

PharoJS



PharoJS

Now
What?



Noury Bouraqadi & Dave Mason



**Toronto
Metropolitan
University**

Why PharosJS?



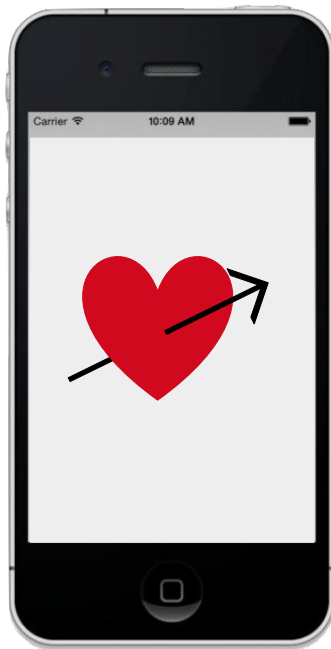
It Started with a Love Story



Portability Challenge: Run on Smartphones

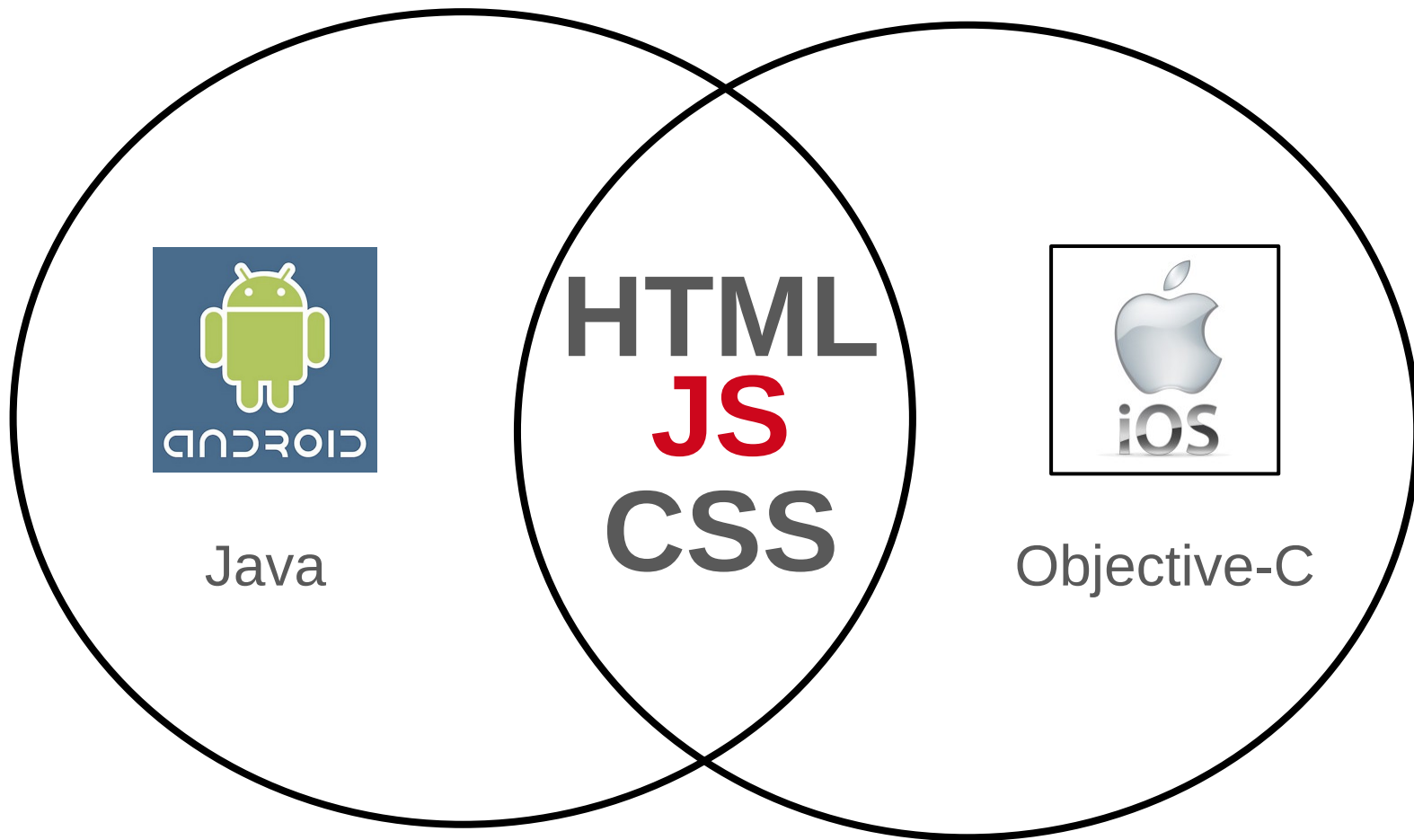


Java



Objective-C

Portability Challenge: Run on Smartphones



But...

I  Smalltalk

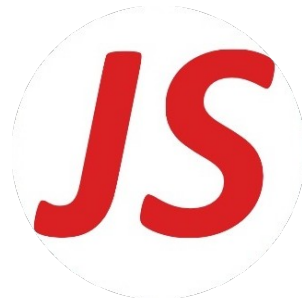
Pharo
100%



Develop



Run



100%
JavaScript

1st Public Demo @ ESUG 2015

9

Innovation Technology Awards



Pivotal Encounter @ ESUG 2015



Dave
Mason

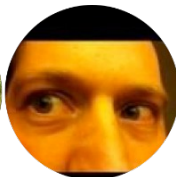
**Toronto
Metropolitan
University**

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Kindly Supported by



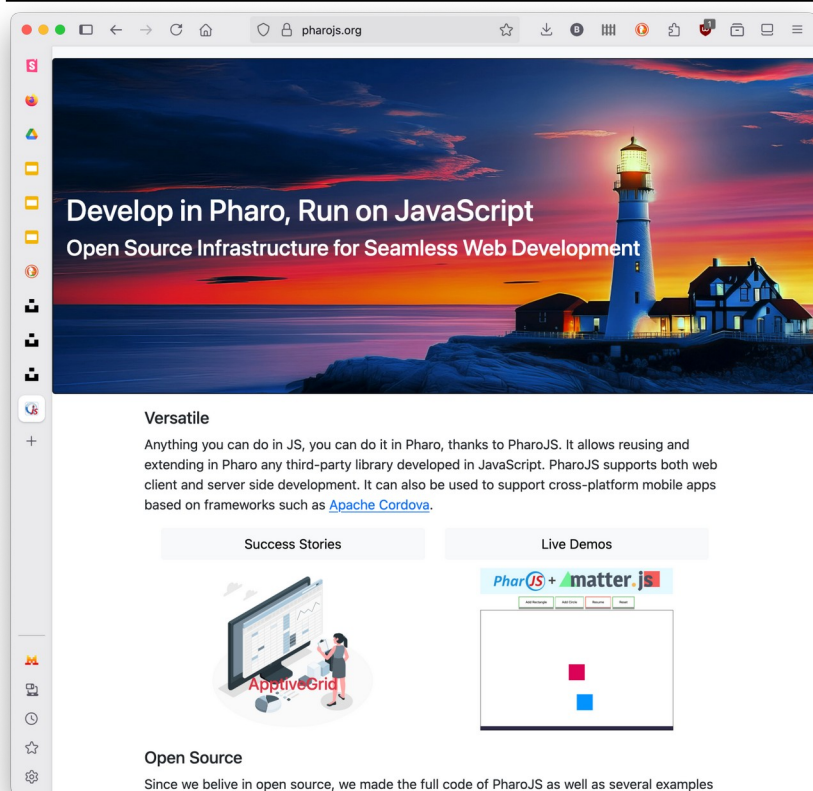
More PharoJS Contributors Over the Years



When to Use PharoJS?



pharojs.org



Success Stories & Live Demos

<https://pharojs.org/demo.html>

MatterJS Physics Engine

PharJS + **matter.js**

Add Rectangle

Add Circle

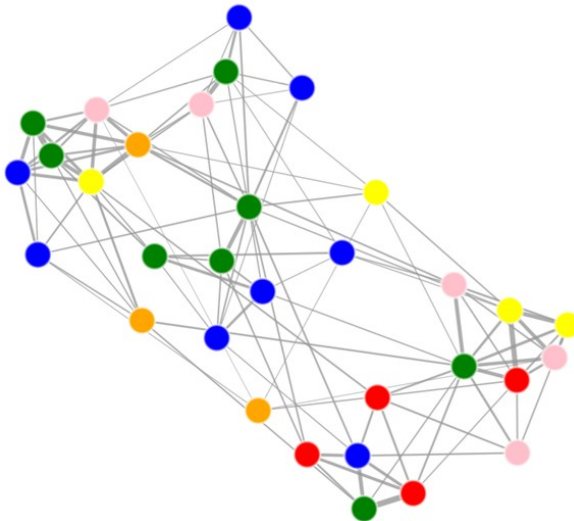
Resume

Reset



D3JS Data Visualisation Library

PharJS +
Data-Driven Documents



ThreeJS 3D Graphics Library

PharJS + **three.js**

Press keyboard arrows to rotate cube.



<https://pharojs.org/demo.html>

MatterJS Physics Engine

PharJS + matter.js

Add Rectangle

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Resume

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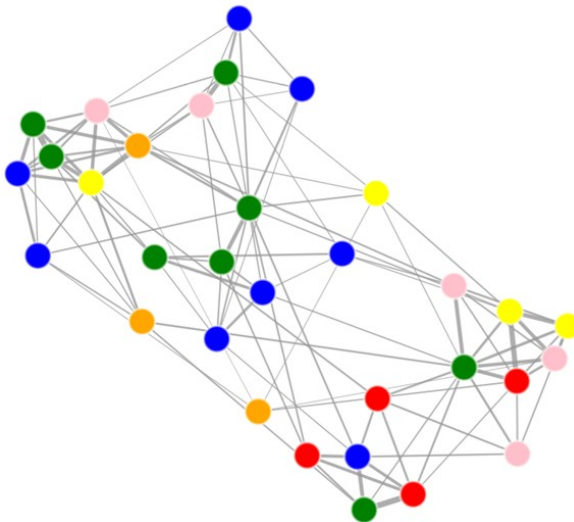
ThreeJS 3D Graphics Library

PharJS + three.js

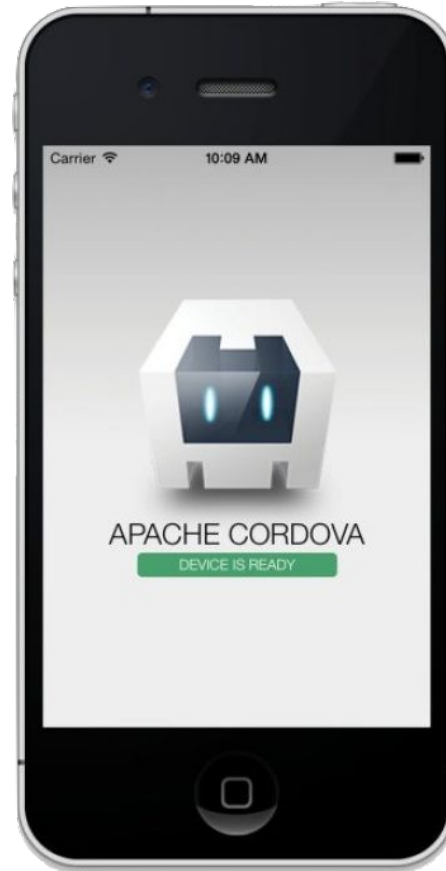
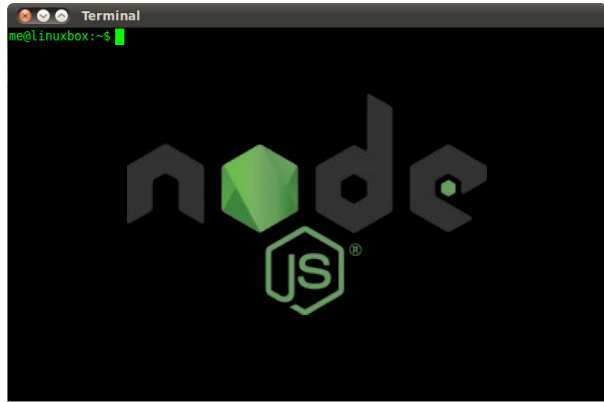
Press keyboard arrows to rotate cube.



DB Data-Driven Documents



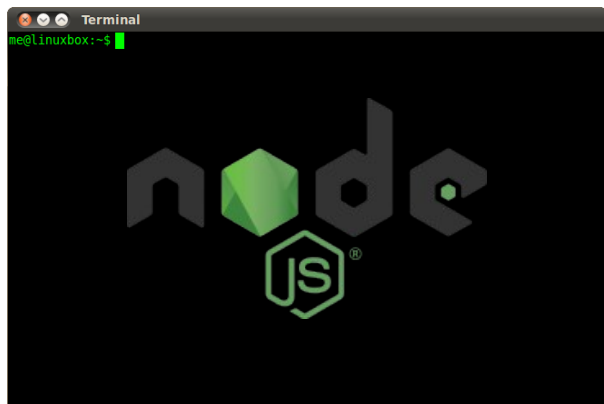
PharoJS Targets Different JS Platforms



PharoJS Targets Different JS Platforms

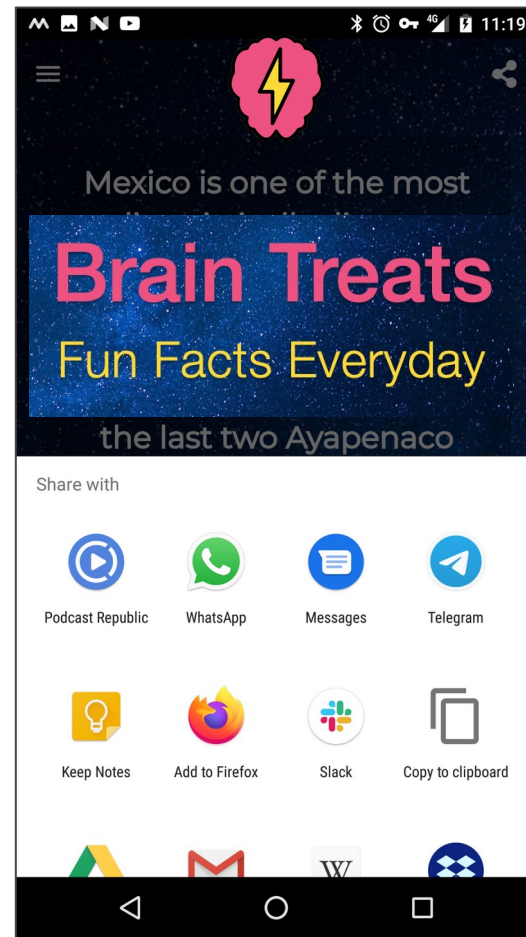


<https://pharojs.org/successStories.html>



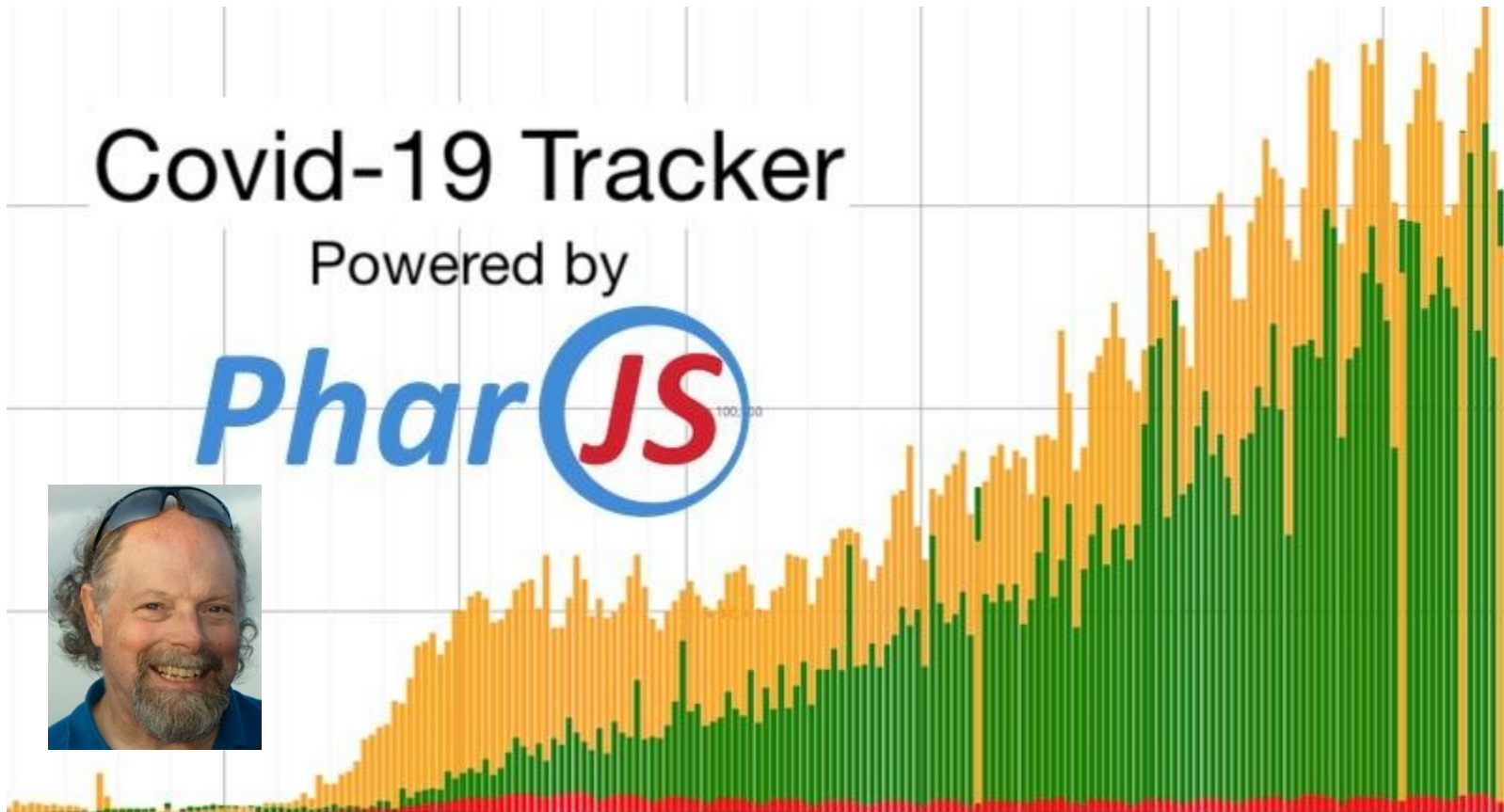
PharJS Success Stories

18



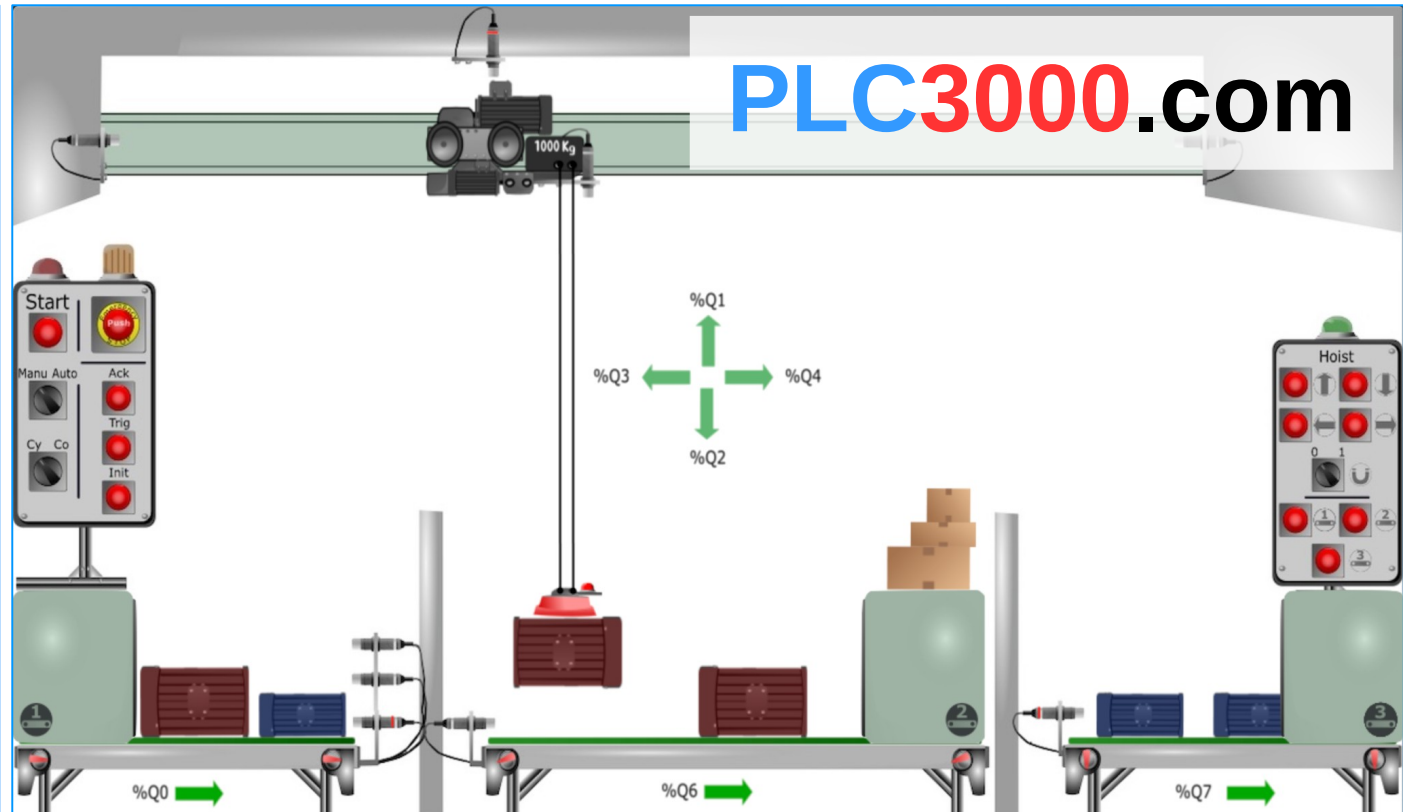
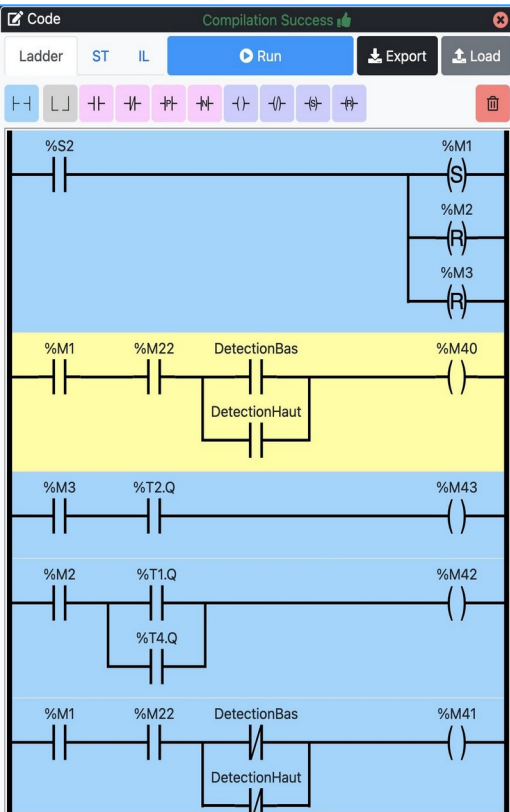
Covid-19 Tracker

Powered by



ApptiveGrid





What is PharoJS?





Development



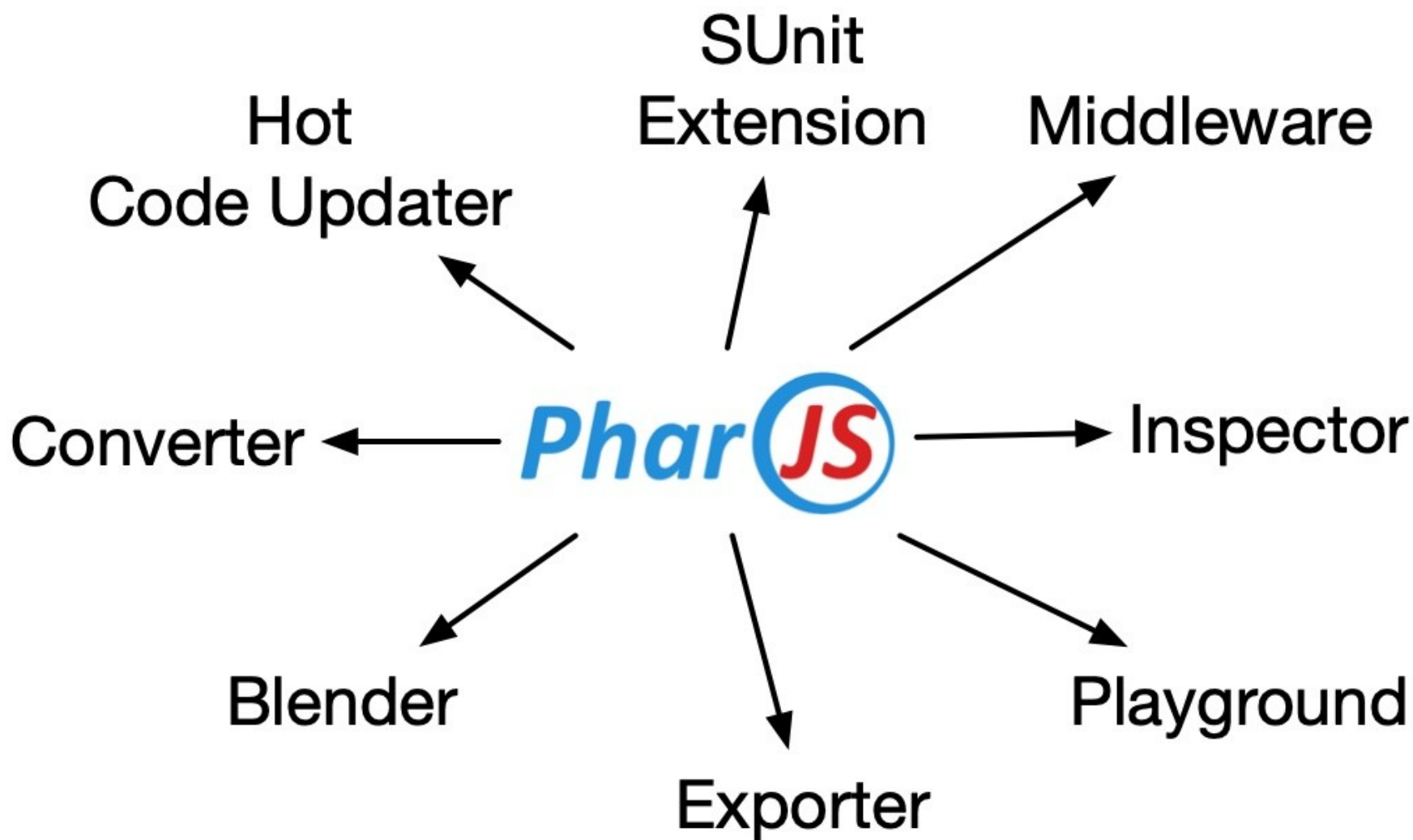
Production





Transpiler

Tools



Converter

- Map Smalltalk to JavaScript
 - E.g. **nil**, **blocks**, **DNU**
- Placeholder for some classes
- Skip some methods for a given class

Blender - Reference JS in Smalltalk

- Access JS Globals in Smalltalk
- Instantiate JS Classes in Smalltalk
 - JS Configuration Objects
 - JS Direct IV Access
- Smalltalk Subclasses for JS Superclasses
- Add Methods and IVs to JS Classes

Blender - Smalltalk API for JS Objects

Transpiler

- Extend JS classes with Smalltalk methods
 - Object
 - Collections (Array, Set, ...)
 - Date
 - ...
- Transform JS kernel to mimic Smalltalk
 - Class-Metaclass inheritance in JS

Blender - Smalltalk API for JS Objects

Transpiler

- Extend JS classes with Smalltalk methods
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Topic of my
IWST Talk

PharoJS **Exporter**

- Strip-down the Smalltalk image
 - Start from 1 entrypoint class
 - Include all referenced classes transitively
- Generate **standalone** JS apps
- Automatic Install of JS dependencies
 - NPM packages

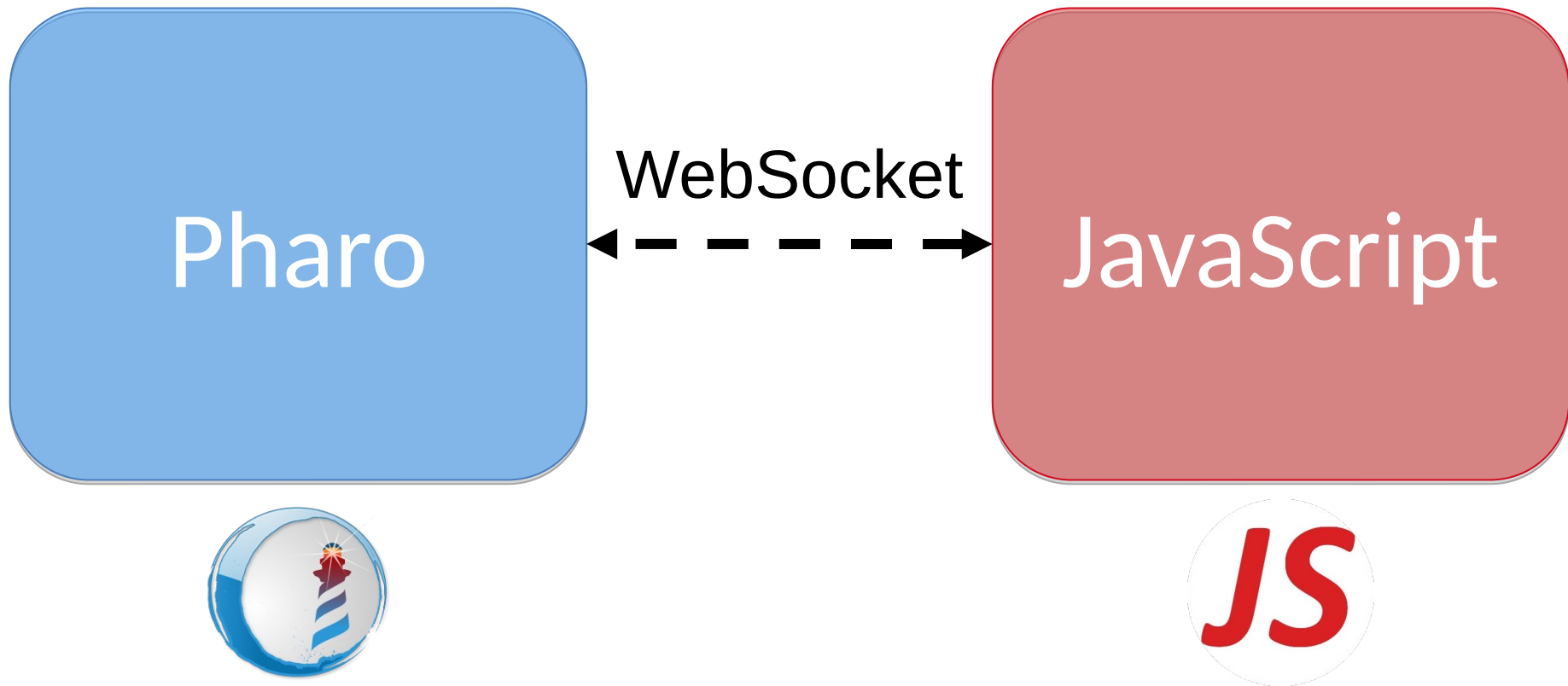
Inspector + Playground

- Smalltalk developer experience
 - Adapt existing tools
- TDD
- Live interaction with JS

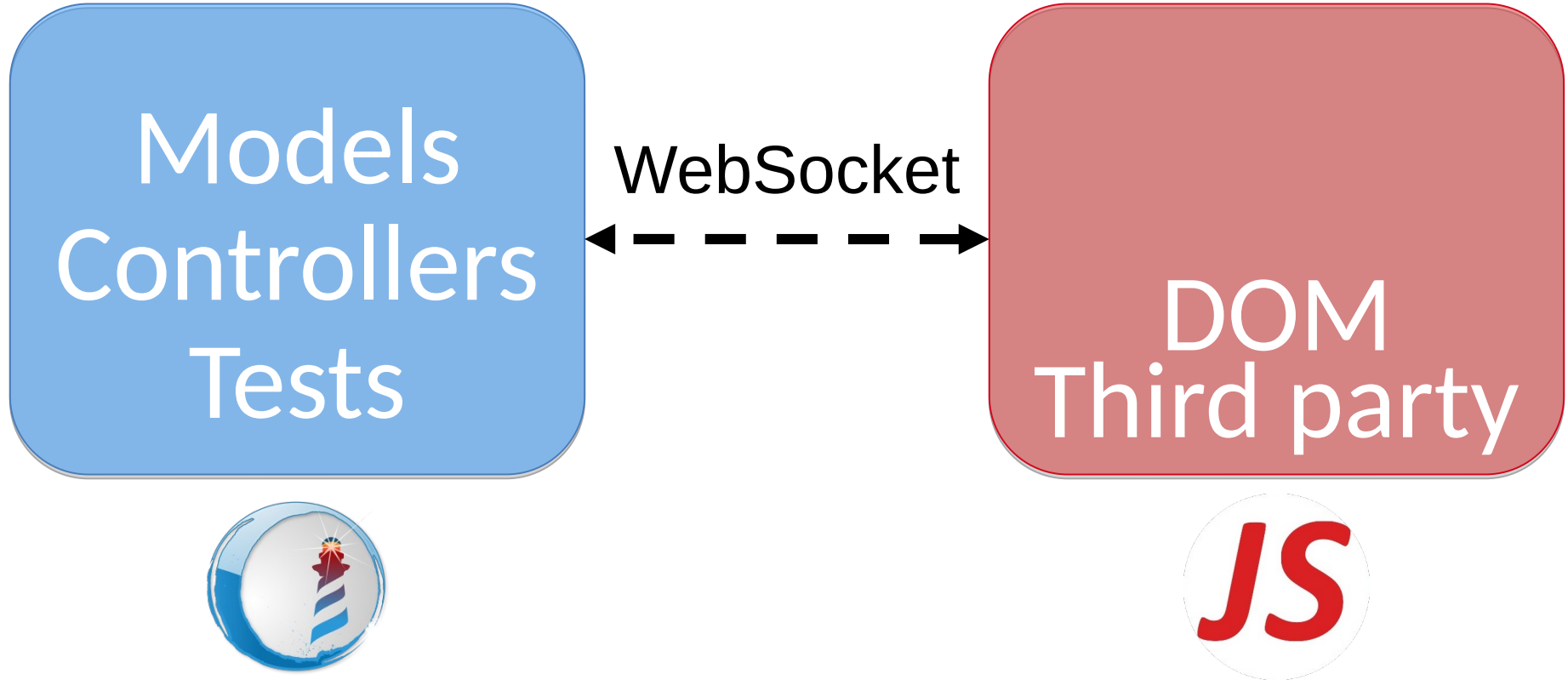
Middleware = Backbone for Tools

- 2 ways Serialization
 - ST to JS
 - JS to ST
- Smalltalk Proxies for JS Objects
- Callbacks from JS to ST

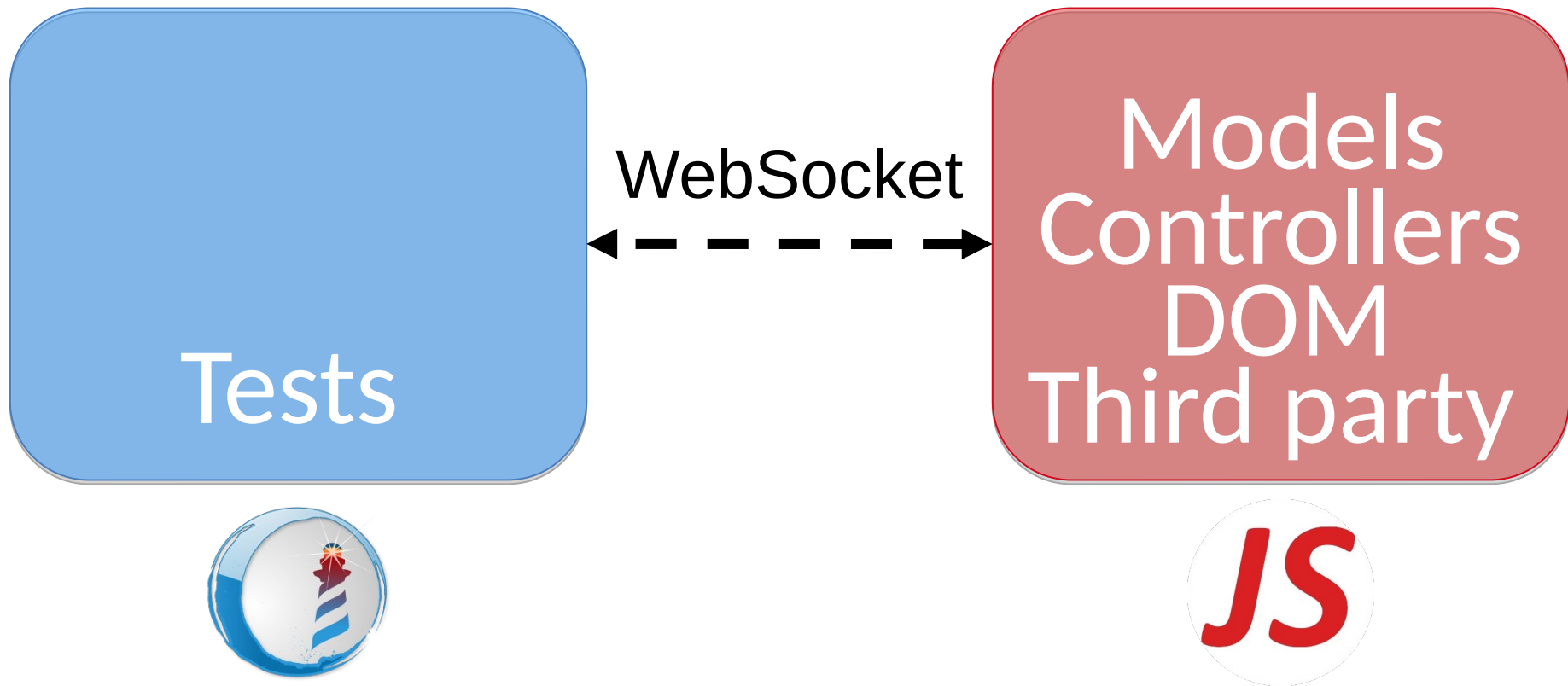
PharoJS Tests Rely on its Middleware



PharoJS Integration Tests



PharoJS Portability Tests



The Future of PharoJS



PharoJS ToDo List

- **Full image transpilation**
 - Ambitious!

PharoJS ToDo List

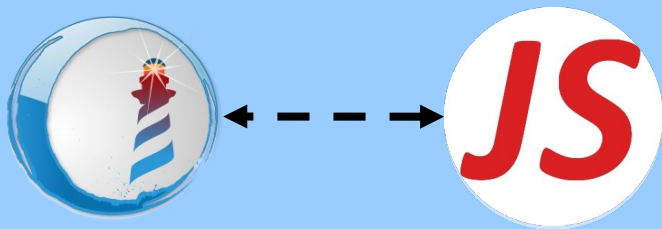
- Full image transpilation
 - Ambitious!
- **Debugger**
 - Stepping JS Code
 - “Show us your project” ESUG 2025

PharoJS ToDo List

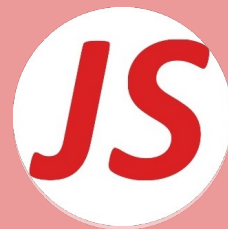
- Full image transpilation
 - Ambitious!
- Debugger
 - Stepping JS Code
 - “Show us your project” ESUG 2025
- **Middleware**
 - See next slide :-)

Current PharosJS

Test

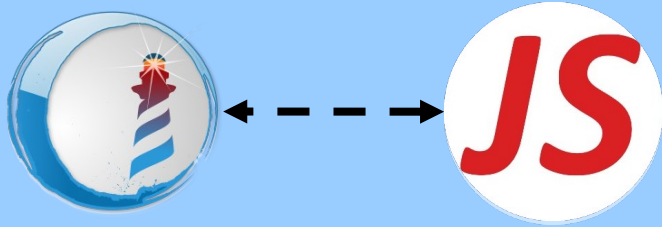


Production

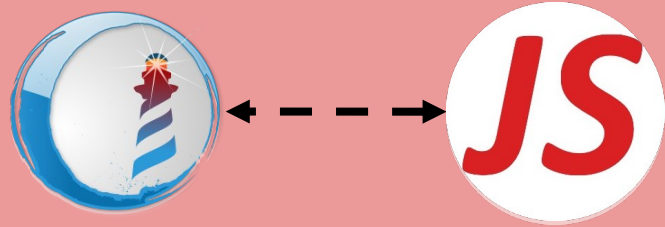


Better Middleware

Test



Production

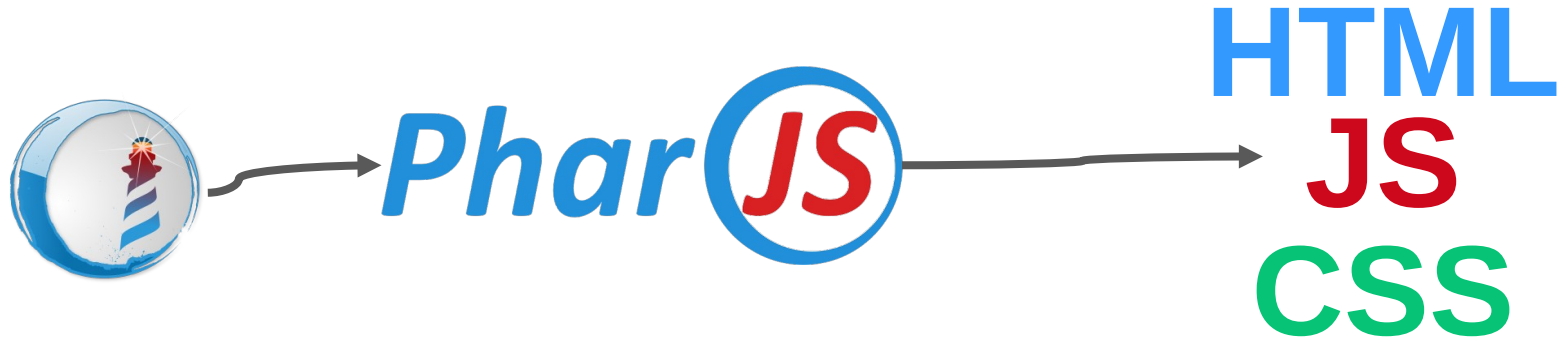


Topic of my
Next Dev Talk

Beyond JavaScript



Web Apps are more than JavaScript!

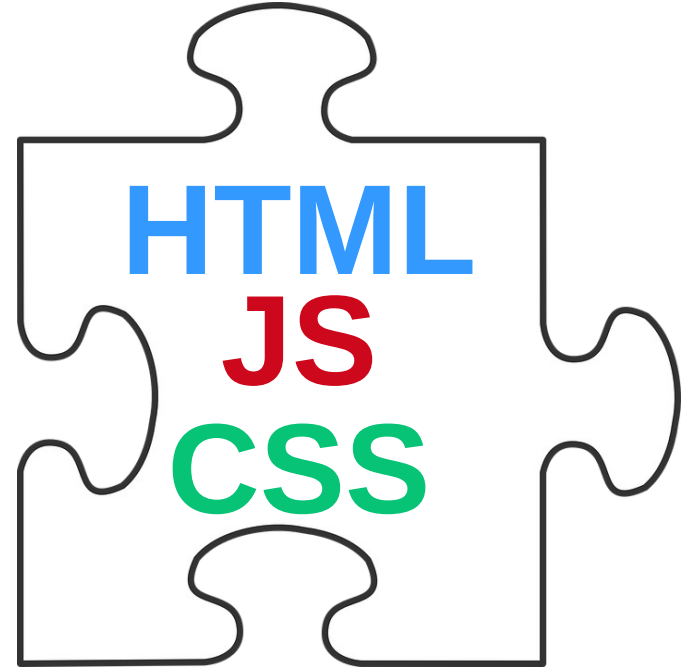


WebST



Phar **JS** + *seaside* ★

Build Web Components



WebST

Assemble Third Party Web Components



Beyond PharoJS

Smalltalk Web initiative

- Presented on ESUG 2025
- **Unite** Smalltalk ecosystem for Web development
 - **Share** libraries / tools / sub-projects
 - **Across Smalltalk Dialects**

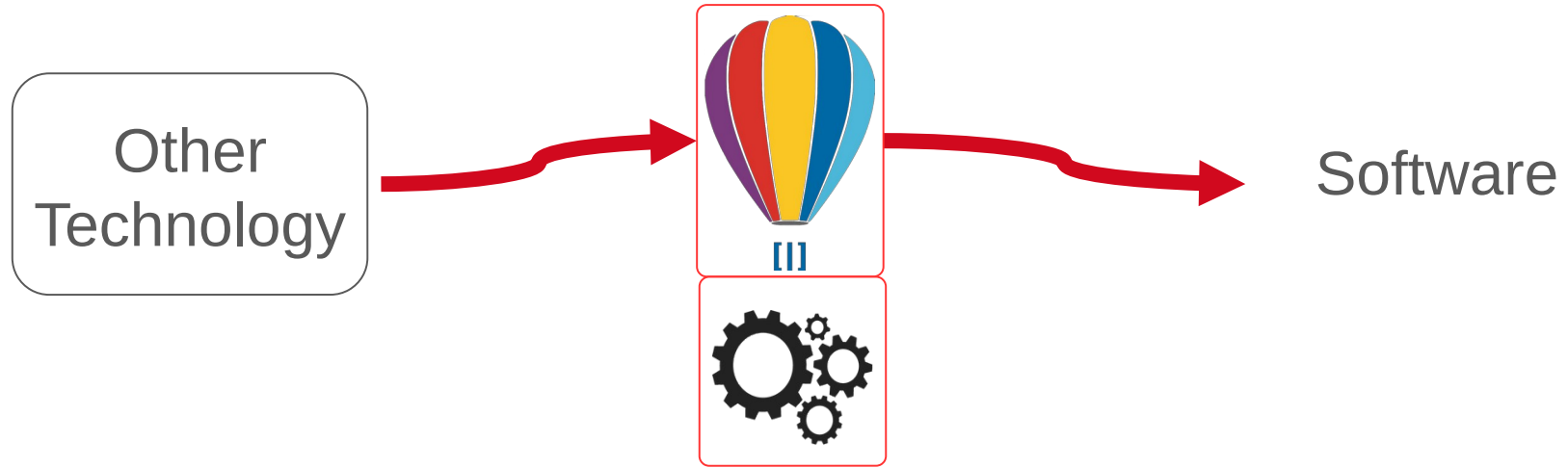


PharoX Beyond JavaScript

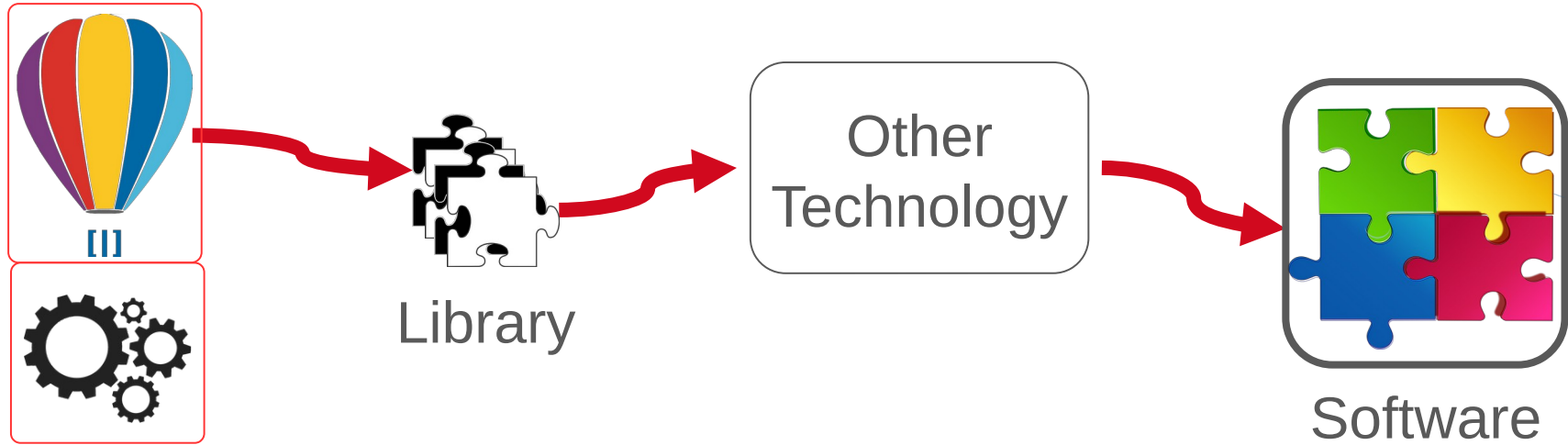
- Leverage Popular Languages
 - Bigger Ecosystems
- 5 Dynamic Languages in the Top 20 by <https://plrank.com>
 - JavaScript 1st ←
 - Python 2nd ←
 - Php 7th
 - Ruby 12th
 - Lua 17th



Leverage Other Technology



Smalltalk Libraries Reusable by Others



PharoX

Develop in Pharo
Run on X



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