

Git Fundamentals

Open up a world of community and collaboration

Paul Broadwith

 @pauby

 <https://blog.pauby.com>

DATA:Scotland



Microsoft



Arnold Clark



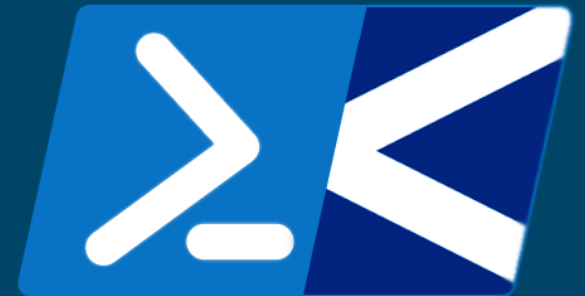
SentryOne[®]

F1F9



Who Am I?

- Paul Broadwith, Glasgow, Scotland
- 25+ years in defence, government, financial sectors
- Lead Engineer on Boxstarter and Chocolatey
cChoco DSC Resource



Questions At The End?

In This Session

- What actually is Git?
- What tools do I need for Git?
- Who is using Git and why do I need to use it?
- How does Git work?
- Git commands you need to know!
- What is a Pull Request and what they are used for;
- How to work with Open Source projects using Git;

Who Is This Aimed At?



Microsoft *Level 100*







Git

is not



GitHub

What Is Git?

What Is Git?

Wikipedia defines Git as:

Git is a version control system for tracking changes in computer files and coordinating work on those files among multiple people. It is primarily used for source code management in software development, but it can be used to keep track of changes in any set of files. As a distributed revision control **system it is aimed at speed, data integrity**, and support for distributed, non-linear workflows.

- <https://en.wikipedia.org/wiki/Git>

What Is Git?

Which means Git is:

Git is a version control system for tracking changes in computer files. It is aimed at speed and data integrity.

What Is Git?

Wikipedia defines Version Control System as:

... **version control is the management of changes to documents, computer programs, large web sites, and other collections of information. Changes are usually identified by a number or letter code, termed the "revision number"** ... Each revision is associated with **a timestamp and the person making the change**. Revisions can be compared, restored, and with some types of files, merged.

- https://en.wikipedia.org/wiki/Version_control

What Is Git?

Which means a version control system is:

Version control is the management of changes to collections of information. Changes are identified by a number associated with a timestamp and the person making the change.

What Tools Do I Need?

Recommended Software



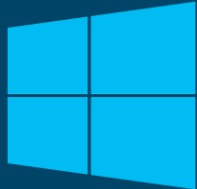
<https://chocolatey.org>

<https://chocolatey.org/install>

Required Tools



Git Tools



<https://gitforwindows.org/>



```
> choco install git -y
```



<https://git-scm.com/download/mac>



```
> apt install git-all
```


Recommended Tools



GitLens
Git supercharged

posh-git



**GitHub Pull
Requests**



Git Extensions

PSGit



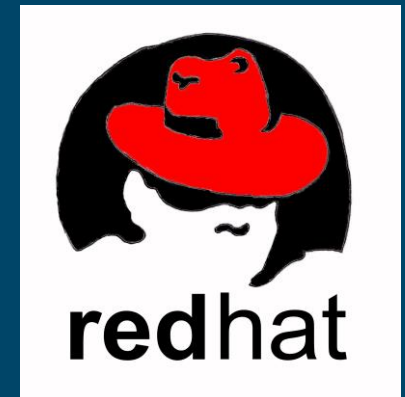
Git Credential Manager For Windows

Who uses Git?

Companies & Projects You Know



Microsoft



Git Providers & Software



GitHub



GitLab



Microsoft Windows & GVFS

Windows Builds (per day)

1760

Active Branches

4352

Pull Requests (per day)

2500

Code Pushes (per day)

8421

As at May 2017 (Using GVFS)

DSCResources Repository Statistics

475 Pull Requests

300 Closed Issues

Since 1 January 2018

Who Uses Git?



Why Do I Need To Use Git?

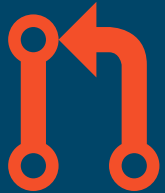
If you write code ...

... you are a developer

2017 GitHub Use



1 Billion Commits



47 Million Pull Requests

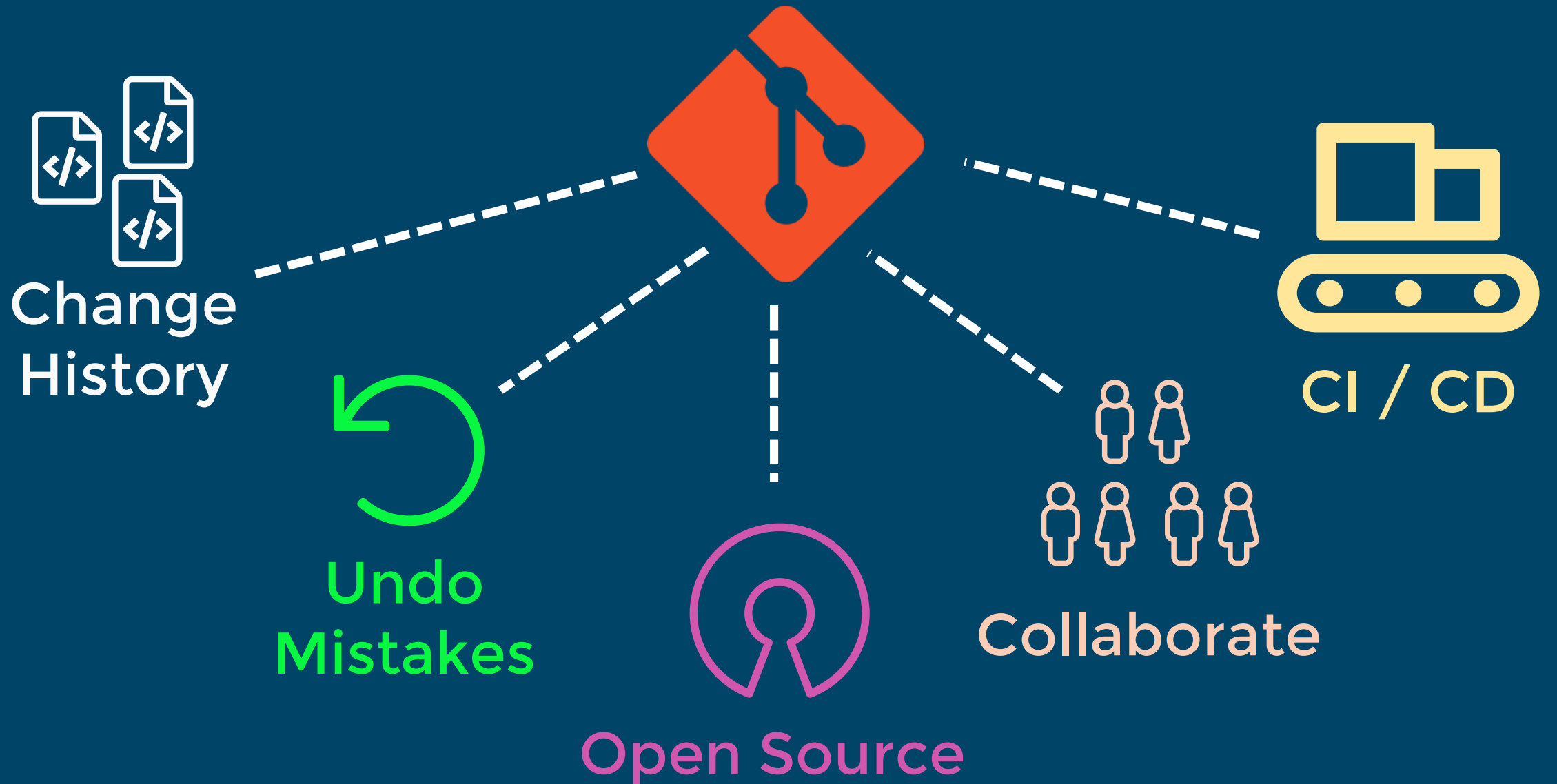


25.3 Million Active Repositories



24 Million Developers

Git Has Your Back



I will not write any more bad code
I will not write any more bad code
I will not write any more bad code
I will not write any more bad code
I will not write any more bad code
I will not write any more bad code
I will not write any more bad code
I will not write any more bad code
I will not write any more bad code
I will not write any more bad code
I will not write any more bad code
I will not write any more bad code



Even The Beards Use It



How Does Git Work?

The 3 Stages Of Git

8 Essential Git Commands



clone



add



commit



push



status



pull



checkout



remote

The 3 Stages

```
> git status
```

```
> git add  
<. | FILES>
```

```
> git commit  
-m 'Message'
```



Change
source files



Stage
changed
files



Commit
changes



Unstaged



Staged



Committed

The 5 Fundamental Building Blocks Of Git



repository



branches



commit



fork *



pull requests

What Is A Repository?



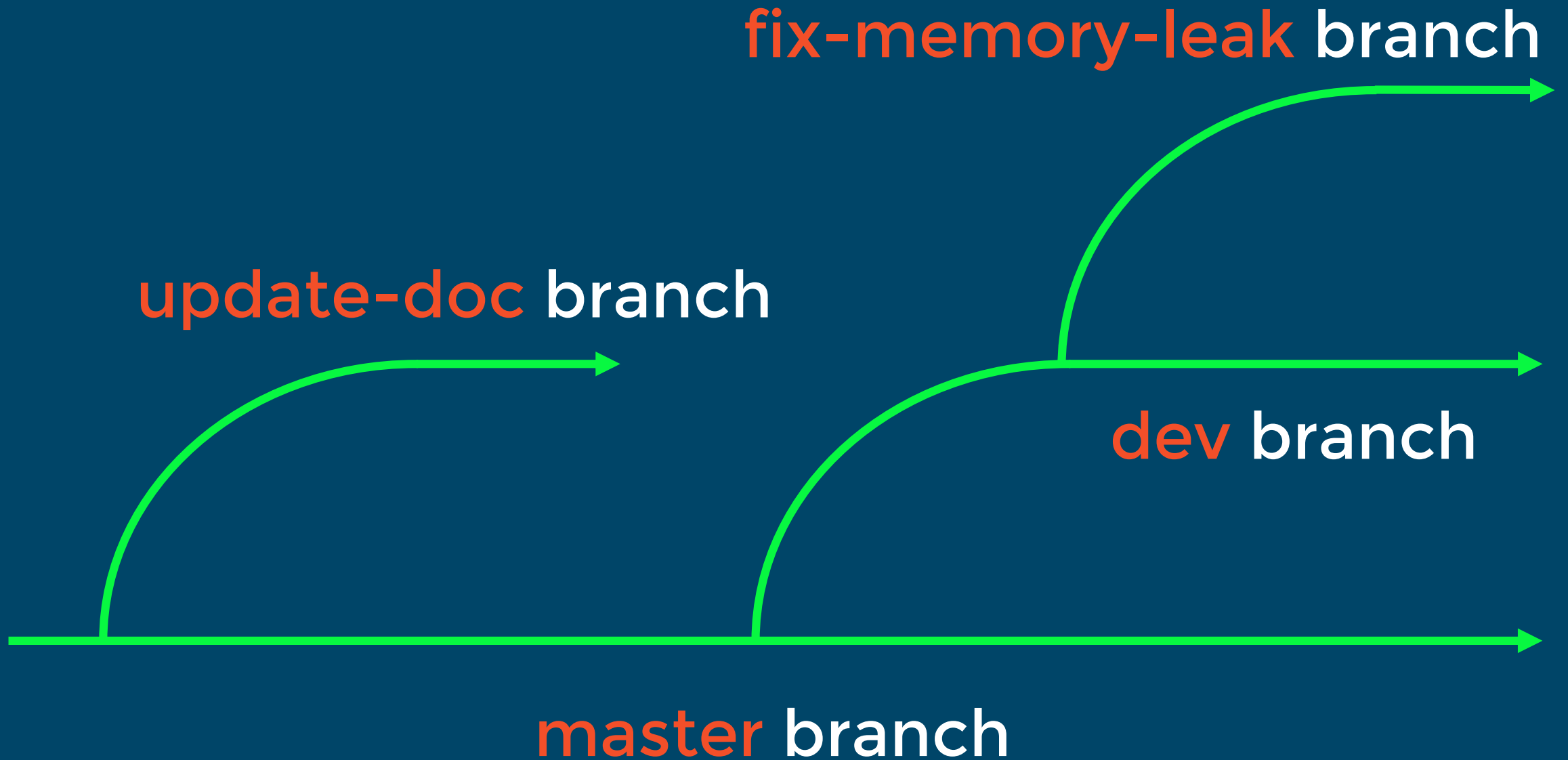
Repository / Repo - terminology - both used



myproj

Just a folder where you store your project files

How Do Branches Work?



What Is A Commit?

```
> git commit -m 'Message'
```



Commit
changes

When one or more changes have been applied to a branch, its called a ... **commit**



Committed

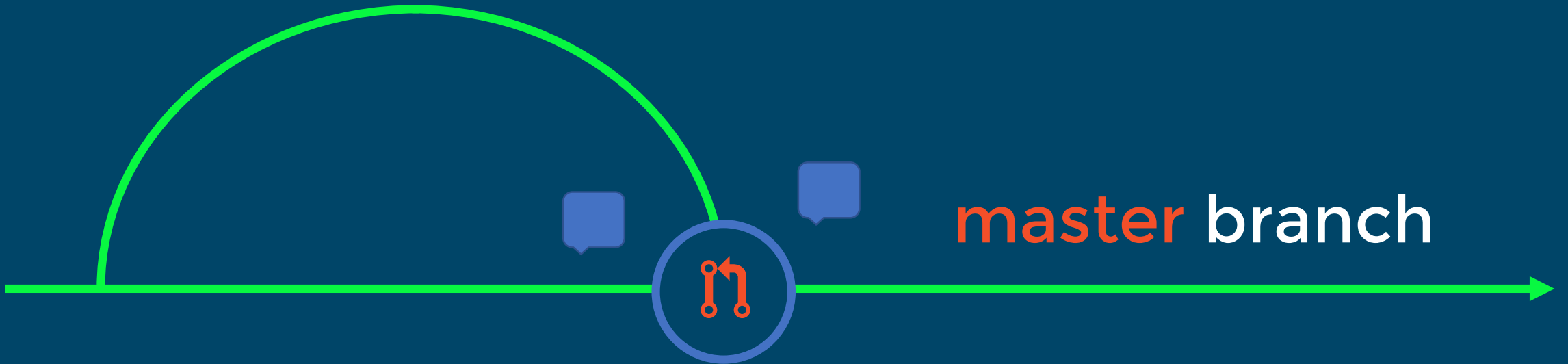
What Is A Fork?



Forking a repo is simply creating a **linked** copy of that repository. The link allows changes to be pulled or pushed to the original repository.

What Is A Pull Request?

update-doc branch



master branch

Lets others know about a change you have made.

Allows review and discussion around those changes.

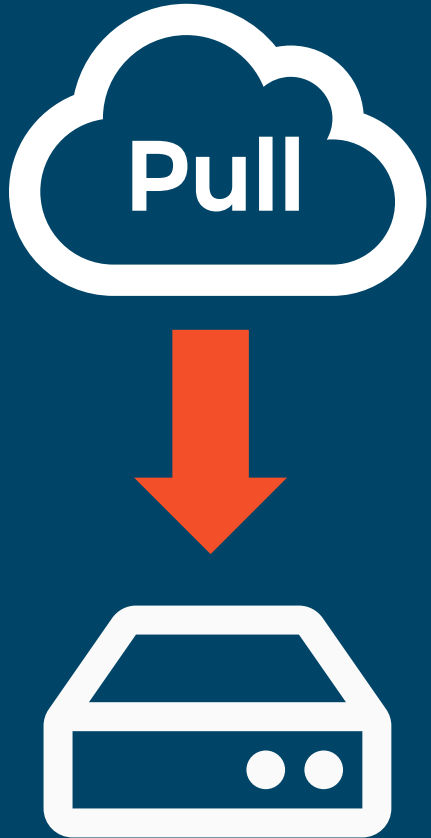
Essential Git Commands

DEMO

Our First Pull Request

Git Cycle

```
> git pull
```



```
> git add .  
> git commit -m  
"Initial commit"
```



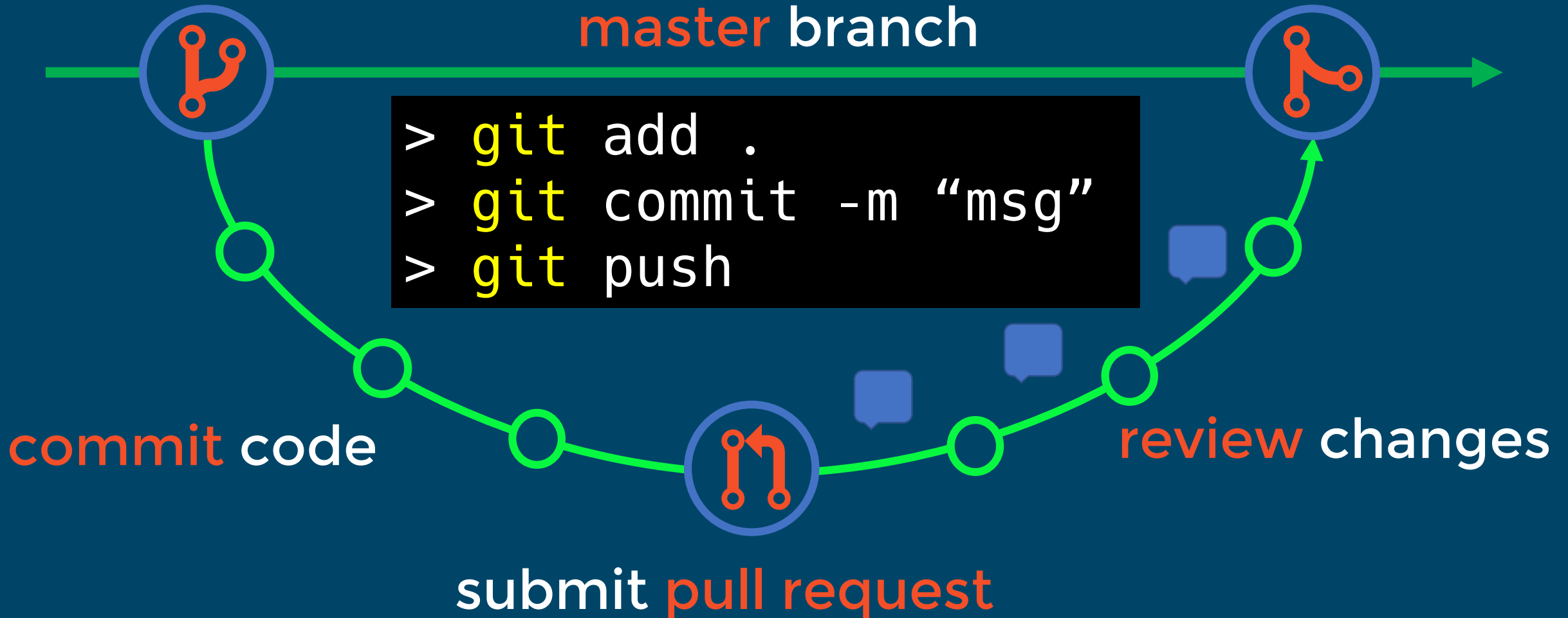
```
> git push
```



Pull Request Flow

dev branch *created*
from master

dev branch
merged to master





Design with
community
in mind

2024

24 PULL REQUESTS

GIVING BACK LITTLE GIFTS OF CODE FOR CHRISTMAS

Hacktoberfest

Summary

- We learned what Git is and where it came from;
- What tools are needed to work with Git;
- Who is using Git and why I need to use it!
- Fundamental Git commands;
- The three stages of Git;
- What a pull request is, why we use them and how to use it to work with Open Source projects;

Congratulations!

You're now a `git`!

Questions?

Speaker Scholarship



bit.ly/ds-speaker

Inclusion – Diversity – Community

DATA:Scotland

Session Feedback
bit.ly/2019sfeedback



Event Feedback
bit.ly/2019efeedback

Thank You!



pauby.com



[@pauby](https://twitter.com/pauby)



github.com/pauby



[linkedin.com/in/paulbroadwith](https://www.linkedin.com/in/paulbroadwith)



Paul Broadwith

pau.by/talks