CI/CD > Build/Deploy Automation

Desenvolvimento de Software de Larga Escala 2022
Ricardo Castro

Let Me Introduce Myself

- Principal SRE at [FanDuel](#)/[Blip.pt](#) ([We're hiring](#))
- Technical Writer at [Professional Data Skills](#)
- [DevOps Porto](#) meetup co-organizer
- [DevOpsDays Portugal](#) conference co-organizer
- [Continuous Delivery Foundation](#) Ambassador
- [CKAD](#), [CKA](#), [CKS](#) by the [CNCF](#)
- Strong believer in culture and teamwork
- Open source passionate (former Mozilla contributor)
- Martial Arts amateur
- Metal lover
- Where to find me:
    - [https://mccricardo.com](#)
    - Twitter: [@mccricardo](#)
    - [Linkedin: Ricardo Castro](#)

Agenda

- What Is CI/CD
  - What is CI
  - What is CD
- Feature Branches
- Development Workflow
  - Pull Requests
  - Code Reviews
  - Alternatives?
- What's The Problem Then?
- Reading Material
- Summary

Who Here Is Practicing CI/CD?

Source: https://unsplash.com/photos/egbB-zLBeDo
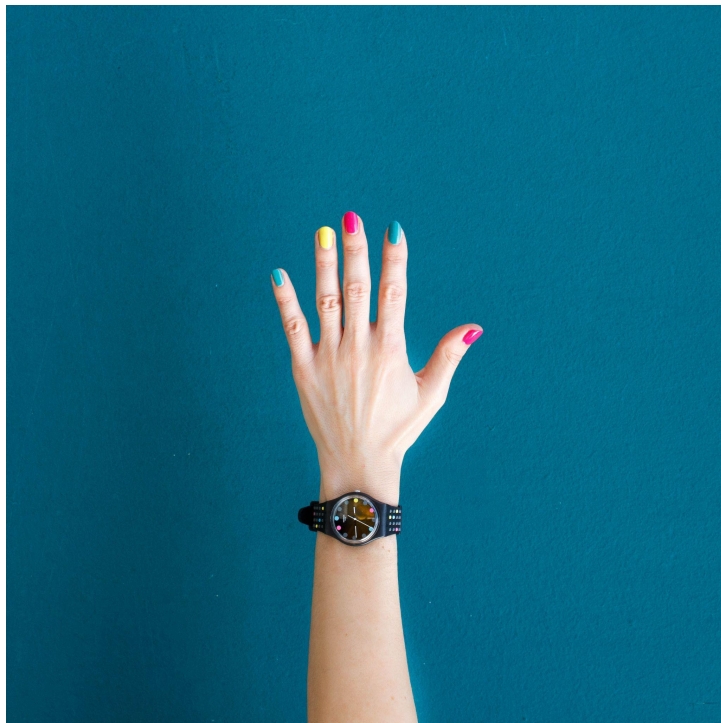
What Is CI

"The practice of merging all developers' working copies to a shared mainline" - **Grady Booch**

"Successful CI means new code changes to an app are regularly built, tested, and merged to a shared repository. It's a solution to the problem of having too many branches of an app in development at once that might conflict with each other." - **Red Hat**

"It's the idea that we can do a better job if we maintain a clear picture of how changes work alongside everybody else's as they progress." - **Dave Farley**

Why CI

- Reduce risk
- Decrease number bugs
- Minimize integration issue
- Precursor to CD

What Is CD

"Continuous deployment (CD) is a software engineering approach in which software functionalities are delivered frequently" - **Wikipedia**

"Continuous Delivery is the ability to get changes of all types—including new features, configuration changes, bug fixes and experiments—into production, or into the hands of users, safely and quickly in a sustainable way." - **Dave Farley**

Why CD

- Low risk releases
- Faster time to market
- Higher quality
- Lower costs
- Better products
- Happier teams

What Is CI/CD

"How we build better software faster" **- Dave Farley**

"CI/CD is a method to frequently deliver apps to customers by introducing automation into the stages of app development." - **Red Hat**

"In software engineering, CI/CD or CICD is the combined practices of continuous integration (CI) and (more often) continuous delivery or (less often) continuous deployment (CD)." - **Wikipedia**

What Is CI/CD

Comparison

- **Continuous integration**: Frequent merging of several small changes into a main branch
- **Continuous delivery**: When teams produce software in short cycles with high speed and frequency so that reliable software can be released at any time, and with a simple and repeatable deployment process when deciding to deploy
- **Continuous deployment**: When new software functionality is rolled out completely automatically

Source: Wikipedia

Continuous Delivery vs Deployment

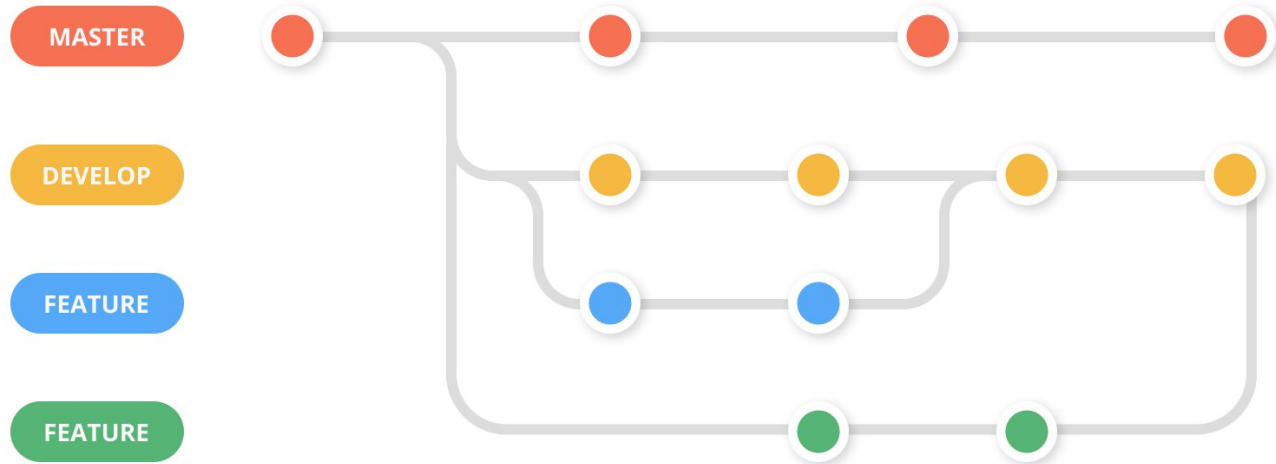Source: https://www.redhat.com/en/topics/devops/what-is-ci-cd

CI/CD

- **CI/CD**: At least once per day
- **CI:** Under 5m - **Dave Farley**
- **CI/CD**: Under 15m - **Charity Majors**
- **CI/CD**: Under 1h - **Elite performers, DORA Report**

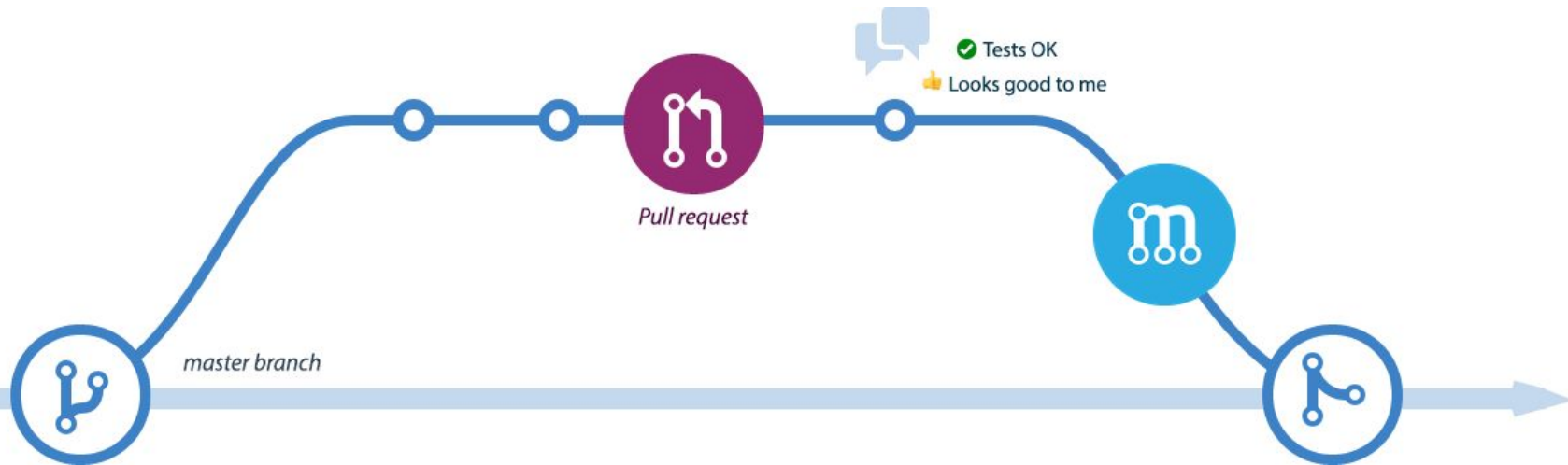| Software delivery performance metric	Elite	High	Medium	Low
⧖ **Deployment frequency** For the primary application or service you work on, how of en does your organization deploy code to production or release it to end users?	On-demand (multiple deploys per day)	Between once per week and once per month	Between once per month and once every 6 months	Fewer than once per six months
⧗ **Lead time for changes** For the primary application or service you work on, what is your lead time for changes (i.e., how long does it take to go from code commit ed to code successfully running in production)?	Less than one hour	Between one day and one week	Between one month and six months	More than six months
⧖ **Time to restore service** For the primary application or service you work on, how long does it generally take to restore service when a service incident or a defect that impacts users occurs (e.g., unplanned outage or service impairment)?	Less than one hour	Less than one day	Between one day and one week	More than six months
⚠ **Change failure rate** For the primary application or service you work on, what percentage of changes to production or released to users result in degraded service (e.g., lead to service impairment or service outage) and subsequently require remediation (e.g., require a hot ix, rollback, f x forward, patch)?	0%-15%	16%-30%	16%-30%	16%-30%

What Is Your Development Workflow?

Source: https://unsplash.com/photos/rn21q4rmSE4

Feature Branches

Source: https://rovitpm.com/content/images/2022/01/feature-branch-with-develop-git-workflow-1.png

Pull Requests

master branch

Pull request

✅ Tests OK
👍 Looks good to me

Source: https://miro.medium.com/max/1400/1*sMJbSt3sLrC-sIsPOVRBdw.png

Code Reviews

Source: https://openpracticelibrary.com/images/code-review.png

Trunk Based Development

Trunk-based development

short-lived branches

master (or trunk)

merging is done more frequently and more easily for shorter branches
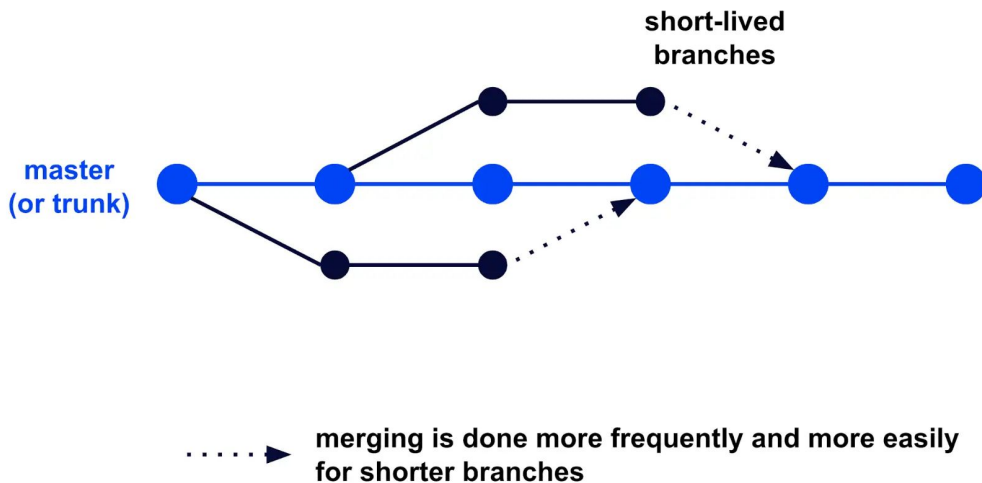
Code Reviews: Pair Programming

Source: https://miro.medium.com/max/550/1*LvlvqPsU7JUdIlvG53QQMw.png
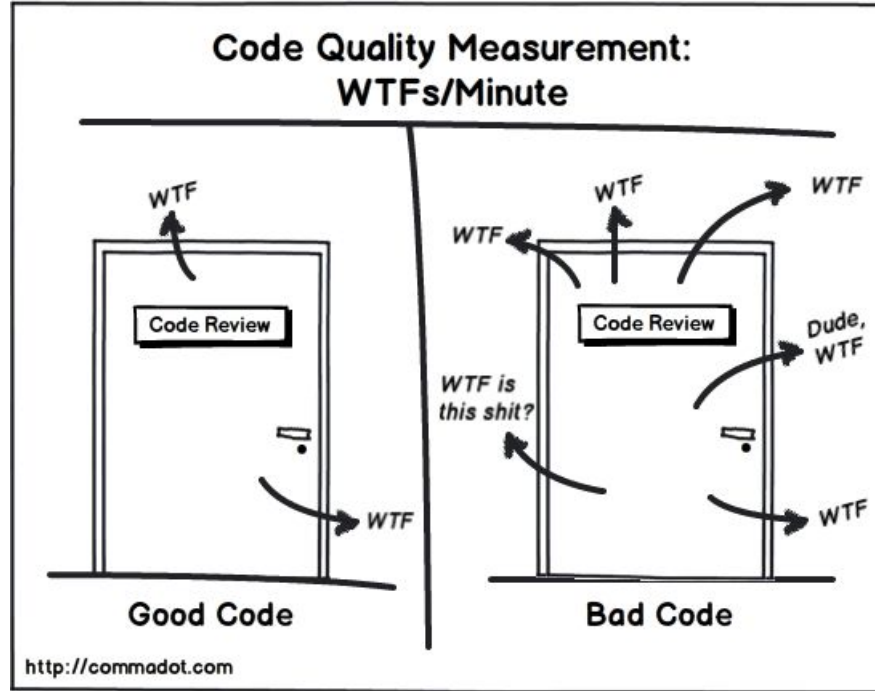
What's The Problem Then?
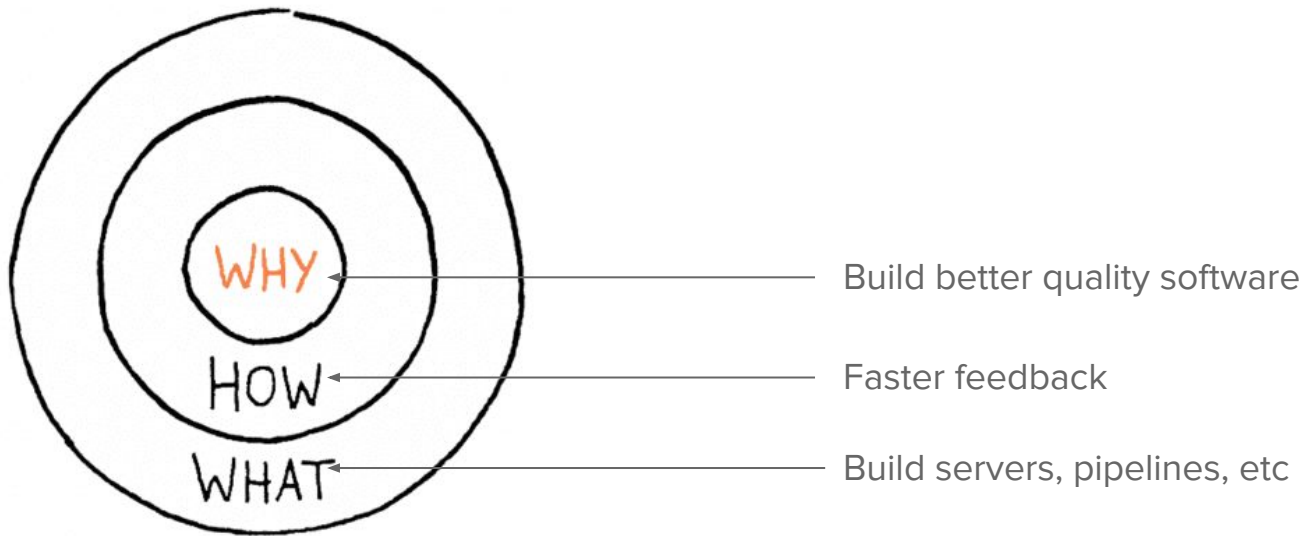
The Golden Circle

WHAT
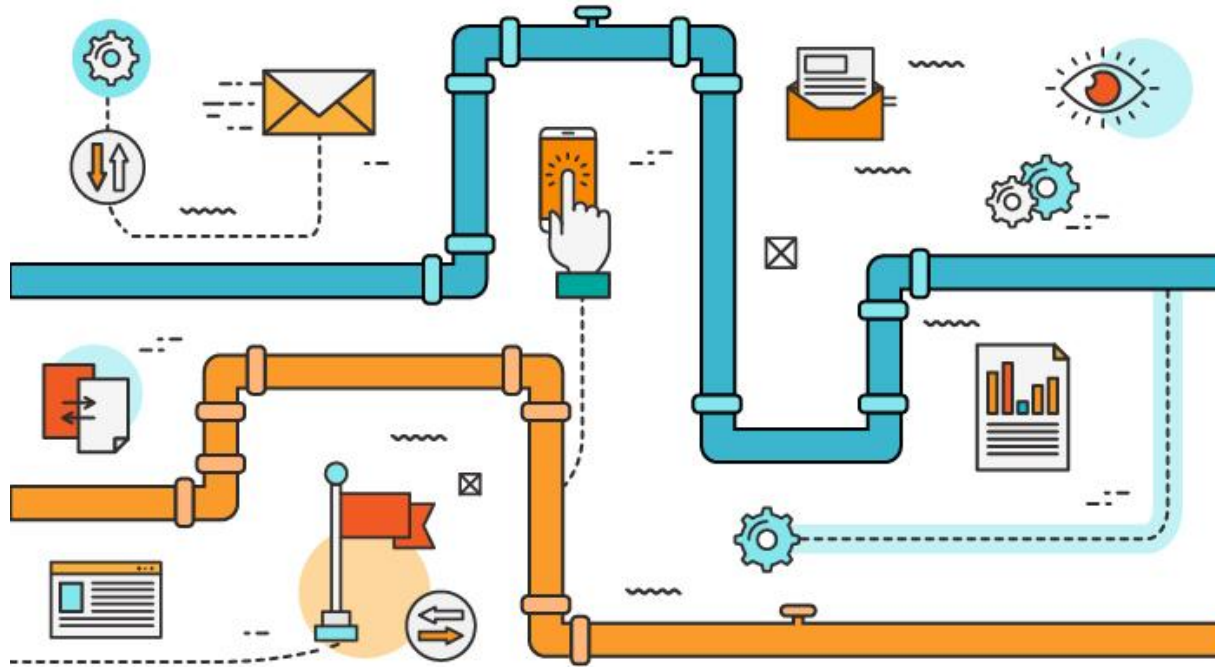Every organization on the planet knows WHAT they do. These are products they sell or the services

HOW
Some organizations know HOW they do it. These are the things that make them special or set them apart from their competition.
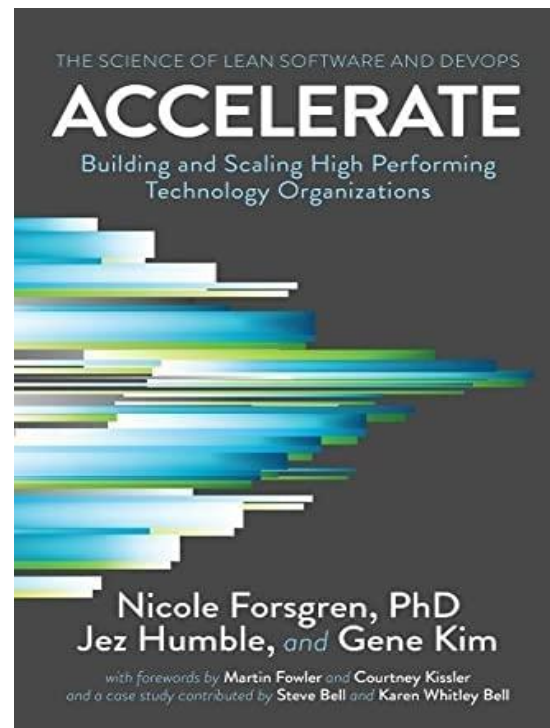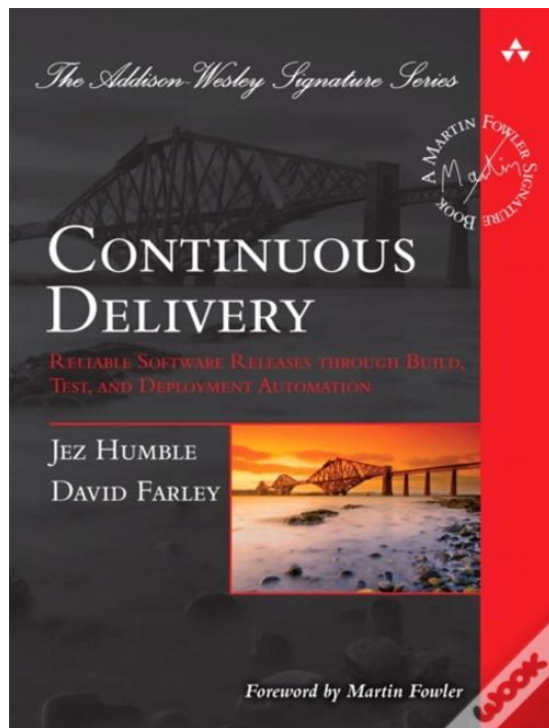
WHY
Very few organizations know WHY they do what they do. WHY is not about making money. That's a result. WHY is a purpose, cause or belief. It's the very reason your organization exists.

WHY — Build better quality software

HOW — Faster feedback

WHAT — Build servers, pipelines, etc

Source: https://www.smartinsights.com/wp-content/uploads/2020/03/The-theory-of-Golden-Circle-model.png

What's The Problem Then?

Source:
https://s7280.pcdn.co/wp-content/uploads/2016/08/Continuous-Delivery-and-Deployment.jpg
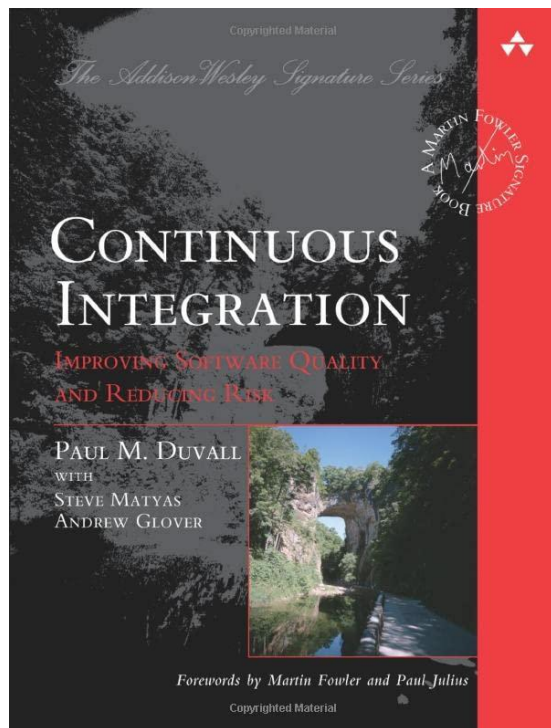
Reading Material

Summary

- What Is CI/CD
    - What is CI
    - What is CD
- Feature Branches
- Development Workflow
    - Pull Requests
    - Code Reviews
    - Alternatives?
- What's The Problem Then?
- Reading Material

Thank You!

- Principal SRE at [FanDuel/Blip.pt](#) ([We're hiring](#))
- Technical Writer at [Professional Data Skills](#)
- [DevOps Porto](#) meetup co-organizer
- [DevOpsDays Portugal](#) conference co-organizer
- [Continuous Delivery Foundation](#) Ambassador
- [CKAD](#), [CKA](#), [CKS](#) by the [CNCF](#)
- Strong believer in culture and teamwork
- Open source passionate (former Mozilla contributor)
- Martial Arts amateur
- Metal lover
- Where to find me:
    - https://mccricardo.com
    - Twitter: [@mccricardo](#)
    - [Linkedin: Ricardo Castro](#)