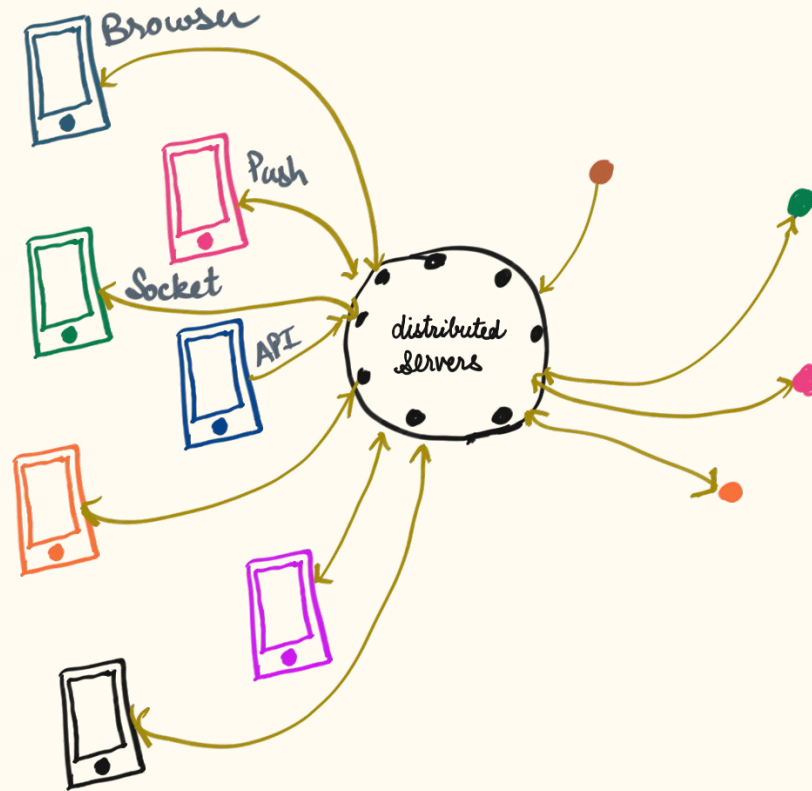


The Elixir Programming Language

By Zorawar Moolenaar

April 30, '19

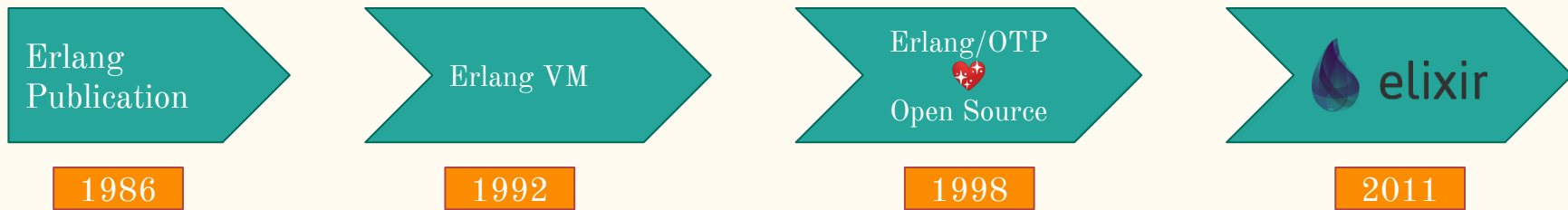


Elixir is designed for the Internet Age

Kudos to
The Erlang VM &
The OTP Framework



- Created by José Valim, a rubyist
- **Goal:** bring **productivity** and **extensibility** to the Erlang Programming Experience
 - Compatibility: "the Erlang VM is Elixir's strongest asset"
 - Modern Programming experience for Erlang



USP of Elixir

- Concurrent, Distributed and Fault Tolerant
 - "Write Once, Run Forever"
 - Hot Code Swapping
 - *Actor Model* for Concurrency
 - Everything is a process

USP of Elixir

- Concurrent, Distributed and Fault Tolerant
- Functional Paradigm
 - Immutable Data Types
 - Pattern Matching
 - Tail Recursion
 - Guards

USP of Elixir

- Concurrent, Distributed and Fault Tolerant
- Functional Paradigm
- General Purpose Programming Language
 - Metaprogramming with Macros
 - Intended for extension to Domain Specific Languages

USP of Elixir

- Concurrent, Distributed and Fault Tolerant
- Functional Paradigm
- General Purpose Programming Language
- Strong but Dynamic typing discipline
 - Values have types, variables do not.
 - Variables are only bound or rebound --- not assigned

USP of Elixir

- Concurrent, Distributed and Fault Tolerant
- Functional Paradigm
- General Purpose Programming Language
- Strong but Dynamic typing discipline
- **Modern Tools**
 - Build & Package Manager
 - Documentation as first-class entity

USP of Elixir

- Concurrent, Distributed and Fault Tolerant
- Functional Paradigm
- General Purpose Programming Language
- Strong but Dynamic typing discipline
- Modern Tools
- Small and new enough => easy to pick up
 - Esp. since we already know FP :)
 - But there are a lot of conceptually heavy features

Three Key Abstractions

- Data Types
 - Everything is an expression
 - Int, float, String, Atoms, Anonymous Functions, Lists, Tuples

Three Key Abstractions

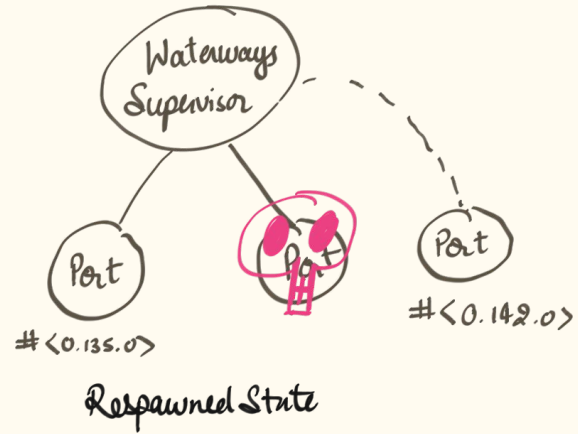
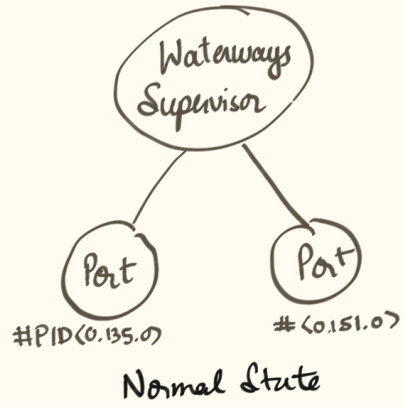
- Data Types
 - Everything is an expression
 - Int, float, String, Atoms, Anonymous Functions, Lists, Tuples
- Modules
 - Group of Functions, Named Functions

Three Key Abstractions

- Data Types
 - Everything is an expression
 - Int, float, String, Atoms, Anonymous Functions, Lists, Tuples
- Modules
 - Group of Functions, Named Functions
- Processes
 - All code is executed in a light-weight process
 - Everything is a process
 - Each process is strongly isolated, and has its own state
 - All code is concurrent out of the box
 - Process exchange messages between each other

Code Overview

1. Inter Process Communication
 - a. MarcoPolo Process Communication
2. Distributed State Model via Stack-based Agent
 - a. Waterways I
3. Distributed, Fault Tolerant State Model via Stack-based Agent & Supervisor
 - a. Waterways II



Supervisor Diagram

Elixir IRL



b/r bleacher report



Thank You! Questions?

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