Packaging made easy

How the openSUSE build service makes building packages easy for developers who don't care about packaging

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Motivation

- Packaging: Creating installable binaries of software for end users
- Assumption: Software developers don't like packaging
  - Requires specific skills and knowledge
  - Needs time, big fraction of the time is spent waiting
  - Effort multiplies with number of platforms the software should run on
- Solution: openSUSE Build Service provides tools to make packaging easy

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Overview

- Architecture
- Tools
  - Web Client
  - Command Line Client
  - Upstream Integration Client
  - Native GUI Client
- Getting Involved

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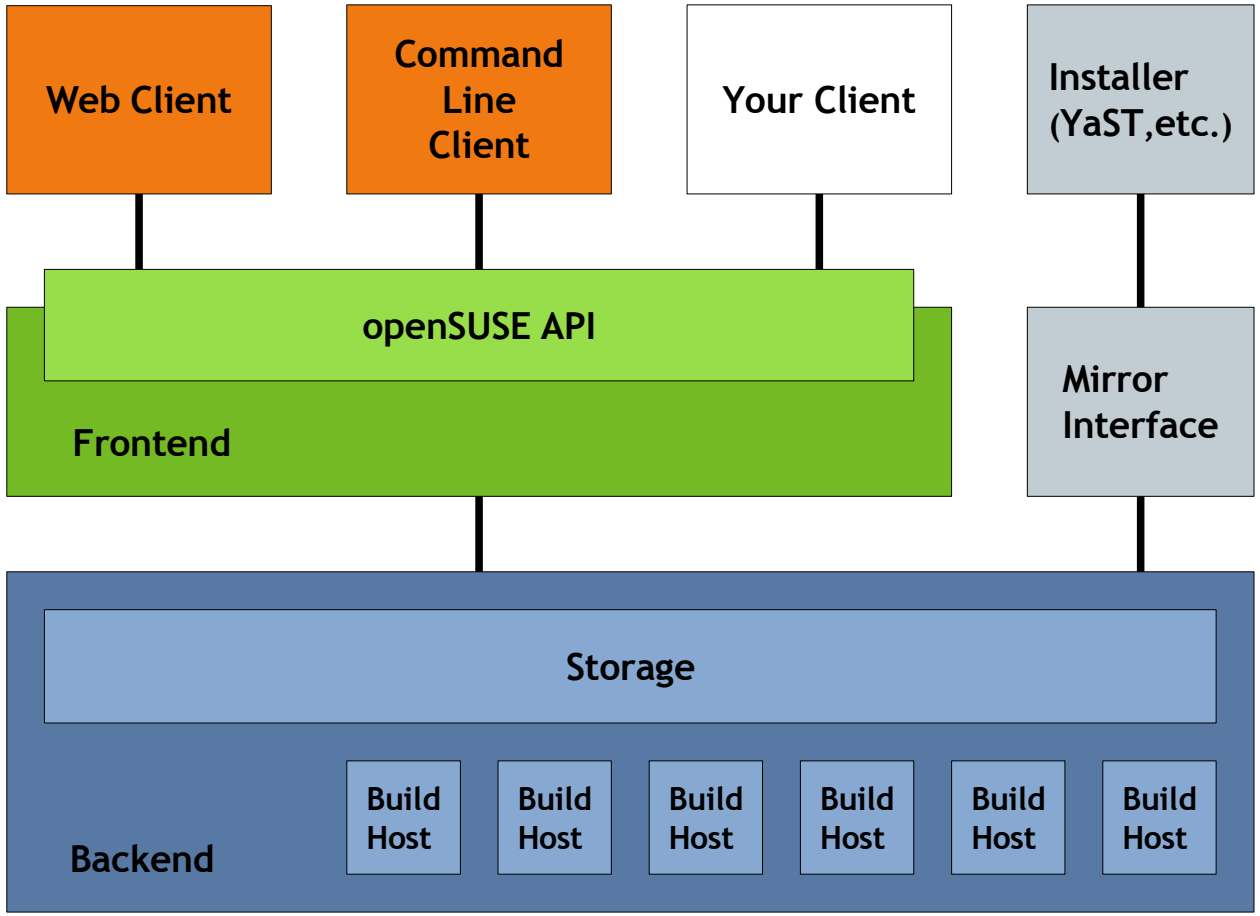
Architecture

Architecture



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Backend

- Building Packages

- Storage for sources (version controlled)
- Farm of build hosts for building packages
- Runs sandboxed builds (using XEN)
- Build for multiple hardware architectures (currently i586, x86_64)
- Storage for built packages
- Provide build status and logs

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Mirror Interface

- Interface to mirrors
- Interface to end users through installation tools

- Syncing with mirrors (rsync, drpmsync)
- Installation source meta data (apt, yum, SUSE)
- Redirecting users to up-to-date mirrors
- Support end users with finding and installing packages from openSUSE
- Planned: Notification about new versions (RSS, mail, ...)

- http://software.opensuse.org/download

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Frontend

- Programming Interface to the Build Service

- Public API for client tools
- Access to sources
- Access to build status and logs
- Access to built packages
- Control build
- User management

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openSUSE API

- Public Programming Interface for the openSUSE Build Service

- Web Service
- REST based API
- XML over HTTP
  - Frontend functionality exposed through HTTP operations
  - Control and meta data is transferred and stored as XML
  - Schema validation for all XML data
- Leverages use of standard tools and frameworks

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Client Tools

- User Interface for Developers and Packagers

- Web Client
  - based on Ruby on Rails
- Command Line Client (osc)
  - SVN-style user interface
  - Python
  - supports local builds
- oscupstream
  - integration with upstream SVN repositories

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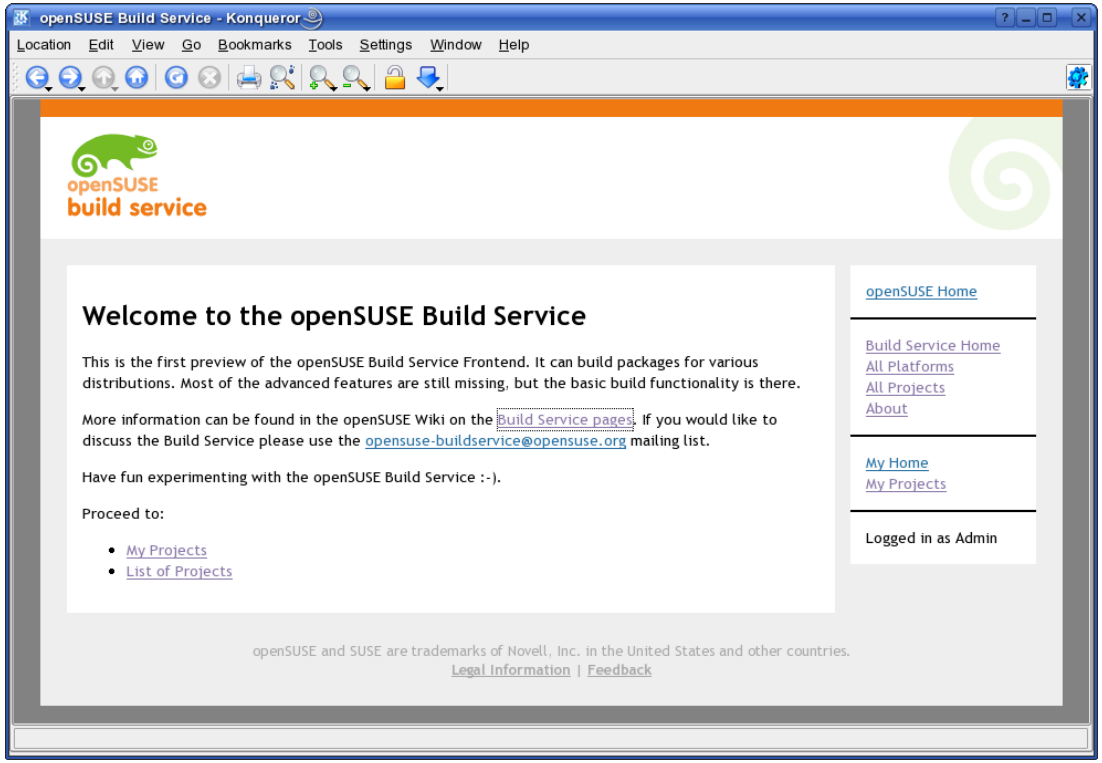
Web Client Demo

Web Client

http://build.opensuse.org



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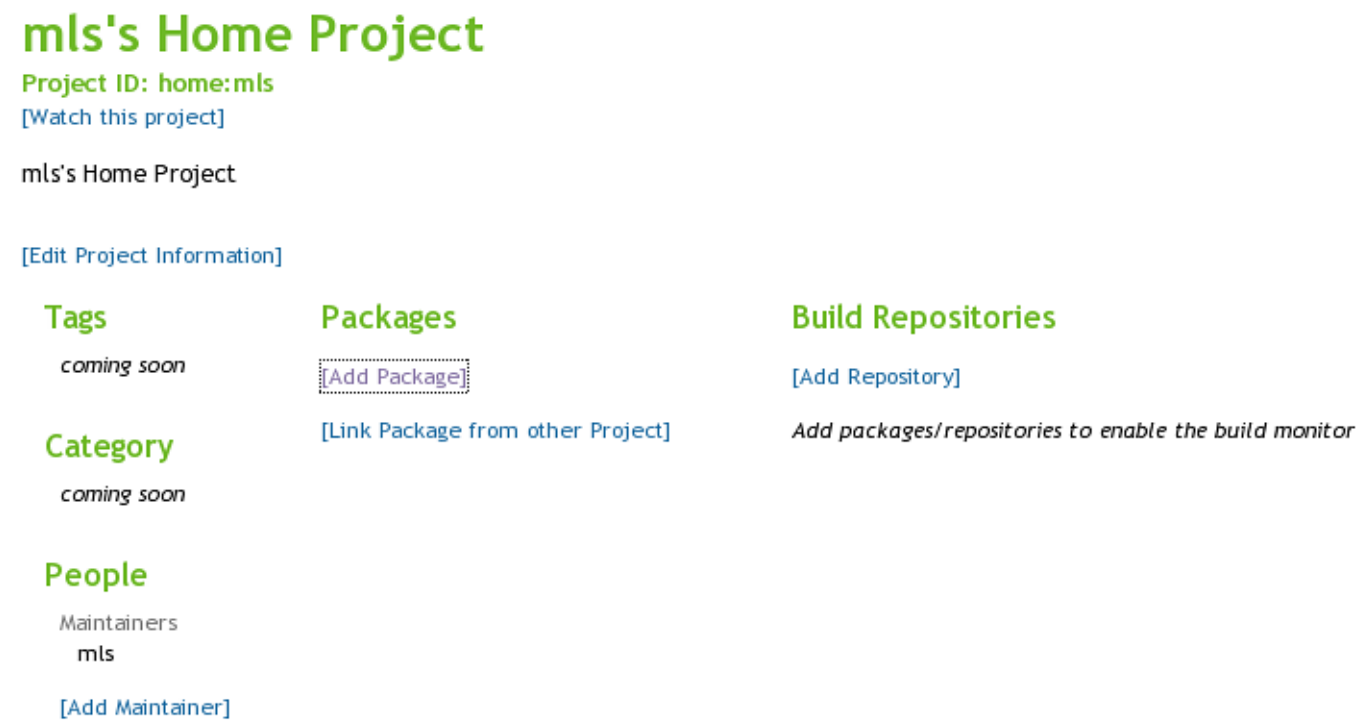
Example: adding a screen package



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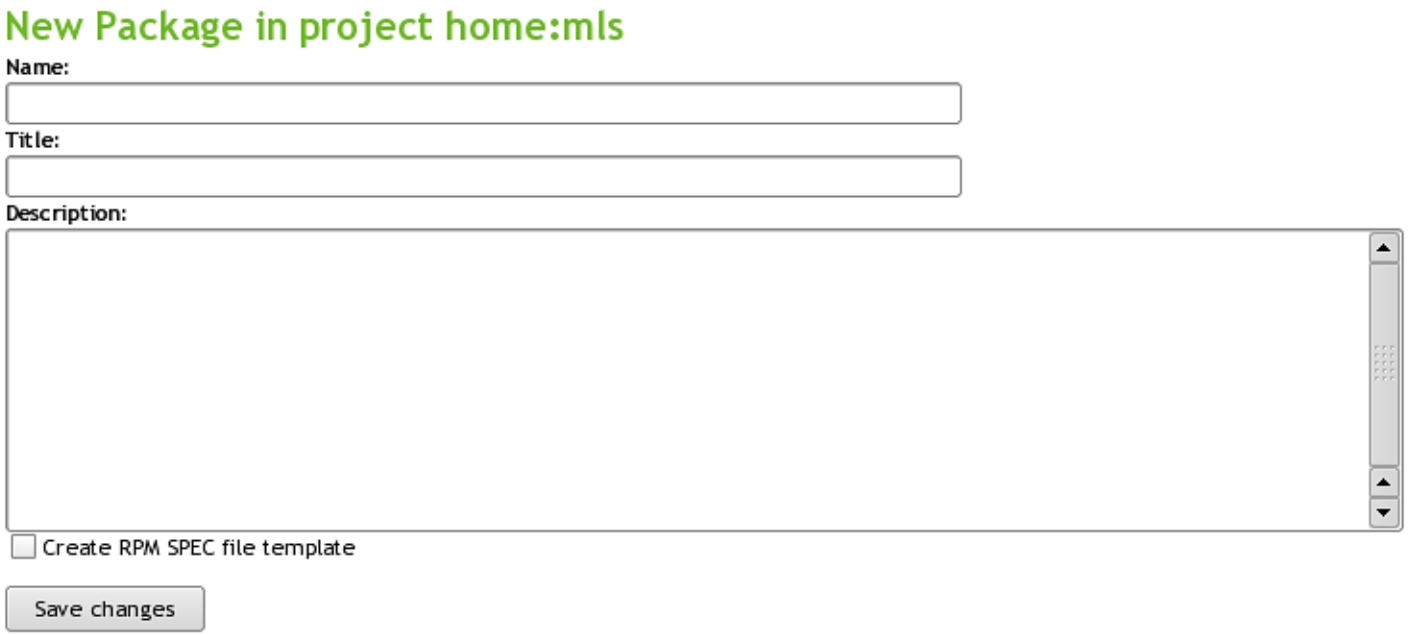
Entering package data



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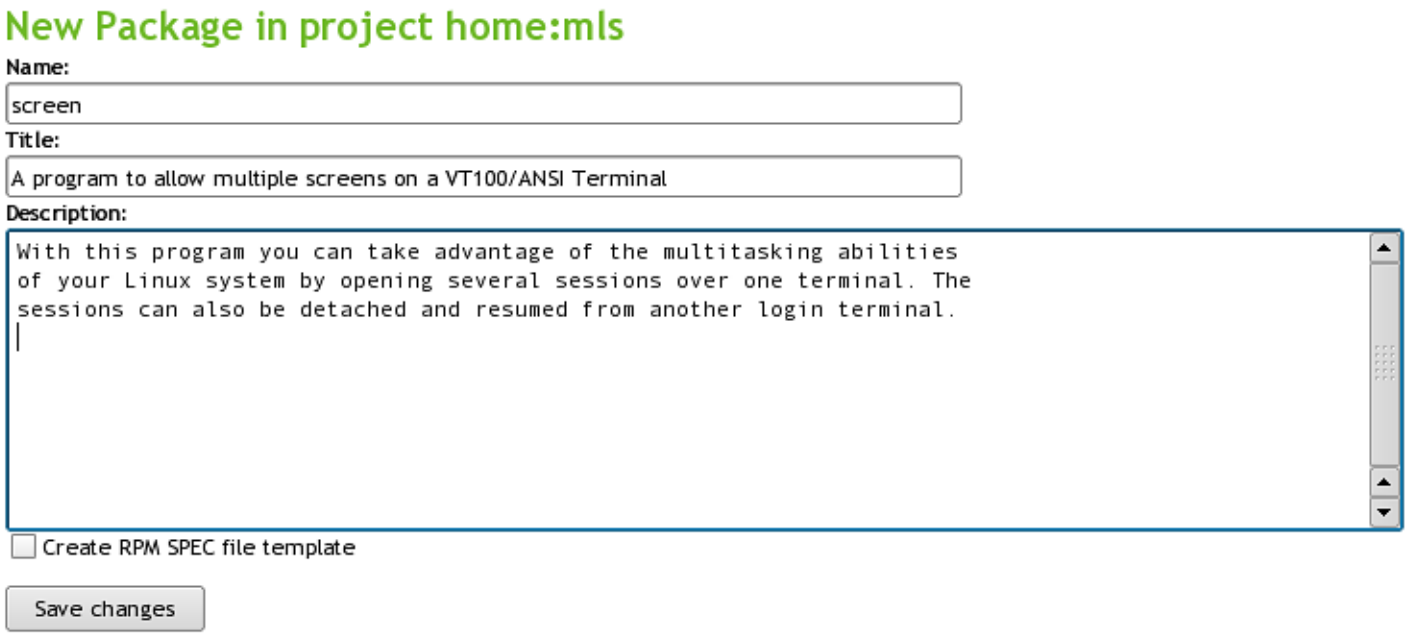
cont.



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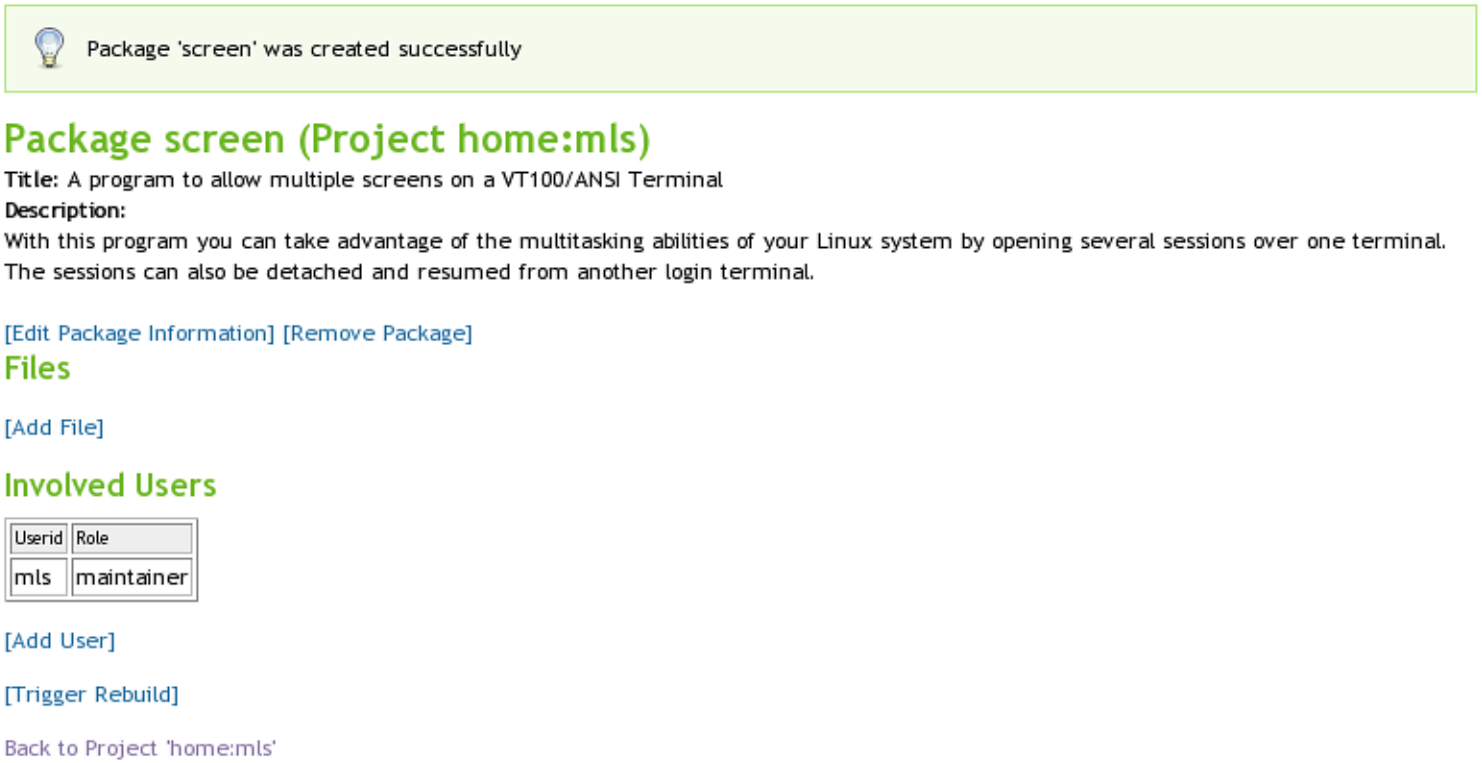
Adding files to a package



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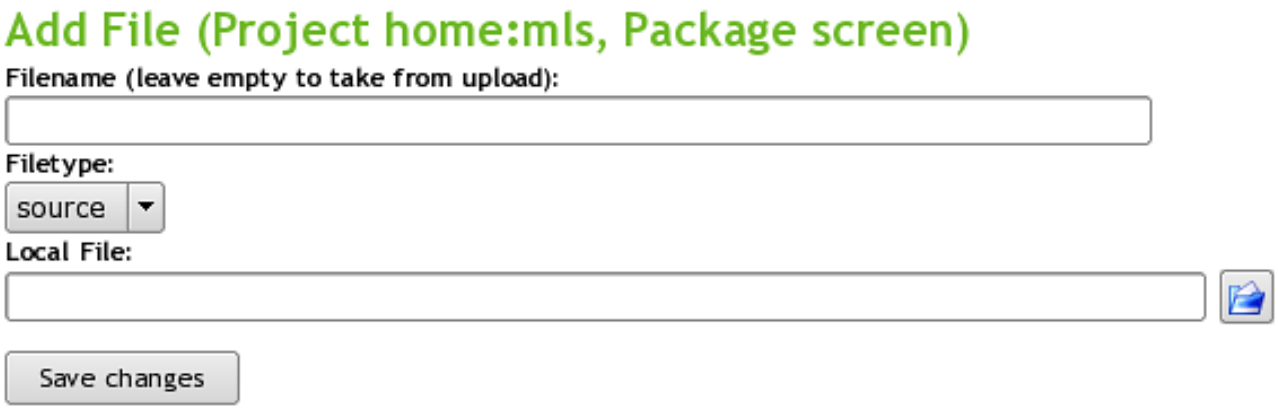
cont.



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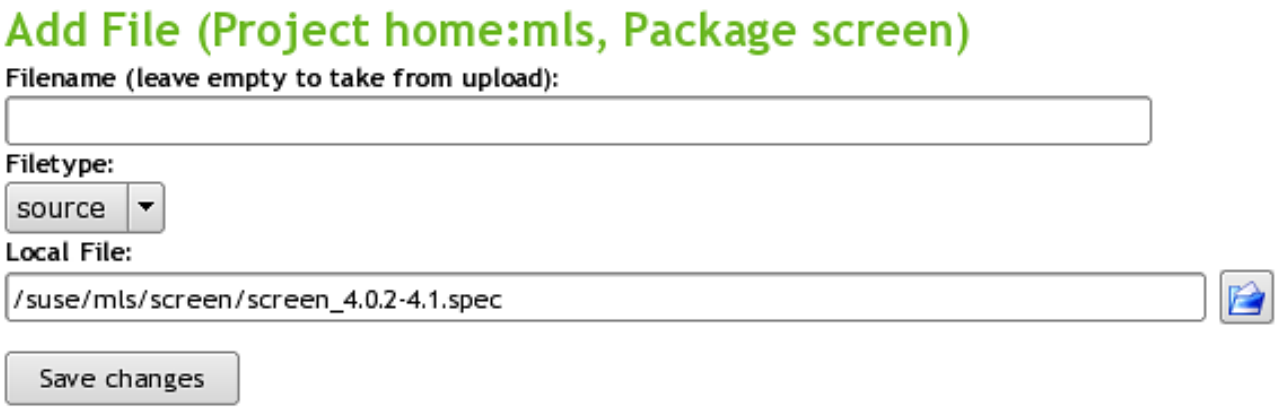
cont.



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cont.

Package screen (Project home:mls)

Title: A program to allow multiple screens on a VT100/ANSI Terminal
Description:
With this program you can take advantage of the multitasking abilities of your Linux system by opening several sessions over one terminal. The sessions can also be detached and resumed from another login terminal.

[Edit Package Information] [Remove Package]

Files

screen_4.0.2-4.1.spec [Edit] [Download] [Remove]

[Add File]

Involved Users

Userid	Role
mls	maintainer

[Add User]

[Trigger Rebuild]

Back to Project 'home:mls'

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cont.

Package screen (Project home:mls)

Title: A program to allow multiple screens on a VT100/ANSI Terminal
Description:
With this program you can take advantage of the multitasking abilities of your Linux system by opening several sessions over one terminal. The sessions can also be detached and resumed from another login terminal.

[Edit Package Information] [Remove Package]

Files

screen_4.0.2-4.1.diff.gz		[Download] [Remove]
screen_4.0.2-4.1.dsc		[Download] [Remove]
screen_4.0.2-4.1.spec	[Edit]	[Download] [Remove]
screen_4.0.2.orig.tar.gz		[Download] [Remove]

[Add File]

Involved Users

Userid	Role
mls	maintainer

[Add User]

[Trigger Rebuild]

Back to Project 'home:mls'

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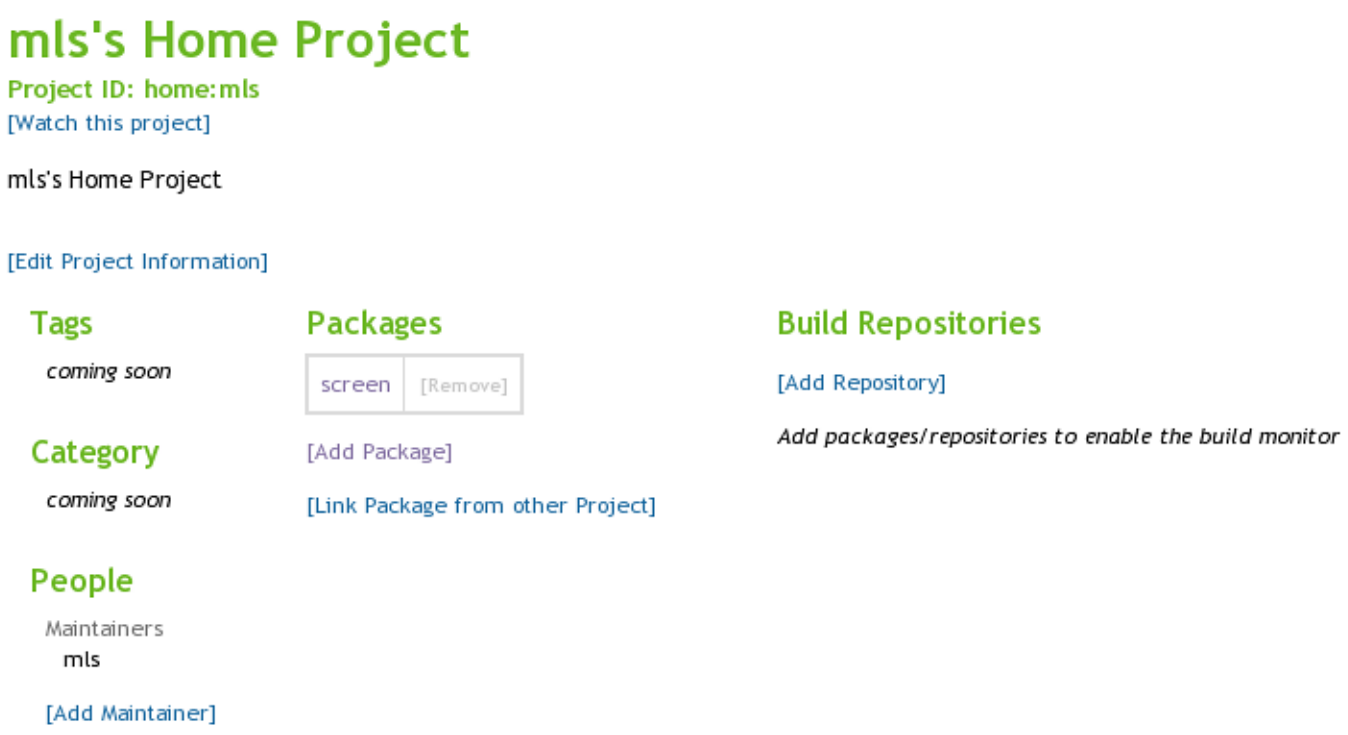
We have a new package!



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Adding Repositories

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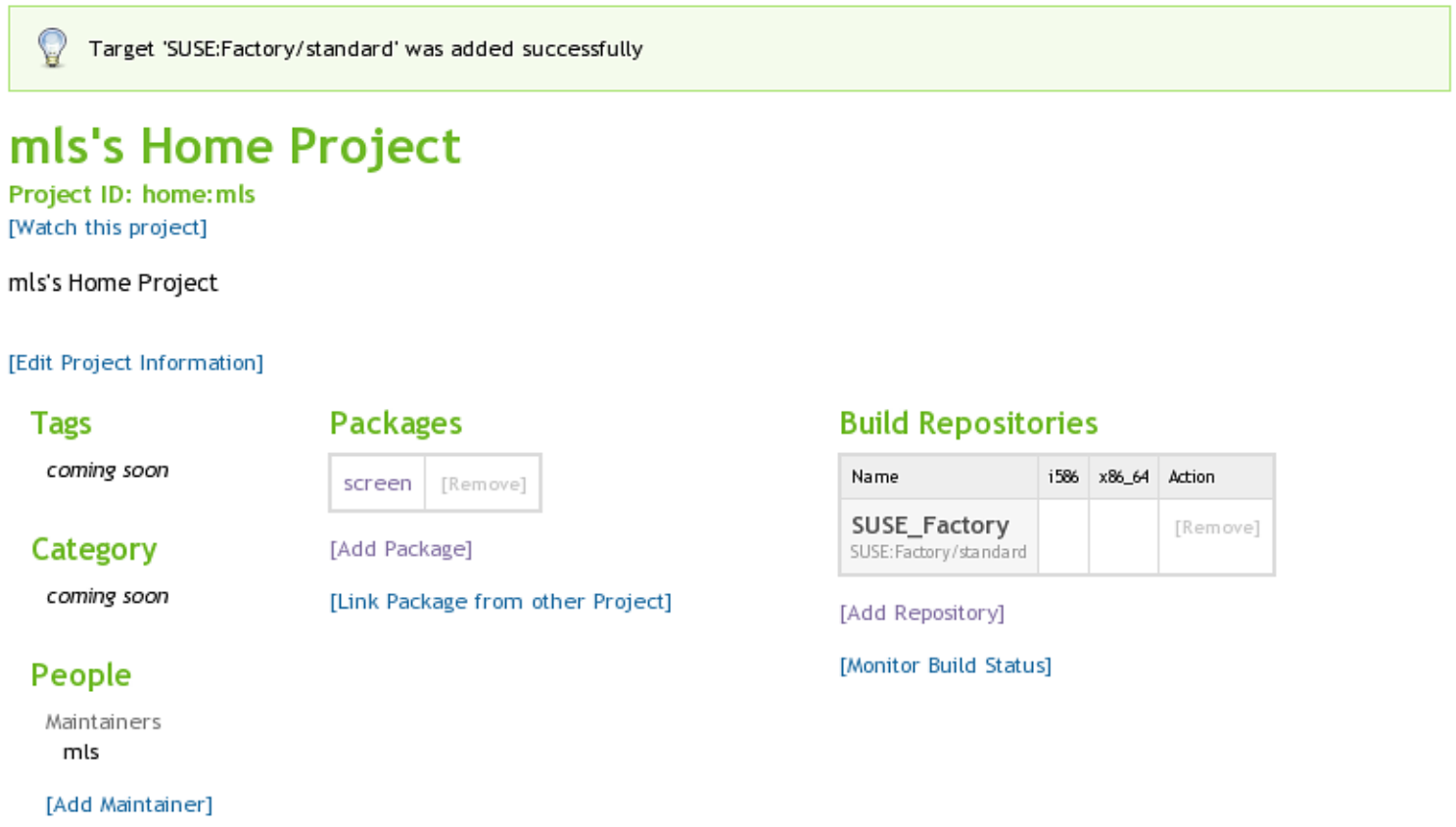
cont.



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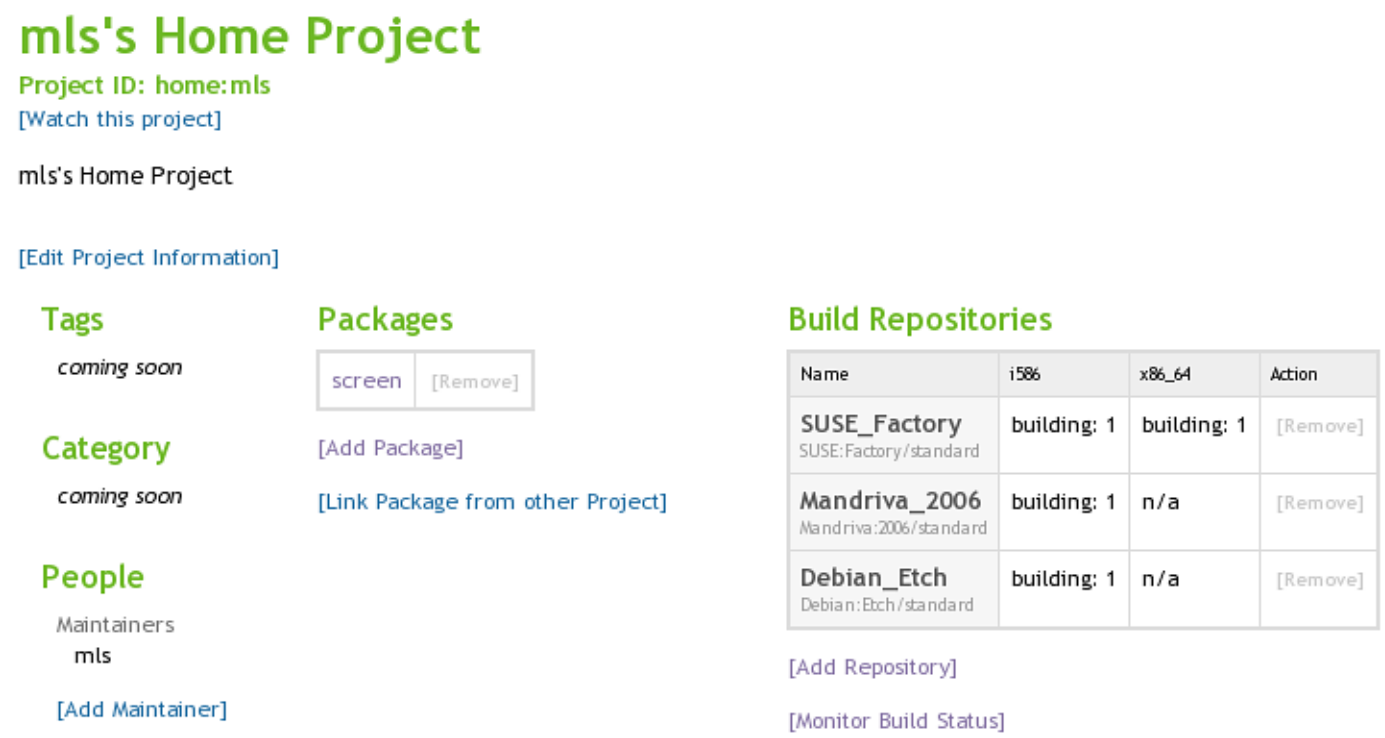
cont.



mls's Home Project

Project ID: home:mls

[Watch this project]

mls's Home Project

[Edit Project Information]

Tags

coming soon

Category

coming soon

People

Maintainers

mls

[Add Maintainer]

Packages

screen [Remove]

[Add Package]

[Link Package from other Project]

Build Repositories

Name	i586	x86_64	Action
SUSE_Factory SUSE:Factory/standard	building: 1	building: 1	[Remove]
Mandriva_2006 Mandriva:2006/standard	building: 1	n/a	[Remove]
Debian_Etch Debian:Etch/standard	building: 1	n/a	[Remove]

[Add Repository]

[Monitor Build Status]

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cont.

screen_4.0.2-4.1.diff.gz [Download] [Remove]
screen_4.0.2-4.1.dsc [Download] [Remove]
screen_4.0.2-4.1.spec [Edit] [Download] [Remove]
screen_4.0.2.orig.tar.gz [Download] [Remove]

[Add File]

Involved Users

Userid	Role
mls	maintainer

[Add User]

Build Status

SUSE_Factory		
x86_64	building	[Live Build Log]
i586	building	[Live Build Log]
Mandriva_2006		
i586	building	[Live Build Log]
Debian_Etch		
i586	building	[Live Build Log]

[Trigger Rebuild]

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cont.

Build Log for Package screen (Project home:mls)

Repository: SUSE_Factory
Architecture: x86_64

[Start Autoscroll]

[Start Refreshing]

Status: Live Log not started

```
    build07 started "build screen_4.0.2-4.1.spec" at Mon Aug 7 21:45:11 CEST 2006.

Building 'screen' for project 'home:mls' target 'SUSE_Factory' arch 'x86_64' srcmd5 '9f1411622a59ca3a7a7d49adc6a
Using BUILD_ROOT=/BUILD/root_7
Using BUILD_ARCH=x86_64:i686:i586:i486:i386

processing specfile /BUILD/root_7/.build-srcdir/screen_4.0.2-4.1.spec...
init_buildsystem --rpmlist /BUILD/root_7/.rpmlist screen_4.0.2-4.1.spec ...
preinstalling aaa_base...
preinstalling acl...
preinstalling attr...
preinstalling bash...
preinstalling bzip2...
preinstalling coreutils...
preinstalling db...
preinstalling diffutils...
preinstalling filesystem...
```


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cont.

```
screen.c: In function 'CoreDump':
screen.c:1510: warning: ignoring return value of 'write', declared with attribute warn_unused_result
screen.c: In function 'Panic':
screen.c:1992: warning: ignoring return value of 'write', declared with attribute warn_unused_result
screen.c:1993: warning: ignoring return value of 'write', declared with attribute warn_unused_result
screen.c: In function 'serv_select_fn':
screen.c:2919: warning: ignoring return value of 'write', declared with attribute warn_unused_result
gcc -c -I. -I.    -fmessage-length=0 -D_FORTIFY_SOURCE=2 -O2 ansi.c
In file included from screen.h:25,
                 from ansi.c:31:
os.h:148:1: warning: "bcopy" redefined
In file included from /usr/include/string.h:422,
                 from os.h:90,
                 from screen.h:25,
                 from ansi.c:31:
/usr/include/bits/string3.h:100:1: warning: this is the location of the previous definition
gcc -c -I. -I.    -fmessage-length=0 -D_FORTIFY_SOURCE=2 -O2 fileio.c
In file included from screen.h:25,
                 from fileio.c:33:
os.h:148:1: warning: "bcopy" redefined
In file included from /usr/include/string.h:422,
                 from os.h:90,
                 from screen.h:25,
                 from fileio.c:33:
/usr/include/bits/string3.h:100:1: warning: this is the location of the previous definition
fileio.c: In function 'WriteFile':
fileio.c:442: warning: ignoring return value of 'ftruncate', declared with attribute warn_unused_result
fileio.c: In function 'printpipe':
fileio.c:775: warning: ignoring return value of 'dup', declared with attribute warn_unused_result
gcc -c -I. -I.    -fmessage-length=0 -D_FORTIFY_SOURCE=2 -O2 mark.c
```

[Stop Autoscroll]

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cont.

Involved Users

Userid	Role
mls	maintainer

[Add User]

Build Status

SUSE_Factory		
x86_64	succeeded	[Live Build Log]
	screen-4.0.2-64.1.x86_64.rpm	
	screen-4.0.2-64.1.src.rpm	
i586	succeeded	[Live Build Log]
	screen-4.0.2-64.1.i586.rpm	
	screen-4.0.2-64.1.src.rpm	
Mandriva_2006		
i586	building	[Live Build Log]
Debian_Etch		
i586	building	[Live Build Log]

[Trigger Rebuild]

Back to Project 'home:mls'

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cont.

Build Status

SUSE_Factory		
x86_64	succeeded	[Live Build Log]
	screen-4.0.2-64.1.x86_64.rpm	
	screen-4.0.2-64.1.src.rpm	
i586	succeeded	[Live Build Log]
	screen-4.0.2-64.1.i586.rpm	
	screen-4.0.2-64.1.src.rpm	
Mandriva_2006		
i586	succeeded	[Live Build Log]
	screen-4.0.2-64.1.i586.rpm	
	screen-4.0.2-64.1.src.rpm	
Debian_Etch		
i586	succeeded	[Live Build Log]
	screen_4.0.2-4.1_i386.deb	

[Trigger Rebuild]

Back to Project 'home:mls'

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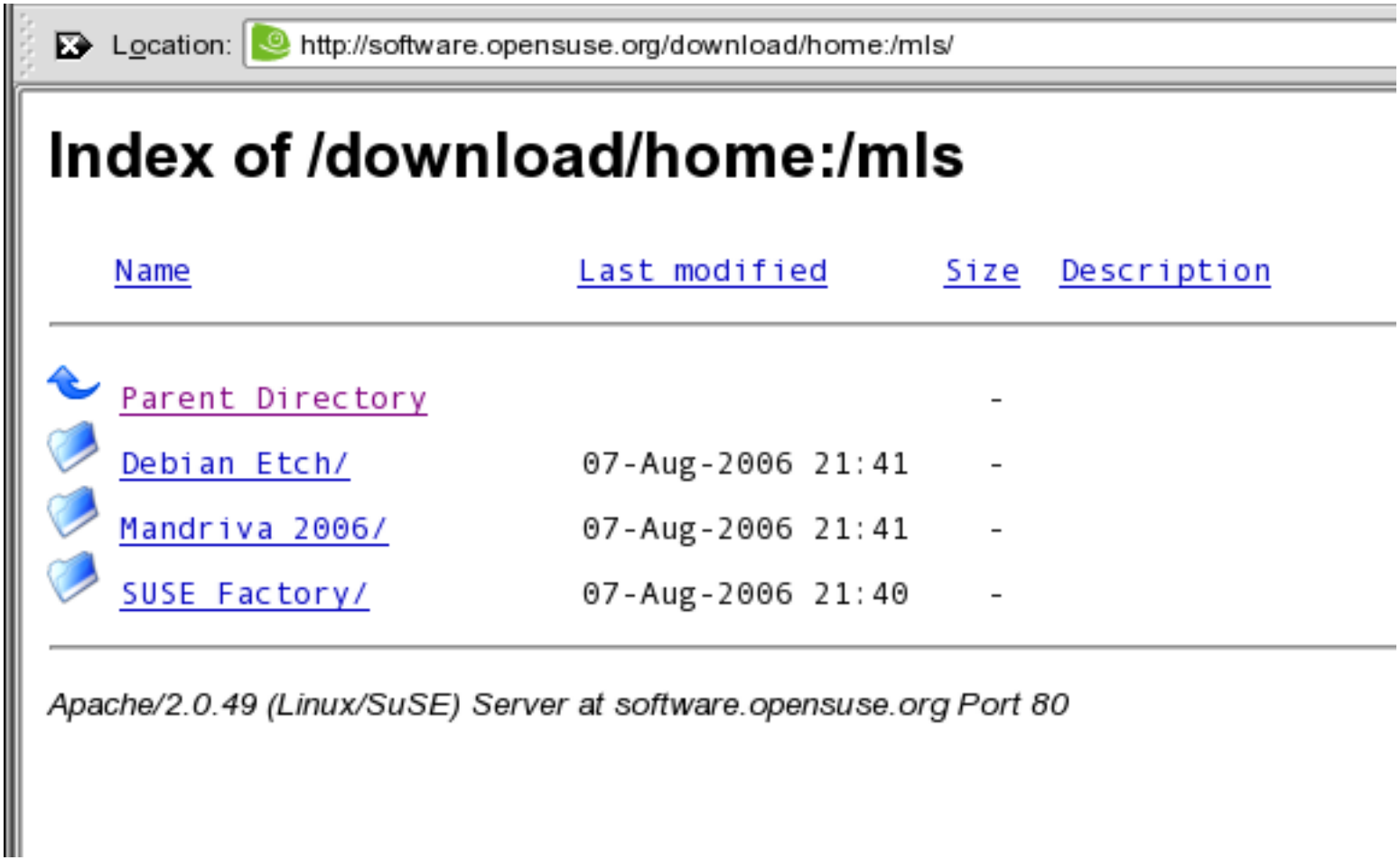
Example: home:mls



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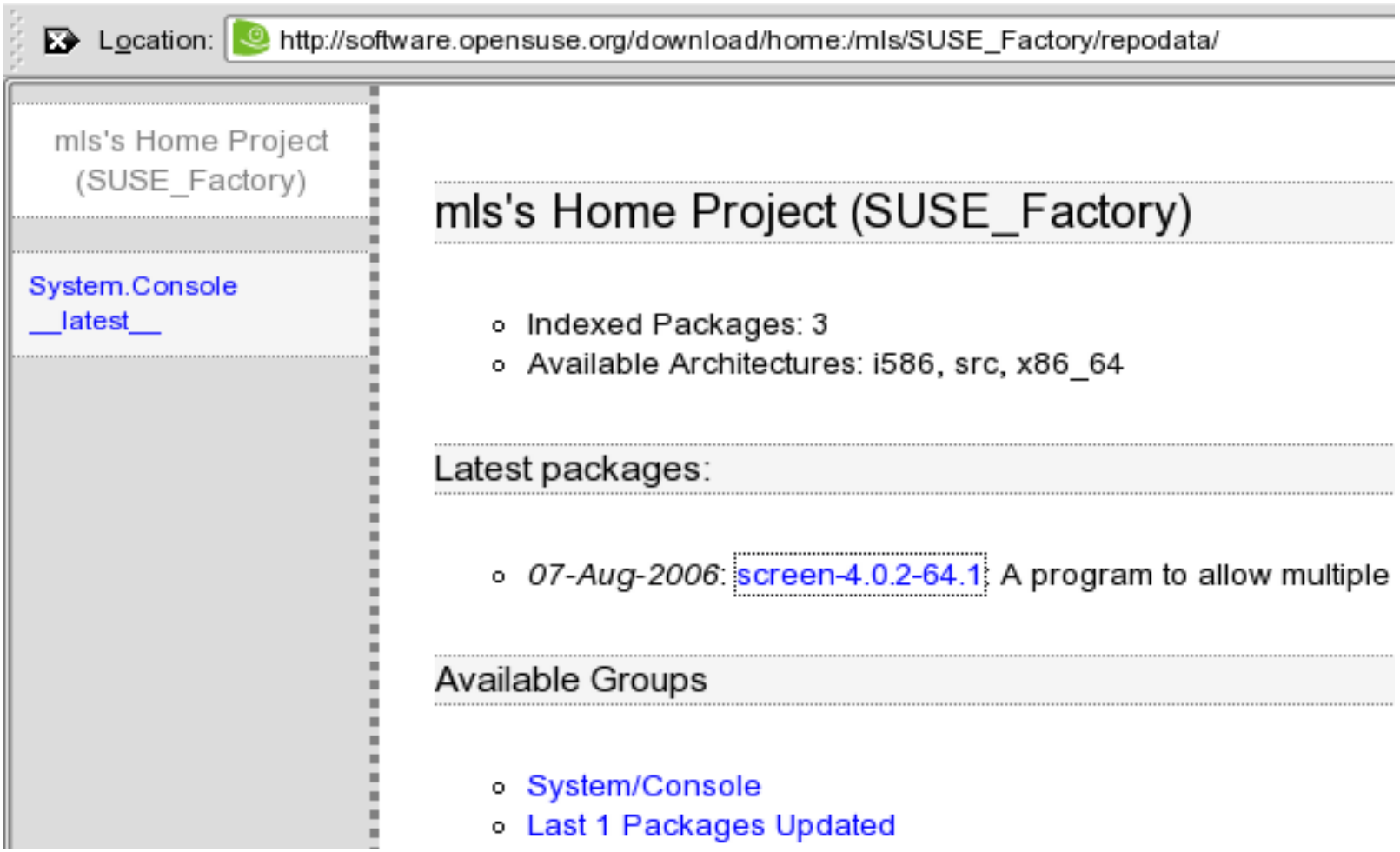
cont.



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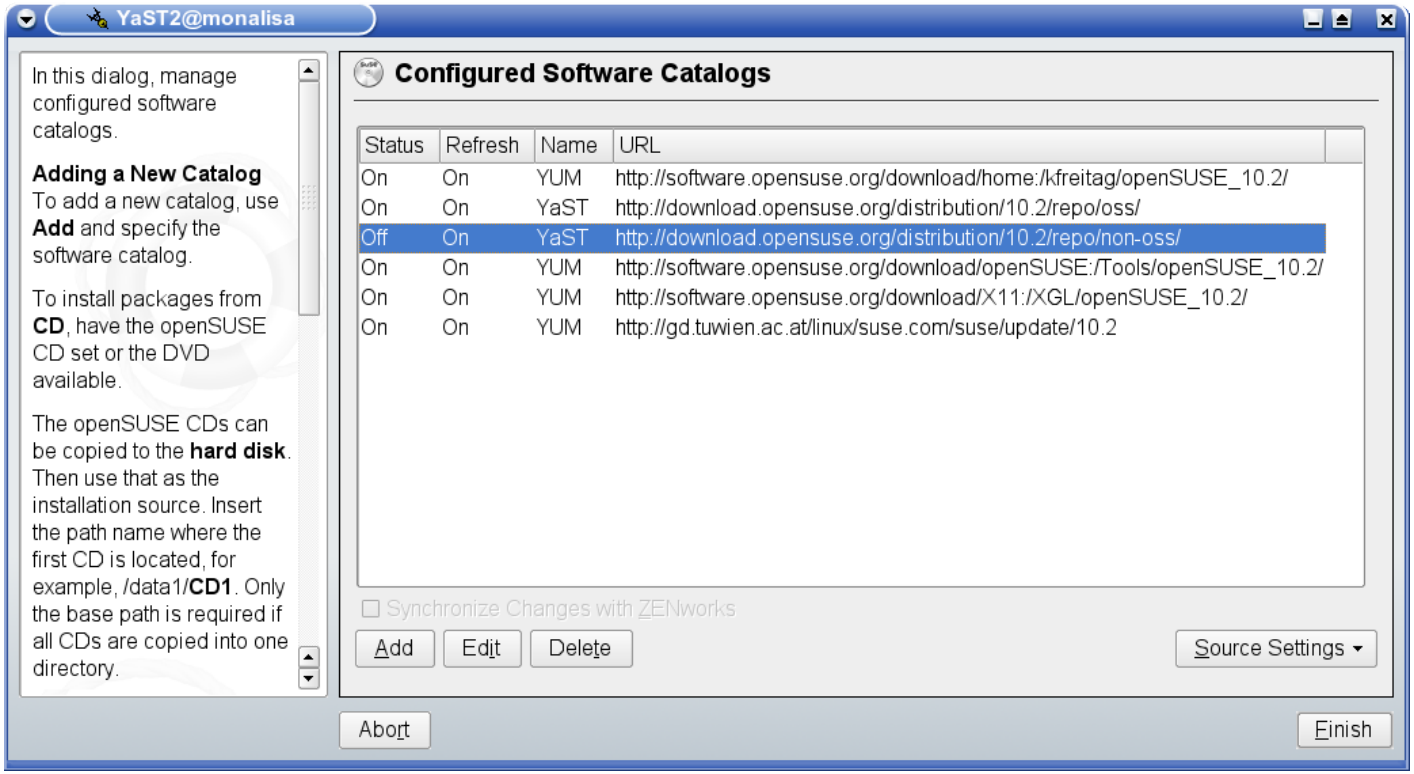
Adding YaST Installation Source



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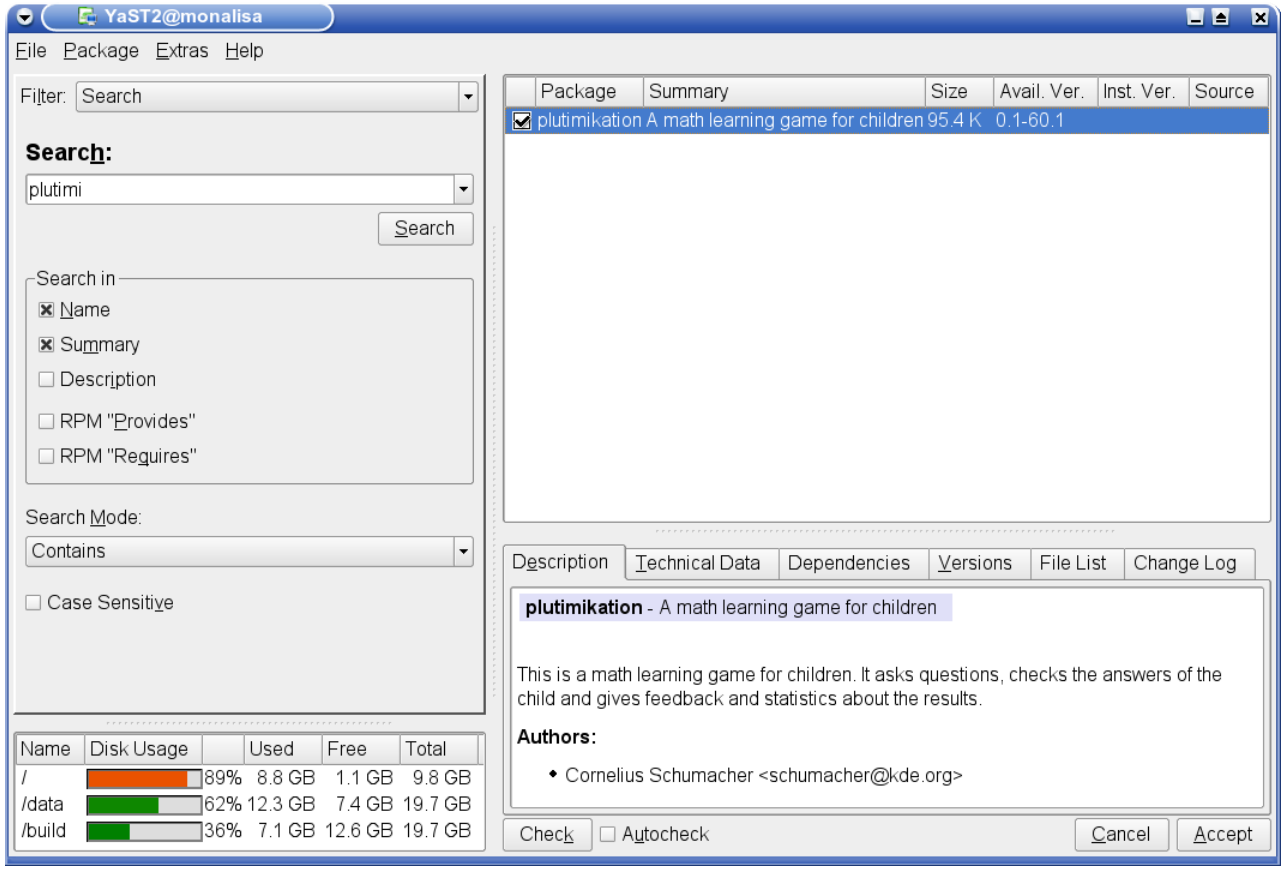
Installing the package



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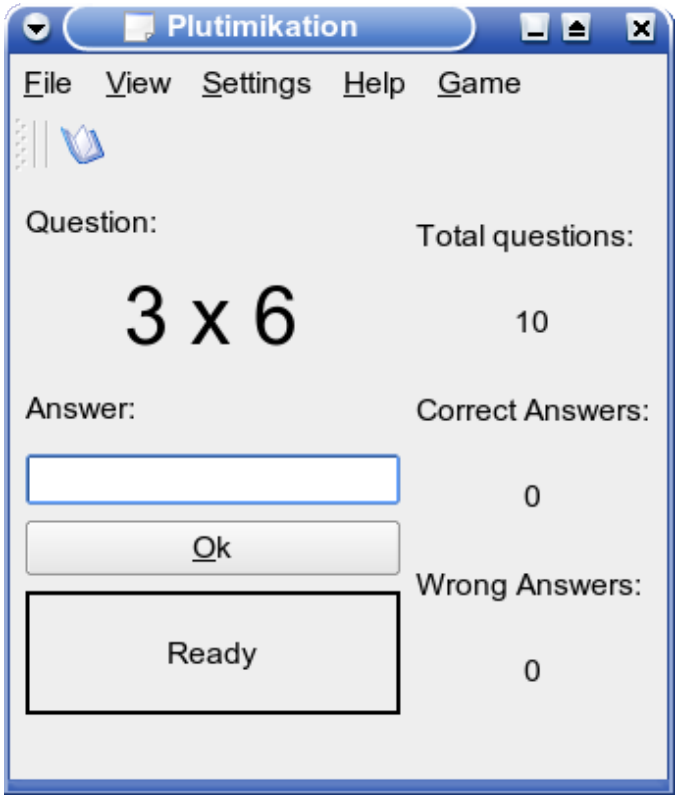
Running the program



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Command Line Client Demo

OSC Demo

```
osc ls
osc co home:cschum plutimikation
cd home:cschum/plutimikation
vi plutimikation.spec
osc add plutimikation.spec
osc ci
osc results
osc log
```


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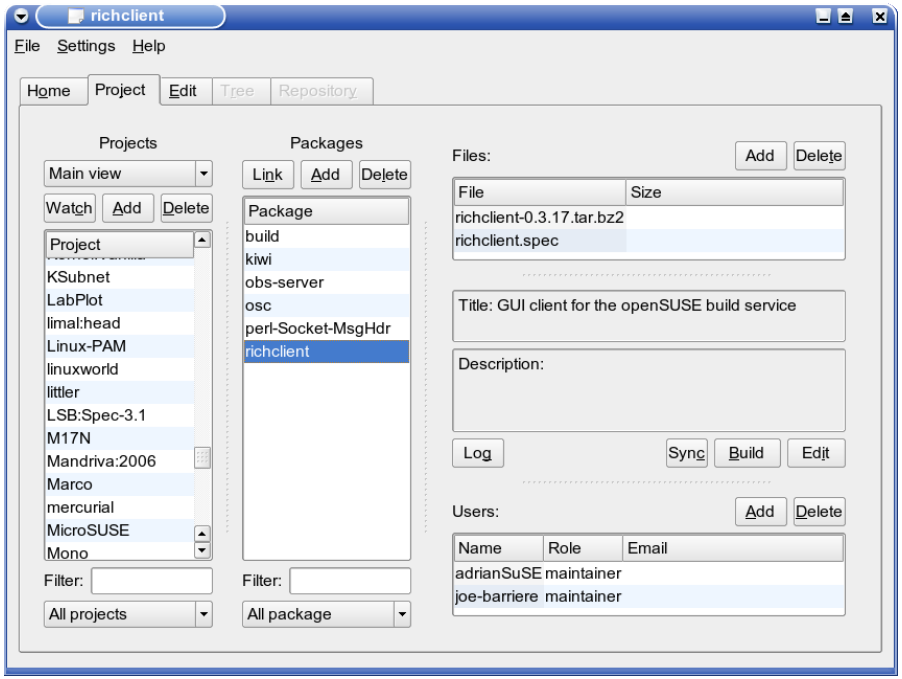
Clients under development

Native GUI Client

- Google Summer of Code 2006 project
- Author: Jonathan Arsenault



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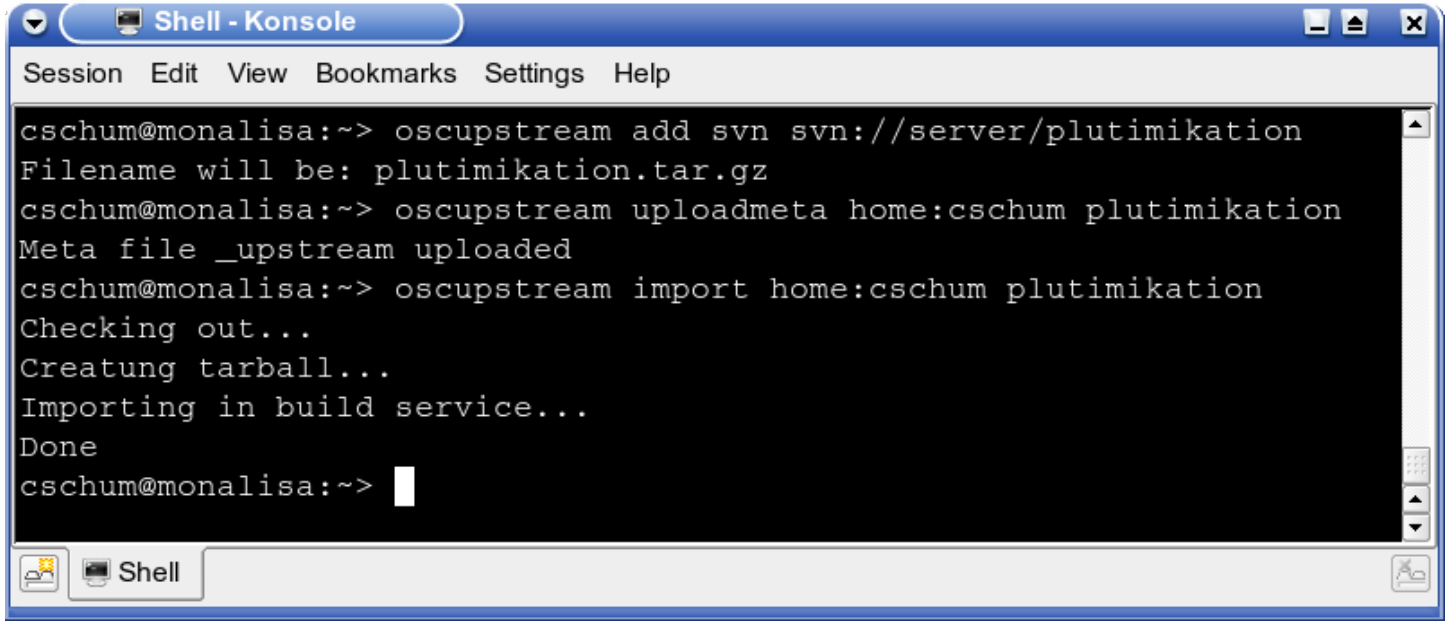
Upstream Integration

- Google Summer of Code 2006 project
- Author: Rafal Kwasny



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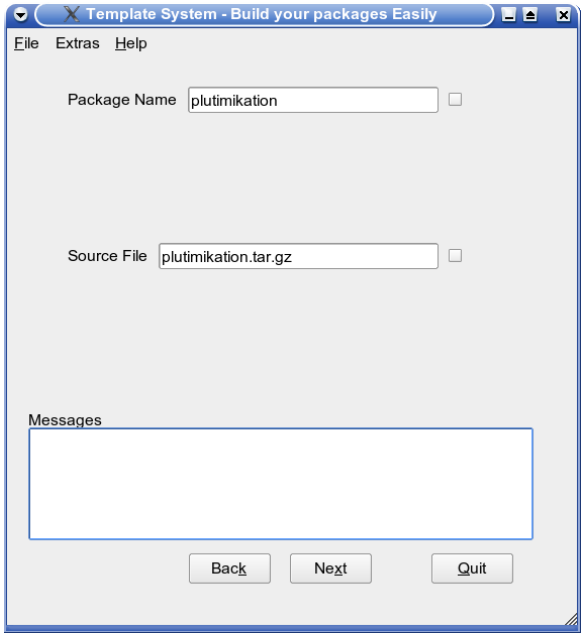
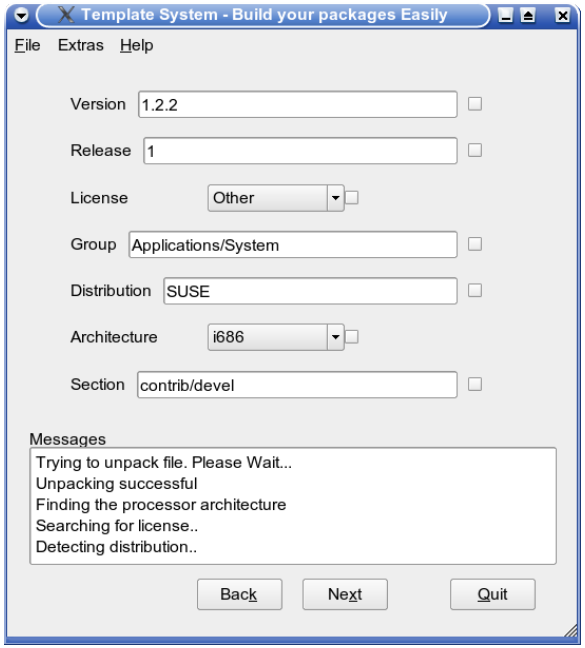
apbuddy

- Google Summer of Code 2006 project
- Author: Rajagopal Natarajan





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Getting Involved

Getting Involved

- Public openSUSE API makes it easy to write own clients
- Build Service is free software
  - Improving existing clients
  - Improving the server parts (frontend, backend)
- Build your own software on the Build Service
- Package software on the Build Service
- Getting involved with development of the openSUSE distribution

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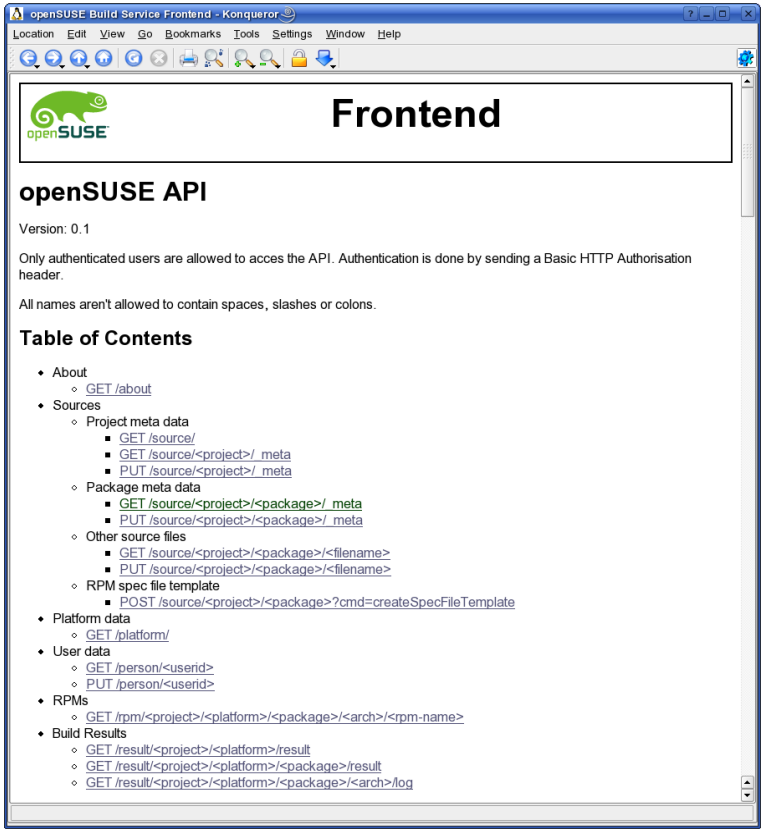
openSUSE API Documentation

http://api.opensuse.org/apidocs



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API Specification Example

<project>: Project name

GET /source/
  Read list of projects.
XmlResult: projects directory.xsd

GET /source/<project>/_meta
  Read project meta file.
XmlResult: project

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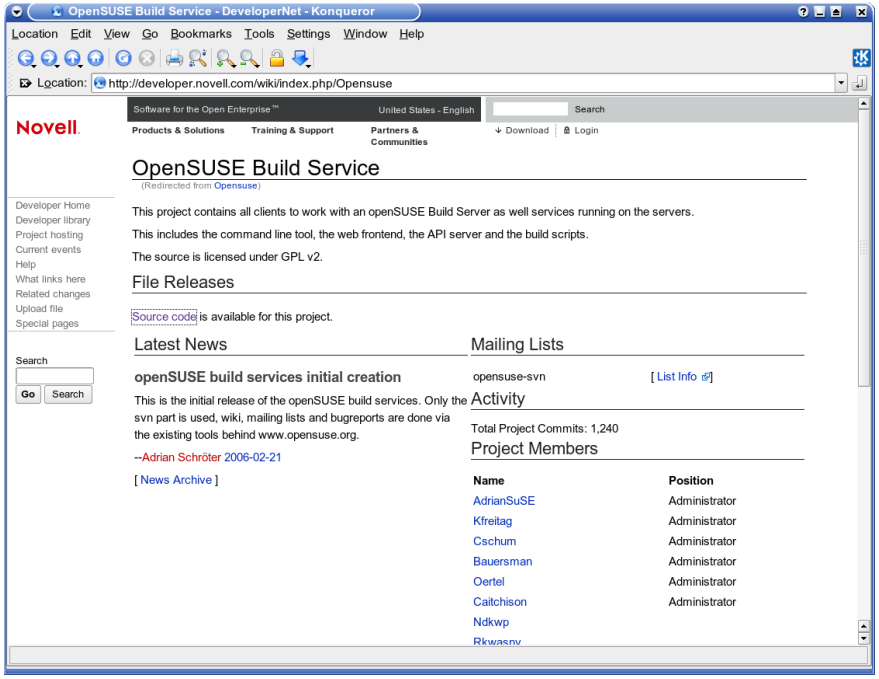
Getting the Source

http://developer.novell.com/wiki/index.php/Opensuse



svn co https://forgesvn1.novell.com/svn/opensuse/trunk

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Conclusion

Conclusion

- openSUSE Build Service makes packaging easy
- Various tools to help to do the job
  - Web Client
  - Command Line Client
  - Upstream Integration, Native GUI Client, apbuddy
- Writing own tools is easy

openSUSE Build Service: http://build.opensuse.org

Wiki: http://en.opensuse.org/Build_Service

Mailing List: opensuse-buildservice@opensuse.org

IRC: #opensuse-buildservice on irc.opensuse.org

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