

Desenvolvimento de software com Git



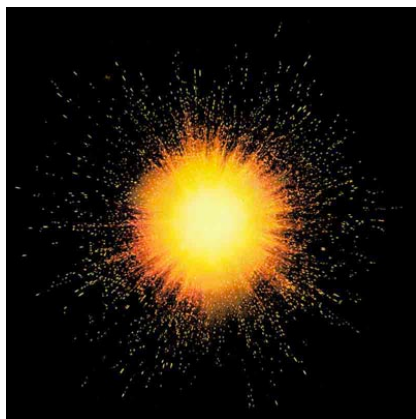
Agenda

- Versionamento
- Sistemas de Controle de Versão
- Formas de adoção de Sistemas de Controle de Versão Distribuídos
- Git em ação

Problema #1

Como vocês desenvolvem software?

Motivação



Big Bang

OU

Processo Incremental
(Versões)

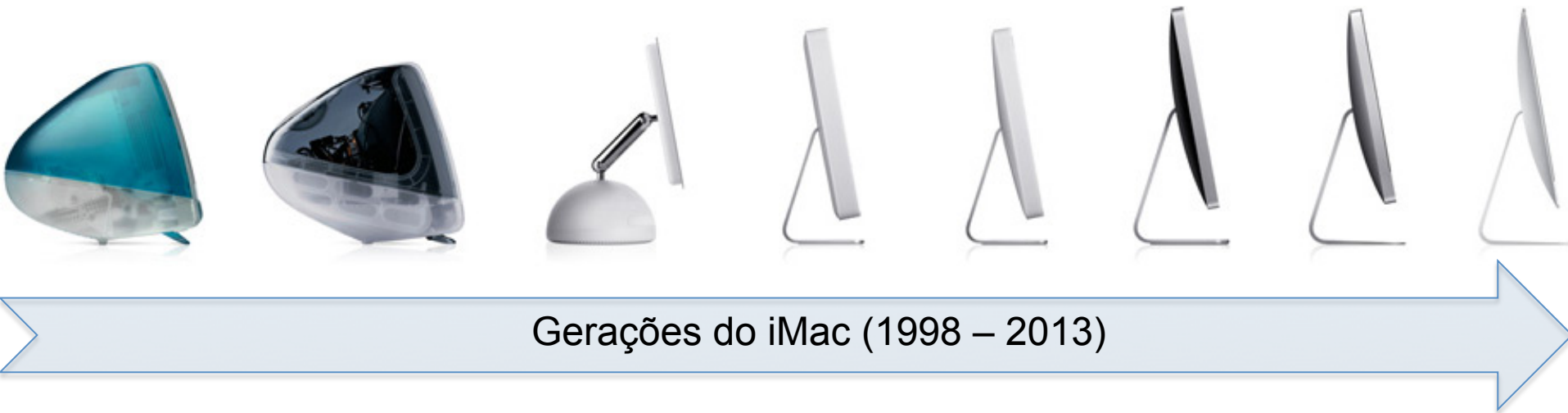


Mas afinal, o que são versões?

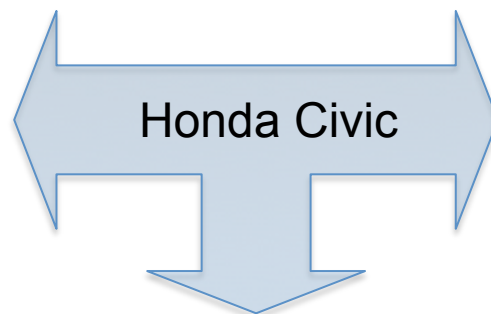
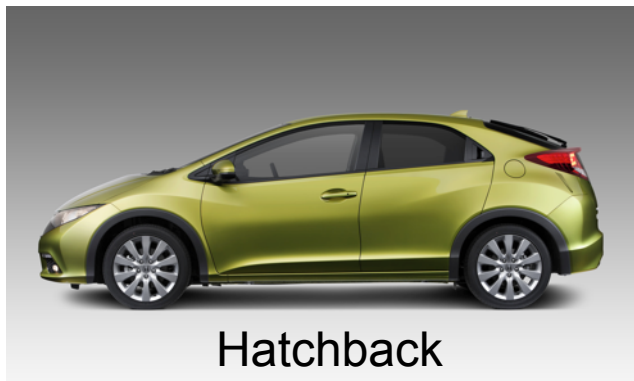


(Conradi and Westfechtel 1998)

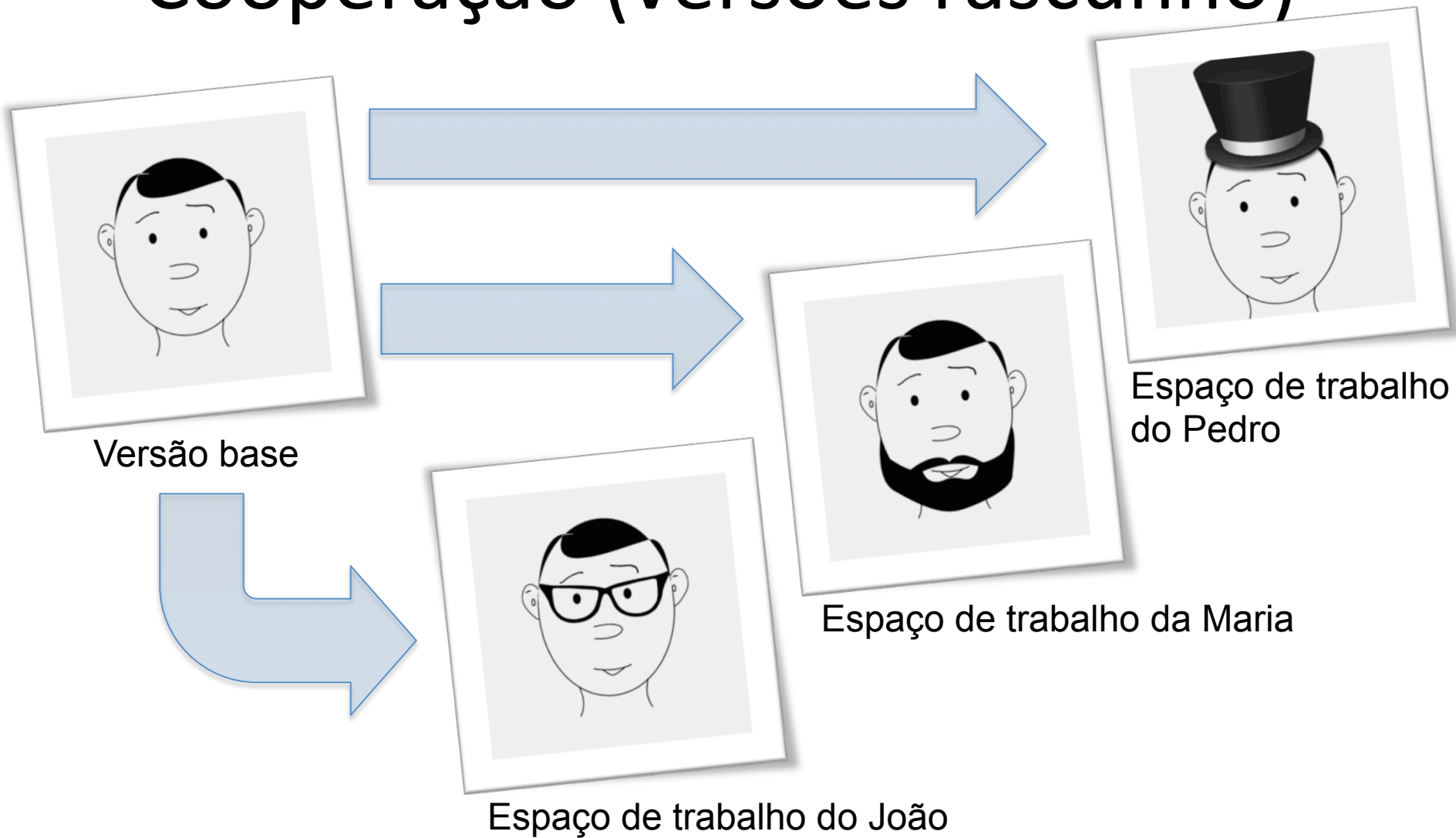
Revisões



Variantes



Cooperação (versões rascunho)

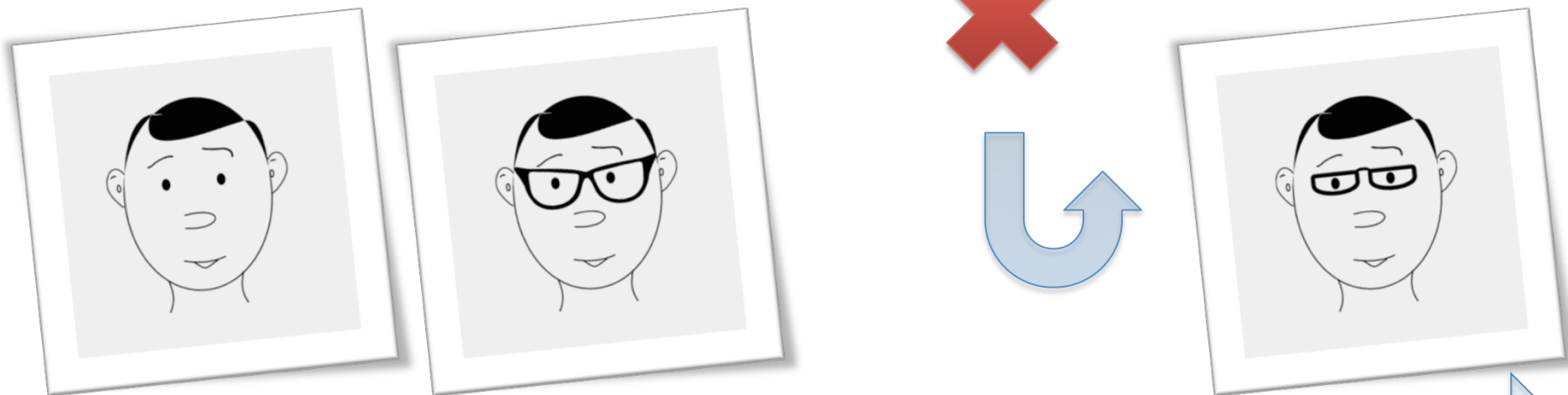
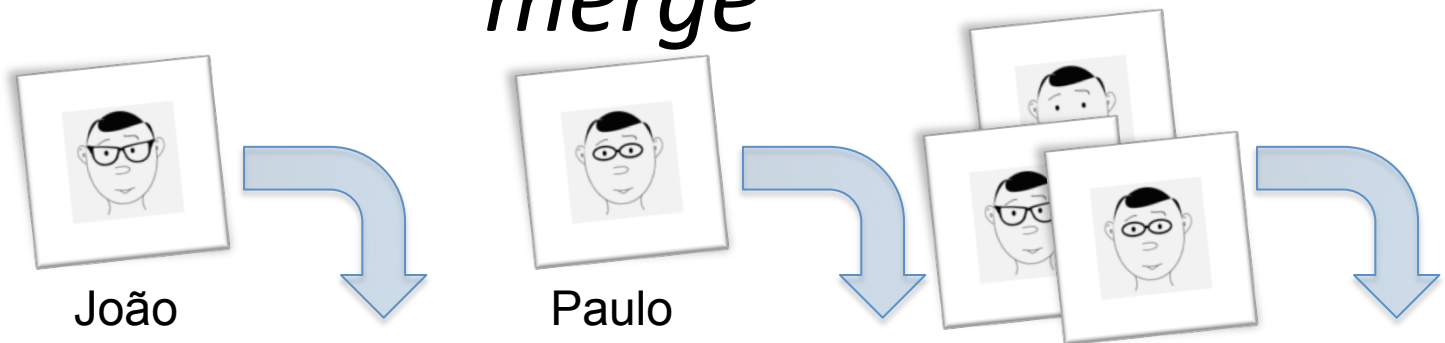


Versões de rascunho podem ser combinadas (operação de *merge*)



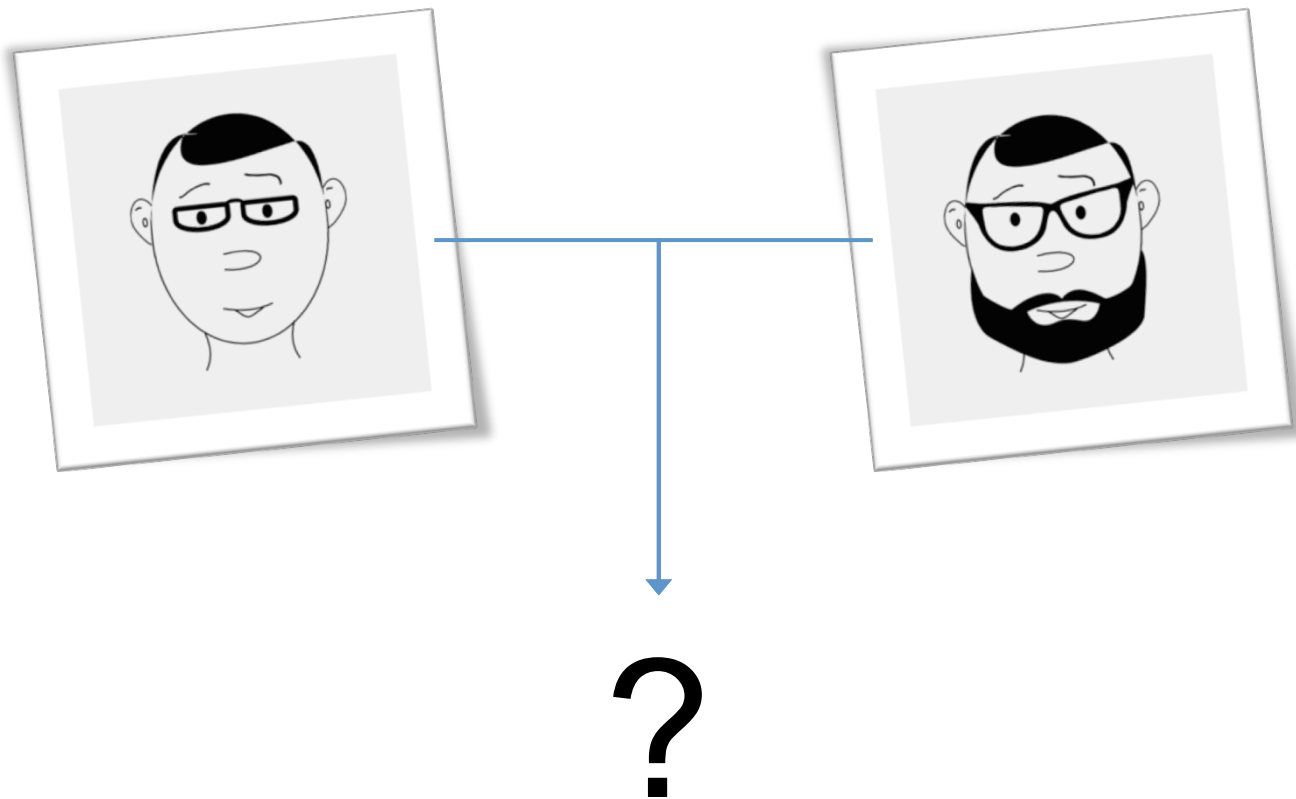
Revisões

Conflitos podem ocorrer durante o *merge*

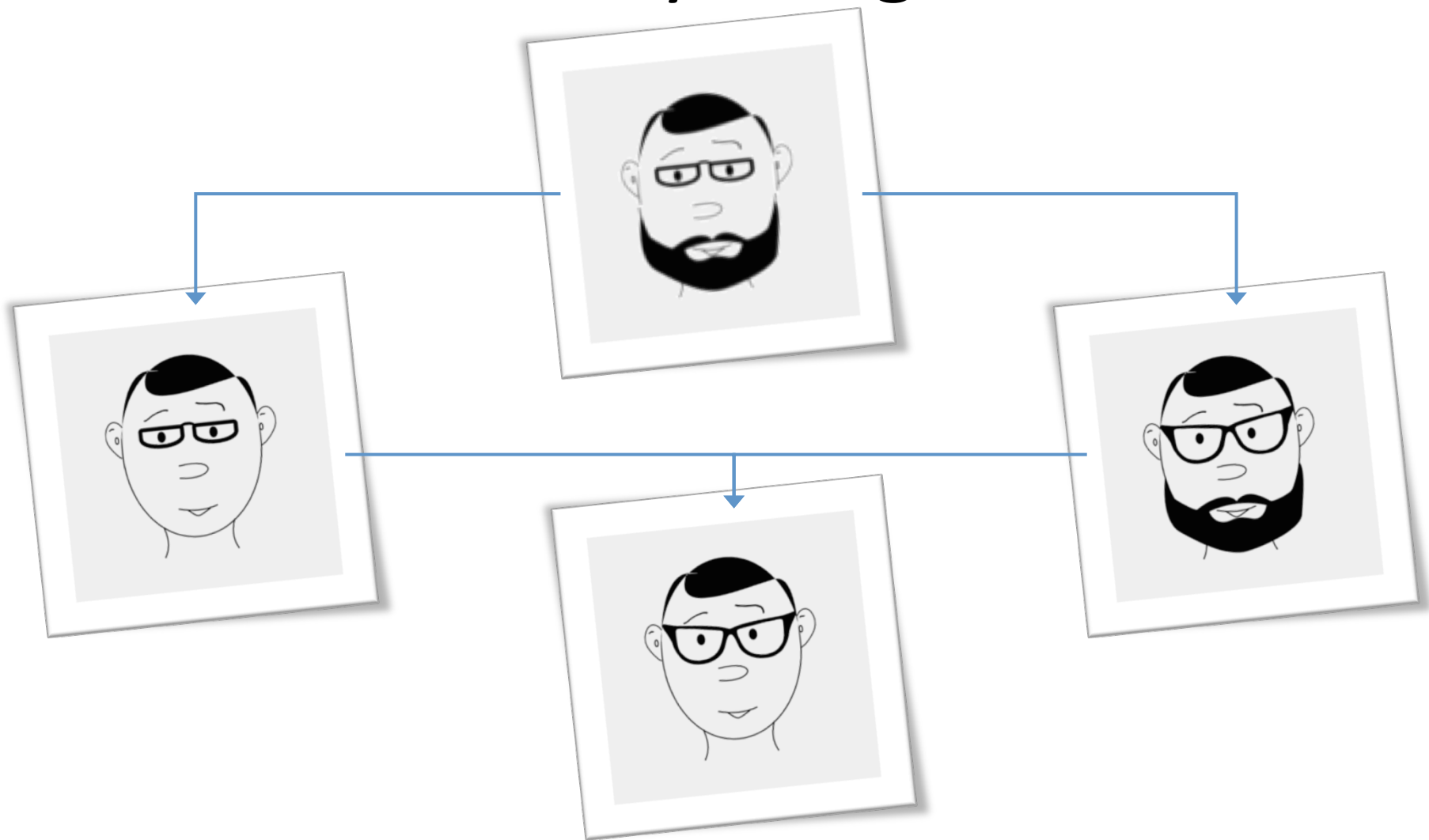


Revisões

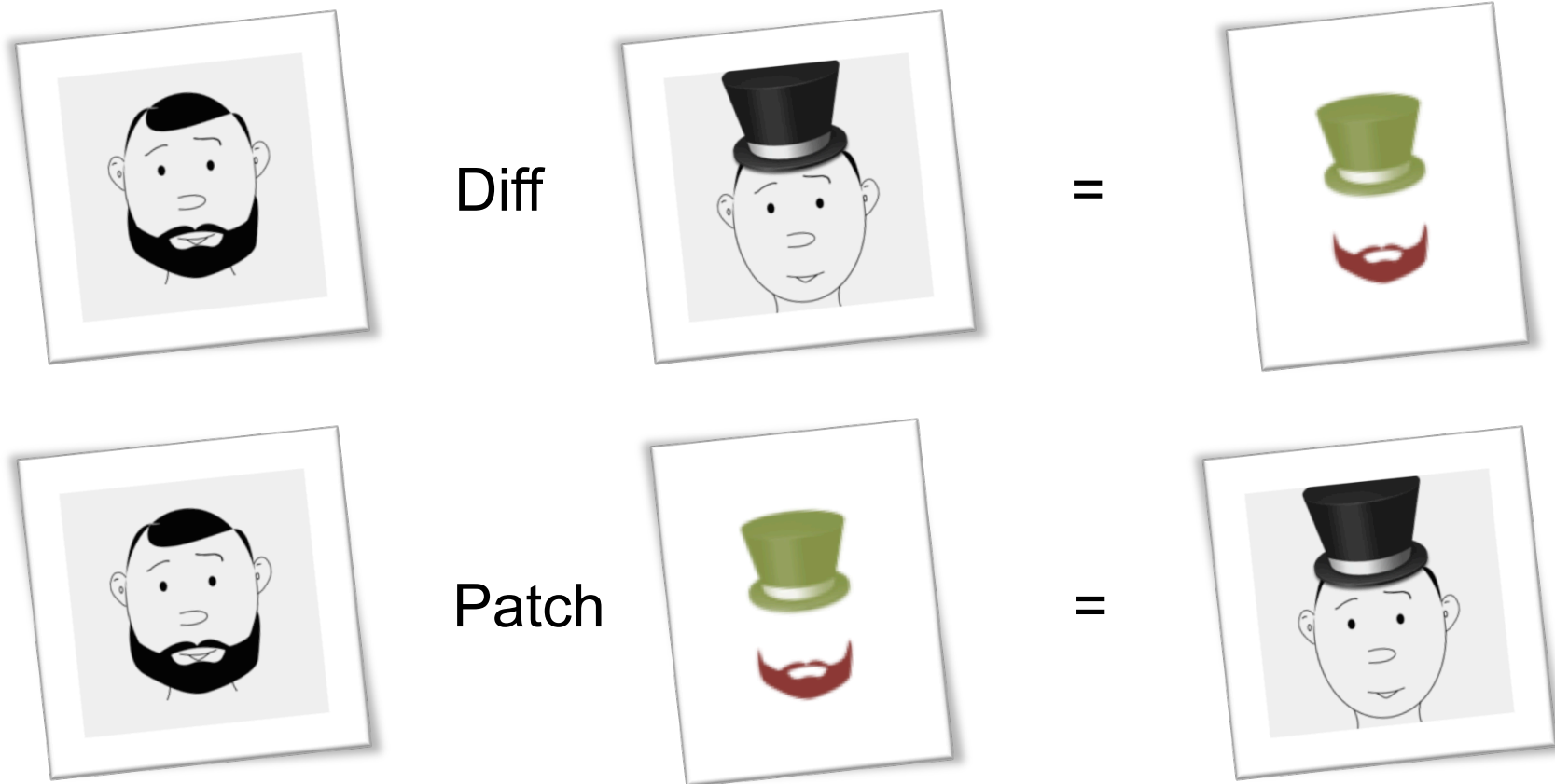
2-way merge



3-way merge



Outras duas operações importantes...



... para guardar, transferir e compreender versões.

Versões no mundo real

- Infinitude de revisões e variantes juntas (sem contar versões rascunho)



Histórico do Linux

Mas afinal, para que servem versões?

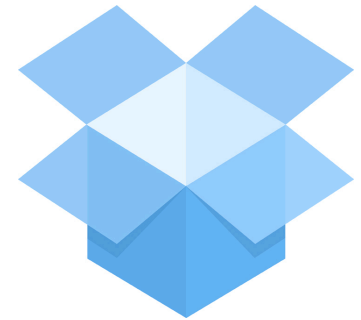
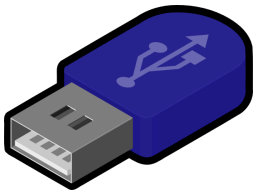
- Sincronizar equipes
- Reproduzir estados anteriores do código
- Explorar possibilidades
- Segregar desenvolvedores
- Customizar produtos (LPS)
- Rastrear a introdução de bugs (bisect)
- Entender a evolução de software (MSR)
- Auditar mudanças (annotate)
- Etc.

Problema #2

Como viabilizar o trabalho em equipe?



Possíveis soluções



Problema/solução

Como viabilizar o
versionamento?

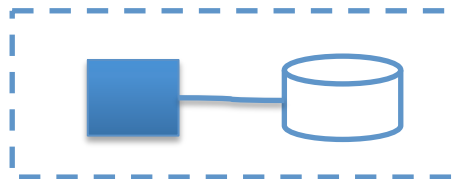


Como viabilizar o
trabalho em equipe?



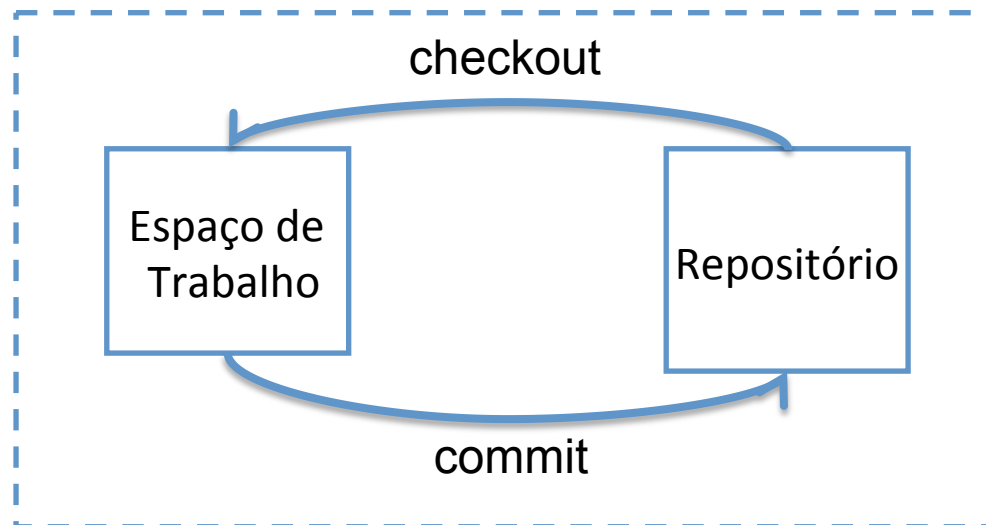
Histórico dos sistemas de controle de versão

- Anos 70/80 – Sistemas locais
 - SCCS (1972)
 - RCS (1982)



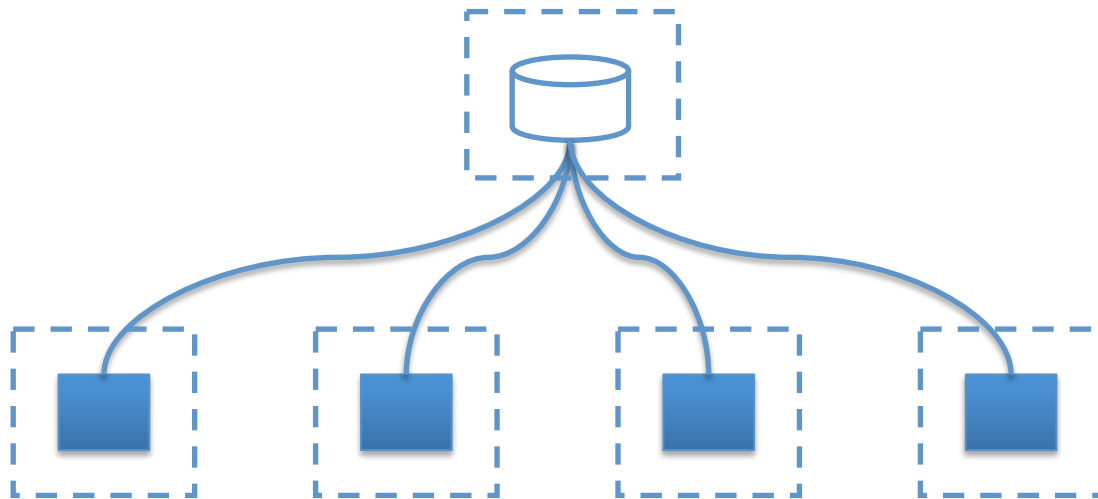
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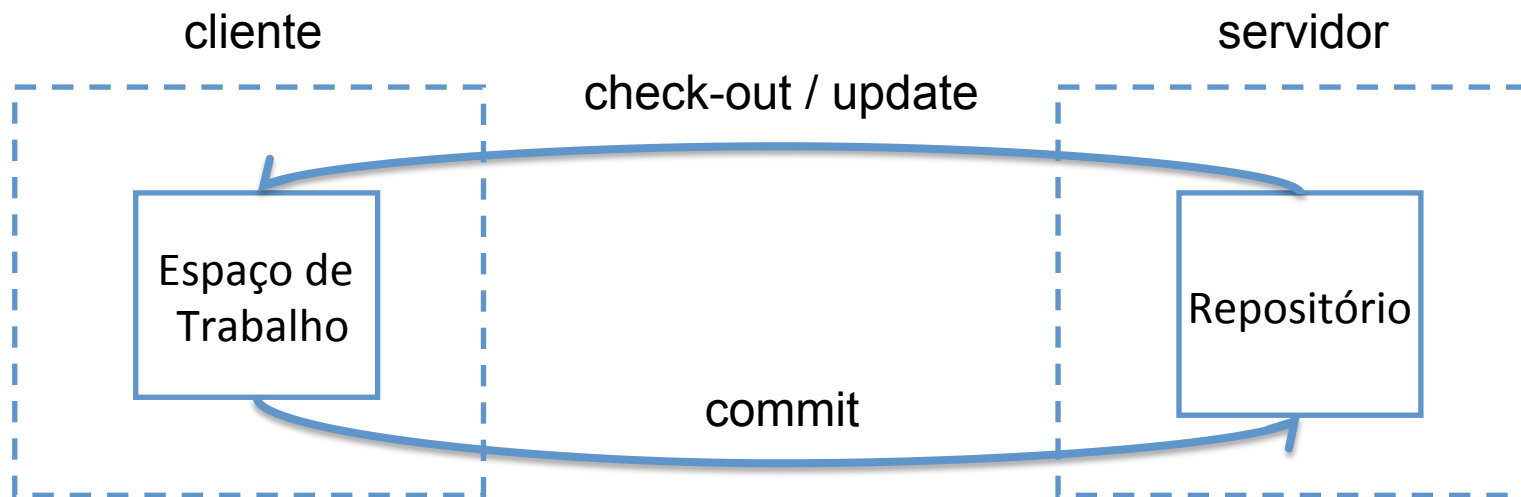
Histórico dos sistemas de controle de versão

- Anos 80/90 – Sistemas cliente-servidor
 - CVS (1986)
 - Subversion (2000)



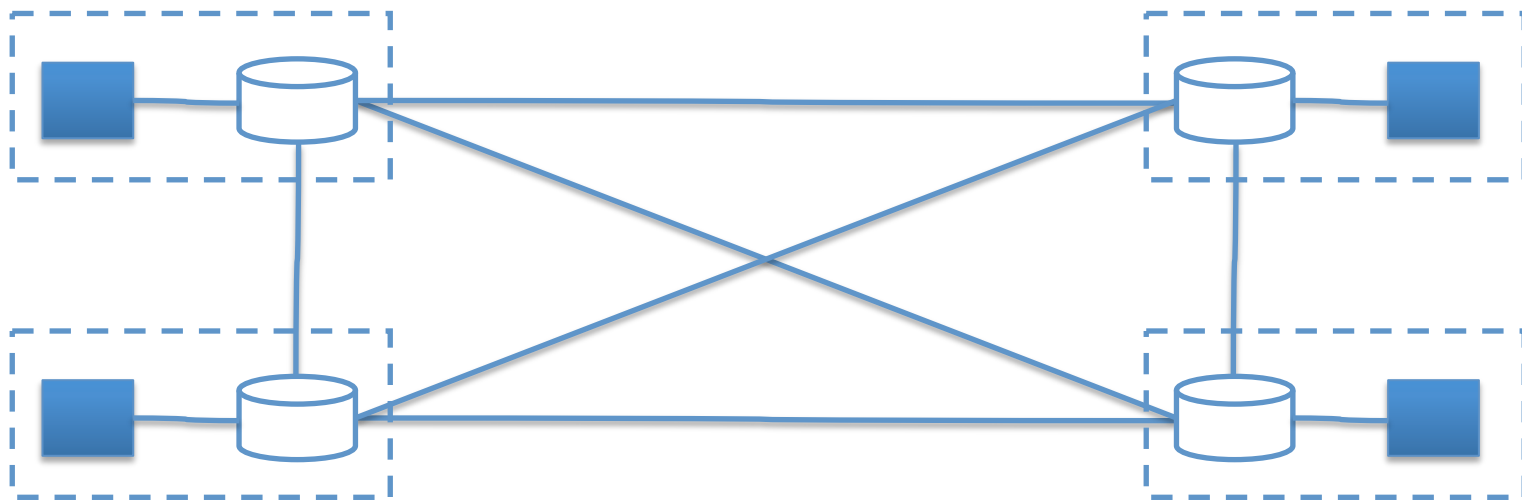
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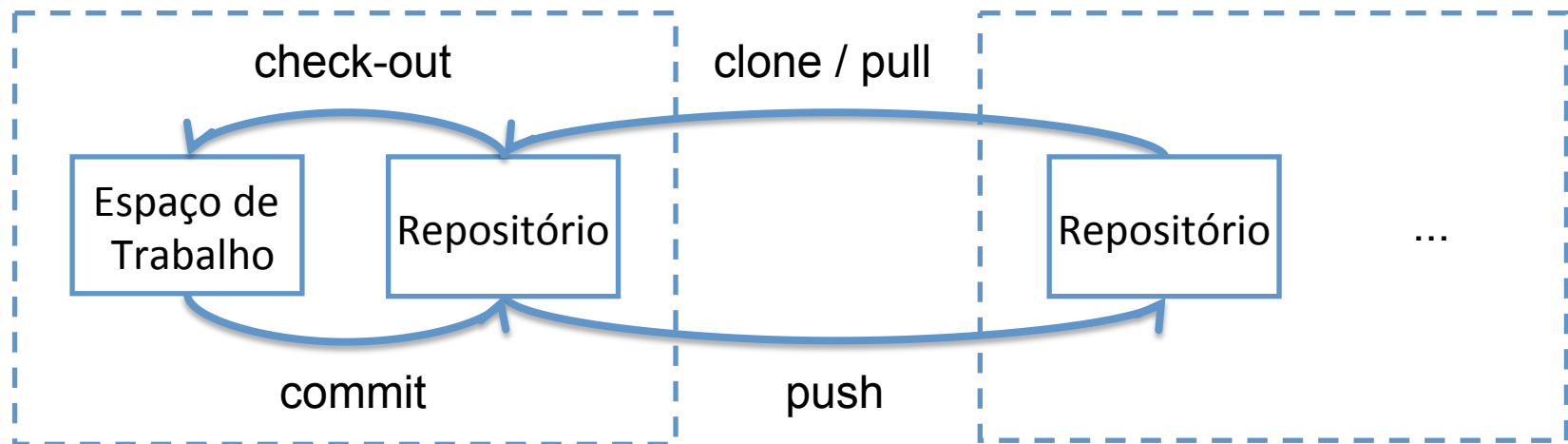
Histórico dos sistemas de controle de versão

- Anos 2000 – Sistemas peer-to-peer
 - Git (2005)
 - Mercurial (2005)

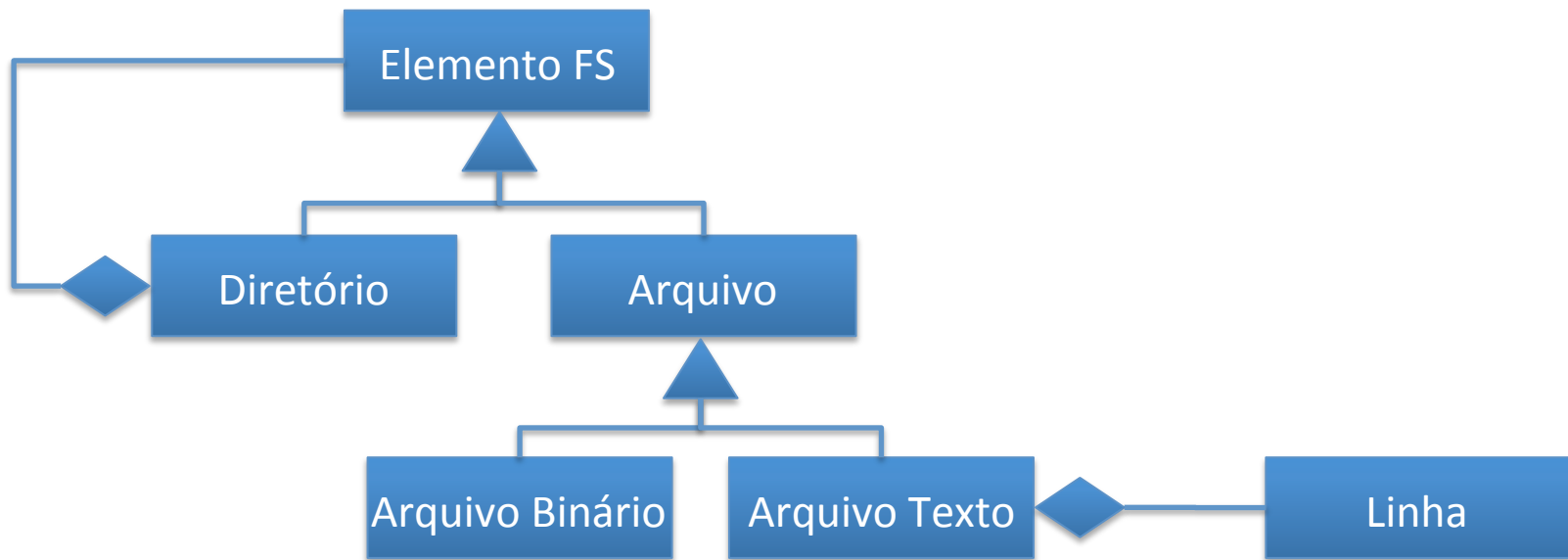


Histórico dos sistemas de controle de versão

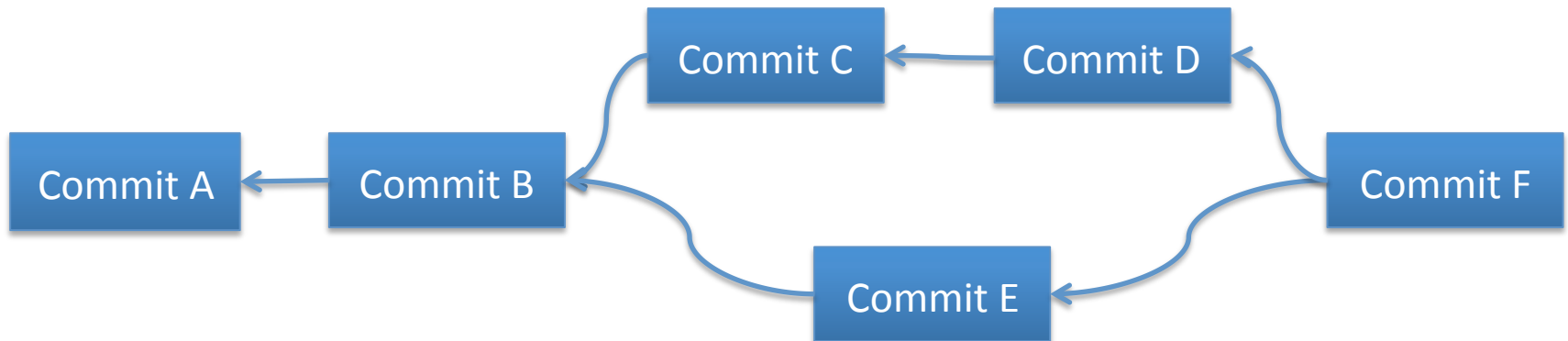
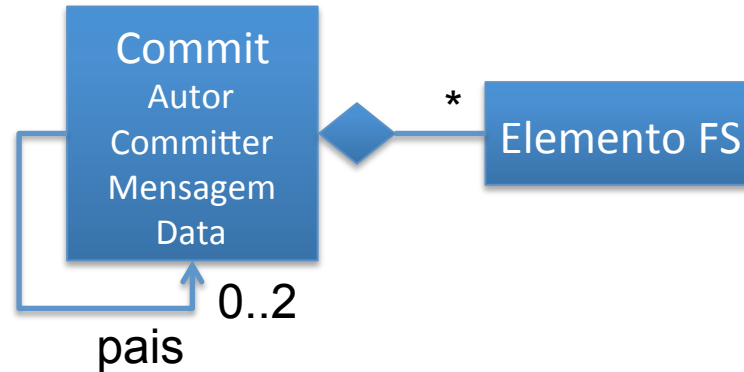
- Anos 2000 – Sistemas peer-to-peer
 - Git (2005)
 - Mercurial (2005)



O que é versionado pelo Git?



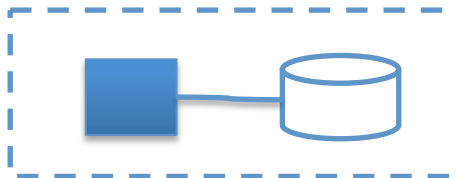
Como é versionado pelo Git?



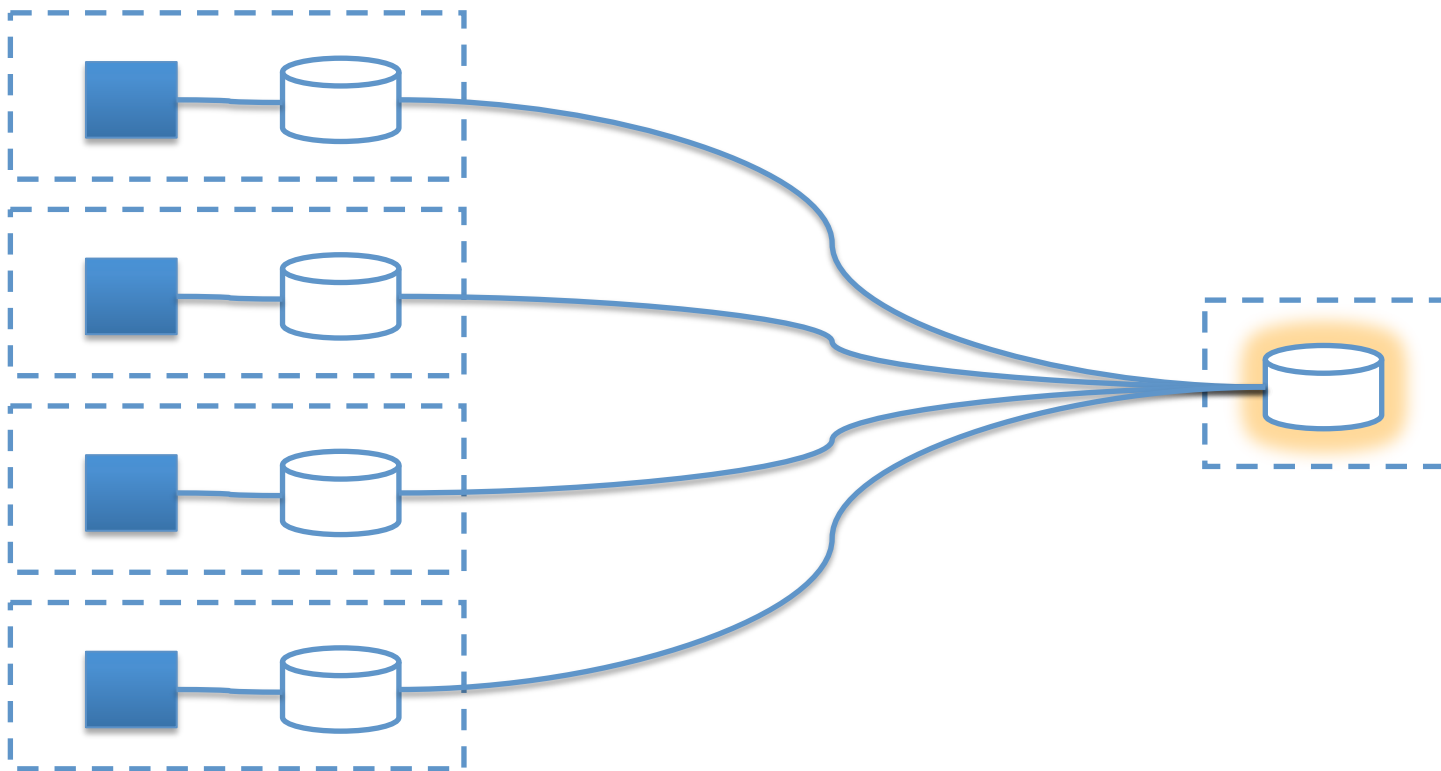
Formas de adoção

- Apesar de ser peer-to-peer, normalmente é definido um “workflow” para adoção do Git em função de características do projeto
 - Individual
 - Cliente-servidor
 - Gerente de integração
 - Ditador/tenentes

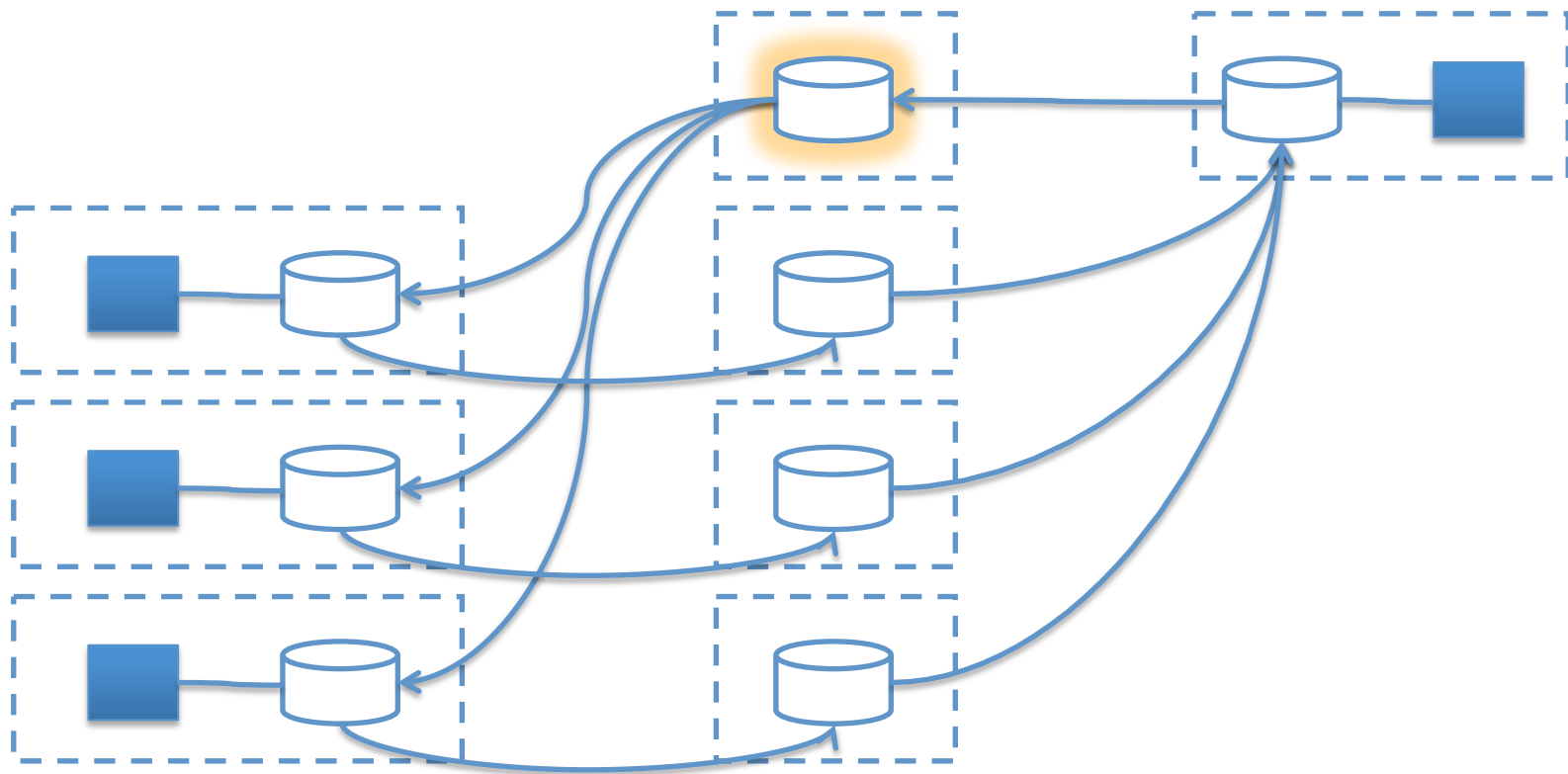
Individual



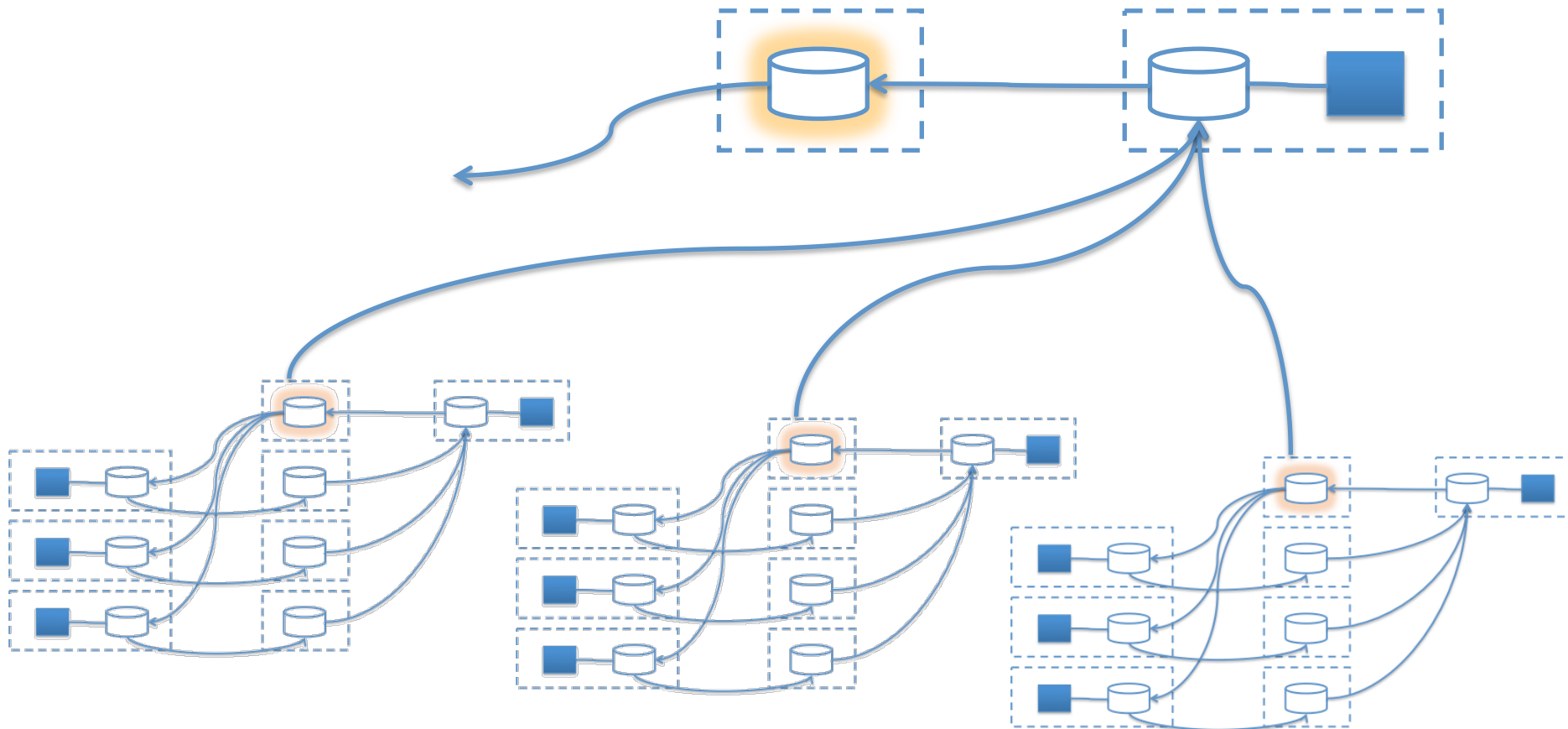
Cliente-servidor



Gerente de integração



Ditador/tenentes



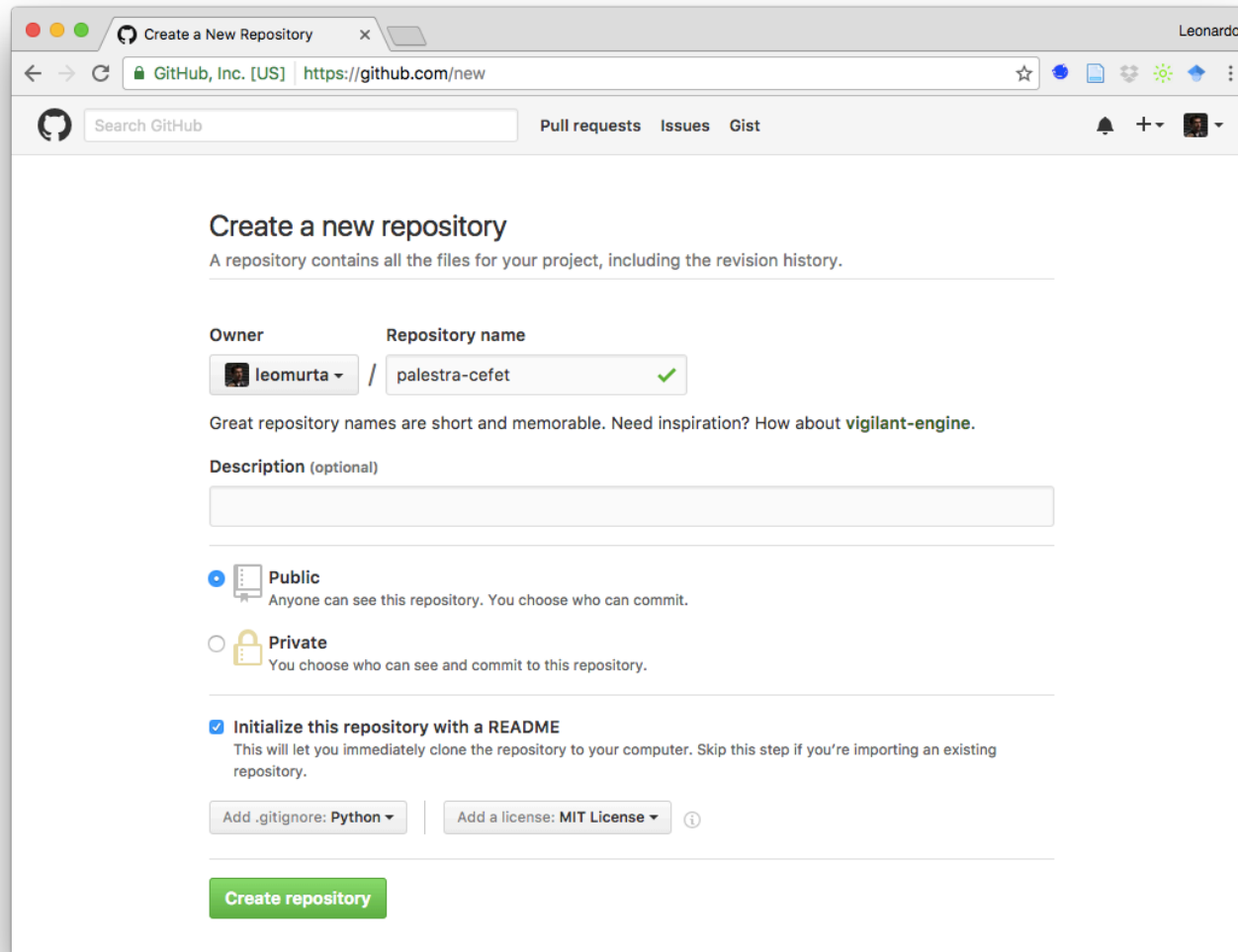
Mão na massa...



GitHub



Criando um repositório no GitHub



Create a New Repository

GitHub, Inc. [US] | <https://github.com/new>

Search GitHub Pull requests Issues Gist

Create a new repository

A repository contains all the files for your project, including the revision history.

Owner: leomurta / Repository name: palestra-cefet ✓

Great repository names are short and memorable. Need inspiration? How about [vigilant-engine](#).

Description (optional)

☒ Public
Anyone can see this repository. You choose who can commit.

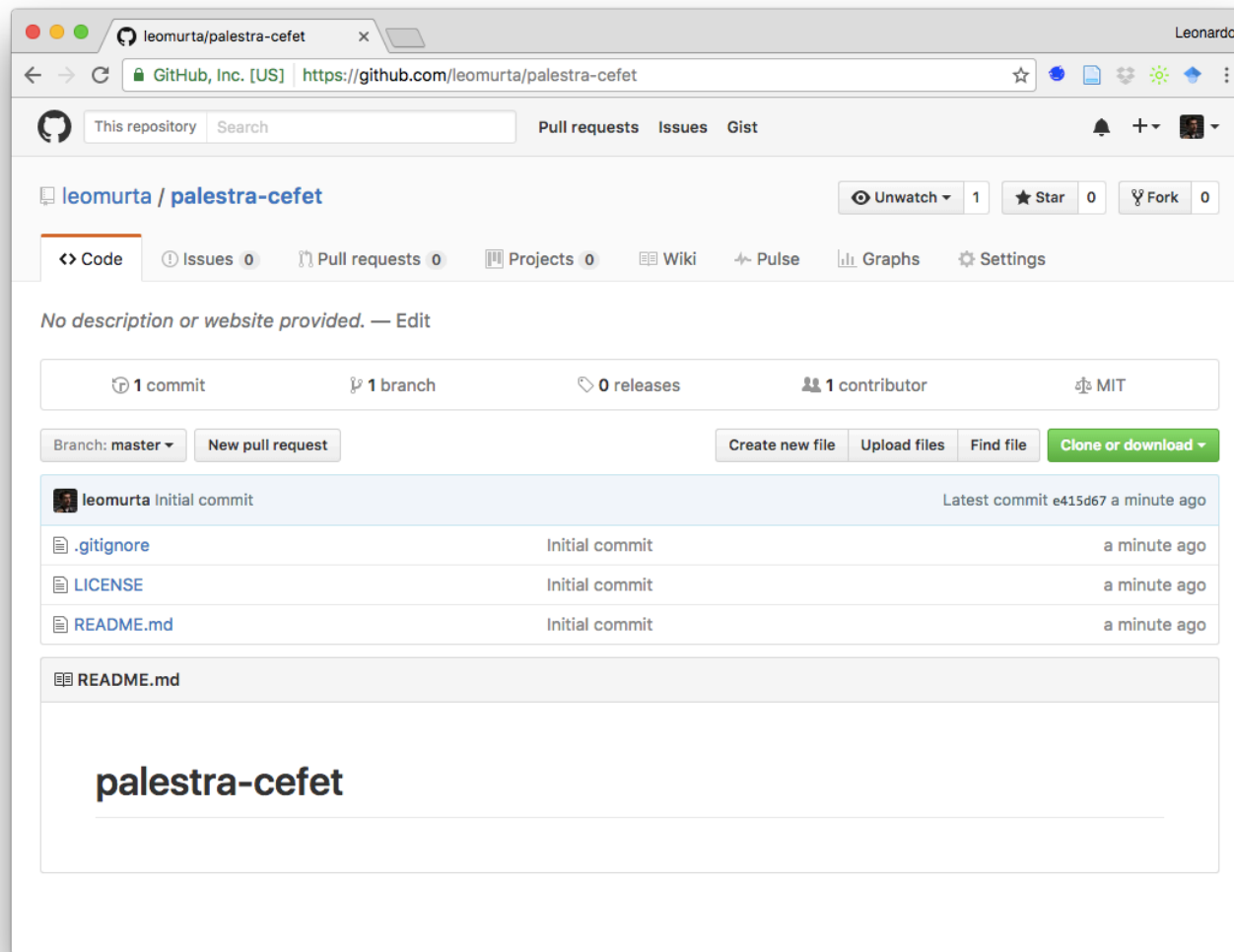
☐ Private
You choose who can see and commit to this repository.

☒ Initialize this repository with a README
This will let you immediately clone the repository to your computer. Skip this step if you're importing an existing repository.

Add .gitignore: Python | Add a license: MIT License ⓘ

Create repository

Repositório recém criado no GitHub



Clonando o repositório via linha de comando

```

palestra-cefet — -bash — 80x19
Last login: Thu Oct 20 10:48:47 on ttys001
Camundongo:~ leomurta$ git clone git@github.com:leomurta/palestra-cefet.git
Cloning into 'palestra-cefet'...
remote: Counting objects: 5, done.
remote: Compressing objects: 100% (4/4), done.
remote: Total 5 (delta 0), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (5/5), done.
Checking connectivity... done.
Camundongo:~ leomurta$ cd palestra-cefet/
Camundongo:palestra-cefet leomurta$ ls -la
total 24
drwxr-xr-x   6 leomurta  staff   204 Oct 20 10:55 .
drwxr-x---+ 102 leomurta  staff  3468 Oct 20 10:55 ..
drwxr-xr-x   13 leomurta  staff   442 Oct 20 10:55 .git
-rw-r--r--    1 leomurta  staff  1045 Oct 20 10:55 .gitignore
-rw-r--r--    1 leomurta  staff  1086 Oct 20 10:55 LICENSE
-rw-r--r--    1 leomurta  staff    16 Oct 20 10:55 README.md
Camundongo:palestra-cefet leomurta$

```

Editando e enviando a contribuição via linha de comando

```

palestra-cefet — -bash — 80x19
Camundongo:palestra-cefet leomurta$ echo "print('Alo Mundo')" > alomundo.py
Camundongo:palestra-cefet leomurta$ git add alomundo.py
Camundongo:palestra-cefet leomurta$ git commit -m "Adicionando Alo Mundo"
[master 0905d13] Adicionando Alo Mundo
 1 file changed, 1 insertion(+)
 create mode 100644 alomundo.py
Camundongo:palestra-cefet leomurta$ git push
Counting objects: 3, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 309 bytes | 0 bytes/s, done.
Total 3 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local objects.
To git@github.com:leomurta/palestra-cefet.git
 e415d67..0905d13 master -> master
Camundongo:palestra-cefet leomurta$

```

Vendo o histórico via linha de comando

```

Camundongo:palestra-cefet leomurta$ git log --graph --name-status
* commit 0905d13d3188ddfc2c579a2accb3a2a2964d66ba
   Author: Leonardo Gresta Paulino Murta <leomurta@ic.uff.br>
   Date:   Thu Oct 20 10:57:22 2016 -0200

       Adicionando Alo Mundo

   A      alomundo.py

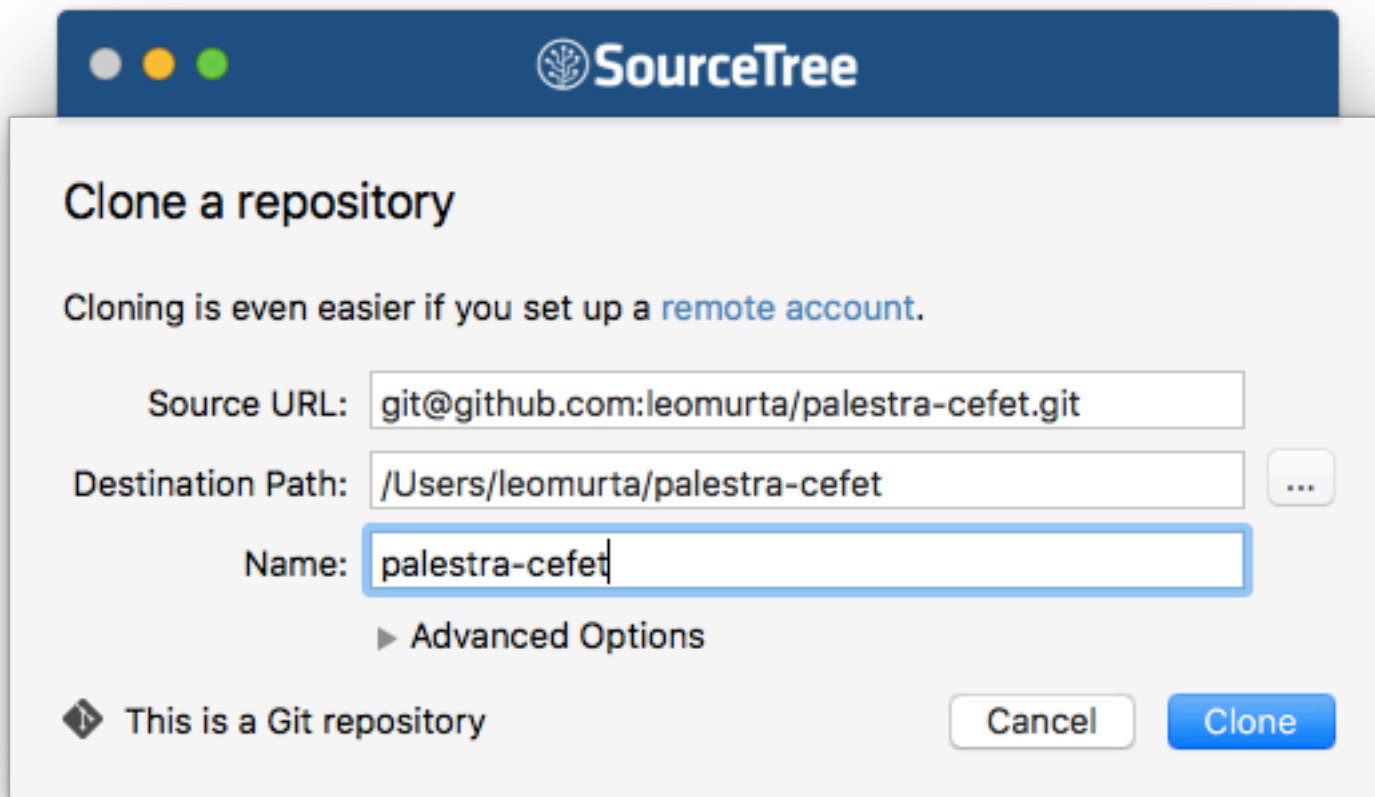
* commit e415d67514049d24b380e9fa3b8e9cf453de2ee7
   Author: Leonardo Gresta Paulino Murta <leomurta@gmail.com>
   Date:   Thu Oct 20 10:36:49 2016 -0200

       Initial commit

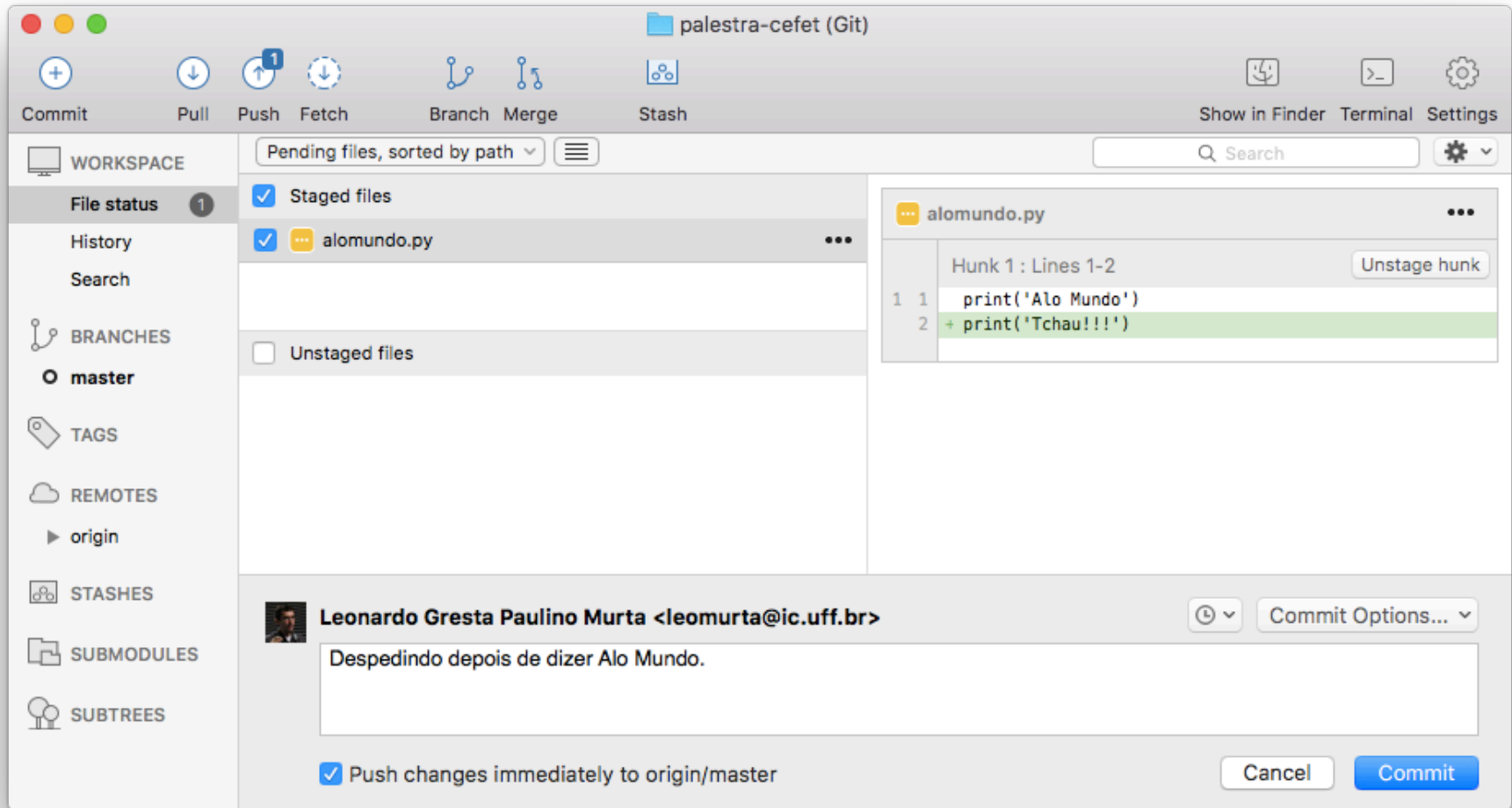
   A      .gitignore
   A      LICENSE
   A      README.md
Camundongo:palestra-cefet leomurta$

```

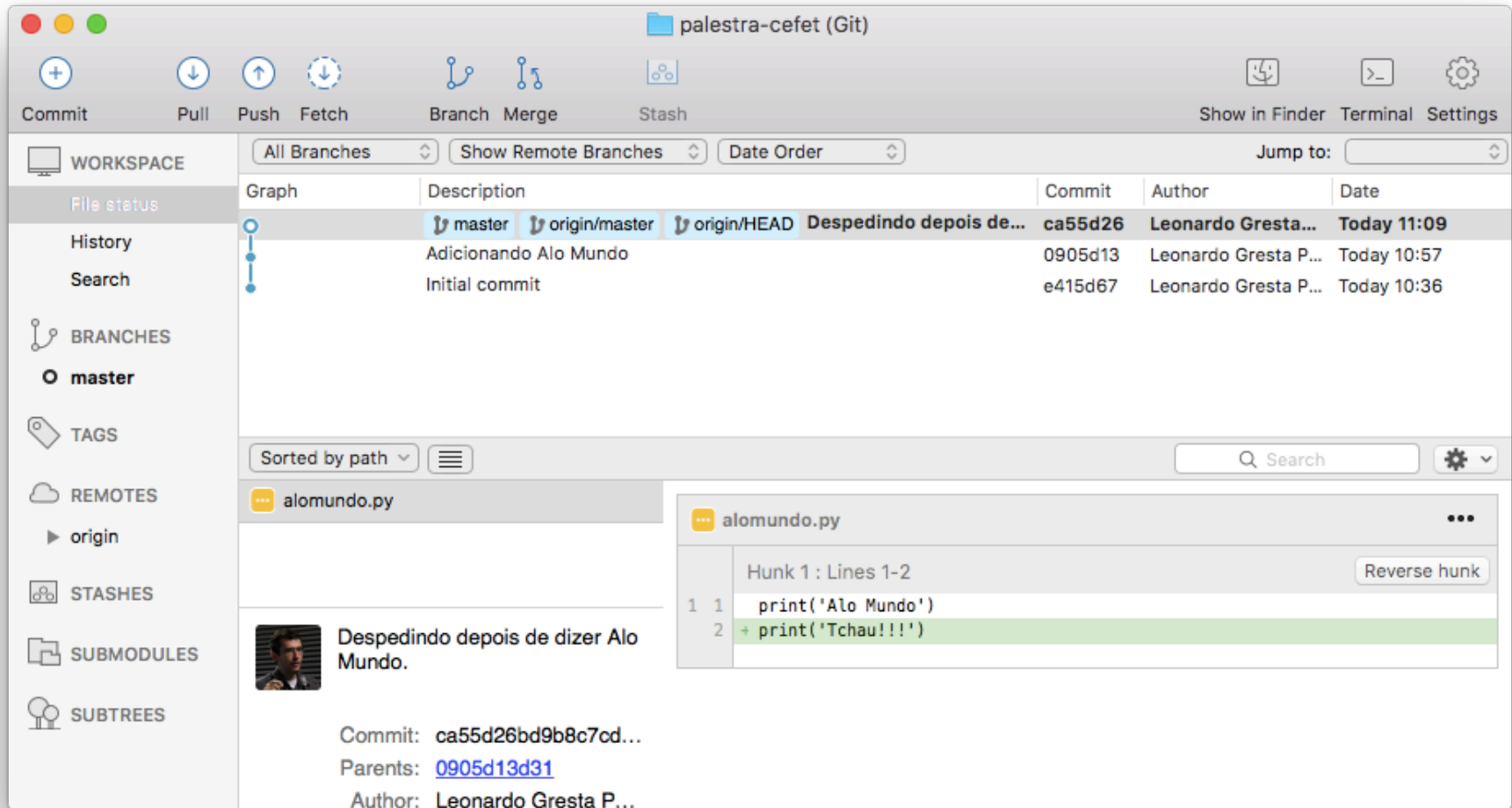

Clonando o repositório via GUI (SourceTree)



Editando e enviando a contribuição via GUI (SourceTree)



Vendo o histórico via GUI (SourceTree)



Estado atual do repositório no GitHub

The screenshot displays the GitHub interface for the repository `leomurta/palestra-cefet`. The browser address bar shows the URL `https://github.com/leomurta/palestra-cefet`. The repository page includes a search bar, navigation tabs for Pull requests, Issues, and Gist, and a user profile for Leonardo. The repository statistics show 1 star, 0 forks, and 0 issues. The file list shows the following files and their commit history:

File	Commit Message	Time Ago
<code>.gitignore</code>	Initial commit	43 minutes ago
<code>LICENSE</code>	Initial commit	43 minutes ago
<code>README.md</code>	Initial commit	43 minutes ago
<code>alomundo.py</code>	Despedindo depois de dizer Alo Mundo.	11 minutes ago

The README content is displayed below the file list:

```
palestra-cefet
```

Principais referências bibliográficas

- Conradi, R. and Westfechtel, B. Version Models for Software Configuration Management. ACM Computing Surveys, v.30, n.2, p. 232-282, 1998.
- Chacon, S. Pro Git. Apress, 1ª edição, 2009.

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