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Introduction

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Agenda

- what is nodejs
- coffeescript introduction
- some httpserver demos
- more nodejs details
- npm package management
- build a website tracking demo

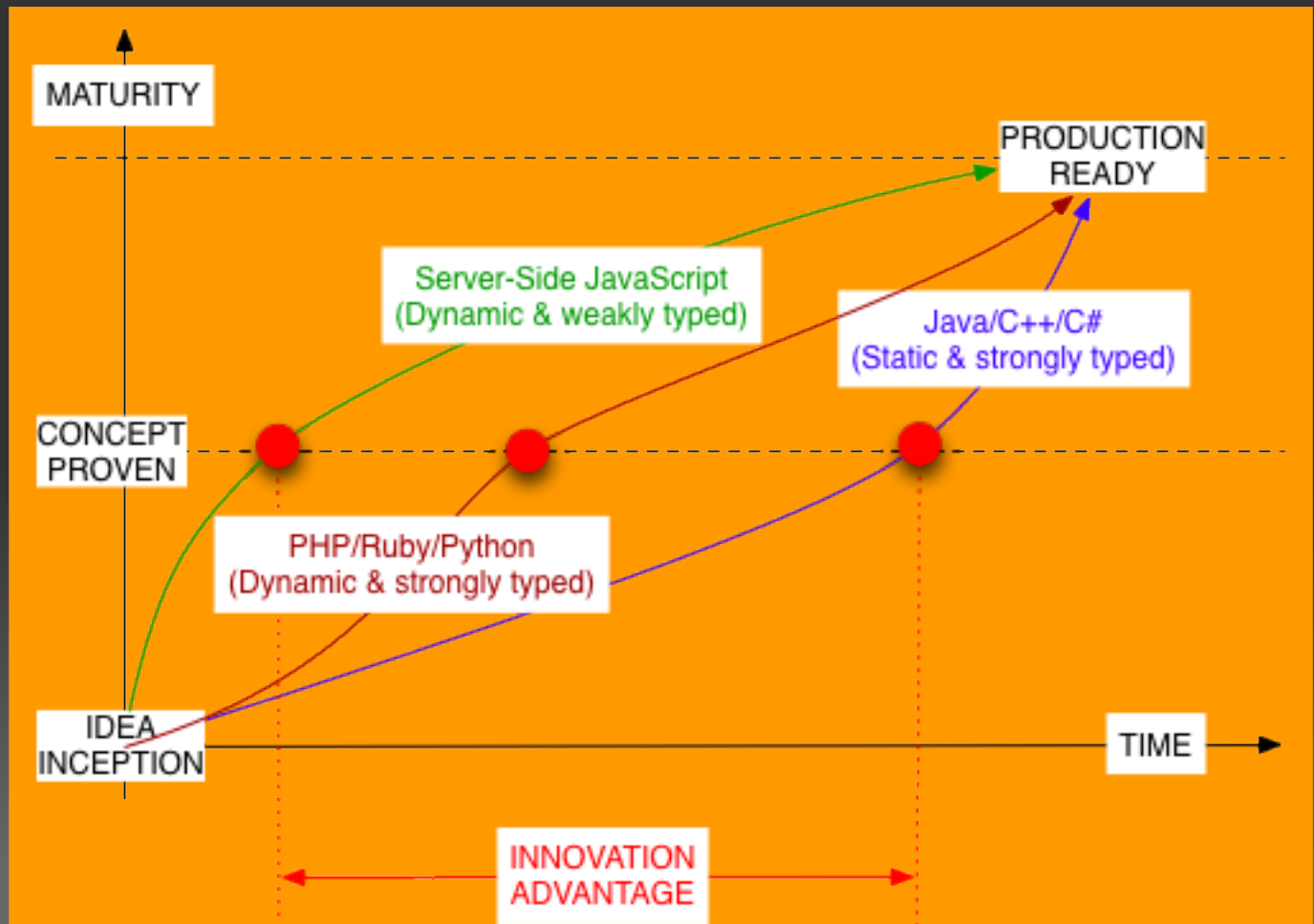
- some history. ryan
- (was) most watched repo on github https://github.com/popular/watched

Node is:

- a set of bindings to V8 for non-browser work: http, sockets, files, etc.
- only exposes non-blocking, async interfaces
- only one thread, one call stack (like the browser)
- has killer http support
- not a webframework (like rails/django...)
  - but it could be (express/geddy etc)
- runs natively on windows

Node is also:
great for innovation

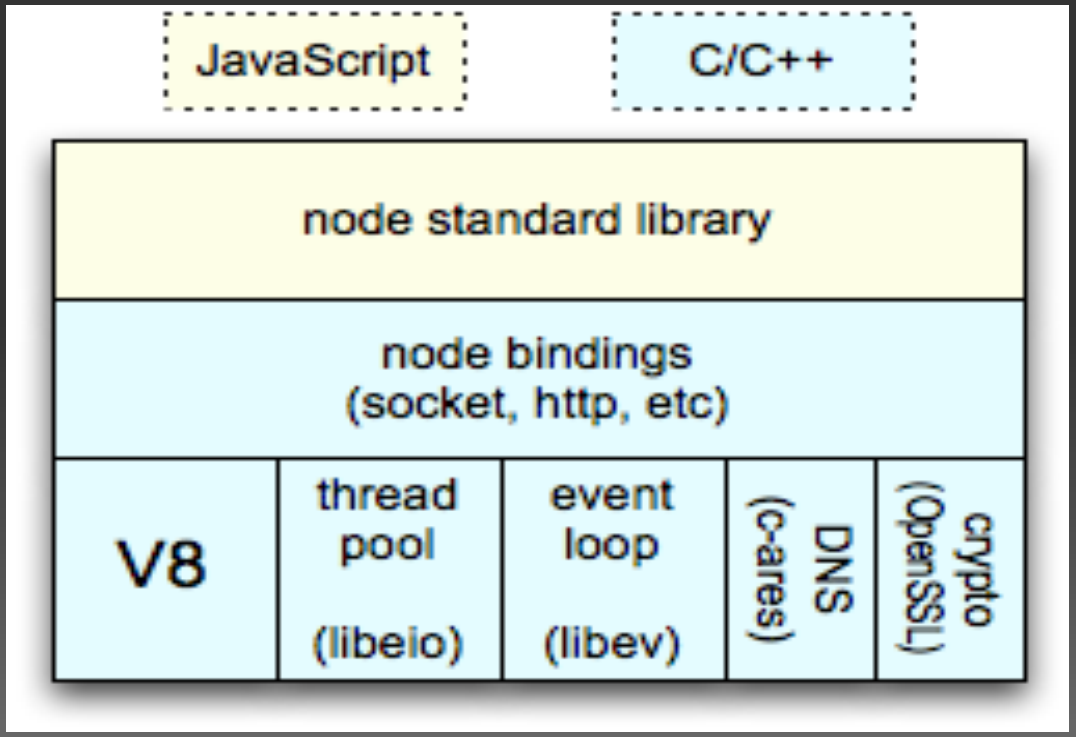
- trying more ideas in less time
- time to production identical
- after concept more time is needed for checks and tests



link

Overall architecture:

- V8 compiles the source JavaScript directly to machine code the first time it is executed. There is no intermediate bytecode format and no JS interpreter.
- node.js relies on libev for the event loop, libeio for asynchronous I/O
- A standard library in JavaScript is supplied. This provides access to the underlying C++ implementation



CoffeeScript

is:

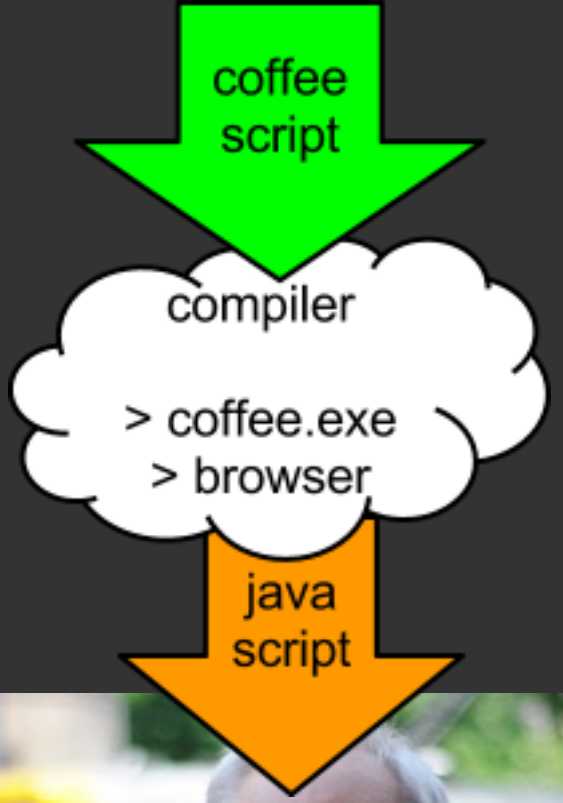
- a javascript replacement
- compiles coffeescript > > javascript
- ruby/phyton inspired

why:

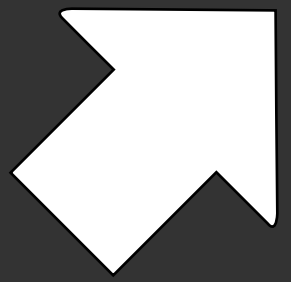
- less code
- readable
- runs great with node
- js good parts only (subset)

highlights:

- indenting/ curly braces
- functions ->
- variable scoping (this?)



Hello world demo:



coffee .\01_web_hello_world.coffee

```
http = require "http"

server = http.createServer (req, res) ->
  res.writeHead 200, "Content-Type": "text/plain"
  res.write "Hello\n"
  setTimeout ->
    res.end "World\n"
  , 3000
server.listen 1337, "127.0.0.1"
```

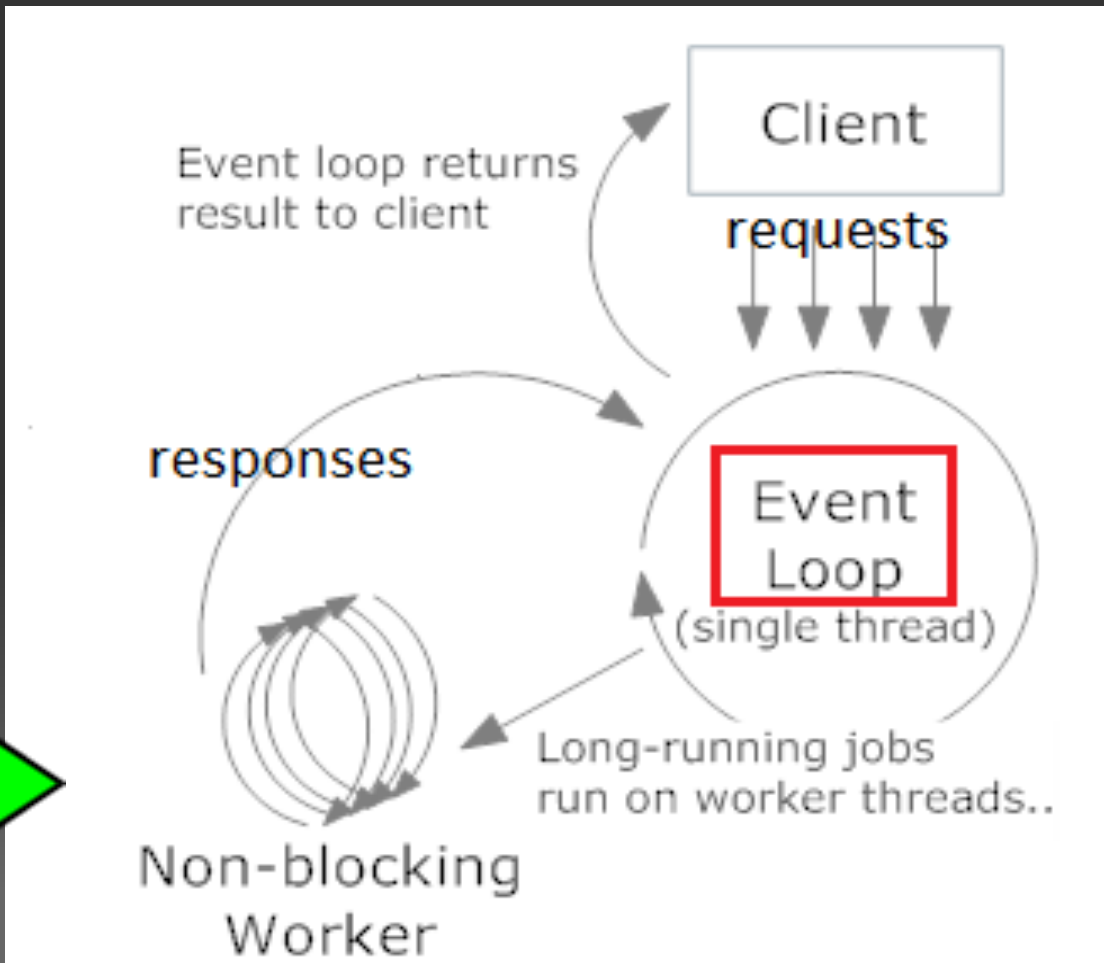
The eventloop

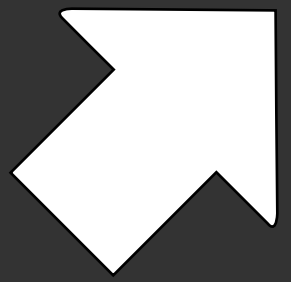
- I/O is expensive, so waiting happens. (cache/ram/disk/network)
- Application runs a main event loop
- Nothing new: EventMachine (ruby), Twisted (python)
- Pattern used already by JavaScript in Web Browsers

request handling solutions:

- synchronous
  - wait for next request
- fork a new process
  - too many processes
- start a new thread
  - thread per request cost lots of memory

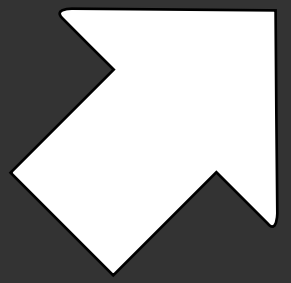
node processing model





Eventloop demo:

coffee .\02_pulser_shows_events.coffee



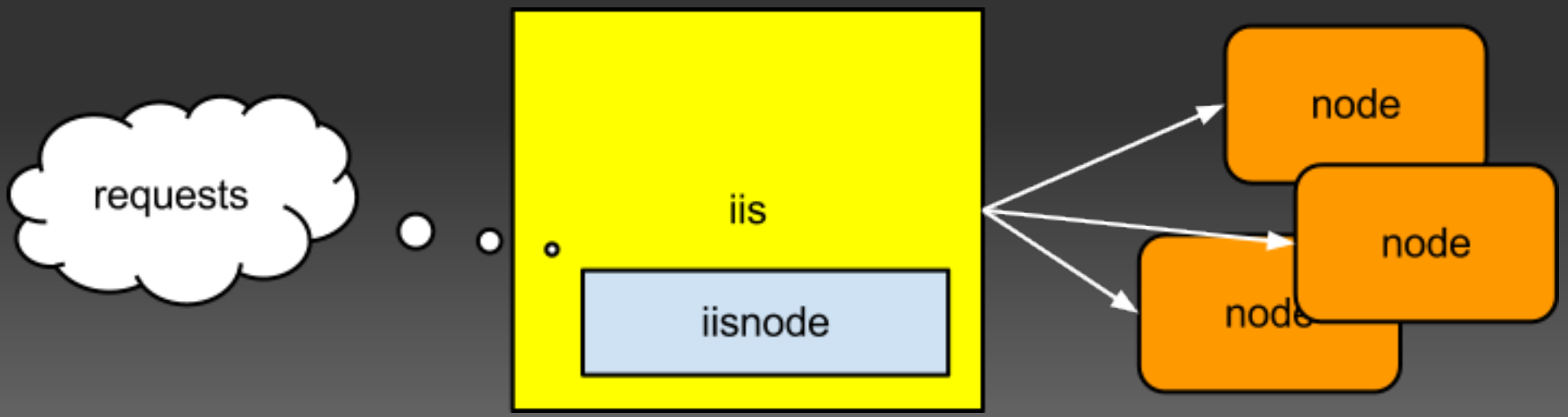
Node never sleeps demo:

coffee .\03_node_never_sleeps.coffee

- Time taken for tests: 2.053 seconds

Scalibility

- node is single threaded, a single process
- to scale over multi-core, multi-machine > start more node instances.
- prefork instances with node-webworker or iisnode, like a load-balancer (not built-in)
  ^^ future node versions will provide this in the core
- memory isolation enforced by process boundary



Package Management

- repository : search.npmjs.org or toolbox.no.de
- scope: global (-g) and application
- usefull packages
  - [web] connect, express
  - [testing] jasmine-node
  - coffeescript, socket.io
- npm commands
  - npm install coffee-script
  - package.json
  - npm install .
  - npm ls
  - npm search coffee

```
{
  "name": "dashboard",
  "version": "0.0.1",
  "dependencies": {
    "coffee-script": "1.2.0",
    "mongodb": "0.9.7",
    "socket.io": "latest",
  }
}
```

Modules

- CommonJS provides namespaces and scoping to nodejs
  - require '...' (like *using* or *import*)
  - exports

http://www.commonjs.org/

http.js

```
server = function(){
.....
}
....
exports.server = server
```

index.js

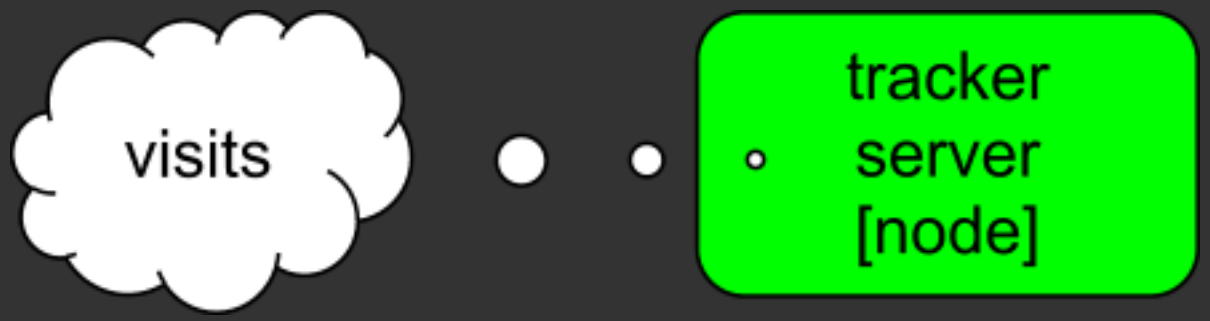
```
var http = require('http')

http.server......
```

Hosting???????????

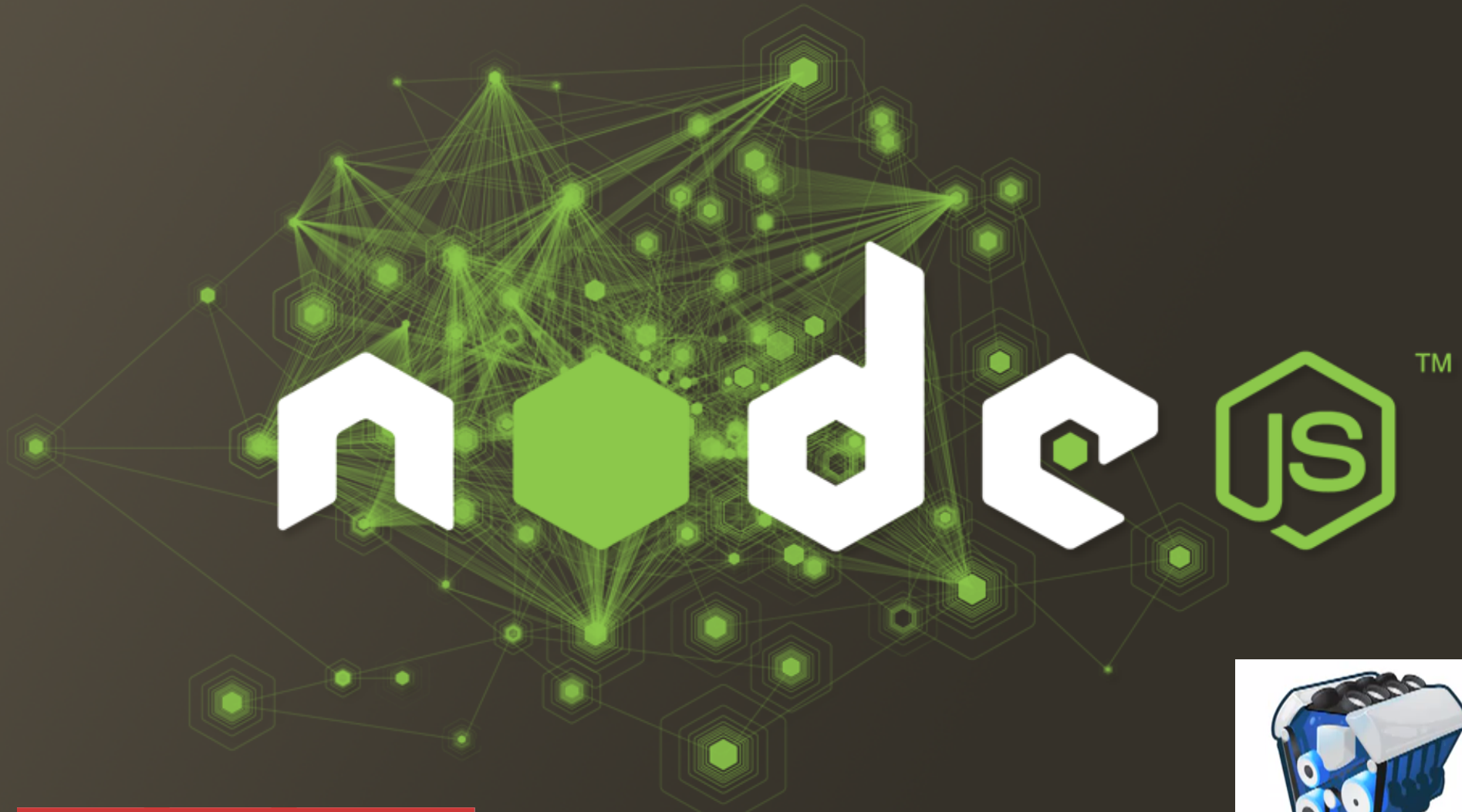
- local
- web

website tracking demo:



a test client and a tracking server

Questions ?!



npm

CoffeeScript

Google

http://github.com/vip32/bit_et2012_1

Wir freuen uns auf Sie.

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