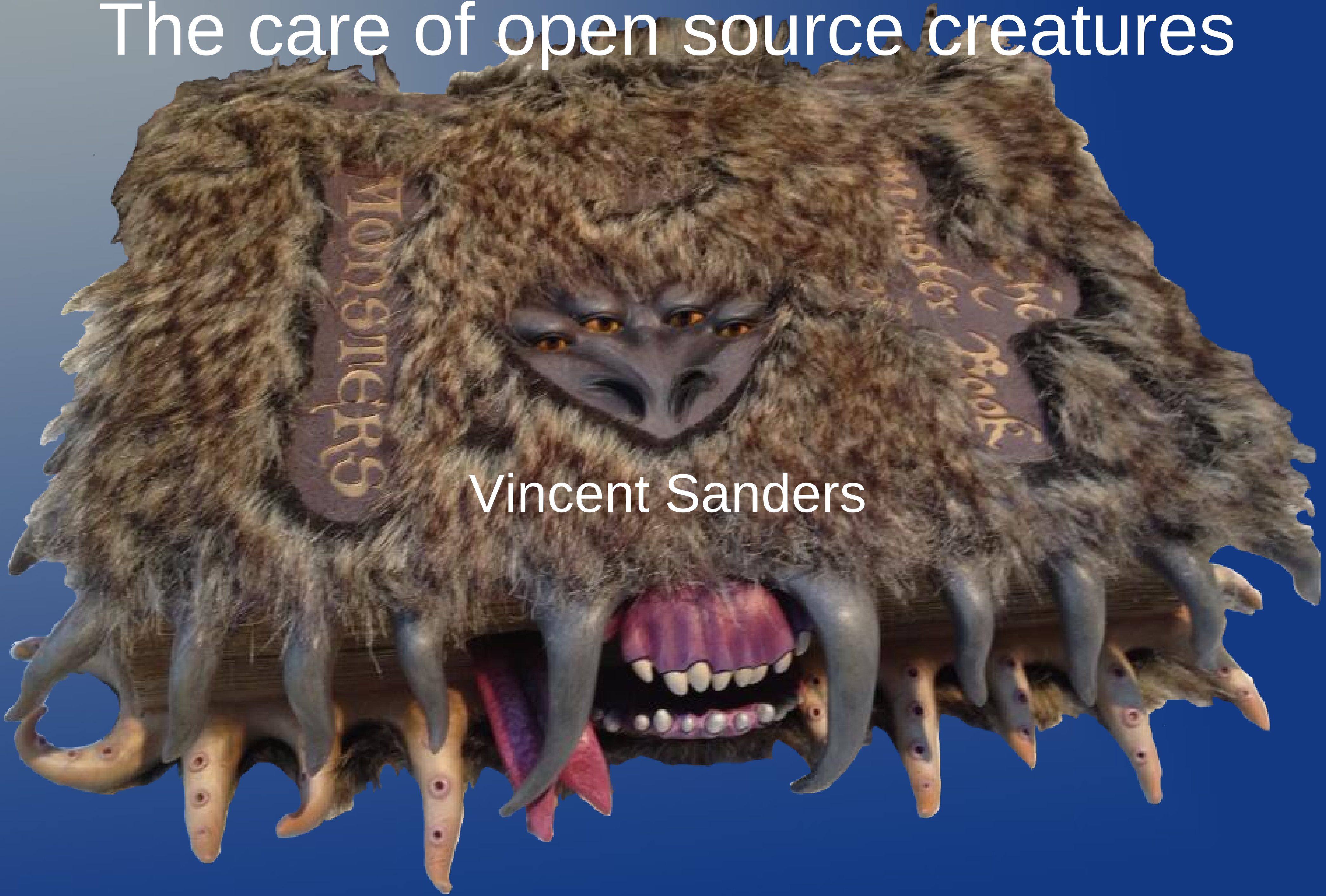
The care of open source creatures



Vincent Sanders

What am I on about?

An examination of:

- What a services a project ought to have
- What options exist to fulfil those requirements
- A practical look at some implementations.

Open Source Life Cycle

- Planning
- Implementing
- Building
- Quality assurance
- Releasing

Planning

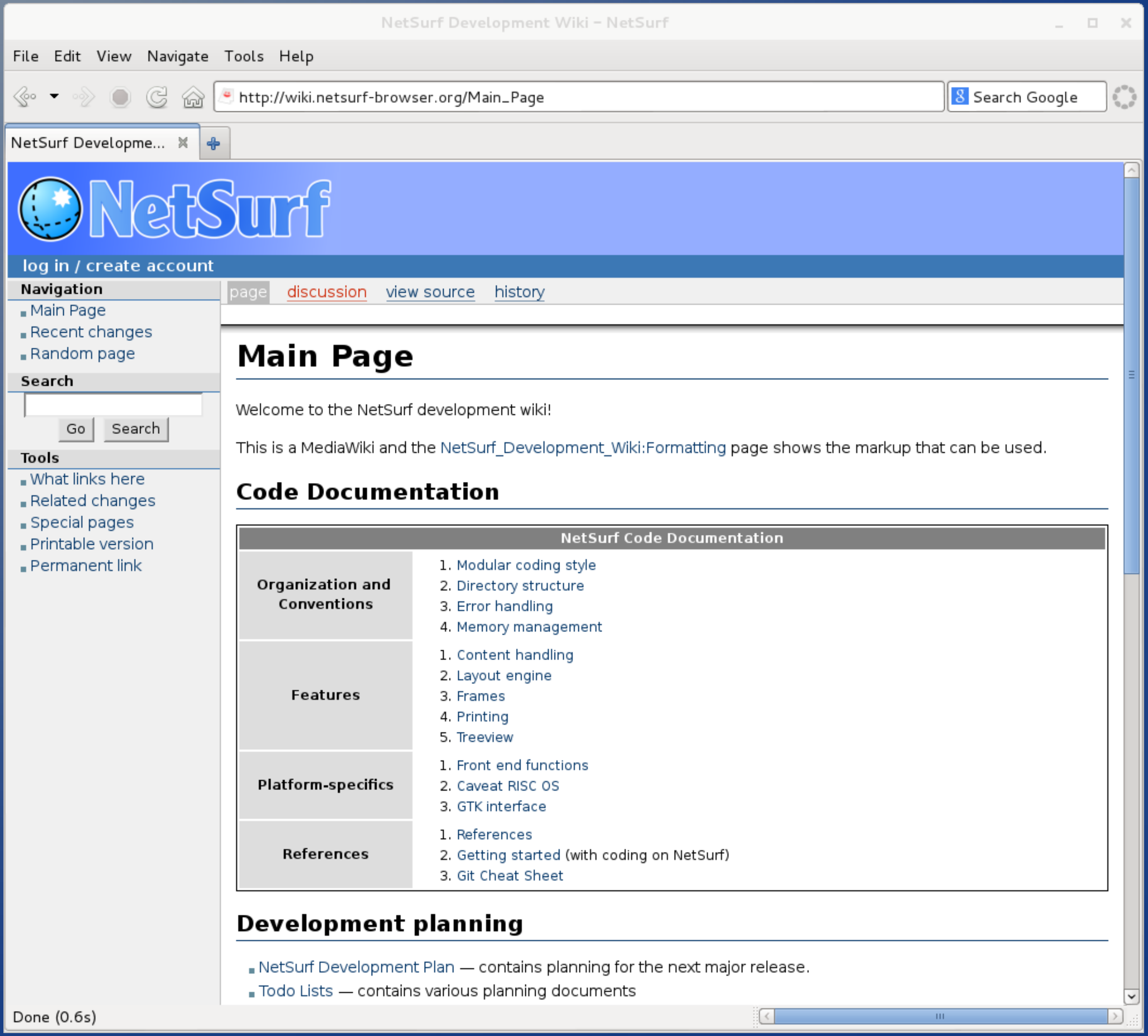
- Planning is usually a social activity
- Important to keep track of decisions
- Communication tools developers actually use
- Flexibility to achieve releases

Planning Infrastructure

- IRC – creating channels on free networks like oftc or freenode is easy
- Email lists are less popular but easy way to communicate with lots of people
- Forums are easy to setup but can degenerate quickly
- Communication with users can occur here to get an idea of what they say they want.

Planning Infrastructure

- A wiki is good for longer term info



Main Page

Welcome to the NetSurf development wiki!

This is a MediaWiki and the NetSurf_Development_Wiki:Formatting page shows the markup that can be used.

Code Documentation

NetSurf Code Documentation	
Organization and Conventions	1. Modular coding style 2. Directory structure 3. Error handling 4. Memory management
Features	1. Content handling 2. Layout engine 3. Frames 4. Printing 5. Treeview
Platform-specifics	1. Front end functions 2. Caveat RISC OS 3. GTK interface
References	1. References 2. Getting started (with coding on NetSurf) 3. Git Cheat Sheet

Development planning

- NetSurf Development Plan — contains planning for the next major release.
- Todo Lists — contains various planning documents

Implementing

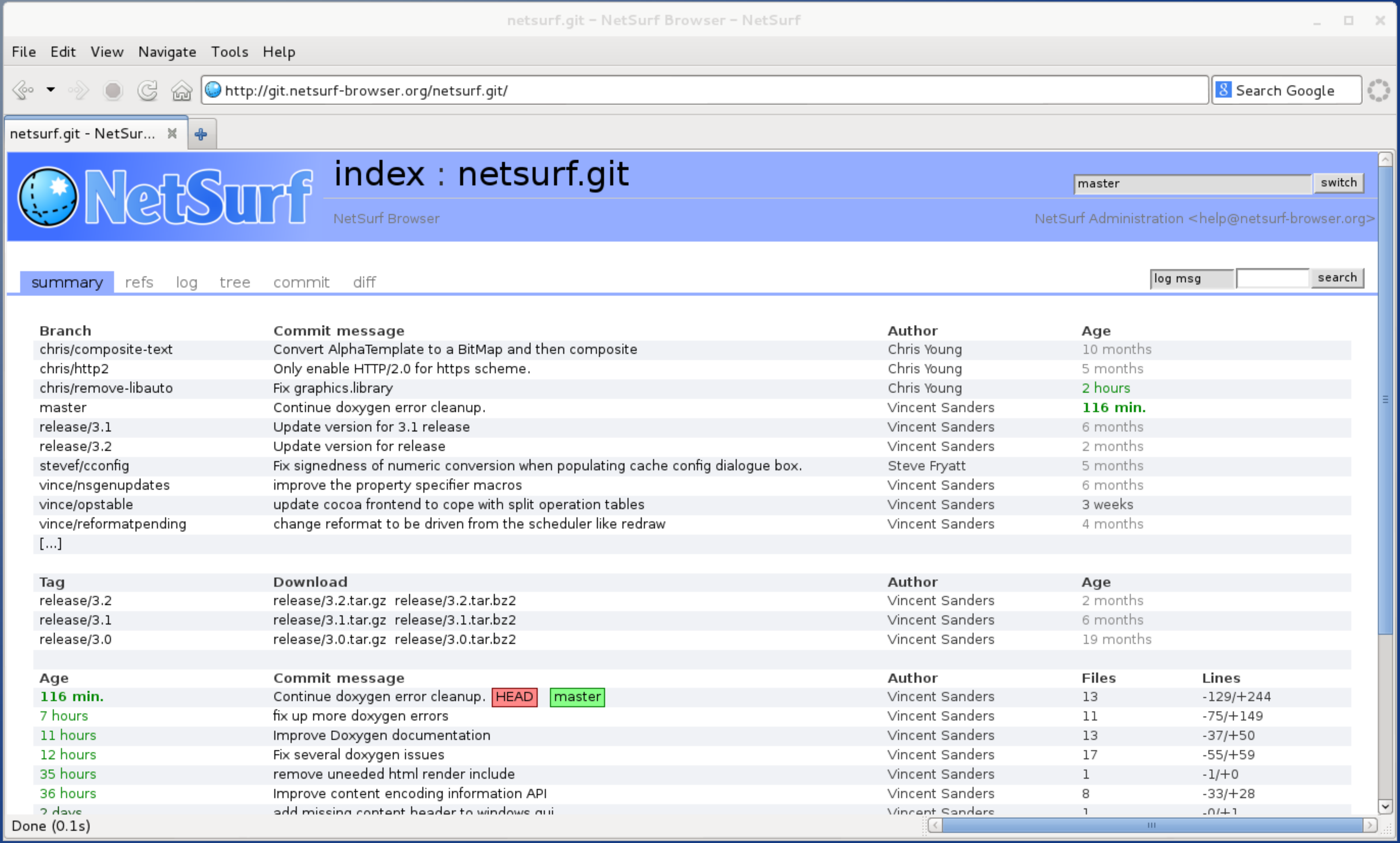
- Code style
- Code documentation

Implementing source control

- Source control is mandatory
- GIT won the argument
- Have a merge policy
- Have a review policy

Implementing source control

- Gitano and cgit are great


netsurf.git – NetSurf Browser – NetSurf
File Edit View Navigate Tools Help
http://git.netsurf-browser.org/netsurf.git/
Search Google
netsurf.git - NetSur...
NetSurf
master
switch
log msg
search
Done (0.1s)

index : netsurf.git

NetSurf Browser

NetSurf Administration <help@netsurf-browser.org>

summary refs log tree commit diff

Branch	Commit message	Author	Age
chris/composite-text	Convert AlphaTemplate to a BitMap and then composite	Chris Young	10 months
chris/http2	Only enable HTTP/2.0 for https scheme.	Chris Young	5 months
chris/remove-libauto	Fix graphics.library	Chris Young	2 hours
master	Continue doxygen error cleanup.	Vincent Sanders	116 min.
release/3.1	Update version for 3.1 release	Vincent Sanders	6 months
release/3.2	Update version for release	Vincent Sanders	2 months
stevef/cconfig	Fix signedness of numeric conversion when populating cache config dialogue box.	Steve Fryatt	5 months
vince/nsgenupdates	improve the property specifier macros	Vincent Sanders	6 months
vince/opstable	update cocoa frontend to cope with split operation tables	Vincent Sanders	3 weeks
vince/reformatpending	change reformat to be driven from the scheduler like redraw	Vincent Sanders	4 months
[...]			

Tag	Download	Author	Age
release/3.2	release/3.2.tar.gz release/3.2.tar.bz2	Vincent Sanders	2 months
release/3.1	release/3.1.tar.gz release/3.1.tar.bz2	Vincent Sanders	6 months
release/3.0	release/3.0.tar.gz release/3.0.tar.bz2	Vincent Sanders	19 months

Age	Commit message	Author	Files	Lines
116 min.	Continue doxygen error cleanup. HEAD master	Vincent Sanders	13	-129/+244
7 hours	fix up more doxygen errors	Vincent Sanders	11	-75/+149
11 hours	Improve Doxygen documentation	Vincent Sanders	13	-37/+50
12 hours	Fix several doxygen issues	Vincent Sanders	17	-55/+59
35 hours	remove uneeded html render include	Vincent Sanders	1	-1/+0
36 hours	Improve content encoding information API	Vincent Sanders	8	-33/+28
2 days	add missing content header to windows gui	Vincent Sanders	1	-0/+1

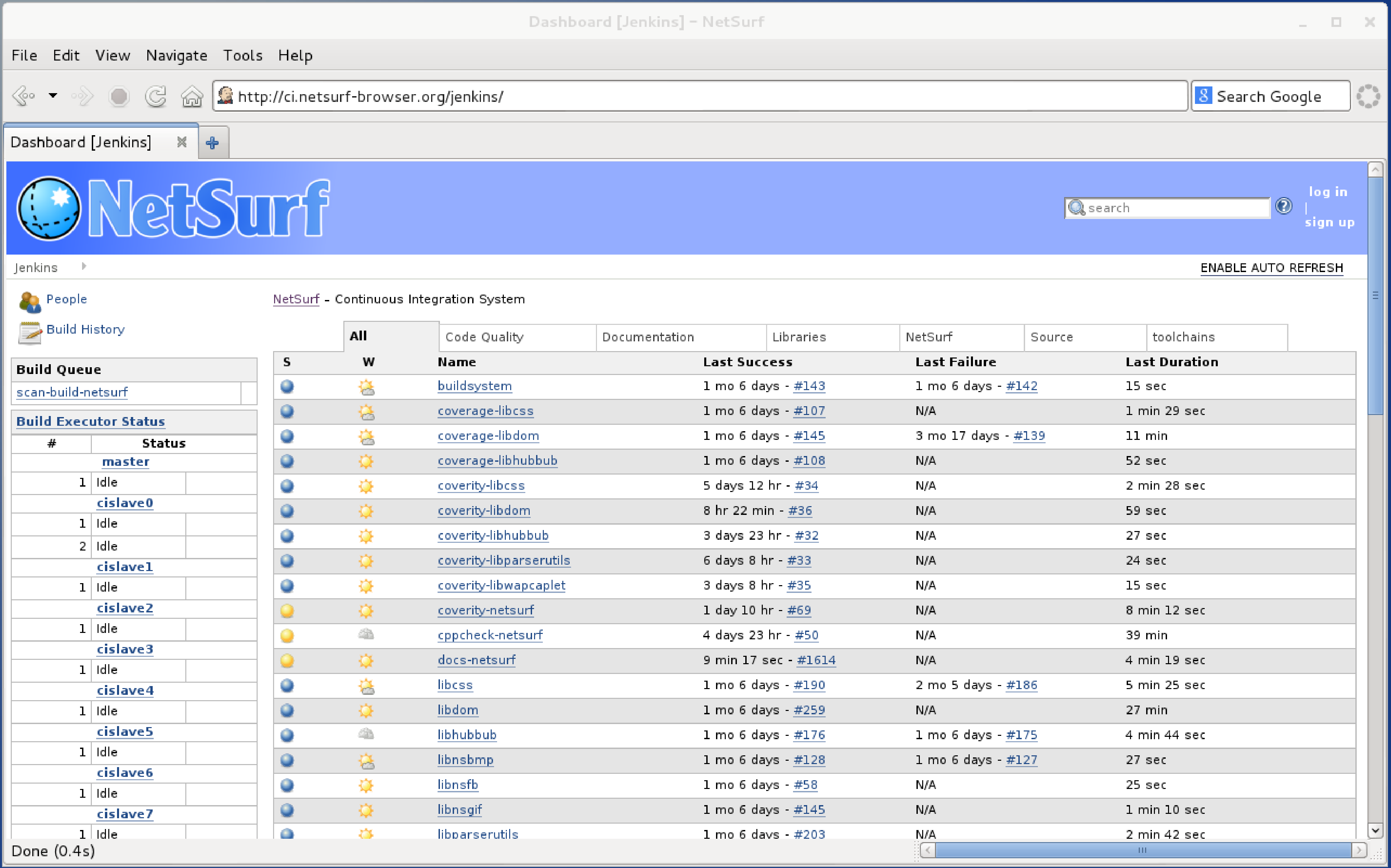
Building

- Master branch should always build
- Getting the software built should be easy
- Build process should be documented
- Continuous integration

Building with Jenkins

- Jenkins is a CI tool
- Jobs can be triggered by GIT changes
- Jobs can be periodic
- Dependences between modules
- Good mechanisms for feedback

Deploying Jenkins



Dashboard [Jenkins] – NetSurf

File Edit View Navigate Tools Help

http://ci.netsurf-browser.org/jenkins/

Search Google

Dashboard [Jenkins]

Jenkins

ENABLE AUTO REFRESH

People

Build History

Build Queue

scan-build-netsurf

Build Executor Status

#	Status
master	
1	Idle
cislave0	
1	Idle
2	Idle
cislave1	
1	Idle
cislave2	
1	Idle
cislave3	
1	Idle
cislave4	
1	Idle
cislave5	
1	Idle
cislave6	
1	Idle
cislave7	
1	Idle

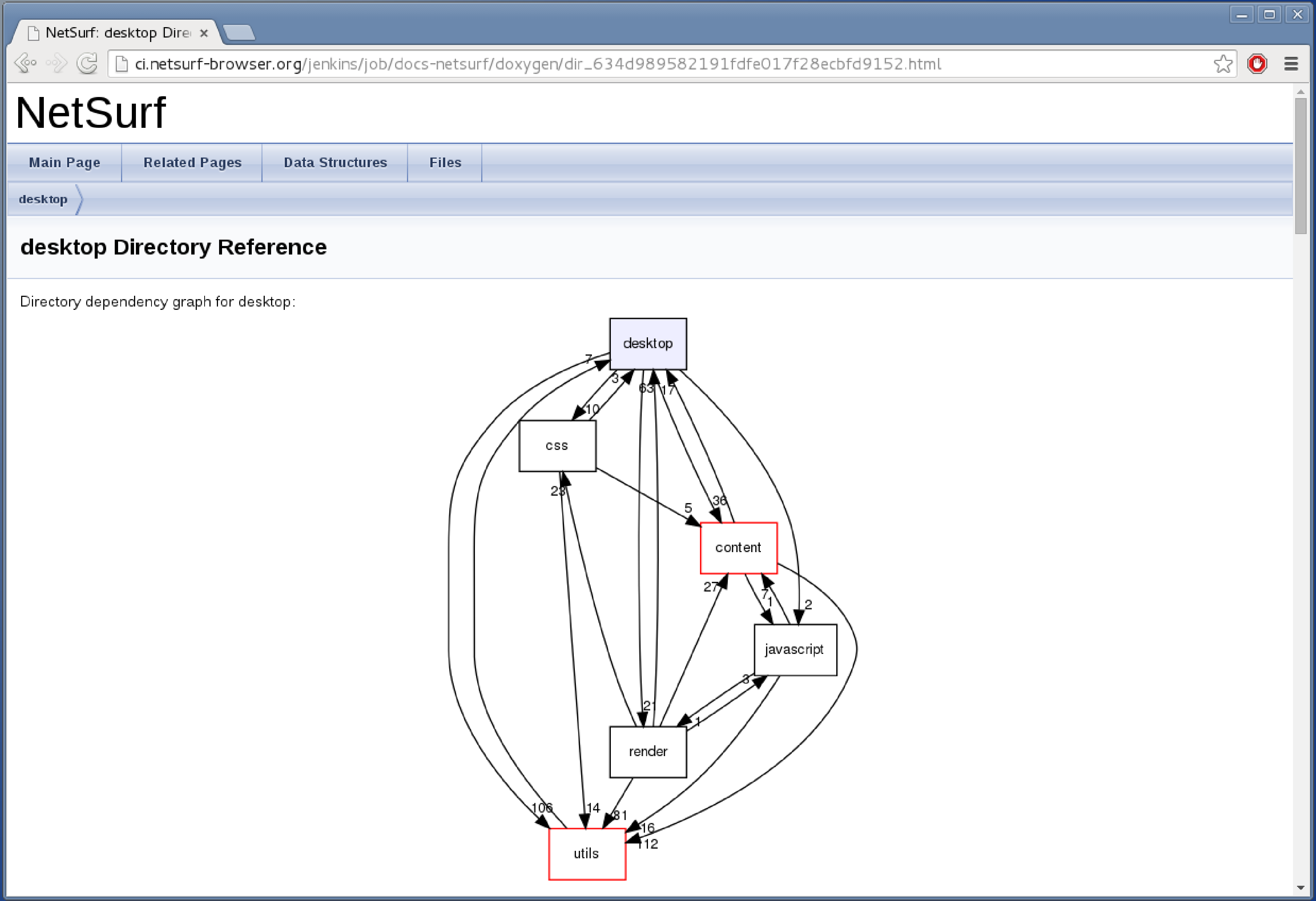
NetSurf – Continuous Integration System

All | Code Quality | Documentation | Libraries | NetSurf | Source | toolchains

S	W	Name	Last Success	Last Failure	Last Duration
🔵	⛅	buildsystem	1 mo 6 days - #143	1 mo 6 days - #142	15 sec
🔵	⛅	coverage-libcss	1 mo 6 days - #107	N/A	1 min 29 sec
🔵	⛅	coverage-libdom	1 mo 6 days - #145	3 mo 17 days - #139	11 min
🔵	☀	coverage-libhubbub	1 mo 6 days - #108	N/A	52 sec
🔵	☀	coverity-libcss	5 days 12 hr - #34	N/A	2 min 28 sec
🔵	☀	coverity-libdom	8 hr 22 min - #36	N/A	59 sec
🔵	☀	coverity-libhubbub	3 days 23 hr - #32	N/A	27 sec
🔵	☀	coverity-libparserutils	6 days 8 hr - #33	N/A	24 sec
🔵	☀	coverity-libwapcaplet	3 days 8 hr - #35	N/A	15 sec
🟡	☀	coverity-netsurf	1 day 10 hr - #69	N/A	8 min 12 sec
🟡	☁	cppcheck-netsurf	4 days 23 hr - #50	N/A	39 min
🟡	☀	docs-netsurf	9 min 17 sec - #1614	N/A	4 min 19 sec
🔵	⛅	libcss	1 mo 6 days - #190	2 mo 5 days - #186	5 min 25 sec
🔵	☀	libdom	1 mo 6 days - #259	N/A	27 min
🔵	☁	libhubbub	1 mo 6 days - #176	1 mo 6 days - #175	4 min 44 sec
🔵	⛅	libnsbmp	1 mo 6 days - #128	1 mo 6 days - #127	27 sec
🔵	☀	libnsfb	1 mo 6 days - #58	N/A	25 sec
🔵	☀	libnsgif	1 mo 6 days - #145	N/A	1 min 10 sec
🔵	☀	libparserutils	1 mo 6 days - #203	N/A	2 min 42 sec

Done (0.4s)

Deploying Jenkins


NetSurf: desktop Dire ×

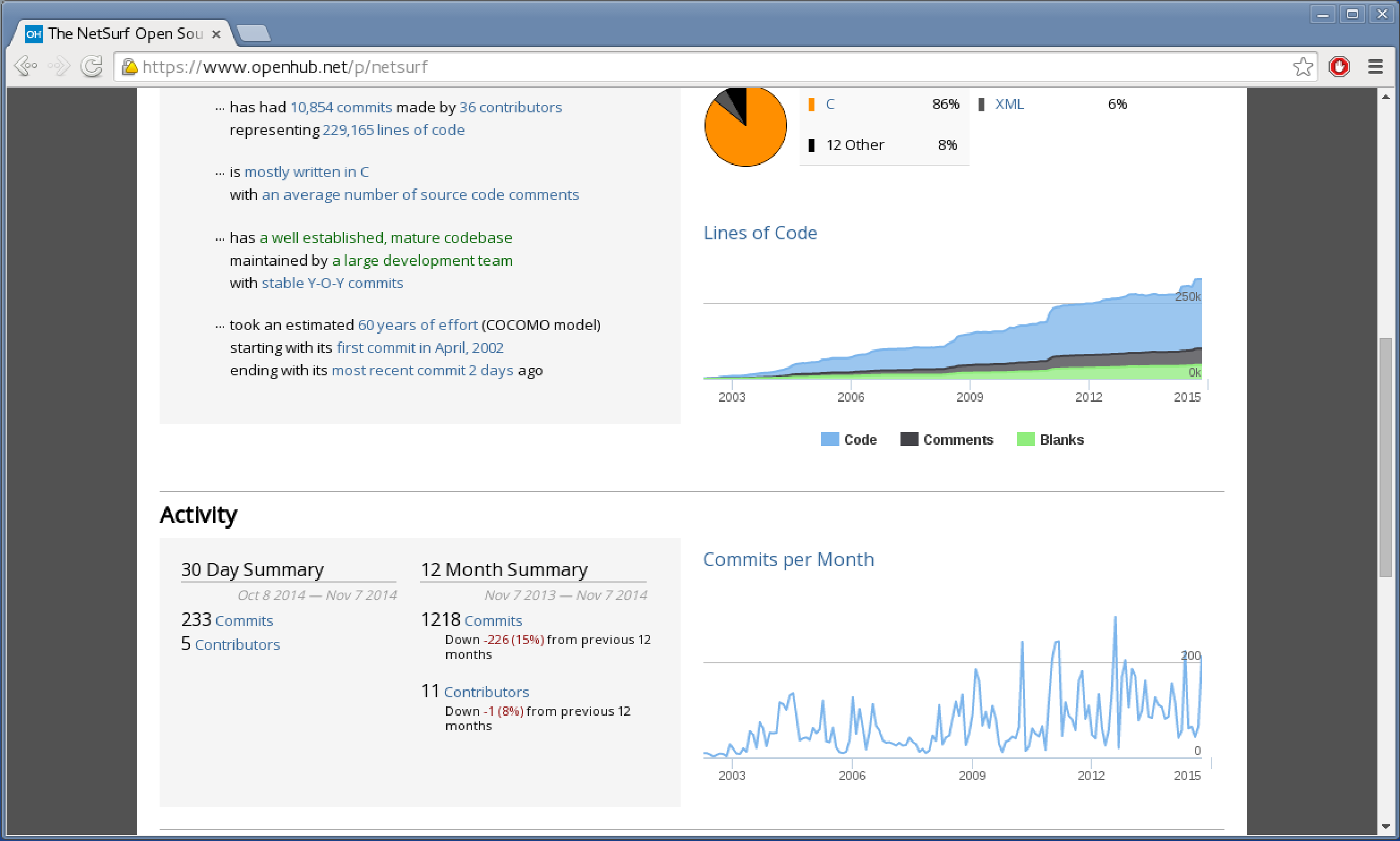
ci.netsurf-browser.org/jenkins/job/docs-netsurf/doxygen/dir_634d989582191fdfe017f28ecbfd9152.html

NetSurf

desktop Directory Reference

Directory dependency graph for desktop:

Metrics



The NetSurf Open Sou ×

https://www.openhub.net/p/netsurf

... has had 10,854 commits made by 36 contributors
representing 229,165 lines of code

... is mostly written in C
with an average number of source code comments

... has a well established, mature codebase
maintained by a large development team
with stable Y-O-Y commits

... took an estimated 60 years of effort (COCOMO model)
starting with its first commit in April, 2002
ending with its most recent commit 2 days ago

C	86%	XML	6%
12 Other	8%		

Lines of Code

Activity

30 Day Summary
Oct 8 2014 — Nov 7 2014
233 Commits
5 Contributors

12 Month Summary
Nov 7 2013 — Nov 7 2014
1218 Commits
Down -226 (15%) from previous 12 months

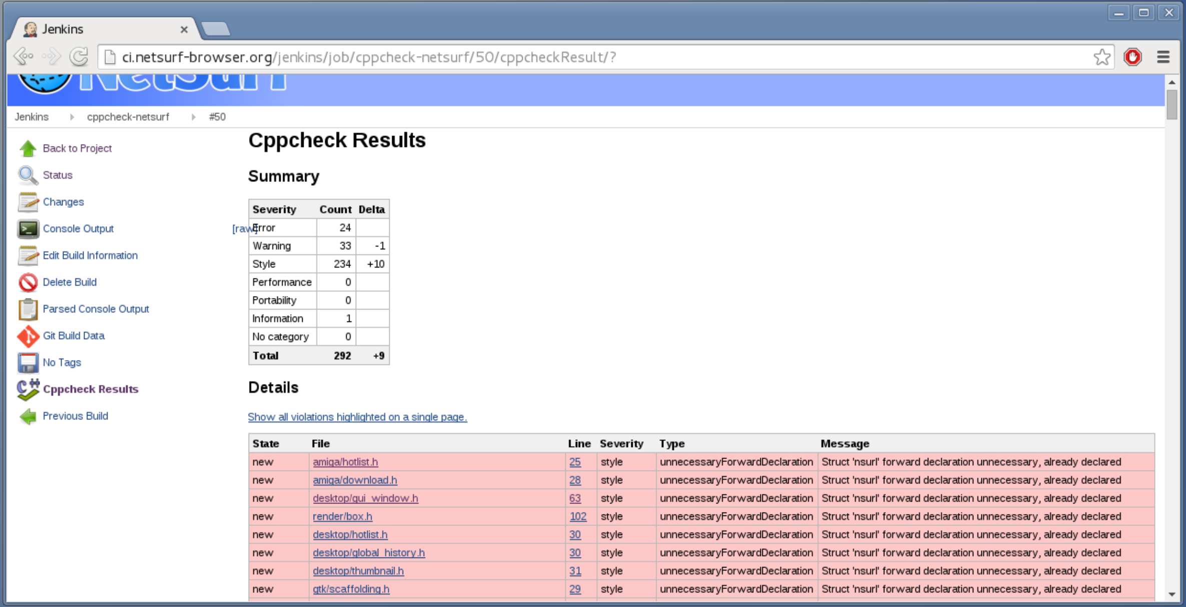
11 Contributors
Down -1 (8%) from previous 12 months

Commits per Month

Quality Assurance

- Static analysis
- Unit testing
- System testing
- Issue tracking
- Metrics

Static analysis



Cppcheck Results

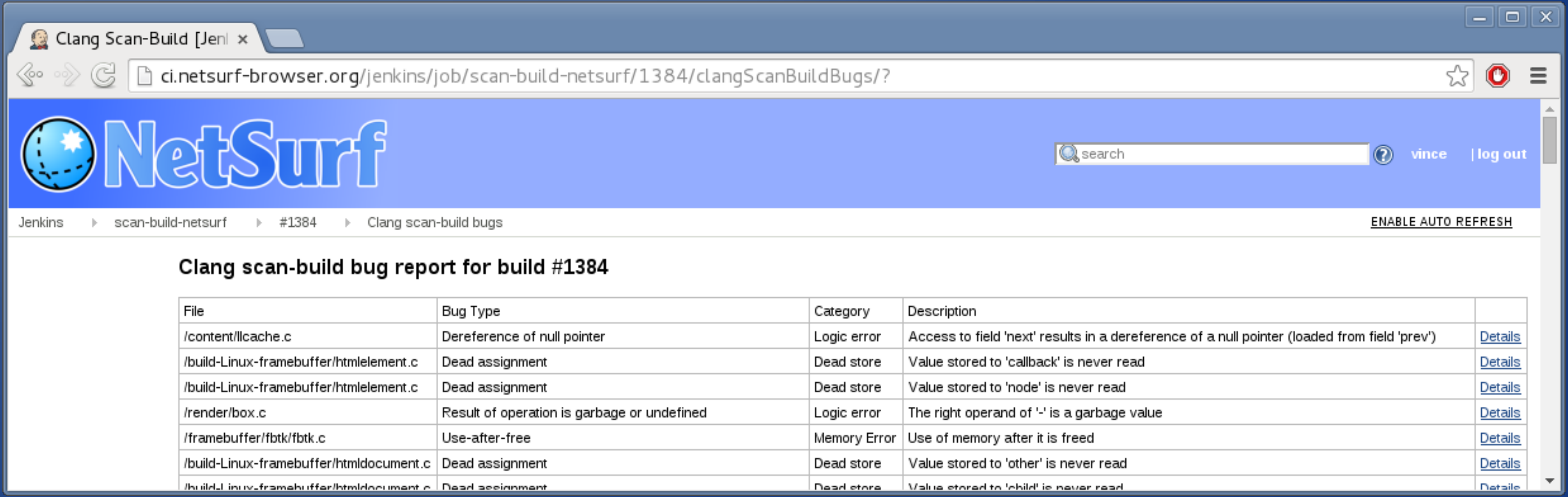
Summary

Severity	Count	Delta
Error	24	
Warning	33	-1
Style	234	+10
Performance	0	
Portability	0	
Information	1	
No category	0	
Total	**292**	**+9**

Details

Show all violations highlighted on a single page.

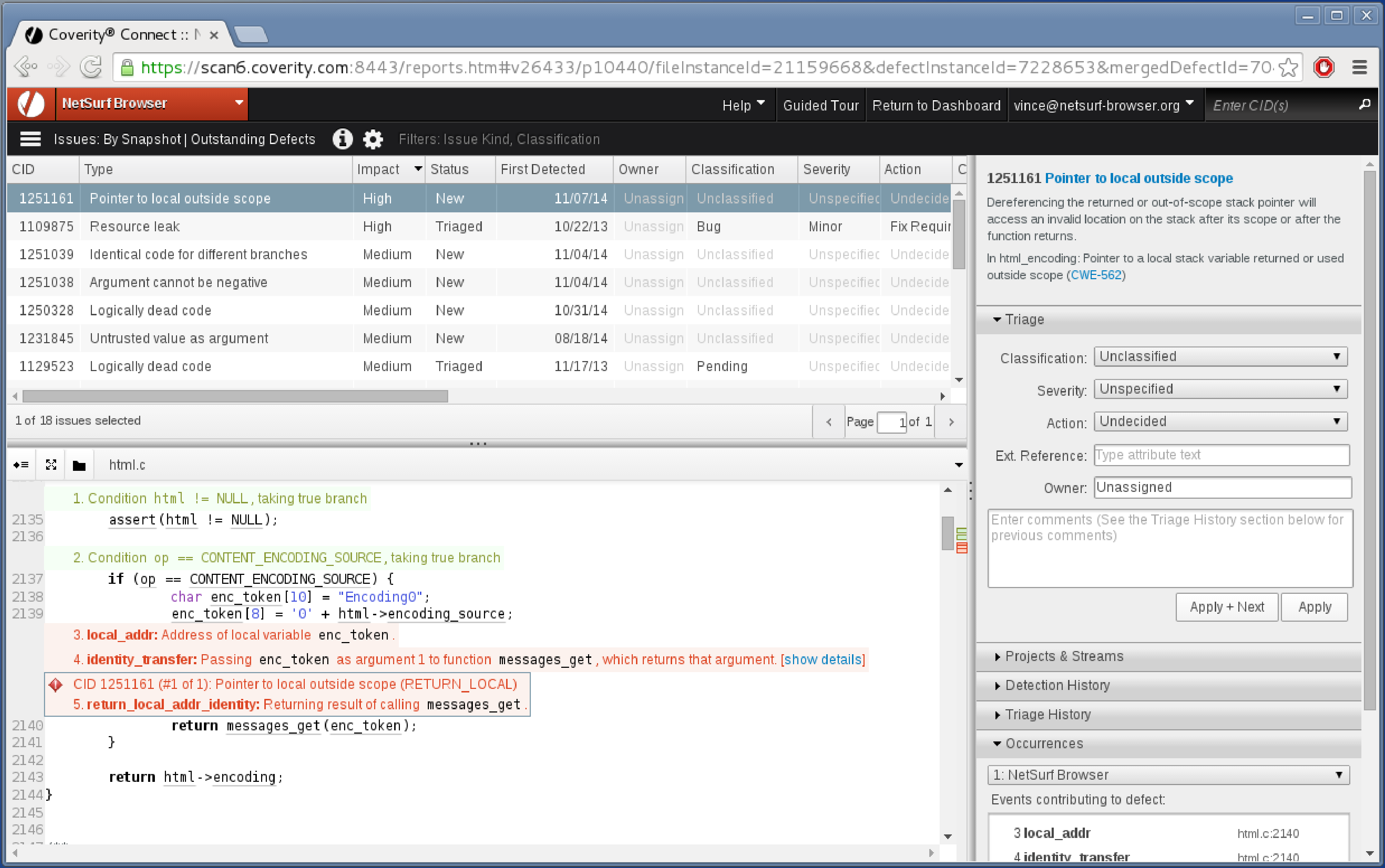
State	File	Line	Severity	Type	Message
new	amiga/hotlist.h	25	style	unnecessaryForwardDeclaration	Struct 'nsurl' forward declaration unnecessary, already declared
new	amiga/download.h	28	style	unnecessaryForwardDeclaration	Struct 'nsurl' forward declaration unnecessary, already declared
new	desktop/gui_window.h	63	style	unnecessaryForwardDeclaration	Struct 'nsurl' forward declaration unnecessary, already declared
new	render/box.h	102	style	unnecessaryForwardDeclaration	Struct 'nsurl' forward declaration unnecessary, already declared
new	desktop/hotlist.h	30	style	unnecessaryForwardDeclaration	Struct 'nsurl' forward declaration unnecessary, already declared
new	desktop/global_history.h	30	style	unnecessaryForwardDeclaration	Struct 'nsurl' forward declaration unnecessary, already declared
new	desktop/thumbnail.h	31	style	unnecessaryForwardDeclaration	Struct 'nsurl' forward declaration unnecessary, already declared
new	gtk/scaffolding.h	29	style	unnecessaryForwardDeclaration	Struct 'nsurl' forward declaration unnecessary, already declared



Clang scan-build bug report for build #1384

File	Bug Type	Category	Description	
/content/llcache.c	Dereference of null pointer	Logic error	Access to field 'next' results in a dereference of a null pointer (loaded from field 'prev')	Details
/build-Linux-framebuffer/htmlelement.c	Dead assignment	Dead store	Value stored to 'callback' is never read	Details
/build-Linux-framebuffer/htmlelement.c	Dead assignment	Dead store	Value stored to 'node' is never read	Details
/render/box.c	Result of operation is garbage or undefined	Logic error	The right operand of '-' is a garbage value	Details
/framebuffer/fbtk/fbtk.c	Use-after-free	Memory Error	Use of memory after it is freed	Details
/build-Linux-framebuffer/htmldocument.c	Dead assignment	Dead store	Value stored to 'other' is never read	Details
/build-Linux-framebuffer/htmldocument.c	Dead assignment	Dead store	Value stored to 'child' is never read	Details

Static Analysis



Coverity® Connect :: N
https://scan6.coverity.com:8443/reports.htm#v26433/p10440/fileInstanceId=21159668&defectInstanceId=7228653&mergedDefectId=70
NetSurf Browser
Help
Guided Tour
Return to Dashboard
vince@netsurf-browser.org
Enter CID(s)
Issues: By Snapshot | Outstanding Defects
Filters: Issue Kind, Classification

CID	Type	Impact	Status	First Detected	Owner	Classification	Severity	Action
1251161	Pointer to local outside scope	High	New	11/07/14	Unassign	Unclassified	Unspecifiec	Undecide
1109875	Resource leak	High	Triaged	10/22/13	Unassign	Bug	Minor	Fix Requir
1251039	Identical code for different branches	Medium	New	11/04/14	Unassign	Unclassified	Unspecifiec	Undecide
1251038	Argument cannot be negative	Medium	New	11/04/14	Unassign	Unclassified	Unspecifiec	Undecide
1250328	Logically dead code	Medium	New	10/31/14	Unassign	Unclassified	Unspecifiec	Undecide
1231845	Untrusted value as argument	Medium	New	08/18/14	Unassign	Unclassified	Unspecifiec	Undecide
1129523	Logically dead code	Medium	Triaged	11/17/13	Unassign	Pending	Unspecifiec	Undecide

1 of 18 issues selected Page 1 of 1

html.c

```
        1. Condition html != NULL, taking true branch
        assert(html != NULL);

        2. Condition op == CONTENT_ENCODING_SOURCE, taking true branch
        if (op == CONTENT_ENCODING_SOURCE) {
                char enc_token[10] = "Encoding0";
                enc_token[8] = '0' + html->encoding_source;
        3. local_addr: Address of local variable enc_token.
        4. identity_transfer: Passing enc_token as argument 1 to function messages_get, which returns that argument. [show details]
        CID 1251161 (#1 of 1): Pointer to local outside scope (RETURN_LOCAL)
        5. return_local_addr_identity: Returning result of calling messages_get.
                return messages_get(enc_token);
        }

        return html->encoding;
}
```

1251161 Pointer to local outside scope

Dereferencing the returned or out-of-scope stack pointer will access an invalid location on the stack after its scope or after the function returns.

In html_encoding: Pointer to a local stack variable returned or used outside scope (CWE-562)

Triage

Classification: Unclassified
Severity: Unspecified
Action: Undecided
Ext. Reference: Type attribute text
Owner: Unassigned

Enter comments (See the Triage History section below for previous comments)

Apply + Next   Apply

Projects & Streams
Detection History
Triage History
Occurrences

1: NetSurf Browser

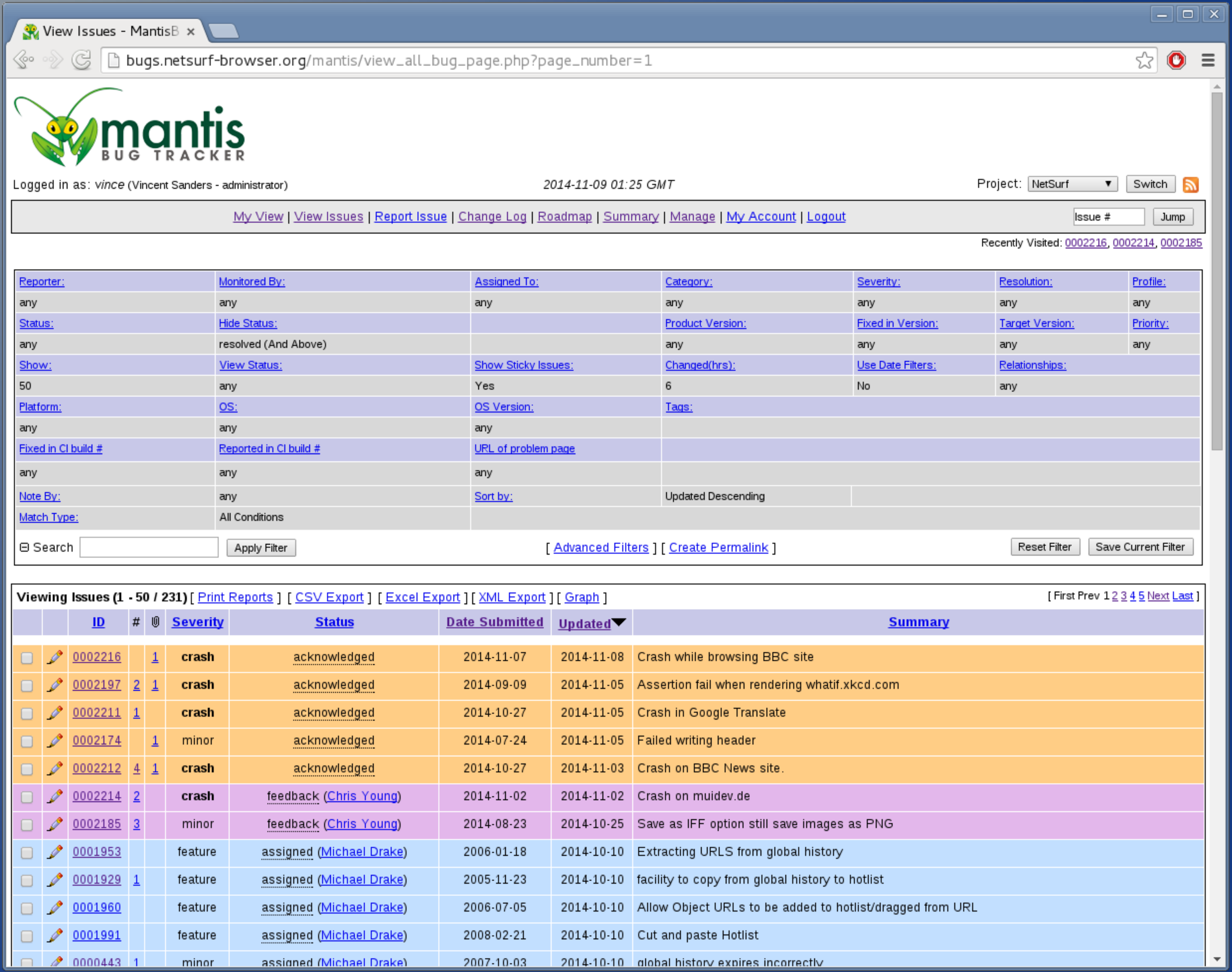
Events contributing to defect:

3 **local_addr**	html.c:2140
4 **identity_transfer**	html.c:2140

Issue tracking

- All issue tracking systems are not ideal
- Go with the system that the fewest number of developers dislike
- Remember users have to report issues with it.
- The issue tracker needs a maintainer to be useful
- Double edged sword.

Mantis



View Issues - MantisB

bugs.netsurf-browser.org/mantis/view_all_bug_page.php?page_number=1

Logged in as: *vince* (Vincent Sanders - administrator) *2014-11-09 01:25 GMT* Project: NetSurf Switch

My View | View Issues | Report Issue | Change Log | Roadmap | Summary | Manage | My Account | Logout Issue # Jump

Recently Visited: 0002216, 0002214, 0002185

Reporter:	Monitored By:	Assigned To:	Category:	Severity:	Resolution:	Profile:
any	any	any	any	any	any	any
Status:	Hide Status:		Product Version:	Fixed in Version:	Target Version:	Priority:
any	resolved (And Above)		any	any	any	any
Show:	View Status:	Show Sticky Issues:	Changed(hrs):	Use Date Filters:	Relationships:	
50	any	Yes	6	No	any	
Platform:	OS:	OS Version:	Tags:			
any	any	any				
Fixed in CI build #	Reported in CI build #	URL of problem page				
any	any	any				
Note By:	any	Sort by:	Updated Descending			
Match Type:	All Conditions					

⊟ Search Apply Filter [Advanced Filters] [Create Permalink] Reset Filter Save Current Filter

Viewing Issues (1 - 50 / 231) [Print Reports] [CSV Export] [Excel Export] [XML Export] [Graph] [First Prev 1 2 3 4 5 Next Last]

		ID	#	📎	Severity	Status	Date Submitted	Updated▼	Summary
☐	✎	0002216		1	**crash**	acknowledged	2014-11-07	2014-11-08	Crash while browsing BBC site
☐	✎	0002197	2	1	**crash**	acknowledged	2014-09-09	2014-11-05	Assertion fail when rendering whatif.xkcd.com
☐	✎	0002211	1		**crash**	acknowledged	2014-10-27	2014-11-05	Crash in Google Translate
☐	✎	0002174		1	minor	acknowledged	2014-07-24	2014-11-05	Failed writing header
☐	✎	0002212	4	1	**crash**	acknowledged	2014-10-27	2014-11-03	Crash on BBC News site.
☐	✎	0002214	2		**crash**	feedback (Chris Young)	2014-11-02	2014-11-02	Crash on muidev.de
☐	✎	0002185	3		minor	feedback (Chris Young)	2014-08-23	2014-10-25	Save as IFF option still save images as PNG
☐	✎	0001953			feature	assigned (Michael Drake)	2006-01-18	2014-10-10	Extracting URLS from global history
☐	✎	0001929	1		feature	assigned (Michael Drake)	2005-11-23	2014-10-10	facility to copy from global history to hotlist
☐	✎	0001960			feature	assigned (Michael Drake)	2006-07-05	2014-10-10	Allow Object URLs to be added to hotlist/dragged from URL
☐	✎	0001991			feature	assigned (Michael Drake)	2008-02-21	2014-10-10	Cut and paste Hotlist
☐	✎	0000443	1		minor	assigned (Michael Drake)	2007-10-03	2014-10-10	global history expires incorrectly

Releasing

- All components of a project come together
- Tested build possibly with known issues
- Unreleased software does not exist
- The easier they are to make the more you do

Practical Releasing

- Create CI jobs triggered from a git tag
- Use git sub modules to create a unified source
- Use the CI system to perform build from generated source in known build environment.

Wrapping up

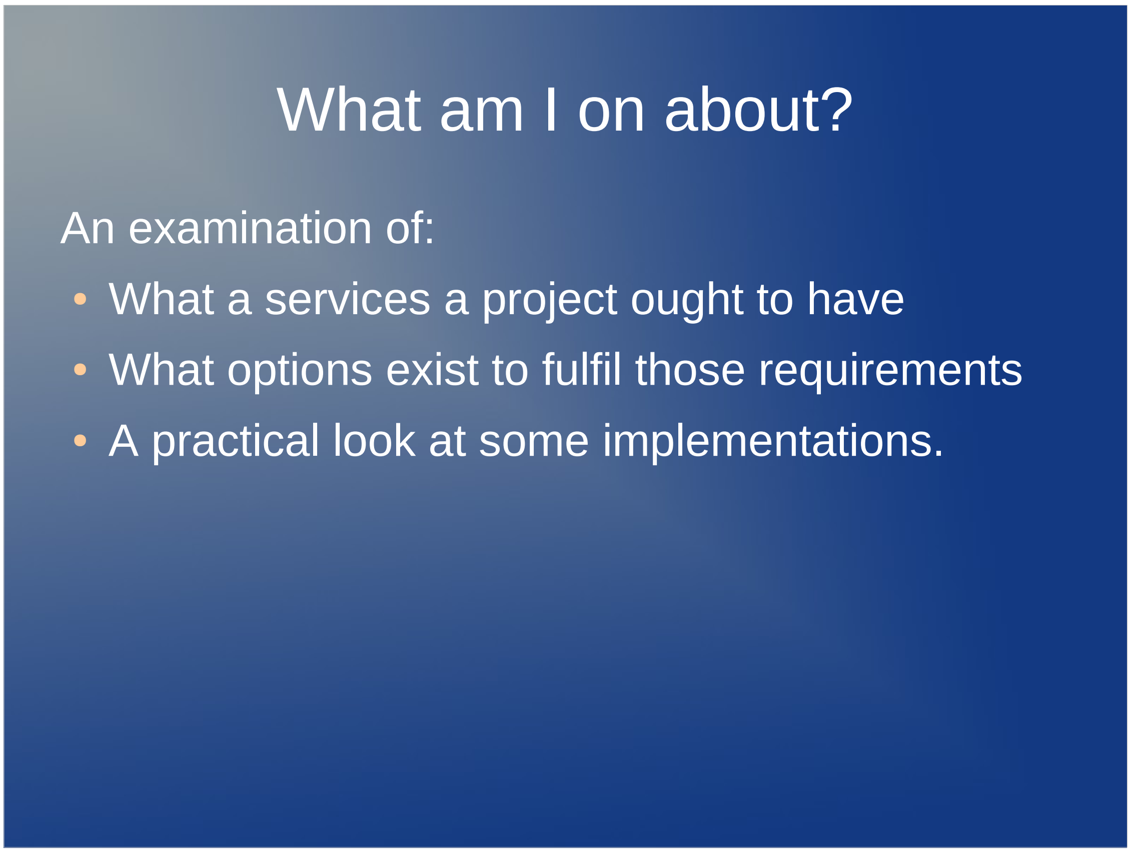
- These are all the parts an open source creature needs to thrive
- Just because a project has these components does not mean it will survive
- The outcome should justify the effort

Any Questions?

The care of open source creatures

Vincent Sanders

Book image from GrrlScientist on flikr



What am I on about?

An examination of:

- What a services a project ought to have
- What options exist to fulfil those requirements
- A practical look at some implementations.

Application Lifecycle Management – horrid term but in common usage

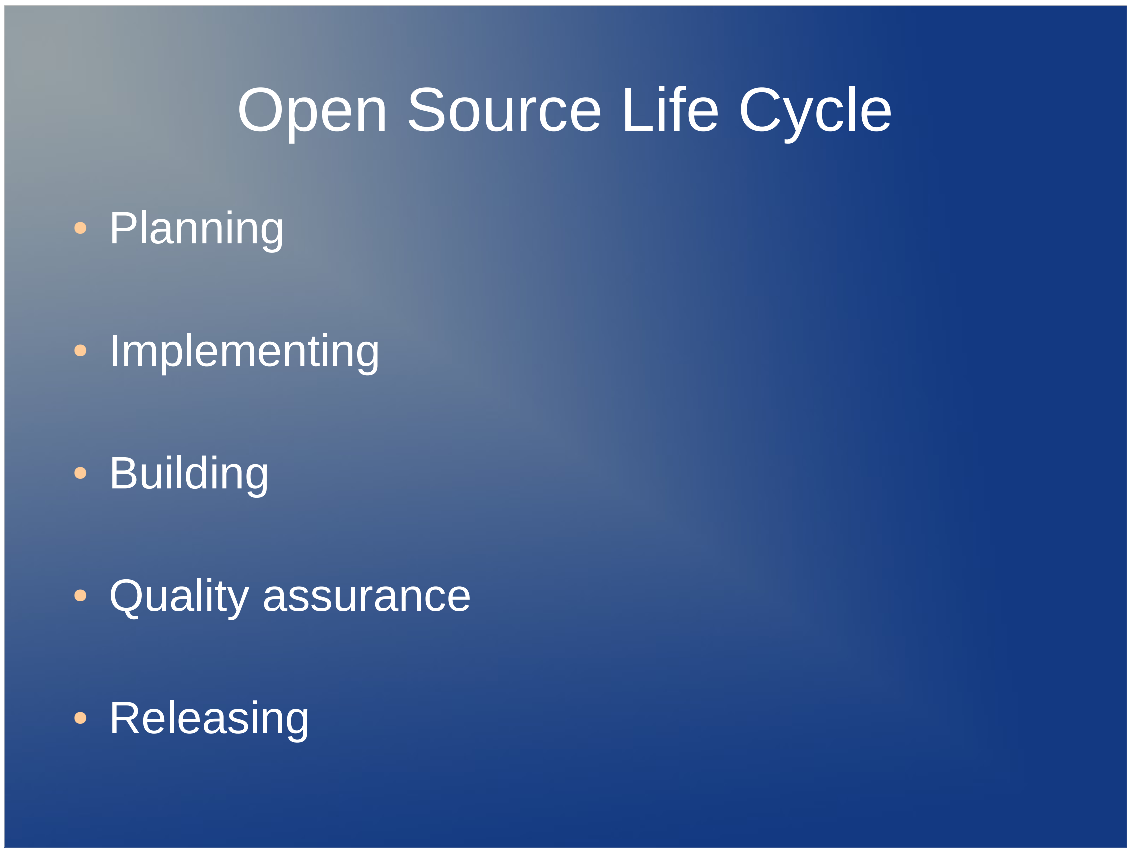
Like Team foundation Server but open source and not crappy

If a project has more than a couple of active developers these are the kind of things that make those people more productive.

The infrastructure should give benefits quickly but be robust enough to grow and adapt

Keep it simple stupid, do not waste more developer time with infrastructure than you gain. This stuff is meant to let you spend more time doing software

Historically sourceforge provided a lot of this, nowadays it is github.



Open Source Life Cycle

- Planning
- Implementing
- Building
- Quality assurance
- Releasing

What are the main areas in our lifecycle?

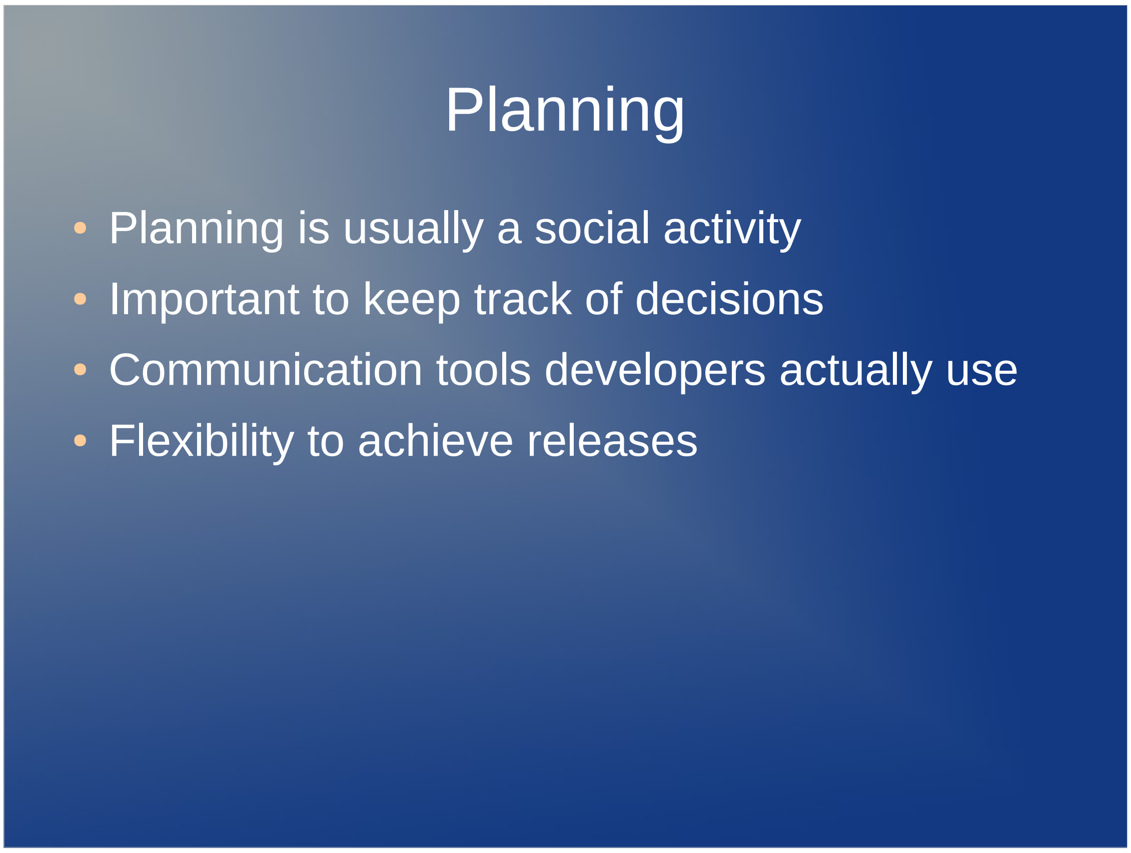
Usually a formal approach has planning and specifications. This is open source, generally we work by consensus and planning is informal at best but it is there. This is not an area technology really helps with and is more a social area. Having said that a wiki is a cheap and easy way to make sure developers ideas do not get lost.

The source code, this is where developers spend most of their effort and scratch their itches, we are generally pretty good at this but it needs managing so revision control systems are needed.

Building the code in all the configurations and environments the project supports can be hard. Continuous integration helps here

QA, Testing, everyone runs their tests all the time before they check in their code, right? Yeah that is what I thought. Having the tests run automatically means you know how healthy the project is

Releasing code is what it is all about. Without this users do not get your software and Debian packages cannot be made. Again CI helps but so does an issue tracker. Especially helpful if the issue tracker allows you to keep track of releases useful for release notes.



Planning

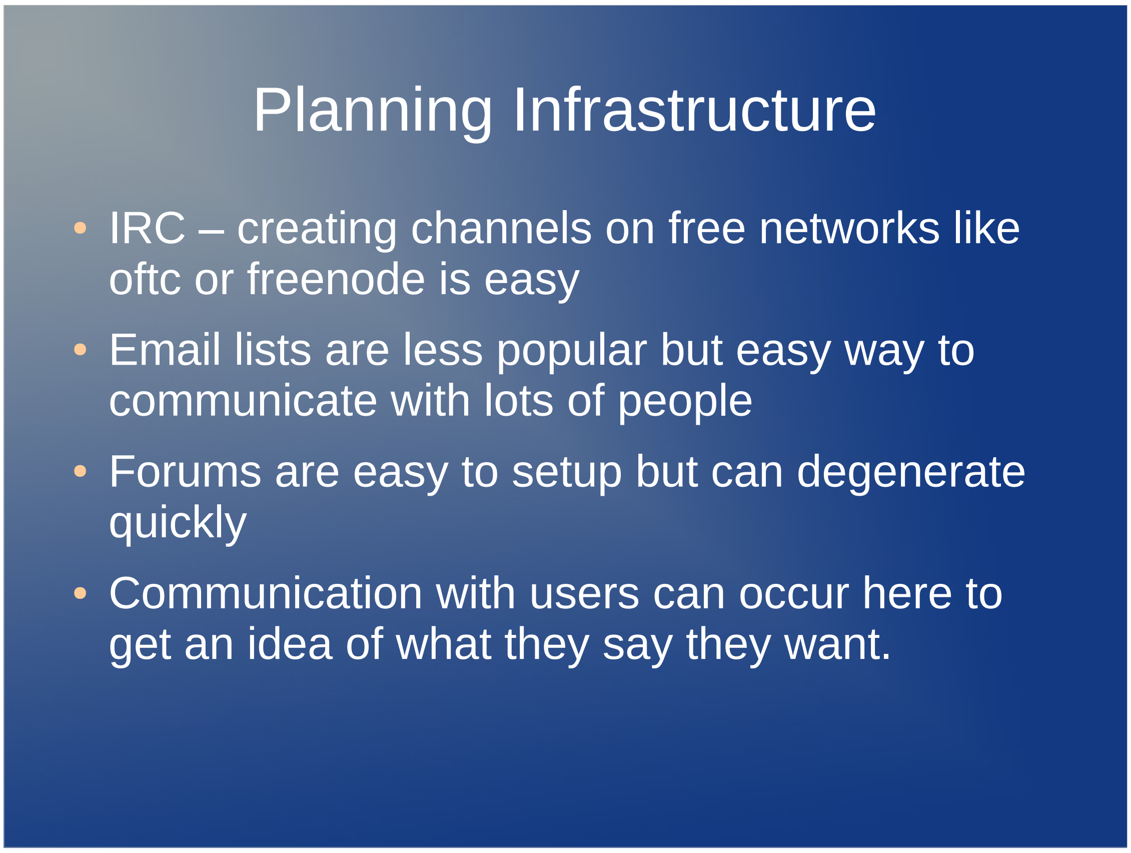
- Planning is usually a social activity
- Important to keep track of decisions
- Communication tools developers actually use
- Flexibility to achieve releases

Most developers do planning in an informal way.

None of these are useful unless developers actually use them, do not implement these unless there is consensus they will be used.

These communication channels are also often where potential new developers join in so its useful to have an easy way to provide answers to all the questions that get repeated a lot (especially gsoc)

No plan survives contact with the enemy, learn to be flexible and ensure your tools are too.



Planning Infrastructure

- IRC – creating channels on free networks like oftc or freenode is easy
- Email lists are less popular but easy way to communicate with lots of people
- Forums are easy to setup but can degenerate quickly
- Communication with users can occur here to get an idea of what they say they want.

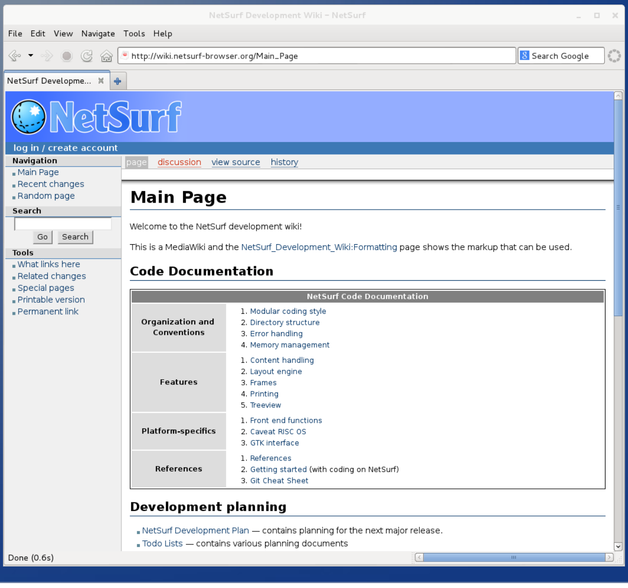
Practically IRC is invaluable for geographically dispersed groups and helps with short term coordination

Email lists or forums are ideal ways to keep in contact with others for with an more permanent record

Forums, especially user forums need ruling with a strong hand to stop them wandering off topic.

Planning Infrastructure

- A wiki is good for longer term info



Main Page

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This is a MediaWiki and the NetSurf_Development_Wiki:Formatting page shows the markup that can be used.

Code Documentation

NetSurf Code Documentation	
Organization and Conventions	1. Modular coding style 2. Directory structure 3. Error handling 4. Memory management
Features	1. Content handling 2. Layout engine 3. Frames 4. Printing 5. Treeview
Platform-specifics	1. Front end functions 2. Caveat RISC OS 3. GTK interface
References	1. References 2. Getting started (with coding on NetSurf) 3. Git Cheat Sheet

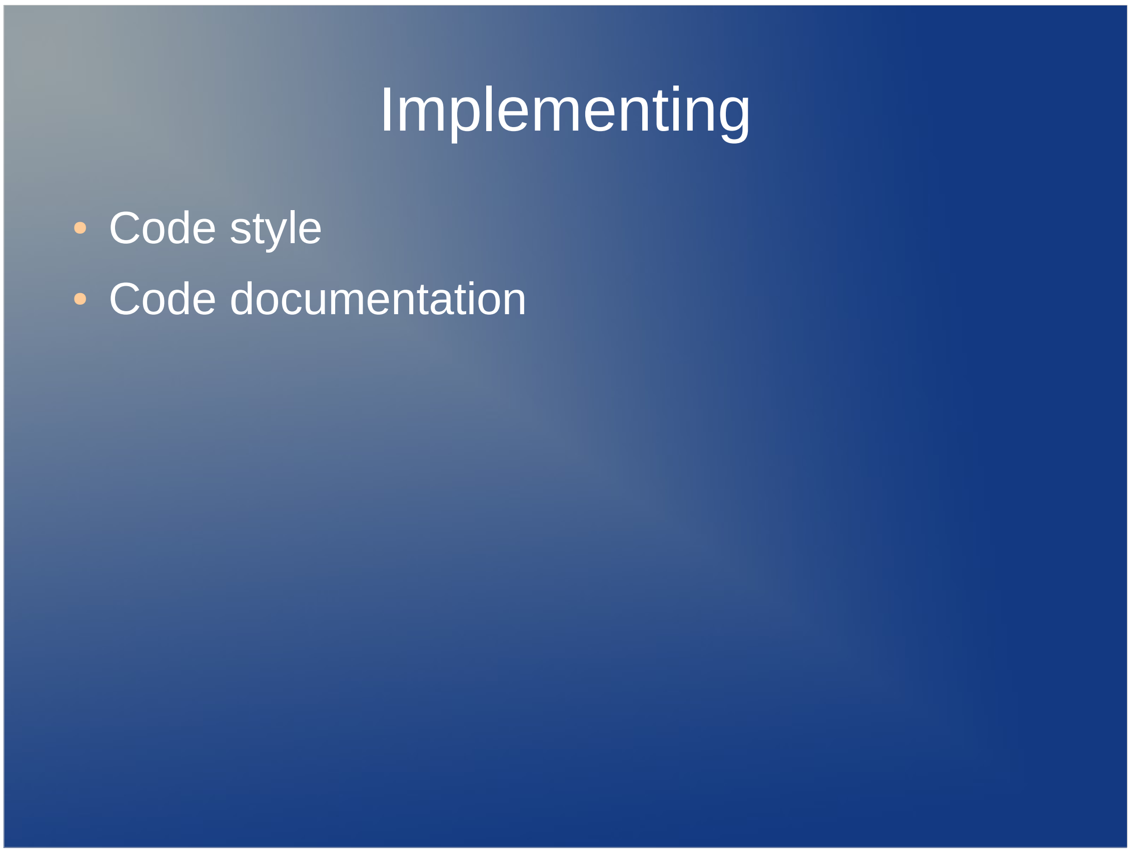
Development planning

- NetSurf Development Plan — contains planning for the next major release.
- Todo Lists — contains various planning documents

Wiki is useful for info that is longer term in nature and the easy changeability means you can put info in quickly

Needs gardening if it not to become a spam infested waste of time.

Debian has many to choose from pick one that suits.



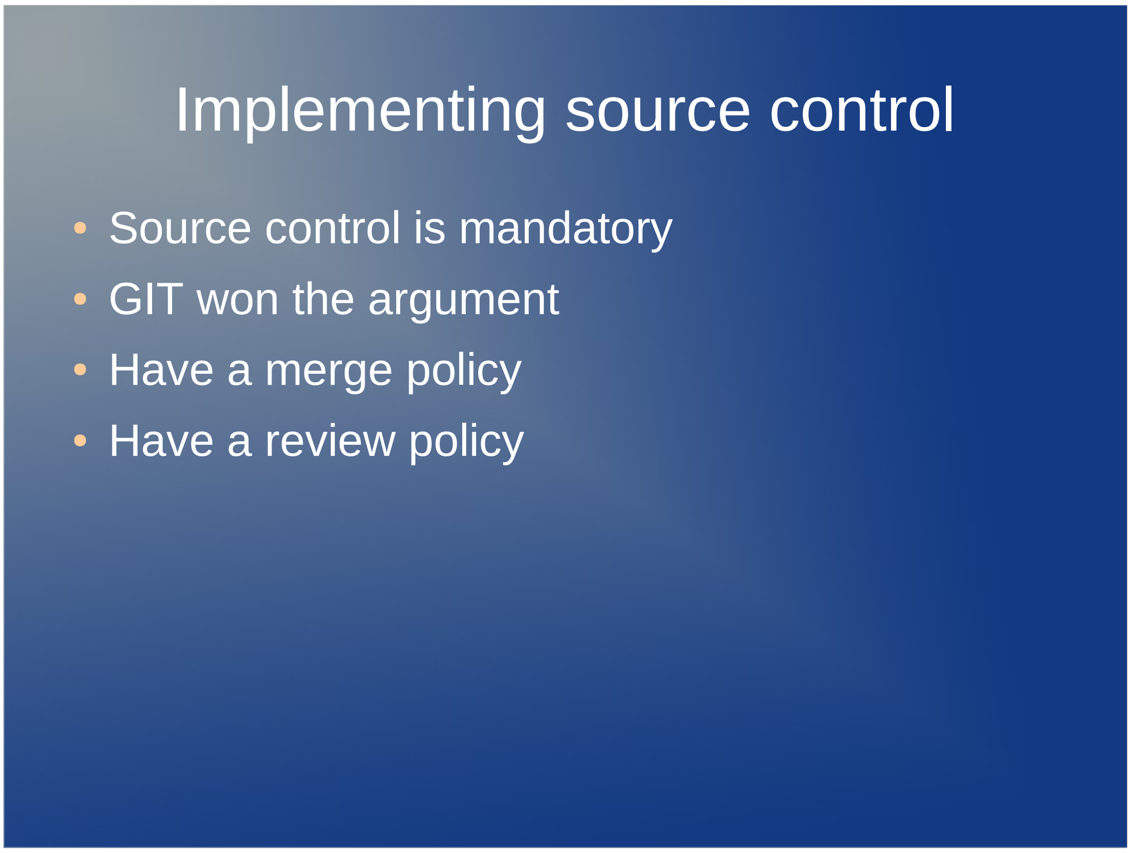
Implementing

- Code style
- Code documentation

This is the bit most developers actually want to do. Personally I love the intellectual rewards

A project should have at least a basic agreement on coding style to stop edit wars breaking out

Basic inline code documentation is useful but it needs maintaining to remain useful



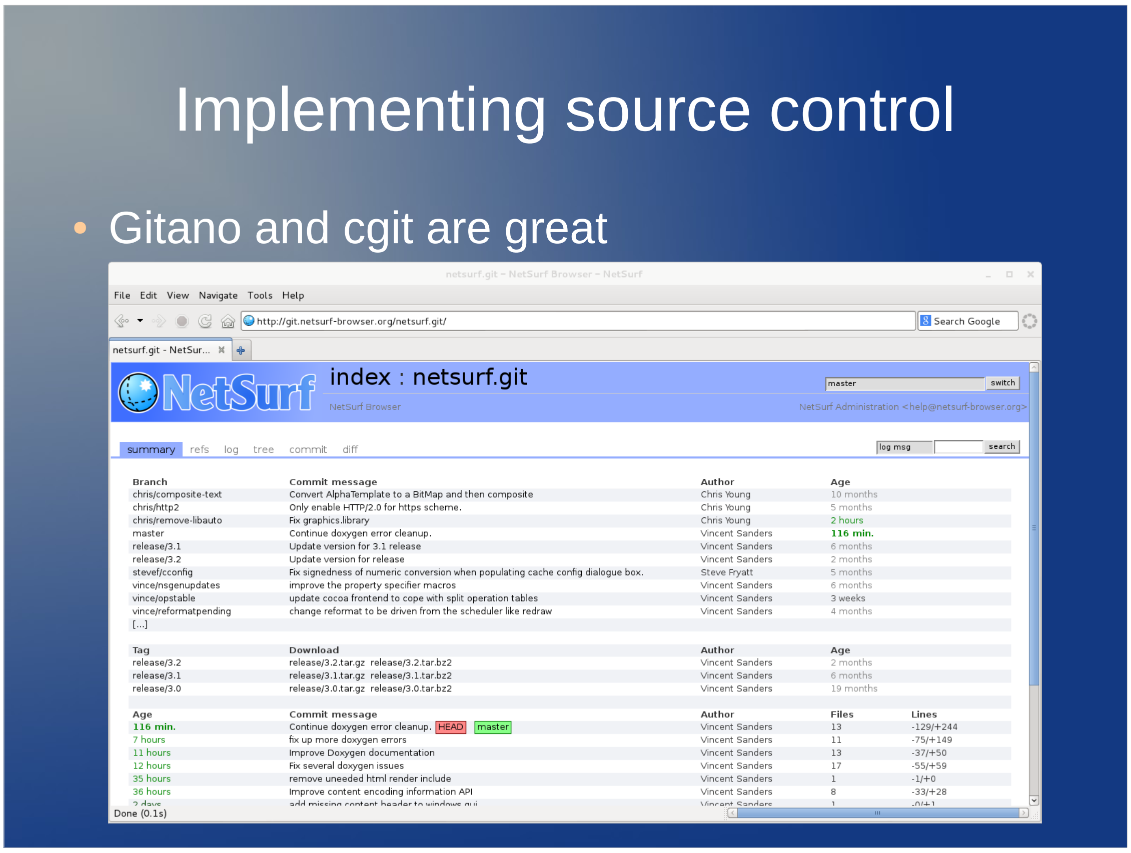
Implementing source control

- Source control is mandatory
- GIT won the argument
- Have a merge policy
- Have a review policy

Any project that does not have a easily accessible revision control system is just plain broken.

I have used everything from SCCS through SVN, bzr, perforce and sourcesafe (you may mock me now) and some of those did some things better but GIT won the argument, even emacs is switching.

Make sure you have a sensible merge policy and if you are doing code review ensure the process is clear or it will be ignored.



Implementing source control

- Gitano and cgit are great

netsurf.git – NetSurf Browser – NetSurf
File Edit View Navigate Tools Help
http://git.netsurf-browser.org/netsurf.git/
Search Google
netsurf.git - NetSur...
NetSurf
master
switch
summary refs log tree commit diff
log msg
search
Done (0.1s)

index : netsurf.git

NetSurf Browser

NetSurf Administration <help@netsurf-browser.org>

Branch	Commit message	Author	Age
chris/composite-text	Convert AlphaTemplate to a BitMap and then composite	Chris Young	10 months
chris/http2	Only enable HTTP/2.0 for https scheme.	Chris Young	5 months
chris/remove-libauto	Fix graphics.library	Chris Young	2 hours
master	Continue doxygen error cleanup.	Vincent Sanders	116 min.
release/3.1	Update version for 3.1 release	Vincent Sanders	6 months
release/3.2	Update version for release	Vincent Sanders	2 months
stevef/cconfig	Fix signedness of numeric conversion when populating cache config dialogue box.	Steve Fryatt	5 months
vince/nsgenupdates	improve the property specifier macros	Vincent Sanders	6 months
vince/opstable	update cocoa frontend to cope with split operation tables	Vincent Sanders	3 weeks
vince/reformatpending	change reformat to be driven from the scheduler like redraw	Vincent Sanders	4 months
[...]			

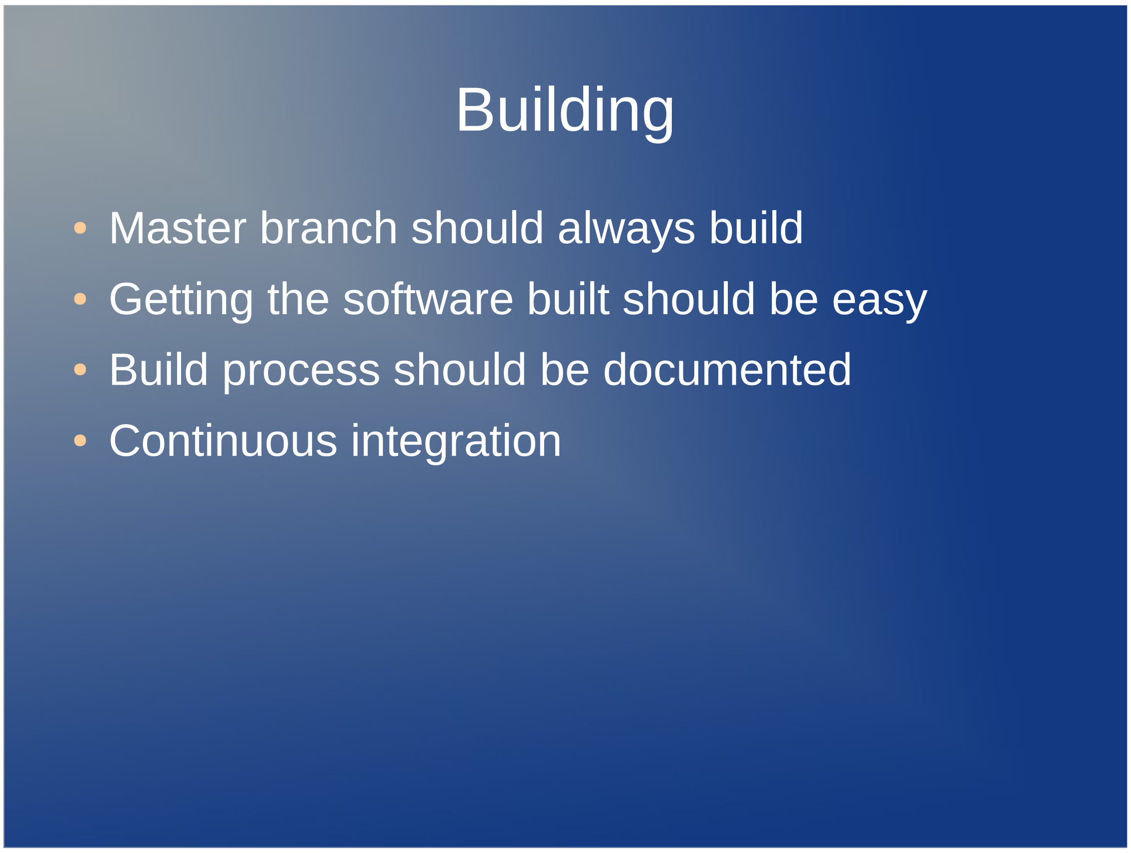
Tag	Download	Author	Age
release/3.2	release/3.2.tar.gz release/3.2.tar.bz2	Vincent Sanders	2 months
release/3.1	release/3.1.tar.gz release/3.1.tar.bz2	Vincent Sanders	6 months
release/3.0	release/3.0.tar.gz release/3.0.tar.bz2	Vincent Sanders	19 months

Age	Commit message	Author	Files	Lines
116 min.	Continue doxygen error cleanup. HEAD master	Vincent Sanders	13	-129/+244
7 hours	fix up more doxygen errors	Vincent Sanders	11	-75/+149
11 hours	Improve Doxygen documentation	Vincent Sanders	13	-37/+50
12 hours	Fix several doxygen issues	Vincent Sanders	17	-55/+59
35 hours	remove uneeded html render include	Vincent Sanders	1	-1/+0
36 hours	Improve content encoding information API	Vincent Sanders	8	-33/+28
2 days	add missing content header to windows gui	Vincent Sanders	1	-0/+1

Gitano is an excellent git server, encourage Daniel to develop it and get it packaged

Cgit is a great tool especially with a forest of trees.

Failing that there are lots of options or githib is always there if you are willing to use their merge/review model. Heck you even get a basic website interface through github if you want.


Building

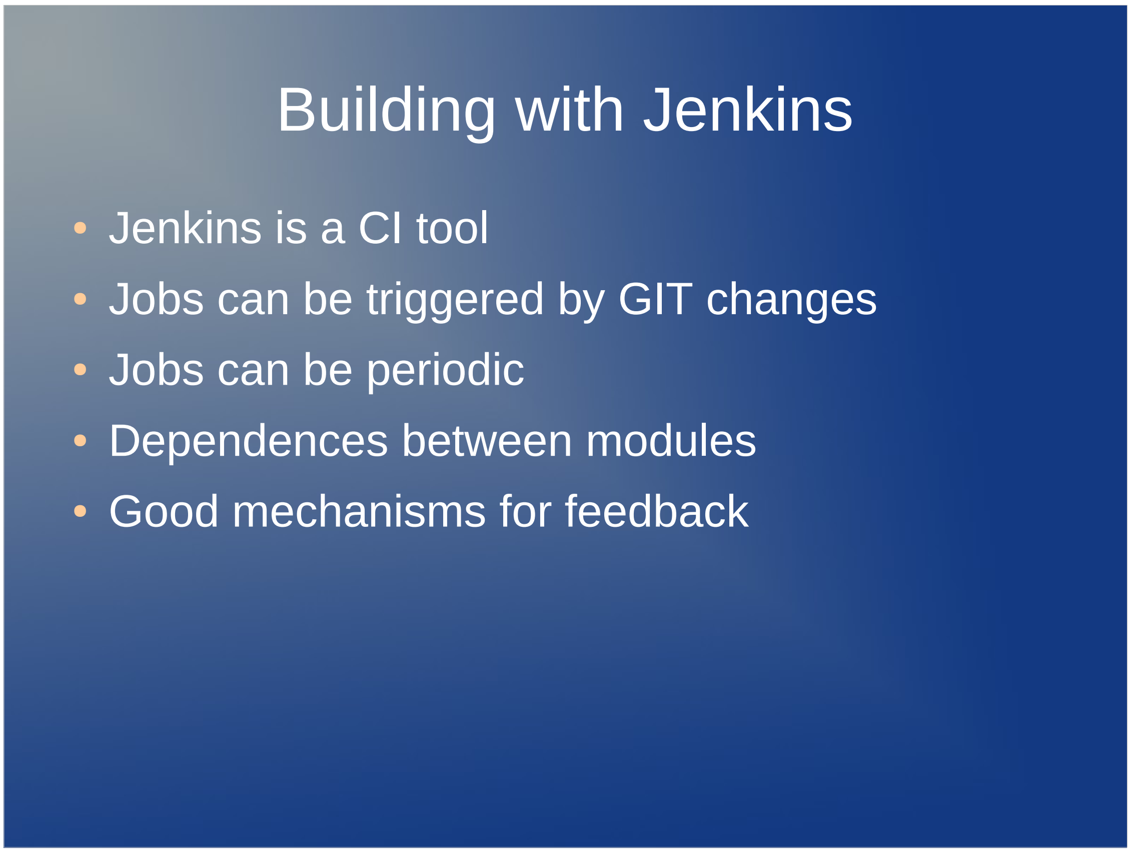
- Master branch should always build
- Getting the software built should be easy
- Build process should be documented
- Continuous integration

Software is no good if developers cannot build it.

Continuous integration is a wonderful tool to ensure the software is always buildable

Especially important if your project has multiple components or architectures.

The more different ways a project can be built to more scope there is that a developer checking in their code will not have tested the alternatives



Building with Jenkins

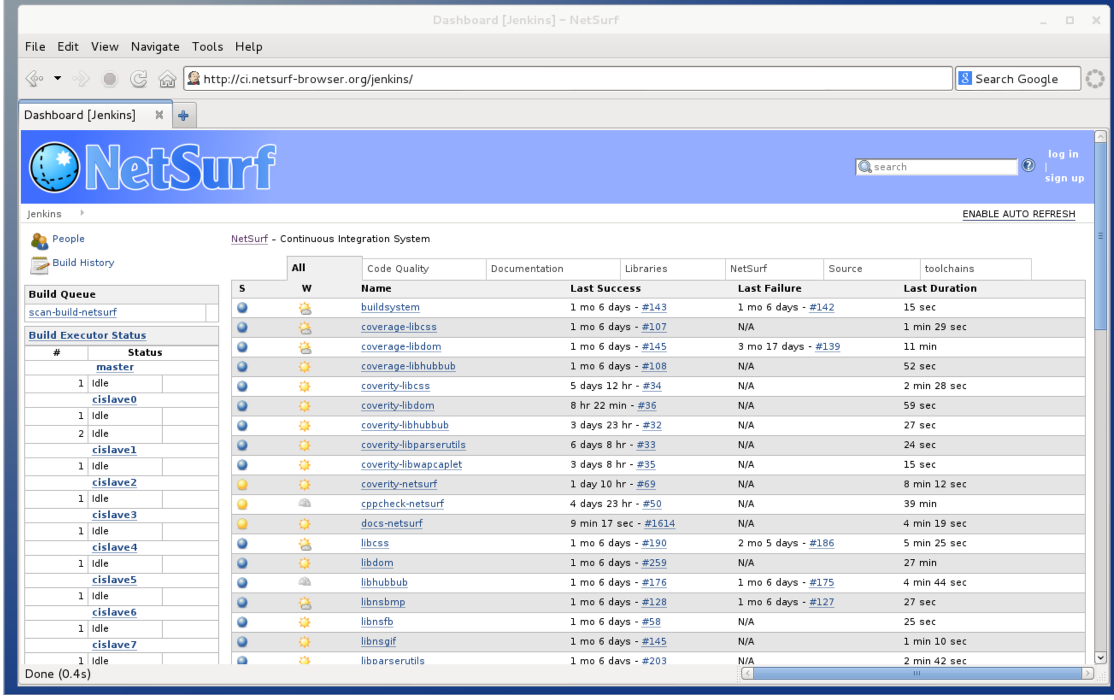
- Jenkins is a CI tool
- Jobs can be triggered by GIT changes
- Jobs can be periodic
- Dependences between modules
- Good mechanisms for feedback

If you are using github their infrastructure integrates travis CI for the rest of us jenkins is probably least bad.

The web based interface and large number of plugins make it easy to deploy.

Start with a small number of jobs and build up means large reward for small initial investment.

Deploying Jenkins



NetSurf - Continuous Integration System

Build Queue

scan-build-netsurf

Build Executor Status

#	Status
master	
1	Idle
cislave0	
1	Idle
2	Idle
cislave1	
1	Idle
cislave2	
1	Idle
cislave3	
1	Idle
cislave4	
1	Idle
cislave5	
1	Idle
cislave6	
1	Idle
cislave7	
1	Idle

All | Code Quality | Documentation | Libraries | NetSurf | Source | toolchains

S	W	Name	Last Success	Last Failure	Last Duration
🔵	⛅	buildsystem	1 mo 6 days - #143	1 mo 6 days - #142	15 sec
🔵	⛅	coverage-libcss	1 mo 6 days - #107	N/A	1 min 29 sec
🔵	⛅	coverage-libdom	1 mo 6 days - #145	3 mo 17 days - #139	11 min
🔵	☀	coverage-libhubbub	1 mo 6 days - #108	N/A	52 sec
🔵	☀	coverity-libcss	5 days 12 hr - #34	N/A	2 min 28 sec
🔵	☀	coverity-libdom	8 hr 22 min - #36	N/A	59 sec
🔵	☀	coverity-libhubbub	3 days 23 hr - #32	N/A	27 sec
🔵	☀	coverity-libparserutils	6 days 8 hr - #33	N/A	24 sec
🔵	☀	coverity-libwapcaplet	3 days 8 hr - #35	N/A	15 sec
🟡	☀	coverity-netsurf	1 day 10 hr - #69	N/A	8 min 12 sec
🟡	☁	cppcheck-netsurf	4 days 23 hr - #50	N/A	39 min
🟡	☀	docs-netsurf	9 min 17 sec - #1614	N/A	4 min 19 sec
🔵	⛅	libcss	1 mo 6 days - #190	2 mo 5 days - #186	5 min 25 sec
🔵	☀	libdom	1 mo 6 days - #259	N/A	27 min
🔵	☁	libhubbub	1 mo 6 days - #176	1 mo 6 days - #175	4 min 44 sec
🔵	⛅	libnsbmp	1 mo 6 days - #128	1 mo 6 days - #127	27 sec
🔵	☀	libnsfb	1 mo 6 days - #58	N/A	25 sec
🔵	☀	libnsgif	1 mo 6 days - #145	N/A	1 min 10 sec
🔵	☀	libparserutils	1 mo 6 days - #203	N/A	2 min 42 sec

Done (0.4s)

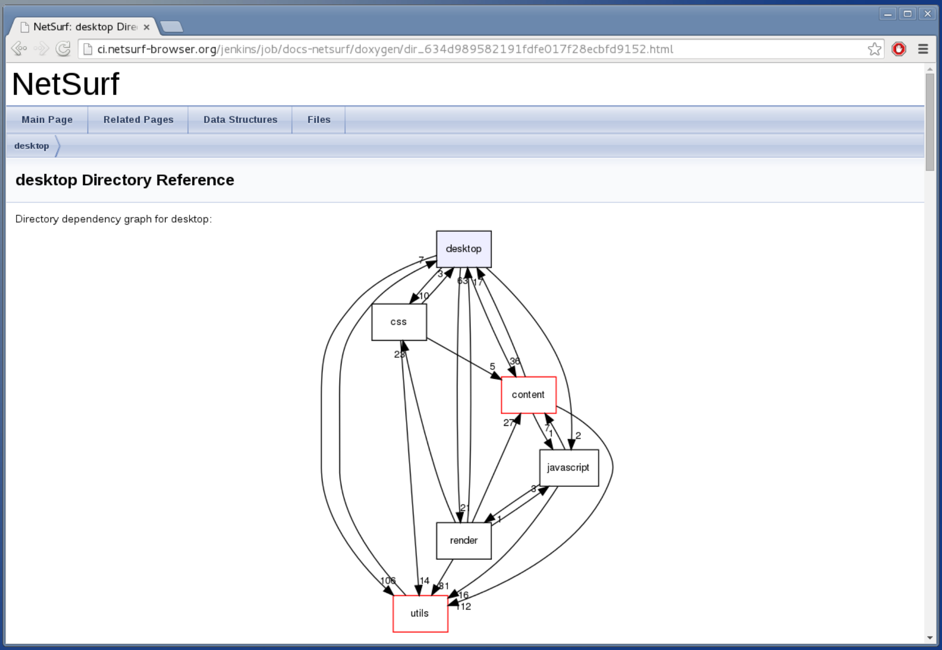
DEMO

I deployed jenkins for the netsurf project more than 18months ago

Started with small number of jobs and now now it build all the libraries and netsurf for 9 OS

Netsuf job builds multiple configurations (with clang and gcc for nine tookits)

Deploying Jenkins


NetSurf: desktop Dire ×

ci.netsurf-browser.org/jenkins/job/docs-netsurf/doxygen/dir_634d989582191fdfe017f28ecbfd9152.html

NetSurf

Main Page | Related Pages | Data Structures | Files

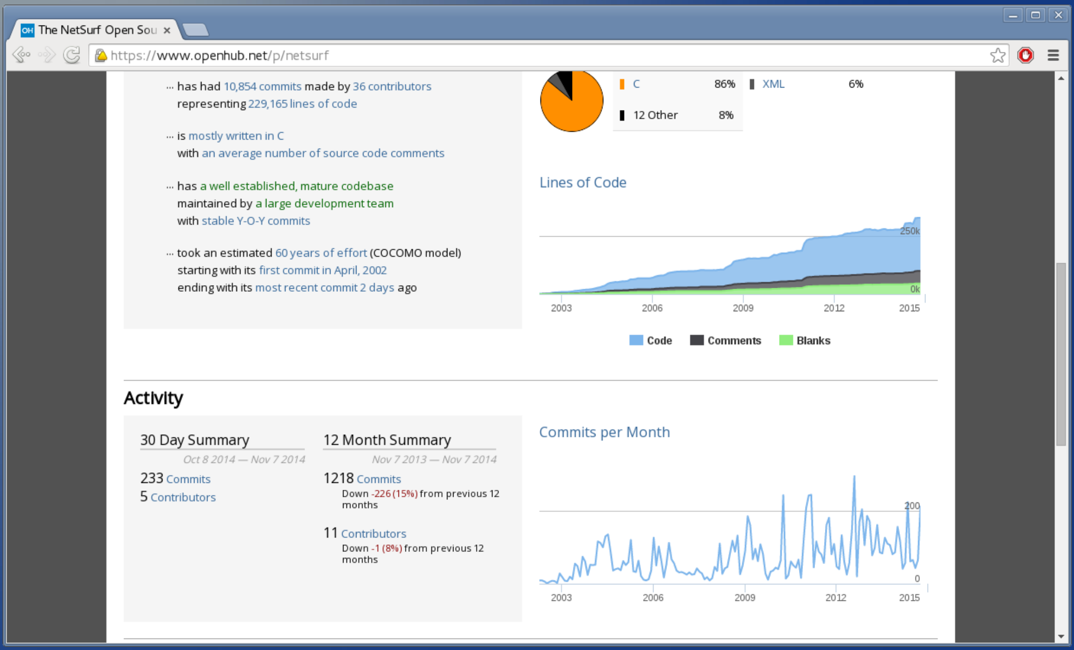
desktop

desktop Directory Reference

Directory dependency graph for desktop:

Jobs can be added to ensure things like the code documentation (via doxygen) is updated at the same time as code is built.

Metrics


The NetSurf Open Sou

https://www.openhub.net/p/netsurf

... has had 10,854 commits made by 36 contributors
representing 229,165 lines of code

... is mostly written in C
with an average number of source code comments

... has a well established, mature codebase
maintained by a large development team
with stable Y-O-Y commits

... took an estimated 60 years of effort (COCOMO model)
starting with its first commit in April, 2002
ending with its most recent commit 2 days ago

C	86%	XML	6%
12 Other	8%		

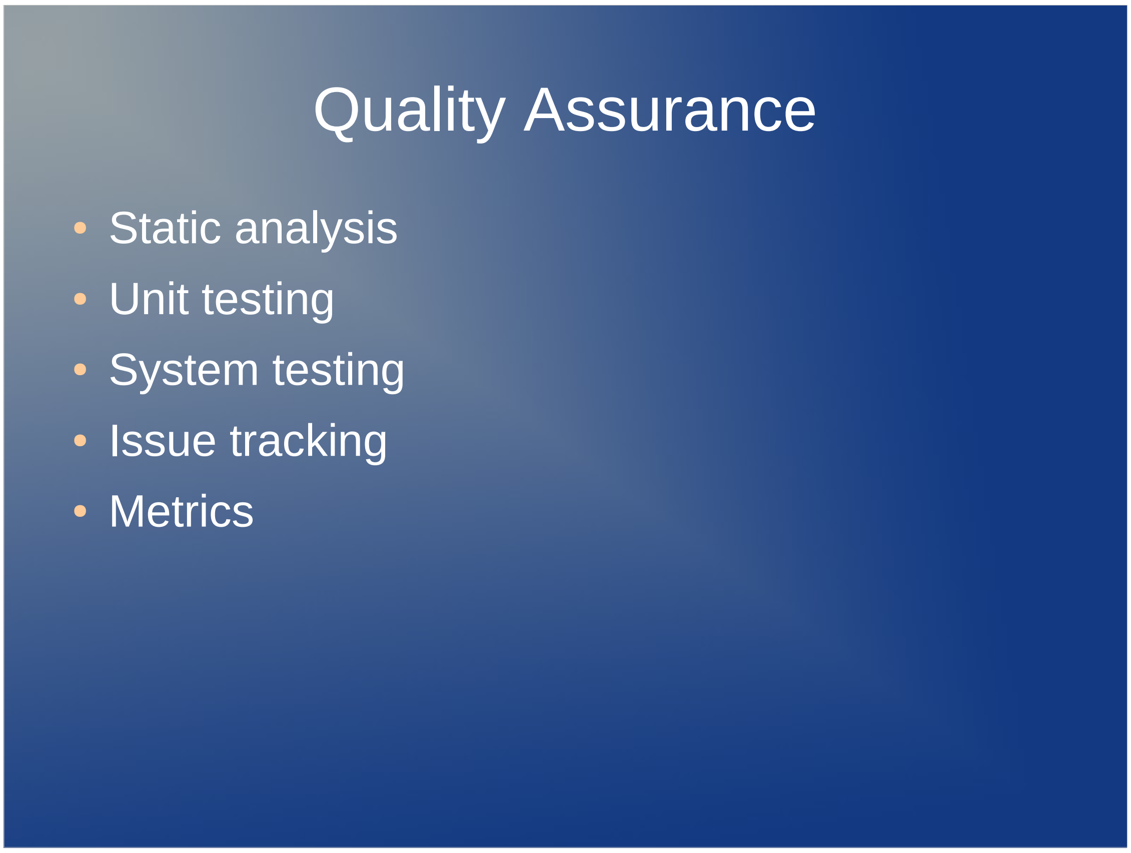
Lines of Code

Activity

30 Day Summary	12 Month Summary
Oct 8 2014 — Nov 7 2014	Nov 7 2013 — Nov 7 2014
233 Commits	1218 Commits Down -226 (15%) from previous 12 months
5 Contributors	11 Contributors Down -1 (8%) from previous 12 months

Commits per Month

Can add other jobs like metrics but sites like oholu now black duck open hub provide these and this kind of info is not hugely helpful



Quality Assurance

- Static analysis
- Unit testing
- System testing
- Issue tracking
- Metrics

Static analysis is a powerful tool that can help find issues before your users do. It is only part of the story but works best when automated and a developer does not have to do anything. No new regressions is helpful target with this.

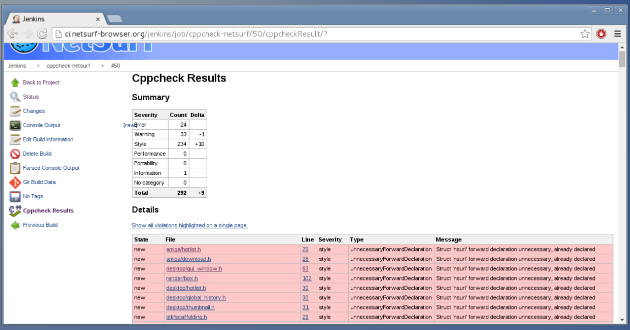
A project should have at least some basic unit testing although this gets missed a lot. Again automation of running the tests is best. Gamification helps

System testing is hard but useful if it can be implemented.

An issue tracker is a useful tool both for keeping track of QA issues and for bugs found by users in releases.

Metrics are pretty but do not serve much beyond that

Static analysis



ci.netsurf-browser.org/jenkins/job/cppcheck-netsurf/50/cppcheckResult/?

Jenkins › cppcheck-netsurf › #50

Cppcheck Results

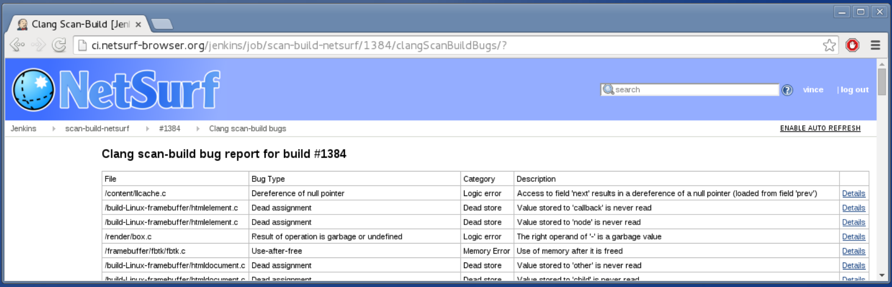
Summary

Severity	Count	Delta
Error	24	
Warning	33	-1
Style	234	+10
Performance	0	
Portability	0	
Information	1	
No category	0	
Total	**292**	**+9**

Details

Show all violations highlighted on a single page.

State	File	Line	Severity	Type	Message
new	amiga/hotlist.h	25	style	unnecessaryForwardDeclaration	Struct 'nsurl' forward declaration unnecessary, already declared
new	amiga/download.h	28	style	unnecessaryForwardDeclaration	Struct 'nsurl' forward declaration unnecessary, already declared
new	desktop/gui_window.h	63	style	unnecessaryForwardDeclaration	Struct 'nsurl' forward declaration unnecessary, already declared
new	render/box.h	102	style	unnecessaryForwardDeclaration	Struct 'nsurl' forward declaration unnecessary, already declared
new	desktop/hotlist.h	30	style	unnecessaryForwardDeclaration	Struct 'nsurl' forward declaration unnecessary, already declared
new	desktop/global_history.h	30	style	unnecessaryForwardDeclaration	Struct 'nsurl' forward declaration unnecessary, already declared
new	desktop/thumbnail.h	31	style	unnecessaryForwardDeclaration	Struct 'nsurl' forward declaration unnecessary, already declared
new	gtk/scaffolding.h	29	style	unnecessaryForwardDeclaration	Struct 'nsurl' forward declaration unnecessary, already declared



ci.netsurf-browser.org/jenkins/job/scan-build-netsurf/1384/clangScanBuildBugs/?

Jenkins › scan-build-netsurf › #1384 › Clang scan-build bugs

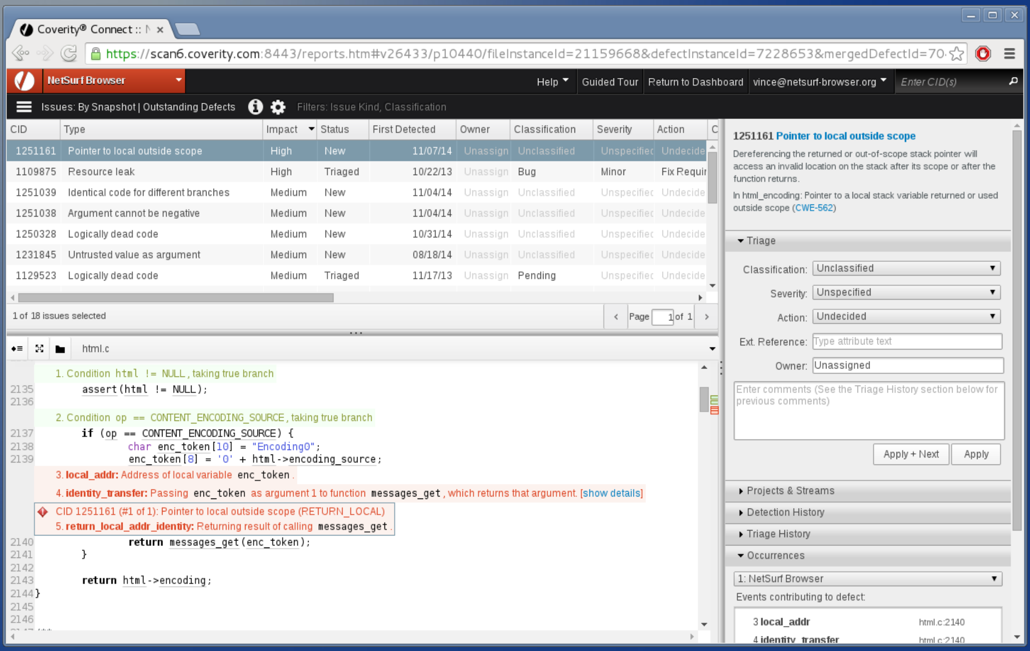
Clang scan-build bug report for build #1384

File	Bug Type	Category	Description	
/content/llcache.c	Dereference of null pointer	Logic error	Access to field 'next' results in a dereference of a null pointer (loaded from field 'prev')	Details
/build-Linux-framebuffer/htmlelement.c	Dead assignment	Dead store	Value stored to 'callback' is never read	Details
/build-Linux-framebuffer/htmlelement.c	Dead assignment	Dead store	Value stored to 'node' is never read	Details
/render/box.c	Result of operation is garbage or undefined	Logic error	The right operand of '-' is a garbage value	Details
/framebuffer/fbtk/fbtk.c	Use-after-free	Memory Error	Use of memory after it is freed	Details
/build-Linux-framebuffer/htmldocument.c	Dead assignment	Dead store	Value stored to 'other' is never read	Details
/build-Linux-framebuffer/htmldocument.c	Dead assignment	Dead store	Value stored to 'child' is never read	Details

Static analysis is powerful for netsurf we have CI jobs that run scan-build (clang) , cppcheck and the proprietary but free (beer) coverity

The free tools are ok but have a lot of false positives and are difficult to manage.

Static Analysis


Coverity® Connect :: N

https://scan6.coverity.com:8443/reports.htm#v26433/p10440/fileInstanceId=21159668&defectInstanceId=7228653&mergedDefectId=70

NetSurf Browser | Help | Guided Tour | Return to Dashboard | vince@netsurf-browser.org | Enter CID(s)

Issues: By Snapshot | Outstanding Defects — Filters: Issue Kind, Classification

CID	Type	Impact	Status	First Detected	Owner	Classification	Severity	Action
1251161	Pointer to local outside scope	High	New	11/07/14	Unassign	Unclassified	Unspecifiec	Undecide
1109875	Resource leak	High	Triaged	10/22/13	Unassign	Bug	Minor	Fix Requir
1251039	Identical code for different branches	Medium	New	11/04/14	Unassign	Unclassified	Unspecifiec	Undecide
1251038	Argument cannot be negative	Medium	New	11/04/14	Unassign	Unclassified	Unspecifiec	Undecide
1250328	Logically dead code	Medium	New	10/31/14	Unassign	Unclassified	Unspecifiec	Undecide
1231845	Untrusted value as argument	Medium	New	08/18/14	Unassign	Unclassified	Unspecifiec	Undecide
1129523	Logically dead code	Medium	Triaged	11/17/13	Unassign	Pending	Unspecifiec	Undecide

1 of 18 issues selected — Page 1 of 1

html.c

```
    1. Condition html != NULL, taking true branch
        assert(html != NULL);

    2. Condition op == CONTENT_ENCODING_SOURCE, taking true branch
        if (op == CONTENT_ENCODING_SOURCE) {
                char enc_token[10] = "Encoding0";
                enc_token[8] = '0' + html->encoding_source;
    3. local_addr: Address of local variable enc_token.
    4. identity_transfer: Passing enc_token as argument 1 to function messages_get, which returns that argument. [show details]
    CID 1251161 (#1 of 1): Pointer to local outside scope (RETURN_LOCAL)
    5. return_local_addr_identity: Returning result of calling messages_get.
                return messages_get(enc_token);
        }

        return html->encoding;
}
```

1251161 Pointer to local outside scope

Dereferencing the returned or out-of-scope stack pointer will access an invalid location on the stack after its scope or after the function returns.

In html_encoding: Pointer to a local stack variable returned or used outside scope (CWE-562)

Triage

Classification:	Unclassified
Severity:	Unspecified
Action:	Undecided
Ext. Reference:	Type attribute text
Owner:	Unassigned

Enter comments (See the Triage History section below for previous comments)

Apply + Next | Apply

Projects & Streams | Detection History | Triage History | Occurrences

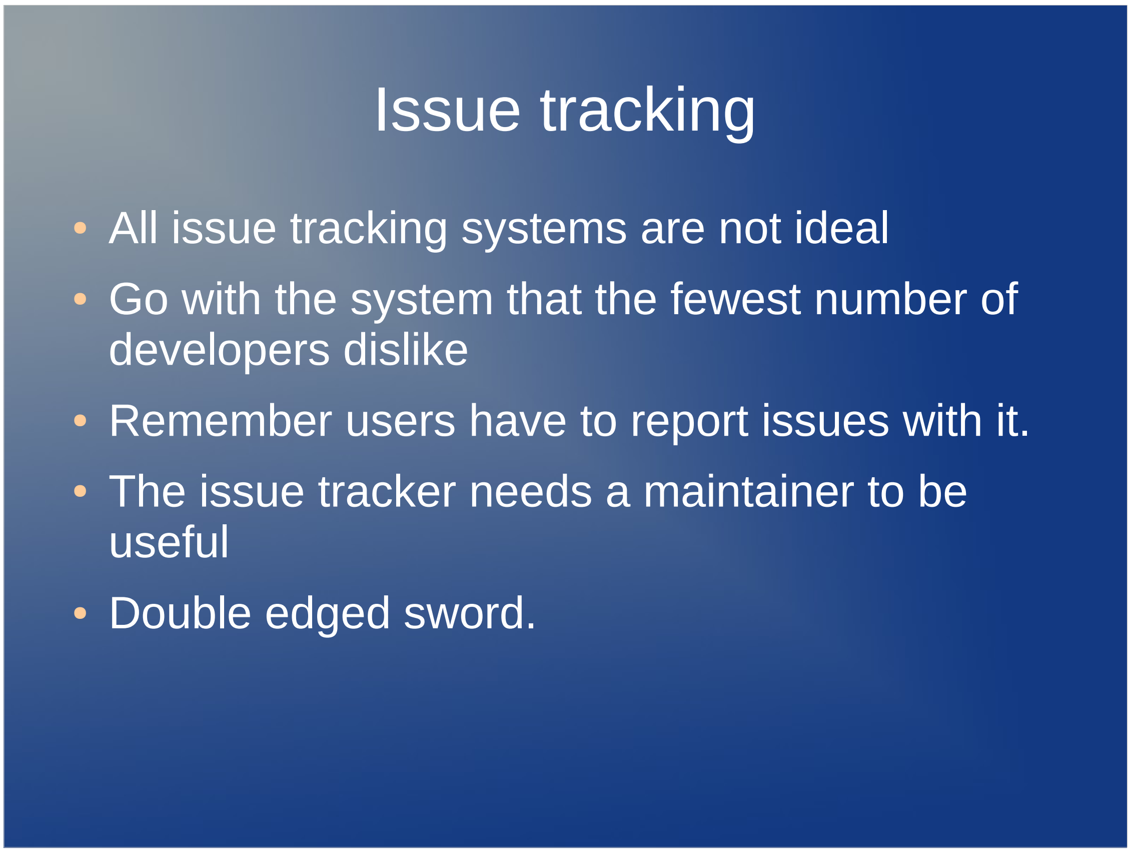
1: NetSurf Browser

Events contributing to defect:

3 local_addr	html.c:2140
4 identity_transfer	html.c:2140

Coverity is much easier to use and worthwhile looking at fro any open source project as you can use their free scan service.

I wrote a lot about this in a blog post
Error analysis is the sweet spot for improvement



Issue tracking

- All issue tracking systems are not ideal
- Go with the system that the fewest number of developers dislike
- Remember users have to report issues with it.
- The issue tracker needs a maintainer to be useful
- Double edged sword.

Issue trackers seem to be like mail clients, they all suck, some less than others

If your project went with github they have an integrated solution, if not practical options are basically bugzilla, trac or mantis

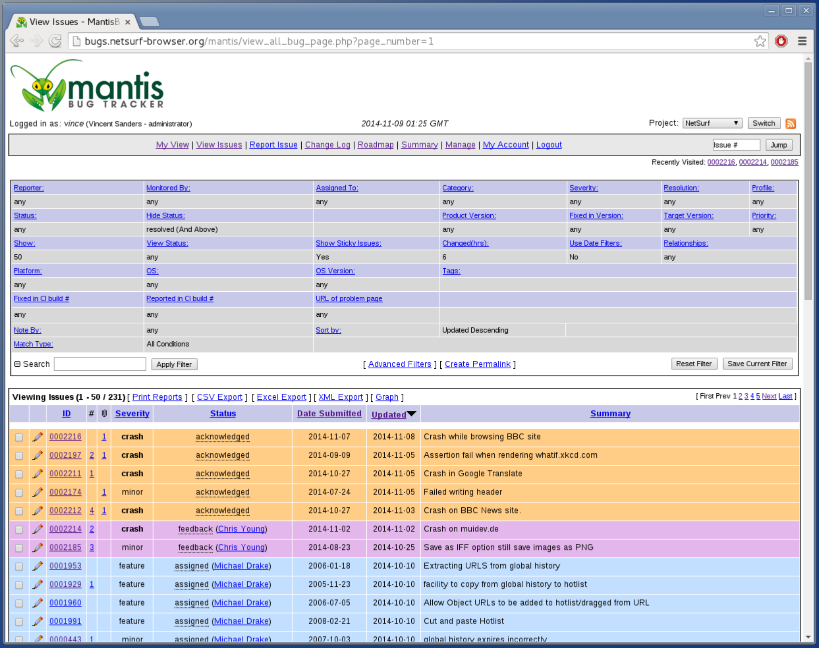
Bugzilla is ubiquitous and hard to admin.

Trac gives you a wiki as well as issue tracker and source viewer but forces a workflow

Mantis is very simple, is usable without javascript/html5 features making it fast to use. The simplicity could be limiting if your project needs more but remember the maintenance burden.

Users need training in whatever tool, its a big investment.

Mantis



View Issues - MantisB

bugs.netsurf-browser.org/mantis/view_all_bug_page.php?page_number=1

Logged in as: *vince* (Vincent Sanders - administrator) *2014-11-09 01:25 GMT* Project: NetSurf Switch

My View | View Issues | Report Issue | Change Log | Roadmap | Summary | Manage | My Account | Logout Issue # Jump

Recently Visited: 0002216, 0002214, 0002185

Reporter:	Monitored By:	Assigned To:	Category:	Severity:	Resolution:	Profile:
any	any	any	any	any	any	any
Status:	Hide Status:		Product Version:	Fixed in Version:	Target Version:	Priority:
any	resolved (And Above)		any	any	any	any
Show:	View Status:	Show Sticky Issues:	Changed(hrs):	Use Date Filters:	Relationships:	
50	any	Yes	6	No	any	
Platform:	OS:	OS Version:	Tags:			
any	any	any				
Fixed in CI build #	Reported in CI build #	URL of problem page				
any	any	any				
Note By:	any	Sort by:	Updated Descending			
Match Type:	All Conditions					

Search Apply Filter [Advanced Filters] [Create Permalink] Reset Filter Save Current Filter

Viewing Issues (1 - 50 / 231) [Print Reports] [CSV Export] [Excel Export] [XML Export] [Graph] [First Prev 1 2 3 4 5 Next Last]

ID	#	@	Severity	Status	Date Submitted	Updated	Summary
0002216		1	crash	acknowledged	2014-11-07	2014-11-08	Crash while browsing BBC site
0002197	2	1	crash	acknowledged	2014-09-09	2014-11-05	Assertion fail when rendering whatif.xkcd.com
0002211	1		crash	acknowledged	2014-10-27	2014-11-05	Crash in Google Translate
0002174		1	minor	acknowledged	2014-07-24	2014-11-05	Failed writing header
0002212	4	1	crash	acknowledged	2014-10-27	2014-11-03	Crash on BBC News site.
0002214	2		crash	feedback (Chris Young)	2014-11-02	2014-11-02	Crash on muidev.de
0002185	3		minor	feedback (Chris Young)	2014-08-23	2014-10-25	Save as IFF option still save images as PNG
0001953			feature	assigned (Michael Drake)	2006-01-18	2014-10-10	Extracting URLS from global history
0001929	1		feature	assigned (Michael Drake)	2005-11-23	2014-10-10	facility to copy from global history to hotlist
0001960			feature	assigned (Michael Drake)	2006-07-05	2014-10-10	Allow Object URLs to be added to hotlist/dragged from URL
0001991			feature	assigned (Michael Drake)	2008-02-21	2014-10-10	Cut and paste Hotlist
0000443	1		minor	assigned (Michael Drake)	2007-10-03	2014-10-10	global history expires incorrectly

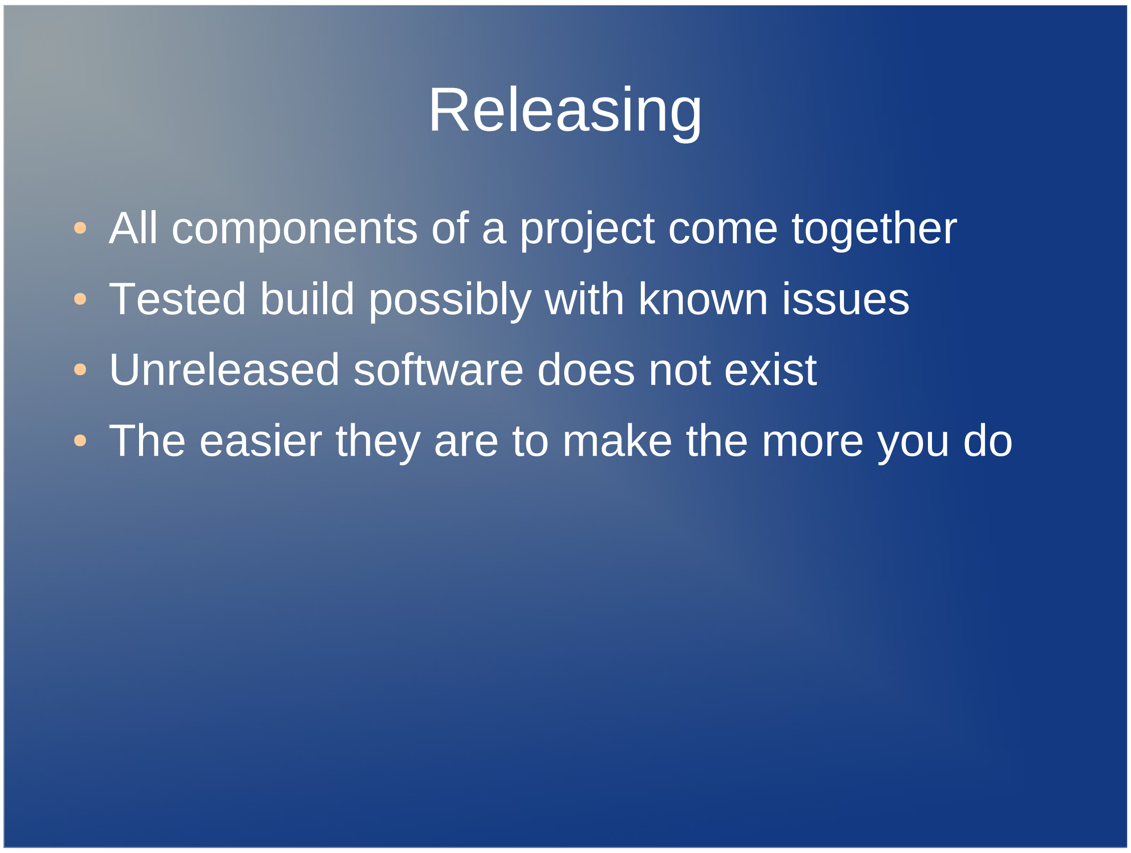
Netsurf deployed mantis

Importing the old data from sourceforge took a lot of time and we **never** look at the historical data

I spend an hour a week minimum just ensuring new bugs are acknowledged and basic triage.

We benefit from it by users reporting issues with CI builds quickly

We have a large backlog of unreproducible crash bugs on minority platforms which appear to be caused by external factors. Users feel slighted if you just close them.



Releasing

- All components of a project come together
- Tested build possibly with known issues
- Unreleased software does not exist
- The easier they are to make the more you do

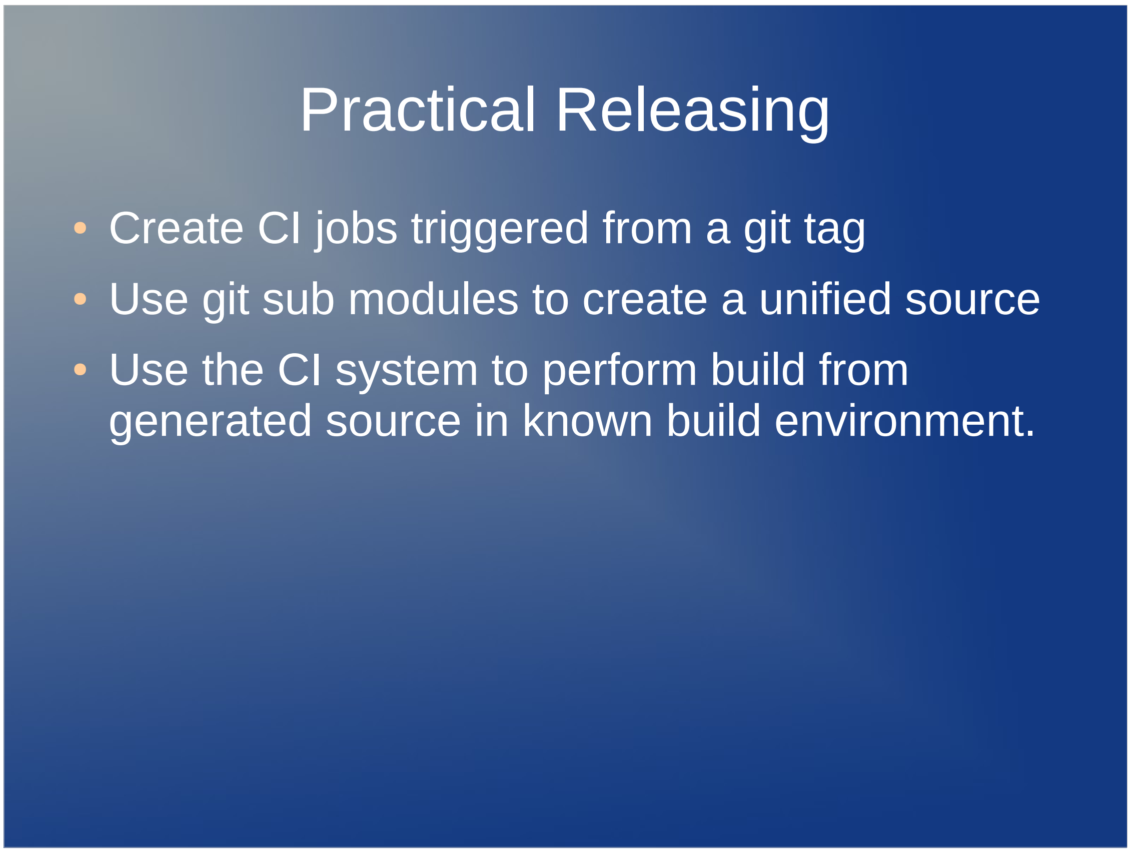
A release is an opportunity for the developers to get all the moving parts of their project in a state it can be used by non-developers

Allows more in depth QA and gives confidence to users they can update.

As far as users are concerned if it is unreleased the software does not exist.

The easier the release process is for developers the less anxiety over a release there is.

One strategy is to use the CI system to publish builds all the time so the difference between a release build and a CI build is negligible aka continuous deployment



Practical Releasing

- Create CI jobs triggered from a git tag
- Use git sub modules to create a unified source
- Use the CI system to perform build from generated source in known build environment.

Release process for sub modules is as simple as

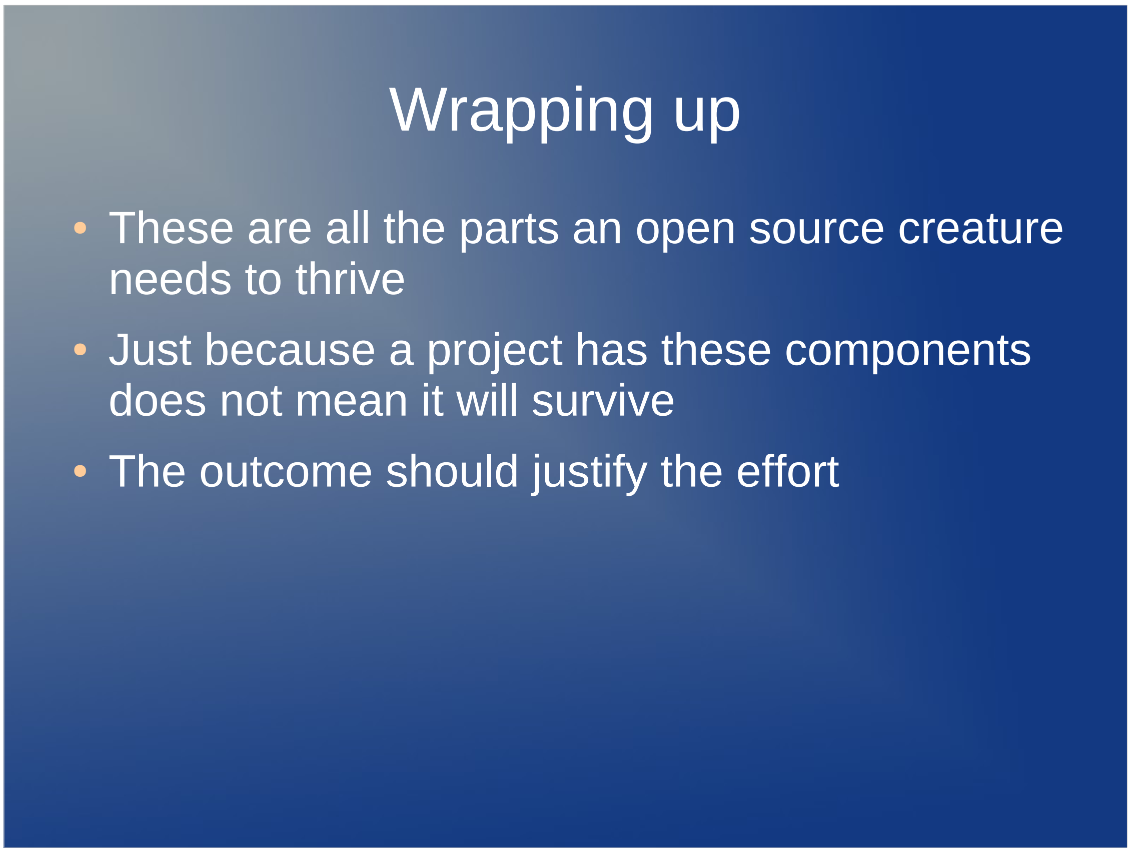
```
git tag -s -m 'Official Release'
release/<version number>

 git push --tags
```

Then updating the sub modules in the netsurf-all repo and pushing a signed tag to that

CI will generate the source tarballs and build them without human involvement. Release can be mechanically generated in under 30 minutes. Most time is spent checking we are releasing what we intend to.

Process in wiki



Wrapping up

- These are all the parts an open source creature needs to thrive
- Just because a project has these components does not mean it will survive
- The outcome should justify the effort

The health of open source projects, like any creature, are not solely dependant on the care given to them. If there is no demand for the software then a project will die as developers move away and do something more interesting but without care a project will definitely fail

Developers should always consider the overhead of implementing things and ensure they will get a worthwhile return

I once killed a Tamagotchi in 90 minutes, maybe there are better ways.

Any Questions?