KARMEN BLAKE

INTRODUCTION TO THE ELIXIR ECOSYSTEM

ME

- Crafting code since 2000
- Blessed to work for silicon valley startups, consultancies, agencies, top Fortune company
- Instructor at Spokane Community College, 2000-2007, teaching computer science and web development

ELIXIR (OR ANY TECH): NOT A SILVER BULLET

MY STORY

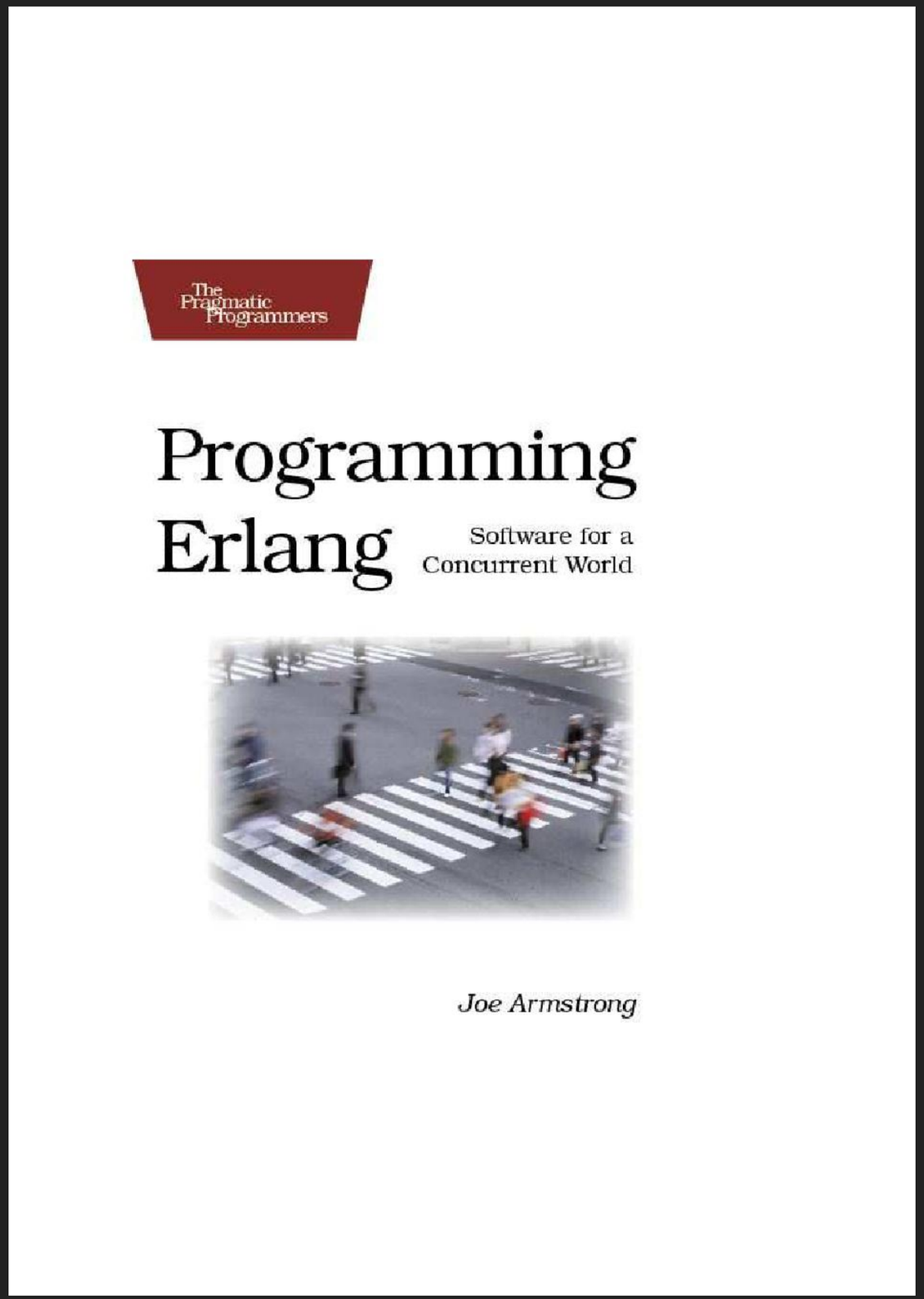
RE: CODING JOURNEY

- **College** (late 90s): BASIC, Pascal, C++
- **Early days** (2000-2005) - Java and PHP
- **Then**... Lots of Ruby (2005 - present)
  - Taught at SCC (converted curricula from Java)
  - Blog posts, presentations, interviews
  - High paying jobs
  - Still a joy to develop in

ERLANG: WHERE ELIXIR CAME FROM

ERLANG

- I read “Programming Erlang: Software for a Concurrent World” by the late Joe Armstrong, 2007
- Created in 1986 at Ericsson
- “…used to build massively scalable soft real-time systems with requirements on high availability.”
- “…telecoms, banking, e-commerce, computer telephony and instant messaging”



ERLANG

- 1998 Ericsson announced the AXD301 switch, containing for a million lines of Erlang and reported to achieve a high availability of nine "9"s.
- Cisco reports that 90% of all internet traffic goes through Erlang controlled nodes
- Scalable, fault-tolerant, functional (immutable data, functions, pattern matching, tail recursive, etc.)

Silicon Valley Ruby on Rails

Palo Alto, CA
Founded May 11, 2006

About us...

Ruby on Rails Engineers	2,555
Group reviews	34
Past events	56
Our calendar	

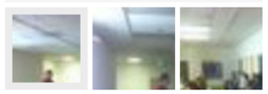
Organizers:

September 29, 2010 - 26 went

Beginning Erlang for the Ruby Developer

1 of 3 Play slideshow All sizes Report SHARE

1 of 1 pages



See all photos »

ERLANG AT APPLE (2011–2012)

- Wrote API web services in Erlang
- Used Riak database (written in Erlang) cluster as an internal asset CDN
- Used CouchDB to deliver real-time web applications

ELIXIR

ELIXIR??????

ELIXIR

- Created by Jose Valim in 2011
- "...dynamic, functional language designed for building scalable and maintainable applications."
- "...**leverages the Erlang VM** (BEAM), known for running low-latency, distributed and fault-tolerant systems, while also being successfully used in web development and embedded software domain.

ELIXIR

- What Erlang provides: scalable, fault-tolerant, functional
- Ruby-like syntax
- Extensible/DSLs
- Tooling/ecosystem
  - package management, testing, iex (repl)

Functional Programming

OO pattern/principle	FP pattern/principle
• Single Responsibility Principle	• Functions
• Open/Closed principle	• Functions
• Dependency Inversion Principle	• Functions, also
• Interface Segregation Principle	• Functions
• Factory pattern	• Yes, functions
• Strategy pattern	• Oh my, functions again!
• Decorator pattern	• Functions
• Visitor pattern	• Functions □

David Acevedo
@rebelwarrior

Following

Neural networks in Elixir #ElixirDaze

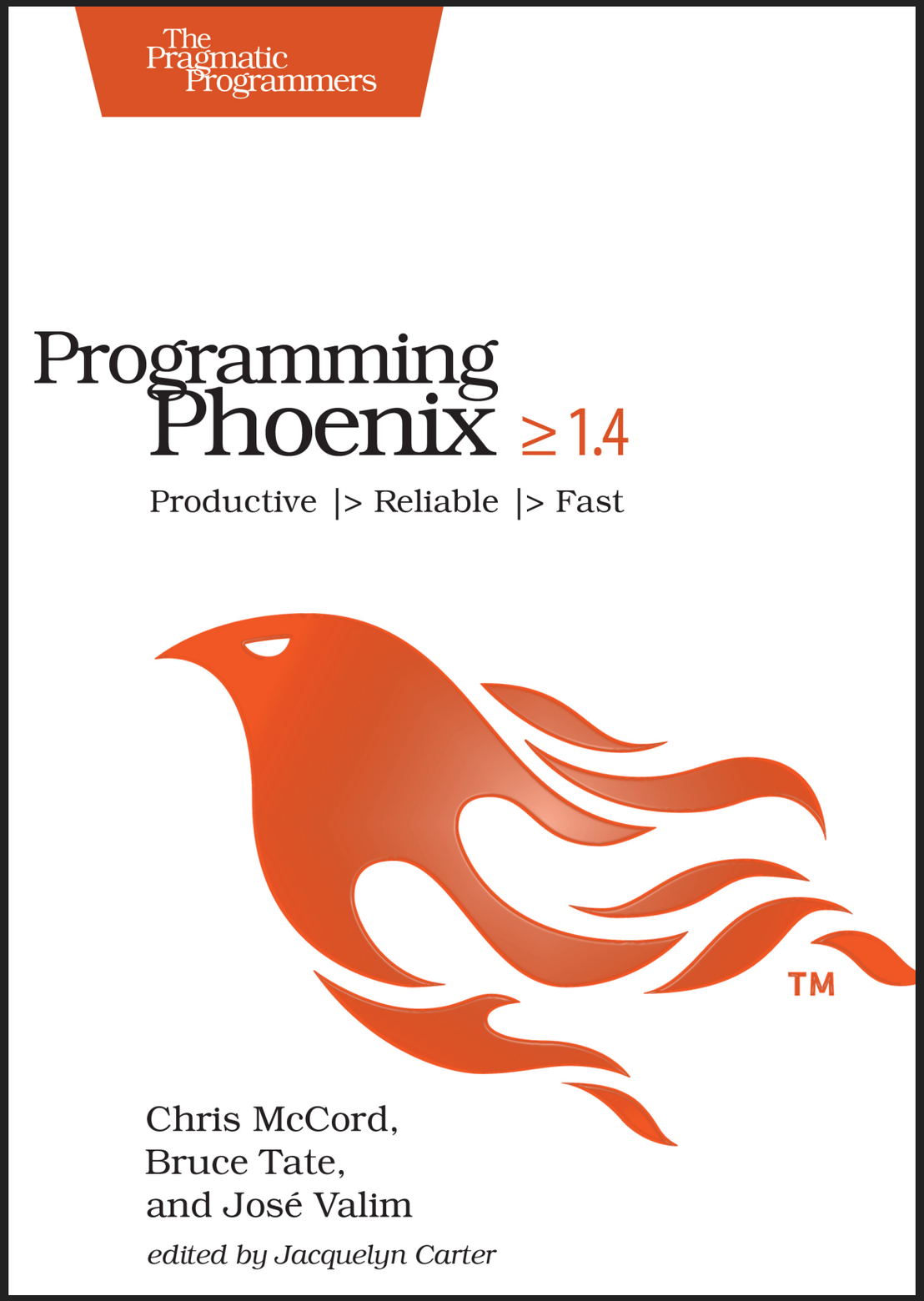
|> (pipe operator) is beautiful

```
network.hidden_layers
  |> Enum.reverse
  |> Enum.each( &(Layer.train(&1)) )

# vs.

reversed = Enum.reverse(network.hidden_layers)
Enum.each(reversed, &(Layer.train(&1))
```

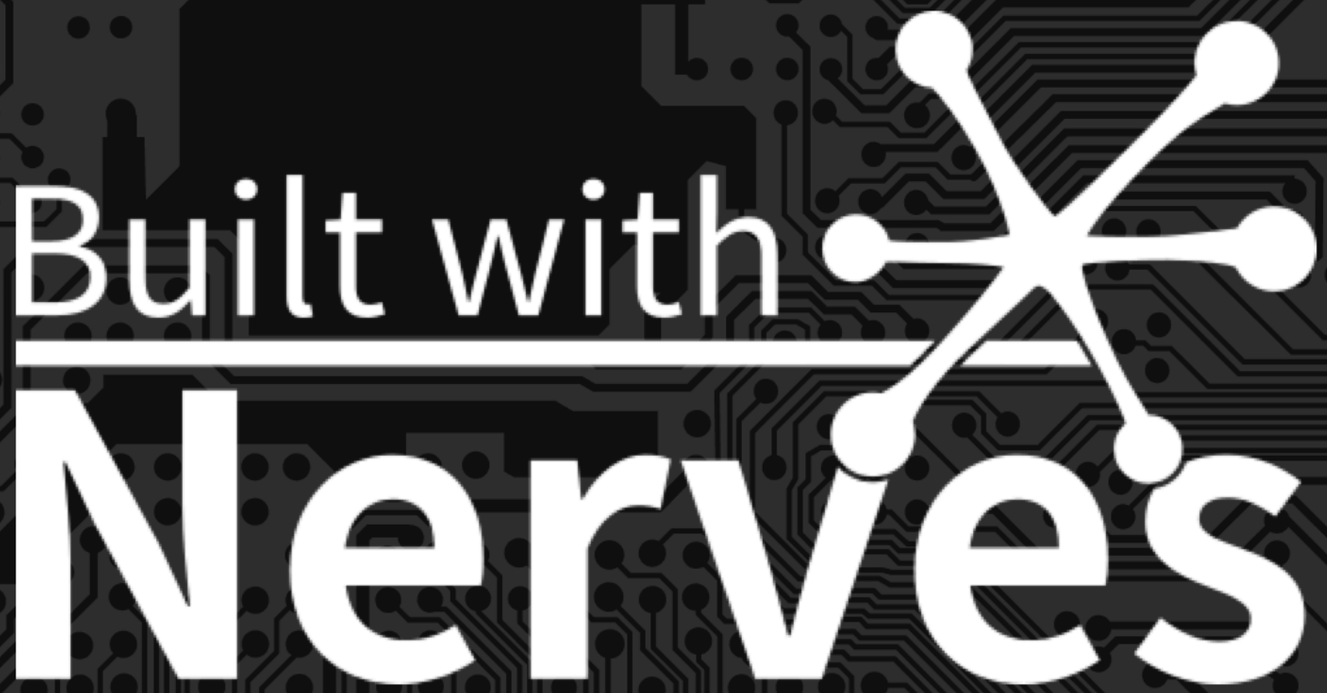
PHOENIX FRAMEWORK



Phoenix LiveView: Interactive, Real-Time Apps. No Need to Write JavaScript.

By: Chris McCord • December 11th, 2018

PHOENIX LIVEVIEW DEMOS



Nerves

Craft and deploy bulletproof embedded software in Elixir

form

your whole application into as as 12MB and have it start in ds by booting a lean cross- led Linux directly to the battle- ned Erlang VM.

Framework

Let Nerves take care of the network, discovery, I/O, firmware updates and more. Focus on what matters and have fun writing robust and maintainable software.

Tooling

Go from "mix new" to running code on your device in minutes. From cross-compilation to remote device access, our tools got you covered.

Join the comm

#nerves channel on Elix
Nerves on Github
Nerves on the Elixir For

Follow @NervesProject
Tweet

Latest News

Nerves Retweeted

Gig City Elixir
@GigCityElixir

NERVES TALKS

- https://nerves-project.org/watch/
  - “Building an artificial Pancreas with Elixir and Nerves”
  - “Keep an eye on the sky with Nerves and Elixir”
  - “Embedded Elixir for Monitoring the Built Environment”
  - “Realtime Vehicle Tracking with Elixir and Phoenix”
  - “Fly Like an Eagle”
  - “Building ‘learn to touch type’ glove with Elixir and Arduino”

introducing scenic

2018 elixir conference

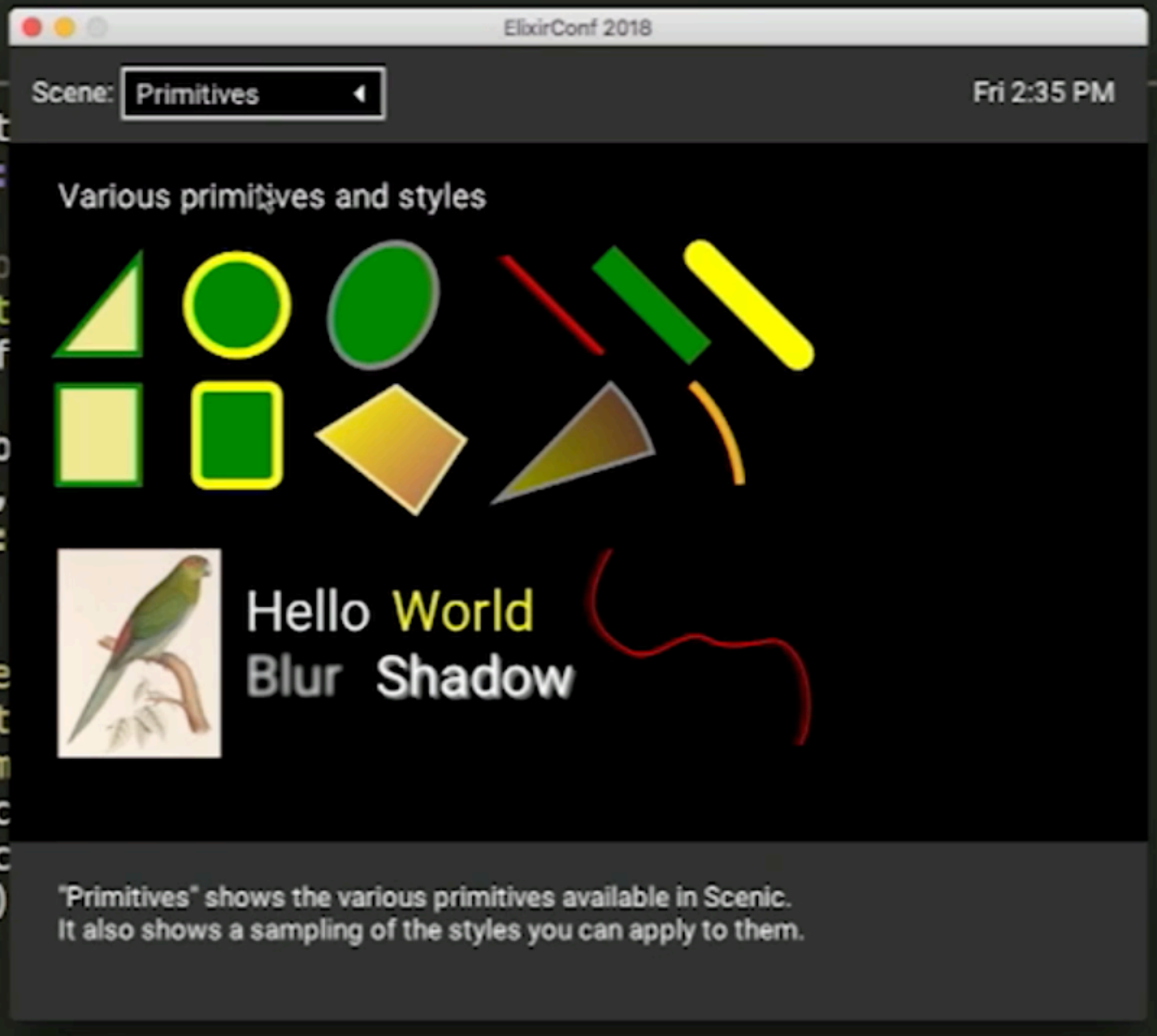
boyd multerer
kry10

```
nit( current
les = opts[:

et the viewp
k, %ViewPort
ViewPort.inf

oh = Graph.b
rect({width,
text("Scene:
dropdown({[
 {"Sensor",
 {"Primitive
 {"Component
 {"Transform
, current_sc
digital_cloc
oush_graph()

k, %{graph:
```




```
ilter_event( {:value_changed, :nav, scene}, _, %{viewport: vp} = state ) when is_atom(scene)
enic.ViewPort.set_root( vp, {scene, nil} )
top, state }
```

TODAY

- Work:
  - Spiked on a real-time **Phoenix** dashboard displaying Trello board info, bug counts, Zoom conference room info, Github PRs
  - **LiveView** app for Zoom conference room and participant information

FUTURE TALK IDEAS (OR TALK TO ME ANYTIME ABOUT):

- Diving deeper into Elixir:
  - Functional Programming
  - Concurrent Programming
  - Fault-tolerant programming
- Deeper into Phoenix
  - Real-time apps
  - LiveView
  - Distributed User Presence

FINISHED.
THANK YOU!

CITATIONS

- https://en.wikipedia.org/wiki/Erlang_(programming_language)
- https://www.erlang.org
- https://elixir-lang.org
- https://www.meetup.com/rubymeetup/events/14908915/
- https://pragprog.com/book/phoenix14/programming-phoenix-1-4
- https://twitter.com/chris_mccord/status/659430661942550528
- https://dockyard.com/blog/2018/12/12/phoenix-liveview-interactive-real-time-apps-no-need-to-write-javascript
- https://nerves-project.org
- https://github.com/boydm/scenic
- https://www.youtube.com/watch?v=1QNxLNMq3Uw