

# VISUALIZING SOFTWARE PROJECTS IN JAVASCRIPT

Tim Disney

# Programming is hard





programming is

programming is **hard**

programming is **boring**

programming is **too hard**

programming is **like a dream**

programming is **a race between**

programming is **an art**

programming is **fun**

programming is **awesome**

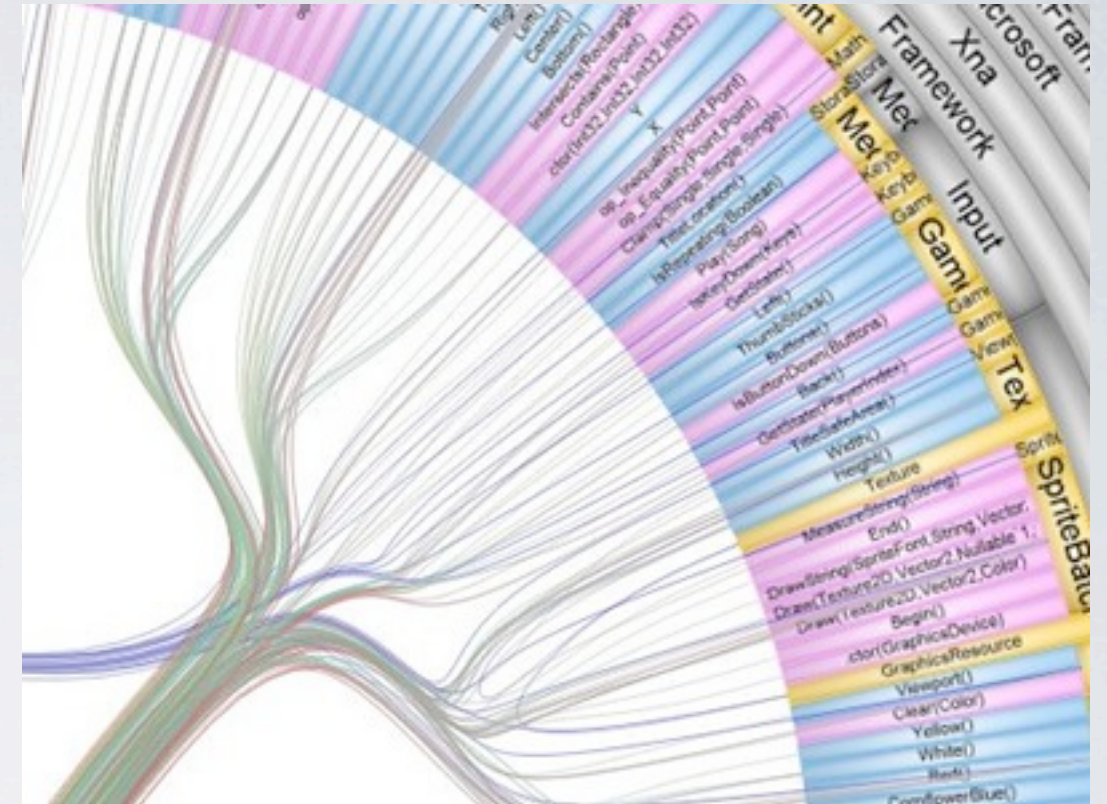
programming is **dead**

programming is **difficult**

Google Search

I'm Feeling Lucky





# SolidSX (Java/.net)





# JAVASCRIPT CRASH COURSE

- Very dynamic language
- No modules or packages
- All about objects
  - no class/object distinction
  - objects are dictionaries/maps/hashes

## JS top level script

```
var myObj = {  
  foo: "bar",  
  baz: 42.34  
}  
myObj.foo; // "bar"
```

```
function myFun() {  
  var localVar = 5;  
  globalVar = 22;  
}
```



## JS top level script

```
var myObj = {  
  foo: "bar",  
  baz: 42.34  
}  
myObj.foo; // "bar"
```

```
function myFun() {  
  var localVar = 5;  
  globalVar = 22;  
}
```

## window object

```
{  
  myObj: {  
    foo: "bar",  
    baz: 42.34  
  },  
  
  myFun: <function>,  
  
  globalVar: 22  
}
```



Console
HTML
CSS
Script
DOM ▾
Net

||

⋮

▶

LONG\_ARRAY

▶

TM

▶

Trans

▶

TreeUtil

▼

VIS

▶

gatherData

▶

getJsonList

▶

init

▶

initControls

▶

initVis

▶

refreshVis

▼

YAHOO

▶

BUILD

▶

VERSION

▶

env

▶

example

▶

lang

▶

util

▶

widget

▶

augment

▶

extend

▶

log

▶

namespace

▶

register

▶

child

▶

ignored

▶

get mozInnerScreenX

▶

get mozInnerScreenY

▶

\$

▶

Complex

▶

DP\_jQuery\_1275939165181

▶

Graph

▶

Hypertree

▶

Polar

▶

PGraph

[ ]

Object { layout=Object, more... }

Object { }

Object { }

Object { }

getIdFromJson(obj)

function()

function()

function()

function()

function()

Object { env=Object, more... }

"2449"

"2.8.0r4"

Object { modules=, more... }

Object { calendar=Object }

Object { }

Object { Lang=Object, more... }

Object { DateMath=Object }

function()

function()

function()

function()

function()

"localStorage"

[ "ignored", "\_firebug", "\_FirebugCommandLine", 100 more... ]

1434

147

function()

function()

function()

function()

function()

function()

function()

Deeper understanding of project



Important Objects



Deeper understanding of project

Visible fields/methods

Important Objects



Deeper understanding of project



Visible fields/methods

Important Objects



Deeper understanding of project

Relationships between objects

Visible fields/methods

Important Objects

Deeper understanding of project

Messy Projects

Relationships between objects



Change of structure

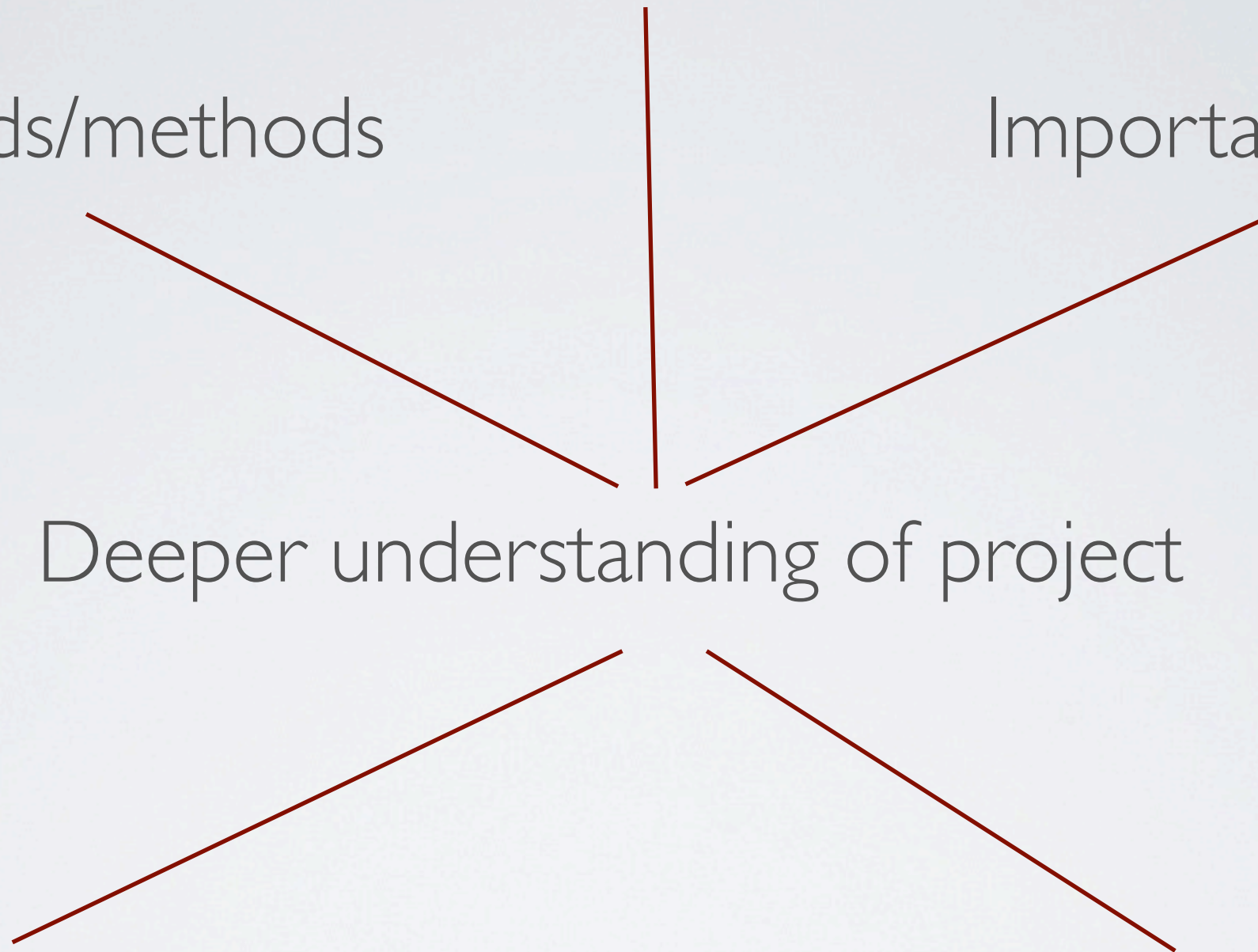
Visible fields/methods

Important Objects

Deeper understanding of project

Messy Projects

Relationships between objects



# HOW

- Runs in the browser
- Walks the starting object
  - by default *window* but can be changed in the interface
  - gathers object names and types (function, number, string)
- Passes resulting data to the JavaScript InfoVis Toolkit (JIT)



gatherData

window  
-myObj  
-foo  
-bar  
-myFun  
-num

gatherData

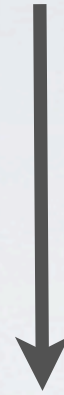
window  
-myObj  
-foo  
-bar  
-myFun  
-num





gatherData

window ←  
-myObj  
-foo  
-bar  
-myFun  
-num



gatherData

window

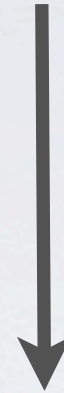
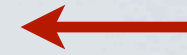
-myObj

-foo

-bar

-myFun

-num





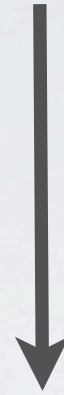
gatherData

window  
-myObj  
-foo  
-bar  
-myFun  
-num



gatherData

window  
-myObj  
-foo  
-bar  
-myFun  
-num



foo



gatherData

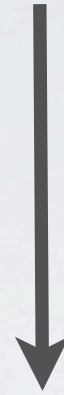
window  
-myObj  
-foo  
-bar  
-myFun  
-num



foo

gatherData

window  
-myObj  
-foo  
-bar  
-myFun  
-num



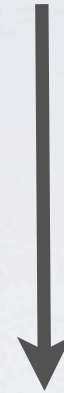
bar

foo



gatherData

window  
-myObj  
-foo  
-bar  
-myFun  
-num



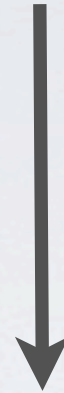
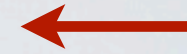
myObj  
children: foo, bar

bar

foo

gatherData

window  
-myObj  
-foo  
-bar  
-myFun  
-num



myObj  
children: foo, bar

bar

foo



gatherData

window  
-myObj  
-foo  
-bar  
-myFun ←  
-num

myFun

myObj  
children: foo, bar

bar

foo

gatherData

window  
-myObj  
-foo  
-bar  
-myFun  
-num



myFun

myObj  
children: foo, bar

bar

foo

gatherData

window  
-myObj  
-foo  
-bar  
-myFun  
-num



num

myFun

myObj  
children: foo, bar

bar

foo



gatherData

window  
-myObj  
-foo  
-bar  
-myFun  
-num



window  
children: myObj, myFun, num

num

myFun

myObj  
children: foo, bar

bar

foo

gatherData

window  
-myObj  
-foo  
-bar  
-myFun  
-num ←

window  
children: myObj, myFun, num

num

myFun

myObj  
children: foo, bar

bar

foo

RGraph

# Demo Time











