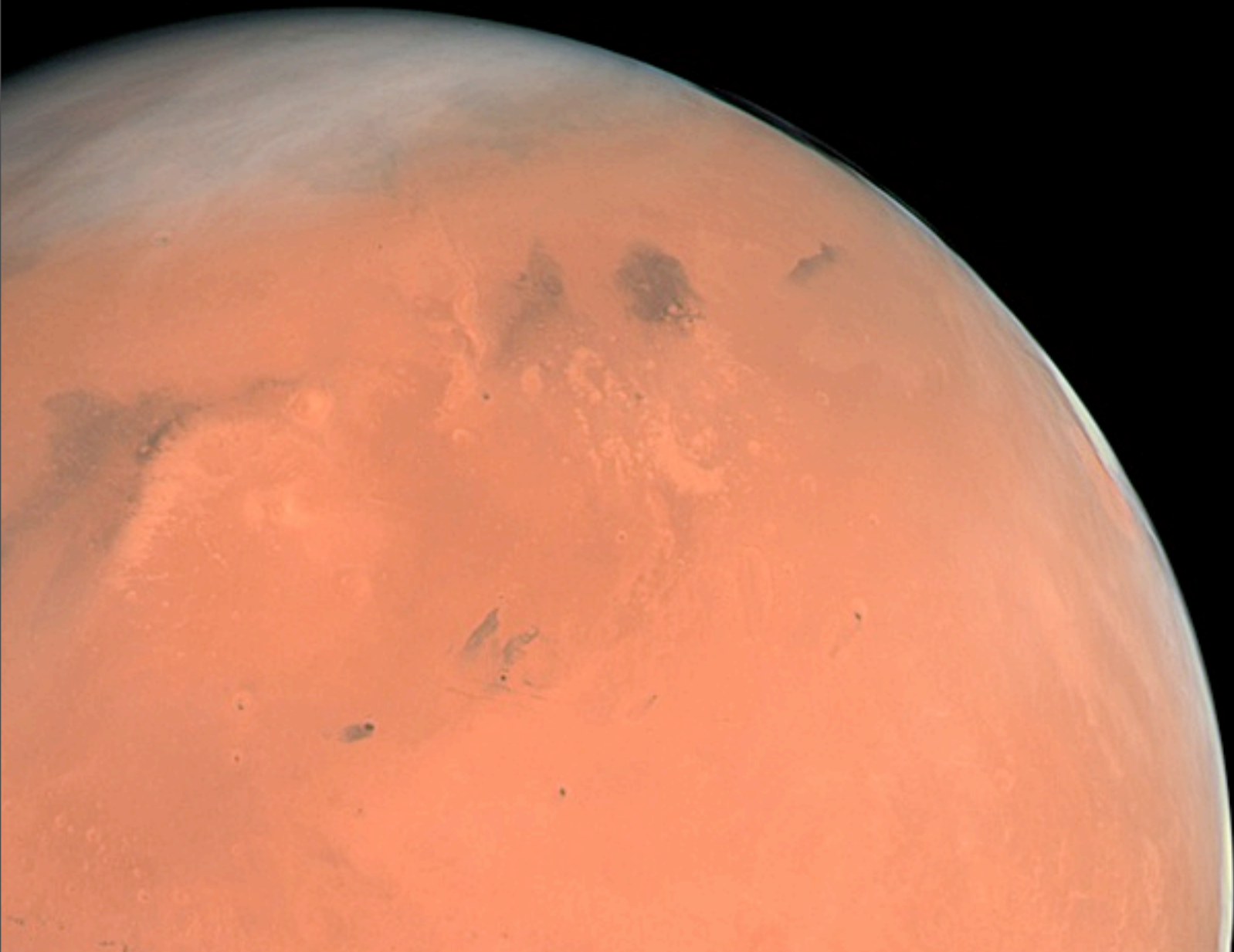


Devs Are From Mars.
SETs Are Too.



shs@google.com
[@shs96c](#)

A Question



<http://www.flickr.com/photos/andreanna/2812118063/>

Where Does It Hurt?

Where Does It Hurt?

Pagers go off at midnight

Where Does It Hurt?

Pagers go off at midnight

Only one person can fix the problem

Where Does It Hurt?

Pagers go off at midnight

Only one person can fix the problem

App is hard to deploy

Who Am I?



Who Am I?



Engineering Productivity



SET,TE

Easing Deployment

Automate!



Capistrano, Puppet, Chef

Compile Faster



Gold, Eclipse compiler, Go, SSD, distcc

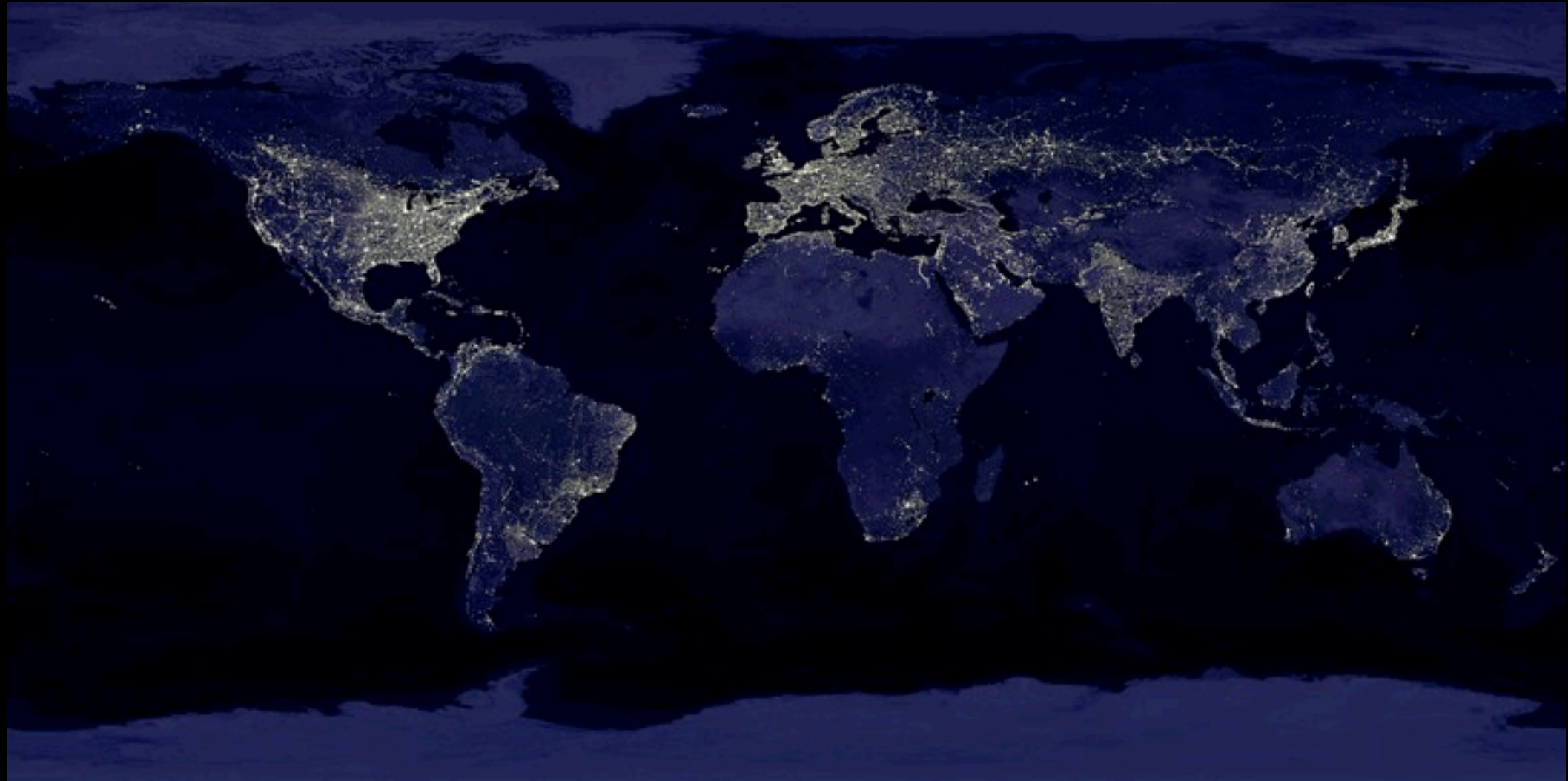
<http://www.flickr.com/photos/thatguyfromcchs08/2300190277/>

Build Less



JDepend, dot and graphviz

Make It Obvious



Big Visible Charts

<http://www.flickr.com/photos/gsfcr/4387582220>

No One Person

The Google Codebase

The Google Codebase

1 tree

The Google Codebase

1 tree

Releases are from HEAD

The Google Codebase

1 tree

Releases are from HEAD

> 10,000 developers

The Google Codebase

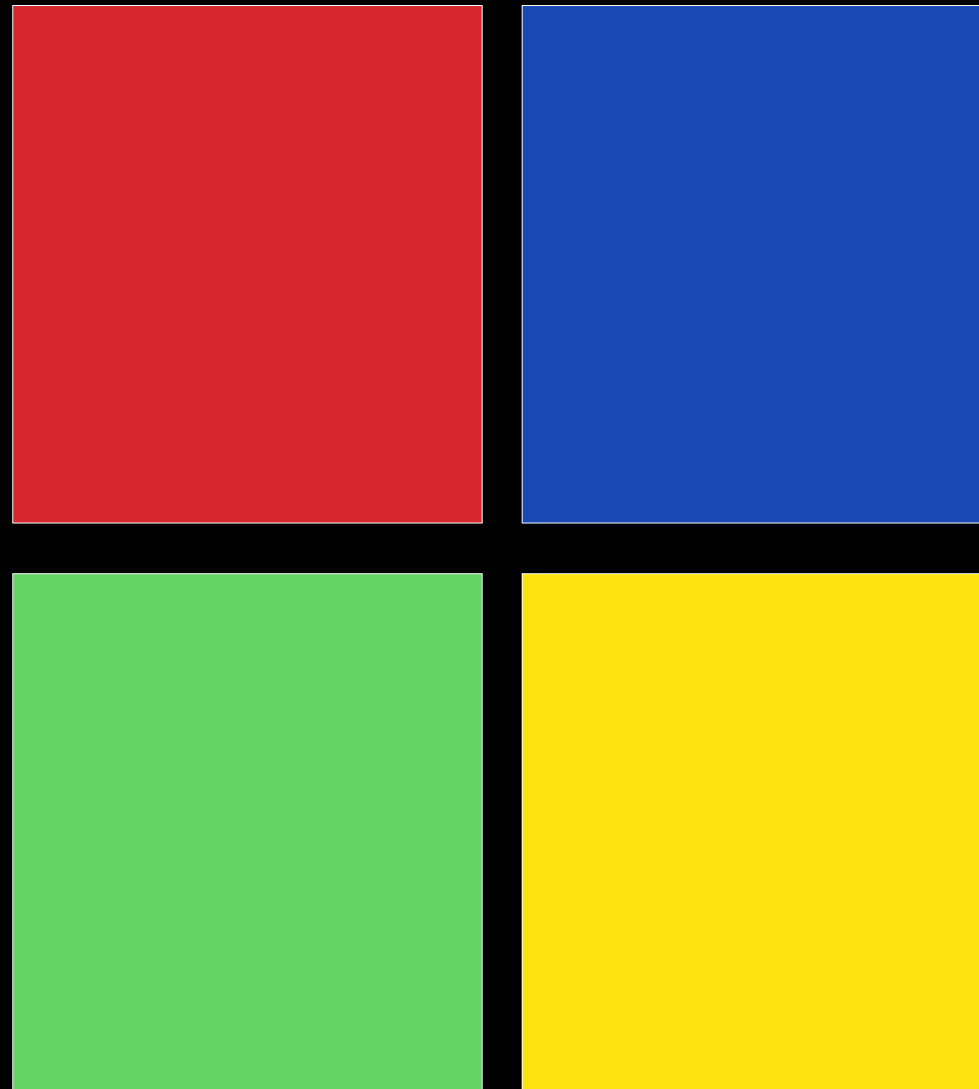
1 tree

Releases are from HEAD

> 10,000 developers

Thousands of changes per day

4 Languages



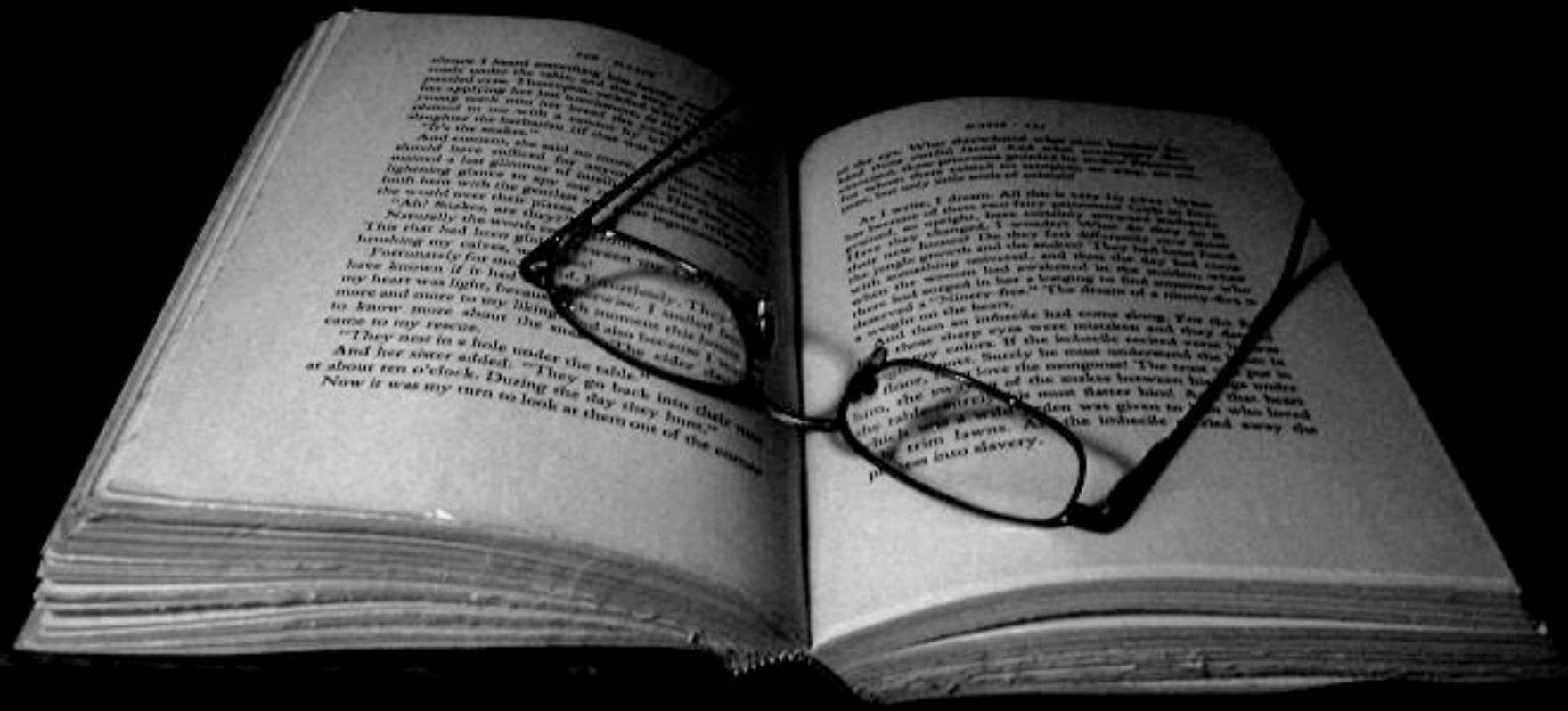
Code Reviews



[Rietveld, Google Code](#)

<http://www.flickr.com/photos/kentwang/368159361/>

“Readability”



<http://google-styleguide.googlecode.com/>

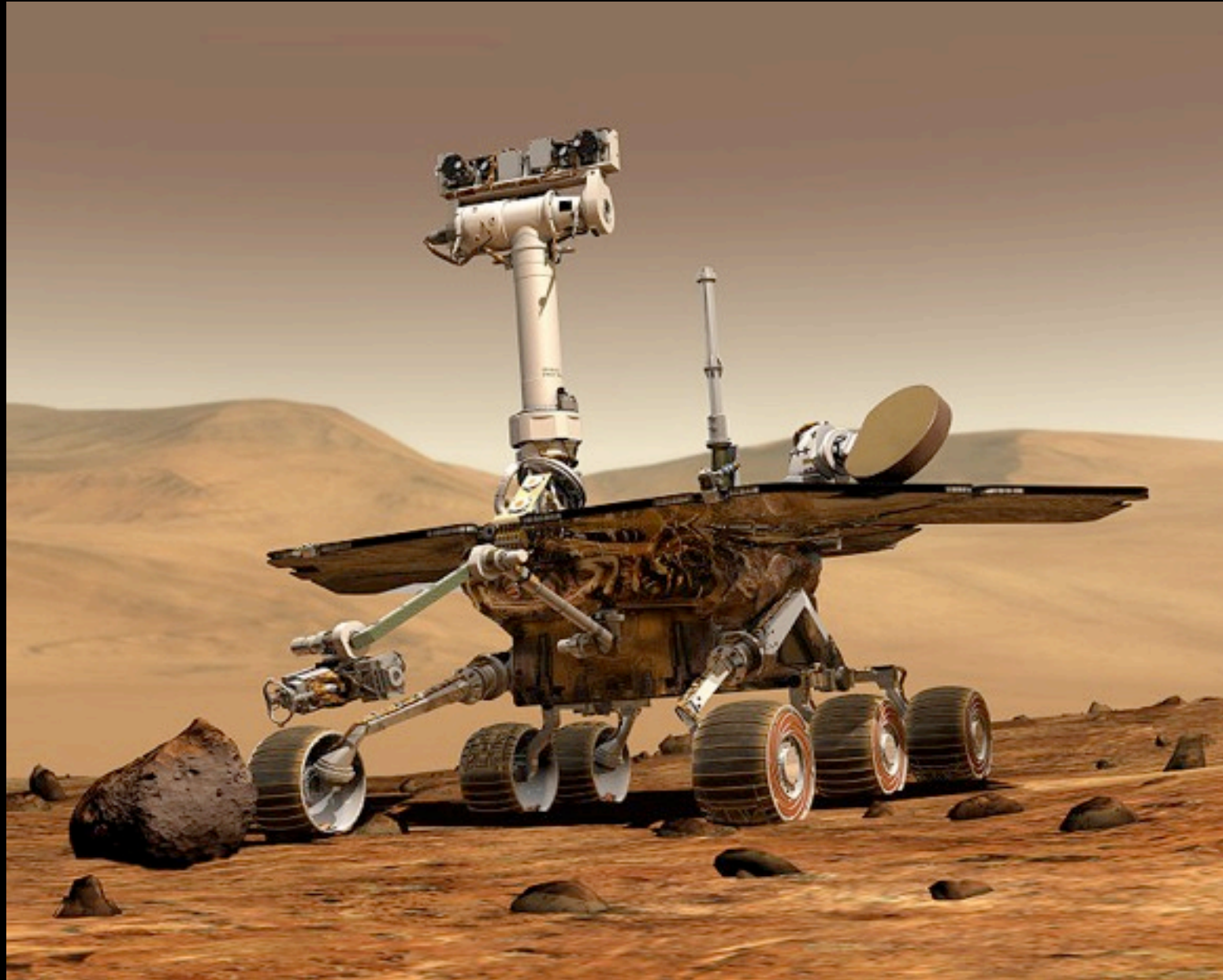
<http://www.flickr.com/photos/nakrnsn/3493275365/>

Pagers At Midnight

aka

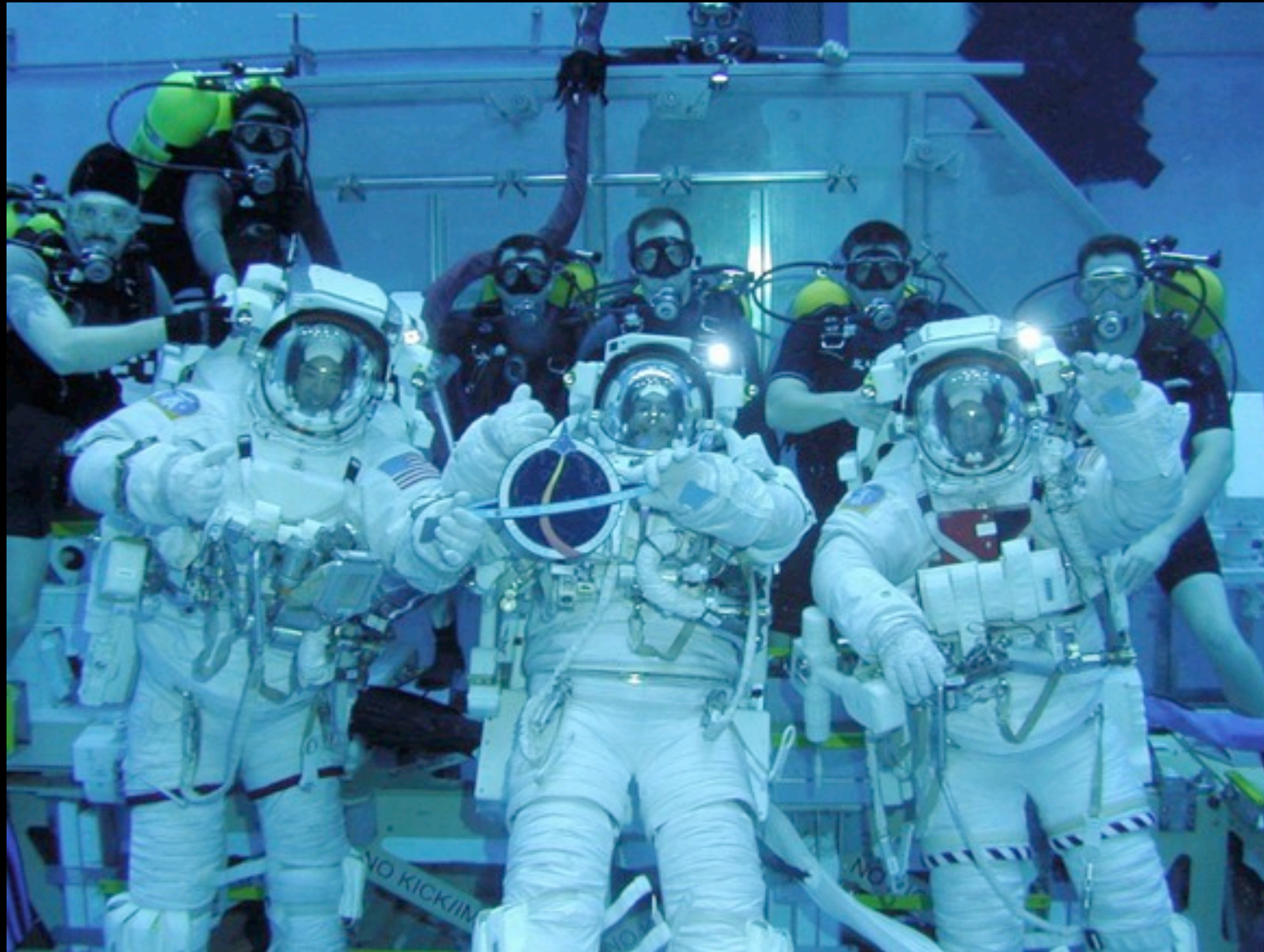
It's easy to write code
quickly if it doesn't
have to work

Automate Testing



JUnit, googletest, jsunit, jstestdriver

Test Certified



What Needs Testing?



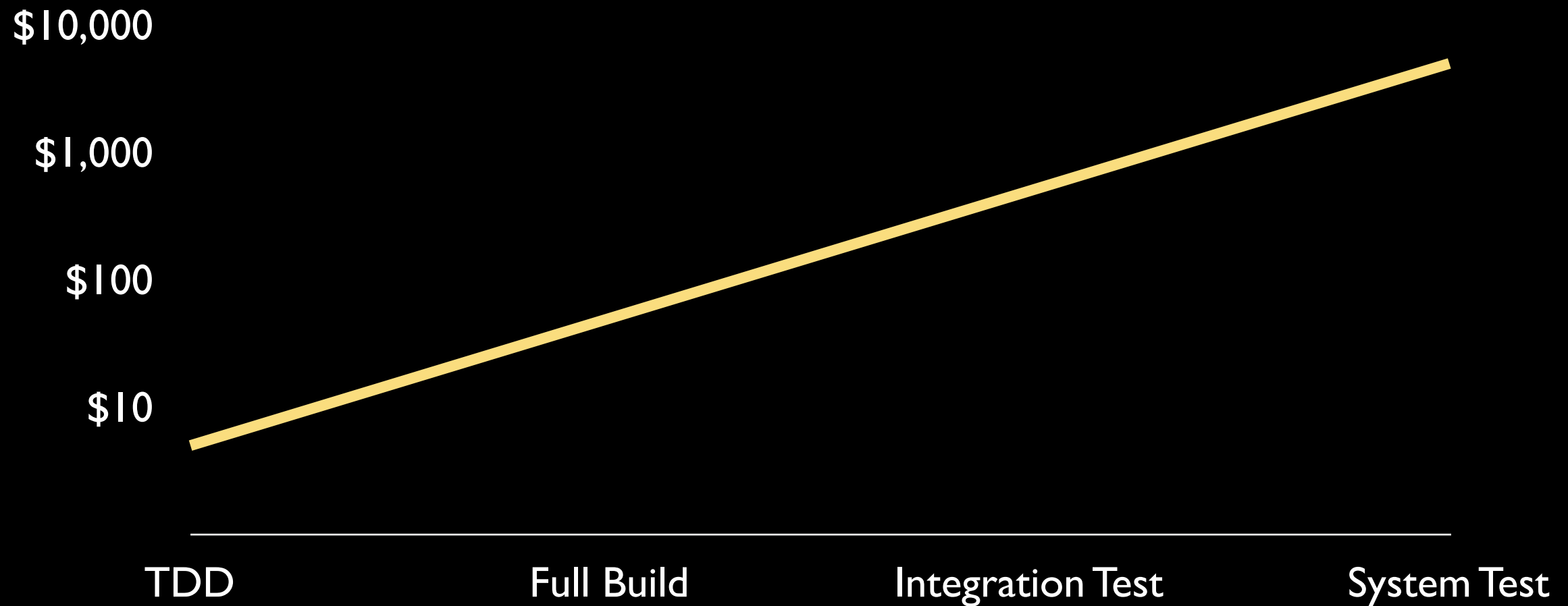
Emma, Cobertura

Diversion: Test Sizes



<http://www.flickr.com/photos/frank-wouters/503453700/>

Diversion: Costs



Build Bloat



70:20:10

<http://www.flickr.com/photos/yukariryu/122530930/>

Writing Small Tests



[Guice](#), [Spring](#), [Picocontainer](#), [googlemock](#), [pymox](#), [EasyMock](#)

<http://www.flickr.com/photos/aussiegall/2306678079/>

War Story: MVP



<http://www.flickr.com/photos/furryscalyman/2740904202/>

Toolsmithing



[Selenium](#), [WebDriver](#), [Farm](#), [Grid](#), [Future](#)

<http://www.flickr.com/photos/gsf/4399423028/>

A Lack of Stability



[Sqlite](#), [HSQLDB](#), [ActiveMQ](#)

<http://www.flickr.com/photos/gsfcr/4399423264/in/photostream/>

Hell is Other People



GD

TAP, Hudson, Bamboo, Cruise

<http://www.flickr.com/photos/neogabox/4043432423/>

One Last Thing

Q & A

All photos from NASA unless otherwise stated. Or it's of me.