

Usando Livebook para construir ferramentas internas



por Hugo Baraúna

como desenvolvedores,
novo trabalho principal é
entregas novas
funcionalidades

—
porém...
**ao longo do tempo
outro trabalho
aparece**

—
porém...
ao longo do tempo
outro trabalho
aparece

“Você pode puxar esse relatório pra mim?”

- produto

“Você pode rodar o script de reembolso?”

- suporte

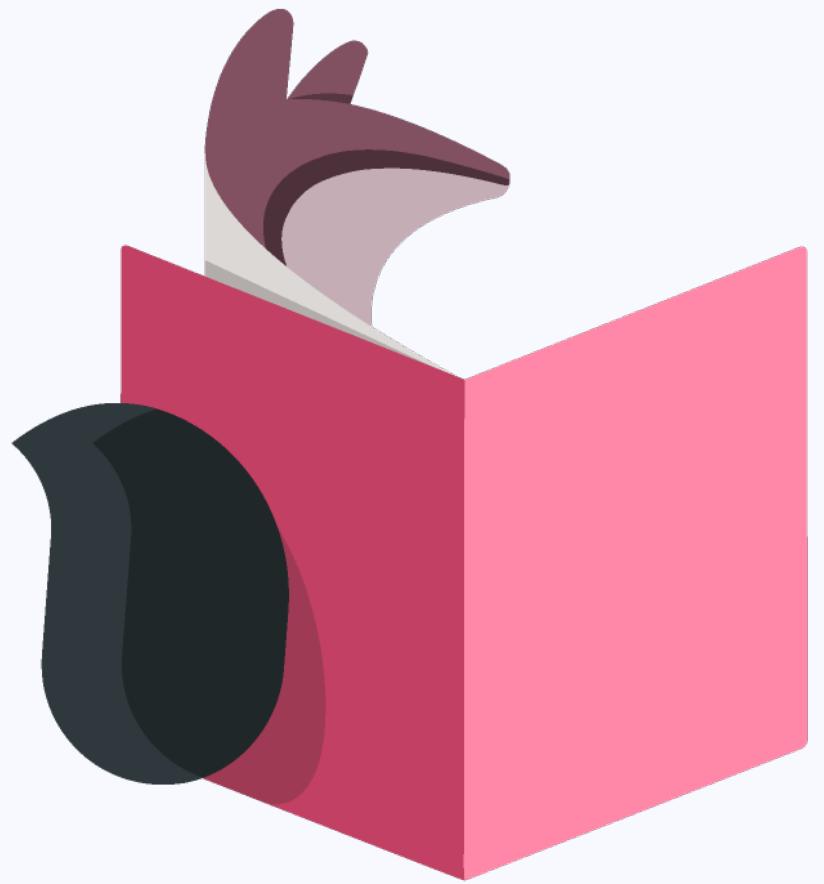
“Como você faz isso em produção?”

- engenharia

*“Devo continuar
fazendo eu mesmo
ou construir uma ferramenta
para que eles possam fazer?”*

		HOW OFTEN YOU DO THE TASK					
		50/DAY	5/DAY	DAILY	WEEKLY	MONTHLY	YEARLY
HOW MUCH TIME YOU HAVE OFF	1 SECOND	1 DAY	2 HOURS	30 MINUTES	4 MINUTES	1 MINUTE	5 SECONDS
	5 SECONDS	5 DAYS	12 HOURS	2 HOURS	21 MINUTES	5 MINUTES	25 SECONDS
	30 SECONDS	4 WEEKS	3 DAYS	12 HOURS	2 HOURS	30 MINUTES	2 MINUTES
	1 MINUTE	8 WEEKS	6 DAYS	1 DAY	4 HOURS	1 HOUR	5 MINUTES
	5 MINUTES	9 MONTHS	4 WEEKS	6 DAYS	21 HOURS	5 HOURS	25 MINUTES
	30 MINUTES	6 MONTHS	5 WEEKS	5 DAYS	1 DAY	2 HOURS	
	1 HOUR	10 MONTHS	2 MONTHS	10 DAYS	2 DAYS	5 HOURS	
	6 HOURS			2 MONTHS	2 WEEKS	1 DAY	
	1 DAY				8 WEEKS	5 DAYS	

Ferramentas internas



Livebook



livebook-dev/livebook

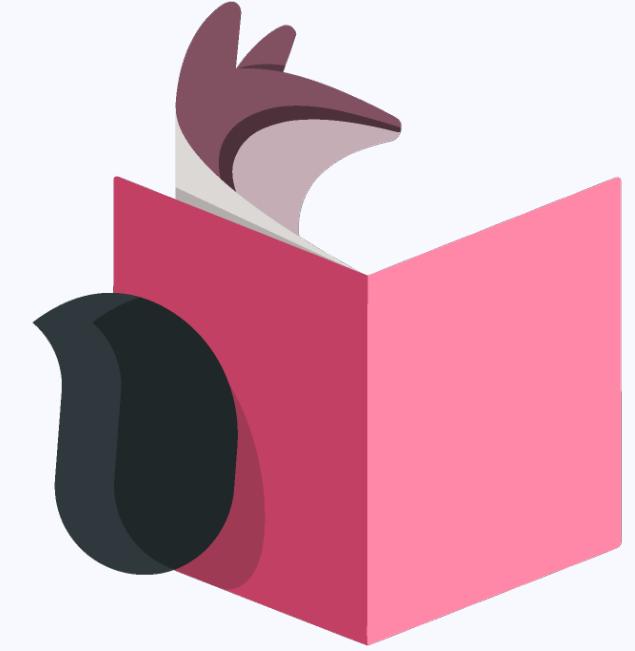


Livebook Apps

Hugo Baraúna

- 🥑 Dev advocate @ Dashbit
- 💌 Elixir Radar newsletter
- 📘 Elixir Patterns
- 📘 Programming Nerves
- 🚩 Paraense





Livebook Apps



O que é uma Livebook app?

Uma Livebook app é
um modo de executar
um Livebook notebook
como uma aplicação

Exemplos de usuários

Relatório Interativo

Em 450 LOC



Dr. Mike Williams
Owner @ QixSoft

Kanban KPIs

Selection of Data

The form below allows you to pick the range of data to retrieve from the DB. The `Start From` date defaults to 60 days ago and the `Until` date defaults to today. The dropdown `Select environment` should be set to `Production` by default. The other values are for development and testing purposes only.

Select environment

Production 

Start From

09/06/2024 

Until

08/08/2024 

Select

Analysis Data Table

This table is the summary of data retrieved from the DB over the time range selected in the above form. The KPIs are computed each day at `0100 UTC` after fetching the latest data from GitLab. The starting date for the analysis calculations was `2024-05-01` and issues are fetched if their creation date is on or after `2023-05-01` (to pick up older created issues that are now being worked on).

Nothing here...

Issues Data Table

Kanban KPIs

Selection of Data

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Select environment

Production

Start From

09/06/2024



Until

08/08/2024



Select

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Nothing here...

Issues Data Table

Discord bot

Em 164 LOC



Rodolfo Silva

CTO @ Infleet

A screenshot of a Discord message from a channel named "LiveBook APP". The message was sent "Hoje às 10:43". It starts with "Hey team, just sharing some relevant facts:" followed by a red vertical bar. To the left of the bar is a small blue circular icon with a white Discord logo. Below the message, there is a summary of analysis results:

Analysis of Submissions and Goal Status		
Goal	On target	Outside target
95%	97%	3%
Goal status		
Goal achieved		
Analysis generated on: 2024-08-20 13:43:00Z		

Exemplos do time do Livebook

**Convites
para o beta
em 300 LOC**

The screenshot shows a web-based invitation form titled "Invite to Livebook Teams beta users". At the top left is a small red icon of a book with a graduation cap. To its right is the title. Below the title is a text input field with the placeholder "Email addresses to receive invite (one per line)". A large, semi-transparent circular overlay covers the middle portion of the page. Inside this overlay, on the left, is the text "Fill in email addresses". On the right side of the overlay is a button labeled "Continue" with a blue circular arrow icon. The background of the page is white, and there is a thin horizontal blue bar at the very top edge.

Fill in email addresses

Continue



Invite to Livebook Teams beta users

Email addresses to receive invite (one per line)

Fill in email addresses

▶ Continue



Dashboard em 610 LOC

Livebook Teams Dashboard

Update dashboard

610 OKC

Acquisition funnel

Invites	Organizations	Orgs that sent invites	Orgs with 2+ members
352	115	54	34
	32.7%	47.0%	63.0%

Activation metrics

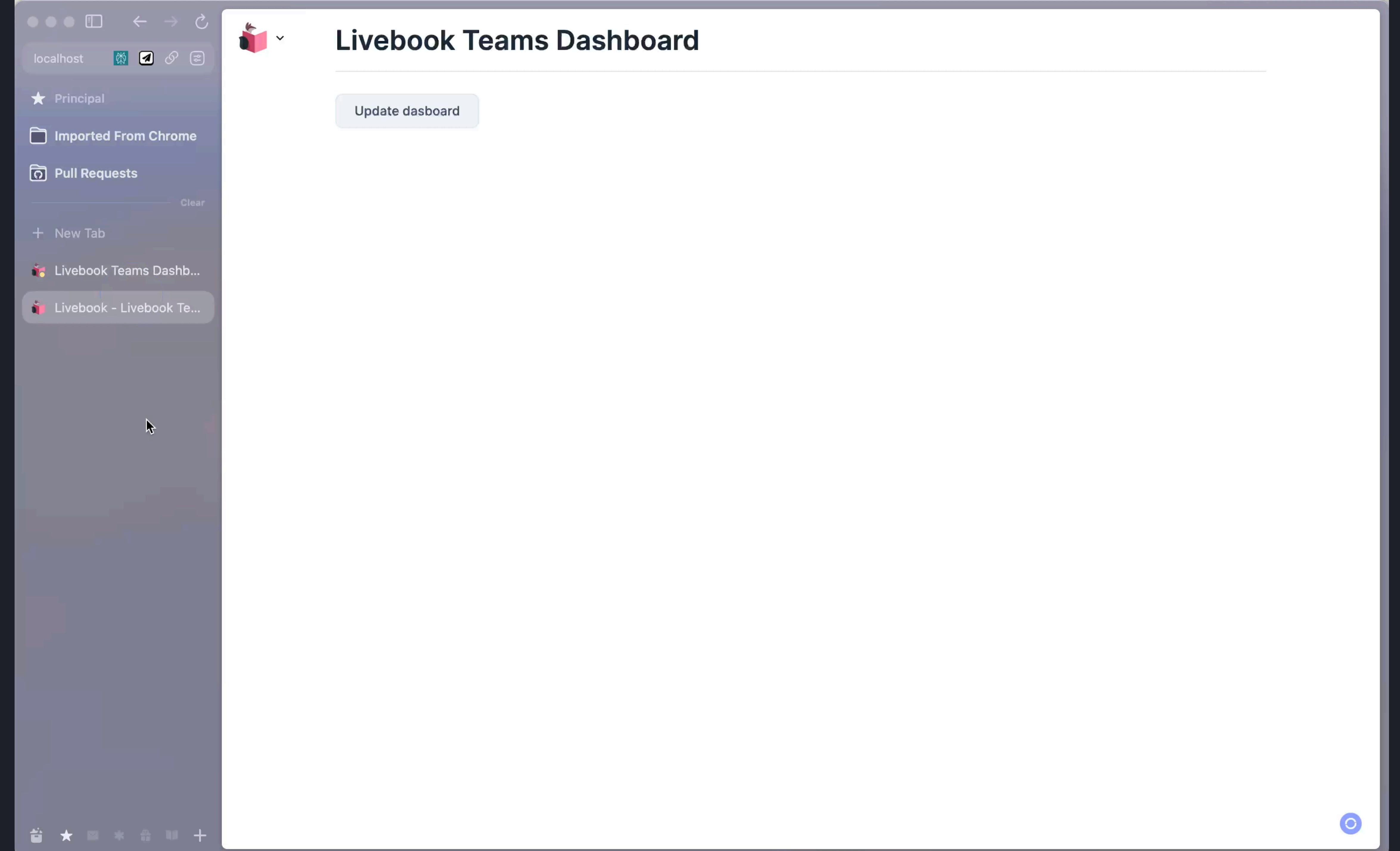
Orgs that deployed apps	Orgs that created secrets	Orgs that created file storages
10.4%	30.4%	16.5%
12 of 115	35 of 115	19 of 115

Retention metrics

based on the user.connected event

Weekly active users

week_start	active_users
2023-11-27	14
2023-12-04	31
2023-12-11	29
2023-12-18	29
2023-12-25	30
2024-01-01	25
2024-01-08	29
2024-01-15	29
2024-01-22	34
2024-01-29	33
2024-02-05	37
2024-02-12	30
2024-02-19	35
2024-02-26	37
2024-03-04	37
2024-03-11	40
2024-03-18	37
2024-03-25	46
2024-04-01	41
2024-04-08	37
2024-04-15	35
2024-04-22	45
2024-04-29	30
2024-05-06	40
2024-05-13	45
2024-05-20	45
2024-05-27	43
2024-06-03	39
2024-06-10	48
2024-06-17	40
2024-06-24	39
2024-07-01	40
2024-07-08	43
2024-07-15	45
2024-07-22	45
2024-07-29	45
2024-08-05	50
2024-08-12	51
2024-08-19	40

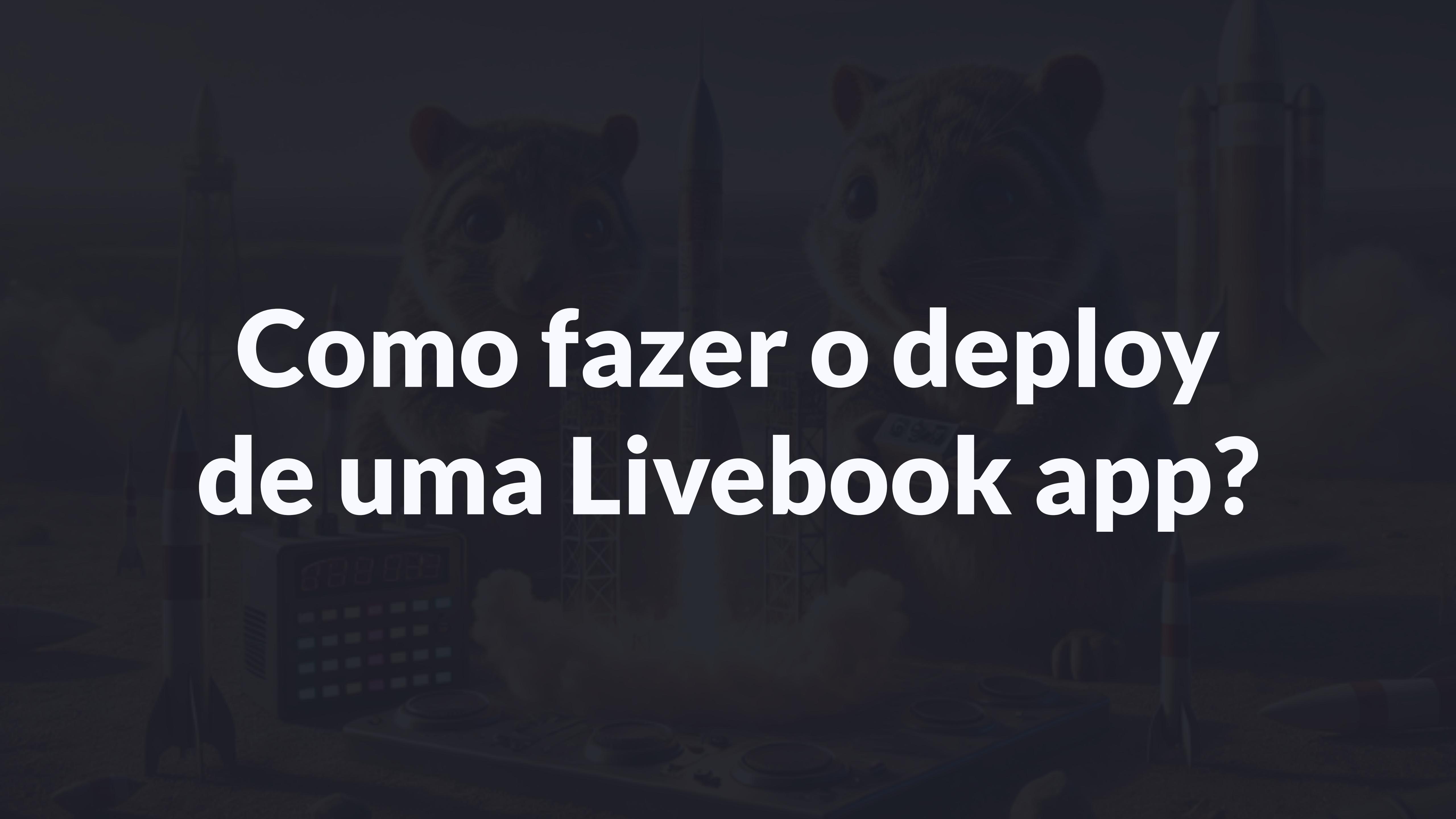




Como construir uma
Livebook app?

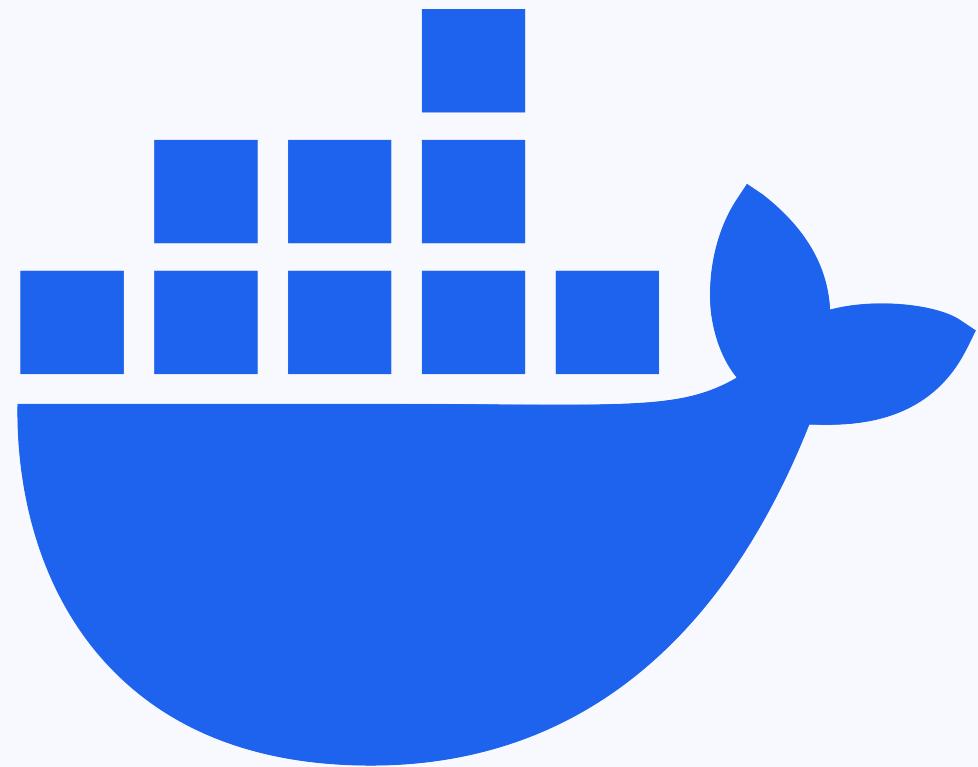
Live coding





Como fazer o deploy
de uma Livebook app?

Como fazer o deploy de uma Livebook app?

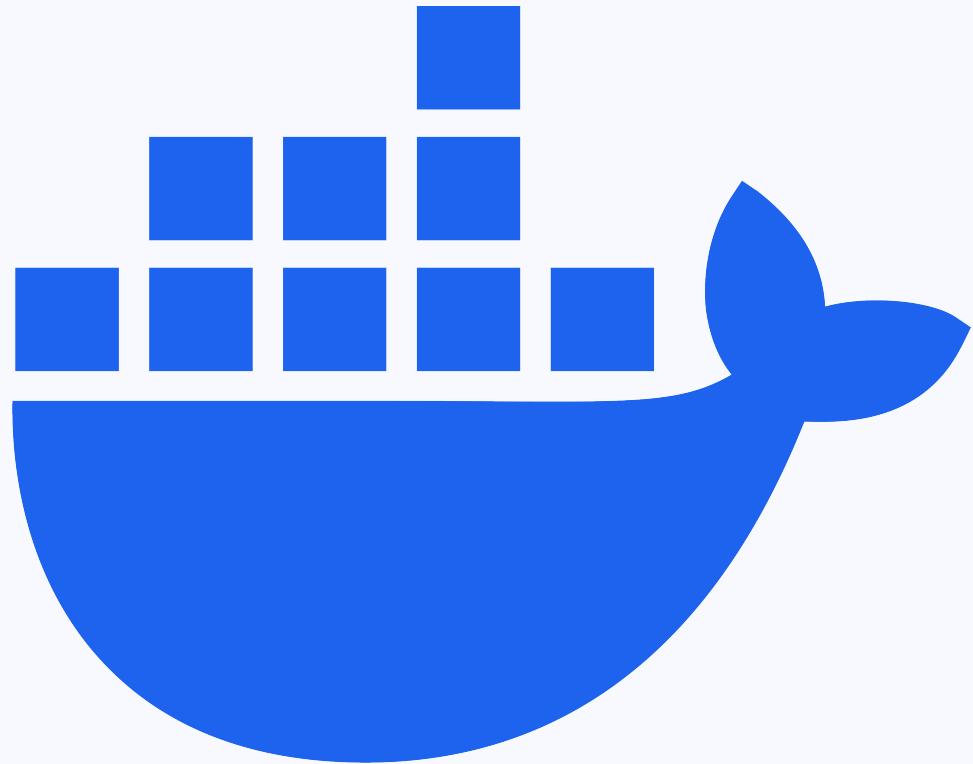


Docker



Livebook Teams

Como fazer o deploy de uma Livebook app?



Docker

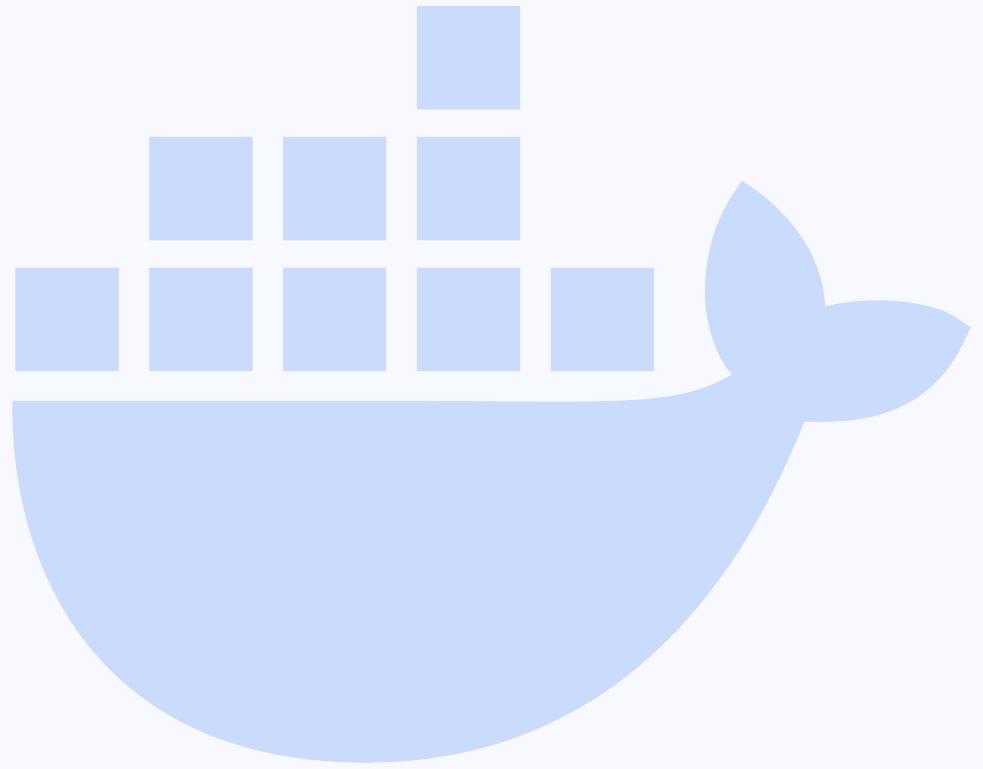


Deploy com Docker

- 1 Copie o Dockerfile gerado pelo Livebook
- 2 Gere a imagem Docker
- 3 Execute a imagem Docker em um serviço de hospedagem de containers
(Fly.io, Amazon AWS, Google Cloud, Kubernetes etc)

Demo

Como fazer o deploy de uma Livebook app?



Livebook Teams

Livebook Teams

The screenshot shows the Livebook Teams landing page with a dark background. At the top left is the Livebook logo. The top navigation bar includes links for Teams, Use cases, Features, Pricing, Docs, Sign in, and a prominent 'Sign up free' button.

The main headline reads: "Ship internal tools fast. Operate production with control."

A subtext explains: "With Livebook Teams, deploy notebooks as internal apps, and turn Livebook into a controlled environment for runbooks and production operations."

Two calls-to-action are visible: a pink button for "Try it free for 30 days" and a white button for "Watch demo 7 minutes".

Below the main content is a preview of a Livebook notebook titled "How to deploy a Livebook app with Livebook Teams". The notebook interface includes a sidebar with icons for file management and notifications. The main area shows code snippets and text, starting with:

```
1 Mix.install([
2   {:kino, "~> 0.13.0"}
3 ])
```

Introduction

In this notebook, we will build and deploy a chat application. To do so, we will use Livebook's companion library called [kino](#).

In a nutshell, Kino is a library that you install as part of your notebooks to make your notebooks interactive. Kino comes from the Greek prefix "kino-" and it stands for "kinetic". As you learn the library, it will become clear that this is precisely what it brings to our notebooks.

Kino can render Markdown, animate frames, display inputs, manage inputs, and more. It also provides the building

Deploy com Livebook Teams

- 1 Crie um deployment group dentro da sua organização no Teams
- 2 Instale a imagem Docker do Livebook app server na sua infraestrutura
- 3 Clique no botão "deploy"

Deploy com Livebook Teams

Uma vez o setup feito

~~Crie um deployment group dentro da sua organização no Teams~~

~~Instale a imagem Docker do Livebook app server na sua infraestrutura~~

1

Clique no botão "deploy"

Demo



Componentes para desenvolvimento rápido

Componentes para desenvolvimento rápido

- 1 Componentes de interface baseados em Elixir
- 2 Integrações com bancos de dados
- 3 Integração com sua Elixir/Phoenix app

Componentes de interface com Kino

necessidade zero ou mínima de HTML e CSS

Forms e inputs

```
1 form =
2   Kino.Control.form(
3     [
4       order_id: Input.text("Order ID"),
5       amount: Input.number("Refund Amount"),
6       date: Input.date("Refund Date"),
7       reason:
8         Input.select(
9           "Refund Reason",
10          product: "Product Issue",
11          shipping: "shipping issue"
12        )
13      ],
14      submit: "Refund"
15    )
16
17 grid([markdown("## Customer Refund Form"), form],
```

Customer Refund Form

Order ID

#441aa9878

Refund Amount

150

Refund Date

27/02/2024



Refund Reason

Product Issue



Refund

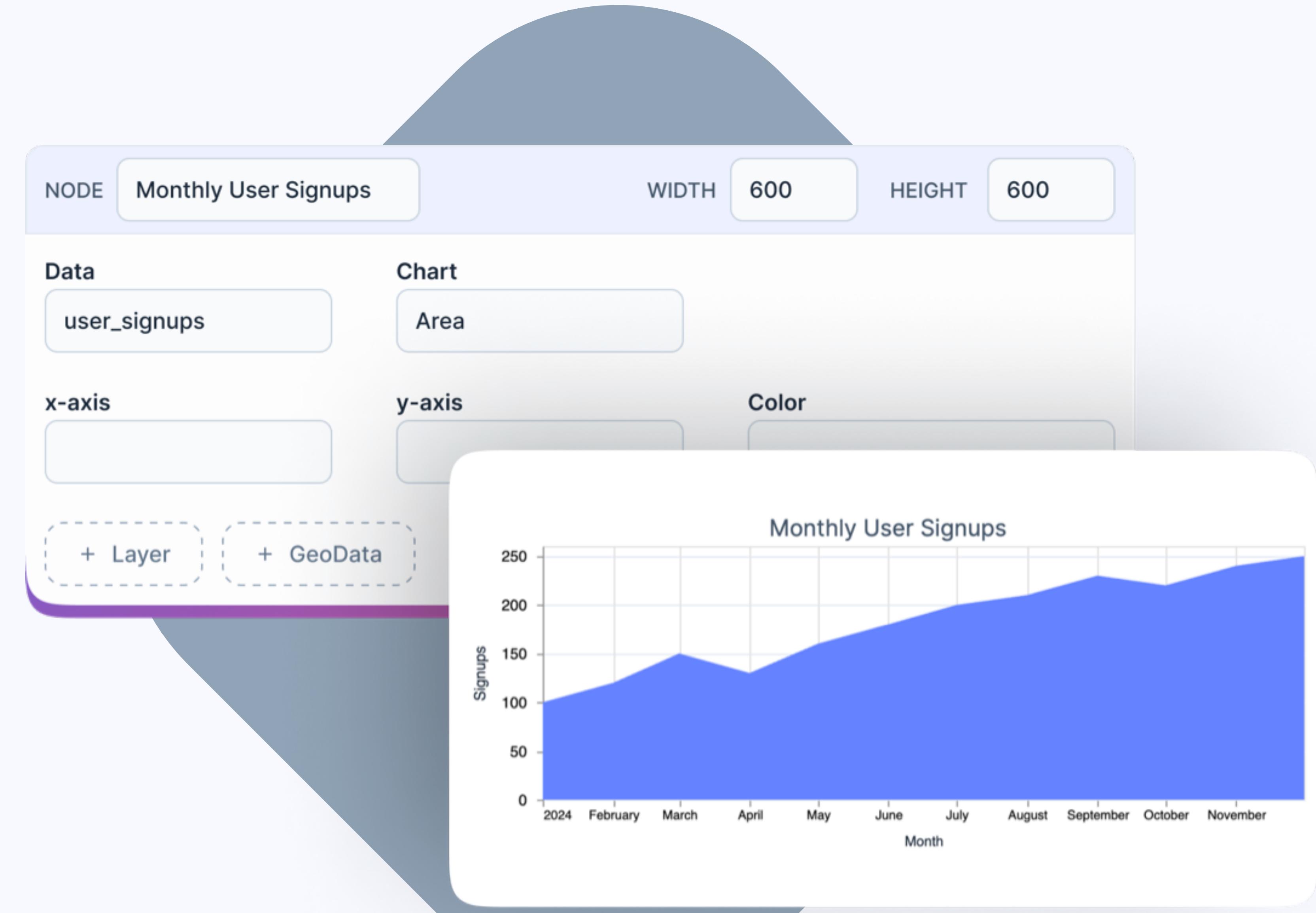
```
1 data_table(data, name: "Product Data")
```

Tabelas de dados

	Last Login Date	Most Used Feature	Subscription	User Name
1	2023-12-06	Feature D	Basic	Eunice Shanahan
2	2023-12-06	Feature D	Basic	Eunice Shanahan
3	2023-12-06	Feature D	Basic	Eunice Shanahan
4	2023-12-06	Feature D	Basic	Eunice Shanahan
5	2023-12-06	Feature D	Basic	Eunice Shanahan
6	2023-12-06	Feature D	Basic	Eunice Shanahan
7	2023-12-06	Feature D	Basic	Eunice Shanahan
8	2023-12-06	Feature D	Basic	Eunice Shanahan
9	2023-12-06	Feature D	Basic	Eunice Shanahan
10	2023-12-06	Feature D	Basic	Eunice Shanahan

Gráficos

com Vega Lite



Mapas

com Map Libre

MAP STYLE street(non-commercial) CENTER longitude, latitude ZOOM 1

Source geo Coordinates Format Single: lat Ing Coordinates Column Single: lat Ing

Type Circle Color #7C8E28 OPACITY 1 RADIUS 62

+ Layer

The interface allows users to customize map styles, center coordinates, and zoom levels. It also provides options for source data ('geo'), coordinate formats ('Single: lat Ing'), and coordinate columns ('Single: lat Ing'). The 'Type' is set to 'Circle'. A color palette shows a selected green shade (#7C8E28) with an opacity of 1 and a radius of 62 pixels. A dashed box labeled '+ Layer' is present. The map itself displays major geographical features and labels for continents, countries, and bodies of water.

*"E se não existir um componente
nativo para o que eu preciso?"*



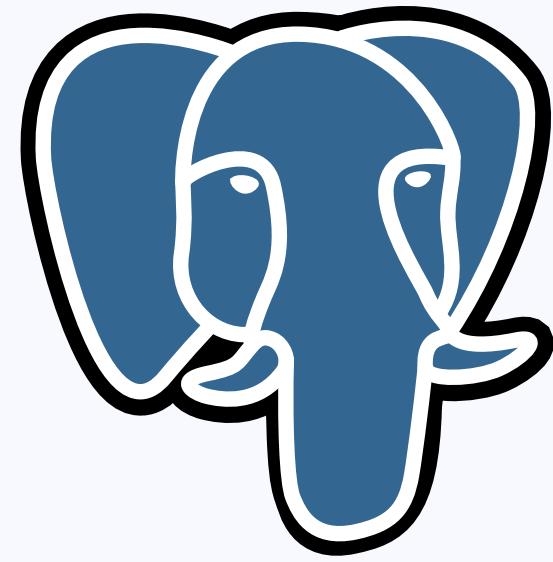
Opções para construir seu componente de interface

- i Kino.HTML + CSS
- ii Kino.HTML + CSS + Javascript
- iii Custom Kino

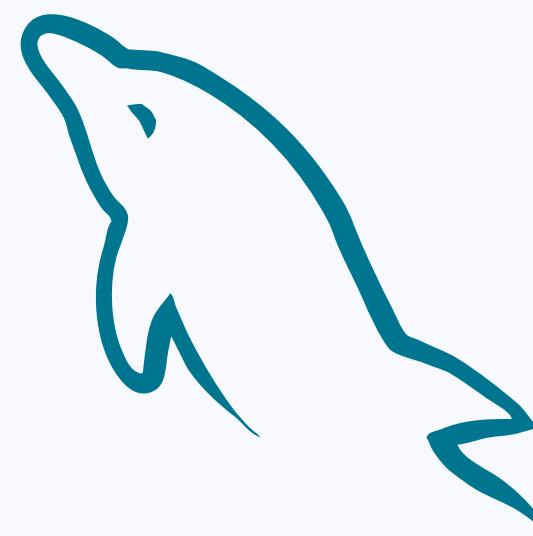
Demo

Integrações com bancos de dados

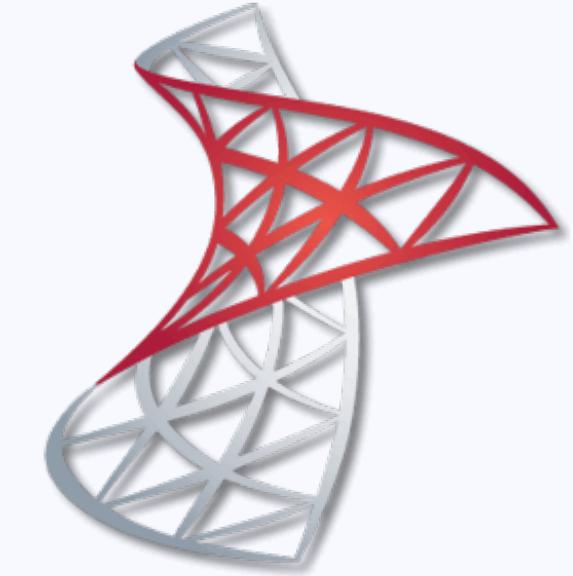
Integrações com bandos de dados e data warehouses



PostgreSQL



MySQL



Microsoft SQL



SQLite



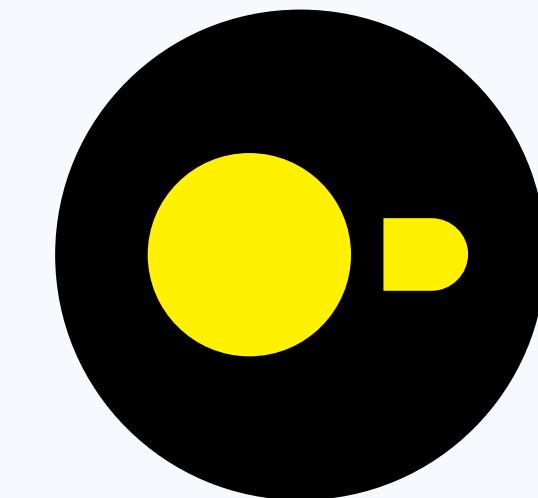
Google BigQuery



Amazon Athena



Snowflake



DuckDB

Demo

Database integration demo

Using Personal workspace



Notebook dependencies and setup

Evaluated

Database connection Smart cell

1

SQL query Smart cell

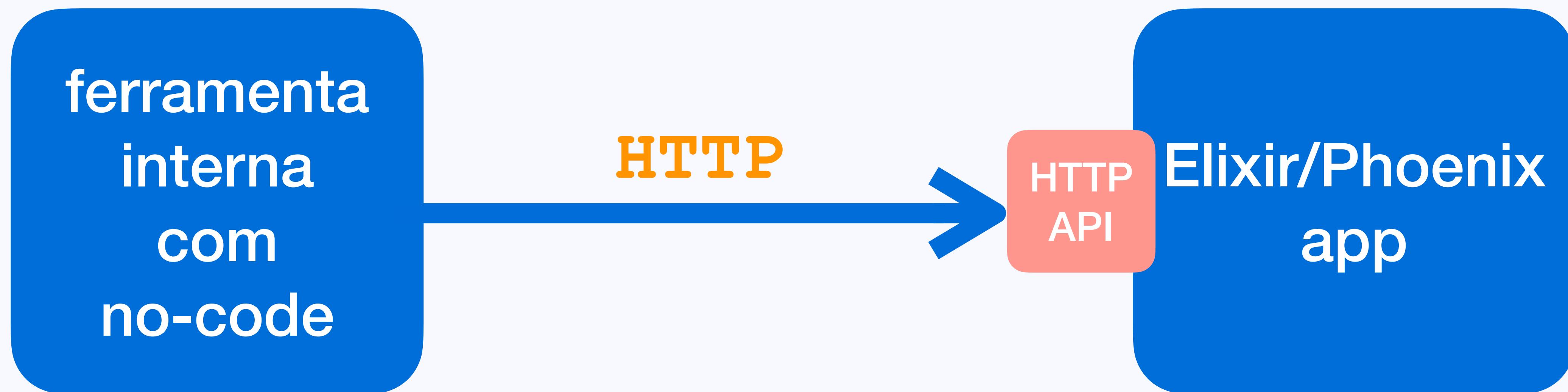
▶ hint: query



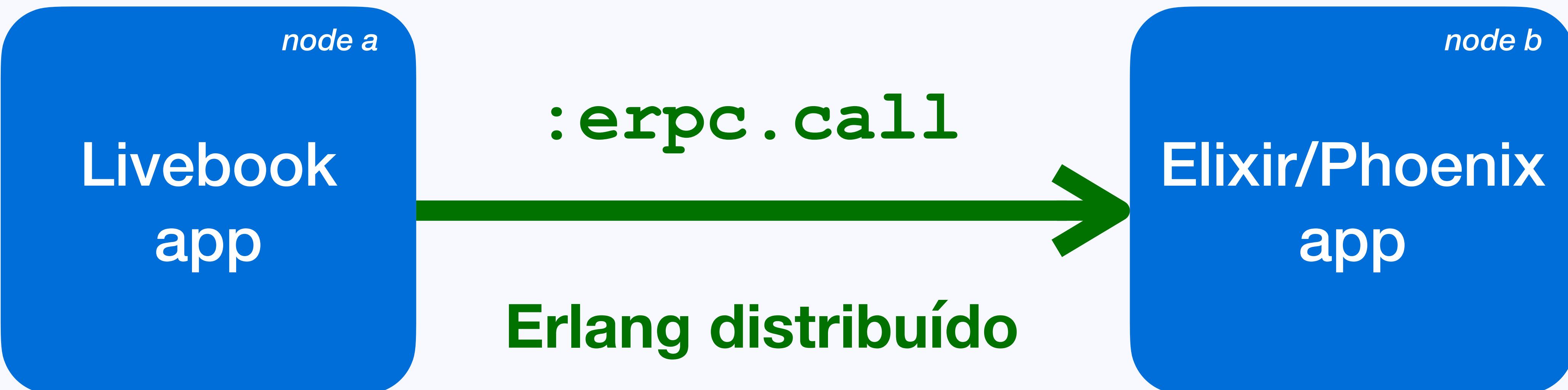
Integração com sua Elixir/Phoenix app

através de Erlang distribuído

Integração sua Elixir/Phoenix app usando uma ferramenta no-code



Integração com sua Elixir/Phoenix app via Erlang distribuído



Demo

Próximos passos

Instalar Livebook

The screenshot shows the official website for Livebook (livebook.dev). The main content area features a large heading "Automate **code & data** workflows with interactive notebooks". Below this, a section explains how Livebook can replace scripts and outdated documentation, mentioning Elixir and its capabilities like sharing knowledge, deploying apps, visualizing data, and running machine learning models. Two call-to-action buttons are present: "Install Livebook Locally or on the cloud" and "Star us on GitHub and join our community". A modal window titled "Welcome to Livebook" is overlaid on the page, providing an introduction to the tool's basic usage, sections, and other features. The modal also includes a preview of the notebook interface and some sample Elixir code.

Automate **code & data** workflows with interactive notebooks

Get rid of scripts, manual steps, and outdated docs. Use Elixir and Livebook to share knowledge, deploy apps, visualize data, run machine learning models, debug systems, and more!

Install Livebook
Locally or on the cloud

Star us on GitHub
and join our community

Welcome to Livebook

Introduction

We are happy you decided to give Livebook a try, hopefully it empowers you to build great stuff! 🎉

Livebook is a tool for crafting **interactive** and **collaborative** code notebooks. It is primarily meant as a tool for prototyping - think of it as an iEx session combined with your editor. You can also use it for authoring static articles that people can easily run and play around with. Package authors can write notebooks as interactivity and include them in their repository, so that users can easily download and run them locally.

Basic usage

Each notebook consists of a number of cells, which serve as primary building blocks. There are **Markdown** cells (like this one) that allow you to describe your work and **Elixir** cells to run your code!

To insert a new cell move your cursor between cells and click one of the revealed buttons. 🌟

```
1 # This is an Elixir cell - as the name suggests that's where the code goes.
2 # To evaluate this cell, you can either press the "Evaluate" button above
3 # or use 'Ctrl + Enter' (or Cmd + Enter on a Mac)!
4 message = "hey, grab yourself a cup of ☕"
5 message
```

"hey, grab yourself a cup of ☕"

Subsequent cells have access to the bindings you've defined:

```
1 String.replace(message, "☕", "=")
```

"hey, grab yourself a cup of ="

Install Livebook in just a

<https://livebook.dev>

Livebook is open source, free, and ready to run anywhere.

Construir um Livebook App

Livebook v0.19.0-dev

- Home
- Local apps
- Learn
- Settings
- Shut Down

WORKSPACES

- Personal
- dashbit
- demos
- + Add Organization

HB Hugo Baraúna

Welcome to Livebook

Get to know Livebook, see how it works, and learn its features.

Open notebook



Distributed portals with Elixir

A fast-paced introduction to Elixir by building distributed data-transfer portals.



Build a chat app with Kino

Write and deploy a chat app with Kino control and frames.



Plotting with VegaLite

Learn how to quickly create numerous plots for your data.



Maps with MapLibre

Seamlessly plot maps using geospatial and tabular data.



Counting GitHub Stars

Build a Livebook app to visualize GitHub repository star growth over time.

4 notebooks

Fazer deploy de um Livebook app

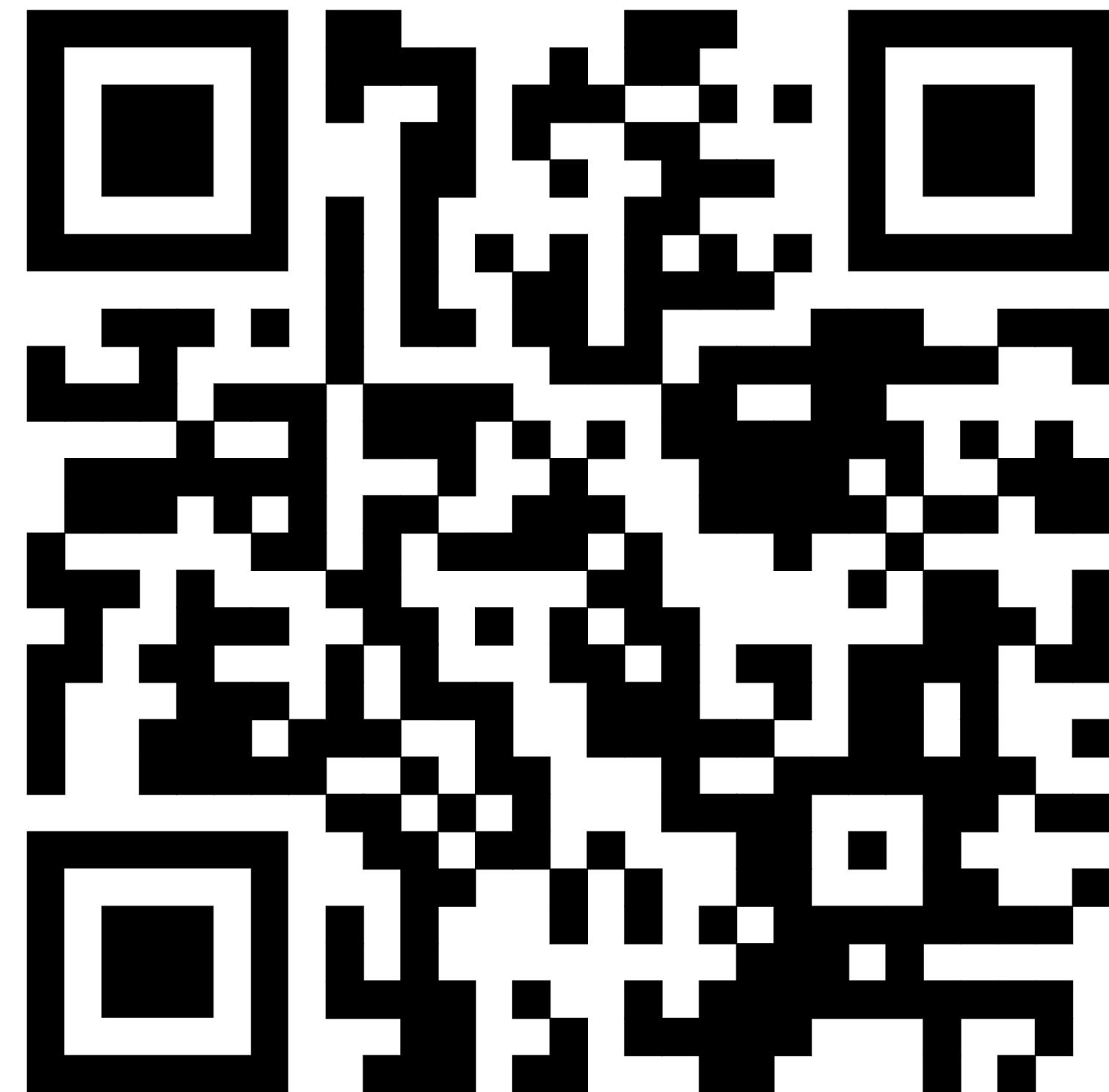
```
1 # This is an Flixie cell - as the name suggests that's where the code goes
```

```
1 String.replace(message, "\u263a", "\u263a")
```

```
"hey, grab yourself a cup of ="
```

<https://www.youtube.com/@dashbitco>

Demos



github.com/hugobarauna/livebook-notebooks/tree/main/talks/elixir-carajas-2026-01

obrigado



@hugobarauna



@hugobarauna.com



livebook.dev



livebook-dev/livebook