Why we use Google Closure

Hunter Blanks, hblanks@monetate.com / @tildehblanks
github.com/hblanks/talks/

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"Something that has been ignored in [previous] responses is the fact that Closure and jQuery are totally different beasts. jQuery is the industry standard way of writing nice, user friendly web pages and user controls. Closure is an application development framework.

Closure comes with a hell of a lot of overheads that are only worthwhile after a certain scale is reached.

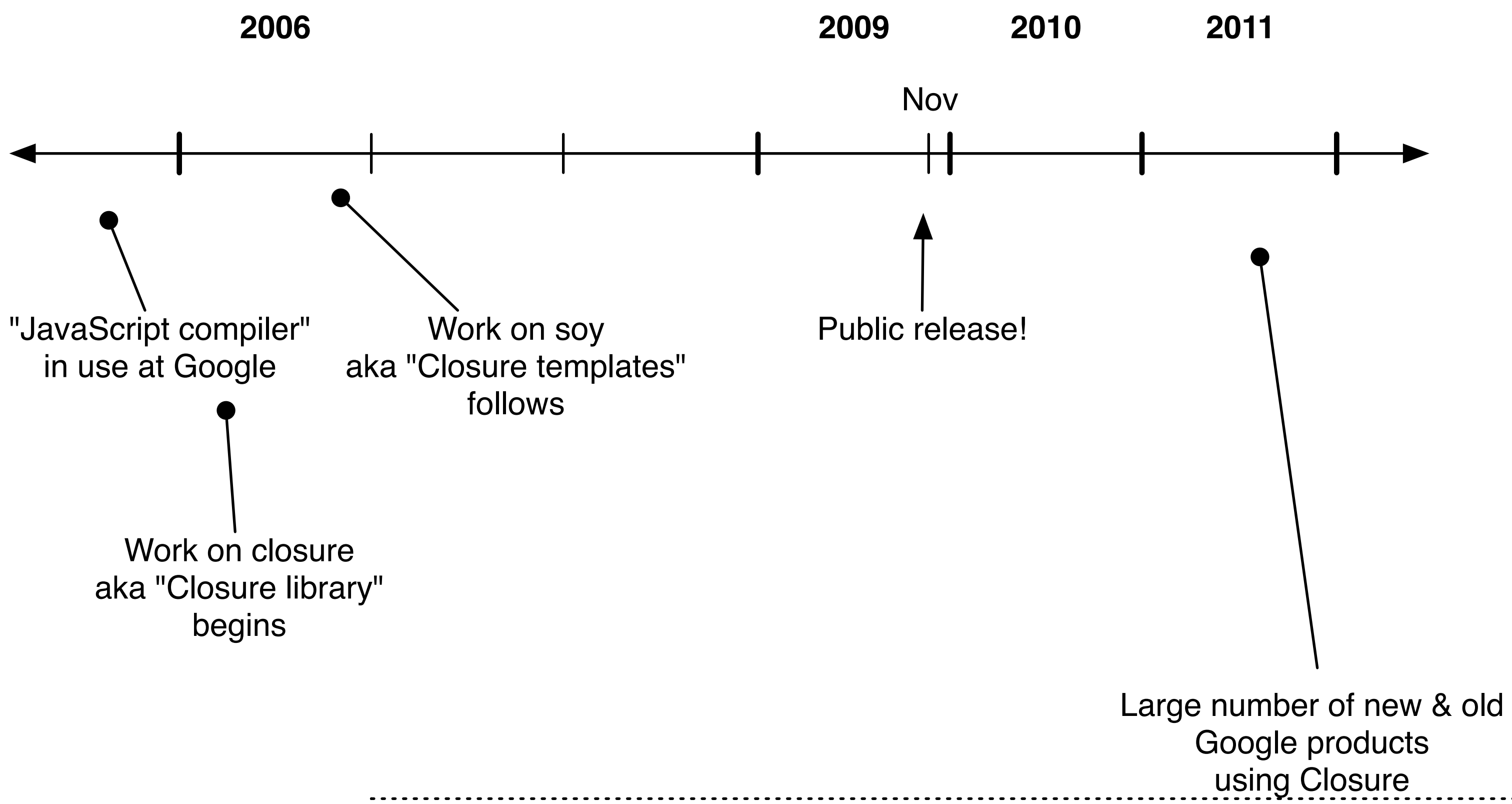
However try writing a complex system (say... 30k+ LOC) in jQuery and you'll feel pain unlike you've never imagined. This is where closure comes into its own (you can always then bring jQuery into a closure project also).

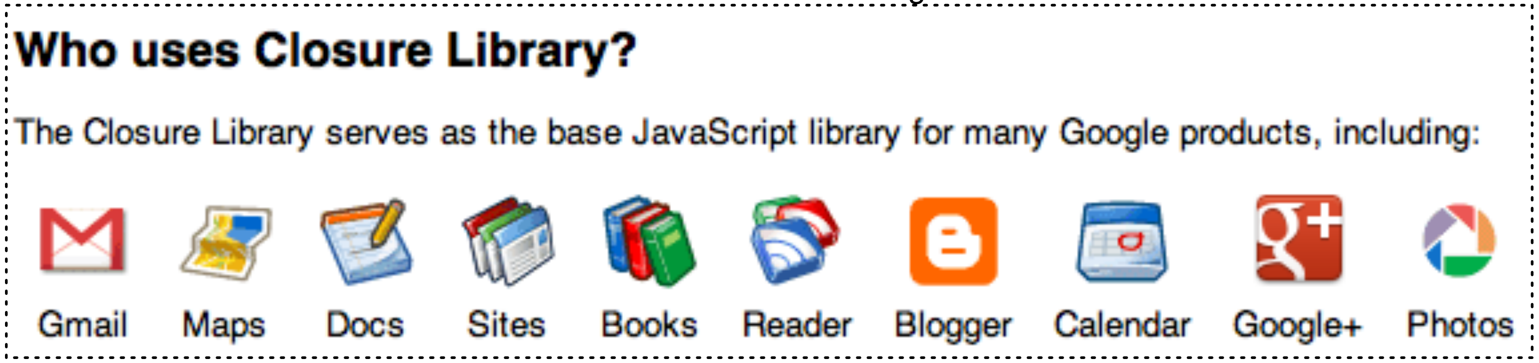
So different tools for different jobs. Both with great support and strong development."

–Guido Tapia

http://groups.google.com/group/closure-library-discuss/browse_thread/thread/498d8fb44957ff75

An outsider's timeline of Google Closure


2006
2009
2010
2011
Nov
"JavaScript compiler" in use at Google
Work on soy aka "Closure templates" follows
Public release!
Work on closure aka "Closure library" begins
Large number of new & old Google products using Closure



Who uses Closure Library?

The Closure Library serves as the base JavaScript library for many Google products, including:

(http://code.google.com/closure/library/)

What is it?

1) **Closure Compiler**. A JavaScript -> Javascript compiler. Key features are:

- dead code elimination
- type checking
- numerous optimizations
- warnings/errors on unsafe code

2) **Closure Library**. A giant, heavily documented, cross-platform JS library.
Key features are:

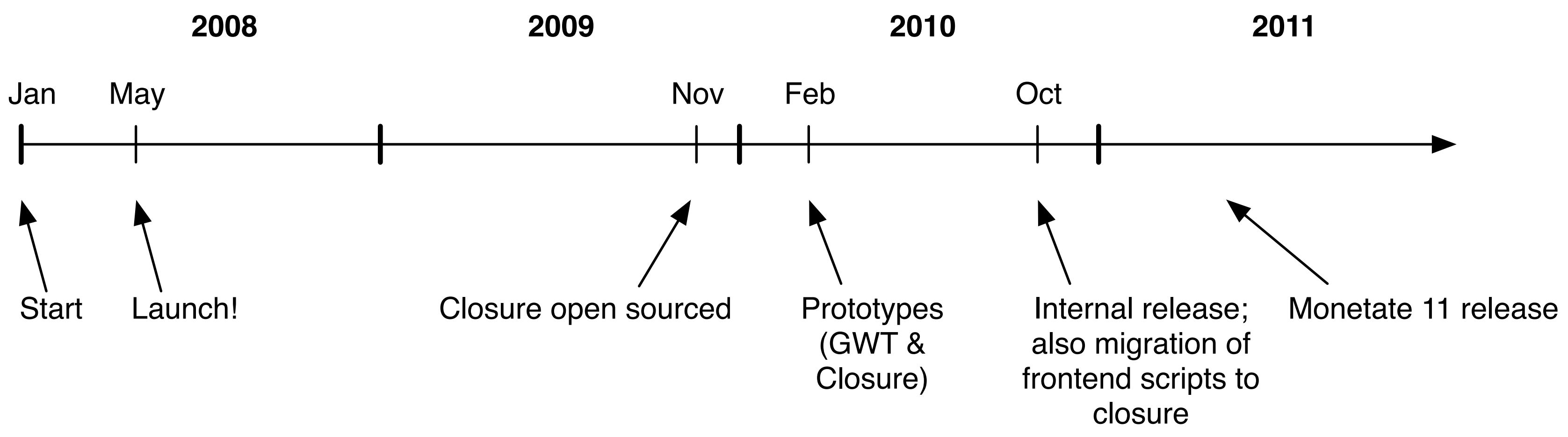
- cross browser event framework
- many, many UI components
- Gmail's rich text editor
- cross-page & server communication libraries
- canvas/SVG/VML graphics libraries
- numerous other libraries (e.g. goog.array, goog.structs.Map, etc.)

3) **Closure templates**. A JS & Java template language/compiler.
Key features are:

- HTML structure can be kept separate from your JavaScript
- you find out about syntax errors and unused varables at compile time!

How did Monetate come to use Google Closure?

Timeline



2008
2009
2010
2011
Jan
May
Nov
Feb
Oct
Start
Launch!
Closure open sourced
Prototypes (GWT & Closure)
Internal release; also migration of frontend scripts to closure
Monetate 11 release

By late 2008, Monetate had a full-featured, complex web application using Django, jQuery, and traditional AJAX.

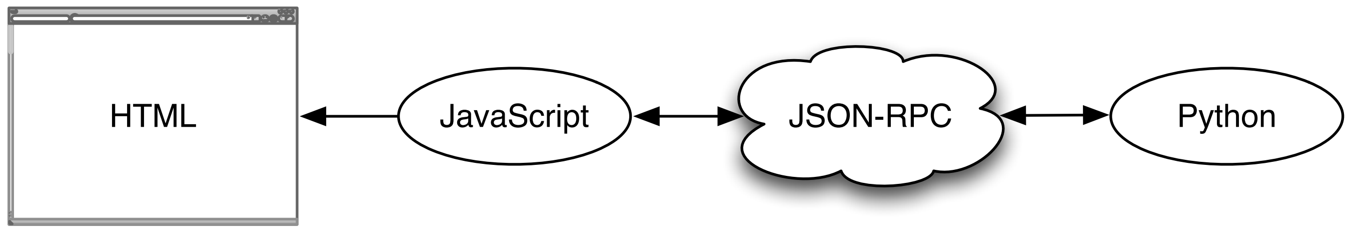
By mid 2009, no one wanted to edit the webui.js file, the dozens of different Django template files that it consumed, or the dozens of Django view methods that it talked to.

To build new UI features, and to build the next version of our product, we needed a better framework for building rich web applications.

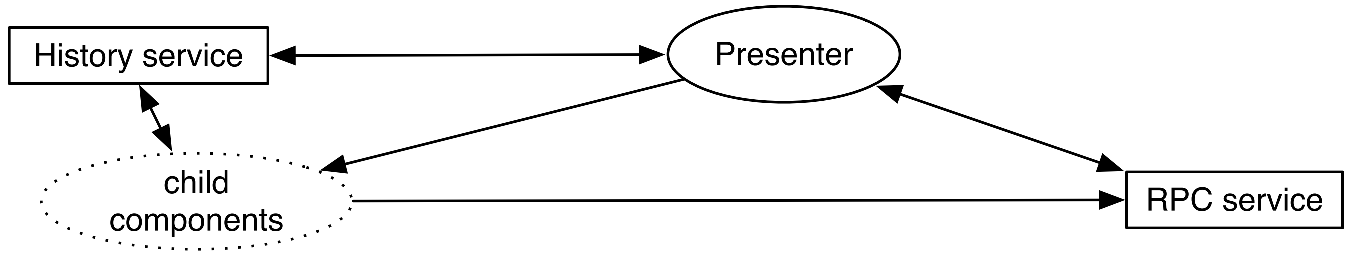
Later, to maintain our customer-side ("frontend*")* JavaScript code, we also needed a better framework for compiling and binding JavaScript.

Highlights from how we use Closure in Monetate's UI

1) Thanks to Closure templates, we only use Django now to serve JSON-RPC and empty page containers. *Everything else is rendered in the browser.*



2) Thanks to Closure's Component & EventTarget model, our UI consists of loosely coupled components, which communicate with each other almost always using event buses.



3) Thanks to goog.History, and Ray Ryan's Google IO 2009 talk, URLs are integral to the application — so things like URL cut & paste, the back button, and the refresh button all work as they should.

Highlights from how we use Closure in Monetate's frontend

1) Closure's namespaces let us easily build libraries for common code, and even split out custom code into individual files.

```
/** @fileoverview Monetate lightbox library. */
goog.provide('mc.Lightbox');

goog.require('goog.style');
goog.require('mc.dom');
goog.require('mc.events');
```

2) JSDoc annotations, together with the Closure compiler, make our code more explicit and help us catch *more bugs at compile time.*

```
/**
 * @constructor
 * @extends {goog.Disposable}
 * @param {number} width Width of lightbox.
 * @param {number} height Height of lightbox.
 */
mc.Lightbox = function(width, height) {
    this.width_ = width;
    ...
};
```

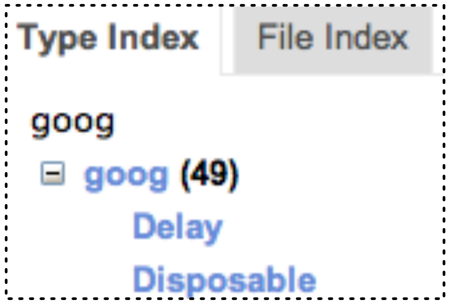
3) Among other things, Closure's advanced optimizations remove functions that are never called and inline others. This is key, since for the frontend, small (<16KB) script payload sizes are best.

Remarks on the painful parts of using Closure, too

1) You're going to need a build system. It helps to support loading compiled scripts for production and uncompiled scripts (with your own deps.js file) for debugging. Options include

- plovr
- closure script
- your own make/rake/jake/waf/ant(?)/Scons/...
- ???

2) Documentation, although rich, is anti-compact. (This is not Python, people.) Michael Bolin's book, *Closure: The Definitive Guide*, is a real help, though.



Type Index | File Index

goog

⊟ goog (49)

Delay

Disposable

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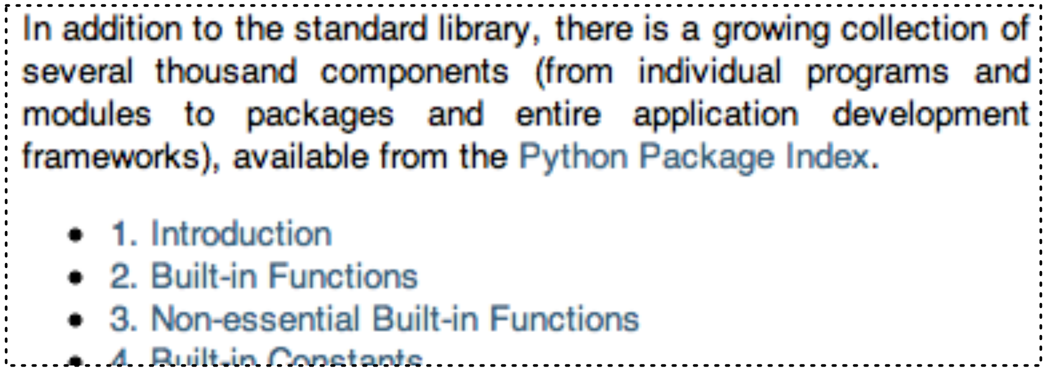

In addition to the standard library, there is a growing collection of several thousand components (from individual programs and modules to packages and entire application development frameworks), available from the Python Package Index.

- 1. Introduction
- 2. Built-in Functions
- 3. Non-essential Built-in Functions

3) Closure library, although tied to Google's own version control and build system, has no versioned releases, only svn/trunk. So be ready for changes.

Where to get started

1) If you just want to try out the compiler, visit:

http://closure-compiler.appspot.com/home

2) If you want to work with the UI, buy this book:

Closure: The Definitive Guide. Michael Bolin. (O'Reilly)

And be sure to read the Component chapter early. Ray Ryan's talk on Best Practices for GWT is also a very good video to watch.

3) For help getting started with the compiler & closurebuilder.py, see

http://code.google.com/closure/library/docs/closurebuilder.html
http://code.google.com/closure/compiler/docs/js-for-compiler.html

Thank you!

Hunter Blanks, hblanks@monetate.com / @tildehblanks
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PS: I'll be pushing a small, demo closure app, with build system,
to github tomorrow. Please check **@tildehblanks** for the announcement.