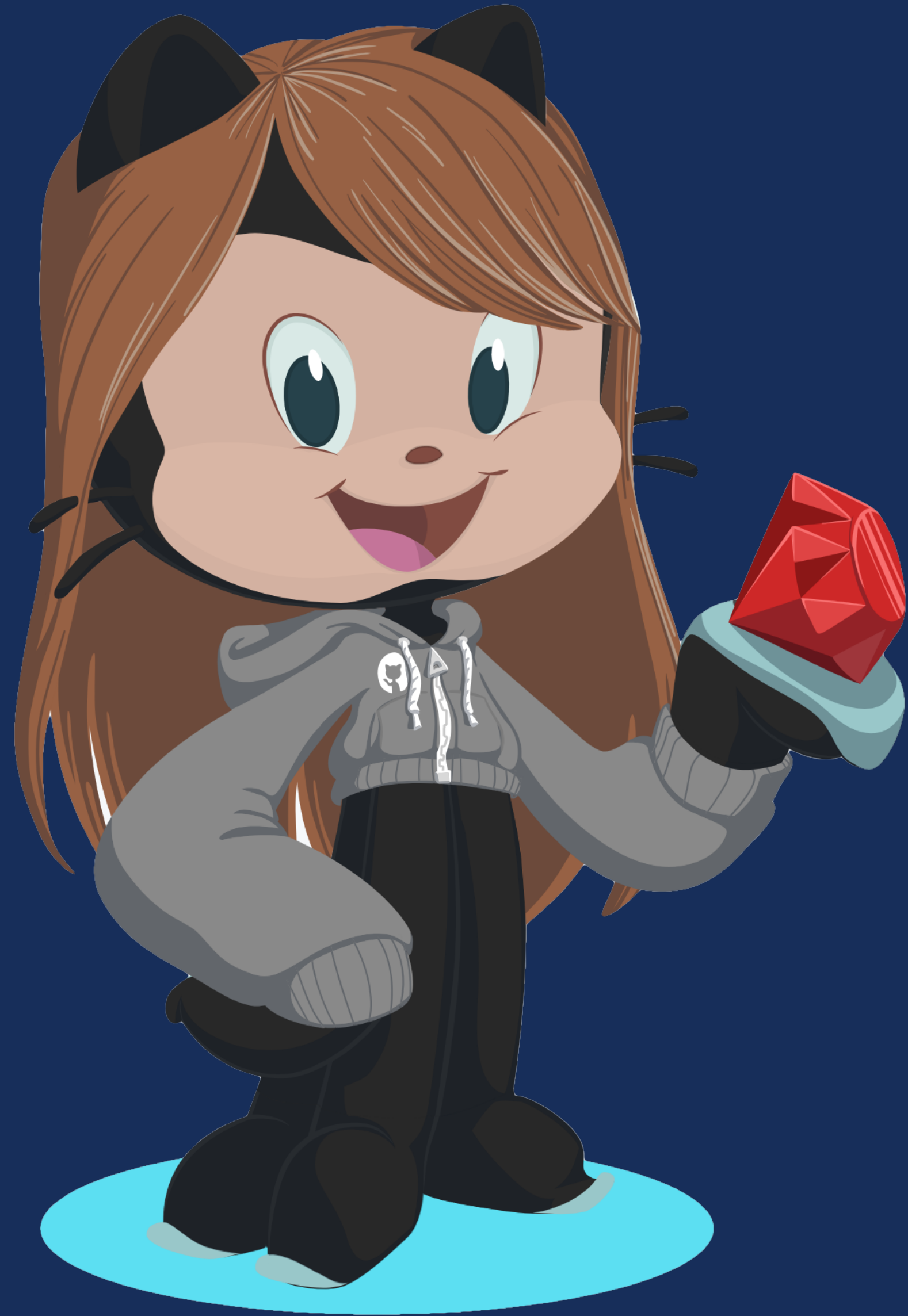


The Past, Present, & Future of RAILS at GitHub

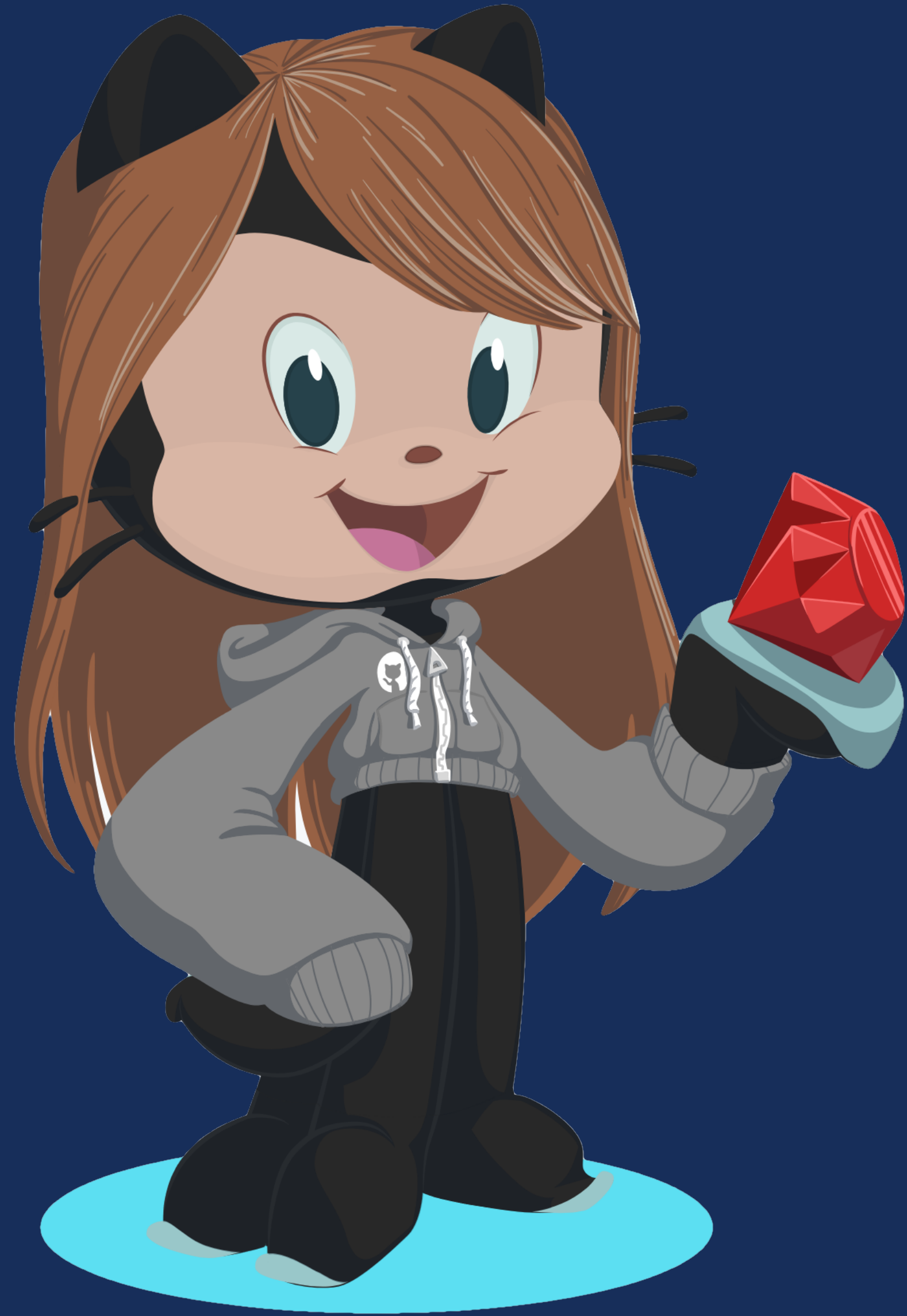


Eileen M. Uchitelle

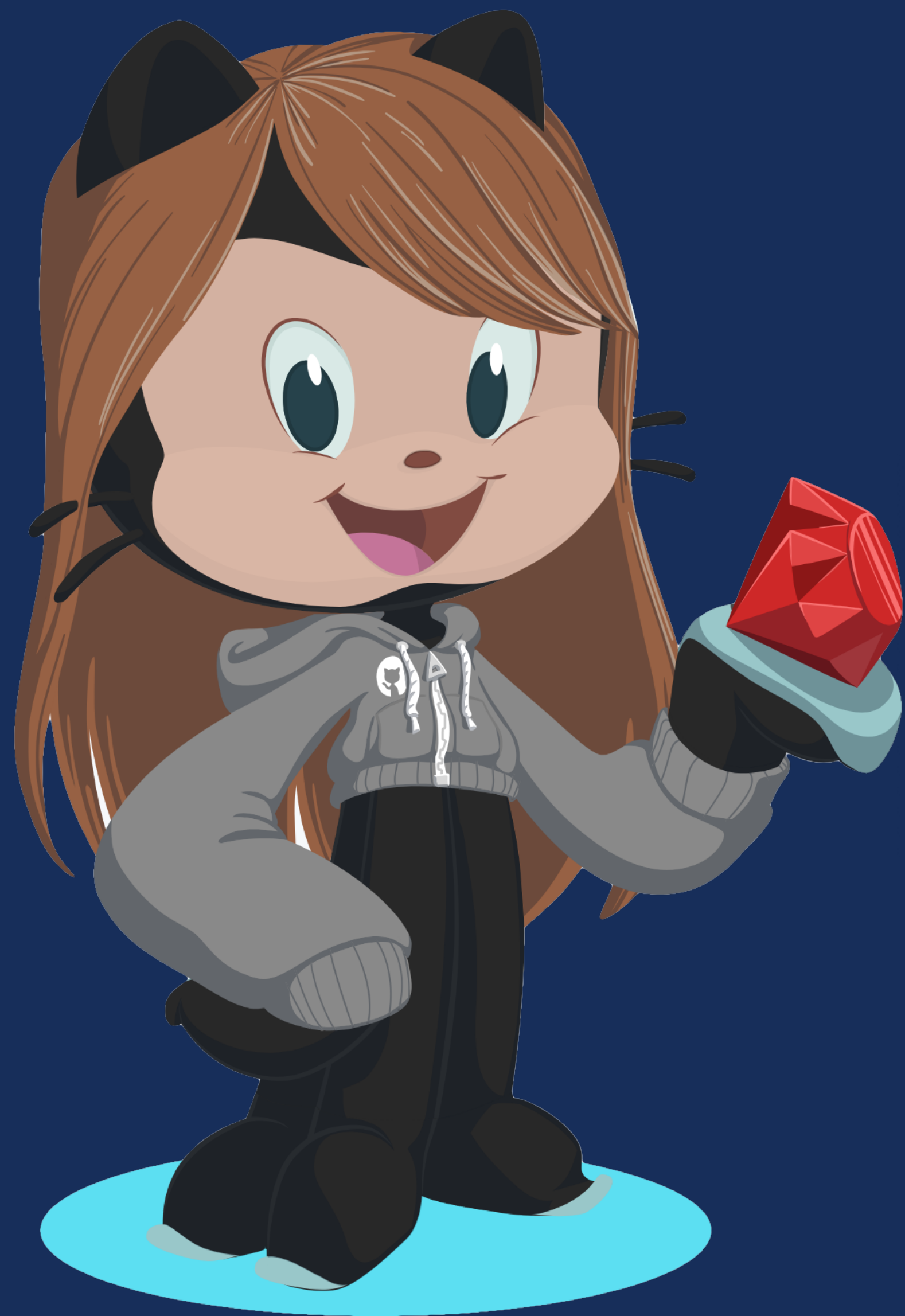


@eileencodes

eileencodes.com



**I'm a Staff
Engineer at
GitHub!**



I'm on the



Core team!

Upgrading at GitHub



The Past, Present, & Future of RAILS at GitHub



2004

**Rails is
born**



2004



-DHH

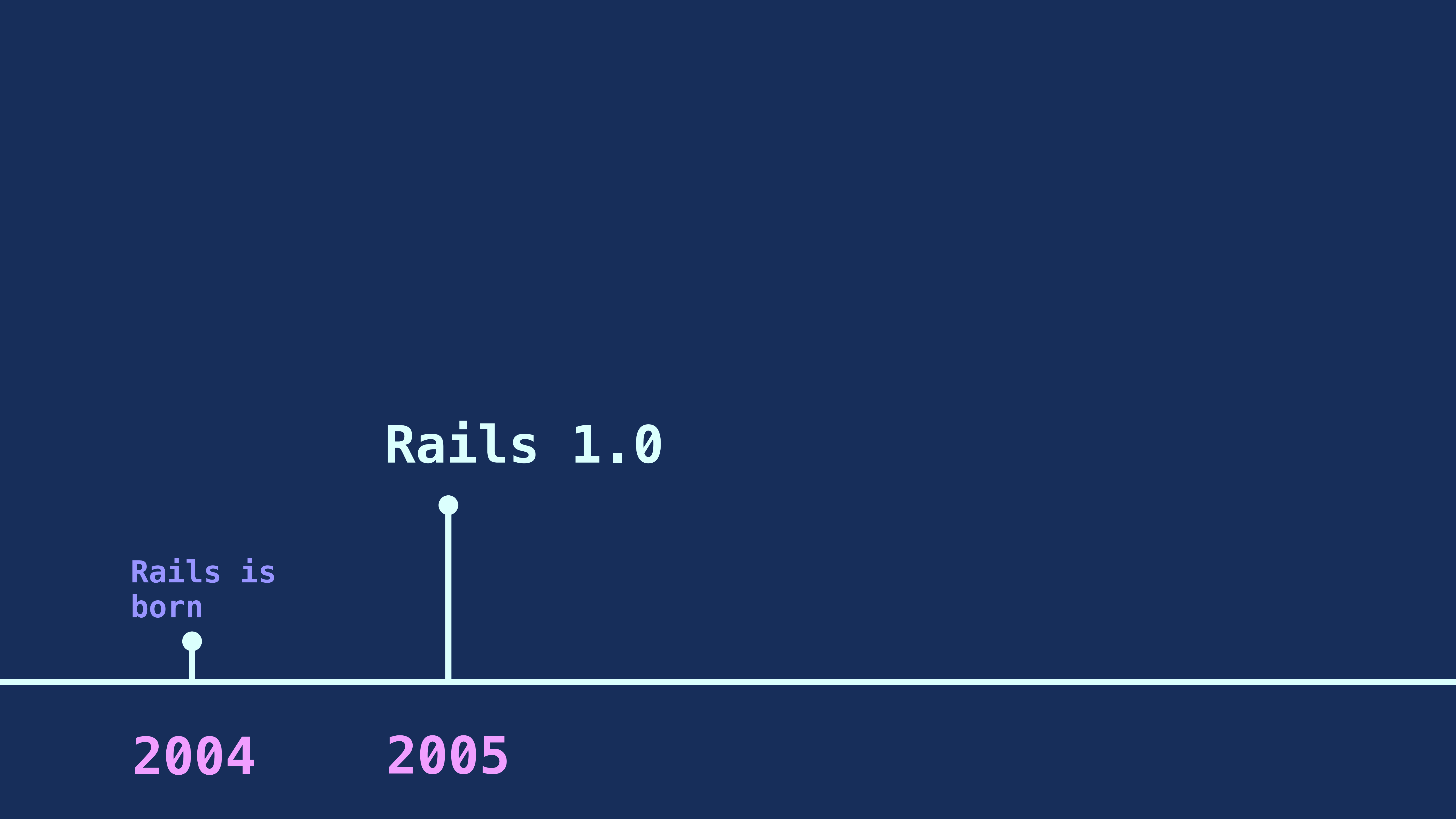
**“Frameworks
are extracted,
not built.”**

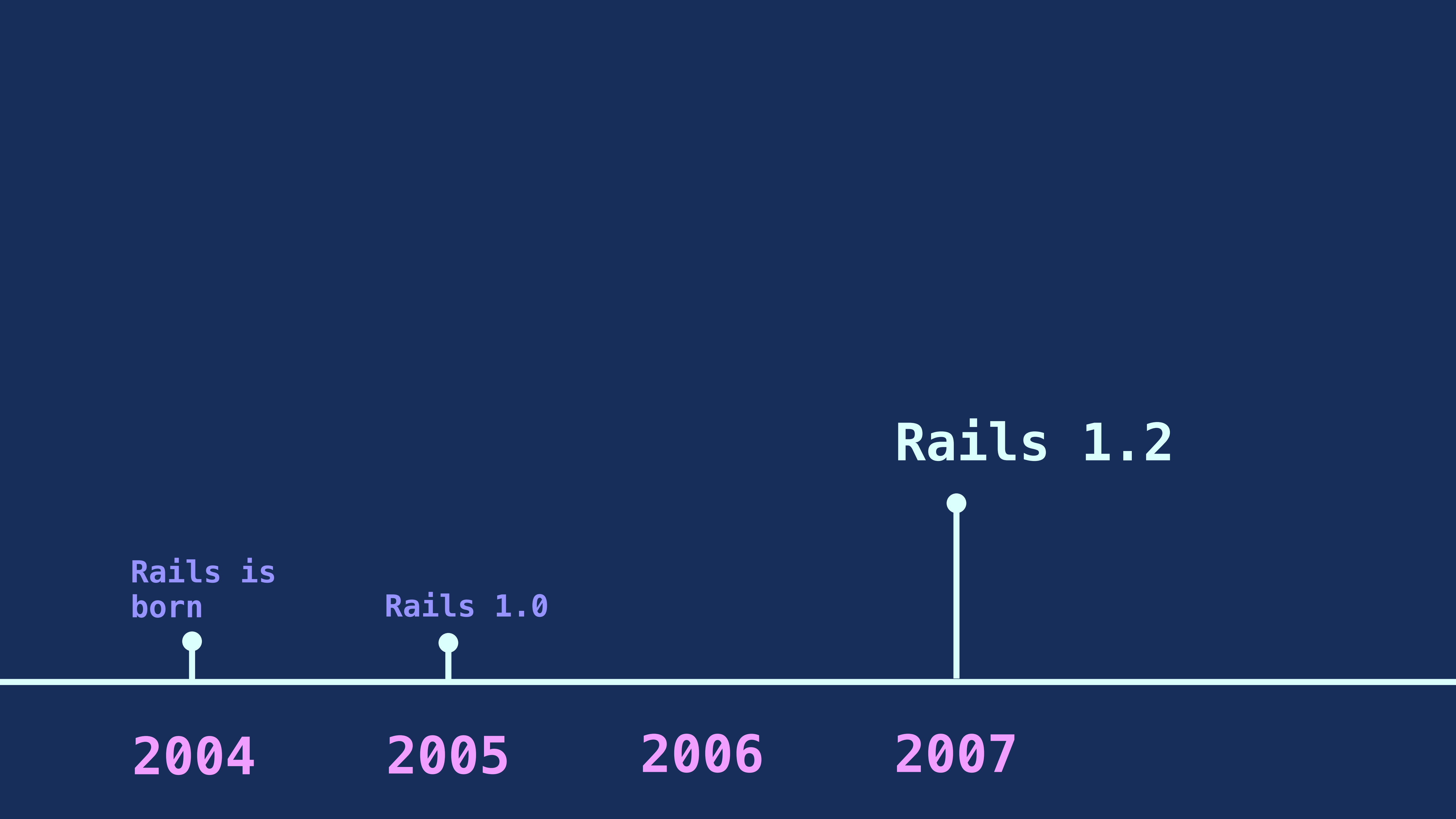
Rails is
born

2004

Rails 1.0

2005





Rails is
born

Rails 1.0

Rails 1.2

2004

2005

2006

2007

**I built
a thing!**



I'm in!

**I built
a thing!**



2004

Rails is
born

2005

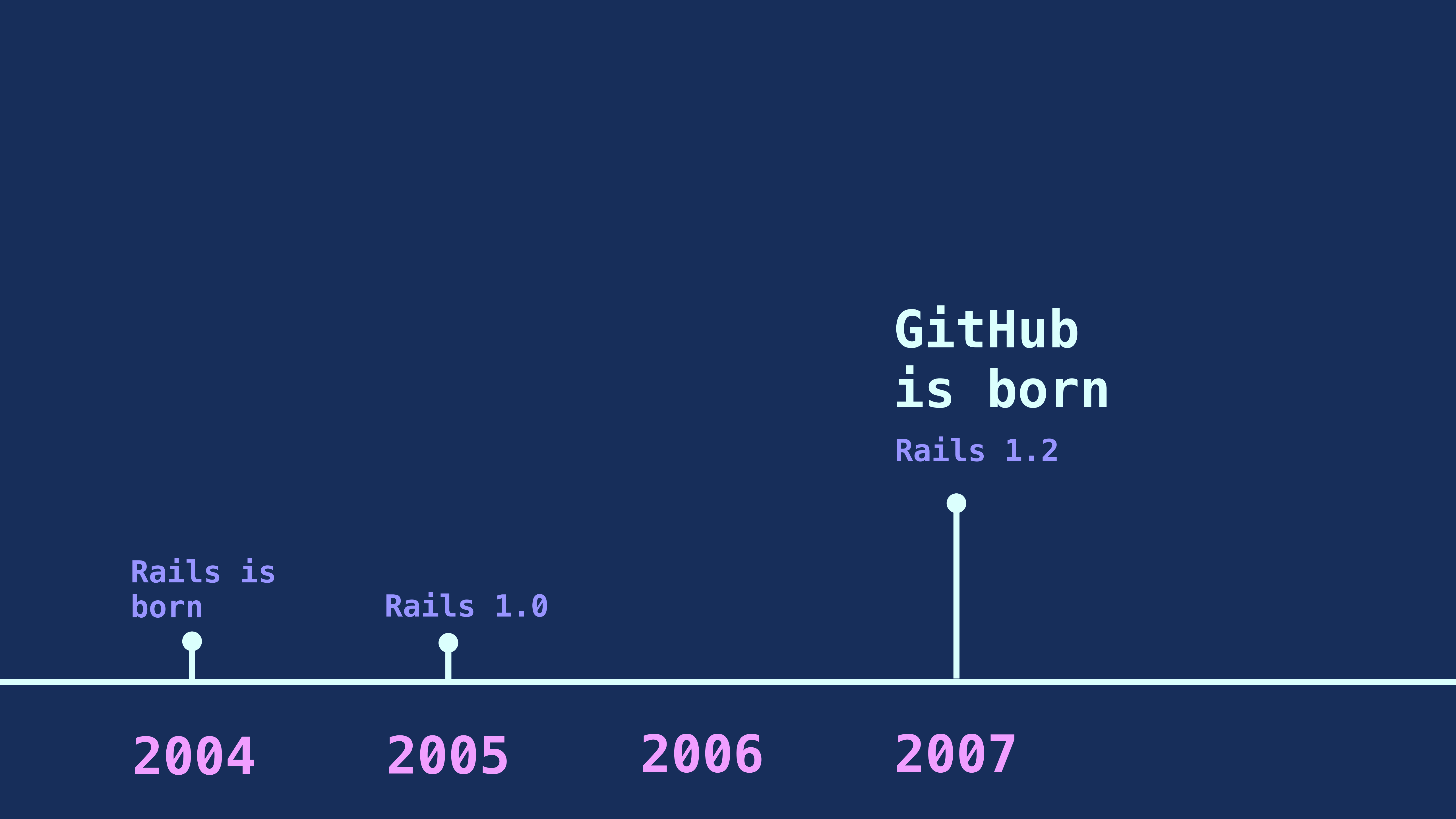
Rails 1.0

2006

2007

GitHub
is born

Rails 1.2



Rails is
born

Rails 1.0

GitHub
is born
Rails 1.2

GitHub
launches

2004

2005

2006

2007

2008

Rails is
born

Rails 1.0

GitHub
is born
Rails 1.2

Rails
joins
GitHub
launches

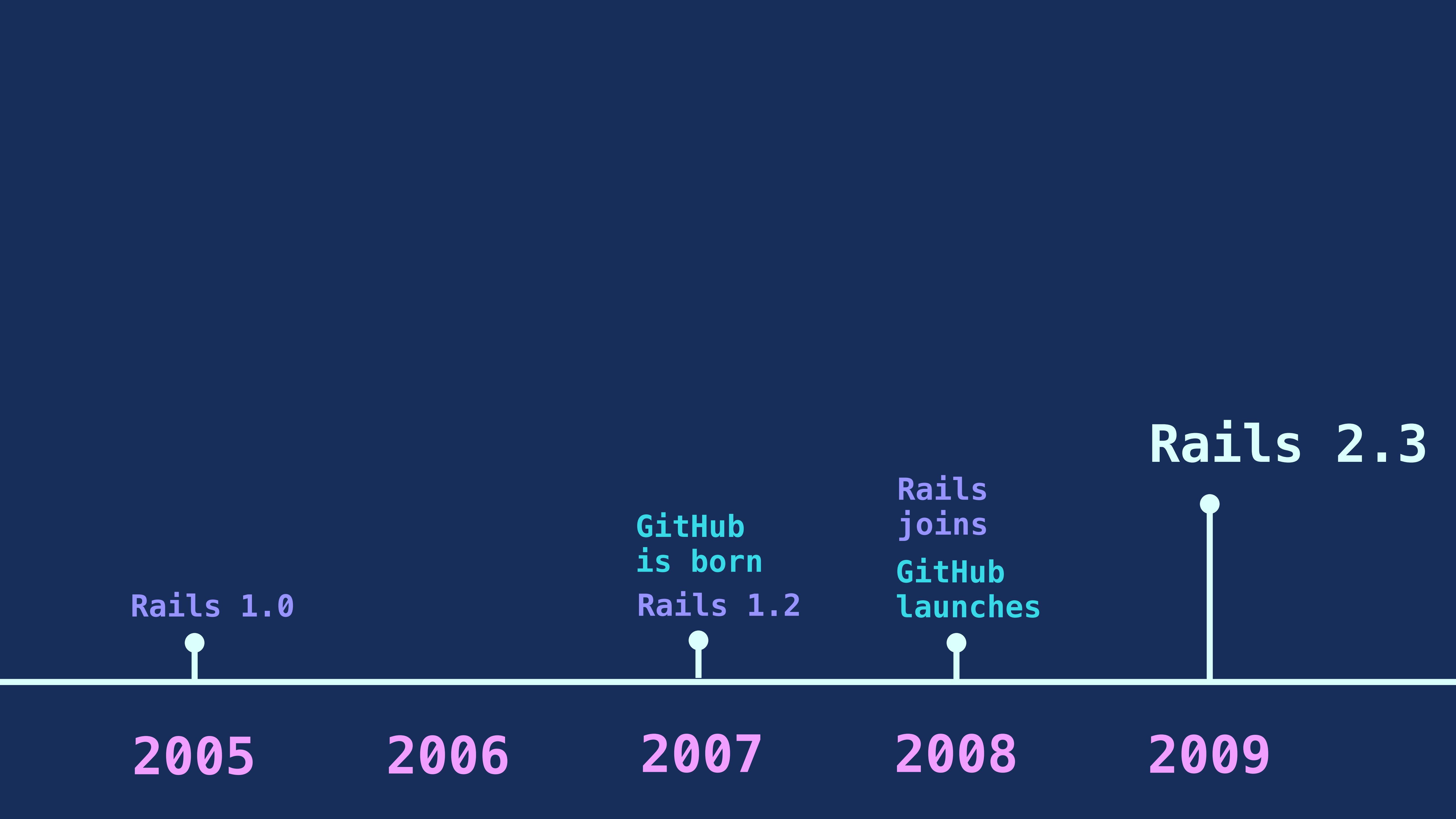
2004

2005

2006

2007

2008



2005

2006

2007

2008

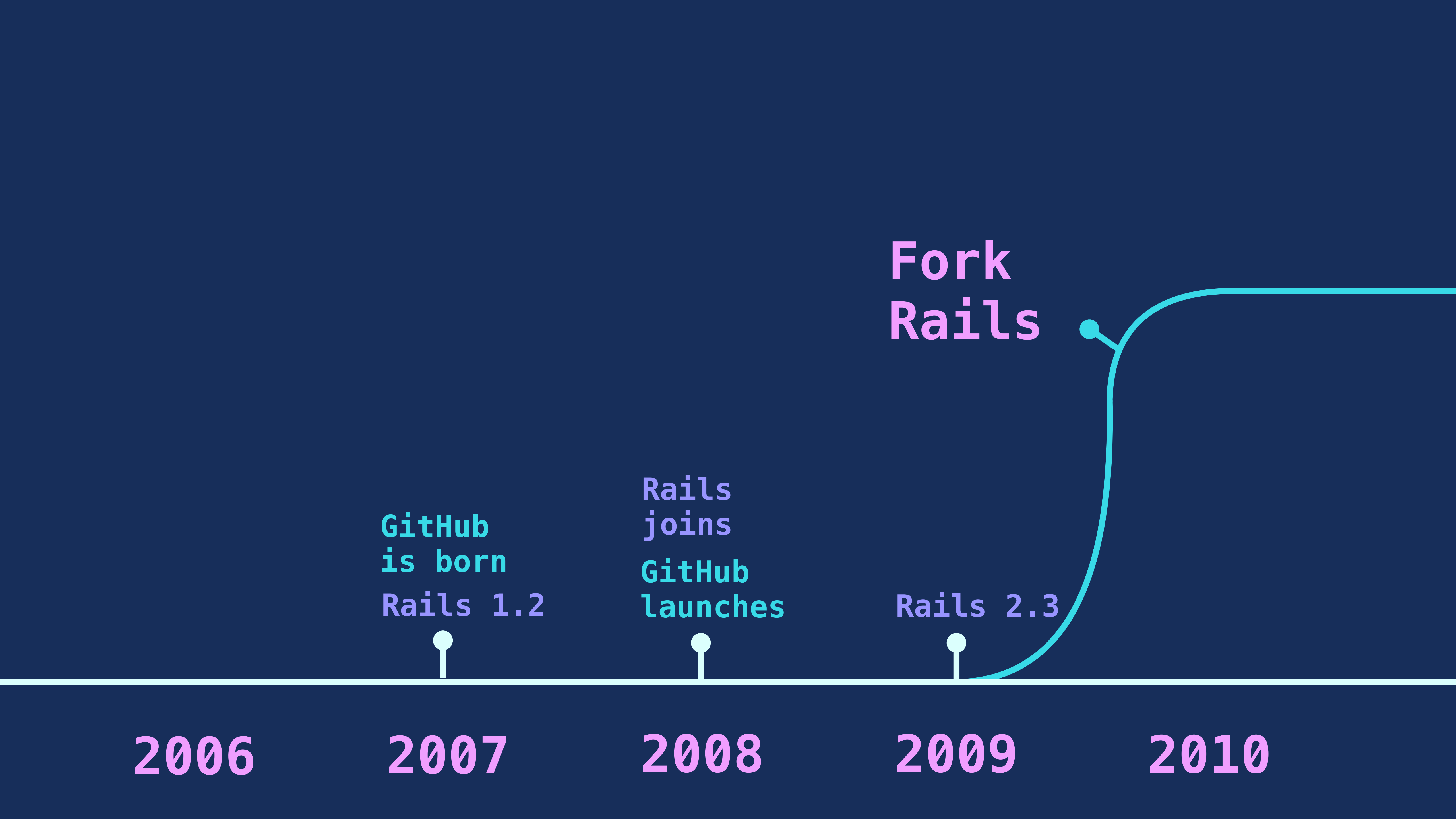
2009

Rails 1.0

GitHub
is born
Rails 1.2

Rails
joins
GitHub
launches

Rails 2.3



2006

2007

2008

2009

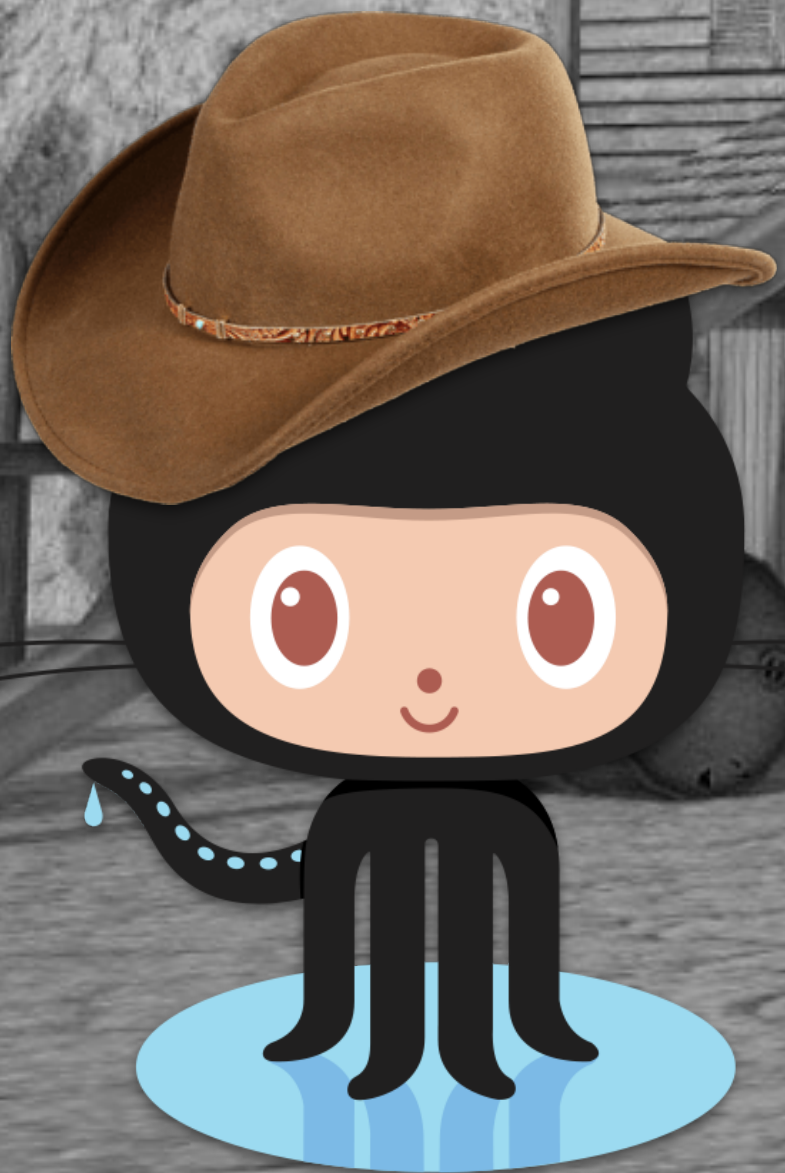
2010

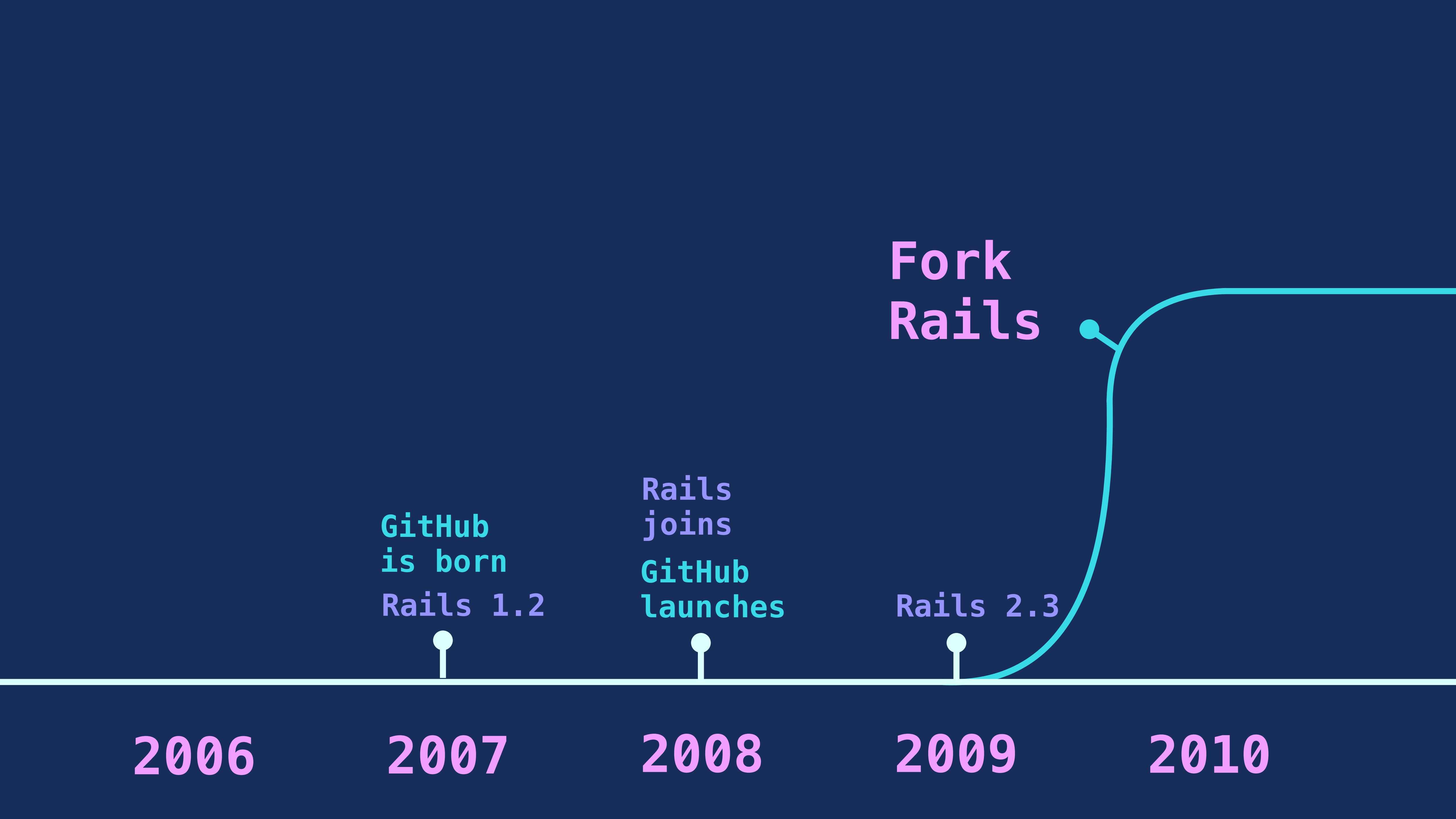
GitHub
is born
Rails 1.2

Rails
joins
GitHub
launches

Rails 2.3

Fork
Rails





2006

2007

2008

2009

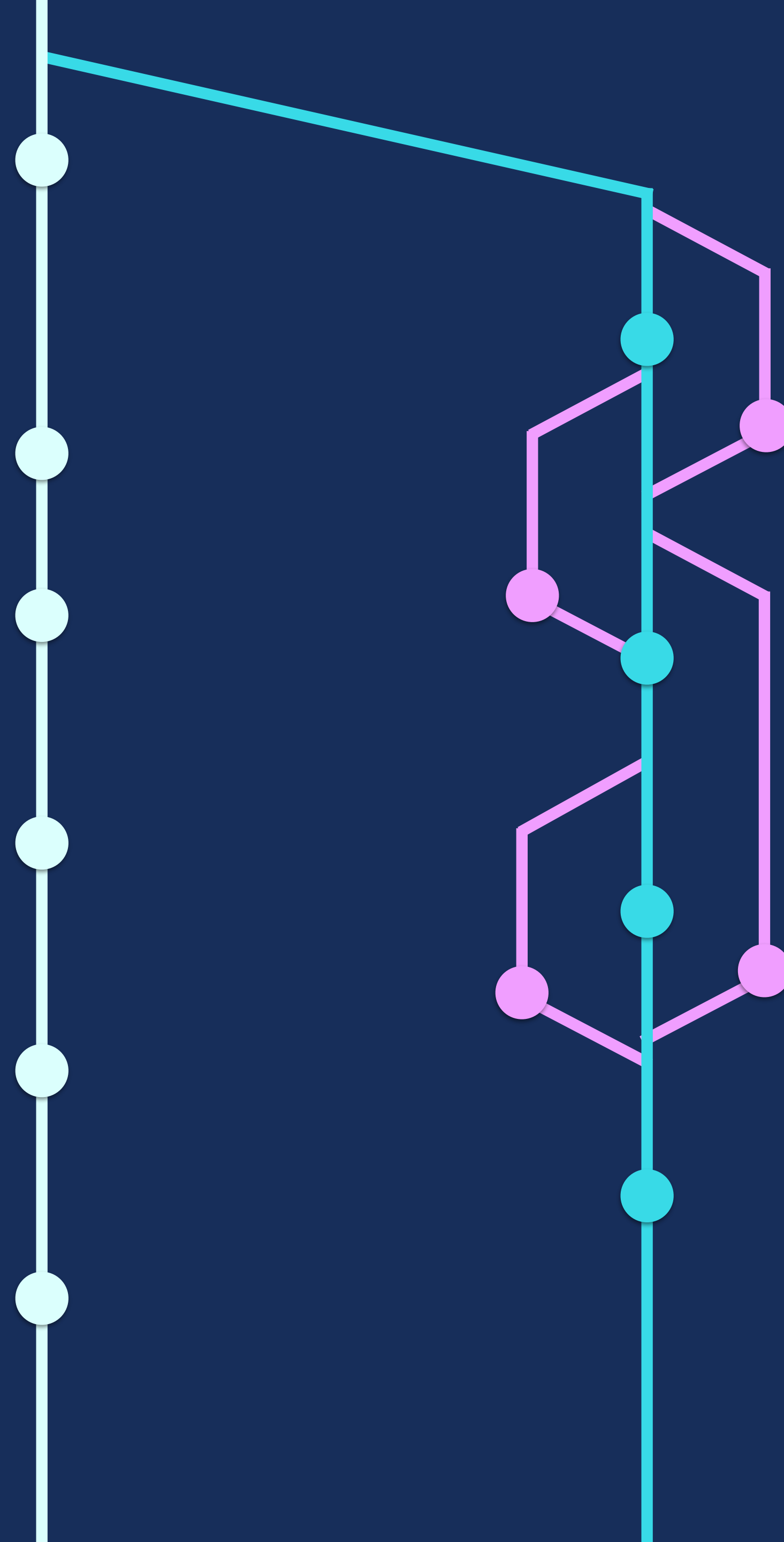
2010

GitHub
is born
Rails 1.2

Rails
joins
GitHub
launches

Rails 2.3

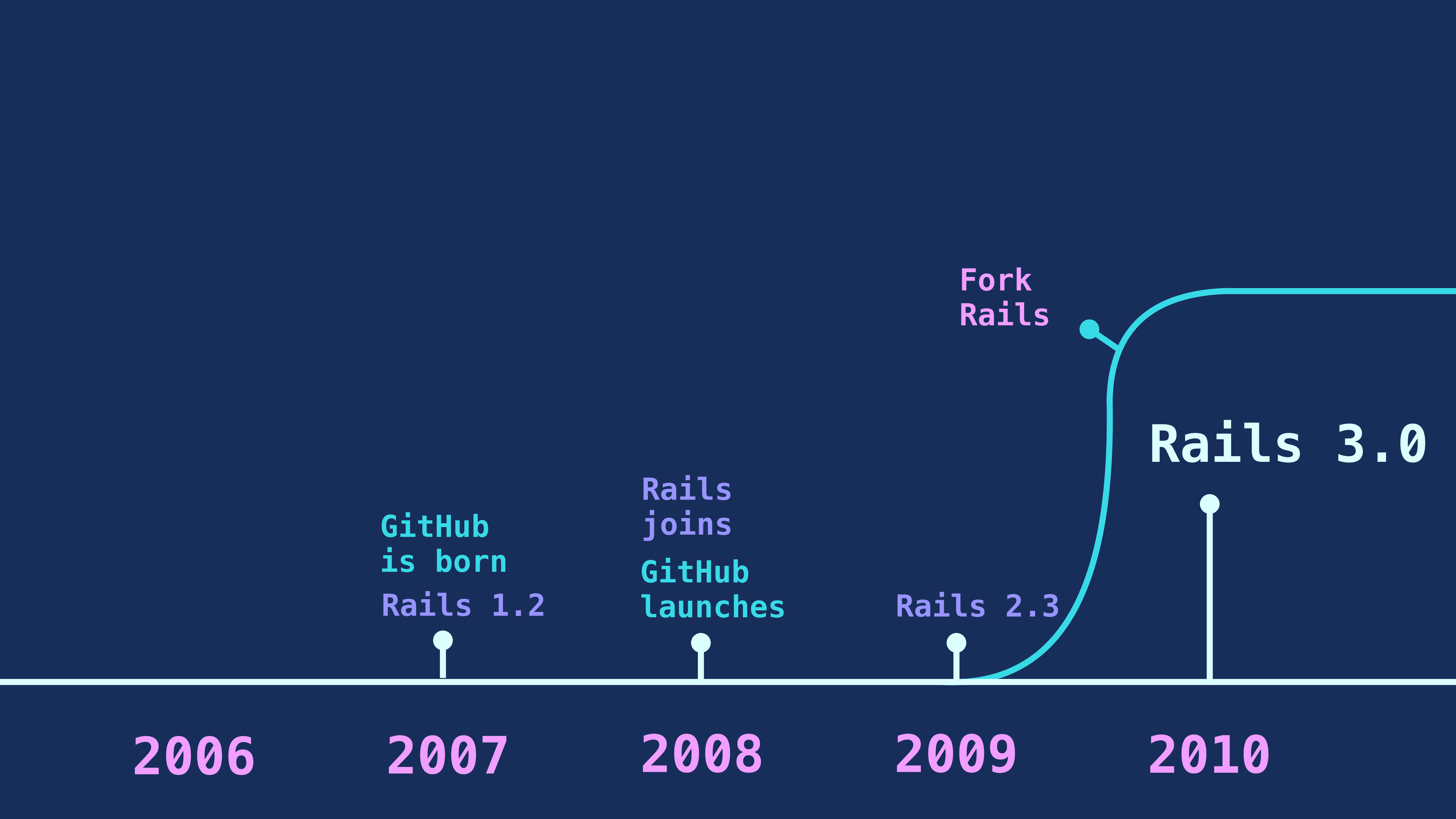
Fork
Rails



GitHub
fork



GitHub
fork



2006

2007

2008

2009

2010

GitHub
is born
Rails 1.2

Rails
joins
GitHub
launches

Rails 2.3

Fork
Rails

Rails 3.0

Rails 3 Performance - Not Good Enough | Hacker News

<https://news.ycombinator.com/item?id=2549240> ▼

May 15, 2011 - But there are plenty more - reviewing rails gems for **performance** is There clearly still are **performance problems** in Rails 3.0.x that aren't ...

Severe performance issue in Rails 3.0.x PostgreSQLAdapter#select ...

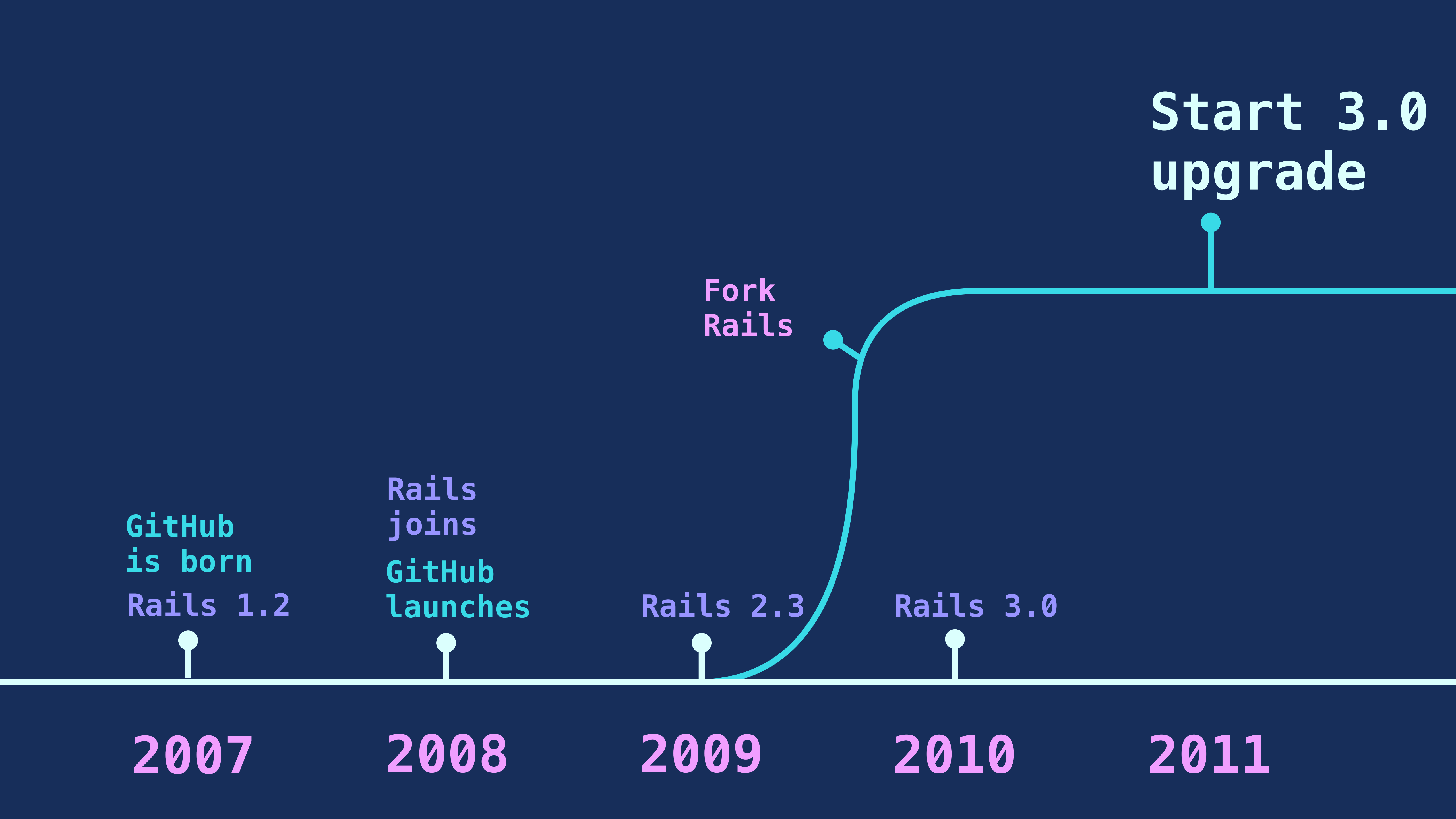
<https://github.com/rails/rails/issues/485> ▼

May 10, 2011 - The following is partially related to #398 as it also covers a **performance issue** in PostgreSQLAdapter related to a huge amount of ...

Huge performance hit in Rails (3.0.20) from ruby 1.9.3p429 to 2p247 ...

https://github.com/banister/binding_of_caller/issues/37 ▼

Huge **performance hit** in Rails (3.0.20) from ruby 1.9.3p429 to 2p247 #37. Closed. gamov opened this **Issue** on Nov 8, 2013 · 6 comments ...



GitHub
is born
Rails 1.2

Rails
joins
GitHub
launches

Rails 2.3

Rails 3.0

Fork
Rails

Start 3.0
upgrade

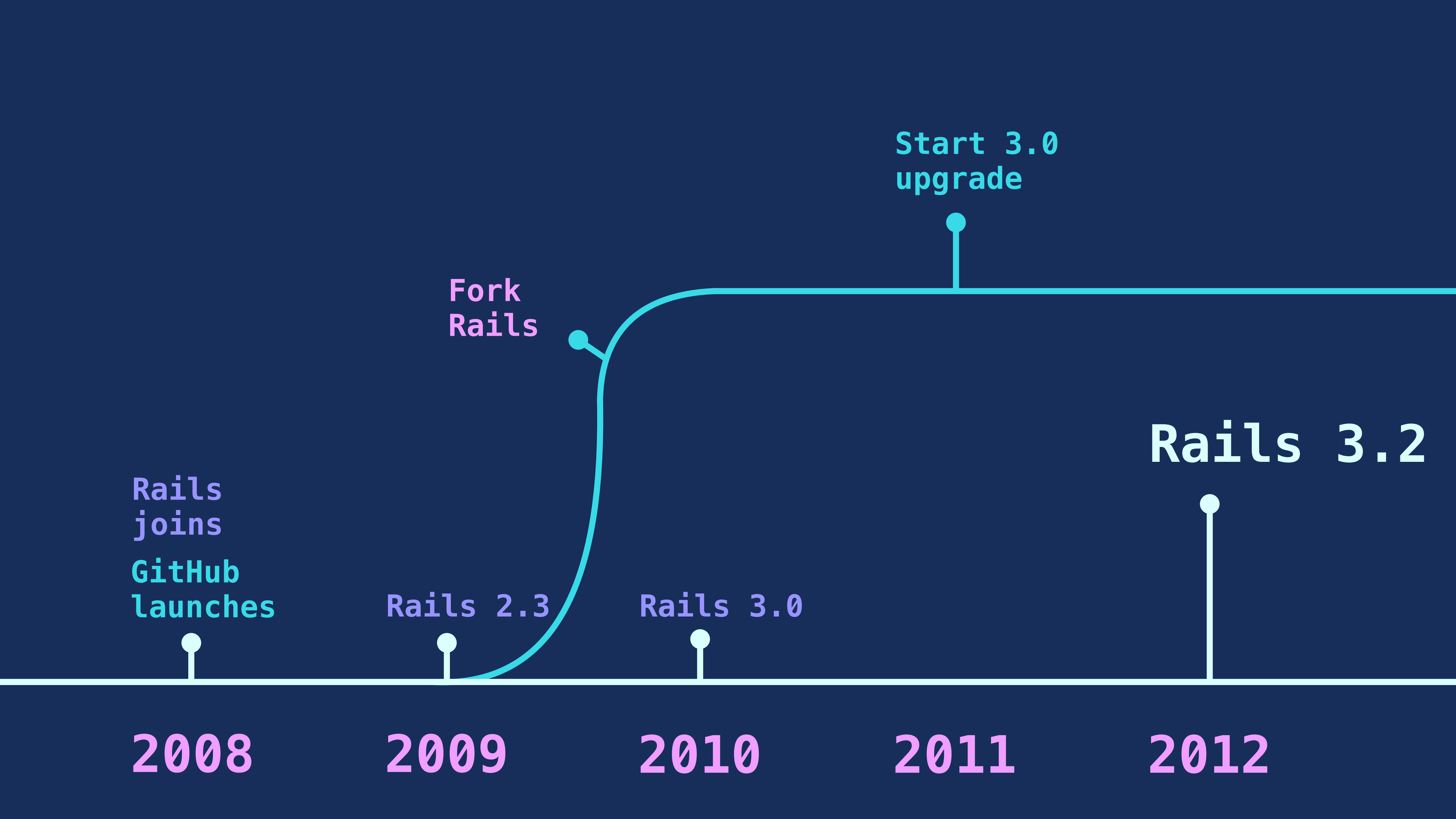
2007

2008

2009

2010

2011



2008

2009

2010

2011

2012

Rails
joins
GitHub
launches

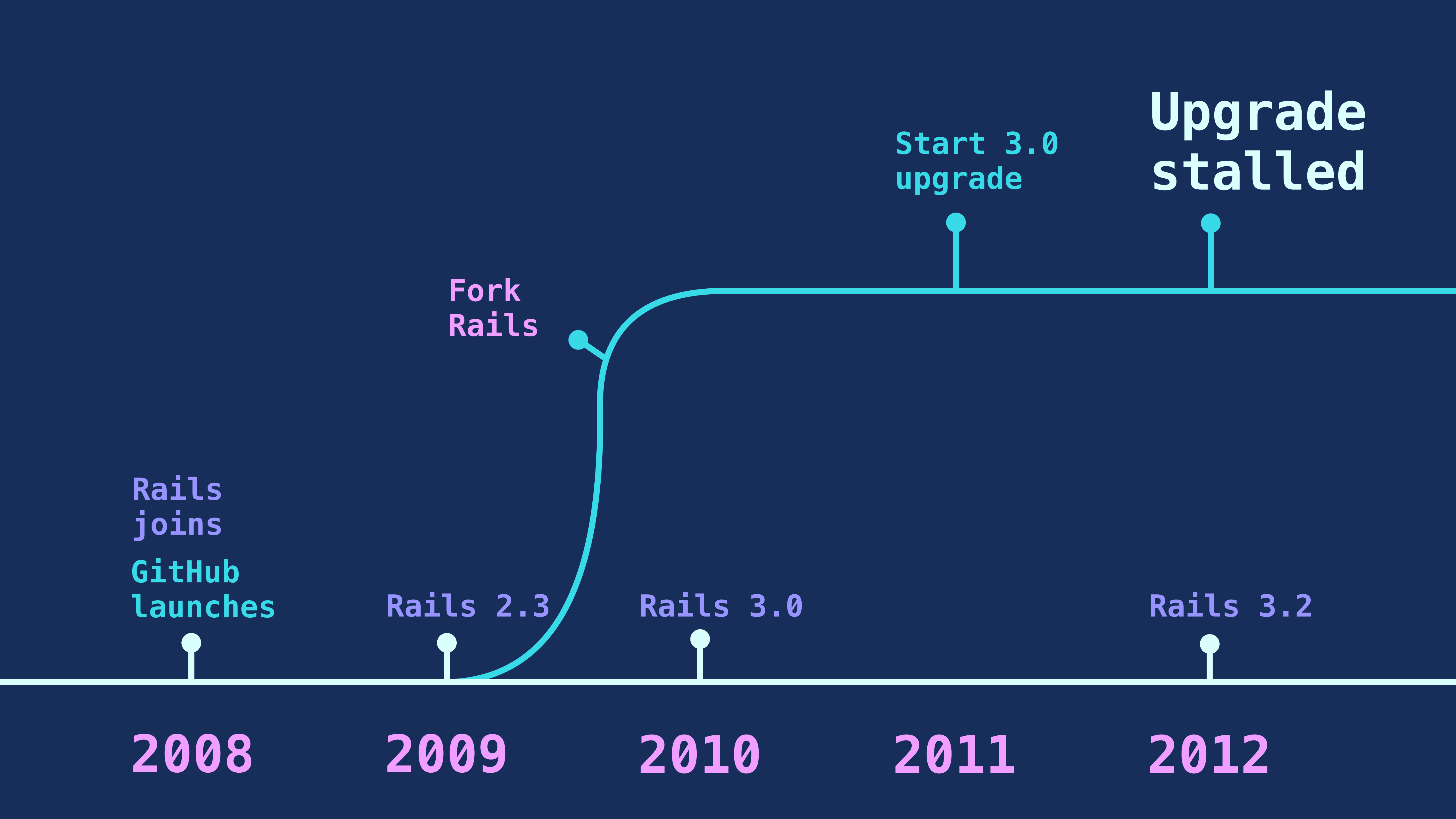
Rails 2.3

Rails 3.0

Fork
Rails

Start 3.0
upgrade

Rails 3.2



2008

2009

2010

2011

2012

Rails
joins
GitHub
launches

Rails 2.3

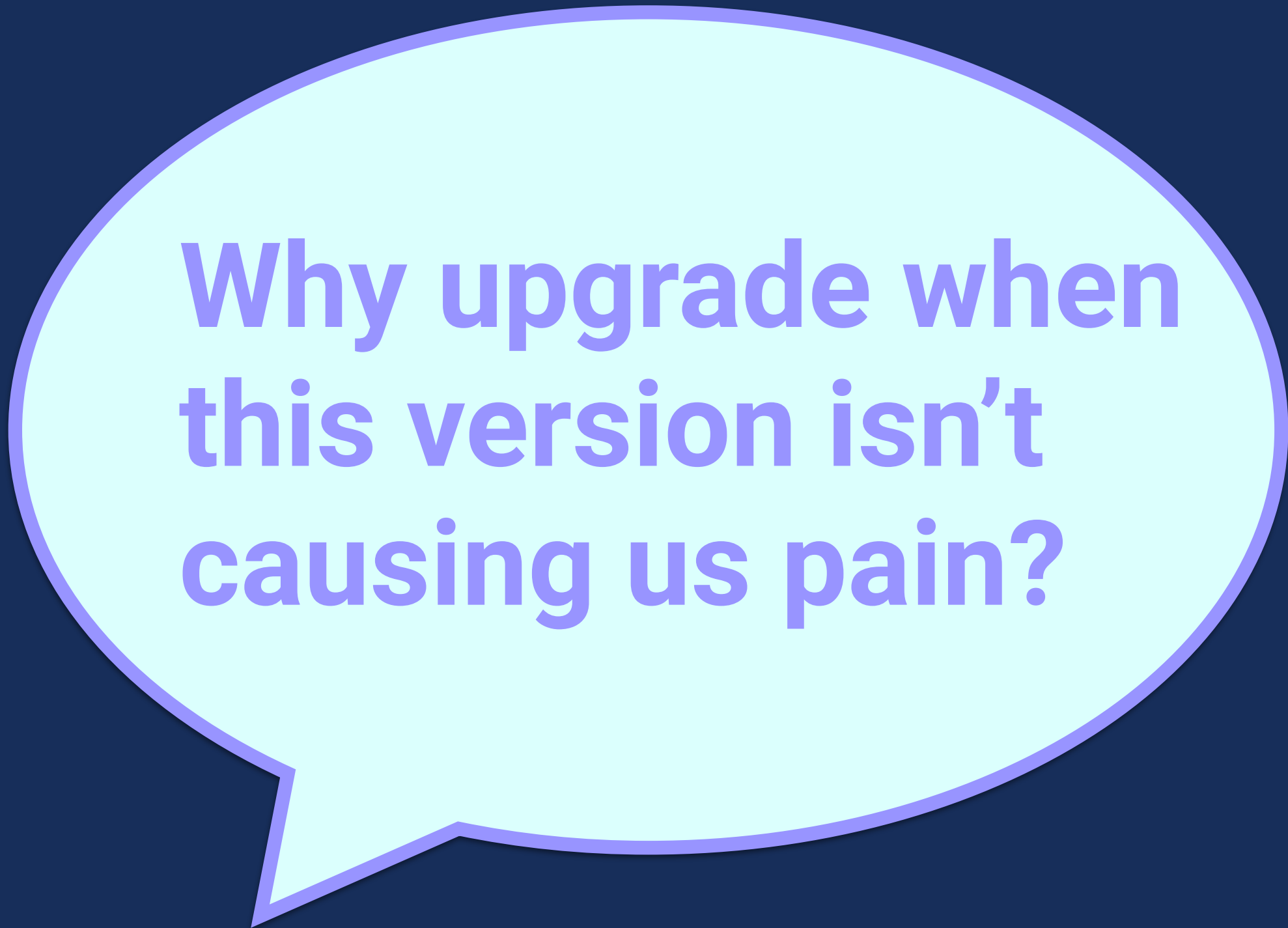
Fork
Rails

Rails 3.0

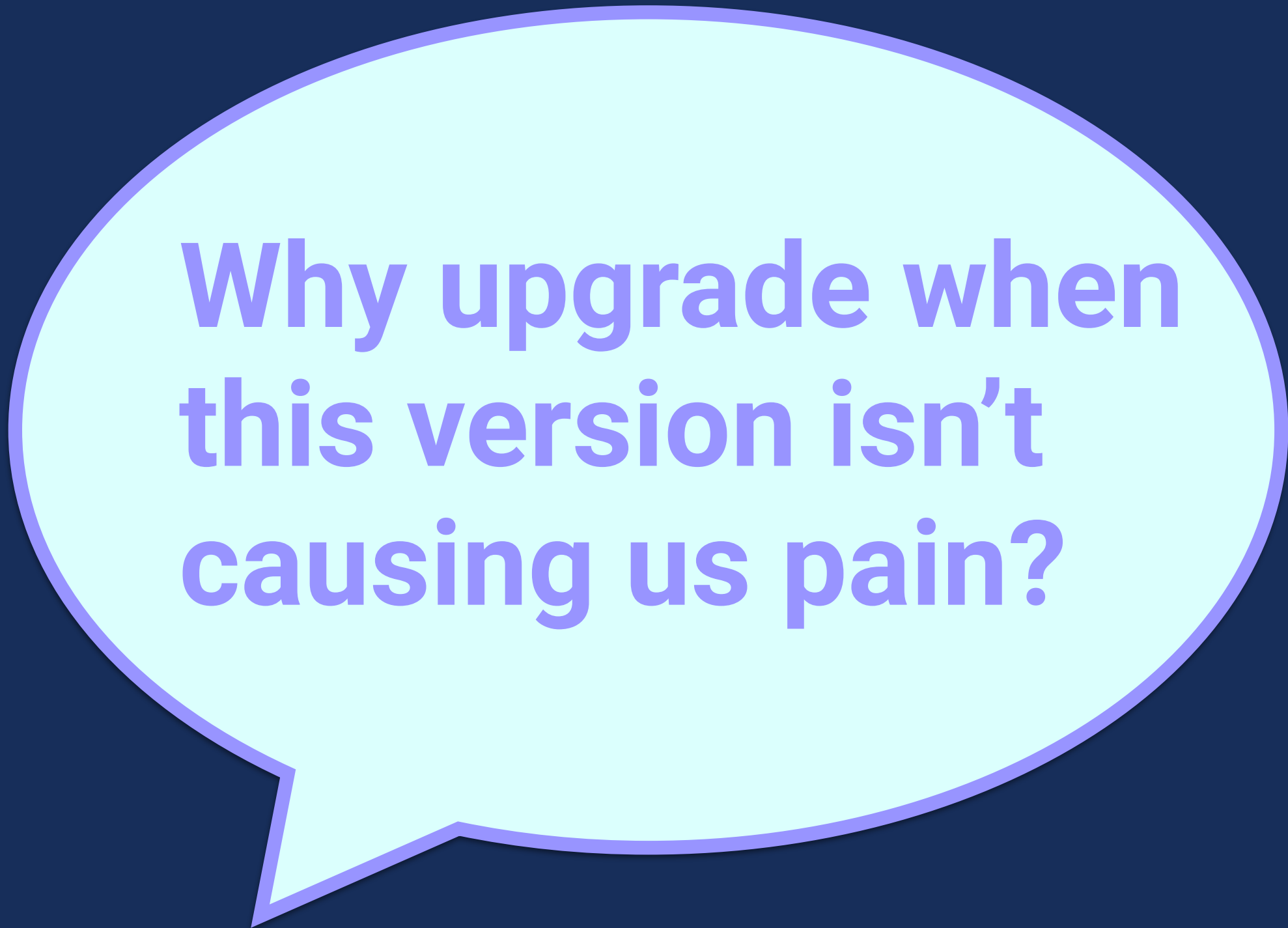
Start 3.0
upgrade

Upgrade
stalled

Rails 3.2



**Why upgrade when
this version isn't
causing us pain?**



**Why upgrade when
this version isn't
causing us pain?**

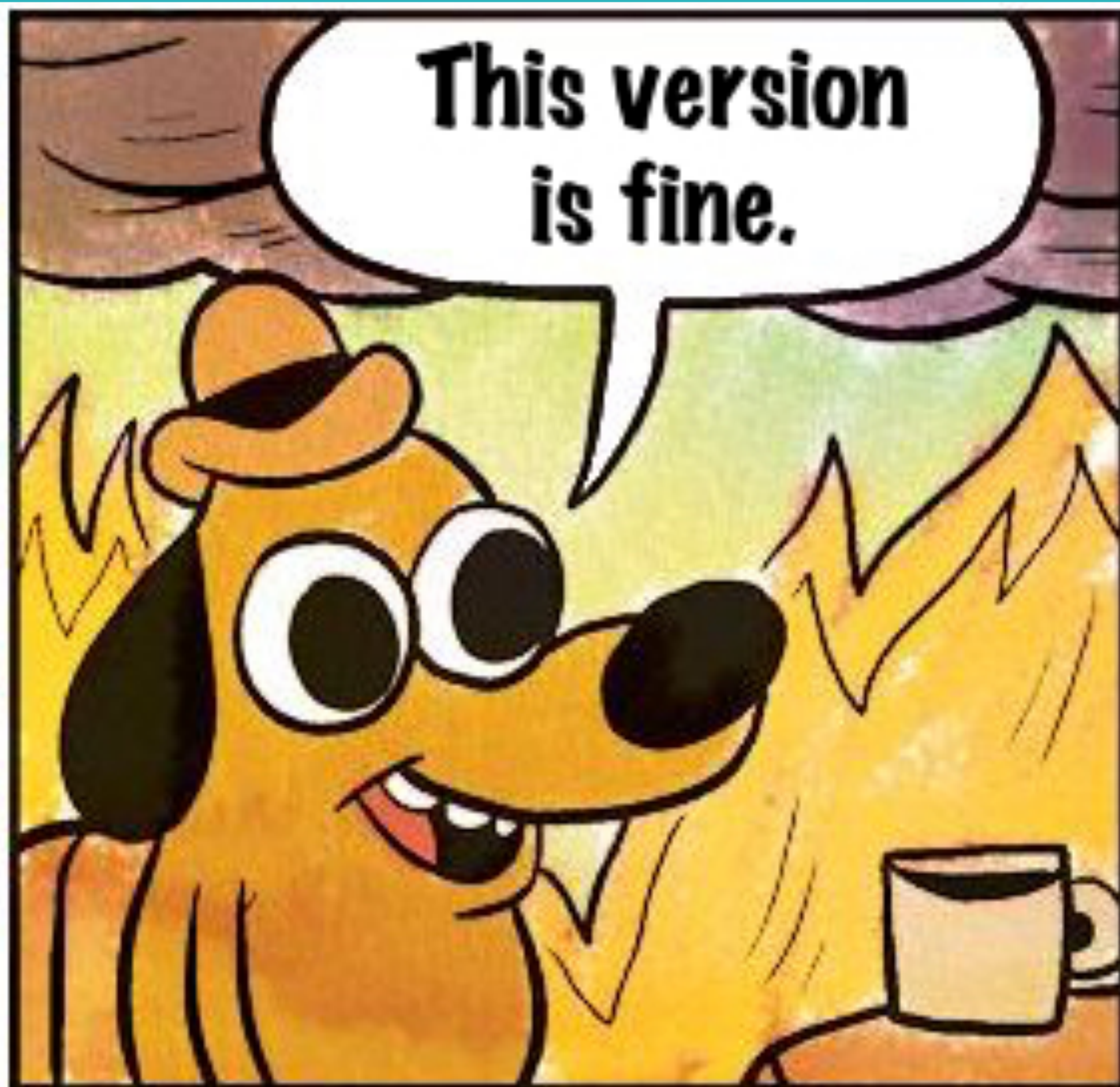


**Why upgrade
when Rails 3
is slower?**

**Why upgrade when
this version isn't
causing us pain?**

**Why upgrade
when Rails 3
is slower?**

**Why upgrade
when our fork
is better?**



SECURITY BACKPORTS



**HIRING IS
HARDER** SECURITY
BACKPORTS



HIRING IS
HARDER

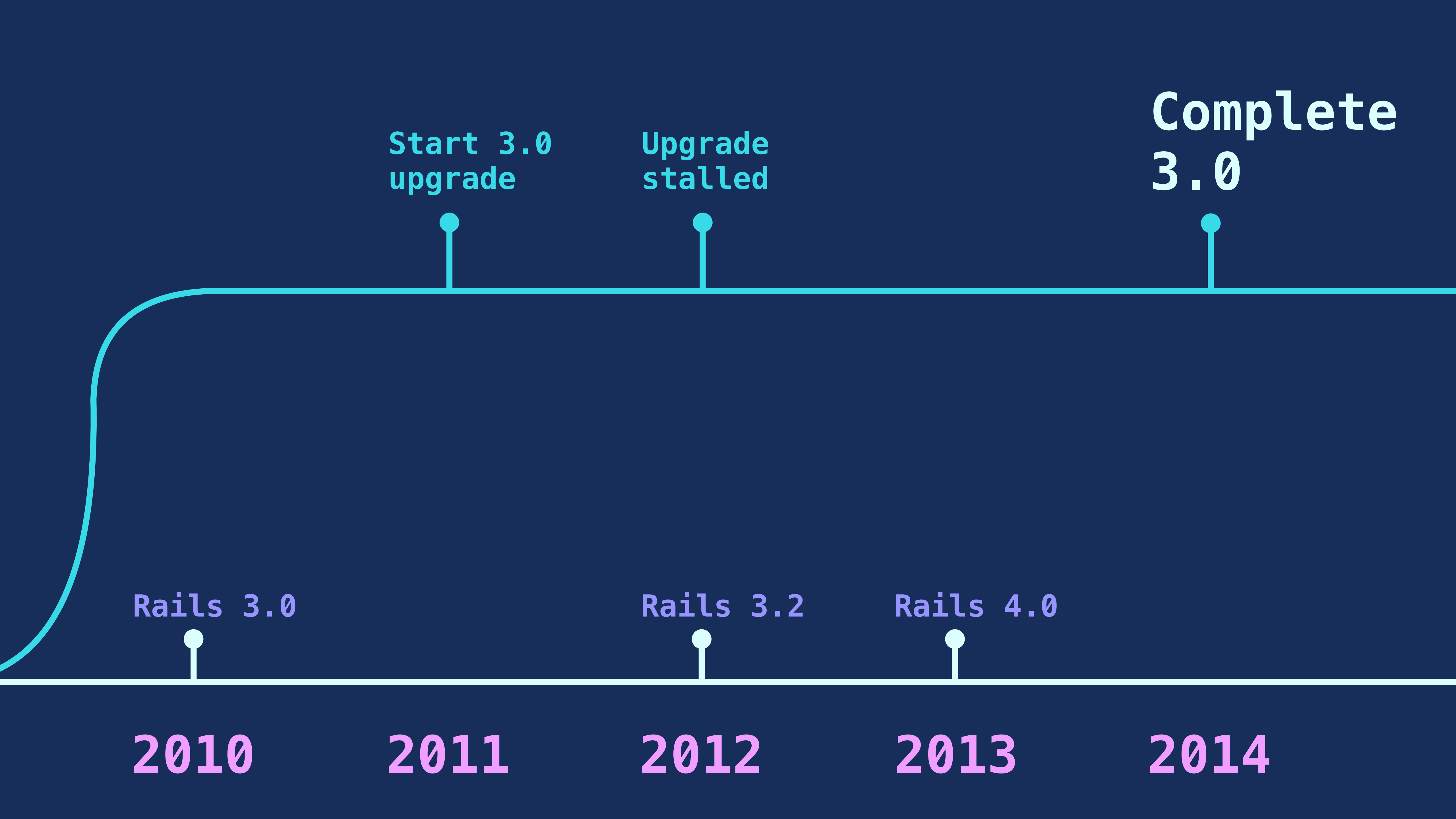
DEPENDENCIES
ARE BRITTLE
SECURITY
BACKPORTS

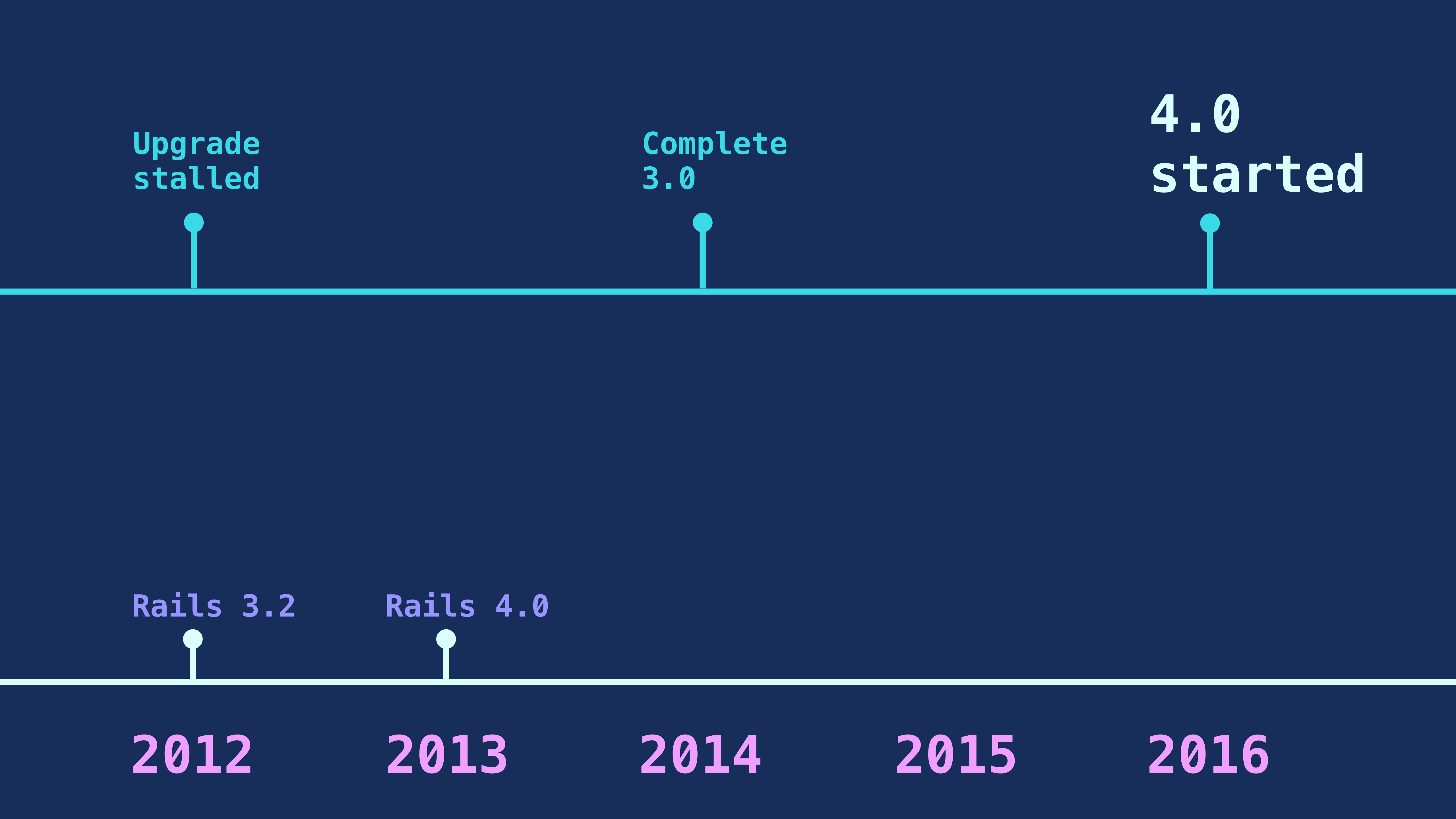


DEVELOPMENT
IS PAINFUL

DEPENDENCIES
ARE BRITTLE
SECURITY
BACKPORTS







Upgrade
stalled

Complete
3.0

4.0
started

Rails 3.2

Rails 4.0

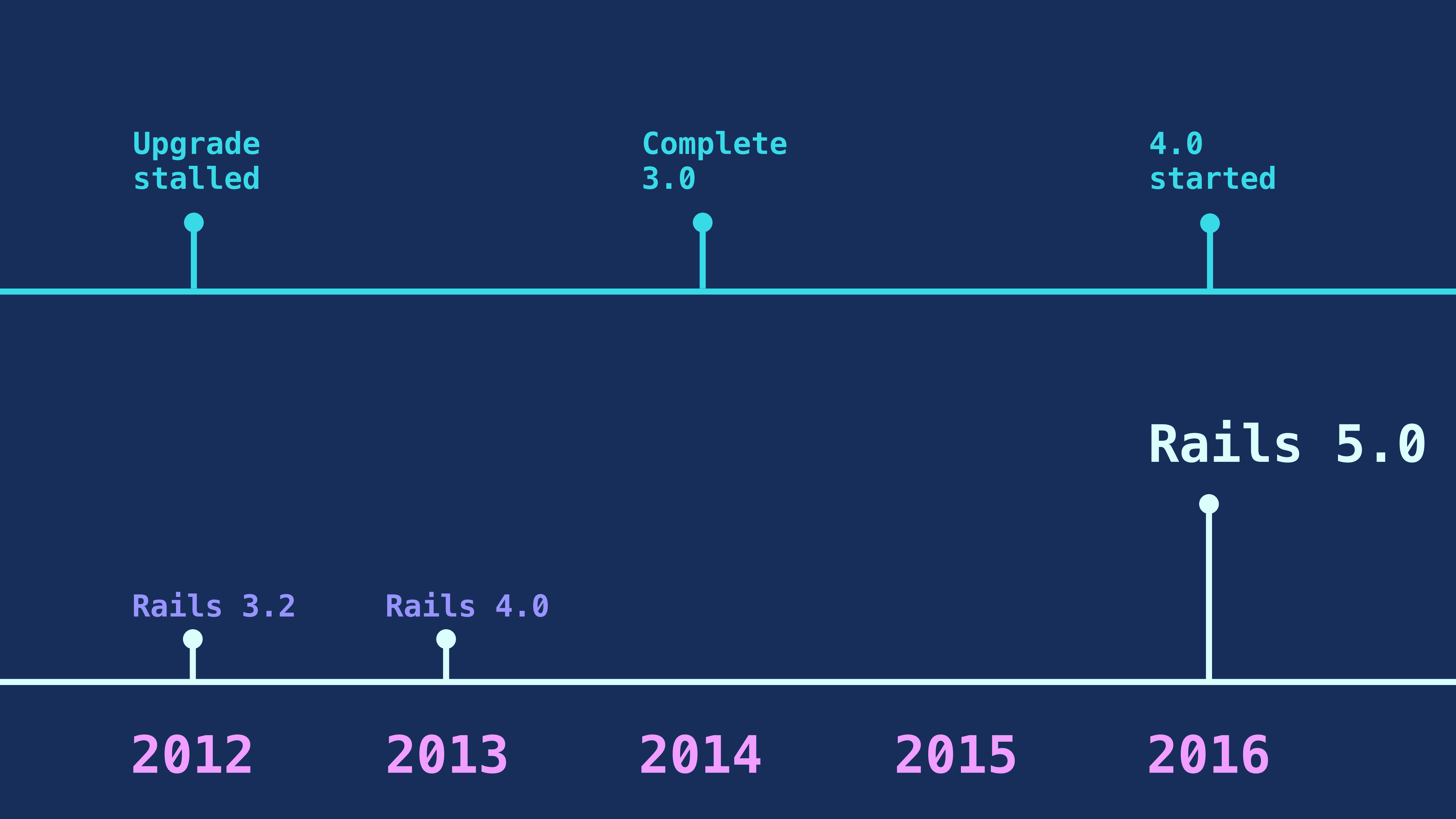
2012

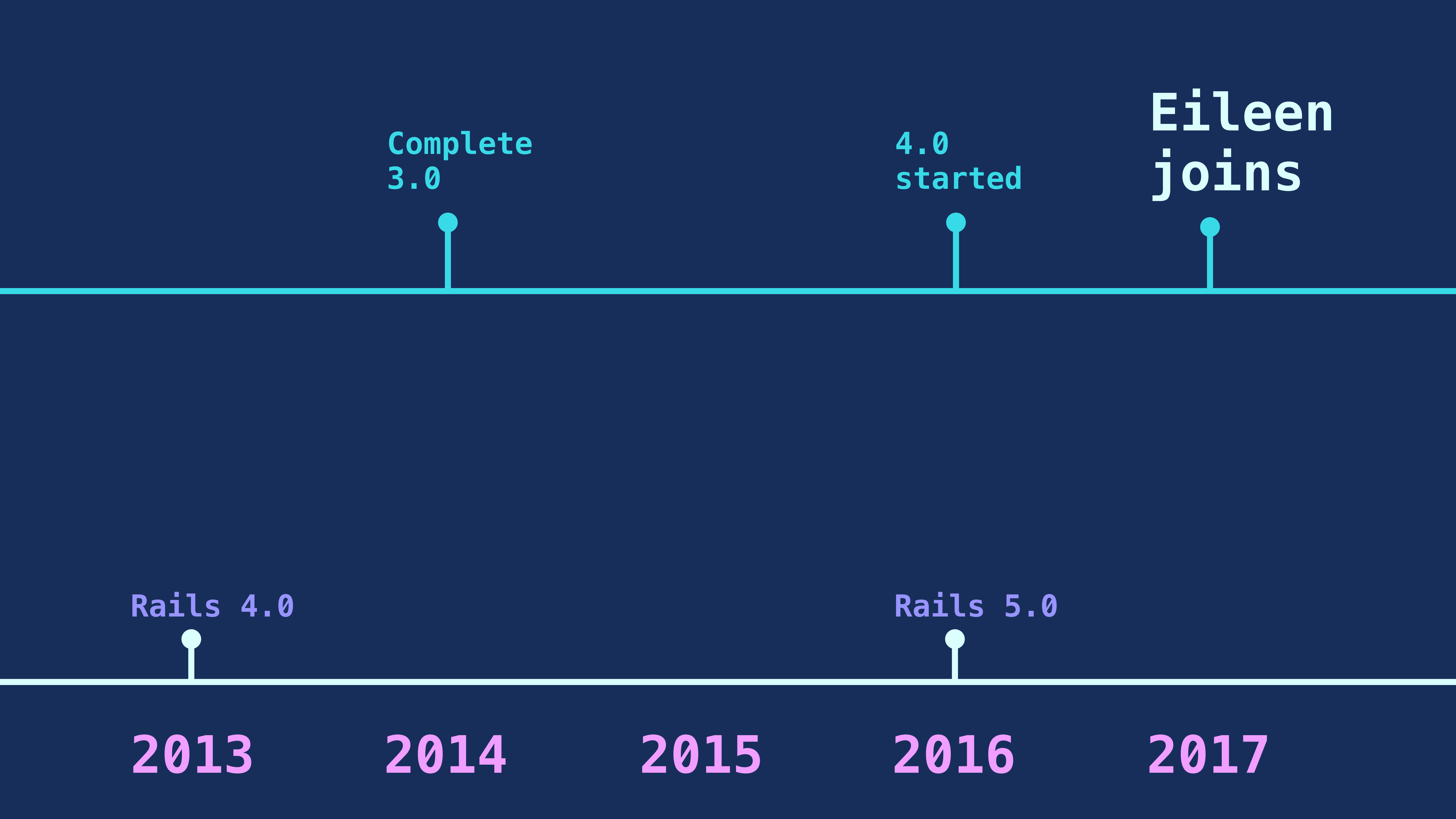
2013

2014

2015

2016





Complete
3.0

4.0
started

Eileen
joins

Rails 4.0

Rails 5.0

2013

2014

2015

2016

2017



eileencodes 1:31 PM

hubot ci build github-rails4/rails-4-route-fixes



hubot APP 1:31 PM

Building github-rails4/rails-4-route-fixes



Hubot APP 1:34 PM

Build [#5167415 \(e911718\)](#) of github-rails4/rails-4-route-fixes failed - 48 failures, 4657 errors (212s, queued 0s)



eileencodes 1:31 PM

hubot ci build github-rails4/rails-4-route-fixes



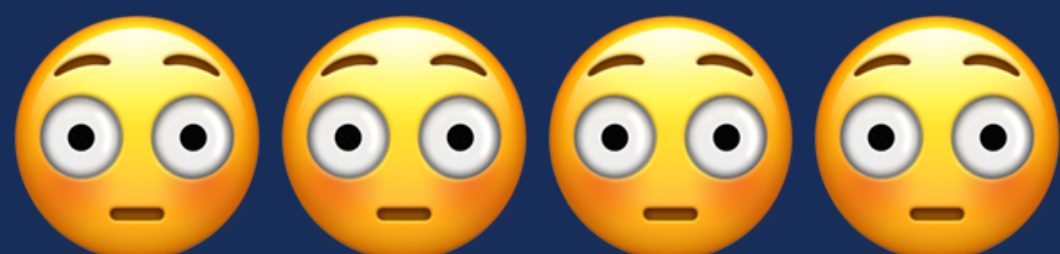
hubot APP 1:31 PM

Building github-rails4/rails-4-route-fixes



Hubot APP 1:34 PM

Build [#5167415](#) ([e911718](#)) of github-rails4/rails-4-route-fixes failed - 48 failures, 4657 errors (212s, queued 0s)



Multiple Rails Versions



Gemfile.lock (Rails 3.2)

```
$ rails server
```

```
$ rails test tests/models/issue_test.rb
```

Gemfile_rails4.lock (Rails 4.0)

```
$ RAILS4=1 rails server
```

```
$ RAILS4=1 rails test tests/models/issue_test.rb
```

Multiple Rails Versions



~~Gemfile_rails4.lock (Rails 4.0)~~

~~\$ RAILS4=1 rails server~~

~~\$ RAILS4=1 rails test tests/models/issue_test.rb~~

Gemfile_rails41.lock (Rails 4.1)

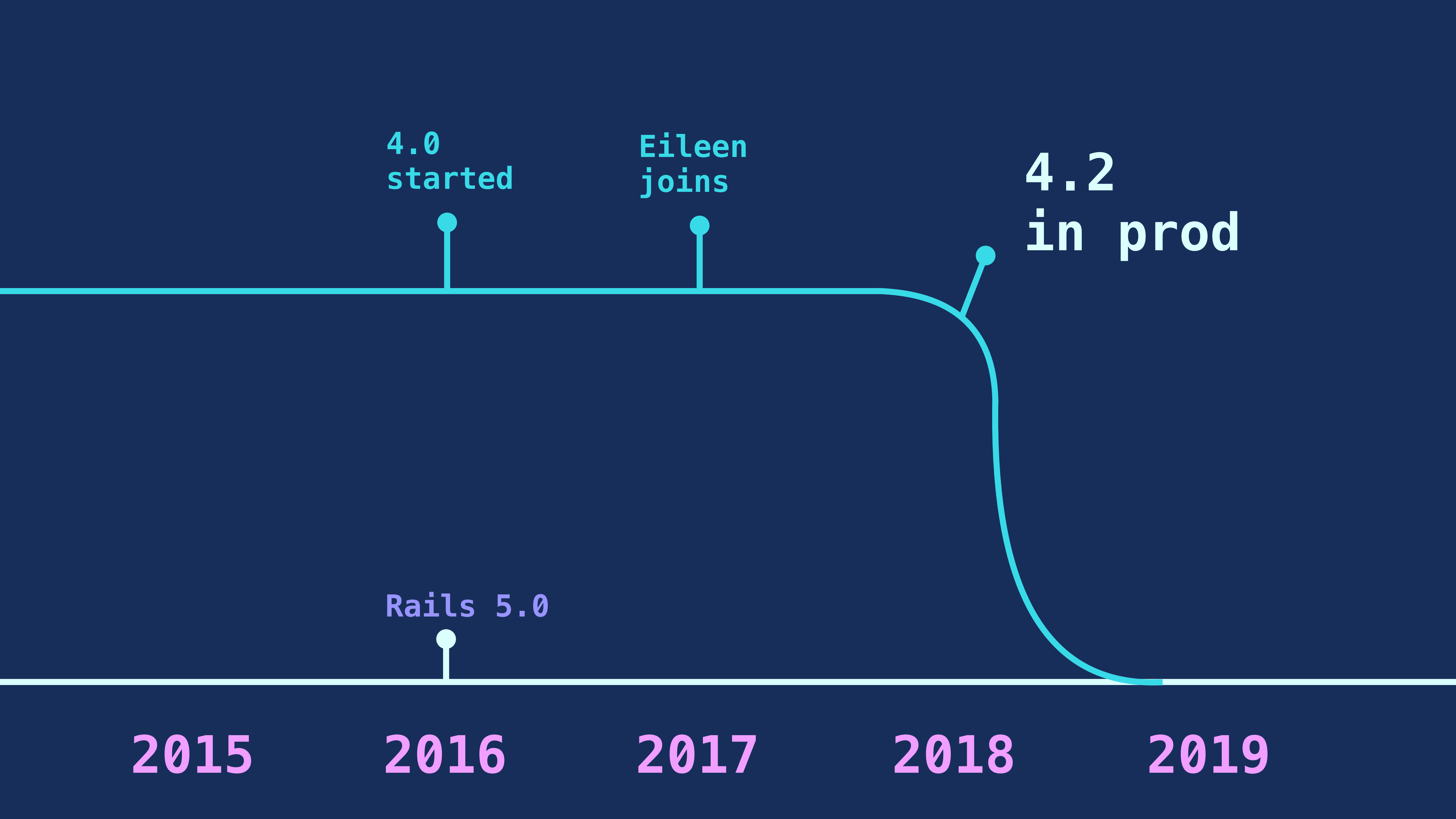
\$ RAILS41=1 rails server

\$ RAILS41=1 rails test tests/models/issue_test.rb

Conditional Code



```
if GitHub.rails_3_2?  
  # code for Rails 3.2  
elsif GitHub.rails_4_0?  
  # code for Rails 4.0  
else  
  # code for all future versions  
end
```

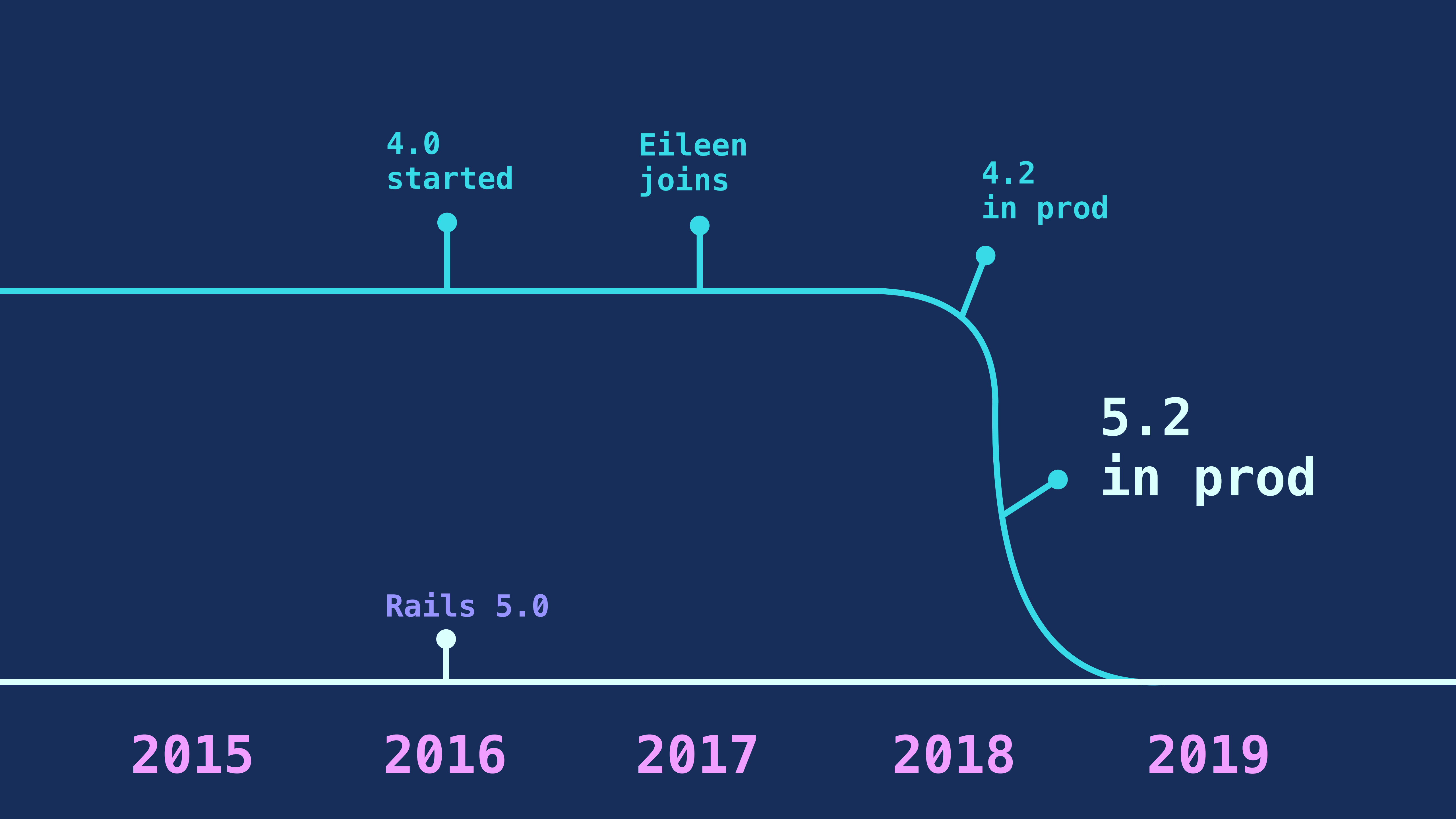


You need to restart your computer. Hold down the Power button for several seconds or press the Restart button.

Veillez redémarrer votre ordinateur. Maintenez la touche de démarrage enfoncée pendant plusieurs secondes ou bien appuyez sur le bouton de réinitialisation.

Sie müssen Ihren Computer neu starten. Halten Sie dazu die Einschalttaste einige Sekunden gedrückt oder drücken Sie die Neustart-Taste.

Musisz zrestartować swój komputer. Wciśnij i przytrzymaj przez kilka sekund przycisk Power lub wciśnij Restart.



4.0
started

Eileen
joins

4.2
in prod

5.2
in prod

Rails 5.0

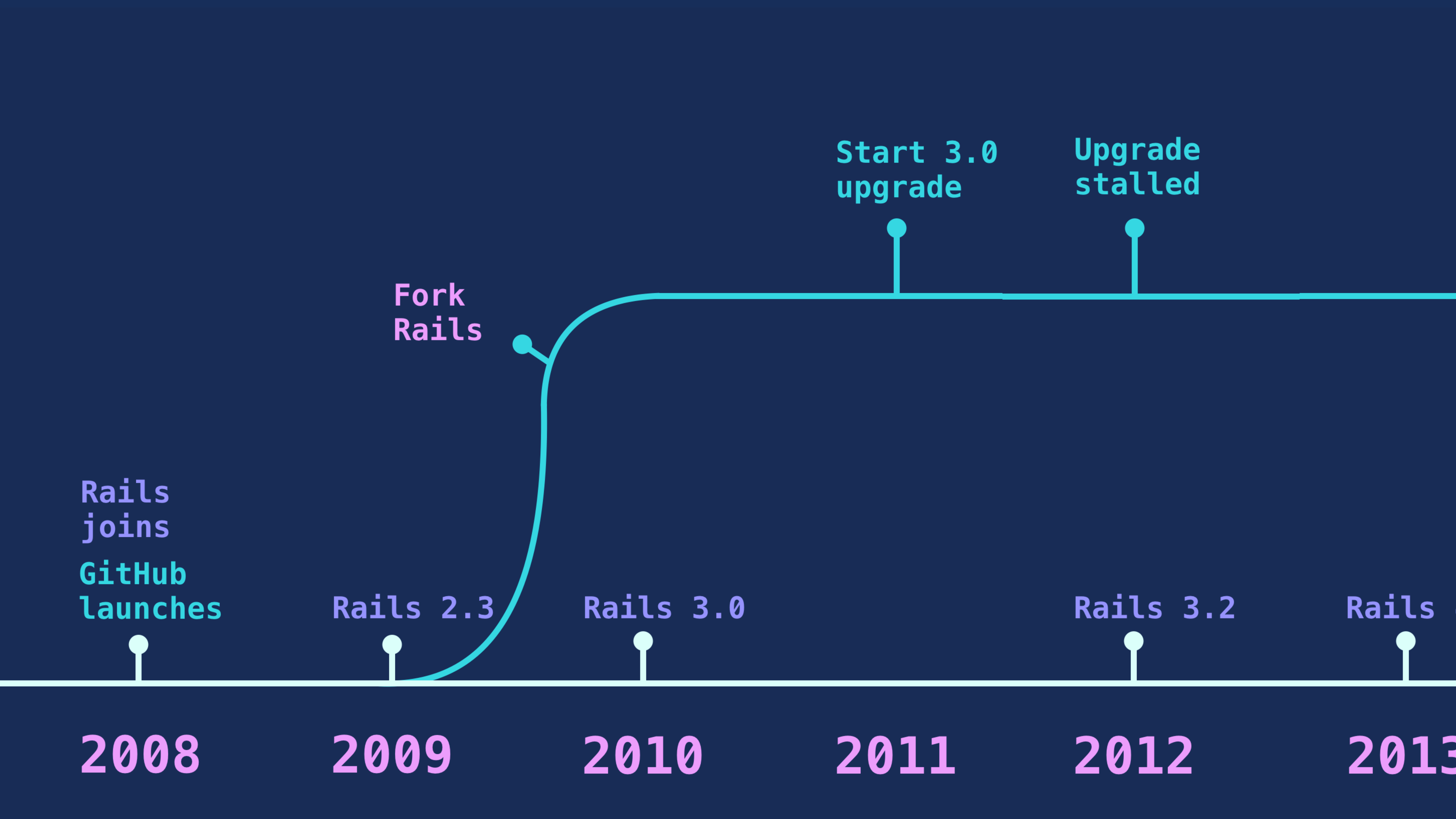
2015

2016

2017

2018

2019







_____ engineers at \$ _____ /hr
for _____ hours = \$ _____





The *cost* of not
upgrading
is *immeasurable*



SECURITY BACKPORTS



**HIRING IS
HARDER** **SECURITY
BACKPORTS**



HIRING IS
HARDER

DEPENDENCIES
ARE BRITTLE
SECURITY
BACKPORTS



DEVELOPMENT
IS PAINFUL
DEPENDENCIES
ARE BRITTLE
HIRING IS
HARDER
SECURITY
BACKPORTS



REWRITE IN MICROSERVICES

DEVELOPMENT

IS PAINFUL

DEPENDENCIES
ARE BRITTLE

SECURITY
BACKPORTS

HIRING IS
HARDER





- HN troll

“...the stories of upgrading being a huge undertaking always makes me scratch my head - what are we doing wrong if its easy for us.”



**When upgrading you
should...**





When upgrading you should
build a team.





When upgrading you should
**take time to make
a plan.**





When upgrading you should
**fix deprecation
warnings early.**





When upgrading you should
plan for the future.







You may regret
forking Rails.





You may regret
**falling behind security
supported versions.**





You may regret
**using old,
unsupported gems.**

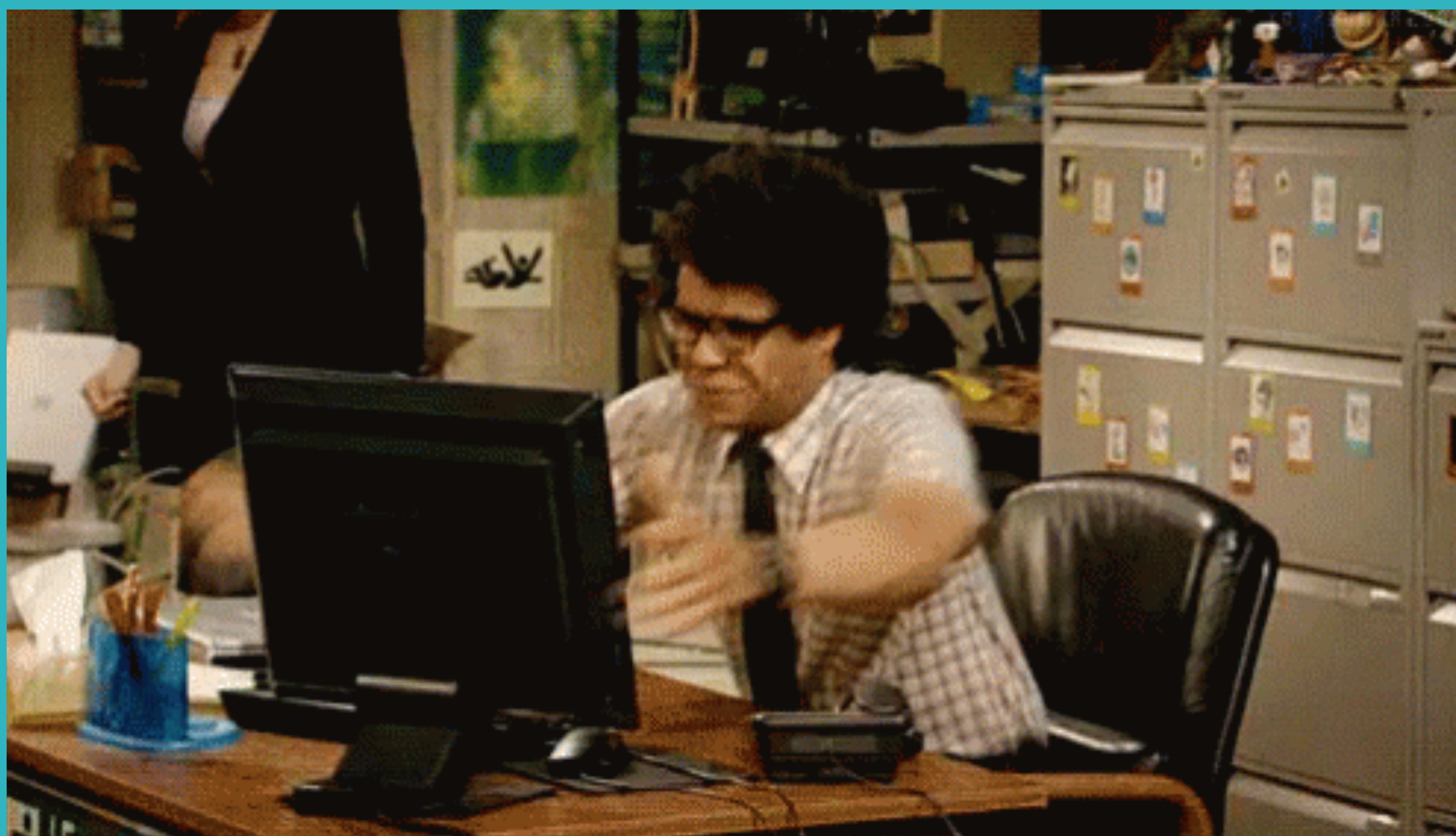




You may regret
**using private Rails
APIs.**











This was my *first*
major *upgrade*.





**It's important to
remember...**





It's important to remember
**to pay debt down
incrementally.**







It's important to remember
you're not alone.







It's important to remember
**the payoff is
worth it.**







The benefits of upgrading





IMPROVED APIS



IMPROVED APIS SECURITY FEATURES



IMPROVED APIS
SECURITY FEATURES
BETTER PERFORMANCE



IMPROVED APIS
SECURITY FEATURES
BETTER PERFORMANCE
NEW LIBRARIES



IMPROVED APIS
SECURITY FEATURES
BETTER PERFORMANCE
NEW LIBRARIES
A CHANCE TO CONTRIBUTE



The Future...







75+ Pull Requests
from GitHub





Rails 6.0: Multiple database support





Continuous Upgrades





For the first time in
GitHub's history...





We're *pioneering*
the *future* of Rails.





We have a
responsibility to
support Rails



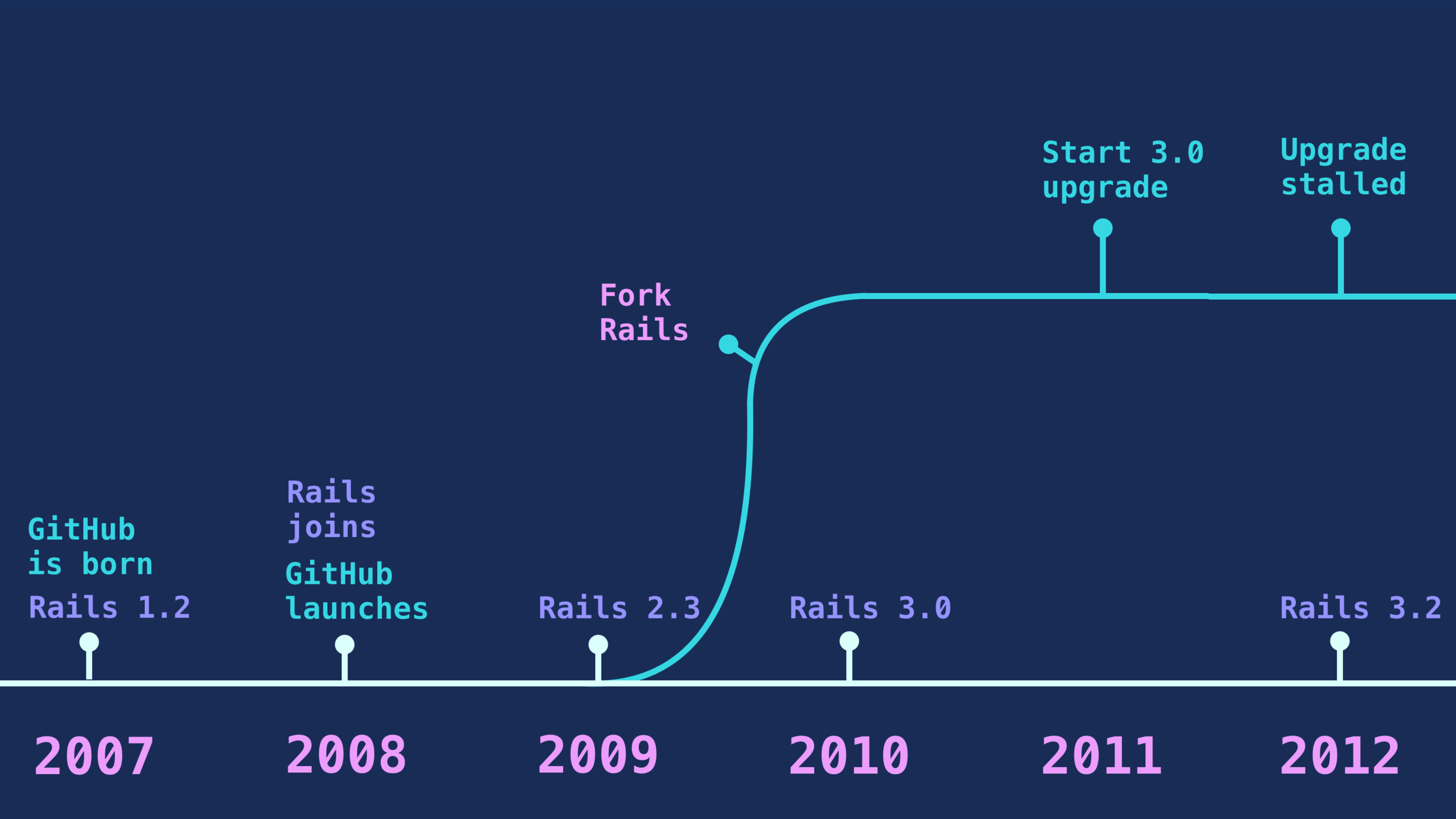


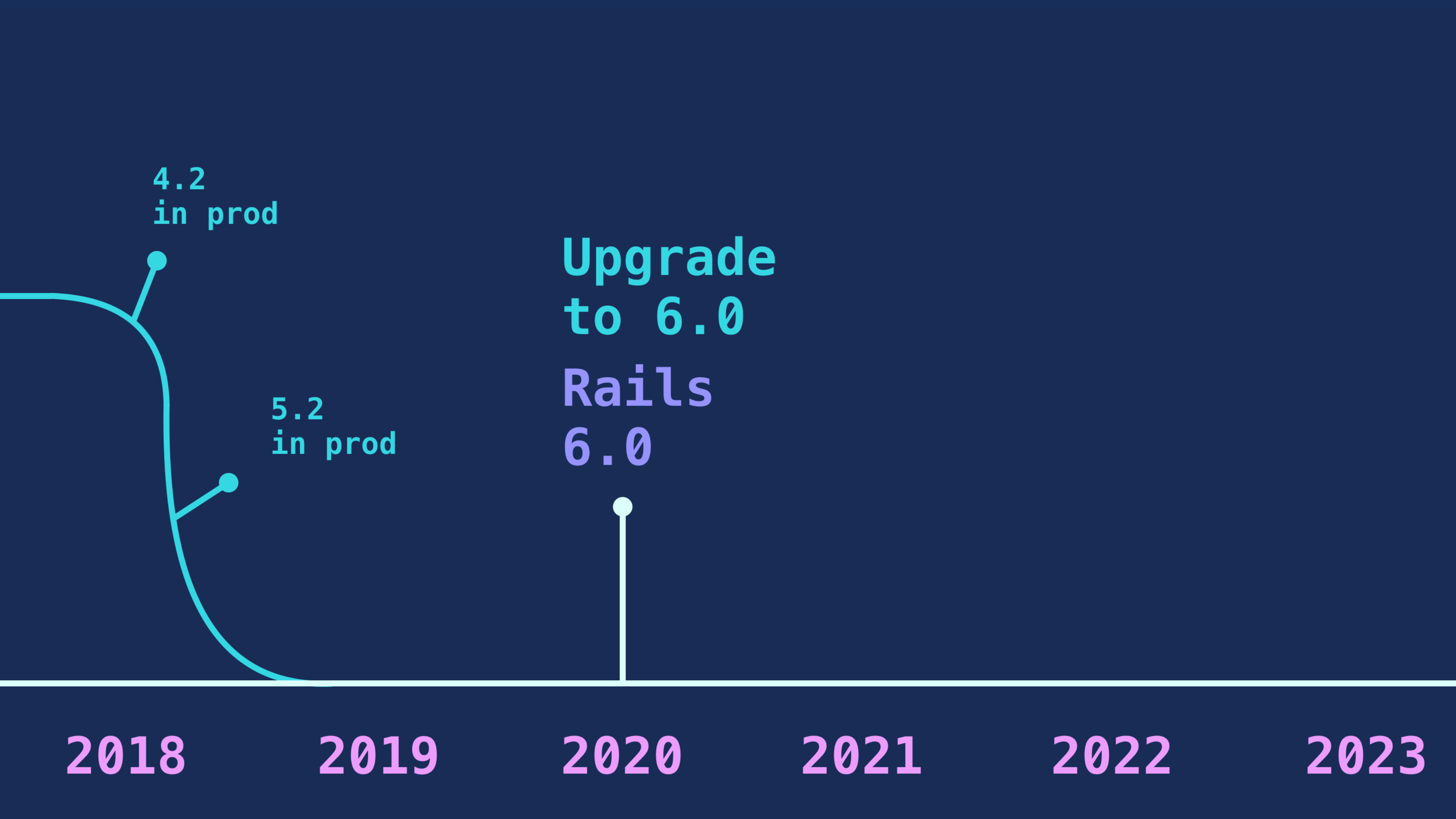
DEVELOPMENT
IS PAINFUL
HIRING IS
HARDER
DEPENDENCIES
ARE BRITTLE
SECURITY
BACKPORTS





IMPROVED APIS
SECURITY
BETTER PERFORMANCE
NEW FEATURES
A CHANCE TO CONTRIBUTE





4.2
in prod

5.2
in prod

Upgrade
to 6.0

Rails
6.0

2018

2019

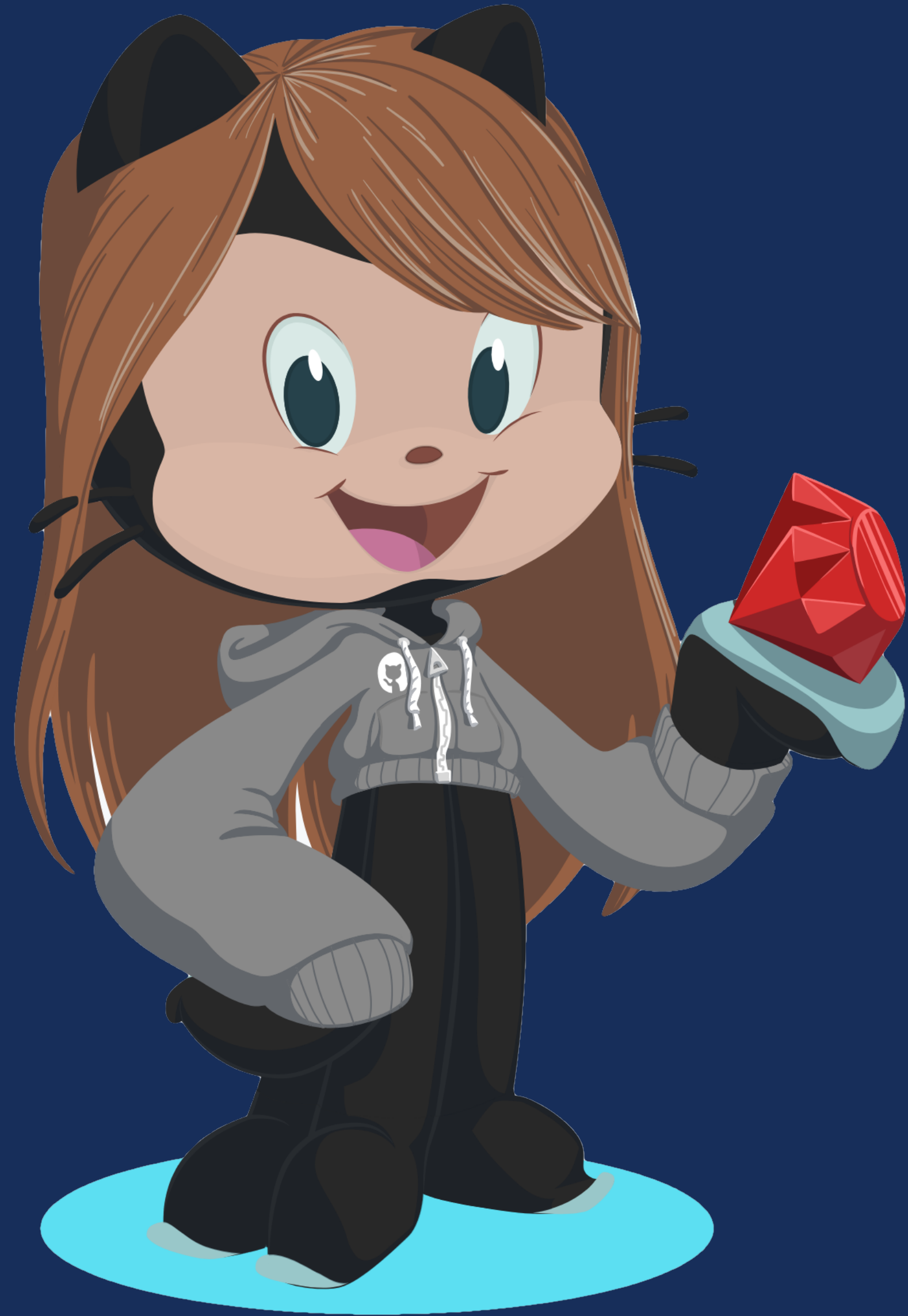
2020

2021

2022

2023





Thank you!



@eileencodes

eileencodes.com