To test – continuously – or not to code

The survival practice
for any software developer

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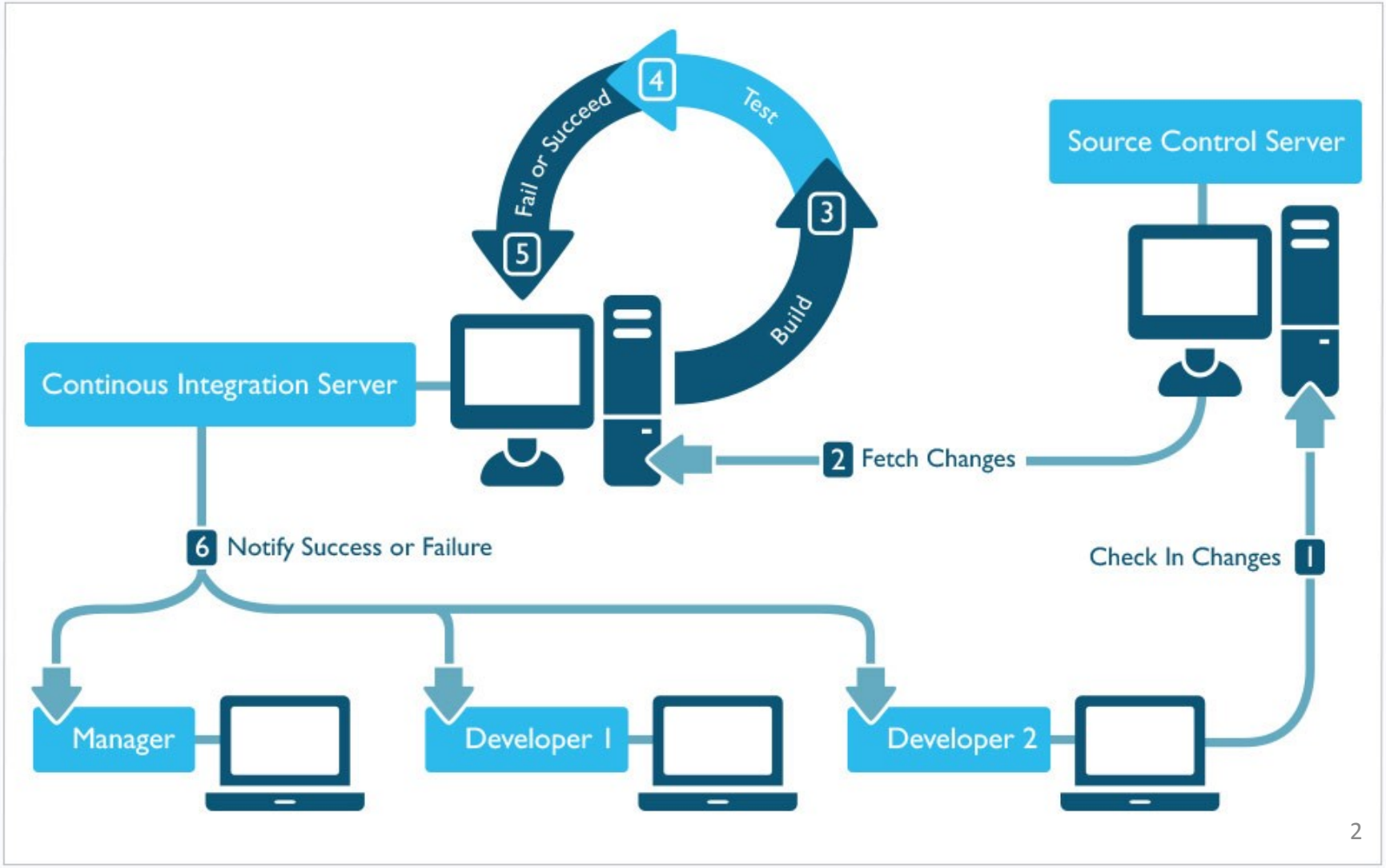
ENVOL 2016

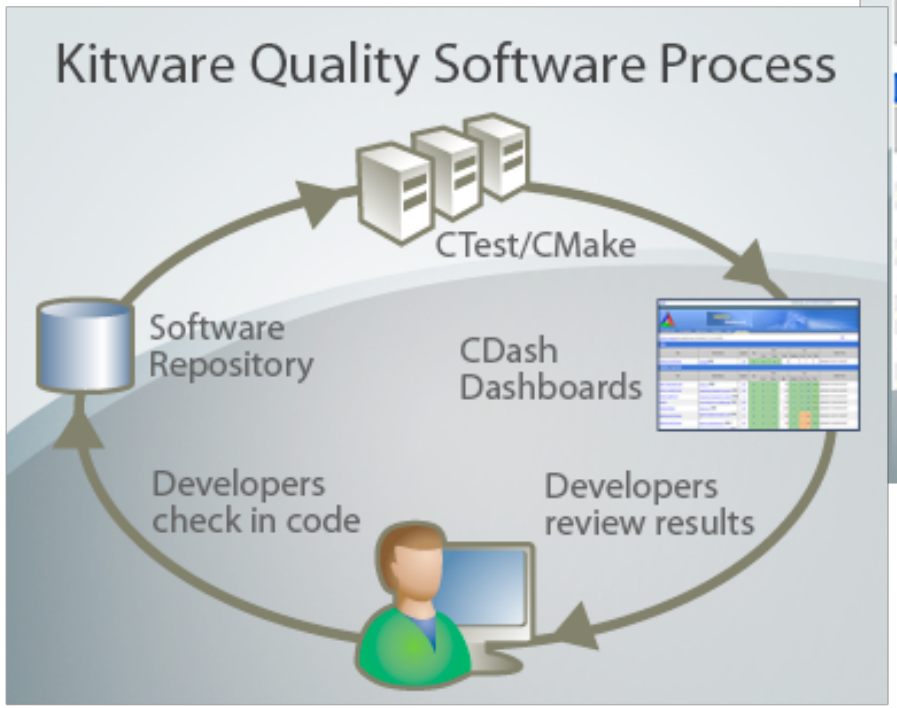
When ?

Continuous integration



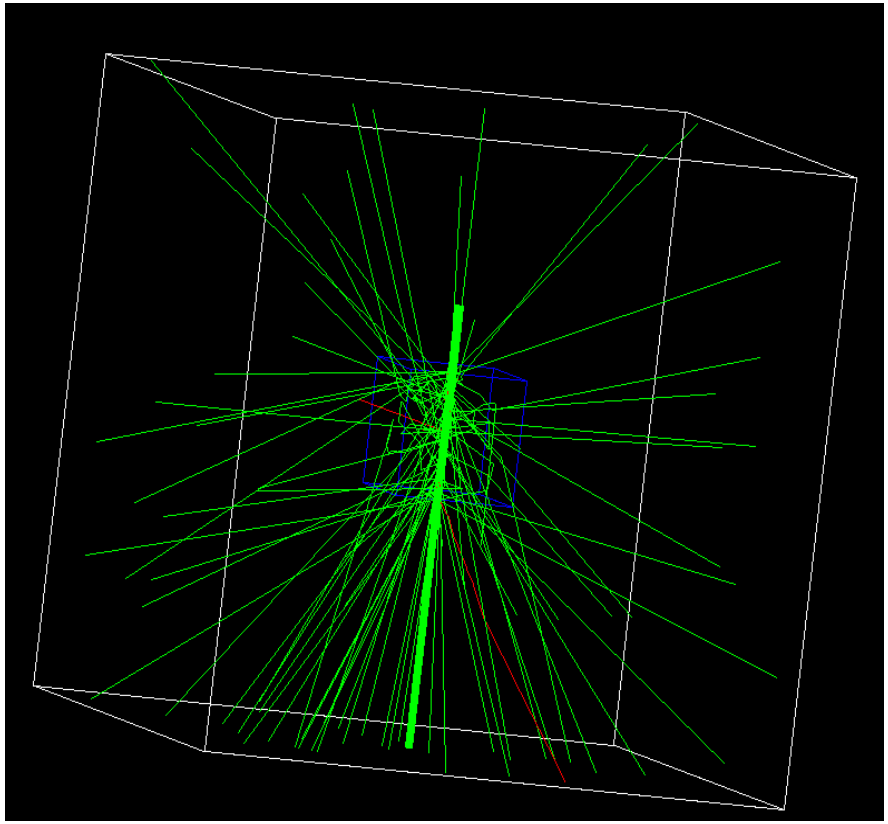
How?

One testing tool

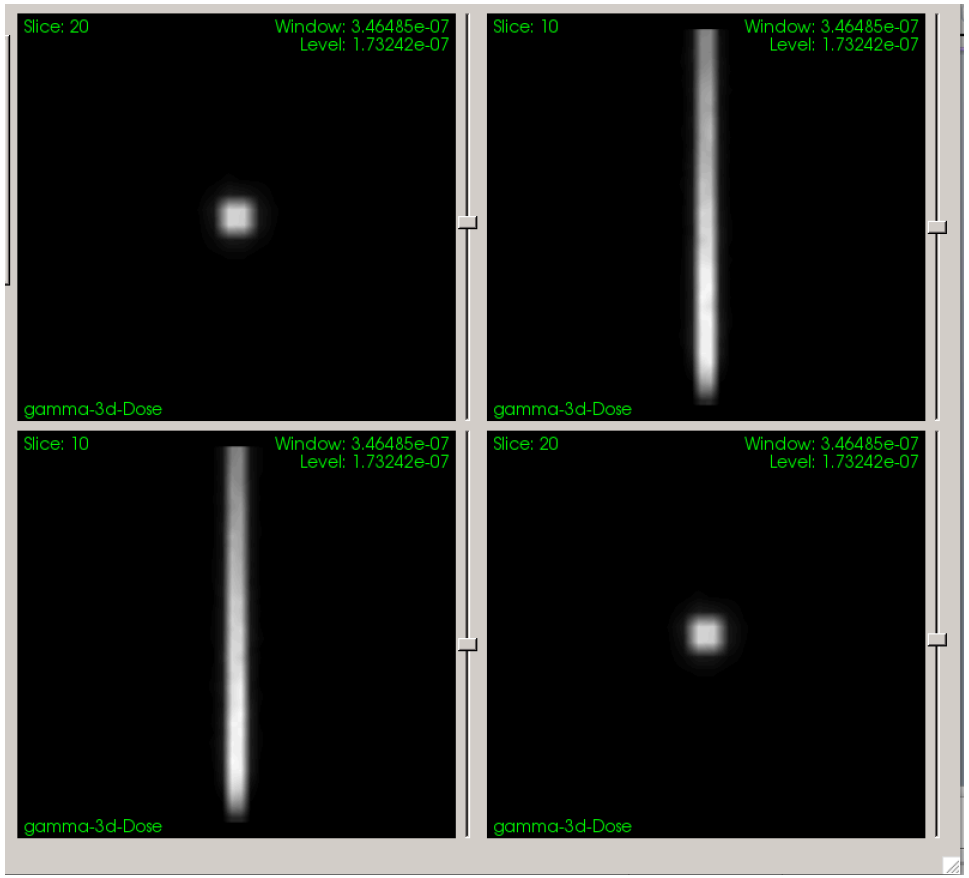


How?

Proof by example



gamma beam in waterbox.

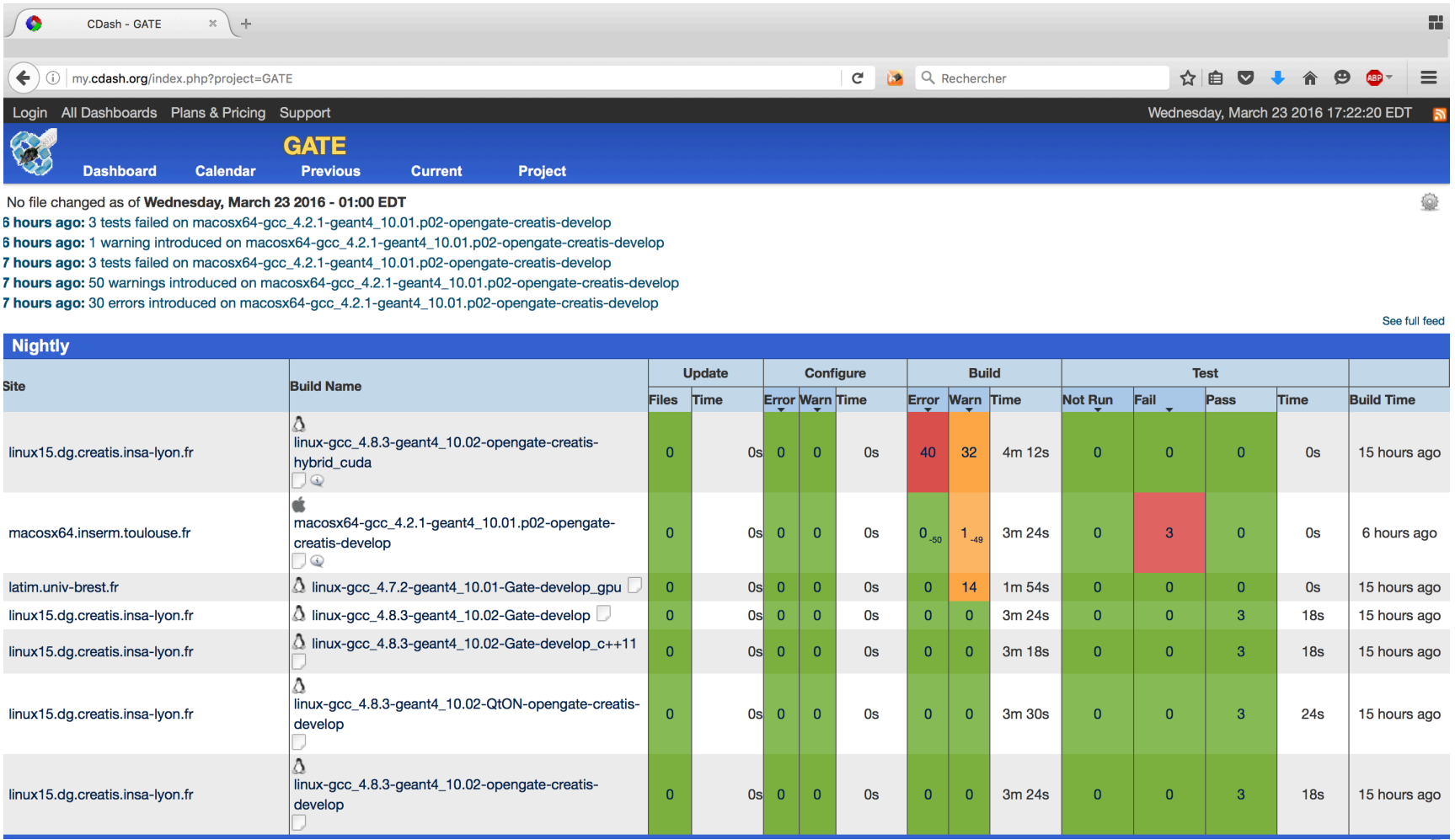


gamma-3d-Dose visualization with vv.

How?

Proof by example

Gate dashboard overview

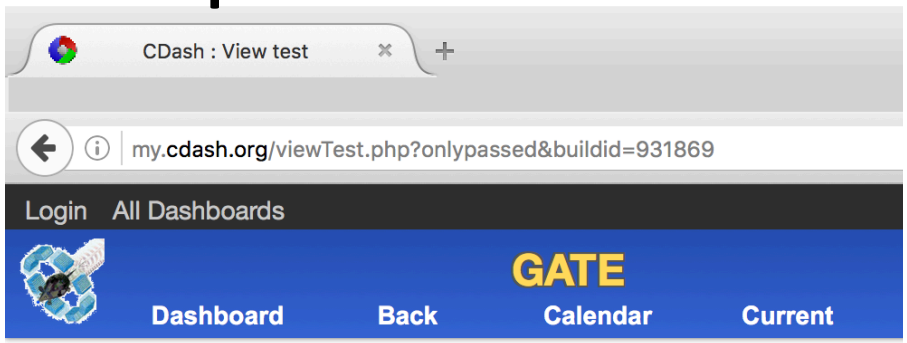


Site	Build Name	Update		Configure			Build			Test				
		Files	Time	Error	Warn	Time	Error	Warn	Time	Not Run	Fail	Pass	Time	Build Time
linux15.dg.creatis.insa-lyon.fr	linux-gcc_4.8.3-geant4_10.02-opengate-creatis-hybrid_cuda	0	0s	0	0	0s	40	32	4m 12s	0	0	0	0s	15 hours ago
macosx64.inserm.toulouse.fr	macosx64-gcc_4.2.1-geant4_10.01.p02-opengate-creatis-develop	0	0s	0	0	0s	0 -50	1 -49	3m 24s	0	3	0	0s	6 hours ago
latim.univ-brest.fr	linux-gcc_4.7.2-geant4_10.01-Gate-develop_gpu	0	0s	0	0	0s	0	14	1m 54s	0	0	0	0s	15 hours ago
linux15.dg.creatis.insa-lyon.fr	linux-gcc_4.8.3-geant4_10.02-Gate-develop	0	0s	0	0	0s	0	0	3m 24s	0	0	3	18s	15 hours ago
linux15.dg.creatis.insa-lyon.fr	linux-gcc_4.8.3-geant4_10.02-Gate-develop_c++11	0	0s	0	0	0s	0	0	3m 18s	0	0	3	18s	15 hours ago
linux15.dg.creatis.insa-lyon.fr	linux-gcc_4.8.3-geant4_10.02-QtON-opengate-creatis-develop	0	0s	0	0	0s	0	0	3m 30s	0	0	3	24s	15 hours ago
linux15.dg.creatis.insa-lyon.fr	linux-gcc_4.8.3-geant4_10.02-opengate-creatis-develop	0	0s	0	0	0s	0	0	3m 24s	0	0	3	18s	15 hours ago

How?

Proof by example

Results of the tests



Testing started on 2016-03-23 06:05:48

Site Name: linux15.dg.creatis.insa-lyon.fr
Build Name: linux-gcc_4.8.3-geant4_10.02-Gate-develop
Total time: 23s 60ms
OS Name: Linux
OS Platform: x86_64
OS Release: 4.4.5-200.fc22.x86_64
OS Version: #1 SMP Thu Mar 10 17:54:17 UTC 2016
Compiler Version: unknown

3 tests passed.

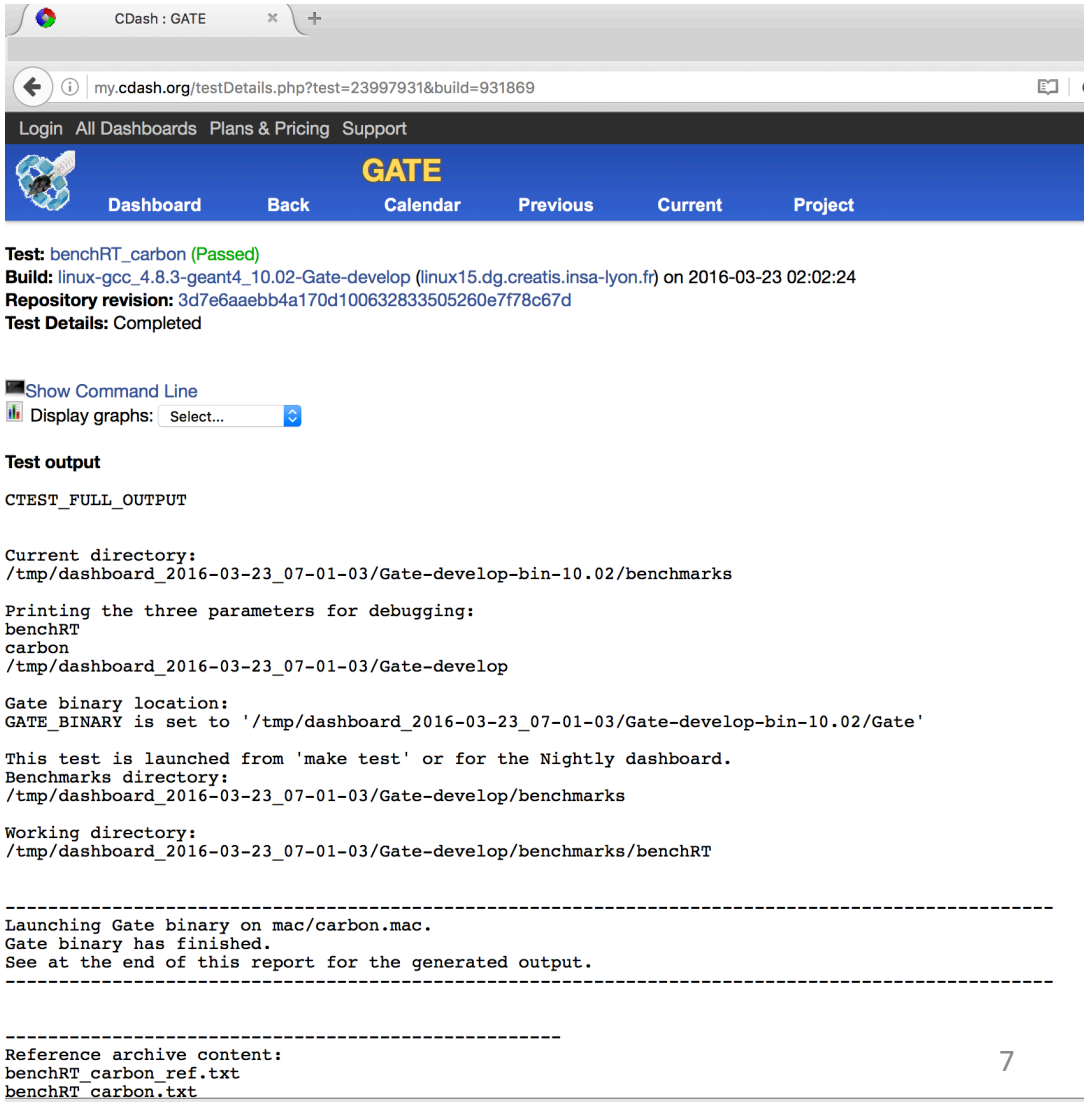
Name	Status	Time	Summary
benchRT_carbon	Passed	6s 340ms	Stable
benchRT_proton	Passed	1s 270ms	Stable
benchRT_gamma	Passed	15s 450ms	Stable

Download Table as CSV File

How?

Proof by example

Example of a log (1/2)



How?

Proof by example

Example of a log (1/2)

```
diff carbon-3d-Edep.raw
diff: Performing diff -s
Files reference/carbon-3d-Edep.raw and output/carbon-3d-Edep.raw are identical
exit_status_partial is:
0

diff carbon-3d-Edep-Squared.mhd
diff: Performing diff -s
Files reference/carbon-3d-Edep-Squared.mhd and output/carbon-3d-Edep-Squared.mhd are identical
exit_status_partial is:
0

diff carbon-3d-Edep-Squared.raw
diff: Performing diff -s
Files reference/carbon-3d-Edep-Squared.raw and output/carbon-3d-Edep-Squared.raw are identical
exit_status_partial is:
0

diff carbon-3d-NbOfHits.mhd
diff: Performing diff -s
Files reference/carbon-3d-NbOfHits.mhd and output/carbon-3d-NbOfHits.mhd are identical
exit_status_partial is:
0

diff carbon-3d-NbOfHits.raw
diff: Performing diff -s
Files reference/carbon-3d-NbOfHits.raw and output/carbon-3d-NbOfHits.raw are identical
exit_status_partial is:
0

diff_stat stat-carbon.txt
diff_stat: Performing detailed diff on the 6th first lines of stat-carbon.txt:
Files /dev/fd/63 and /dev/fd/62 are identical
exit_status_partial is:
0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Meaning of the exit_status_partial:
'0': no difference i.e. SUCCESSFUL TEST
'1': difference in a text file i.e. FAILING TEST
'2': difference on a binary file or missing file i.e. FAILING TEST

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exit_status_final is:
0
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(Gate output is in gate_simulation_log.txt)
```

Summary

Testing is a survival practice in any source code development life cycle.

- Test as early as possible.
- You can even start by testing!
- Test as often as possible.

CDash is your nightly friend!

Conclusion

What software would we get
without any test ?

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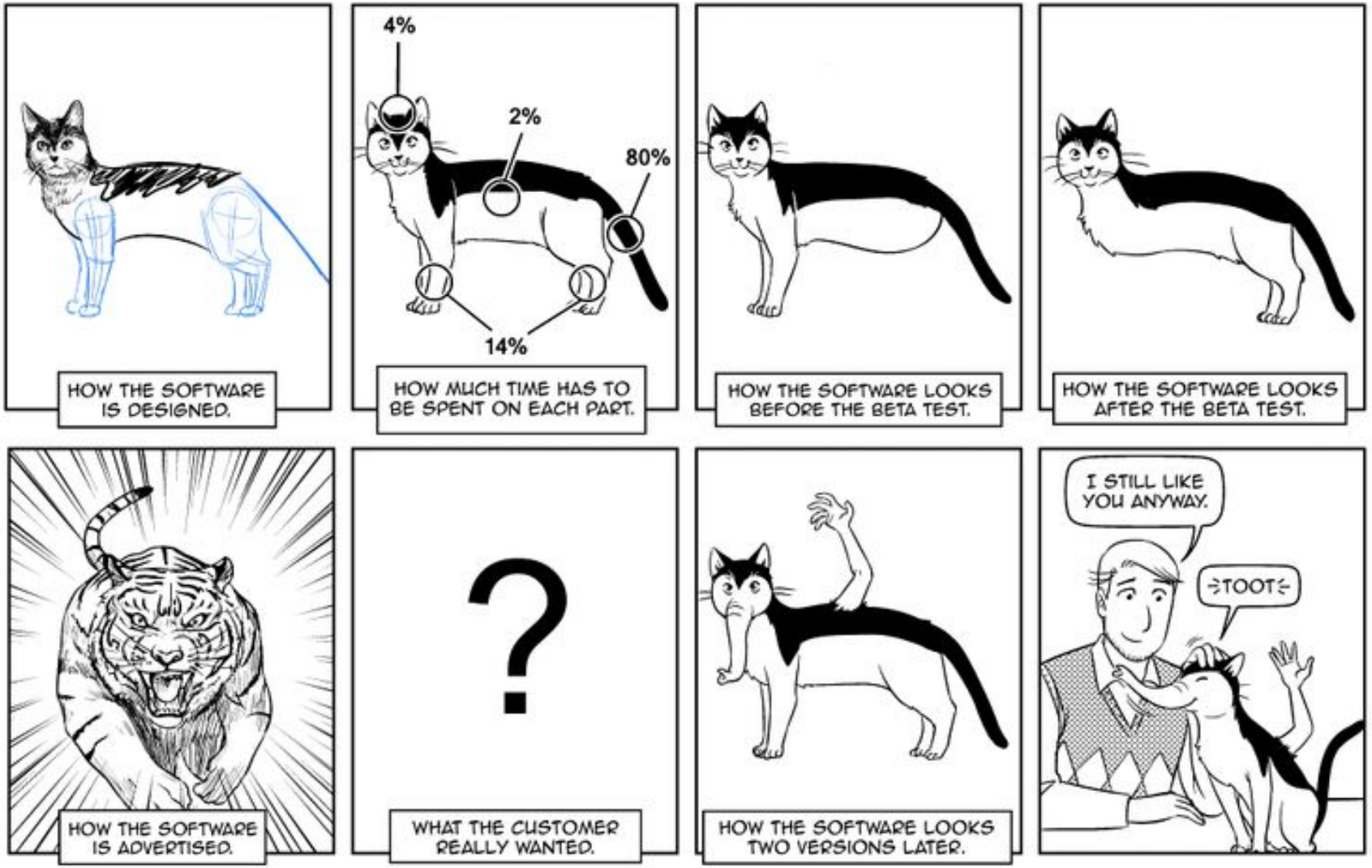
What software would we get
without any test ?

Your software would live its own odd life…

Richard's guide to software development



Sandra and Woo by Oliver Knörzer (writer) and Powree (artist) – www.sandraandwoo.com