ElixirConfEU and Emp.ex Recap

Josh Price / James Sadler

@joshprice / @freshtonic

Sydney Elixir Meetup, June 2016

ElixirConf.EU

Berlin

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José Valim

What's ahead for Elixir?

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What's ahead for Elixir?

- Elixir 1.3
  - getting close!
  - lots of deprecation warnings to tidy up
  - help still required
  - plenty of warnings for all

with-else

Allows transform of errors

```
with :ok <- validate_strategy(strategy),
     :ok <- validate_restarts(max_restarts),
     :ok <- validate_seconds(max_seconds) do
  {:ok, state}
else
  {:error, message} ->
    {:error, String.upcase(message)}
end
```

mix test --stale

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Mix Escripts

- Added as an alternative to archives
- Run apart from Mix
- Do not depend on the Elixir version installed locally

Mix Escripts

```
$ mix escript.install phoenixframework.org/phoenix
$ phoenix new_app
```

mix .tree

```
$ mix app.tree
$ mix deps.tree
```

MIX_DEBUG=1 mix compile

Compiler tracing

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GenBroker & GenStage R&D

» Parallel Pipelines with Backpressure

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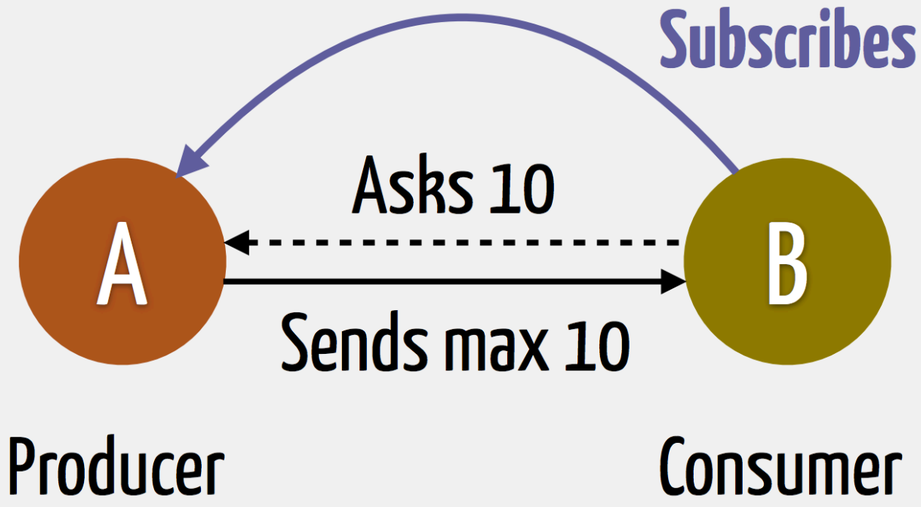
GenStage: Demand-driven



1. consumer subscribes to producer
2. consumer sends demand
3. producer sends events

AST for fun and profit

Rene Föhring

Credo is a learning and guidance tool

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ASTs for fun and profit

- readability
- software design
- refactoring opportunities
- consistency checks
- warnings

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ASTs for fun and profit

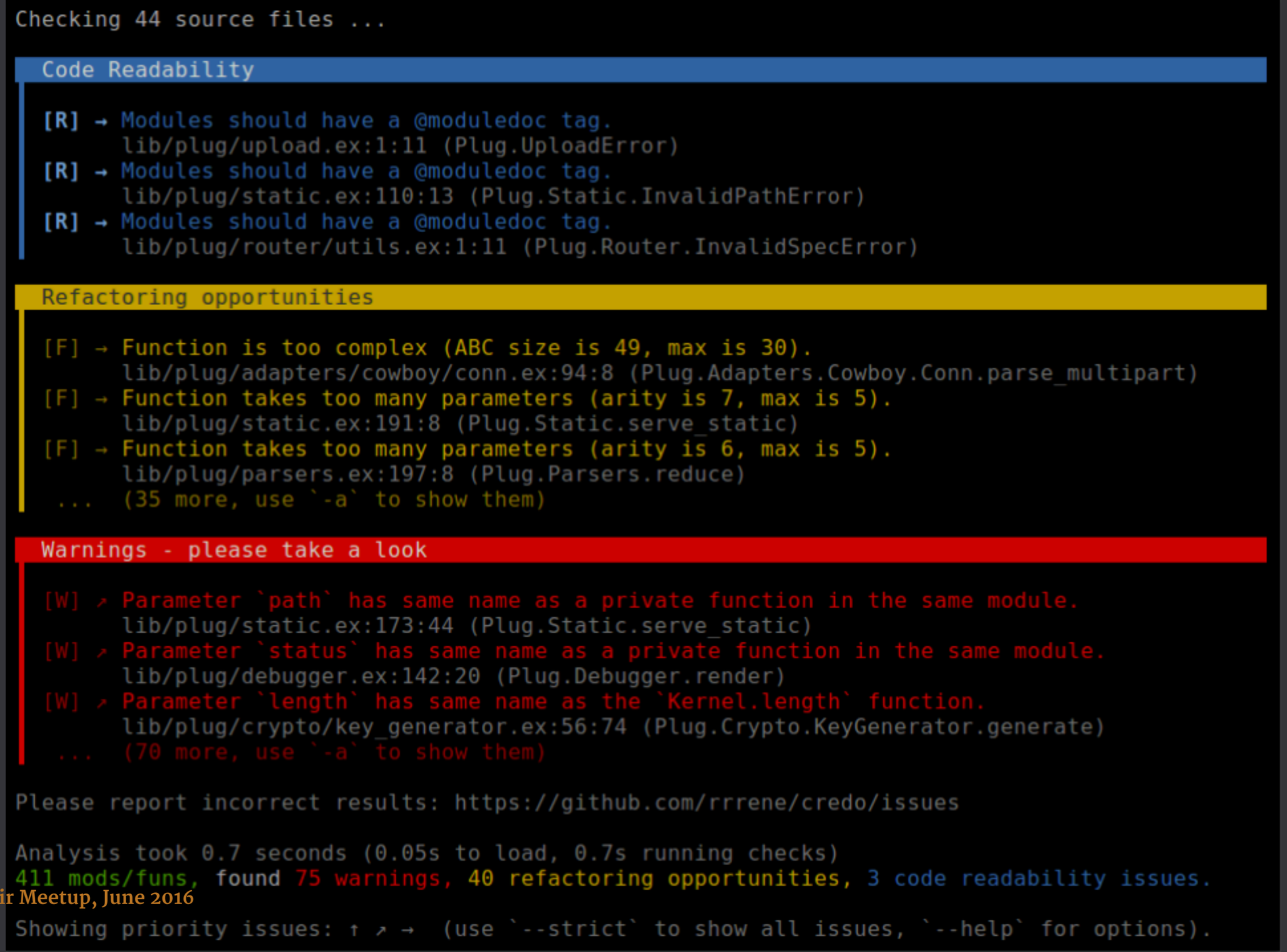
» ASTs are awesome

```
» quote do: 1+2

» {:+, [context: Elixir, import: Kernel], [1, 2]}
```

Install credo

```
# add credo to mix.exs
$ mix deps.get
$ mix credo
```


Checking 44 source files ...
Code Readability
[R] → Modules should have a @moduledoc tag.
lib/plug/upload.ex:1:11 (Plug.UploadError)
[R] → Modules should have a @moduledoc tag.
lib/plug/static.ex:110:13 (Plug.Static.InvalidPathError)
[R] → Modules should have a @moduledoc tag.
lib/plug/router/utils.ex:1:11 (Plug.Router.InvalidSpecError)
Refactoring opportunities
[F] → Function is too complex (ABC size is 49, max is 30).
lib/plug/adapters/cowboy/conn.ex:94:8 (Plug.Adapters.Cowboy.Conn.parse_multipart)
[F] → Function takes too many parameters (arity is 7, max is 5).
lib/plug/static.ex:191:8 (Plug.Static.serve_static)
[F] → Function takes too many parameters (arity is 6, max is 5).
lib/plug/parsers.ex:197:8 (Plug.Parsers.reduce)
... (35 more, use `-a` to show them)
Warnings - please take a look
[W] ↗ Parameter `path` has same name as a private function in the same module.
lib/plug/static.ex:173:44 (Plug.Static.serve_static)
[W] ↗ Parameter `status` has same name as a private function in the same module.
lib/plug/debugger.ex:142:20 (Plug.Debugger.render)
[W] ↗ Parameter `length` has same name as the `Kernel.length` function.
lib/plug/crypto/key_generator.ex:56:74 (Plug.Crypto.KeyGenerator.generate)
... (70 more, use `-a` to show them)
Please report incorrect results: https://github.com/rrrene/credo/issues
Analysis took 0.7 seconds (0.05s to load, 0.7s running checks)
411 mods/funs, found 75 warnings, 40 refactoring opportunities, 3 code readability issues.
Showing priority issues: ↑ ↗ → (use `--strict` to show all issues, `--help` for options).

Scaling Distributed Erlang

Zandra Norman

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Problem

Fully connected nodes don't work

Fixing OTP 19

Issue: Connections stay up
Plan: Automatic disconnects

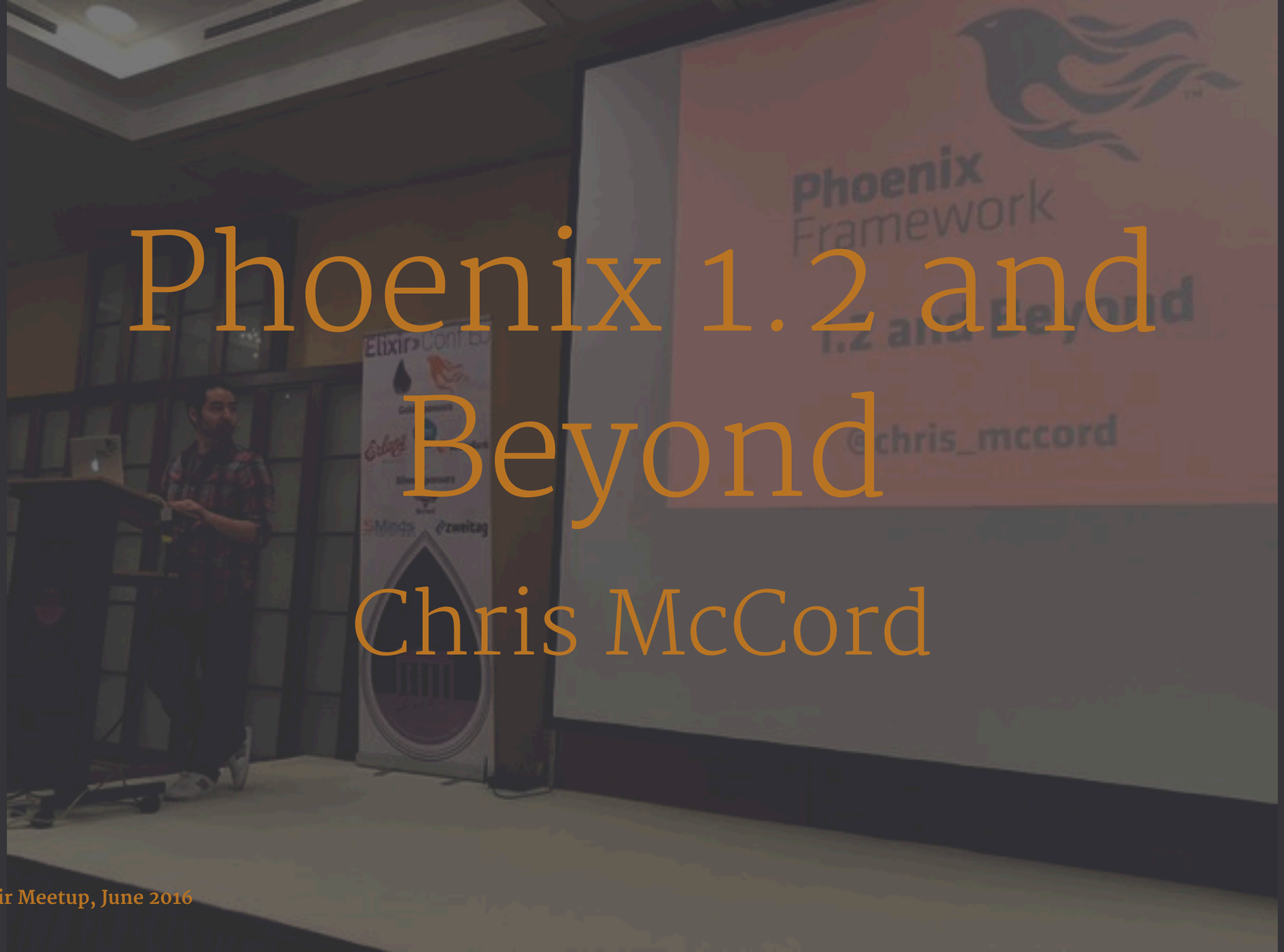
Issue: Too many connections
Plan: Avoid fully connected network

Issue: Expensive when new nodes join
Plan: Make node joins cheaper

Issue: :global chats a lot
Plan: Make :global less chatty

Magic scaling sprinkles

Coming soon



Phoenix 1.2 and Beyond

Chris McCord

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"In this way, for each replica there is a monotonic sequence of states, defined under the lattice partial order, where each subsequent state subsumes the previous state when joined elsewhere."
"Proof. *Trivial*, given the associativity, commutativity, and idempotence of the join operation in any join-semilattice."
http://gsd.di.uminho.pt/members/cbm/ps/delta-crdt-draft16may2014.pdf
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zweitag

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GraphQL shoutout!

(Yay)

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Three Games
Roope Kangas

- Oops! we left our MMORPG running
- For 3 months
- Never noticed
- No errors, 1000s of users

Journey to 2M connections

Garry Rennie

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ulimit -n 2000000

Phoenix and Riak Core

Ben Tyler

» Riak core implements Dynamo (Amazon)

» Implement riak core genserver

» Rebalance data

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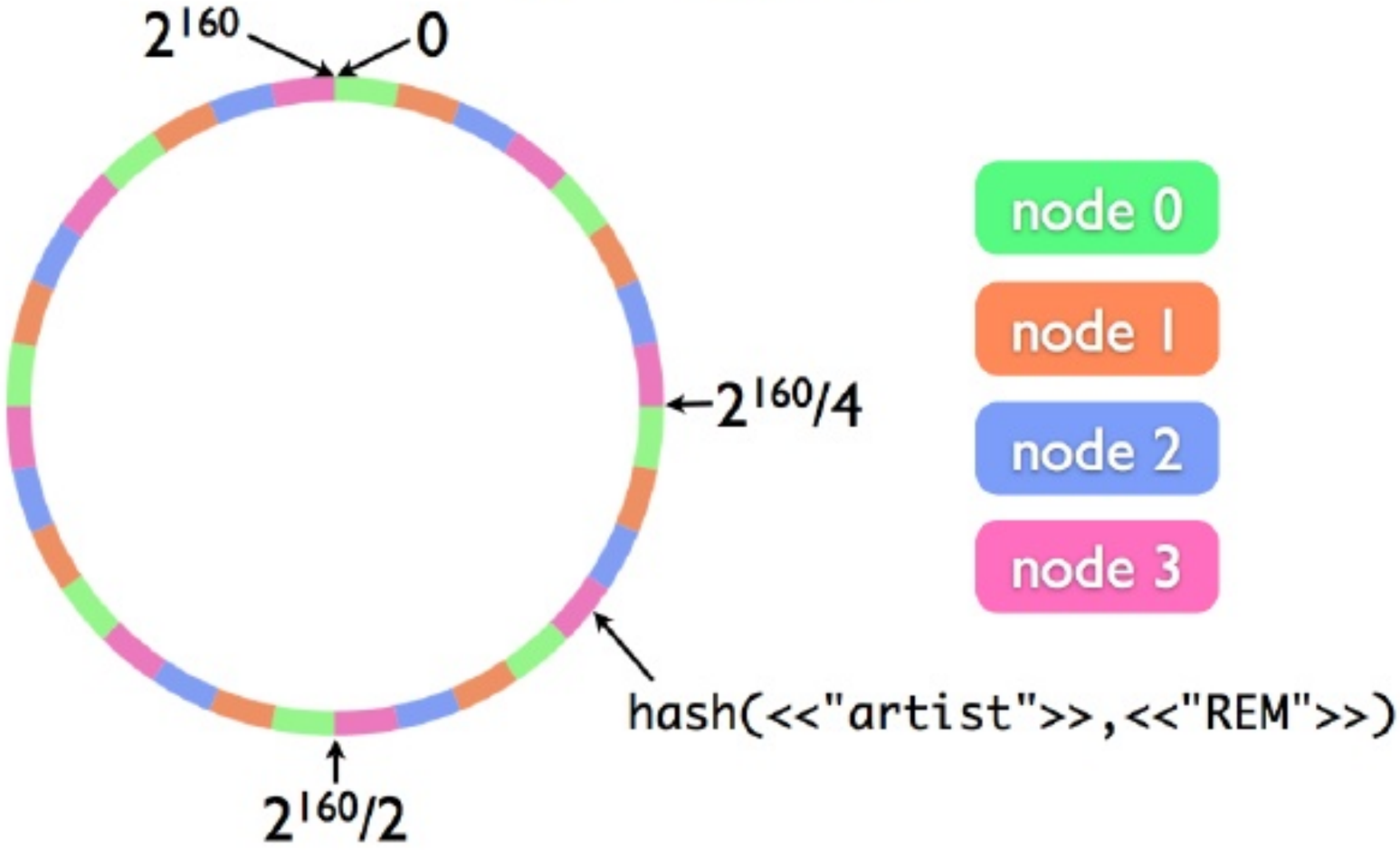
N value



Phoenix is not your app

- Build your app first
  - no HTTP interface
- Include your (micro)app(s) as deps in Phoenix

Josh Price
@joshprice

"Who has experienced a Rails monolith?" Entire room raises their hands #elixirconfeu

RETWEETS 15 LIKES 20

12:31 AM - 12 May 2016

Emp.ex
Empire State Elixir Conf

New York City

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Jazz Hands

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The Climb

Experiencing the Rise of Elixir from the Inside

Bruce Tate

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The Climb

- Lots of work went into Elixir
- Jose made several attempts
- Then discovered Erlang
- BOOM!
- Inspirational feel good talk
- Elixir is the future

Real World Elixir Deployment

Pete Gamache

- Using EXRM for zero downtime deployments is hard
- Lot's of war stories
- Use edeliver which makes it easier

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A Journey To The Center Of The BEAM

Brian Mitchell

- Thrilling intense ride through all of the compilation steps
- I didn't understand most of this
- Explained some weird things deep in stacktraces
- Lot's of stuff happens when you compile!

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CodeDeploy

Monica Hirst

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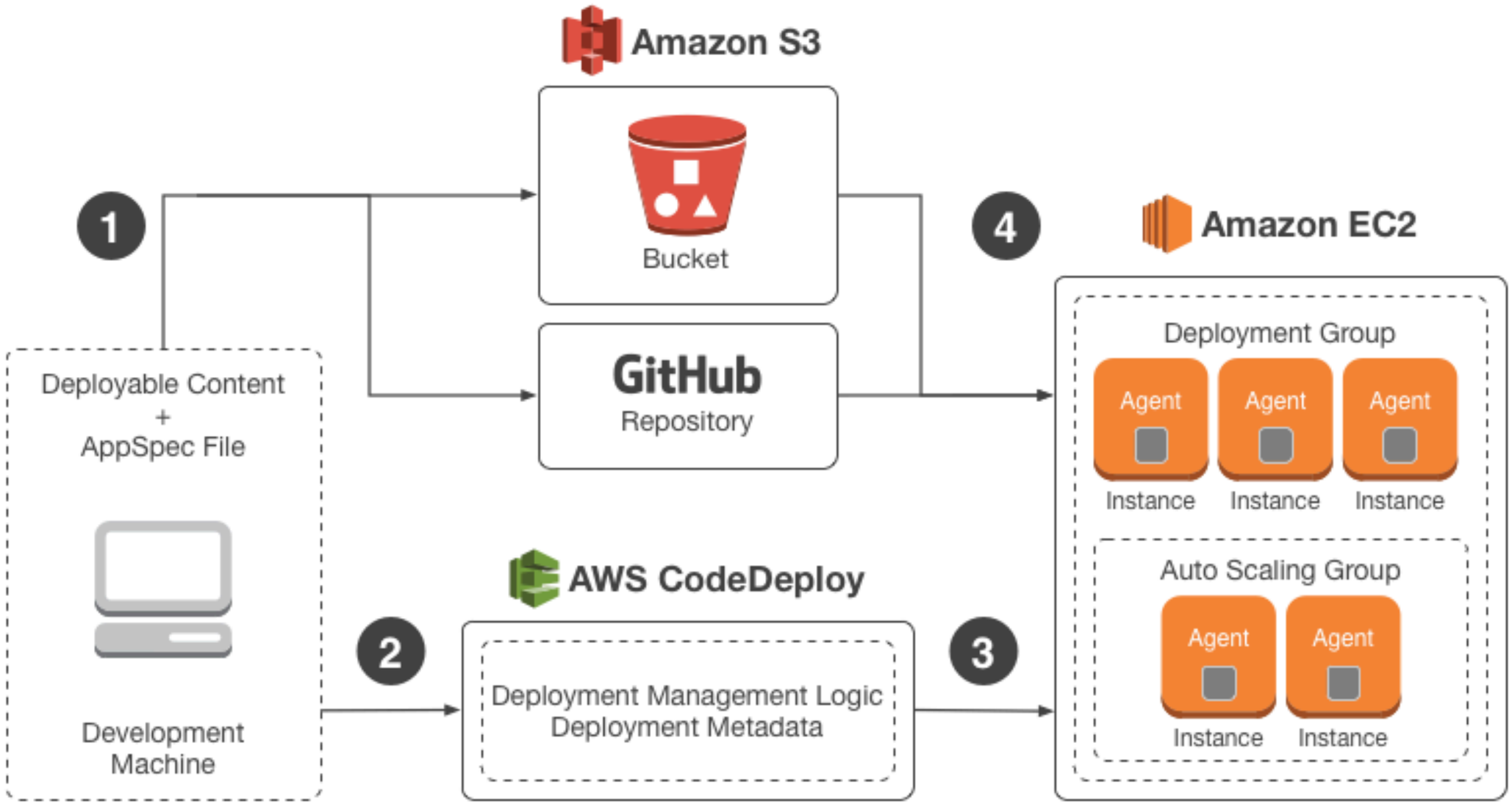
Overview of a Deployment

The following diagram illustrates the flow of a typical AWS CodeDeploy deployment:



CodeDeploy Resources

http://docs.aws.amazon.com/codedeploy/latest/userguide/welcome.html

Micropatterns: Learning to Reach Quickly for the Right Tool

Cameron Price

- Forget GoF patterns they don't really make sense in FP
- Recursion! learn to use it, don't be afraid
- Practice small exercises to improve (exercism.io, etc)

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Concurrency + Distribution = Scalability + Availability a journey architecting Systems on BEAM

Francesco Cesarini

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Dark Magic

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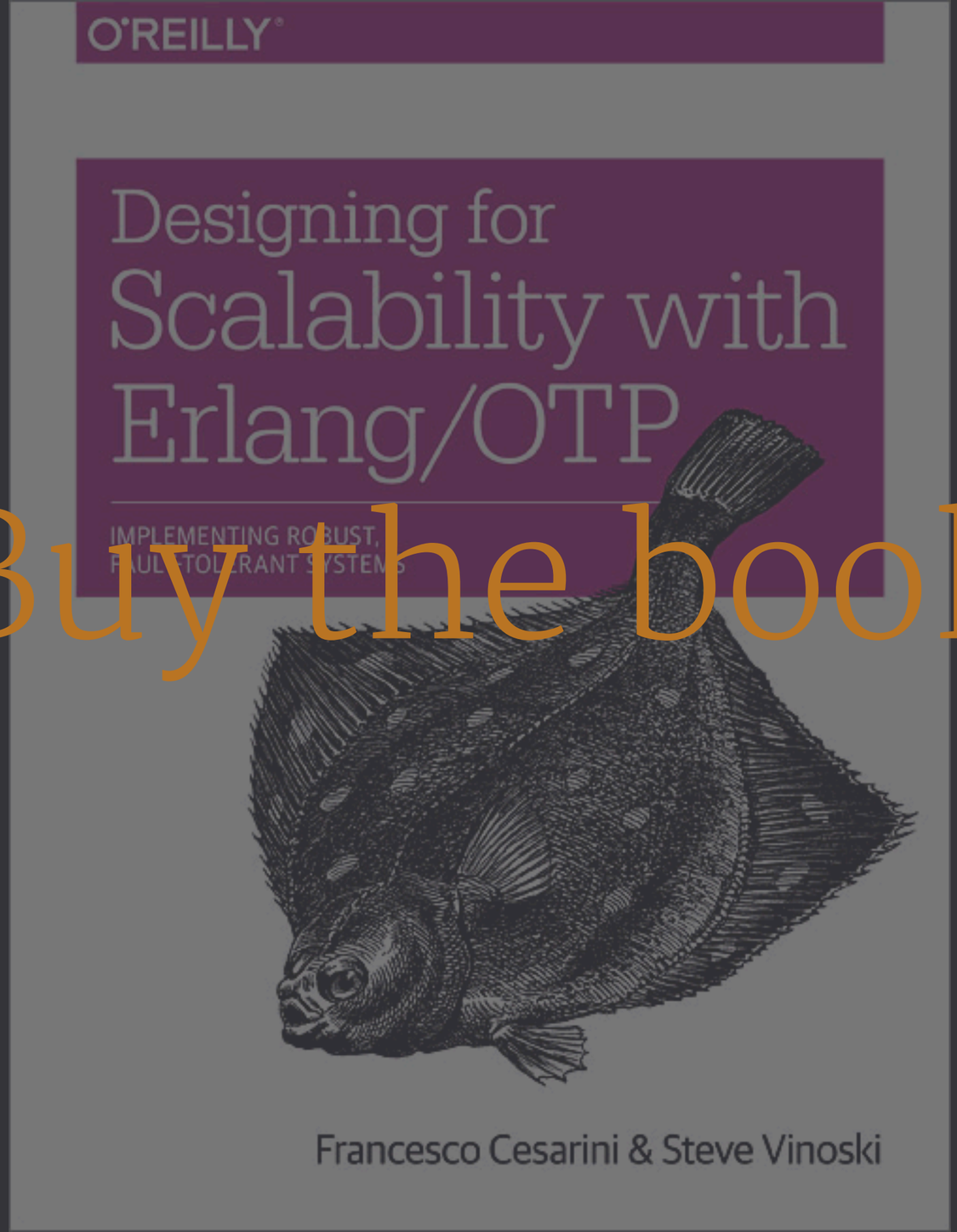
Dark Magic

» OTP doesn't give you Scalability and Availability for free

» Need to carefully design your system

» Lots of patterns



Buy the book

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Resources

- ElixirConf.EU
  - http://www.elixirconf.eu/elixirconf2016
  - Talks and slides up
- Empex NYC
  - http://empex.co/
  - Talks and slides soon?

`mix ecto`

» now shows ecto tasks

» https://github.com/elixir-lang/ecto/pull/1442

Could be generalised

```
» mix <string>

» mix help --search "<string>."
```

Project Idea

```
>> mix deps.tree --dot
```

```
>> mix apps.tree --dot
```

I'm halfway through a solution if someone wants to help out

Some Other Project Ideas

Improve Ecto README

» instructions could use a little work

» not as helpful for beginners as could be

Dialyzer with Credo-style reports

- Problem: Dialyzer v Dialyxir
  - Funky, hard to read error messages
- Solution: Credo reports for Dialyzer
- Inspiration: Elm error messages

Thanks!