

Helvetic Ruby 2024



When

17.05.2024

Where

Zürich, Switzerland



Marco Roth

Revisiting the Hotwire Landscape after
Turbo 8

Revisiting the Hotwire Landscape after Turbo 8

HOTWIRE

Marco Roth

Full-Stack Developer & Open Source Contributor



👋 Marco Roth

Full-Stack Developer & Open Source Contributor

 @marcoroth

 @marcoroth_

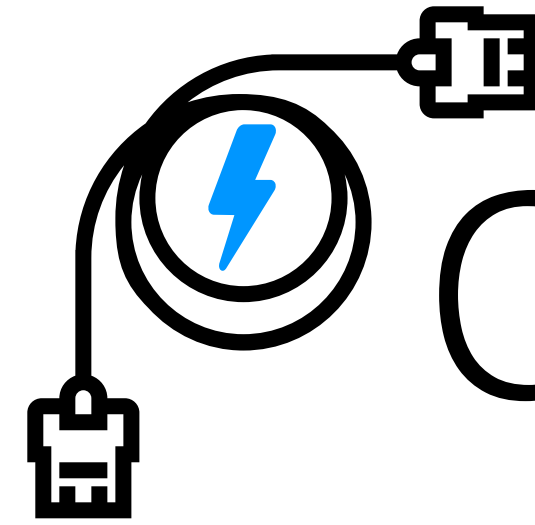
 @marcoroth@ruby.social

 marcoroth.dev

Core Team



Stimulus**Reflex**



CableReady

Maintainer



STIMULUS

I ❤️ Open Source

Open Source Journey

Started to **actively contribute** in **2019**

Started to **actively contribute** in **2019**

Went **full-time** on OSS in January **2022**

Started to **actively contribute** in **2019**

Went **full-time** on OSS in January **2022**

Started **contracting** in July **2023** to support
working on OSS 50% of my time





HOTW⚡RE





X

HOTW*⚡*RE



Superpower

The future of modern Rails apps



Wednesday, December 15, 2021

Rails 7.0: Fulfilling a vision

This version of Rails has been years in the conceptual making. It's the fulfillment of a vision to present a truly full-stack approach to web development that tackles both the front- and back-end challenges with equal vigor. An omakase menu that includes everything from the aperitif to the dessert.

Rails Renaissance

HOTW⚡RE







**I want to build modern
frontend tools and tooling**

**...that are worthy of the Rails
framework and it's history.**

February 7, 2024

Turbo 8 released

Turbo 8 introduces morphing for smooth page refreshes, view transitions, InstantClick, and more.



Alberto Fernández-Capel
Programmer

**And I think that changed the trajectory
for the ecosystem quite a bit.**

What is

HOTW  ***RE***

HTML-over-the-wire

**We want to use HTML as the
format for our application.**

**The server is the
single source of truth**

**We want to use the HTML and the
business logic we already have on
the backend**

**Without having to duplicate any
logic on the frontend**

Hotwire is not about getting rid of JavaScript.

**Hotwire is about reducing the amount of
application-specific JavaScript**

Timeline and History

Turbolinks first released

2012

Rails 3.2

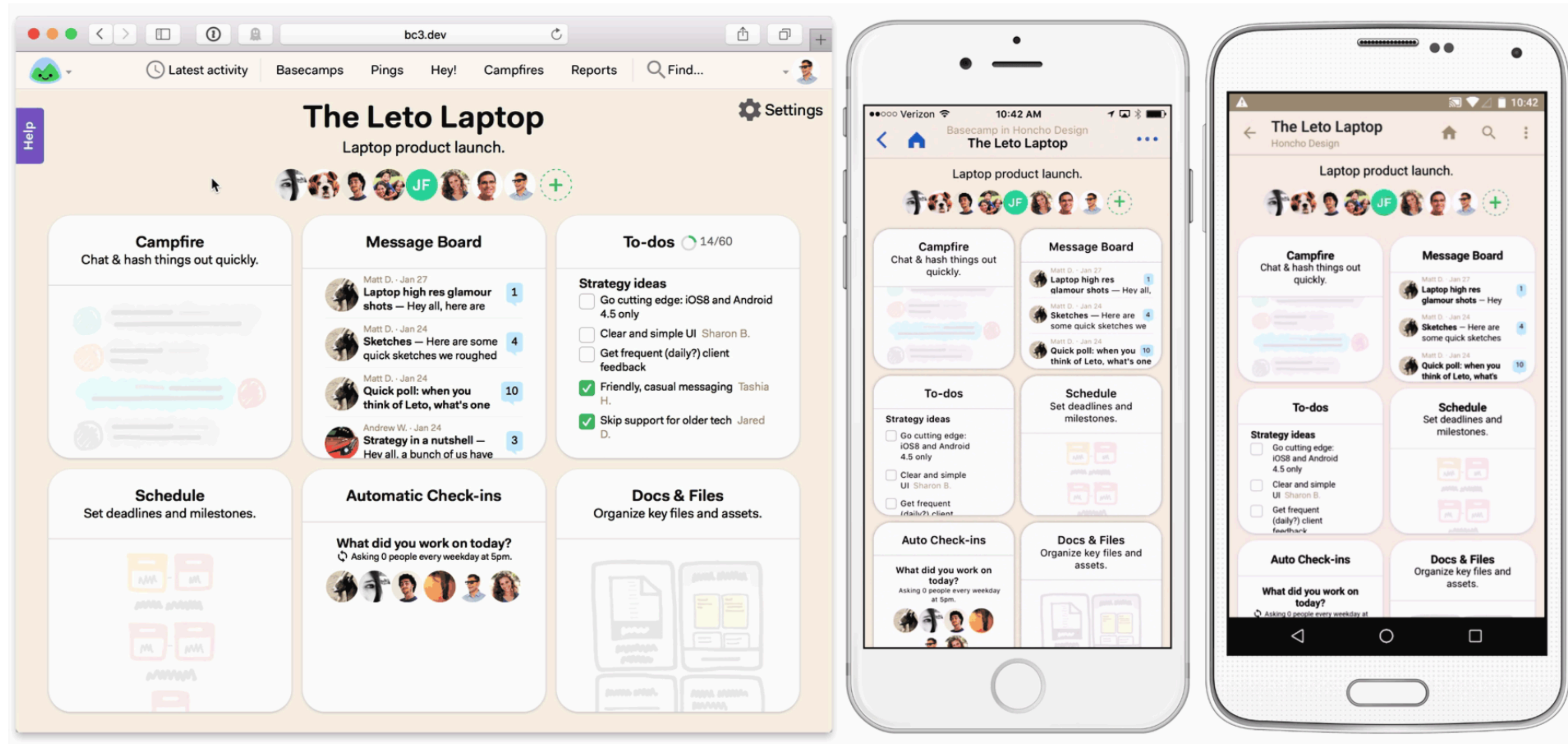
Turbolinks ships per default in Rails

2013

Rails 4.0

Turbolinks

Turbolinks® makes navigating your web application faster. Get the performance benefits of a single-page application without the added complexity of a client-side JavaScript framework. Use HTML to render your views on the server side and link to pages as usual. When you follow a link, Turbolinks automatically fetches the page, swaps in its `<body>`, and merges its `<head>`, all without incurring the cost of a full page load.



```
$ rails new --skip-turbo1inks
```

**Turbolinks was a decade
ahead of it's time.**

Turbolinks first released

2012

Rails 3.2

Turbolinks ships per default in Rails

2013

Rails 4.0

2014

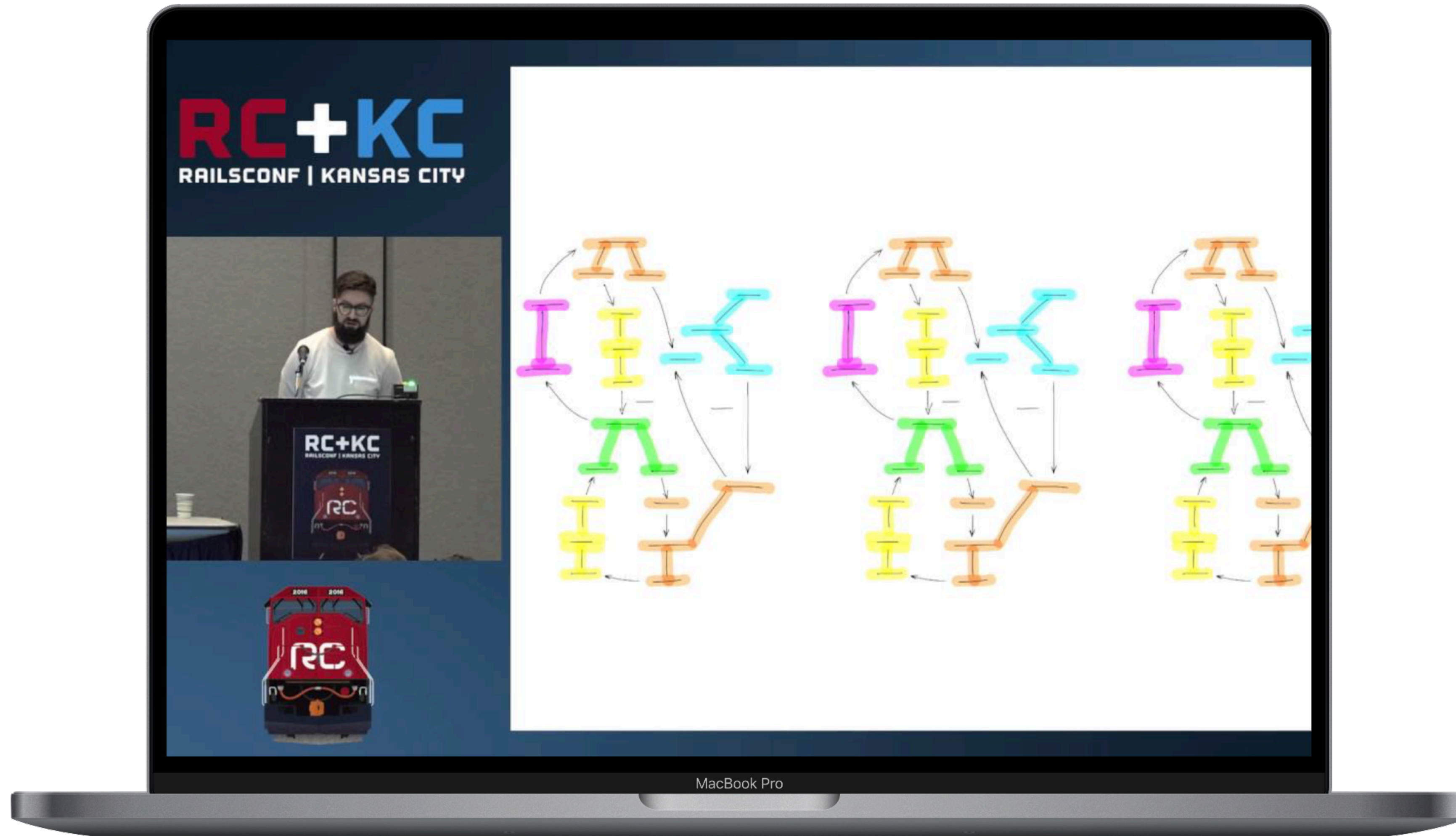
Rails 4.1 and Rails 4.2

Turbolinks 5 released

2016

Rails 5.0

RailsConf 2016 - Turbolinks 5: I Can't Believe It's Not Native! by Sam Stephenson



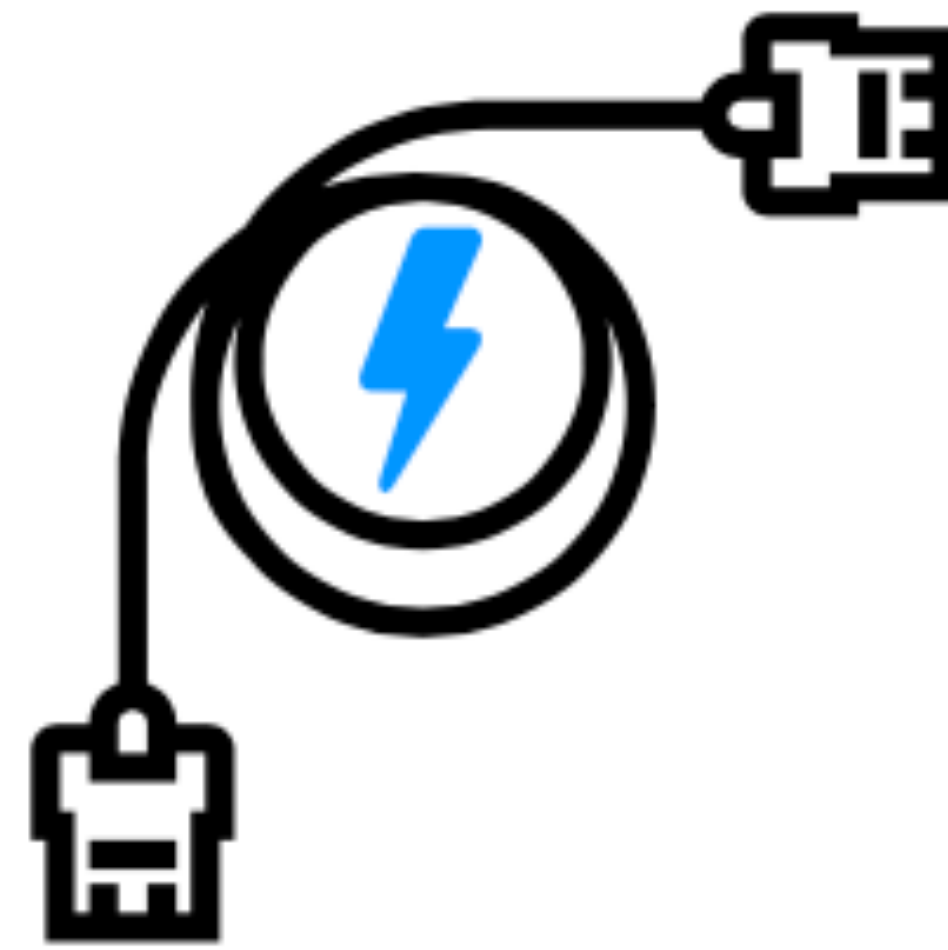


jQuery

Turbolinks first released	2012	Rails 3.2
Turbolinks ships per default in Rails	2013	Rails 4.0
	2014	Rails 4.1 and Rails 4.2
Turbolinks 5 released	2016	Rails 5.0
Stimulus and CableReady released	2017	Rails 5.1



Stimulus



CableReady

**We were missing a way to
reactively reflect updates in
our Rails frontend.**

**We wanted to build more
sophisticated Rails
applications.**

**Reactive
Real-time
High fidelity
Applications**

Turbolinks first released

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2014

Rails 4.1 and Rails 4.2

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Phoenix LiveView and
StimulusReflex released

2018

Rails 5.2



Phoenix LiveView



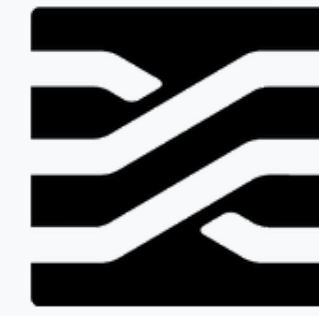
StimulusReflex

**Build reactive applications with
the Rails tooling you already
know and love.**

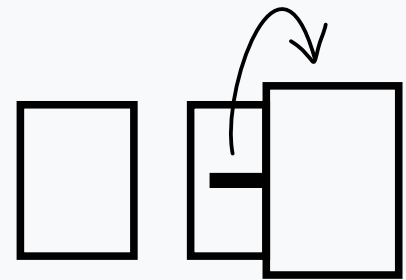
2018



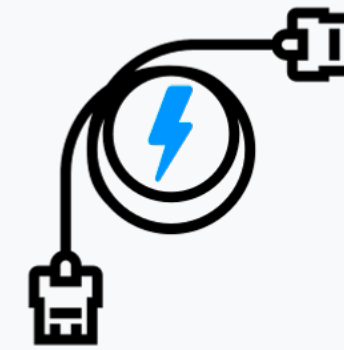
Rails



Stimulus



Turbolinks



CableReady



ActionCable



Rails UJS

```
<button data-reflex="click">  
  <%= Time.current.to_i %>  
</button>
```

1715061086223



```
class CounterController < ApplicationController
  def show
    @count = session[:count] || 0
  end
end
```

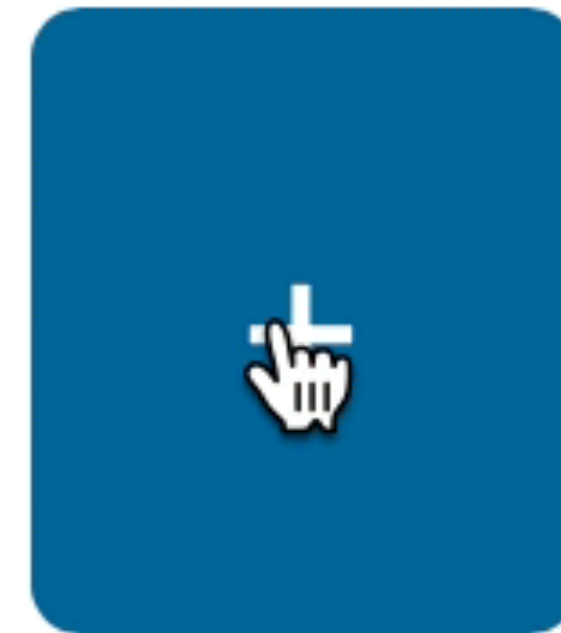
```
<button data-reflex="click->Counter#increment">+</button>  
<button data-reflex="click->Counter#decrement">-</button>
```

Count:

```
<b><%= @count %></b>
```

```
class CounterReflex < ApplicationReflex
  def increment
    session[:count] += 1
  end

  def decrement
    session[:count] -= 1
  end
end
```



Count: **0**



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Rails 4.1 and Rails 4.2

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Phoenix LiveView and
StimulusReflex released

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Rails 5.2

2019

Rails 6.0

Hotwire umbrella and Turbo released

2020

Rails 6.1

December 2020



Turbo Drive



Turbo Streams



Turbo Frames

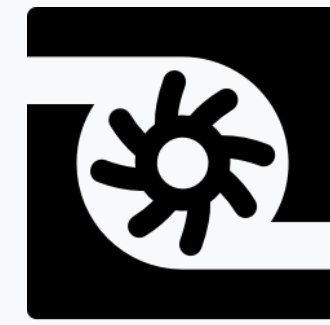
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	2023	Rails 7.1
Turbo 8 with Morphing released	2024	

February 2024






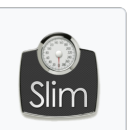





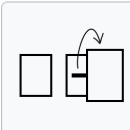


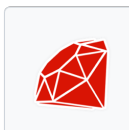




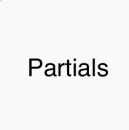




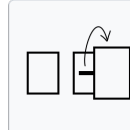
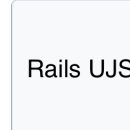

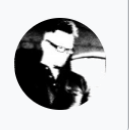
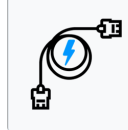
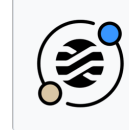
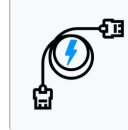
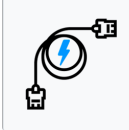

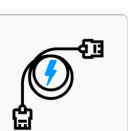
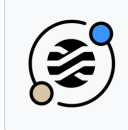

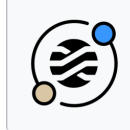



Turbo Page Refreshes





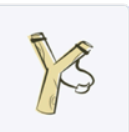
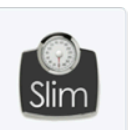





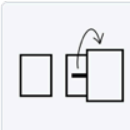







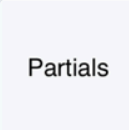




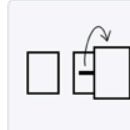
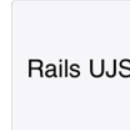

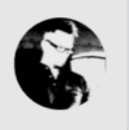
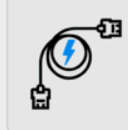

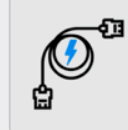
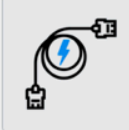








Turbo Model Broadcasts







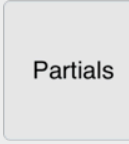




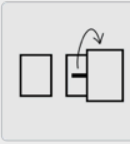
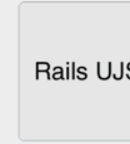

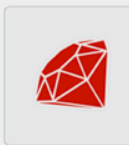

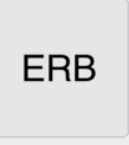

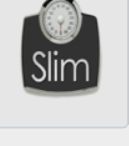
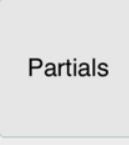




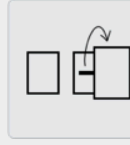
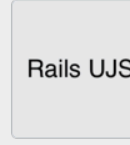

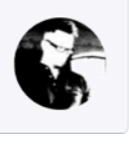
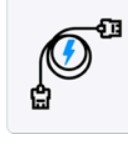







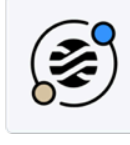

2018

	Programming Language	Web Framework	HTML Rendering	Views/ Components	JavaScript Sprinkles	Websockets	Navigation	Form Submission	Live Form Validation	Lazy Loading	Server-Side DOM-Updates	Real-Time Apps	Custom Update Actions	Subscribe to model updates	Morphing	Full-Page Refreshes	Scoped-Page Updates	Partial-Page Refreshes	Optimistic UI	
 <p>Rails Stack before Hotwire (before 2021)</p>			 ERB  Yjs  Slim	 Partials 		 		 Rails UJS												
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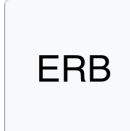








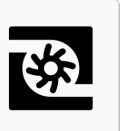










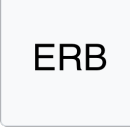
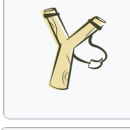

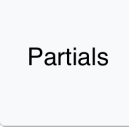







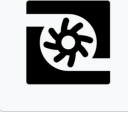
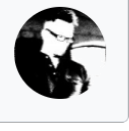
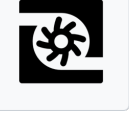
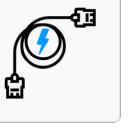
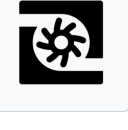

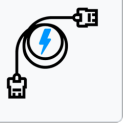
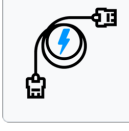

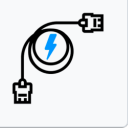
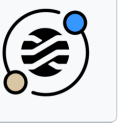

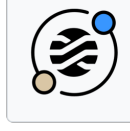

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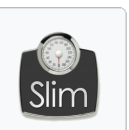






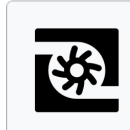

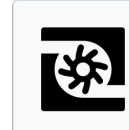




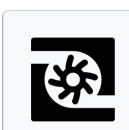
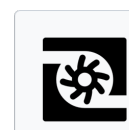



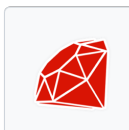




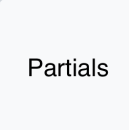





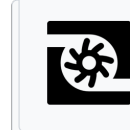


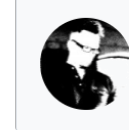

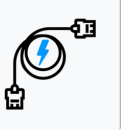


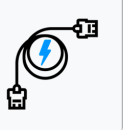
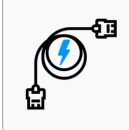

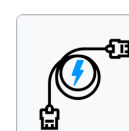


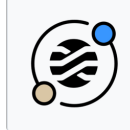

2018

	Programming Language	Web Framework	HTML Rendering	Views/ Components	JavaScript Sprinkles	Websockets	Navigation	Form Submission	Live Form Validation	Lazy Loading	Server-Side DOM-Updates	Real-Time Apps	Custom Update Actions	Subscribe to model updates	Morphing	Full-Page Refreshes	Scoped-Page Updates	Partial-Page Refreshes	Optimistic UI
 <p>Rails Stack before Hotwire (before 2021)</p>			  	 		 													
 <p>StimulusReflex Stack</p>			  	 		 									 				

2021

	Programming Language	Web Framework	HTML Rendering	Views/ Components	JavaScript Sprinkles	Websockets	Navigation	Form Submission	Live Form Validation	Lazy Loading	Server-Side DOM-Updates	Real-Time Apps	Custom Update Actions	Subscribe to model updates	Morphing	Full-Page Refreshes	Scoped-Page Updates	Partial-Page Refreshes	Optimistic UI
 Hotwire Stack			  	 		 					 		 						
 StimulusReflex Stack			  	 		 			 	 	 				 				

2024

	Programming Language	Web Framework	HTML Rendering	Views/ Components	JavaScript Sprinkles	Websockets	Navigation	Form Submission	Live Form Validation	Lazy Loading	Server-Side DOM-Updates	Real-Time Apps	Custom Update Actions	Subscribe to model updates	Morphing	Full-Page Refreshes	Scoped-Page Updates	Partial-Page Refreshes	Optimistic UI
 <p>Hotwire Stack with Turbo 8</p>			 ERB  Yjs  Slim	 Partials 		 					 		 						
 <p>StimulusReflex Stack</p>			 ERB  Yjs  Slim	 Partials 		 			 	 	 				 				

The paths are converging

They have the same goal

**Hotwire is the default
in Rails now**

**Build reactive applications with
the Rails tooling you already know
and love.**

**Should you start new apps
with StimulusReflex?**

Probably not.

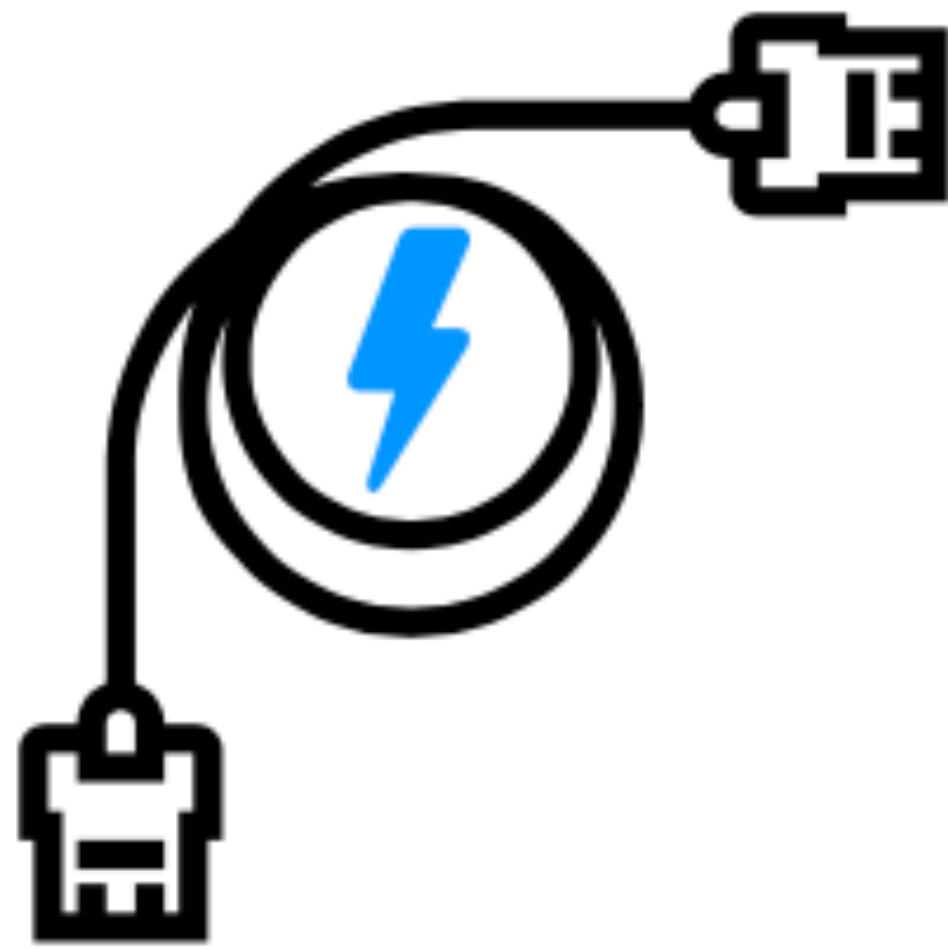
**Hotwire has come a long way
over the years**

**Both projects have the same
end goal**

**The projects are somewhat
competing.**

**People are confused with the
amount of projects and their
boundaries**

**Simplifying the Hotwire
ecosystem doesn't hurt**



CableReady 5.0



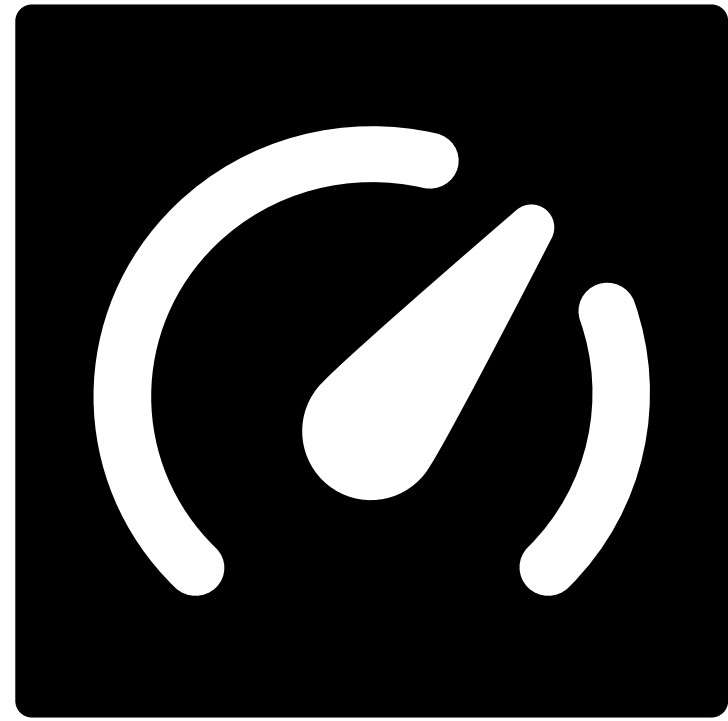
StimulusReflex 3.5



StimulusReflex 3.5
Is out now!

**In the making
for over 3+ years**

**The StimulusReflex Core team
has decided that v3.5 is the
last feature-release for now.**



BOOST

HOW STANDARDS PROLIFERATE:

(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC.)

SITUATION:
THERE ARE
14 COMPETING
STANDARDS.

14?! RIDICULOUS!
WE NEED TO DEVELOP
ONE UNIVERSAL STANDARD
THAT COVERS EVERYONE'S
USE CASES.



YEAH!



SOON:

SITUATION:
THERE ARE
15 COMPETING
STANDARDS.

**Instead, we want to focus and
help on improving the greater
Hotwire ecosystem.**

**Going forward we would love
to help make Hotwire the best
framework in this space.**

Make it the best for Rails

StimulusReflex inspired

**StimulusReflex pushed
what is possible**

Turbo Frames

Turbo Streams

Custom Turbo Stream Actions

Turbo Broadcasts

Turbo Page Refreshes

Morphing

**We were pushing what's
possible with the HTML-over-
the-wire approach**

**Before the Hotwire umbrella
was even a thing**

**StimulusReflex has been
innovative**

	StimulusReflex + CableReady	Hotwire / Turbo	Difference
DOM Updates	May 2017 CableReady Operations	Dec 2020 Turbo Streams	3 yrs 7 mo
Morphing as an individual concept	Aug 2019 CR Morph Action + SR Morphs	?	4 yrs 9 mo+
Scoped Navigation	Oct 2019 data-reflex-root	Dec 2020 Turbo Frames	1 yrs 2 mo
Custom Actions	May 2020 Custom CableReady Operations	Sep 2022 Custom Turbo Stream Actions	2 yrs 4 mo
Reactive Page Refreshes	May 2020* StimulusReflex Page Morph	Feb 2024 Turbo Page Refreshes	3 yrs 9 mo
Partial Page Refreshes	May 2020 StimulusReflex Selector Morph	?	4 yrs+
Subscribe to Models	Jan 2021 cable_ready_stream_from	Dec 2020 turbo_stream_from	-1 mo
Modal Change Broadcasts	Aug 2021 CableReady::Updatable	Feb 2024 Turbo Model Broadcasts	2 yrs 6 mo



None of is to blame

What can we learn from it?

**Missing a formal organizational
structure to push things**

Tooling
Education
Marketing
Documentation
Addressing Issues
Community Building
Building new features
Accelerating Adoption
Framework integrations
Answering Questions/Forums
Guides/How tos/Best Practices
Support Migrations/Transitions

**There are a lot of open issues
and unaddressed pull requests.**

**Stimulus and Turbo are now
default in Rails 7.0**

Who's driving this?

**There is no
Hotwire "Core Team"**

Rails is diverse

**...and all the people that have
contributed and pushed Rails
over the years**

Building a community around Hotwire

To push things forward

Meet the Core team.

The direction of the framework is stewarded by the Rails Core. This group of long-term contributors manages releases, evaluates pull-requests, handles conduct complaints, and does a lot of the groundwork on major new features.



David

USA

Since 2003



Jeremy

USA

Since 2005



Aaron

USA

Since 2011



Xavier

Catalonia

Since 2011



Rafael

Canada

Since 2012



Guillermo

Canada

Since 2012



Carlos

Brazil

Since 2012



Matthew

Australia

Since 2015



Eileen

USA

Since 2017



Ryuta

Japan

Since 2022



Jean

France

Since 2022



John

Canada

Since 2022

The Committers.

The Committer team assists with processing pull requests and making changes to the framework, but does not have the keys to make final releases or set policy. All members of the Core team came up through working on this team: [Akira Matsuda](#), [Eugene Kenny](#), [Gannon McGibbon](#), [Jonathan Hefner](#), [Yasuo Honda](#)

The Issues team.

The Issues team assists with issues triage, pull request reviews, and documentation improvements. They are often the first point of interaction of users with the Rails team: [Adam Hess](#), [Adrianna Chang](#), [Akhil G Krishnan](#), [Alex Ghiculescu](#), [Dima Fako](#), [Edouard Chin](#), [Haroon Ahmed](#), [Hartley McGuire](#), [John Crepezzi](#), [Jorge Manrubia](#), [Keeran Raj Hawoldar](#), [Leo Correa](#), [Luan Vieira](#), [Matheus Richard](#), [Mike Dalessio](#), [Nikita Vasilevsky](#), [Paul Reece](#), [Petrik de Heus](#), [Prem Sichanugrist](#), [Robin Dupret](#), [Vipul A M](#), [Zak Scott](#)

**Can we have something
similar for Hotwire?**

**Should we have something
similar for Hotwire?**

I think we should.

**What can we take over from
StimulusReflex?**

DX

Installer experience

Partial page updates

Morphing beyond Page Refreshes

Optimistic UI

Plugability

**Bringing over as much
as possible.**

It would benefit everyone.

**More diversity and
advanced uses cases**

**The needs of those
companies must be heard**

**Rails integration and
documentation is key**

**So many companies use
and rely on Hotwire**

**I want to keep building
Full-stack apps with Rails**

**Hotwire should
enable it**

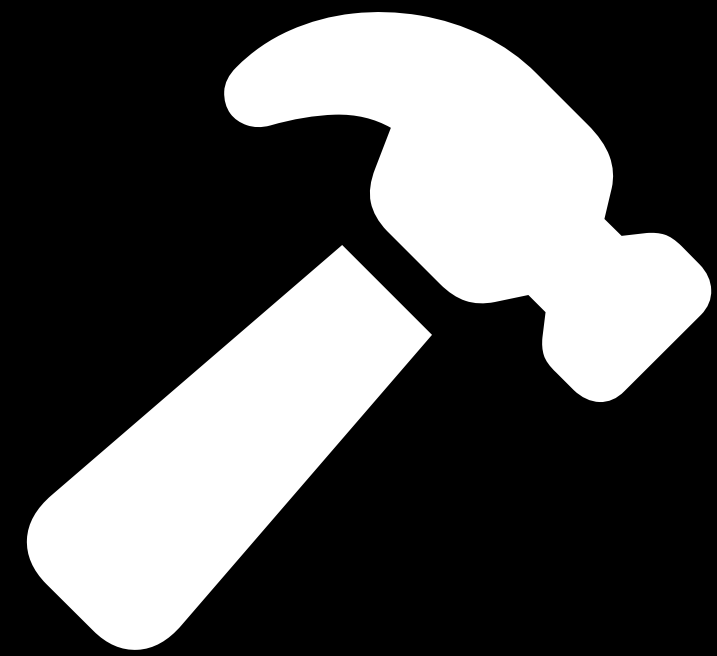
Ecosystem

Frameworks

Tooling

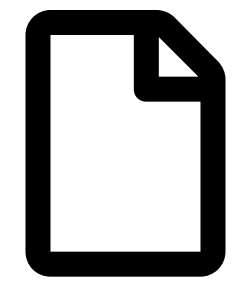
Documentation

Community



Tools

Developer Experience Improvements in Stimulus



app/javascript/controllers/user_profile_controller.js

```
import { Controller } from "@hotwired/stimulus"

export default class extends Controller {
  connect() {
    console.log("User Profile connected")
  }
}
```

```
import { Controller } from "@hotwired/stimulus"

export default class extends Controller {
  connect() {
    console.log("User Profile connected")
  }
}
```

```
import { Controller } from "@hotwired/stimulus"

export default class extends Controller {
  connect() {
    console.log("User Profile connected")
  }
}
```

```
<div data-controller="user_profile">
```

```
</div>
```

Console opened at 5:20:56 PM




```
<div data-controller="user_profile">
```

```
</div>
```

```
<div data-controller="user-profile">
```

```
</div>
```

**These mistakes
happen so easily**

Can we do better?

Available Now

Stimulus LSP



Visual Studio Code



NeoVim



```
<div data-controller=""></div>
```

- application
- circular-progressbar
- collapse-buttons
- filter-checkbox
- filter-slider
- form
- range-slider
- tippy
- tooltip
- worker-list

```
<div data-controller="filter"></div>
```

filter-checkbox

filter-slider

```
<div data-controller="filter-checkbox"></div>
```



```
<div data-controller="filter_checkbox"></div>
```

```
"filter_checkbox" isn't a valid Stimulus controller.  
Did you mean "filter-checkbox"? Stimulus  
LSP(stimulus.controller.invalid)
```

[View Problem](#) (⌘F8) [Quick Fix...](#) (⌘.)

```
<div data-controller="new-controller"></div>
```

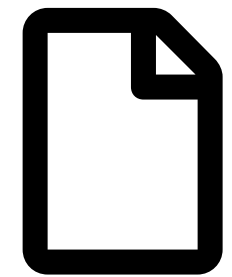
Quick Fix

💡 Create "new-controller" Stimulus Controller

```
<div data-controller="new-controller"></div>
```

Quick Fix

💡 Create "new-controller" Stimulus Controller



```
app/javascript/controllers/new_controller_controller.js
```

```
<div data-controller="filter-checkbox">
```

```
  <a data-action="click"
```

```
</div>
```

```
click
```

```
click->application
```

```
click->circular-progressbar
```

```
click->circular-progressbar#calculateDashOffset
```

```
click->circular-progressbar#connect
```

```
click->circular-progressbar#getColorForPercentage
```

```
click->circular-progressbar#initializeCircularProgressbar
```

```
click->circular-progressbar#updateCircularProgressbar
```

```
click->collapse-buttons
```

```
click->collapse-buttons#connect
```

```
click->collapse-buttons#initializeCollapse
```

```
click->filter-checkbox
```

```
<div data-controller="filter-checkbox">
```

```
  <a data-action="click->filter"
```

```
</div>
```

```
click->filter-checkbox
```

```
click->filter-checkbox#applyClasses
```

```
click->filter-checkbox#checkDisabledState
```

```
click->filter-checkbox#checkedValueChanged
```

```
click->filter-checkbox#connect
```

```
click->filter-checkbox#toggle
```

```
click->filter-slider
```

```
click->filter-slider#checkSliderStatus
```

```
click->filter-slider#connect
```

```
click->filter-slider#disconnect
```

```
click->filter-slider#updateLegend
```

```
click@window->filter-checkbox
```

```
<div data-controller="filter-checkbox">
```

```
  <a data-action="click->filter-checkbox#" |
```

```
</div>
```

- click->filter-checkbox#applyClasses
- click->filter-checkbox#checkDisabledState
- click->filter-checkbox#checkedValueChanged
- click->filter-checkbox#connect
- click->filter-checkbox#toggle
- click@window->filter-checkbox#applyClasses
- click@window->filter-checkbox#checkDisabledState
- click@window->filter-checkbox#checkedValueChang...
- click@window->filter-checkbox#connect
- click@window->filter-checkbox#toggle
- click@document->filter-checkbox#applyClasses
- click@document->filter-checkbox#checkDisabledSt...

```
<div data-controller="filter-checkbox">
```

```
  <a data-action="click->filter-checkbox#applyClasses"></a>
```

```
</div>
```

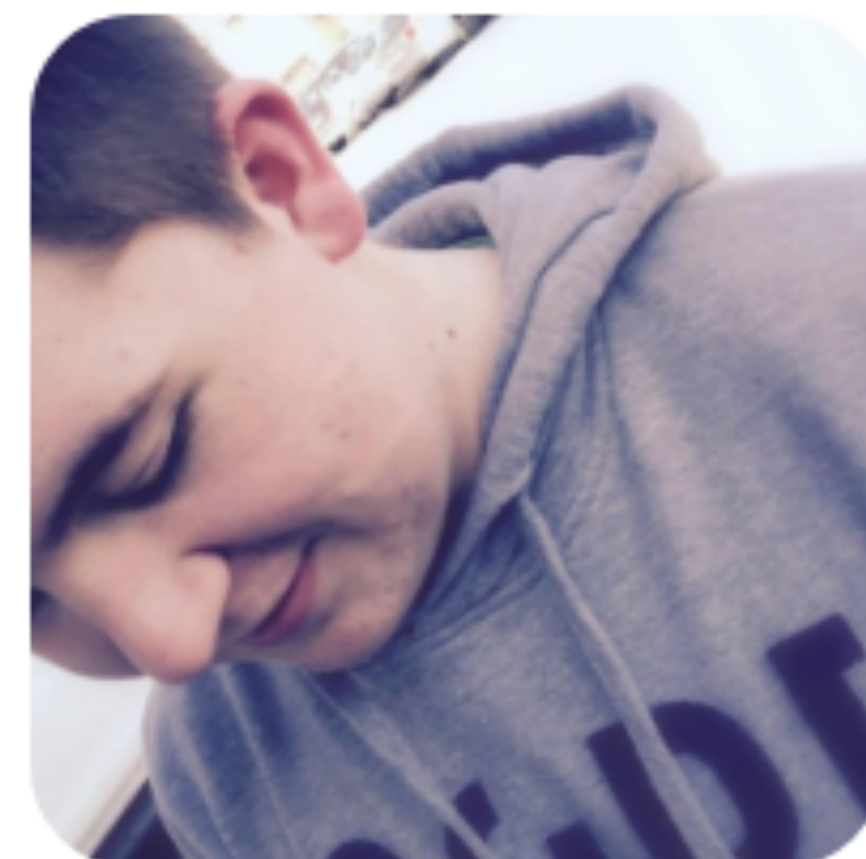
```
<div data-controller="filter-checkbox">  
  <a data-action="click->filter-checkbox#unknown"></a>  
</div>
```

"unknown" isn't a valid Controller Action on the "filter-checkbox" controller. Did you mean "connect"?
Stimulus LSP(stimulus.controller.action.invalid)

[View Problem \(⌘F8\)](#) No quick fixes available

New features

marcoroth/ stimulus-parser



Statically analyze Stimulus controllers in your project.



7

Contributors



4

Used by



28

Stars



7

Forks

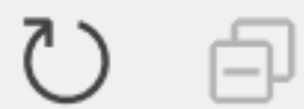


**Parses JavaScript classes and
traces imports and exports**

Registers and tracks identifiers



STIMULUS CONTROLLERS



- laravel
- name
- nested--laravel
- nested--twice--laravel
- nested--twice--webpack
- nested--webpack
- some-thing
- typescript
- user--nested--update
- user--status
- user-profile
- webpack



JS user_profile_controller.js ×

JS name_controller.js


```
app > javascript > controllers > JS user_profile_controller.js >
1   import { Controller } from "@hotwired/stimulus"
2
3   export default class extends Controller {
4     connect() {
5       console.log("Hello, Stimulus!", this.element)
6     }
7   }
```

STIMULUS CONTROLLERS



✓ Unregistered (6 controllers)

 alert (tailwindcss-stimulus-components)

 autosave (tailwindcss-stimulus-components)

 color-preview (tailwindcss-stimulus-components)

 modal (tailwindcss-stimulus-components)

 slideover (tailwindcss-stimulus-components)

 strada (@hotwired/strada)

> Registered (40 controllers)






<> index.html >  div

1 <div data-controller="alert">

2

3 </div>

Quick Fix

-  Register "alert" from "app/javascript/controllers/alert_controller.js" on Stimulus Application
-  Register "alert" from "tailwindcss-stimulus-components" on Stimulus Application
-  Create "alert" Stimulus Controller
-  Fix using Copilot
-  Explain using Copilot

JS profile_controller.js ●

app > javascript > controllers > user > JS profile_controller.js > ...

```
1 import { Controller } from "@hotwired/stimulus"
```

```
2
```

Stimulus: Connects to data-controller="user--profile"

```
3 export default class extends Controller {
```

```
4   connect() {
```

```
5     // ...
```

```
6   }
```

```
7
```

```
8   // ...
```

```
9 }
```

```
10
```


src > controllers > JS alert_controller.js > ...

```
1 import { Controller } from "@hotwired/stimulus"
```

```
2
```

Stimulus: The "alert" controller isn't registered on your Stimulus Application

```
3 export default class extends Controller {
```

```
4   static targets = ["item"];
```

```
5   static classes = ["active", "inactive"];
```

```
6
```

```
7   connect() {
```

```
8     | console.log("connect")
```

```
9   }
```

```
10
```

```
11   show(event) {
```

```
12     | console.log("alert#show", event)
```

```
13   }
```

Better. GoToDefinition()



Code Actions

🔧 6 New Code Actions

🔧 For more productivity

Reduced
False-Positives



Support for **TypeScript** Files
and Stimulus Controllers

Inheritance
Support

Stimulus LSP 1.0

```
import { } from ""  
  
import * as  
  
export default  
  
export * from  
  
export { }
```

Full **import** and **export**
tracing for more accurate
results and diagnostics



Support for Stimulus Controllers
imported from NPM packages

New Diagnostics



Over 5+ new supported kinds

@Decorators

Support and Diagnostics for
Stimulus Decorators

CodeLens

▼ STIMULUS CONTROLLERS



- 🔗 tree-list-view
- 🔗 to-show-available
- 🔗 and-registered
- 🔗 controller-identifiers

Stimulus LSP

Next steps

Full support for HTML+ERB and Rails-specific helpers

```
<%= tag.div(  
  data: {  
    controller: "filter",  
    filter_open_class: "border-white",  
    filter_close_class: "hover:bg-gray-100 border-gray-300"  
  }  
) %>
```



Ruby LSP

Full support for importmap-rails

```
# Pin npm packages by running ./bin/importmap

pin "application", preload: true

pin "@hotwired/turbo-rails", to: "turbo.min.js", preload: true
pin "@hotwired/stimulus", to: "stimulus.js", preload: true
pin "@hotwired/stimulus-loading", to: "stimulus-loading.js", preload: true

pin "@rails/request.js", to: "requestjs.js", preload: true

pin_all_from "app/javascript/controllers", under: "controllers"
pin_all_from "app/javascript/config", under: "config"
```



Search bar: Type / to search



- <> Code
- Issues **67**
- Pull requests **6**
- Actions
- Security
- Insights
- Settings

Filters: is:open is:issue label:diagnostic

Labels 19

Milestones 0

New issue

Clear current search query, filters, and sorts

19 Open ✓ 4 Closed

 Author ▾ Label ▾ Projects ▾ Milestones ▾ Assignee ▾ Sort ▾

Diagnostic: Calling `application.register` with a non-controller should warn you
diagnostic enhancement feature
 #204 opened on Mar 2 by marcoroth

Diagnostic: Put controller actions in specific order diagnostic enhancement feature
 #201 opened on Mar 1 by marcoroth

Diagnostic: Warn if target is never referenced in app diagnostic enhancement feature
find-references
 #172 opened on Feb 17 by marcoroth

Diagnostic: Implement `stimulus.controller.class.missing` diagnostic diagnostic
enhancement feature
 #165 opened on Feb 15 by marcoroth

Diagnostics

HTML Files

- Missing controllers (`stimulus.controller.invalid`)
- Missing controller actions (`stimulus.action.invalid`)
- Missing controller targets (`stimulus.controller.target.missing`)
- Missing controller values (`stimulus.controller.value.missing`)
- Invalid action descriptors (`stimulus.action.invalid`)
- Data attributes format mismatches (`stimulus.attribute.mismatch`)
- Controller values type mismatches (`stimulus.controller.value.type_mismatch`)

JavaScript Files/Stimulus Controller Files

- Controller value definition default value type mismatch
(`stimulus.controller.value_definition.default_value.type_mismatch`)
- Unknown value definition type (`stimulus.controller.value_definition.unknown_type`)
- Controller parsing errors (`stimulus.controller.parse_error`)
- Import from deprecated packages (`stimulus.package.deprecated.import`)

Coming Soon

Stimulus Lint

Errors

Diagnostics

Best Practices

Recommendations

```
$ stimulus-lint
```

```
Stimulus Lint is inspecting 25 files
```

```
.....
```

```
25 files inspected, 0 offenses detected, 0 offenses autocorrectable
```

Planned

Turbo LSP

Planned

Stimulus/Turbo Browser Extension

 Create a post +

 **Default Contact Admin** · 28 days ago
posted in [Nate's Space](#) Also really long name here ...

New Post 1

Test update the body

 Like  Comment 18 comments



ReflexBehaviors toggles(trigger/target) ✕



Create a post



Default Contact Admin · 28 days ago

posted in Nate's Space Also really long name here



New Post 1

Test update the body



Like



Comment

18 comments

ReflexBehaviors toggles(trigger/target)



DC Create a post +

DC Default Contact Admin · 28 days ago
 posted in Nate's Space Also really long name here

New Post 1

Test update the body

Like Comment 18 comments

```

  ER (controls: comments_communities
  customers/community/community.html.erb
  account/communities/spaces/posts/_show.html
  account/communities/spaces/posts/_actions.html.erb
  
```

```

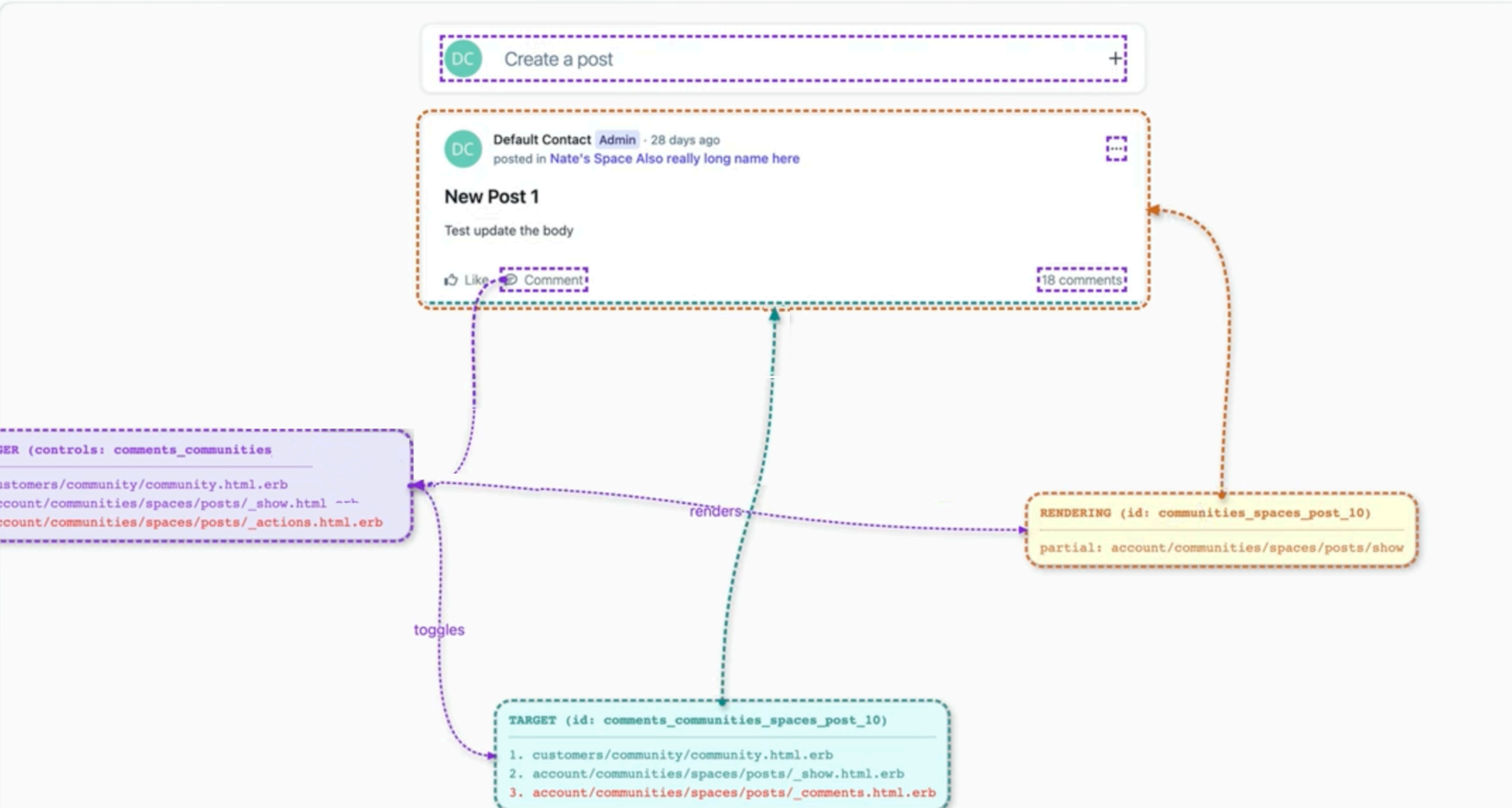
  RENDERING (id: communities_spaces_post_10)
  partial: account/communities/spaces/posts/show
  
```

```

  TARGET (id: comments_communities_spaces_post_10)
  1. customers/community/community.html.erb
  2. account/communities/spaces/posts/_show.html.erb
  3. account/communities/spaces/posts/_comments.html.erb
  
```

toggles

renders



**Developer Experience and
Developer Ergonomics matter.**

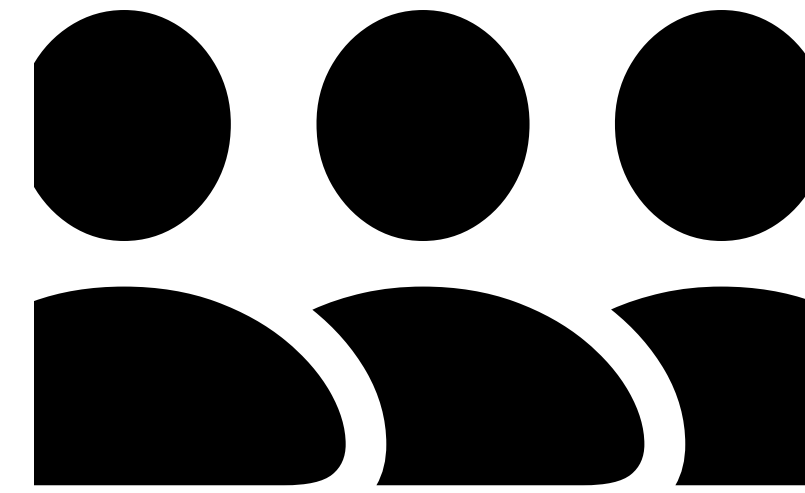
**This is the kind of tooling
Hotwire is currently missing.**



Documentation



Documentation



Community

What's lacking in Hotwire?

Framework-specific documentation

In-depth guides

Discoverability

Navigating the ecosystem

Presentation and marketing

Staying up-to-date

ActionCable **AnyCable** **CableReady** Cubism current.js

Debounce **Formulus** Futurism Hotwire Kredis Local Time

Rails Request.js **Skeletons** **Stimulus** Stimulus Intellisense

Stimulus LSP **Stimulus Parser** Stimulus Rails **Stimulus Use**

StimulusReflex Strada Strada Android Strada Web Strada iOS

tippy.js Tom Select **Turbo** **Turbo Boost** Turbo Boost Commands

Turbo Boost Dev Tools Turbo Boost Elements Turbo Boost Streams

Turbo LSP **Turbo Morph** Turbo Native Turbo Native Android

Turbo Native iOS **Turbo Power** Turbo Power Rails Turbo Rails

View Components

HOTW**ARE .IO

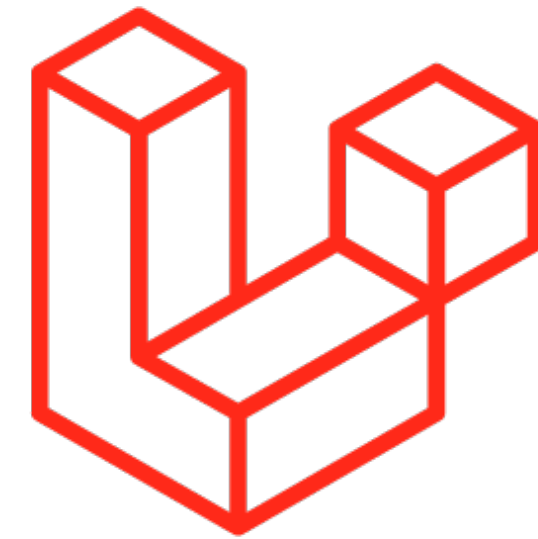
Community-maintained documentation and resource Hub

Frameworks

Tooling

Documentation

Community



RODA

 **amber**

 **LUCKY**

 **Phoenix**

An elegant way to combine **Hotwire** and **Laravel**

An alternative way of building web and hybrid native applications with minimal JavaScript that relies on sending HTML over the wire.

Get Started

<https://turbo-laravel.com/>

CURATED BY SYMFONY

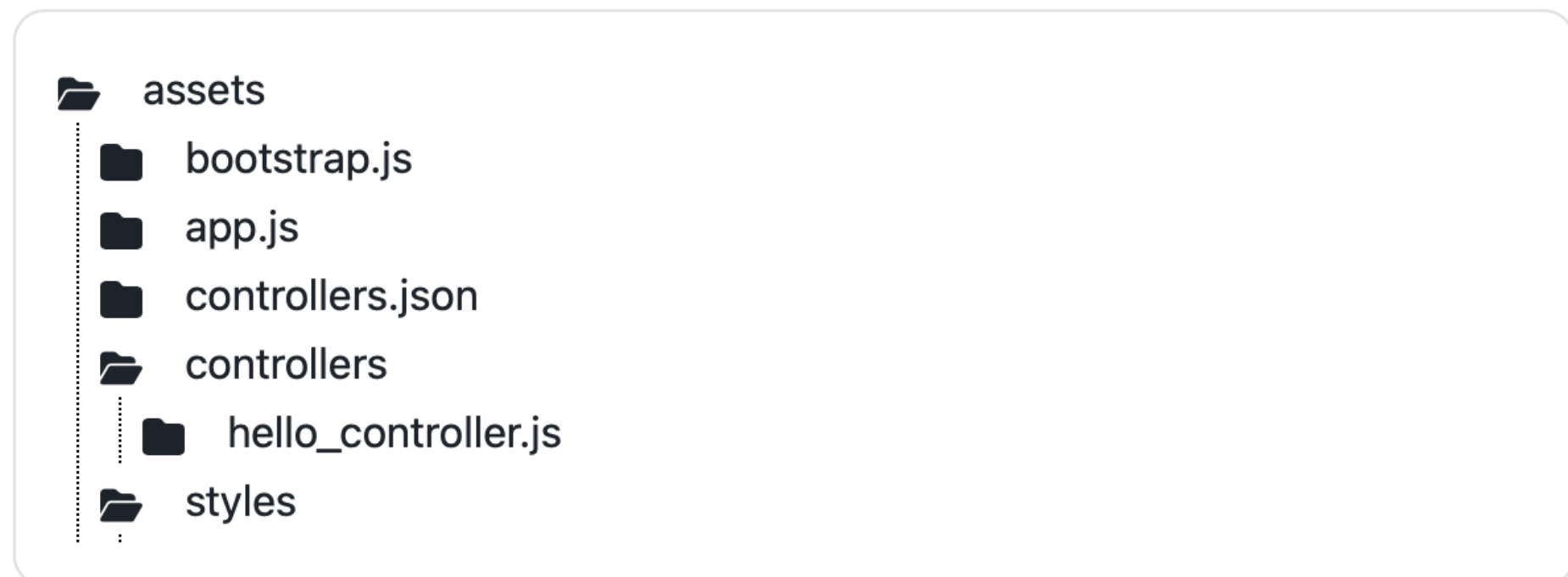
JavaScript **tools** you can't live without.

A set of PHP & JavaScript packages to solve every day frontend problems featuring Stimulus and Turbo.

```
// I need to add a JavaScript image cropper
```

Install it

```
$ composer require symfony/webpack-encore-bundle symfony/stimulus  
$ npm install  
$ npm run watch
```



<https://ux.symfony.com/>

Class List

Classes | [Methods](#) | [Files](#)

Search:

Top Level Namespace

▼ Turbo

► Broadcastable

[DriveHelper](#)

[Engine](#) < [Engine](#)

[FramesHelper](#)

[IncludesHelper](#)

[StreamsChannel](#) < [Base](#)

[StreamsHelper](#)

► TestAssertions

[Turbo::Frames::FrameReque](#)

[Turbo::Native::Navigation](#)

[Turbo::Native::NavigationCo](#)

[Turbo::Streams::ActionBroac](#)

[Turbo::Streams::ActionHelpe](#)

[Turbo::Streams::BroadcastJo](#)

[Turbo::Streams::Broadcasts](#)

▼ Turbo::Streams::StreamNam

[ClassMethods](#)

[Turbo::Streams::TagBuilder](#)

[Turbo::Streams::TurboStrear](#)

[Libraries](#) » [hotwired/turbo-rails \(main\)](#) » [Index](#) » File: README

Turbo

Turbo gives you the speed of a single-page web application without having to write any JavaScript. Turbo accelerates links and form submissions without requiring you to change your server-side generated HTML. It lets you carve up a page into independent frames, which can be lazy-loaded and operate as independent components. And finally, helps you make partial page updates using just HTML and a set of CRUD-like container tags. These three techniques reduce the amount of custom JavaScript that many web applications need to write by an order of magnitude. And for the few dynamic bits that are left, you're invited to finish the job with [Stimulus](#).

On top of accelerating web applications, Turbo was built from the ground-up to form the foundation of hybrid native applications. Write the navigational shell of your [Android](#) or [iOS](#) app using the standard platform tooling, then seamlessly fill in features from the web, following native navigation patterns. Not every mobile screen needs to be written in Swift or Kotlin to feel native. With Turbo, you spend less time wrangling JSON, waiting on app stores to approve updates, or reimplementing features you've already created in HTML.

Turbo is a language-agnostic framework written in TypeScript, but this gem builds on top of those basics to make the integration with Rails as smooth as possible. You can deliver turbo updates via model callbacks over Action Cable, respond to controller actions with native navigation or standard redirects, and render turbo frames with helpers and layout-free responses.

Navigate with Turbo Drive

Turbo is a continuation of the ideas from the previous [Turbolinks](#) framework, and the heart of that past approach lives on as Turbo Drive. When installed, Turbo automatically intercepts all clicks on `<a href>` links to the same domain. When you click an eligible link, Turbo prevents the browser from following it. Instead, Turbo changes the browser's URL using the History API, requests the new page using `fetch`, and then renders the HTML response.

Table of Contents

1. [Navigate with Turbo Drive](#)
2. [Decompose with Turbo Frames](#)
 1. [A note on custom layouts](#)
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5. [Usage](#)
 1. [RubyDoc Documentation](#)
6. [Compatibility with Rails UJS](#)
7. [Testing](#)
8. [Development](#)
9. [License](#)


<https://rubydoc.info/github/hotwired/turbo-rails/main>

Introducing Hotwire.io →

The JavaScript Ecosystem for Server-rendered Web- Applications

Hotwire is an alternative approach to building modern web applications without using much JavaScript by sending HTML instead of JSON over the wire.

Get Started →

 Read the docs

Helping you navigate and discover the ecosystem

Ecosystem

Core Libraries

 **STIMULUS** **STRADA** **TURBO**

[View all →](#)

Extending Core Functionality

Stimulus Use

 **MORPH** **POWER**

[View all →](#)

New Concepts

 **FORMULUS**

Skeletons

 **BOOST**

Use-Cases and Best practices



[Ecosystem](#) [Documentation](#) [Use-Cases](#) [Frameworks](#) [Community](#) [Newsletter](#)

Use Cases

[AJAX](#)

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[Forms](#)

[Keyboard Shortcuts](#)

[Morphing Content](#)

[Presence](#)

[Toasts](#)

[View Transitions](#)

Backed by community content

Backed by community content

If you write a post, we want to feature it next to the relevant documentation section so it can also be discovered by the community.

We would love to see your contribution.

For the community, by the community.

Hotwire.io is a **community-driven** effort and is **not** affiliated with the **official Hotwire project** in any way.

The purpose is to promote the entire Hotwire ecosystem, show framework-specific documentation, have a place to discover tools and libraries built for the Hotwire ecosystem and also have a place to showcase community created content like blog posts and videos.

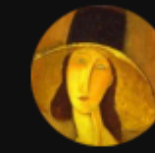
Hotwire.io is brought to you by these awesome members of the
Hotwire community:



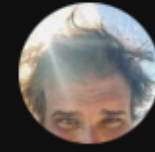
Tony Messias
Contributor



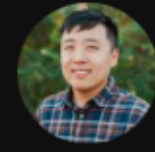
LB (Ben Johnston)
Contributor



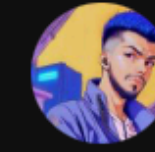
Ariel
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Omar Luq
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Teppei Taguchi
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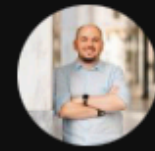
Michael Yin
Contributor



Guillaume Briday
Contributor



redbar0n
Contributor



Adrian Marin
Contributor



Connor Bey 13
Contributor



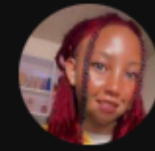
Martin Arce
Contributor



Marco Roth
Contributor



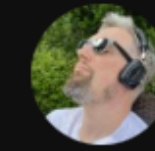
e
Contributor



Joan Njuguna
Contributor



SHUBHAM SHARMA
Contributor



Julian Rubisch
Contributor



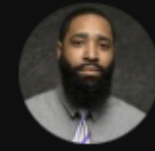
Konnor Rogers
Contributor



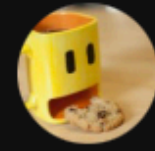
Sebastian Scholl
Contributor



Dom Christie
Contributor



Smith
Contributor



Valerio Francescangeli
Contributor



Tabish Iqbal
Contributor

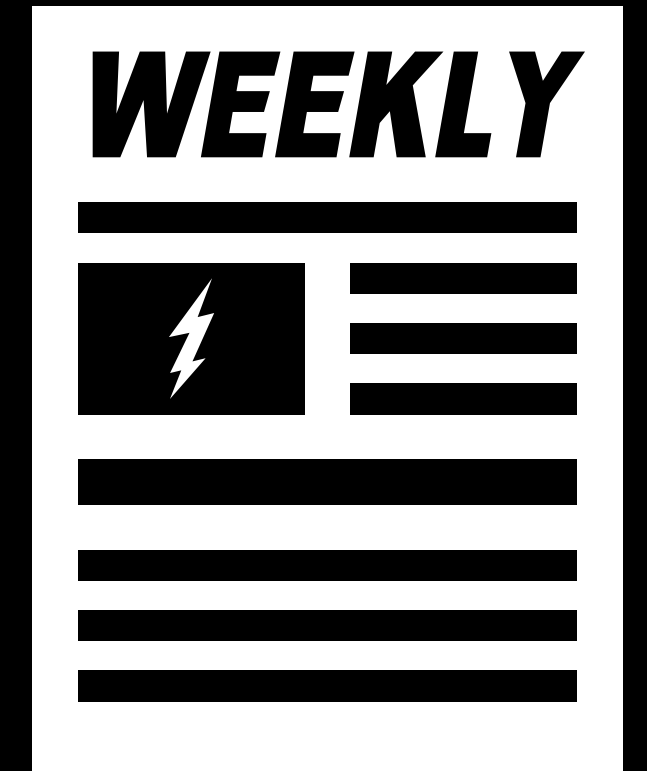
The framework is not worth anything if people do not know about it and can not learn about it.



WEEKLY

Hotwire Weekly

- A new Hotwire-focused newsletter
- Delivered Weekly
- Explore what's happening in the world of Hotwire
- Progress and updates while we are building out hotwire.io
- Been running since Oct 2023
- Over 1200+ subscribers and growing





WEEKLY

Welcome to Hotwire Weekly!

Welcome to the another issue of Hotwire Weekly! [RailsConf](#) is happening in Detroit next week. There are also going to be a few Hotwire-adjacent talks:

- "Revisiting the Hotwire Landscape after Turbo 8" by **Marco Roth** on Thursday at 9 am.
- "Insights Gained from Developing a Hybrid Application Using Turbo-Native and Strada" by **John Pollard** on Thursday at 10 am.
- "Dungeons & Dragons & Rails" by **Joël Quenneville** on Thursday at 11 am.
- "Progressive Web Apps with Ruby on Rails" by **Avi Flombaum** on Thursday at 2:30 pm.

If you want to hack on anything Hotwire-related on the Hackday on Tuesday come find Marco Roth!

Happy reading! 🚀 ✨

📖 Articles, Tutorials, and Videos

[How to build a Cmd+k search modal with Hotwire](#) - **Alexandre Ruban** published a blog post in which he describes how he built a keyboard shortcuts interface with Hotwire.

[From React to Hotwire: The Adventures of a Frontend Migration](#) - **Weldys Santos** gave a talk at [Tropical.rb](#) in April which is now available on YouTube.

[AnyCable for Ruby on Rails: How Does it Improve over Action Cable?](#) - **Abiodun Olowode** wrote an article on the [AppSignal Blog](#) where he compares ActionCable with AnyCable in Rails

🛠 Libraries and Tools

[stimulus-use](#) - A collection of composable behaviors for your Stimulus Controllers.

[@rails/request.js](#) - A thin wrapper around the `fetch` API built for the use with Rails Hotwire.

🎉 Releases

[turbo-android v7.1.3](#) - Android framework for making Turbo native apps.

[hotwire_combobox v0.3.0](#) - An autocomplete combobox implementation for apps using Hotwire.

[tailwindcss-rails v2.6.0](#) and [v2.4.1](#) - TailwindCSS for Rails.

[hotwire-livereload v1.4.0](#) - Live reload gem for Hotwire Rails apps.

[phlex v1.10.2](#) - A framework for building object-oriented views in Ruby.

Feel free to follow us on [Twitter/X](#) or on [Mastodon](#)!

See you next week!

Coming Soon

Hotwire.io Improvements

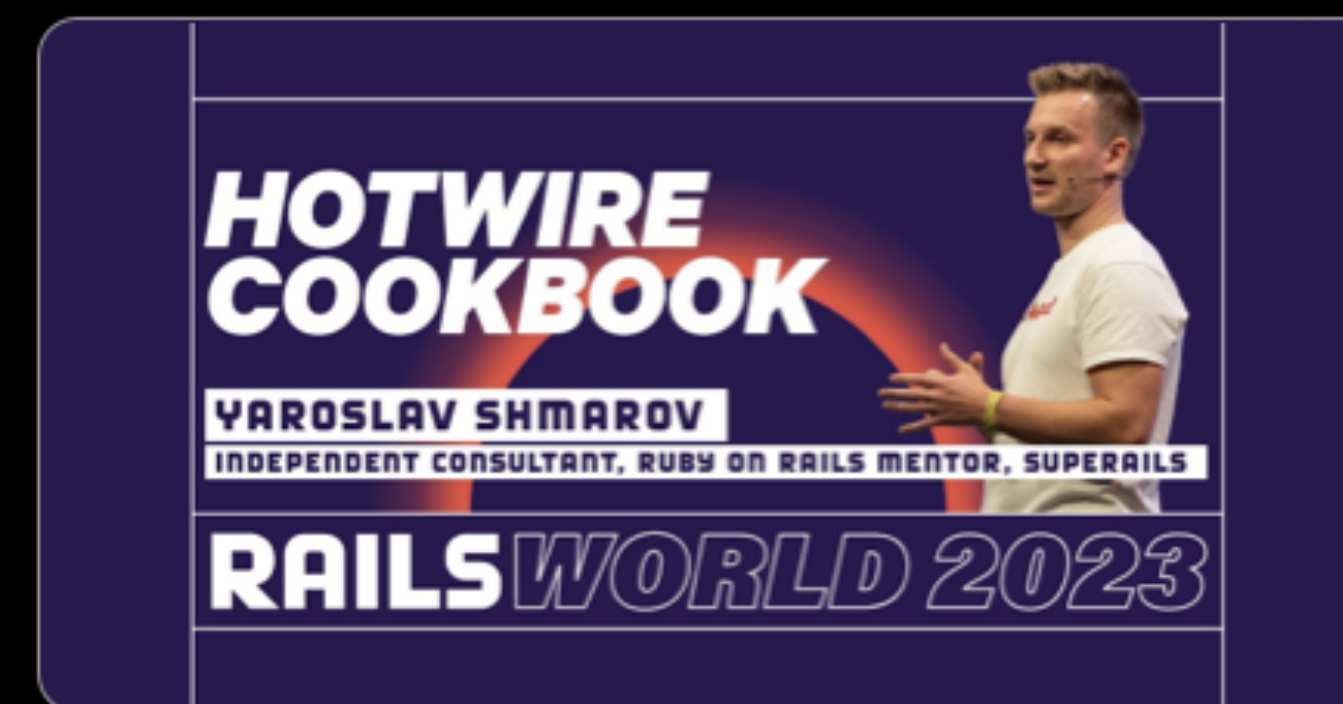
Hotwire Videos



Generate Barcodes with JsBarcode. StimulusJS, Importmaps



Jorge Manrubia - Making a difference with Turbo - Rails World 2023



Yaroslav Shmarov - Hotwire Cookbook: Common Uses, Essential Patterns & Best Practices - Rails World

Hotwire Articles

Turbo

Stimulus

Turbo Streams

Turbo Frames

Turbo Drive

Ruby on Rails

Laravel

Symfony

Phoenix

Ruby

PHP

Elixir



The future of full-stack Rails II: Turbo View Transitions

The Web continues to evolve at a fast pace. New, exciting features are being proposed and adopted by web browsers at regular intervals.



The future of full-stack Rails: Turbo Morph Drive

The “getting-back-into-full-stack” trend in web development communities is gaining more traction.



Dashbit

Supercharge your app: latency and rendering optimizations in Phoenix LiveView

LiveView's unique integration between server and client allows it to drastically optimize both latency and bandwidth

esbuild, importmaps or something else?

 sprockets-rails

 webpacker

 webpack

 shakapacker

 jsbundling-rails

 cssbundling-rails

 **esbuild**
An extremely fast JavaScript bundler

 rollup.js

 importmap-rails

 **esbuild-rails**



Vite



Vite Ruby

 propshaft



 dartsass-rails

 tailwindcss-rails



 **BULMA**

Coming Soon

Hotwire.io Rails Asset Setup Guide

Asset Setup-Guide for new Rails apps

Answer a few questions to get the best asset bundling setup for your needs.

Is your Rails app going to be a regular app or an API-only app?

Classic

API-only

How many JavaScript packages/dependencies do you anticipate to use?

0-5

5-10


10 or more

Do you need customized styles?


Asset Setup-Guide for new Rails apps

Based on your answers, here's the result


JavaScript Bundler

 Vite Ruby


CSS Framework

 Tailwind via tailwindcss-rails

Asset Pipeline

 Propshaft

JavaScript Framework(s)

 Turbo and Stimulus

JavaScript Framework(s)

⚡ Turbo and Stimulus

Setup this configuration in your Rails app

To get your app setup, please install vite-rails first:

```
$ bundle add vite-rails
```

Run the installer:

```
$ bundle exec vite install
```


Future and Vision

**All these projects and efforts
need to be seen by the people
in the community.**

**It is a loss if people don't know
these tools exist**

**My wish is that we as a
community can continue
pushing what's possible with
Hotwire.**

**Turbo 8 has been awesome
and is going in right direction.**

But we need more of it.

**..and that we have a more
formal and "official" way of
pushing things forward.**

Optimistic UI

Optimistic client-side rendering

"Frameless"-Turbo Frames

Partial Page Morph Updates

Independent Morphing

Plugins/Extensibility

Web Components

PWA

Better React-compatibility

HOTW⚡RE

**A more unified Hotwire
ecosystem**

Keep Building

Keep Pushing

**Build reactive applications with
the Rails tooling you already know
and love.**



Hotwire Weekly

 @Hotwire_Weekly

 @Hotwire_Weekly@ruby.social

Sign up on hotwireweekly.com

Stickers



 @marcoroth

 marcoroth.dev

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 @marcoroth@ruby.social

Thank you 🙏