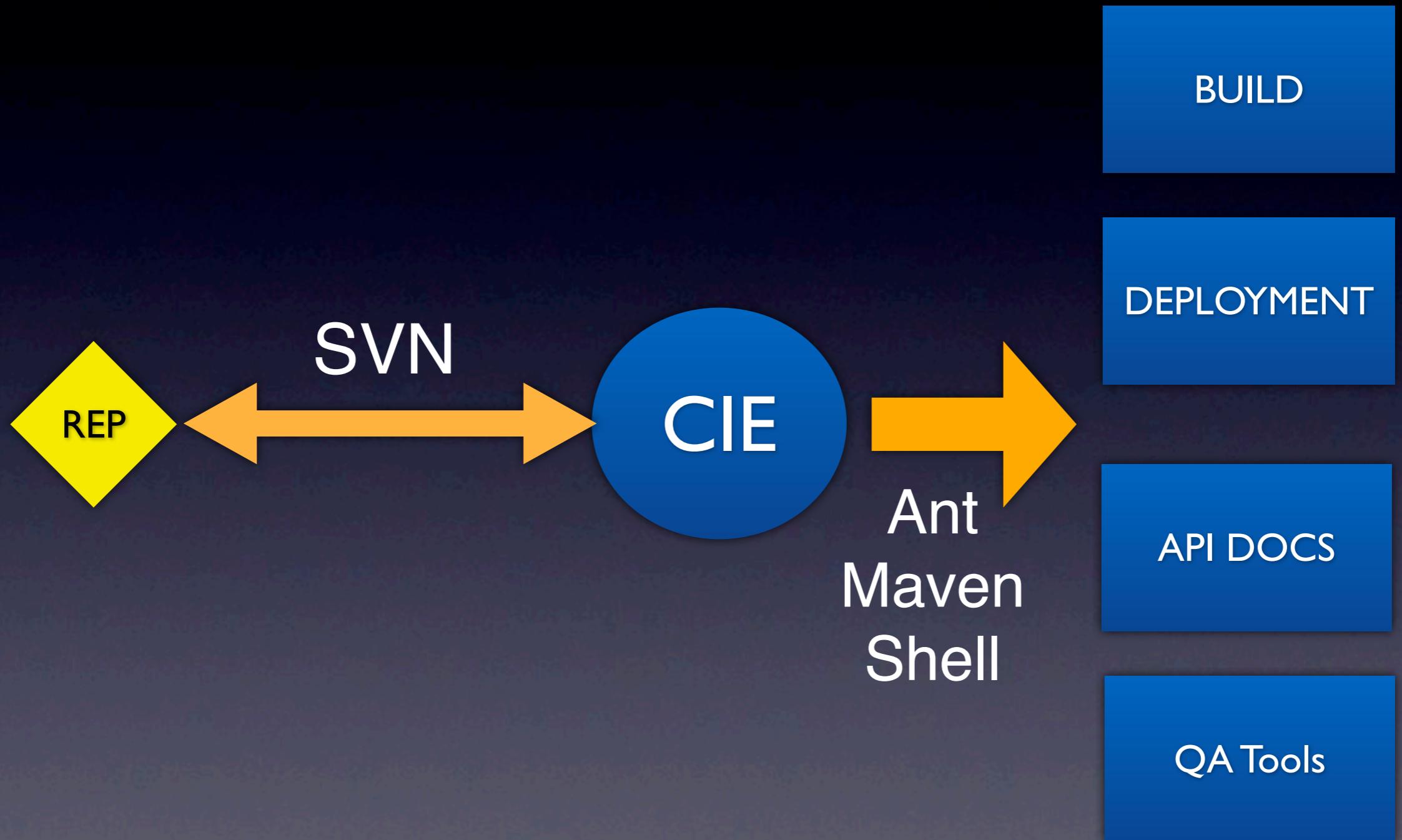
# Kdy zamykat a kdy ne!

- binární soubory
- skladiště dokumentů
- pro programátory není většinou nutné

# Jak pracovat s commity

- message
- četnost
- pre-commit hook (kontrola syntaxe)
- post-commit hook (emaily)

# Continuous integration



# Jenkins CI a Integrace Subversion

# IDE Integrace

- Eclipse
  - Subversive, Subclipse
- Netbeans
- Komodo IDE
- JetBrains IDEA platform
- Visual Studio

# Další nástroje

- Webové rozhraní
  - ViewVC, ...
- Commit monitor
- StatSVN
- Generování changelogů pomocí svn2cl