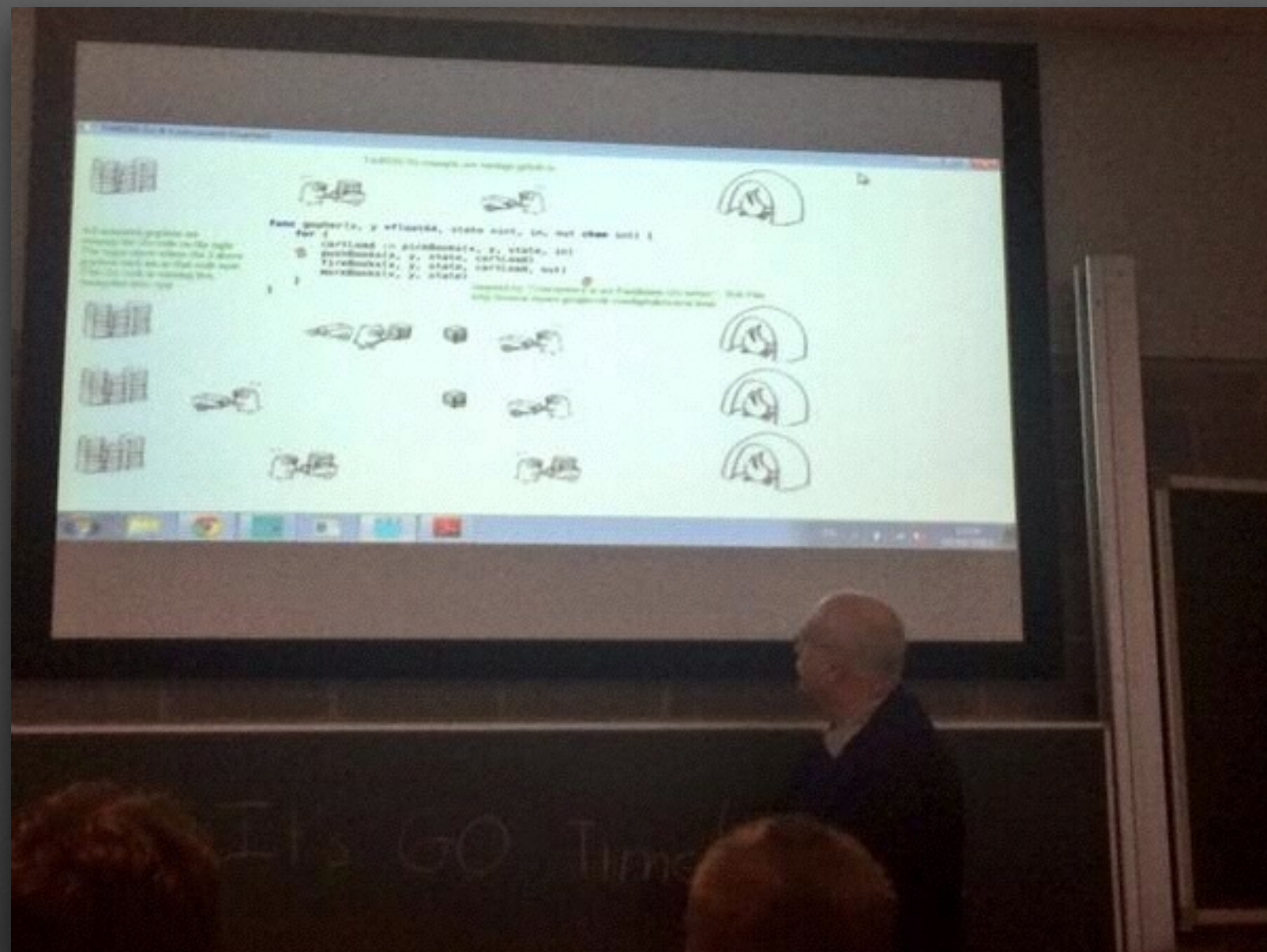


The mutant Go compilers

A short talk by [Elliott Stoneham](#) at GopherCon on 26th April 2014



documize.com



blog.golang.org/fosdem14

Elliott giving his "Write your own Go compiler" talk

Picture from <https://sourcegraph.com/blog/fosdem-2014-go-devroom>

Gopher images by Renee French, licensed under Creative Commons Attributions 3.0

open-source mutant Go compilers

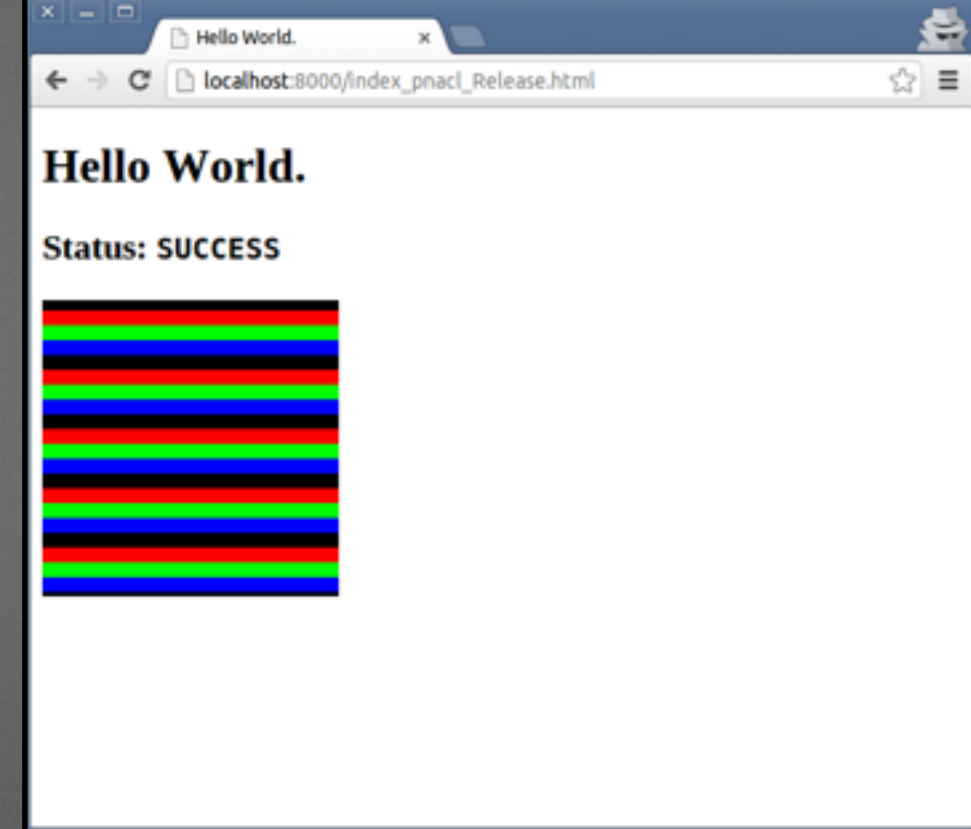
	AUTHORS	PROJECT FIRST PUBLISHED	GITHUB STARS	TARGET RUNTIMES
LLGO	Andrew Wilkins + others	October 2011	450+	LLVM
GOPHERJS	Richard Musiol + others	November 2013	400+	JavaScript
TARDISGO	Elliott Stoneham	January 2014	100+	JS, Flash, Java, C++, C# & PHP via Haxe

compilation sequences

<u>TARDIS Go</u>	<u>llgo</u>	<u>GopherJS</u>
Go source => go/* libraries => AST		
AST => go.tools/go/types => types.Info		
AST + types.Info => go.tools/ssa => SSA		AST + types.Info => GopherJS => JavaScript
SSA => tardisgo => Haxe	SSA => llgo => LLVM module	
Haxe => JavaScript, Flash, Java, C++, C#, PHP & Neko	LLVM modules => llgo-build => executable	



Ilgo



- On-track to become a mainstream Go implementation
- Fastest go execution speed for some benchmarks
- Now has a branch in progress to use libgo
- Thanks to Peter Collingbourne at Google
- ...but still some stabilisation and bug fixes to do



GopherJS

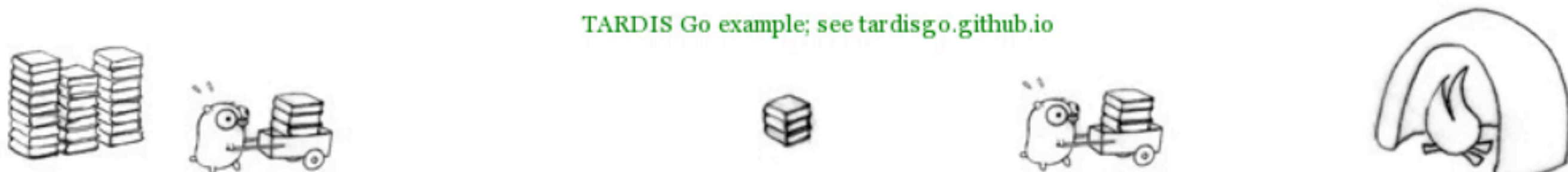


- Most immediately useful
- Active user community
- jQuery and AngularJS bindings
- Now runs over 5x faster for fannkuch.go benchmark
- ...but no goroutines or channels yet

TARDIS Go

TARDIS Go Concurrent Gophers

TARDIS Go example; see tardisgo.github.io



Both animated gophers are running the code on the right. The 2 logos show where they each are in that code now. This code is running live, targeting: neko

```
func gopher(x, y *float64, state *int, in, out chan int) {  
    for {  
        cartLoad := pickBooks(x, y, state, in)  
        pushBooks(x, y, state, cartLoad)  
        fireBooks(x, y, state, cartLoad, out)  
        moreBooks(x, y, state)  
    }  
}
```

Inspired by "Concurrency is not Parallelism (it's better)" - Rob Pike
<http://concur.rspace.googlecode.com/hg/talk/concur.html>

- Most portable: JavaScript, Flash, Java, C++, C#, PHP
- Most hosts: HTML5/iOS/Android/Tizen/Win/Mac/Linux
- ...but least Go library support, and least optimisation

WWX 2014

WORLD WIDE HAXE CONFERENCE
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FOUNDATION

 **SILEX LABS**

“TARDIS: Go for Haxe!”

<http://wwx.silexlabs.org/2014/>

Mutant Go compiler projects

llgo		<u>github.com/go-llvm/llgo</u>
GopherJS		<u>github.com/gopherjs/gopherjs</u>
tardisgo		<u>github.com/tardisgo/tardisgo</u>
video overview		<u>blog.golang.org/fosdem14</u>