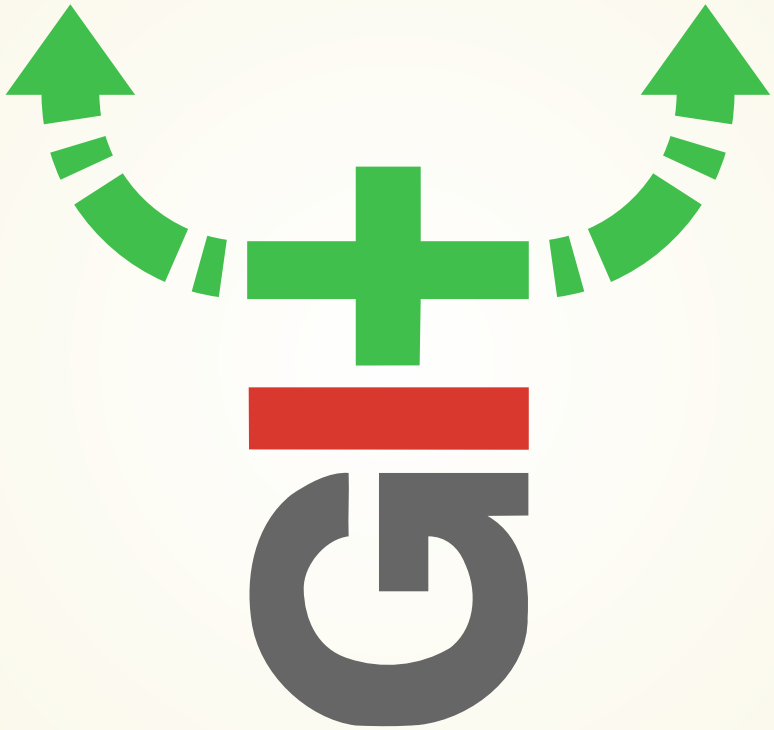
DISTRIBUTED FILEMANAGEMENT USING GIT-ANNEX



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INTRODUCTION

This presentation will give you a overview about the concepts and features provided by the file synchronisation tool git-annex.

Well, you will learn about:

- File synchronisation systems and their issues
- Git annex **repositories** and **remotes**
- Git annex **distributed** synchronization concept
- Git annex **security concepts**
- Git annex assistant **webapp** tool

CLOUD STORAGE SERVICES

Cloud storage is a comfortable solution to share data across several systems and networks

- Today data should be always accessible, on different system
- Using a cloud service like
  - Box.com
  - Dropbox
  - Megaupload
  - ...

makes sense...but

THERE ARE ISSUES

- Is your data „safe" inside the cloud?
  - Dropbox issue made password optional for several hours
  - Data loss caused by a bug in Dropbox Client
  - Megaupload taken down by FBI
  - ...
- Local storage
  - Hard drives often silently fail
  - Data gets corrupted by malicious software
  - ...

A POSSIBLE SOLUTION

To keep your data safe and secured not just a backup but a backup strategy is needed.

- Backup important data to different location
- Encrypt sensible data if it is stored in the „cloud"
- Track your data, verify your data because hardware is error-prone

Too much effort, right?

GIT - A DEVELOPERS VIEW!

Git is a version control system primary used by developers to track their code changes.

- Linus Torvalds calls it: A „stupid" content tracker.

- Problem:
  - Not suitable for big binary data

GIT CONCEPT - REPOSITORIES AND REMOTES

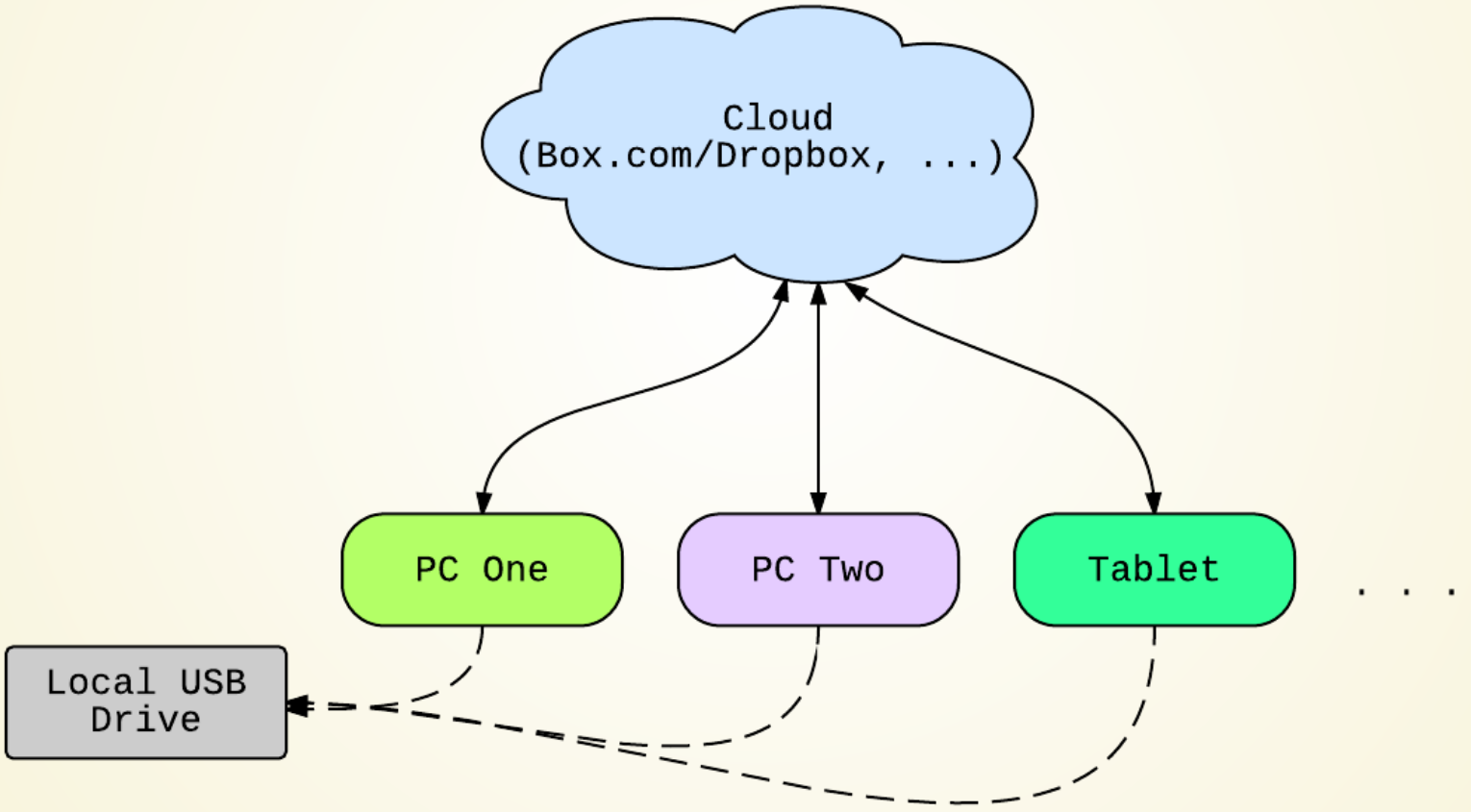
- A **repository** is the **place where your files are stored.** Usually this are so-called git repositories. Git repositories have a `.git` folder with a specific structure.
- A **remote** is a **external place where a repository may be stored.** This might be for example a external usbdrive oder a cloud service

GIT-ANNEX OVERVIEW

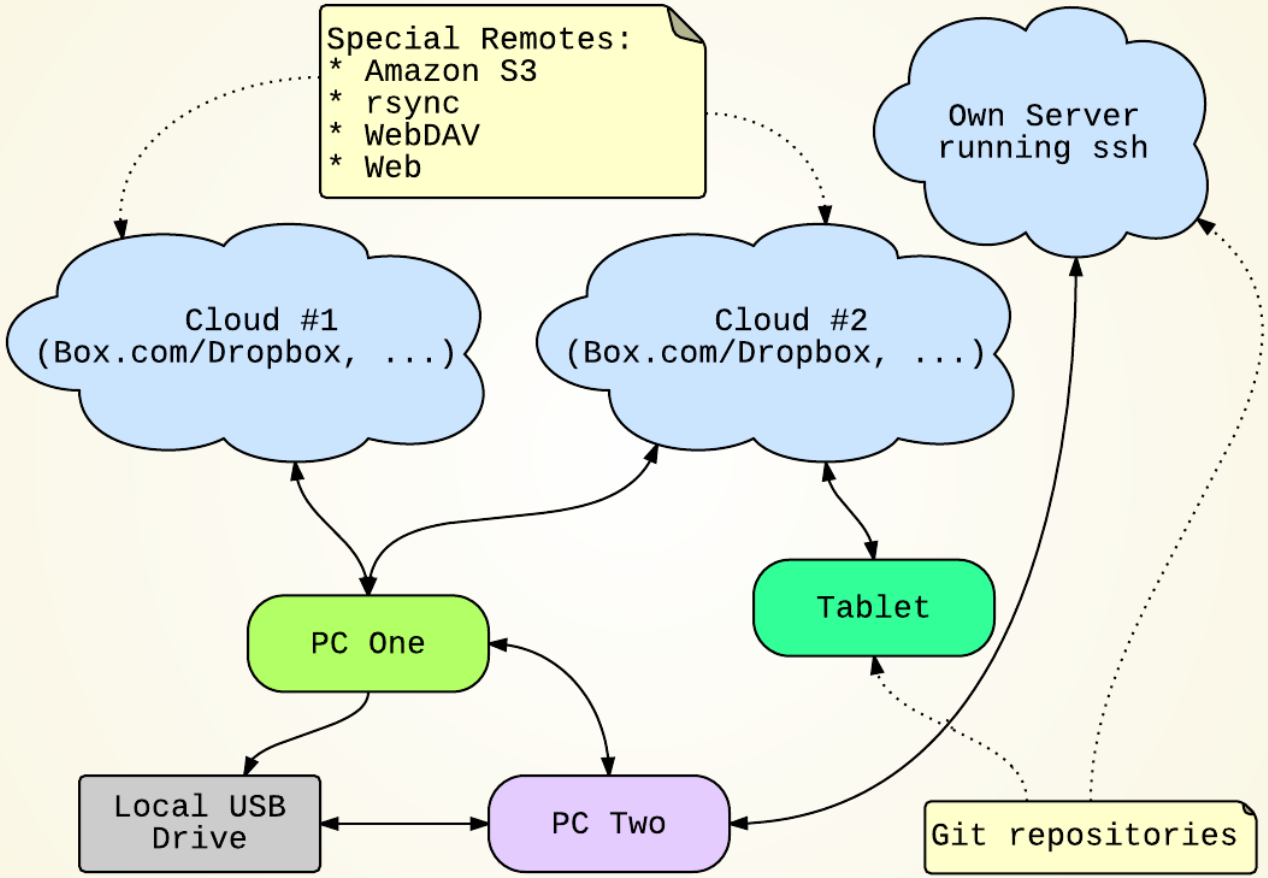
Git-annex is a tool that extends the git concept by only tracking the content's metadata. In this way it allows git to track large binary files without checking them into git.

- Crowdfunding project, reached over $20000
- Developed in Haskell by Joey Hess
- Free Software
- Primary a commandline tool
- Now, there is a fancy GUI

FILE SYNCHRONISATION ACROSS DIFFERENT DEVICES AND NETWORKS

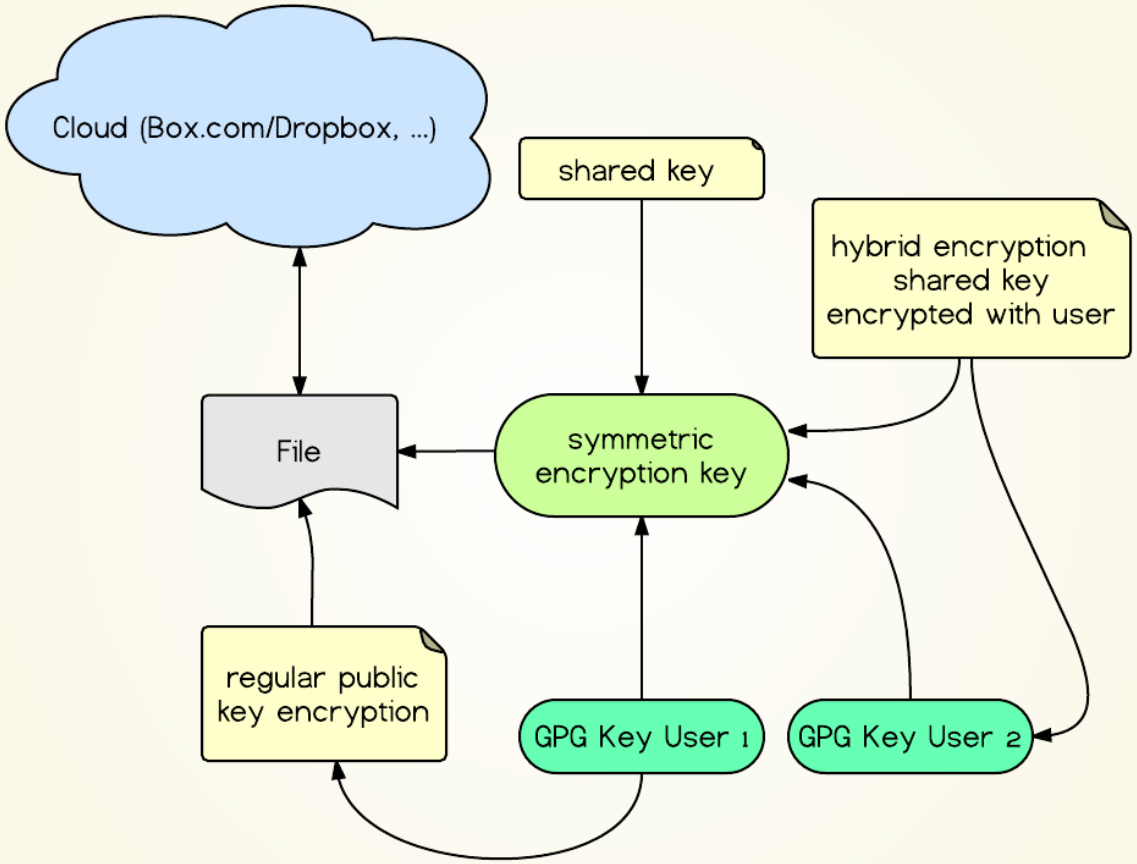


GIT-ANNEX WAY TO SYNCHRONIZE YOUR DATA



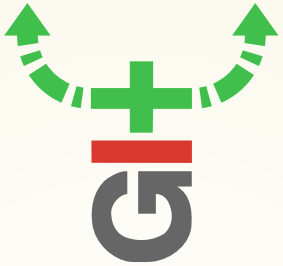
- Git-annex extends git concept by special remotes

SHARED AND HYBRID ENCRYPTION CONCEPT



- Supports different encryption use cases

OTHER GIT ANNEX FEATURES



- File integrity check (cryptographic hashsum)
- Location tracking
- Minimum number of copies
- Different repository groups
- Repository trust levels
- Chunked file upload support

OPERATING SYSTEM SUPPORT

Mac™ OS

ANDROID

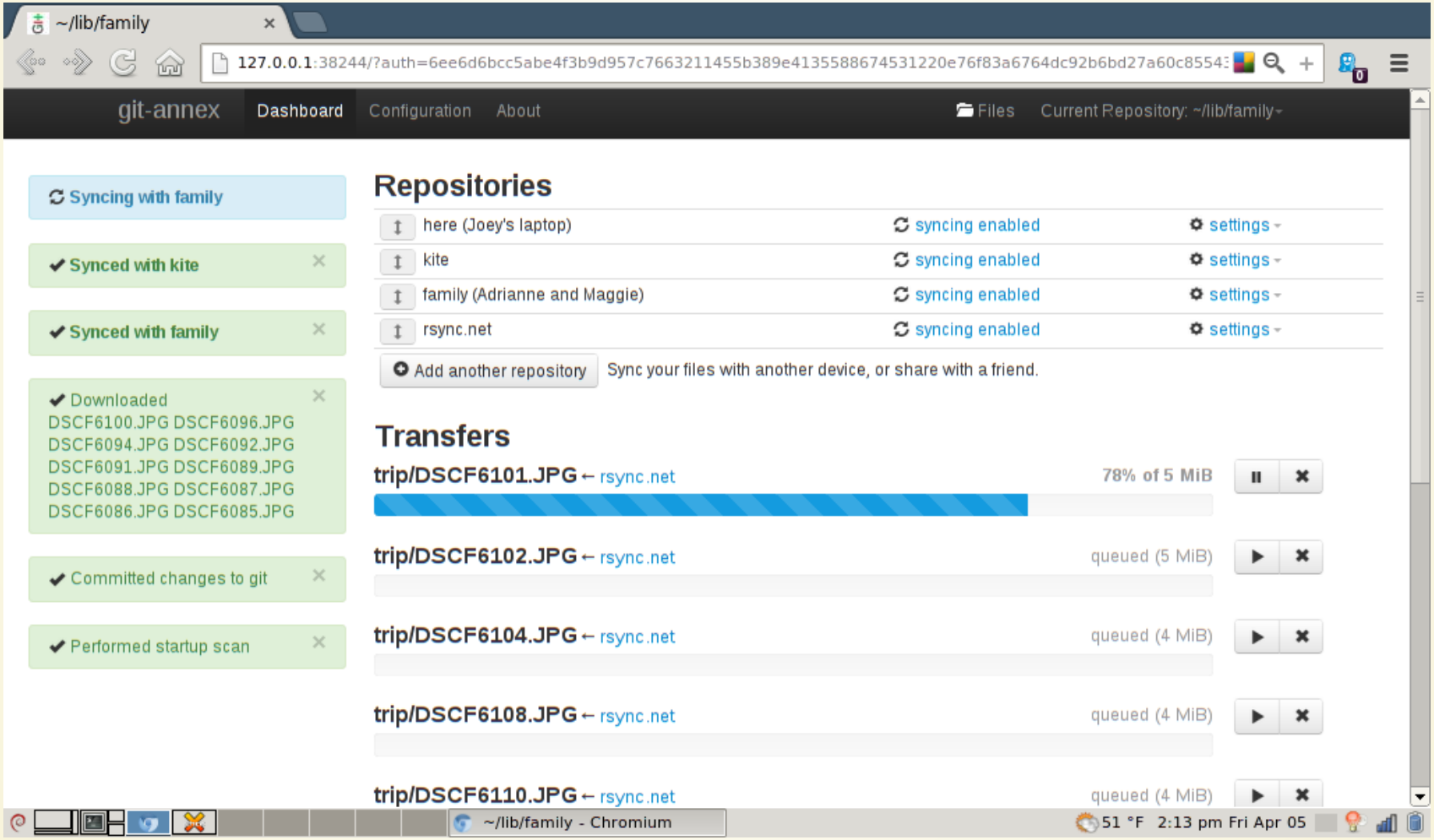
THE GIT-ANNEX COMMANDLINE USAGE

```
$ git init myrepo
Initialized empty Git repository in /home/qitta/myrepo/.git/
$ cd myrepo
$ git annex init 'myrepo'
init myrepo ok
(Recording state in git...)
```

- `git-annex` commands to work with:
  - add
  - drop
  - whereis
  - info
- Just type `git-annex` to get the whole list or check the manpage. Usual `git` commands are used to add/remove remotes, check status or commit changes.

GIT-ANNEX WEBAPP GUI-INTERFACE

- „Like DropBox, but with your own cloud"



EVERYTHING PERFECT? - LET'S SUM UP

Pros:

- Integrates itself into existing cloud environment
- Encryption to secure your data
- File integrity and location tracking
- Chunked file upload support
- Free and Open Source Software
- Operating system support

Cons:

- Git annex is still under heavy development
- Commandline Interface is a high entry barrier

REFERENCES

Main ressource:

https://git-annex.branchable.com/

The basics, git annex walkthrough:

https://git-annex.branchable.com/walkthrough/

Some git-annex video tutorials

https://git-annex.branchable.com/videos/

Thank you for your attention!

Questions?