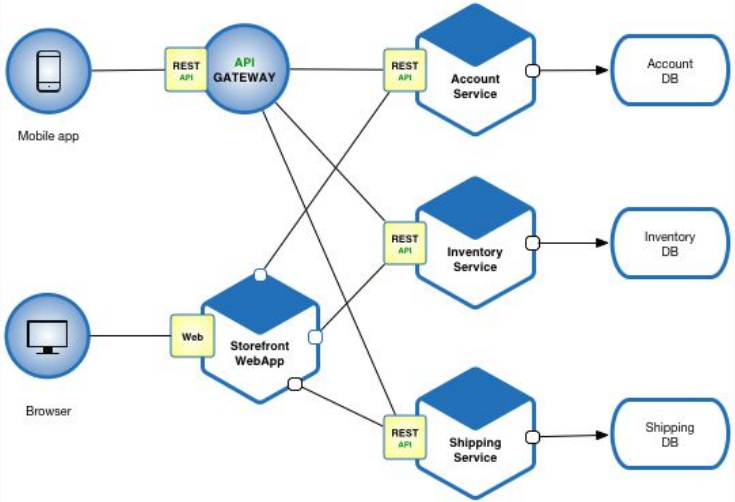
hammer.io

A tool for developing, maintaining, and monitoring Node.js microservices.

Tyr In Production:
https://www.npmjs.com/package/tyr-cli
Source Code:
https://github.com/hammer-io
Website
https://hammer-io.github.io

Erica Clark, Nathan De Graaf, Nathan Karasch, Jack Meyer, Nischay Venkatram Lotfi ben-Othmane

What are microservices?



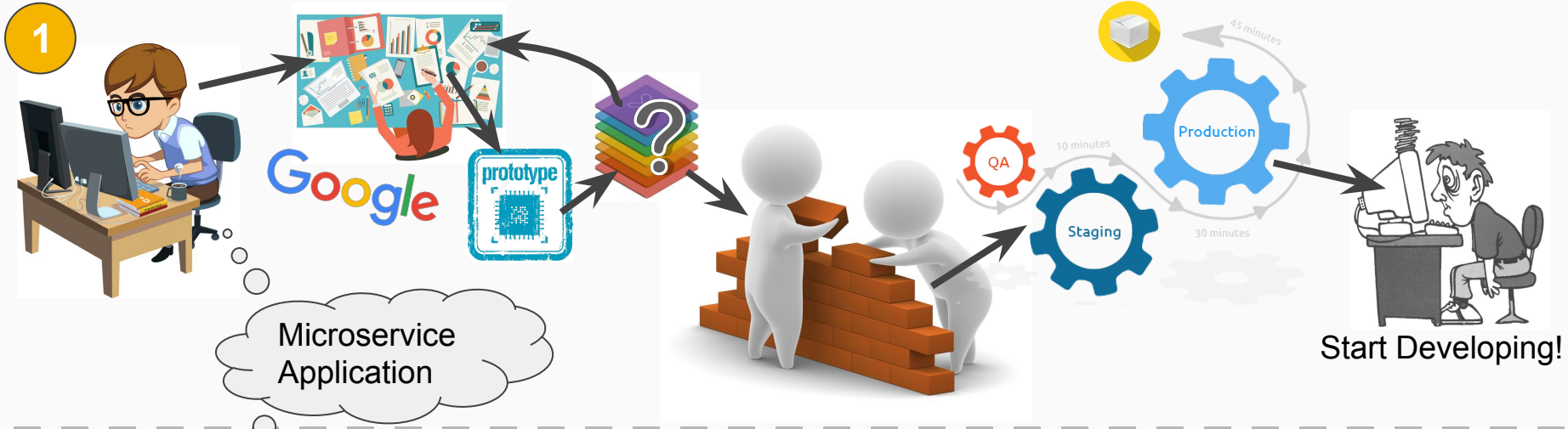
“Microservices . . . is an architectural style that structures an application as a collection of loosely coupled services, which implement business capabilities. The microservice architecture enables the continuous delivery/deployment of large, complex applications.”

http://microservices.io/
http://microservices.io/i/Microservice_Architecture.png

What’s the problem?

- In order to deploy a set of microservices to the cloud reliably, a developer must go through a significant amount of work to establish the infrastructure and build an automated deployment process.
- Students or small startups with limited knowledge, resources, or time are faced with a significant barrier when beginning a microservices project.

The Tale of Two Coders



How are we going to solve it?

Tyr

An automated DevOps process for Node.js applications

Heimdall

A framework to develop Node.Js microservice applications

Yggdrasil

An interface to monitor the health and status of deployed Tyr applications

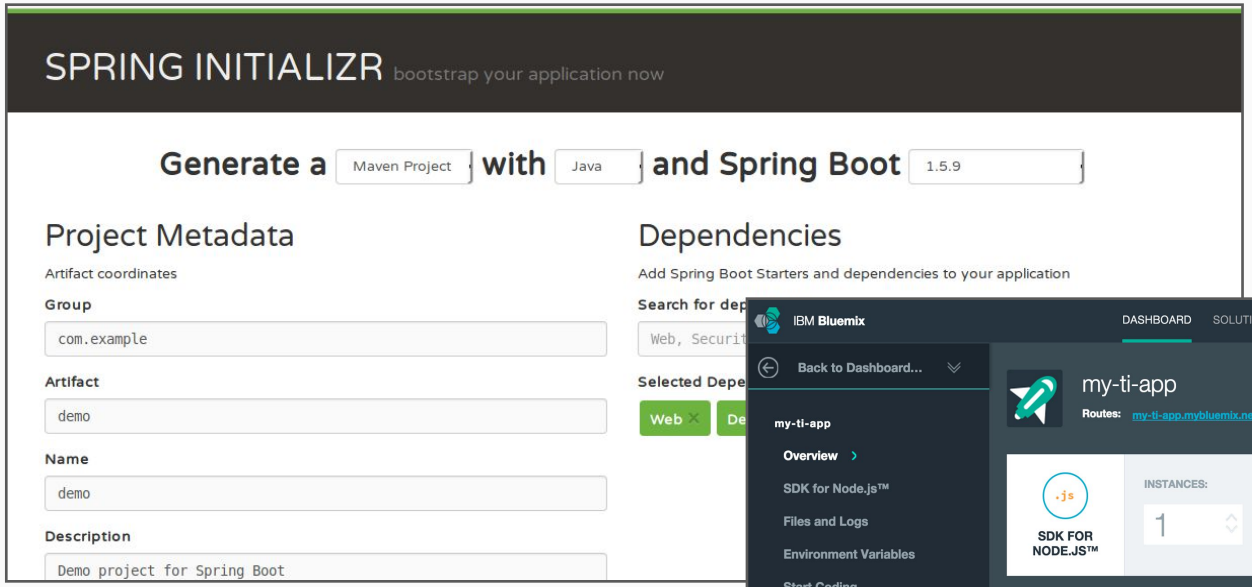
Functional Requirements

- The product shall generate an opinionated Node.js project, ready for Microservice development
- The product shall set up an automated DevOps workflow, which can be customized by the user
- The product shall allow the user to view statistics, reports, and analytics about their deployed applications
- The product shall have a library that allows data such as health statuses, data flow statistics, and other application information to be gathered and sent to a web application to be viewed
- The product shall allow the user to add new microservices into an existing microservice architecture

Non-functional Requirements

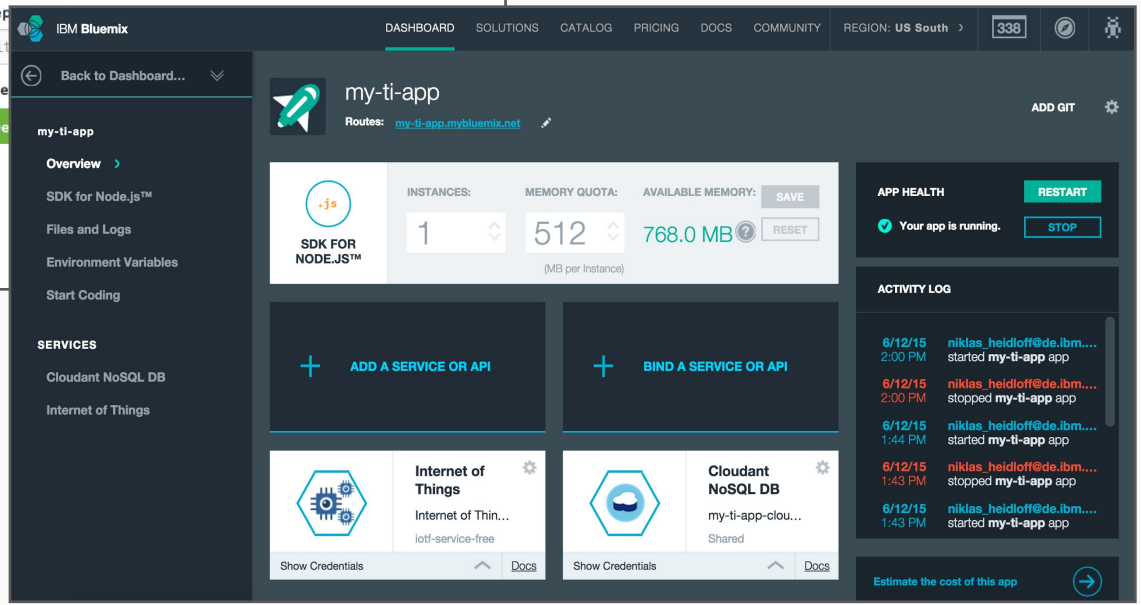
- Usability
  - A clean, consistent look and feel throughout the product, which is usable by those with limited understanding of DevOps and services being utilized
- Supportability
  - The system will support Node.Js version 8.x> on Unix-based systems
- Reliability
  - Reliable uptime for web application
- Security
  - Secure handling of user information

What else is out there?



Spring Boot

IBM Bluemix



Potential Risks & Mitigation

- Integration with Third Party APIs
  - We are using many third party APIs, which can change, often times without notice
  - We run integration tests daily to ensure that we are aware if the API changes and it breaks our code
- Security risks
  - We are handling user data and passwords, sometimes of third party services
  - We follow best practices and consult with Dr. ben-Othmane
- Sustainability
  - We will be leaving, so someone else must understand code base
  - We practice code reviews and constant vigilance

How much does this cost?

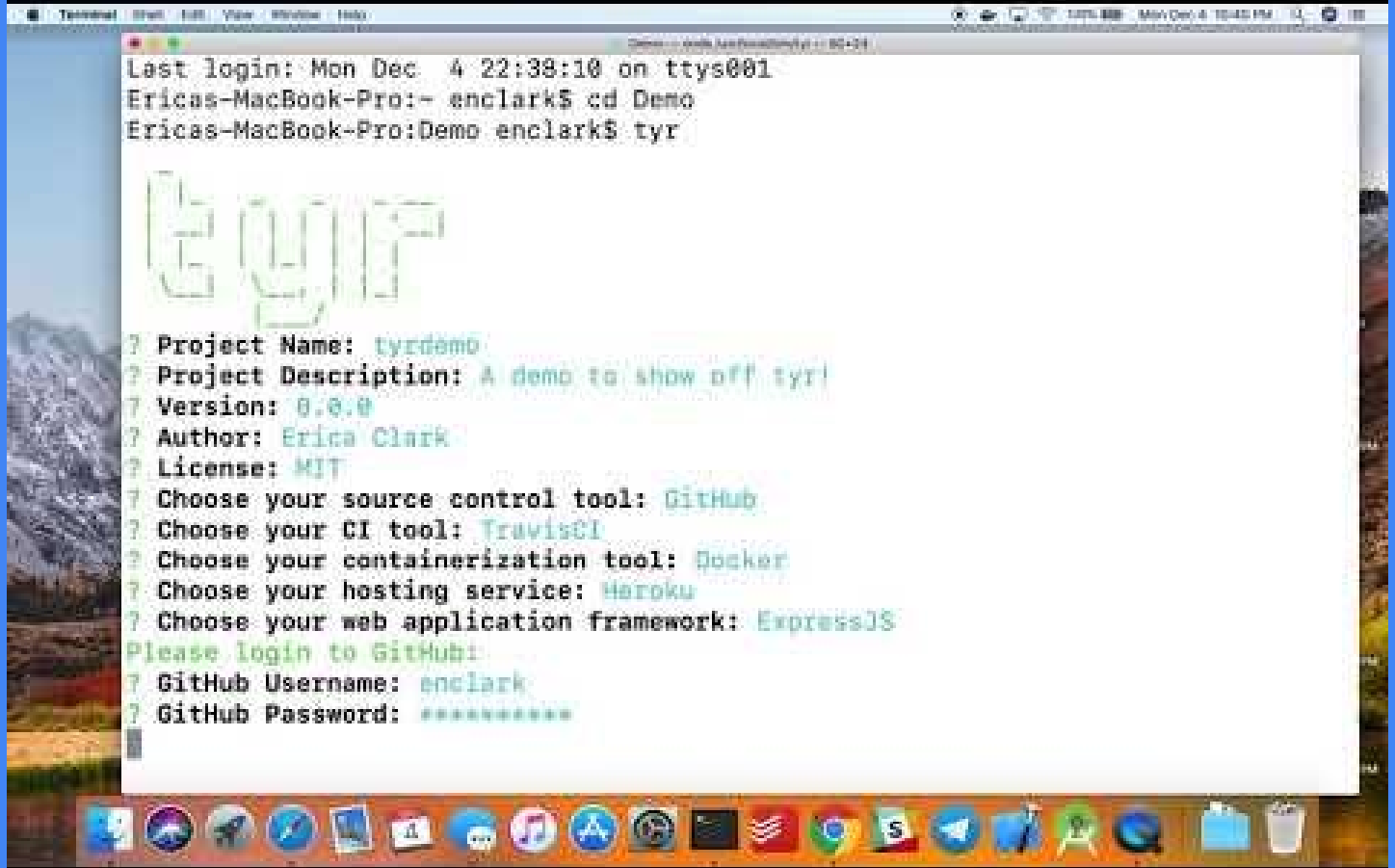
- $0.00
- Open Source Tooling and Iowa State Resources keep costs at zero

Project Milestones & Schedule

Aug				Sept				Oct				Nov				Dec			
W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4
		Requirements gathering																	
				Research															
					Build CLI tool for app generation															
												Web app setup							
															Demos				

Jan				Feb				Mar				Apr			
W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4
Monitoring Web application															
		Deployment Web application													
										Development framework					
						Testing, Validation, Polishing									

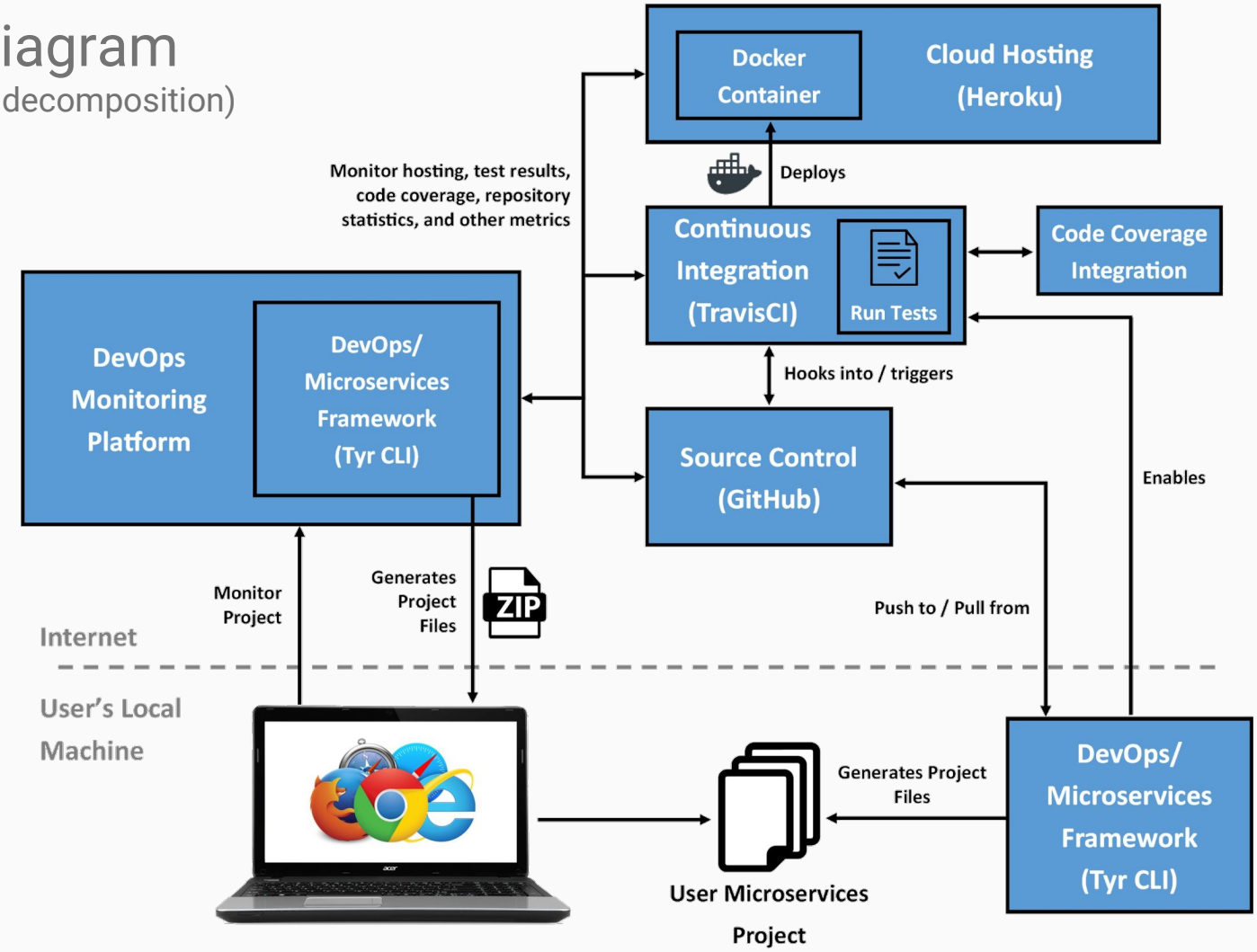
Demo


Last login: Mon Dec 4 22:38:10 on ttys001
Ericas-MacBook-Pro:~ enclark$ cd Demo
Ericas-MacBook-Pro:Demo enclark$ tyr
? Project Name: tyrdemo
? Project Description: A demo to show off tyr!
? Version: 0.0.0
? Author: Erica Clark
? License: MIT
? Choose your source control tool: GitHub
? Choose your CI tool: TravisCI
? Choose your containerization tool: Docker
? Choose your hosting service: Heroku
? Choose your web application framework: ExpressJS
Please login to GitHub:
? GitHub Username: enclark
? GitHub Password: **********

System Design

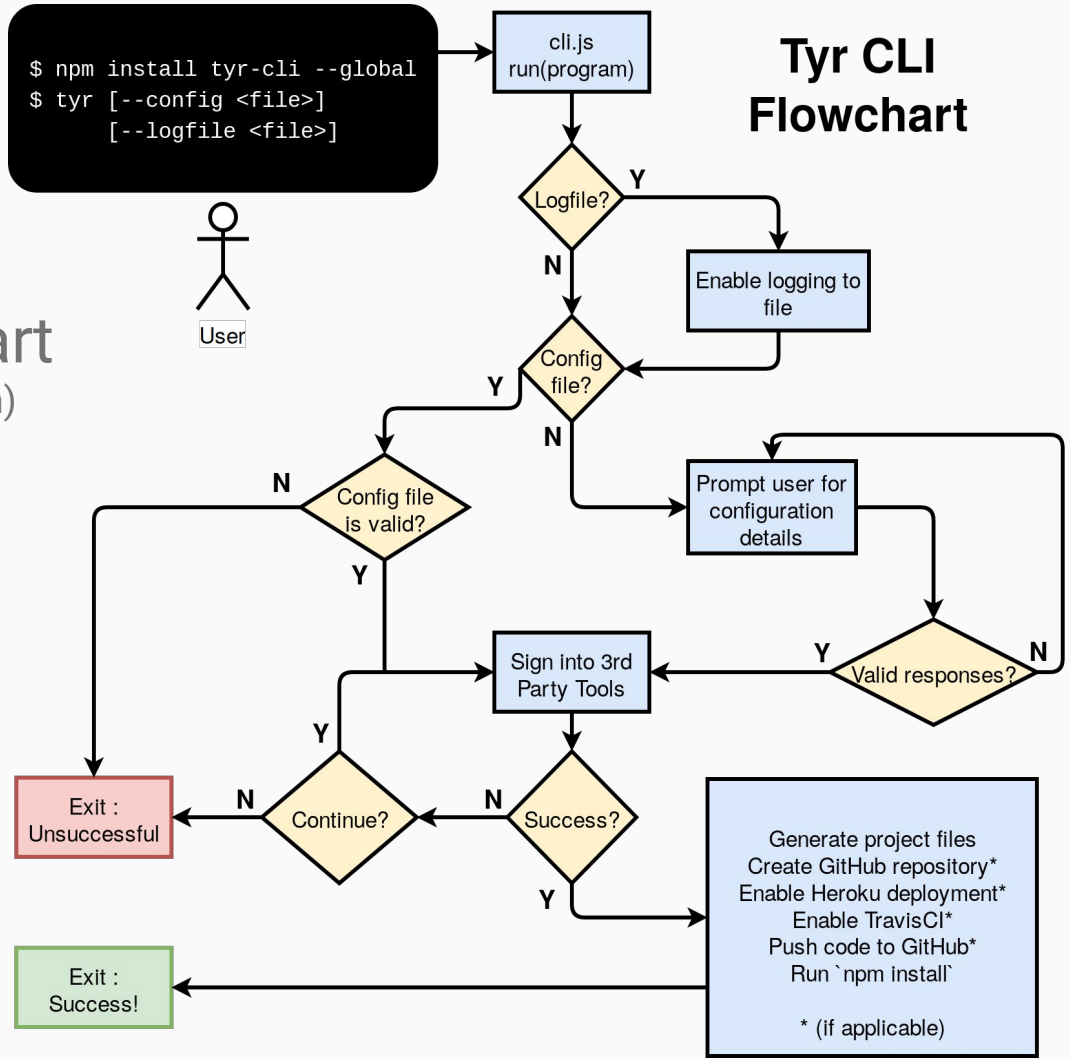
Block Diagram

(a functional decomposition)

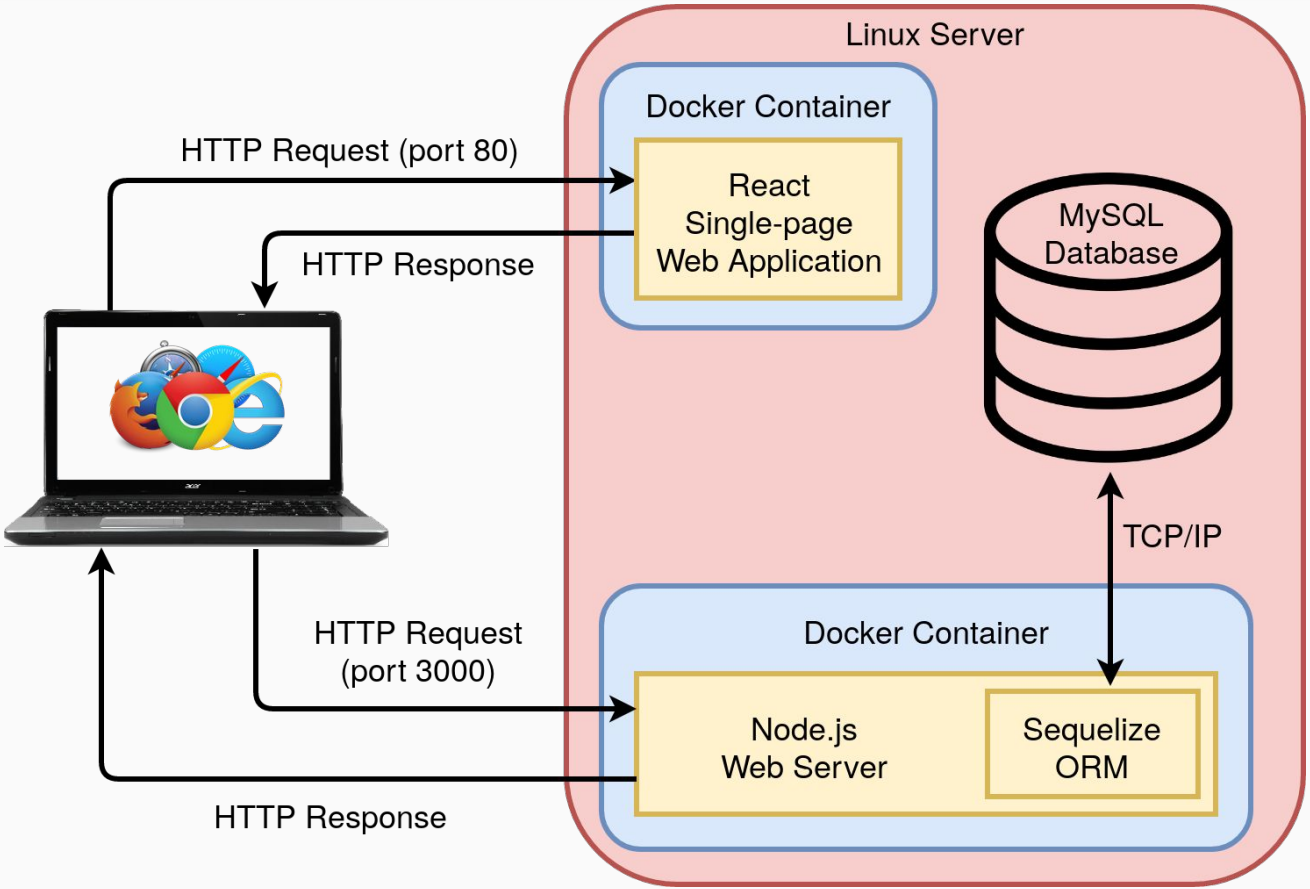


Tyr CLI FLowchart

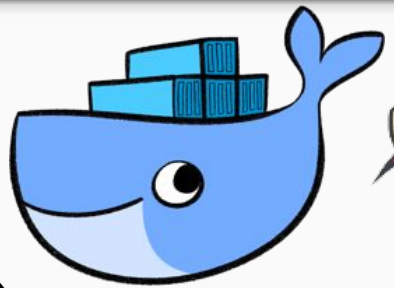
(a functional decomposition)

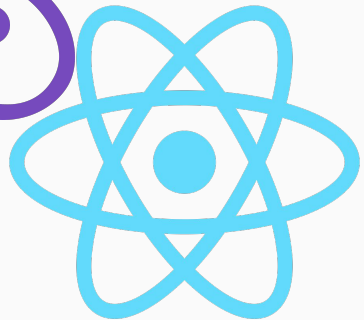


Software Architecture of Yggdrasil



Technologies used

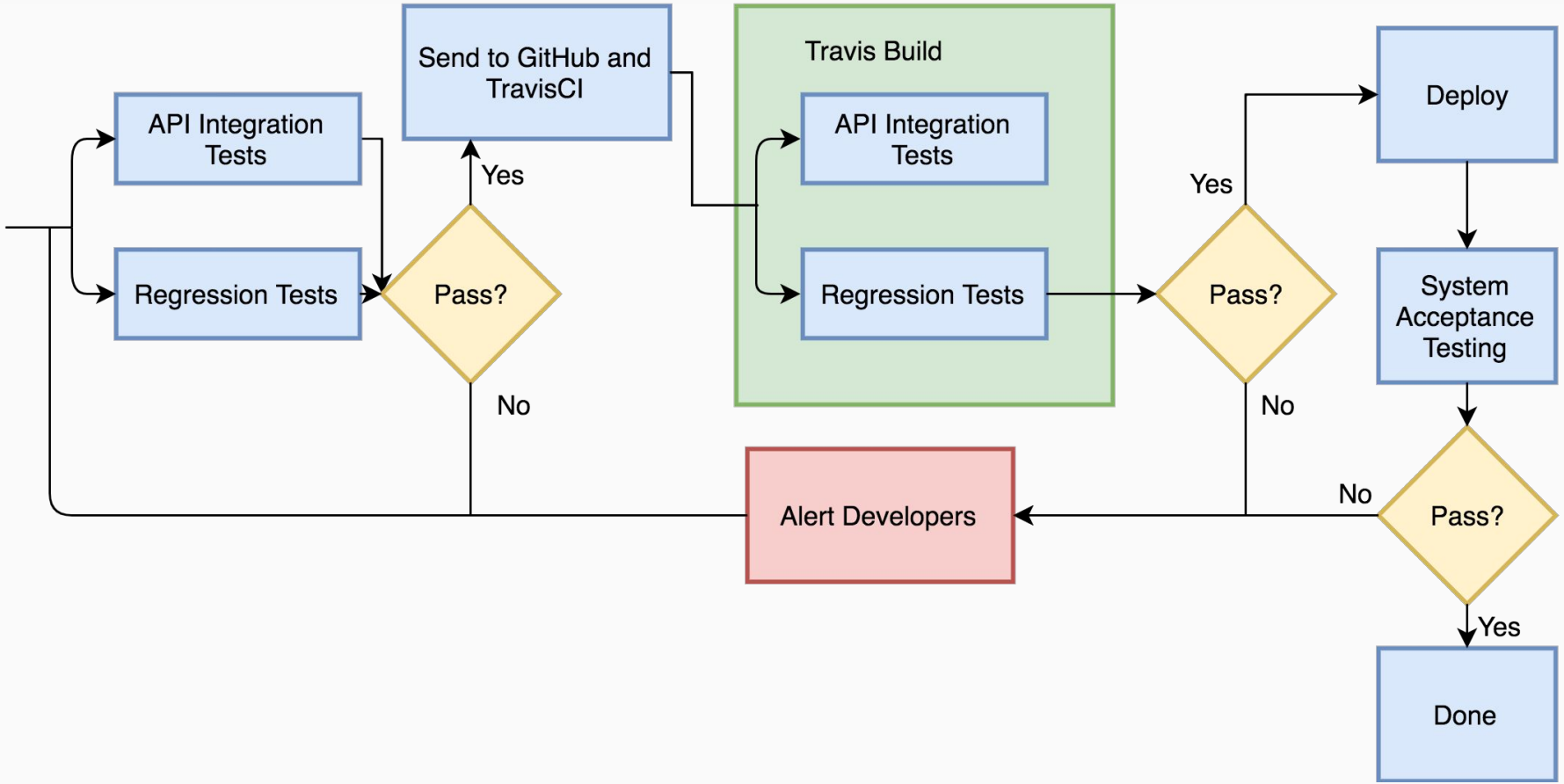




How are we testing it?

- Unit Testing with Mocha
- Integration Test Suite with Mocha
- TravisCI for Continuous Integration
- Manual Testing for System Testing and Acceptance Testing

Test Plan


API Integration Tests
Regression Tests
Pass?
Yes
No
Send to GitHub and TravisCI
Travis Build
API Integration Tests
Regression Tests
Pass?
Yes
No
Deploy
System Acceptance Testing
Pass?
No
Yes
Done
Alert Developers

Closing Material

Where are we?

We published version 0.1.4 of Tyr, our CLI tool

Setup is complete and development has started on our web app Yggdrasil

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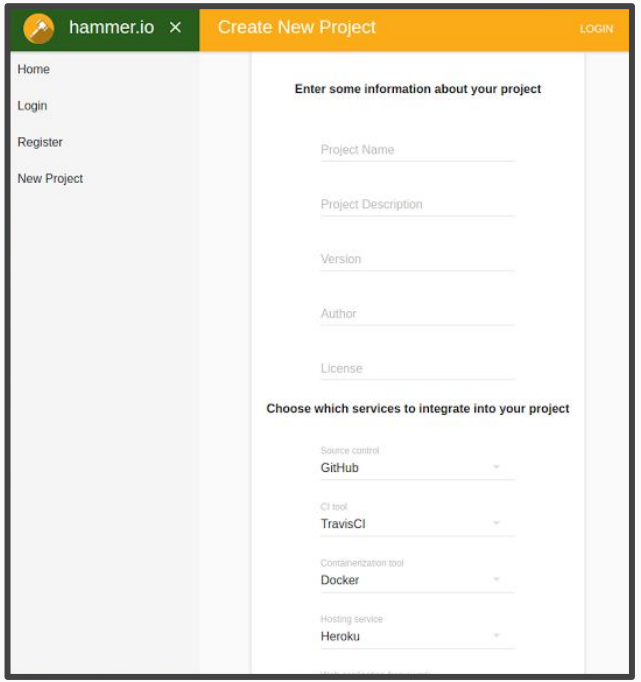

Where are we going?

- Continued Support for Tyr (New Features and Bug Fixes)
- Continued Development for Yggdrasil
- Start developing on monitoring framework

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Questions?

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