When CERNBox met Agile

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Project Lead and Service Manager, CERNBox
CERN IT Storage

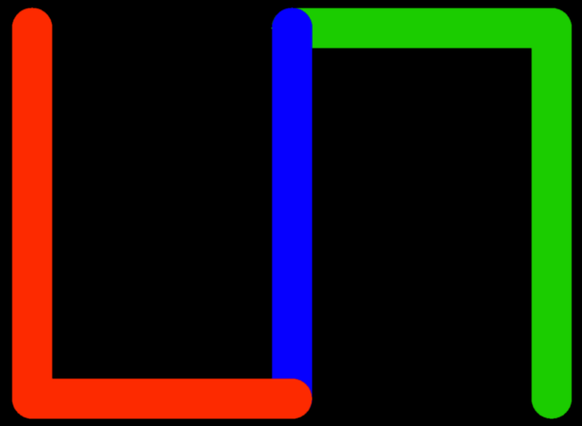
PMMU 9th March 2021

Me

Galician (from Spain)

Msc Computer Engineering

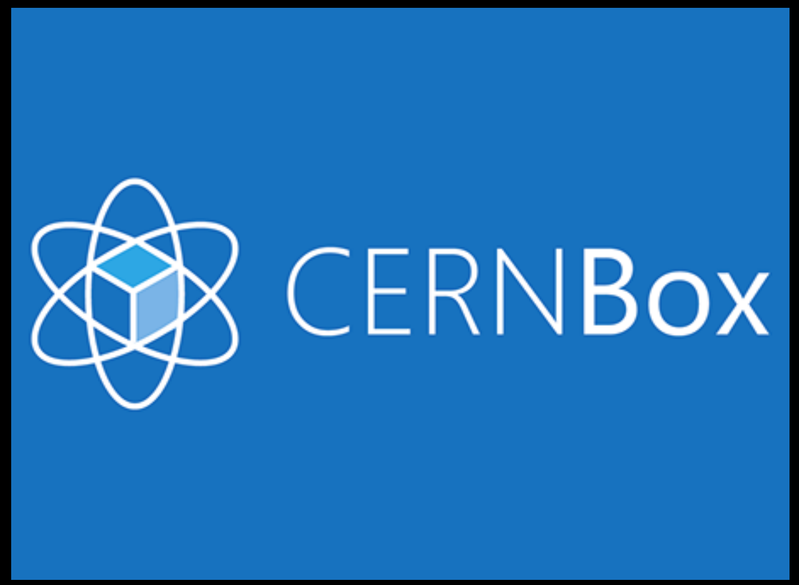
I like diving in cold lakes



- Software Developer
- Aerospace
- Pentas (Humsat constellation)

- Technical Student
- Fellow
- Staff

2014

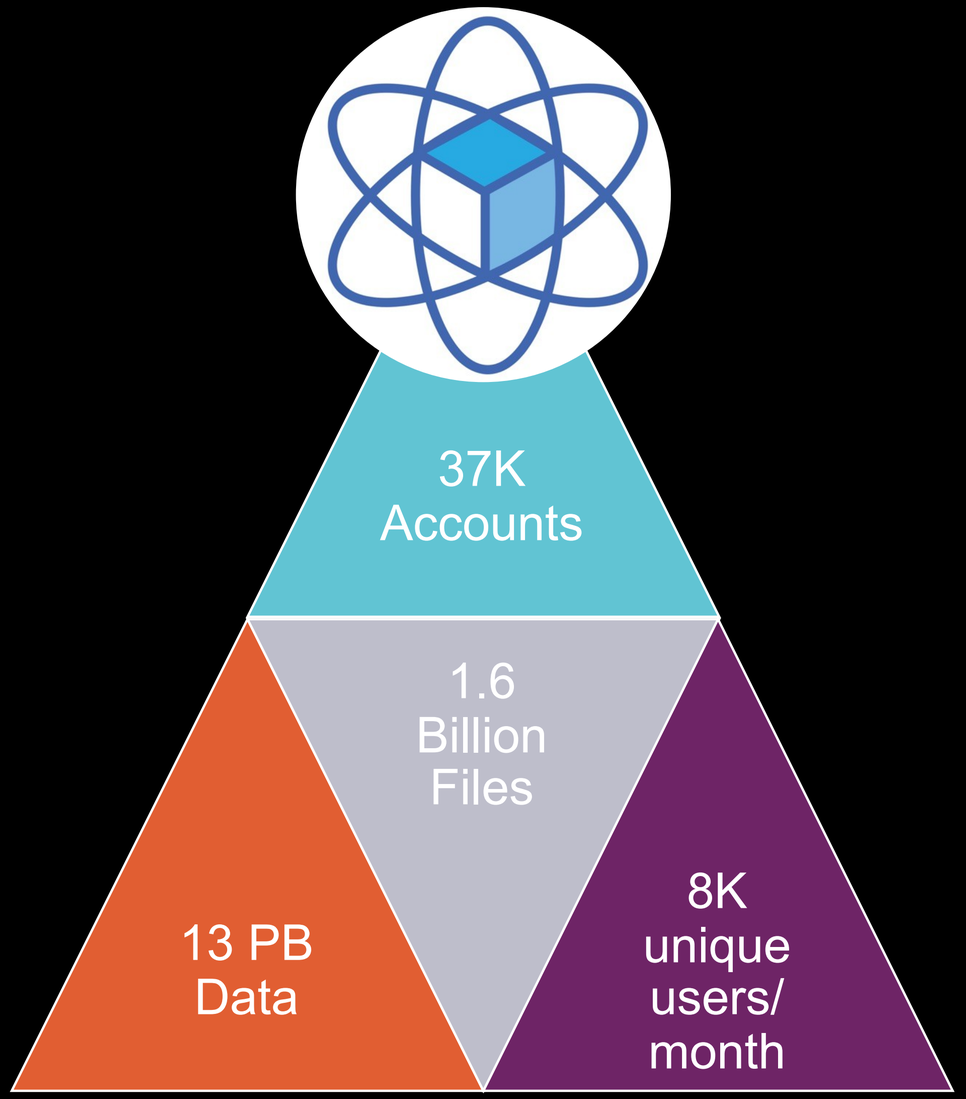


- Project Lead and Service Manager
- Team of 12 people
- 5 functional areas

- WP3 leader (Technology and Foundation)
- Team of 10 people (from different EU institutions)
- WP3 = 204 Person-Month

CERNBox in a nutshell

Sync and Share	• Dropbox-like use-case • Offline access to data • Universal access to data
Web Apps	• Real time collaboration • Office documents
Online filesystem access	• SAMBA (Windows) • FUSEX (Linux)
Physics integration	• ROOT • SWAN • LXPLUS/LXBATCH

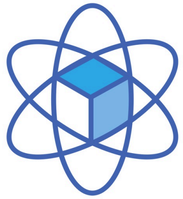


The team

- 5 STAFF
- 5 FELLOW
- 1 PJAS
- 1 TTE

Functional areas

"Un pour tous et tous pour un"



ROTA
(~All members)

Web
(~2)

Desktop/Mobile
Apps
(~2)

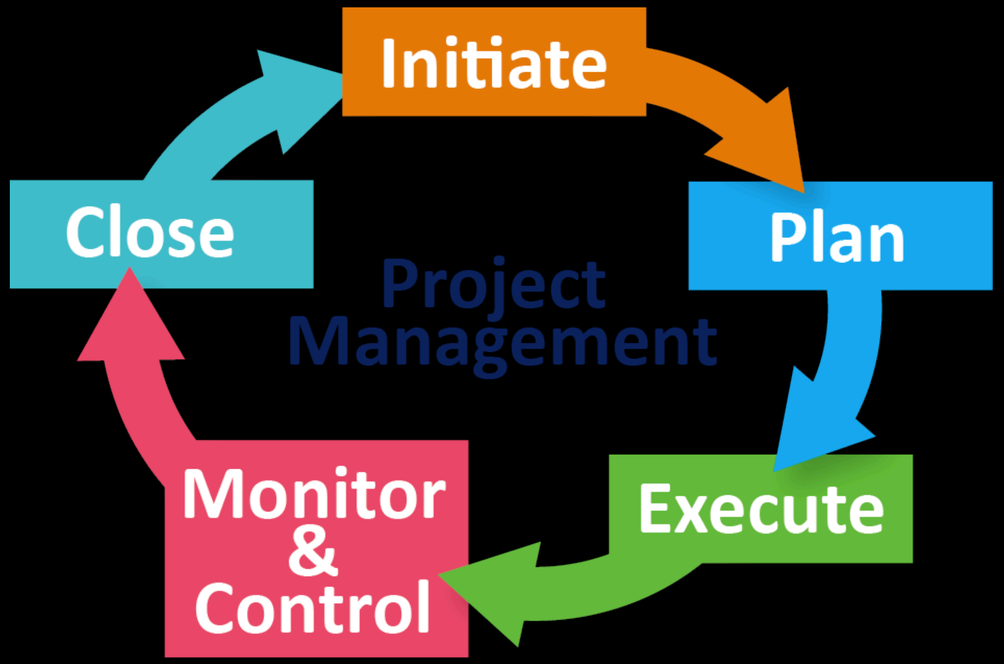
App integrations
(~2)

SAMBA
(~2)

Storage EOS
(~4)

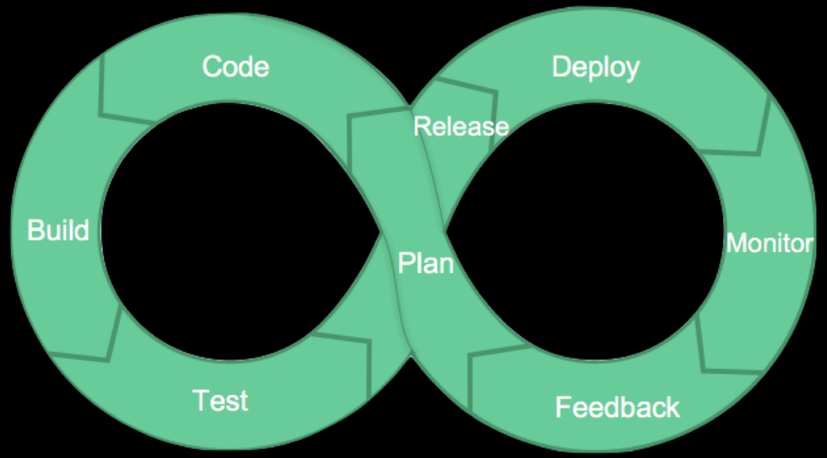
Project Management

- Is the process of leading the work of a team to achieve goals in time
- As project manager
  - Create project plans (why, how, what)
  - Stakeholder management (for who)
  - Communication (to)
  - Managing teams (together with)
  - Controlling schedule (when)
  - Assessment of risks (what if)
- Many ways to develop this process, one is with Agile methods

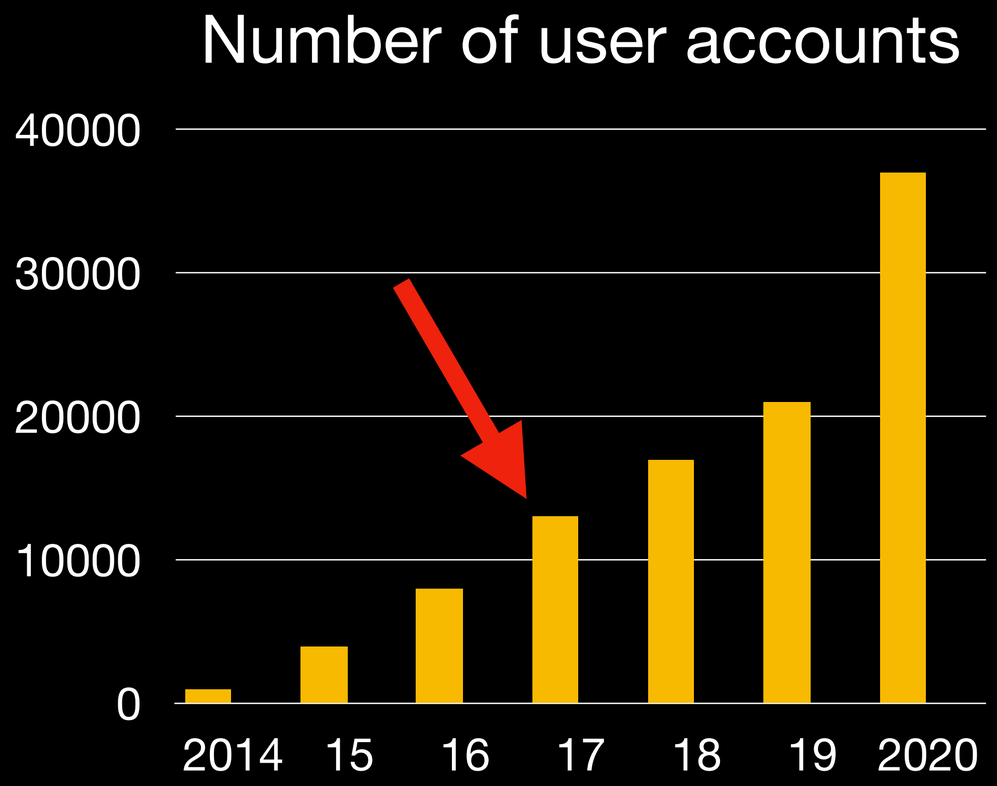


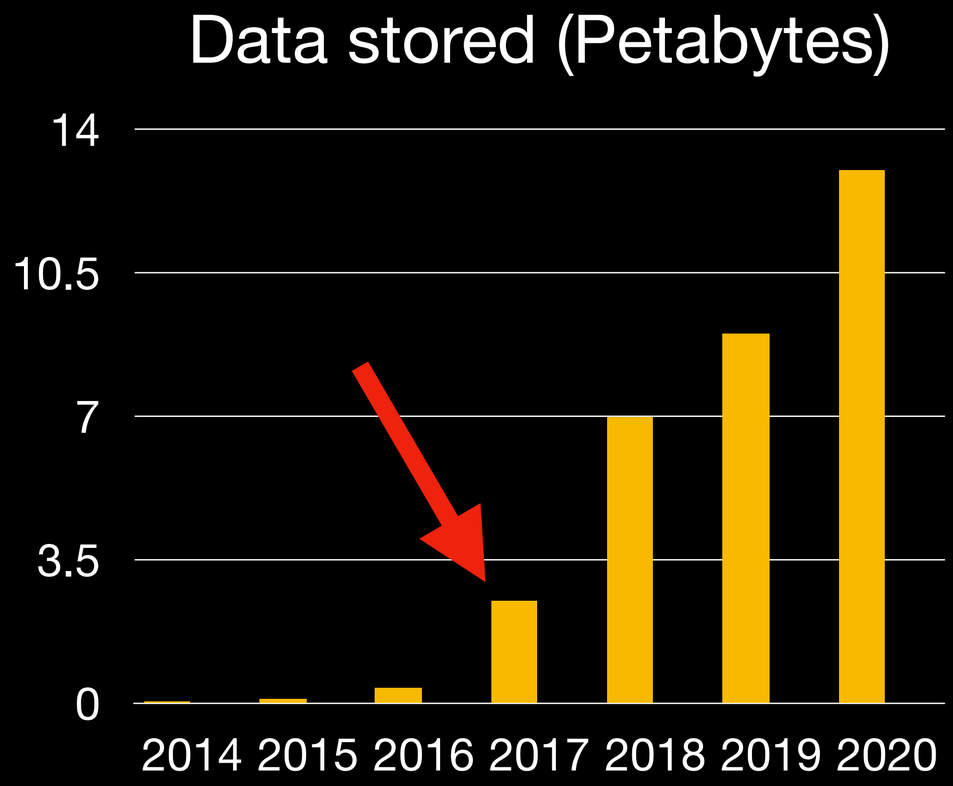
Agile Software Development

- Self-organizing (per functional area) and cross-functional teams (pizza teams)
- Iterative, incremental and evolutionary (ship faster)
- Short feedback loops (daily, weekly, biweekly)
- Virtues (theory vs practice)
  - Individuals and interactions over processes and tools
  - Working Software over comprehensive documentation
  - Customer collaboration over contract negotiation
  - Responding to change rather than following a plan



Why Agile?


Number of user accounts
40000
30000
20000
10000
0
2014
15
16
17
18
19
2020


Data stored (Petabytes)
14
10.5
7
3.5
0
2014
2015
2016
2017
2018
2019
2020

How do we do Agile?

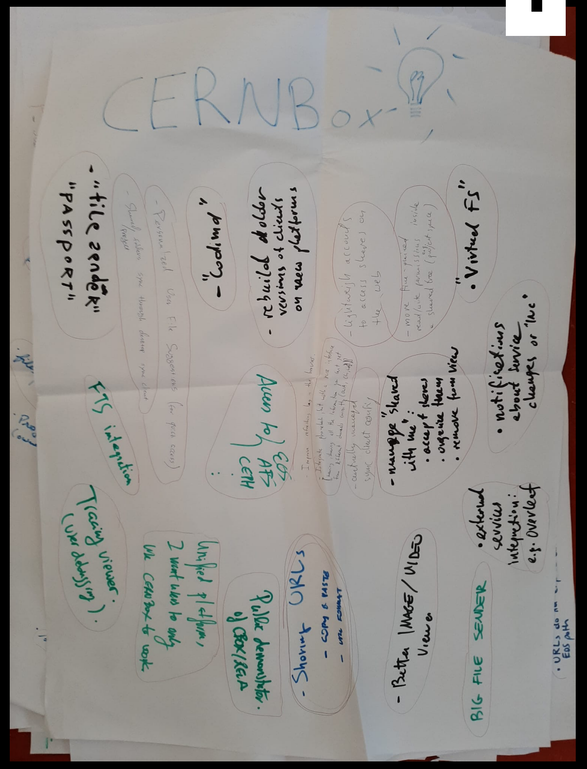
We don't polarize, we take features from both models to fit the dynamics of the team

	Scrum	Kanban
Cadence	Regular fixed length sprints (ie, 2 weeks)	Continuous flow
Release methodology	At the end of each sprint	Continuous delivery
Roles	Product owner, scrum master, development team	No required roles
Key metrics	Velocity	Lead time, cycle time, WIP
Change philosophy	Teams should not make changes during the sprint.	Change can happen at any time

What do we do?

Backlog creation

1



2

	TO BE SCHEDULED	Q1	Q2	Q3	
APP PARITY	Office 365	DrawIO Text Editor Image Gallery PDF Viewer	Gantt Viewer ROOT/S ZIP/TAR	SWAN OnlyOffice Collabora	
USER USABILITY	EOS for Physics	Global URL	Sharing for Sync Client Better Project Spaces Restrictive ACLS Better Trashbin	Lightweight Account Support Self-Service Backup	
INFRASTRUCTURE	EOS Canary SRE CERNBox EOS CANARY ScienceBox K8S	OCIS + EOS + Sharing + New Canary AD Reppiacement EOSUSER Decomissioning EOSBackup Decomissioning	OCIS v1 UPLOAD EOS GRPC	OCIS in PROD for everyone	EOS TUS
NEW INTEGRATIONS	File picker in OX File picker in Mattermost Mattermost chat Overleaf MALT		File Picker in Indico		
CLIENTS	iOS for OCIS Android for OCIS VFS		Desktop 2.7 everywhere		OIDC
OWNCLOUD	File Spaces				

3

EPICS

All issues

- ACL Next Generation
- Better Project Spaces
- APPMIGR
- SHAREPOINT
- EOSUSER-Decomission
- EOSBACKUP-Decomission
- FCC
- DFS-migr
- EOSHOME-SSD
- OCIS Basic

Issues without epics

4

Issues in Epic

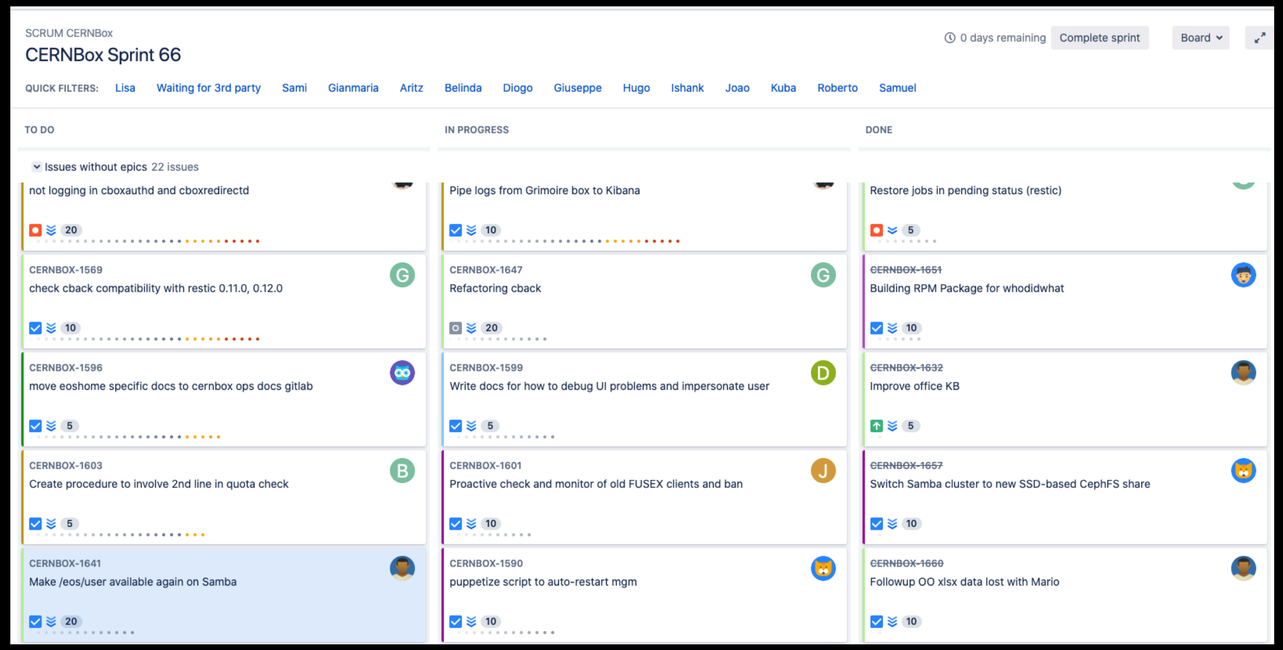
CERNBOX-1611	Dismantle Redis cluster running in cbox-lbproxy boxes	OPEN		*Unassigned*
CERNBOX-1613	Review locmap config for fuse	CLOSED		*Unassigned*
CERNBOX-1625	Decommission "eosmigr" node used in the EOSUSER->EOSHOME migration	OPEN		Roberto Valverde Cameselle
CERNBOX-1606	Review homedirectory script	CLOSED		Hugo Gonzalez Labrador
CERNBOX-1610	Review web logic	CLOSED		Hugo Gonzalez Labrador
CERNBOX-1608	Review NGINX	CLOSED		Hugo Gonzalez Labrador
CERNBOX-1607	Review http redirector	CLOSED		Hugo Gonzalez Labrador
CERNBOX-1609	Review existing traffic in EOSUSER	OPEN		Roberto Valverde Cameselle

What do we do?

Sprint Planning

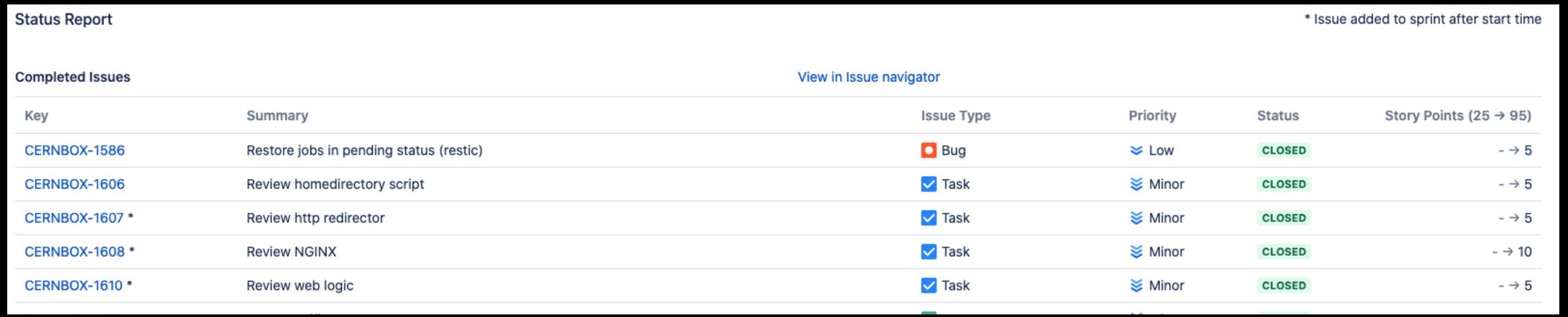
- Time boxed goals and deliverables: 2 weeks sprints
- Light resource estimation based on story points: 5 (~2 days), 10 (~1 weeks), 20 (~2 weeks)
- Prioritisation based on:
  - Epic deadlines
  - Firefighting
- Removing from Sprint is forbidden, adding is possible
- Kanban board from Sprint overview

KANBAN



What do we do?
Sprint Review

- No formal retrospectives
- Simply review: Done? ok
  - Not done? Why, blockers, help?



Status Report

* Issue added to sprint after start time

Completed Issues

View in Issue navigator

Key	Summary	Issue Type	Priority	Status	Story Points (25 → 95)
CERNBOX-1586	Restore jobs in pending status (restic)	Bug	Low	CLOSED	- → 5
CERNBOX-1606	Review homedirectory script	Task	Minor	CLOSED	- → 5
CERNBOX-1607 *	Review http redirector	Task	Minor	CLOSED	- → 5
CERNBOX-1608 *	Review NGINX	Task	Minor	CLOSED	- → 10
CERNBOX-1610 *	Review web logic	Task	Minor	CLOSED	- → 5

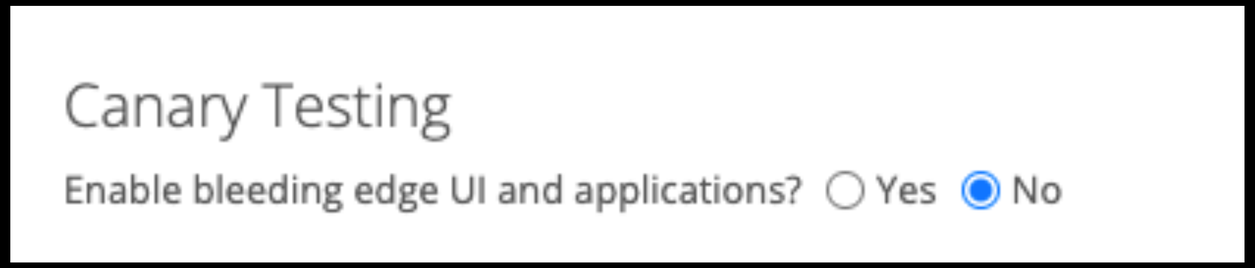
What do we do?

Release Cycle: QCP (Quick Change to Production)

Quality Assurance Phase

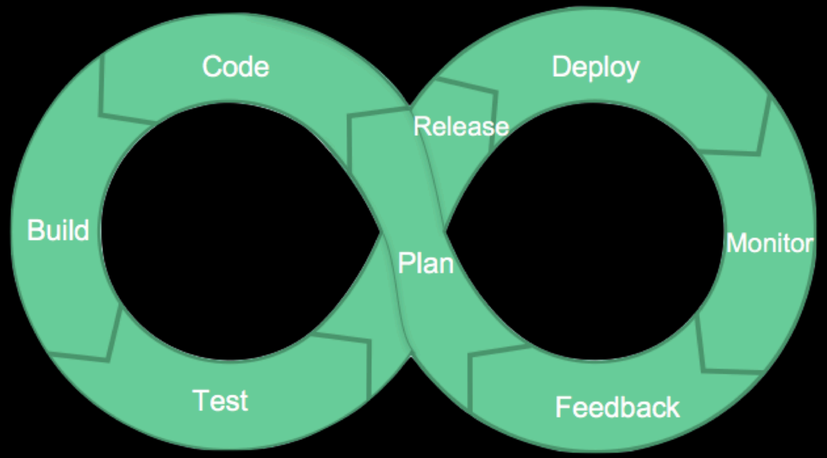
Canary Phase

Production Phase



What do we do?
Feedback loops

- **Daily stand-ups** (what I plan to do, where I need help) - 5 min
- **Weekly meetings** (Mondays 16:30) - 1H
  - What is going on (raise awareness)
  - Executive summaries from functional areas
  - ROTA debrief and add improvement points
- **Bi-weekly sprint meetings** (Fridays 15:00) - 1.5H
  - Peace of mind



What do we do?

Delegation and dependency management

Each component has a responsible

Component	Status	Issues	Lead	Description	Default assignee	Actions
backup	ACTIVE	36 Issues	Roberto Valverde Cameselle		Component lead	···
docs	ACTIVE	29 Issues	Belinda Chan Kwok Cheong	Documentation for the CERNBox Service	Component lead	···
eos	ACTIVE	64 Issues	Roberto Valverde Cameselle	EOS for the CERNBox Service	Component lead	···
integrations	ACTIVE	7 Issues	Giuseppe Lo Presti	Integrated applications	Component lead	···
mobile	ACTIVE	4 Issues	Samuel Alfageme Sainz	Mobile apps for CERNBox Service	Component lead	···
ocis	ACTIVE	5 Issues	Ishank Arora		Component lead	···
ops	ACTIVE	52 Issues	Hugo Gonzalez Labrador	Operations for the CERNBox Service	Component lead	···
proxy	ACTIVE	10 Issues	Hugo Gonzalez Labrador	Proxy for the CERNBox Service	Component lead	···
samba	ACTIVE	27 Issues	Giuseppe Lo Presti	SAMBA for the CERNBox Service	Component lead	···
sciencebox	ACTIVE	1 Issue	Samuel Alfageme Sainz	Dockerized version of the CERNBox Service	Component lead	···
sharepoint	ACTIVE	1 Issue	Joao Calado Vicente	Sharepoint developments	Component lead	···
smashbox	ACTIVE	14 Issues	Samuel Alfageme Sainz	Smashbox for the CERNBox Service	Component lead	···
swan	ACTIVE	9 Issues	Diogo Castro	SWAN integration for CERNBox Service	Component lead	···
sync	ACTIVE	51 Issues	Samuel Alfageme Sainz	Sync clients for the CERNBox Service	Component lead	···
ux	ACTIVE	1 Issue	Diogo Castro		Component lead	···
web	ACTIVE	125 Issues	Hugo Gonzalez Labrador	Web Server for the CERNBox Service	Component lead	···
wopi	ACTIVE	11 Issues	Giuseppe Lo Presti	WOPI Setup	Component lead	···

We have a label to find issues in other services CERNBox depends on

EOS · Type: All · Status: All · Assignee: All · Contains text · More · Search · Advanced

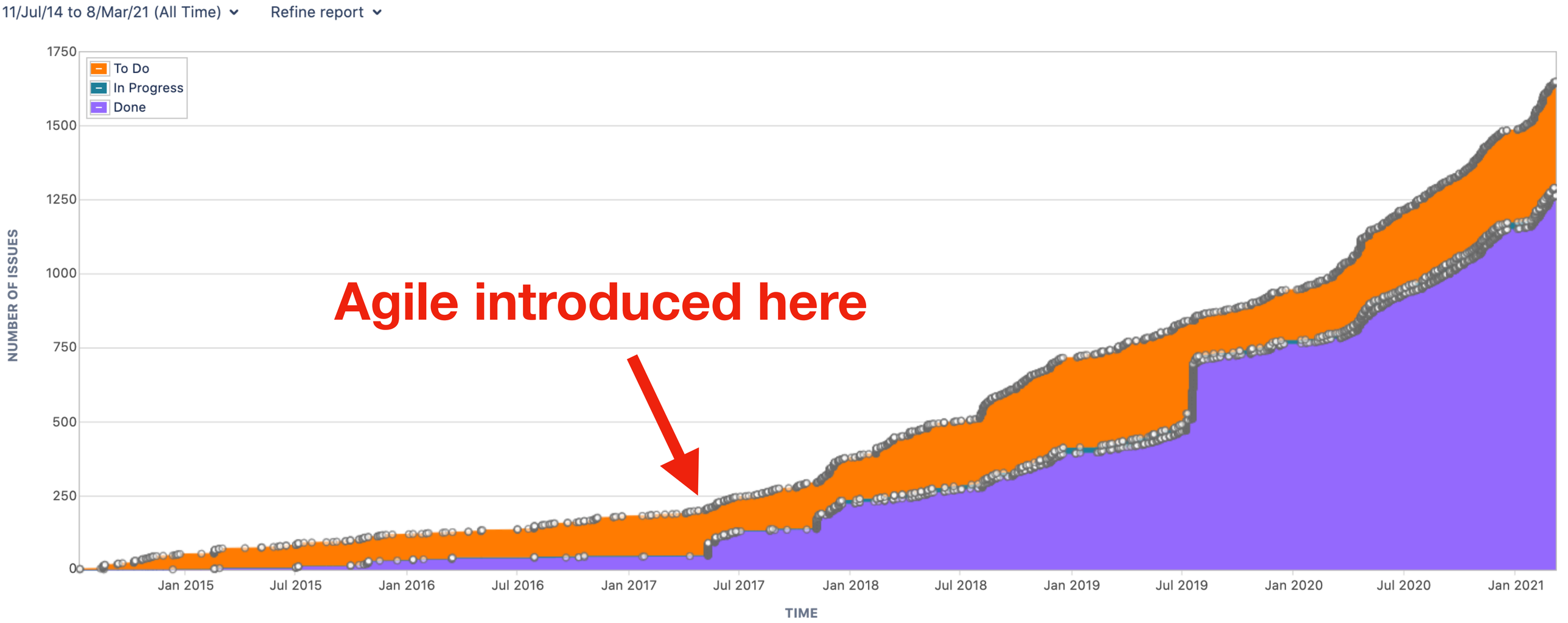
Resolution: Unresolved · Label: affects-cernbox

Components	Labels	Summary	P	Status
	affects-cernbox	EOSHOME-i04 - Mounts evicted after high user activity		OPEN
FUSEX	affects-cernbox	eosxd killed in eos webservices container		OPEN
MGM	affects-cernbox	Error on eos find command when tmp file cannot be created		OPEN

Is Agile Really Worth It?

Does Agile work?

Team throughput - Agile introduced Q3 2017



Does Agile work?

Resource Estimation

95%
Average Efficiency
(2017-2021)

5%
Average Accuracy
Error Rate
(2017-2021)

Does Agile work?

Resource Estimation

COVID &Teleworking? New fellows?

95%
Average Efficiency
(2017-2021)

5%
Average Accuracy
Error Rate
(2017-2021)

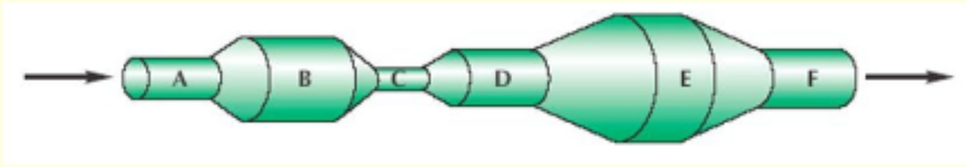
Some tips

Exploit your bottlenecks

- A local optimization unrelated to the bottleneck causes global system degradation
- Where to find the bottleneck?
  - 5 Ms (Man, Machine, Material, Method, Measurement)

Theory of Constraints

- Pipeline analogy



- Which piece of the pipe is restricting the flow?
- Would making parts A or D bigger help?

Meta-Review: Review how you review

Be open minded

- 3 simple questions:
  - What should we CONTINUE doing?
  - What we should STOP doing?
  - What we should START?

What we should start doing?

- Diogo: Maybe a monthly, or quarterly, wrap up where we all - as a team - see what was done/achieved and what should be the priorities for the next one (this is already kind of done by the Service Manager, but by involving everyone it might create a shared ownership mindset?) (+1)

What we should stop doing?

- Samuel: Review which automatic emails can be disabled / reduce their frequence (+1 on this!)

What we should continue doing?

- Diogo: Daily standups
- Aritz: Anual brain storming session as we did lasst year, but having a more concrete outcome, having fewer and more specific goals for the service, setting some sort of timeline for them, with different priorities.

Optimize personalities

Business Chemistry (Deloitte), Colour Personality (DISC)...

Conclusion and outlook

Agile is here to stay

- Agile helped to drive progress, manage complexity in a service that was (is) skyrocketing in usage
- Agile helped to reduce risks: avoid waterfall pitfalls
- Agile helped to raise team awareness: Just look at the sprint.
- Agile is a means to and end, not the end itself
- The most important aspect of your service is your team

- Next things to try:
  - Set Quarterly Reviews
  - Sprint Reviews driven by Rota person
  - Give a try to JIRA Gannt diagram for Epic visualization