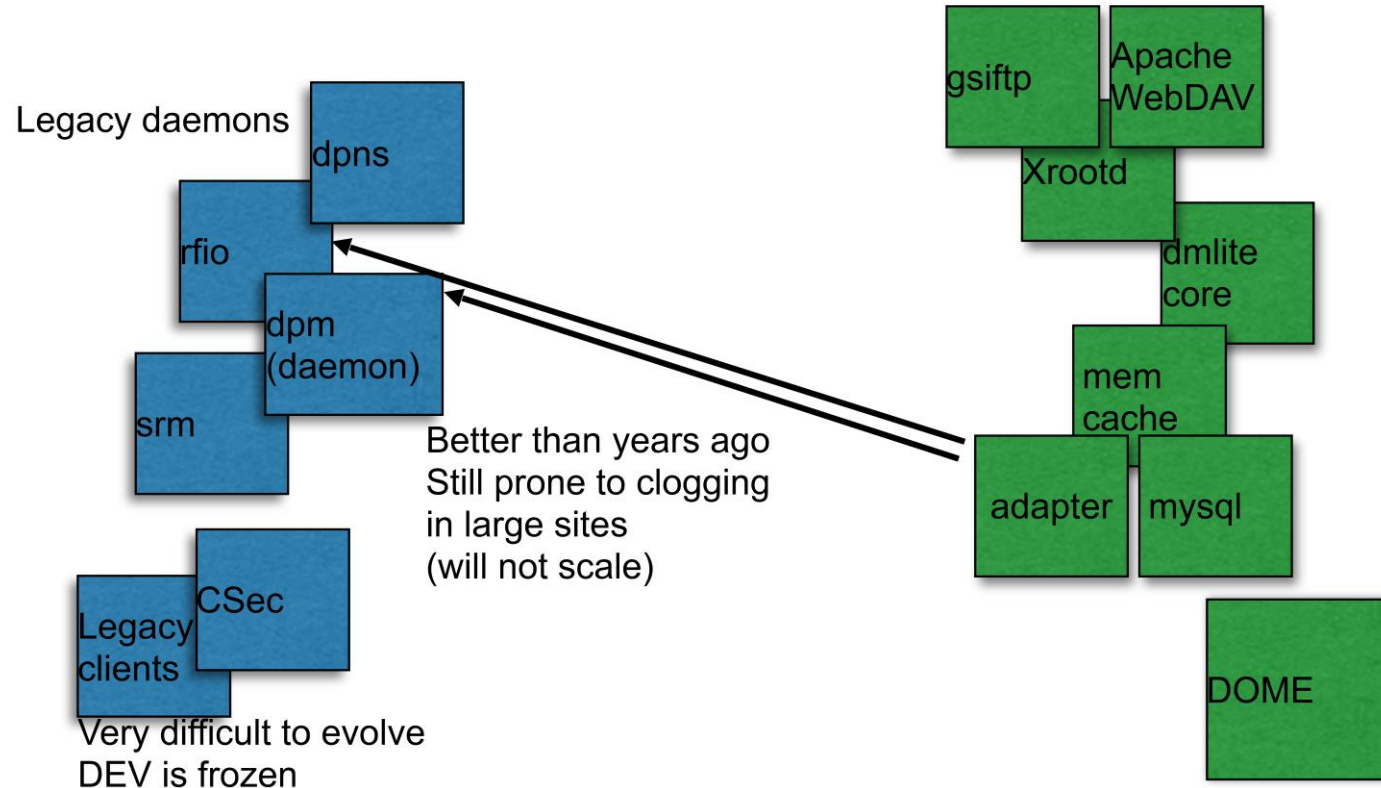# DPM News:

migration to DOME and white paper.

Frédérique Chollet, Andrea Sartirana

➢ **Final phase** of years long **re-engineering of DPM** soft

❖ ongoing migration of sites to the **new stack (DOME)**

❑ pilot phase ended Q2 2019 now migrating the bulk of sites;

❑ status: **80% sites** worldwide, 80% sites in France;

❖ few bugs discovered and (almost all) fixed along the way.

➢ Starting to think about the **middle/long term future**

❖ **doubts** about the project **sustainability** (losing FTEs);

❖ **big changes** ongoing in technology and WLCG architecture;

❖ seeking a common vision: DPM community **White Paper**;

DPM News:

migration to DOME
and white paper.

dome: what is it?

Legacy daemons

dpns

rfio

dpm (daemon)

srm

Better than years ago
Still prone to clogging
in large sites
(will not scale)

CSec

Legacy clients

Very difficult to evolve
DEV is frozen

gsiftp

Apache WebDAV
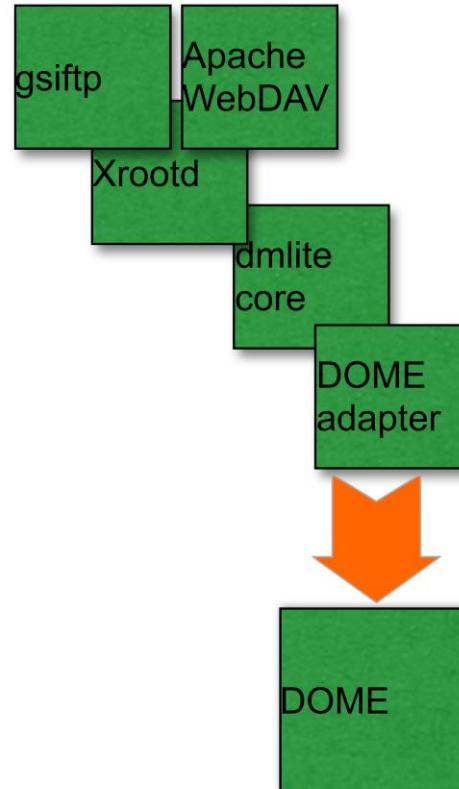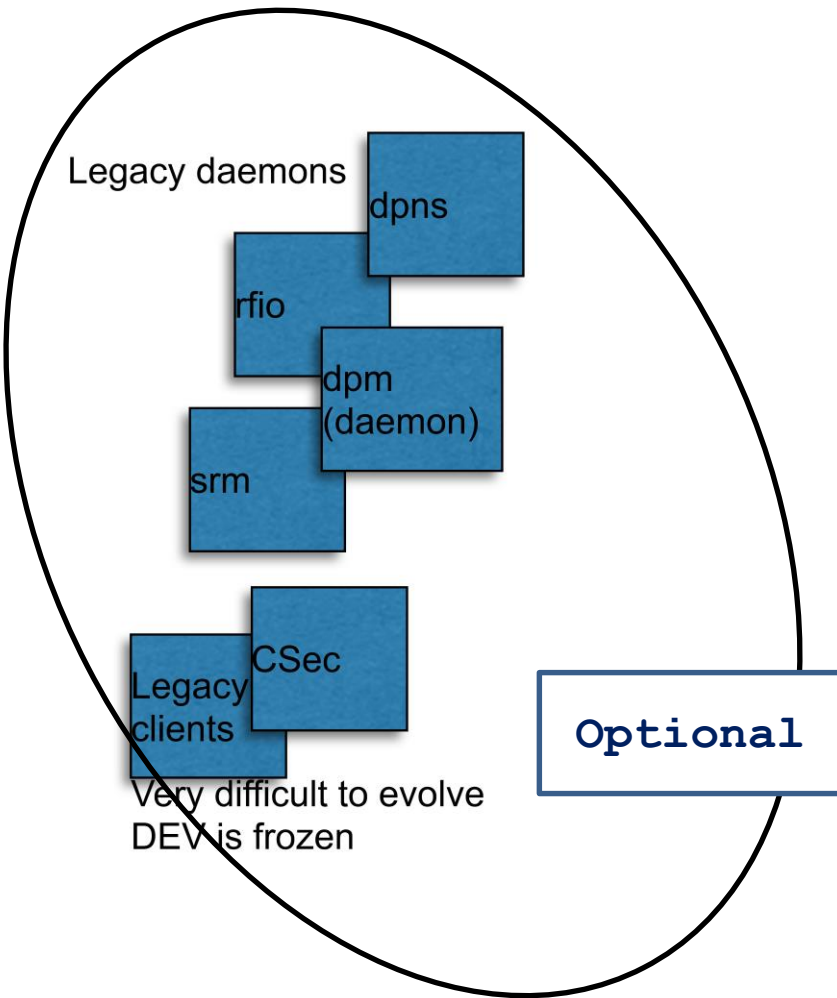
Xrootd

dmlite core

mem cache

adapter mysql

DOME

The **disk operation manager engine (dome)** is XrdHTTP REST service which exposes **functionalities** (roughly) **equivalent** to the root mode of **DPM/DPNS** daemons.

It **talks to dmlite via the DOME adapted** and makes the legacy stack optional.

In legacy flavor Dome can be **running but** is **not used** by dmlite.

dome: what is it?

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dpns

rfio

dpm (daemon)

srm

Legacy clients

CSec

Very difficult to evolve
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Optional

gsiftp

Apache WebDAV

Xrootd

dmlite core

DOME adapter

DOME

When **dome** is **enabled**, **dmlite** will **interact exclusively with it.**

Old **lcgdm** stack will remain, **independent and optional.**

Remove lcgdm (**srm-less**) **needs gsiftp redir** (not otherwise mandatory).

New protocols (xrootd, gsiftp, http) will improve in perf and robustness.

Steps for the migration.

1. **Upgrade DPM** to suitable version (a.k.a. latest: 1.13)
   - ❖ move to use the **puppet conf**. (directly or via ncm-puppet)
     - ❏ legacy quattor not DOME compliant. by-hand upgrade not a good idea.

2. **Enable DOME**
   - ❖ big bang migration, requires a downtime and **QuotaToken definition**;
   - ❖ **old and new stack** will run **in parallel**
     - ❏ may trigger sync problems, better run "homogeneous" tasks.
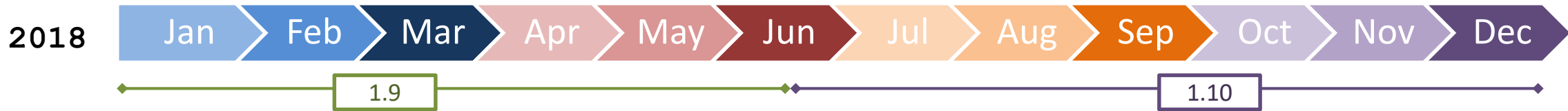
3. **GridFTP redirection**
   - ❖ can be done anytime (reversible). Be sure to restart everything;
   - ❖ makes **SRM optional for TPC**.

4. **Decommission SRM**
   - ❖ can be done **progressively** in interaction with VOs.

Timeline.

DPM — Disk Pool Manager

- DOME complete: old stack optional
- DOME uses fastCGI for REST
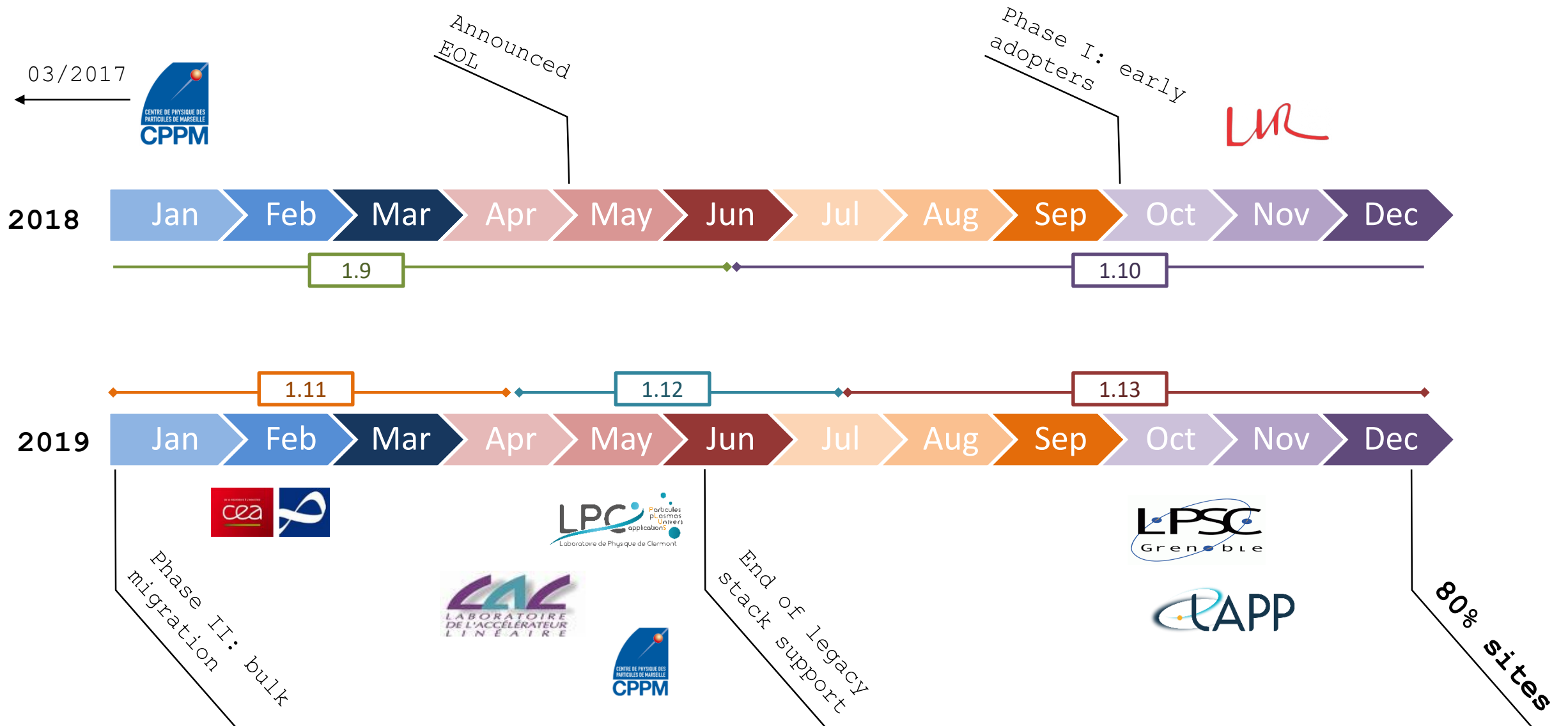- first roadmap to obsoleting old stack

- DOME REST moved to XrdHTTP
- better sync for ST-less writing
- completed srm-less functionalities
- only 1 dmlite plugin (dome)
- WT-MD-cache from dynafed (memcache removed)

2018 | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec

1.9   1.10

1.11   1.12   1.13

2019 | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec

- Xrootd checksum support
- Fix cksum perf issues

- Disabled filesystems behavior
- Fixed instabilities
- Failed putdone bhvr

- Disabled random nodes selection
- Various fixes

Timeline.

03/2017

CPPM

Announced EOL

Phase I: early adopters

LAL

2018 | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec

1.9

1.10

1.11

1.12

1.13

2019 | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec

cea

LPC Particules pLasmas Univers applications
Laboratoire de Physique de Clermont

LABORATOIRE DE L'ACCÉLÉRATEUR LINÉAIRE

CPPM

LPSC Grenoble

LAPP

Phase II: bulk migration

End of legacy stack support

80% sites

➢ **80% of sites done** (~18 sites to go)

❖ **ok** for the **deadline** of end 2019;

❖ most of the sites left have the migration planned for Q1 2020;

❖ there are **few** "won't do". Mostly because they **plan to migrate** to a different storage tech

❑ Xcache: UKI-NORTHGRID-SHEF-HEP, UKI-SOUTHGRID-CAM-HEP;

❑ Xrootd: UKI-SOUTHGRID-BRIS-HEP;

❑ EOS: Hephy-Vienna, ru-PNPI, **IP2I-Lyon**;

❑ CEPH: UKI-SCOTGRID-GLASGOW;

❑ dCache: NIKHEF-ELPROD.

➢ **80% of LCG-FR** sites done

❖ 2 sites, IPHC, GRIF_LPNHE, just slightly delayed the upgrade to match planned downtimes or suitable time windows;

❖ we should be done by Q2 2020.

Issues and feedbacks.

➢ In general **migration is fine**, DOME stable and well performing
  ❖ few issues detected and readily fixed in the latest releases;

➢ **documentation improved** along the way
  ❖ not only clear/complete for non pilot sites;
  ❖ Few pitfalls, e.g.
    ❑ no storage on the HN;
    ❑ epsv_match in the gridftp conf;
    ❑ activate gridftp redir needs complete restart;

➢ ongoing **issue** with **griftp** (probably linked to redirection)
  ❖ many stuck ftp procs: impacting TPC and stageout;
  ❖ sites impacted… (not clear this is exactly the same pb);
  ❖ not yet understood (patched with watchdogs);
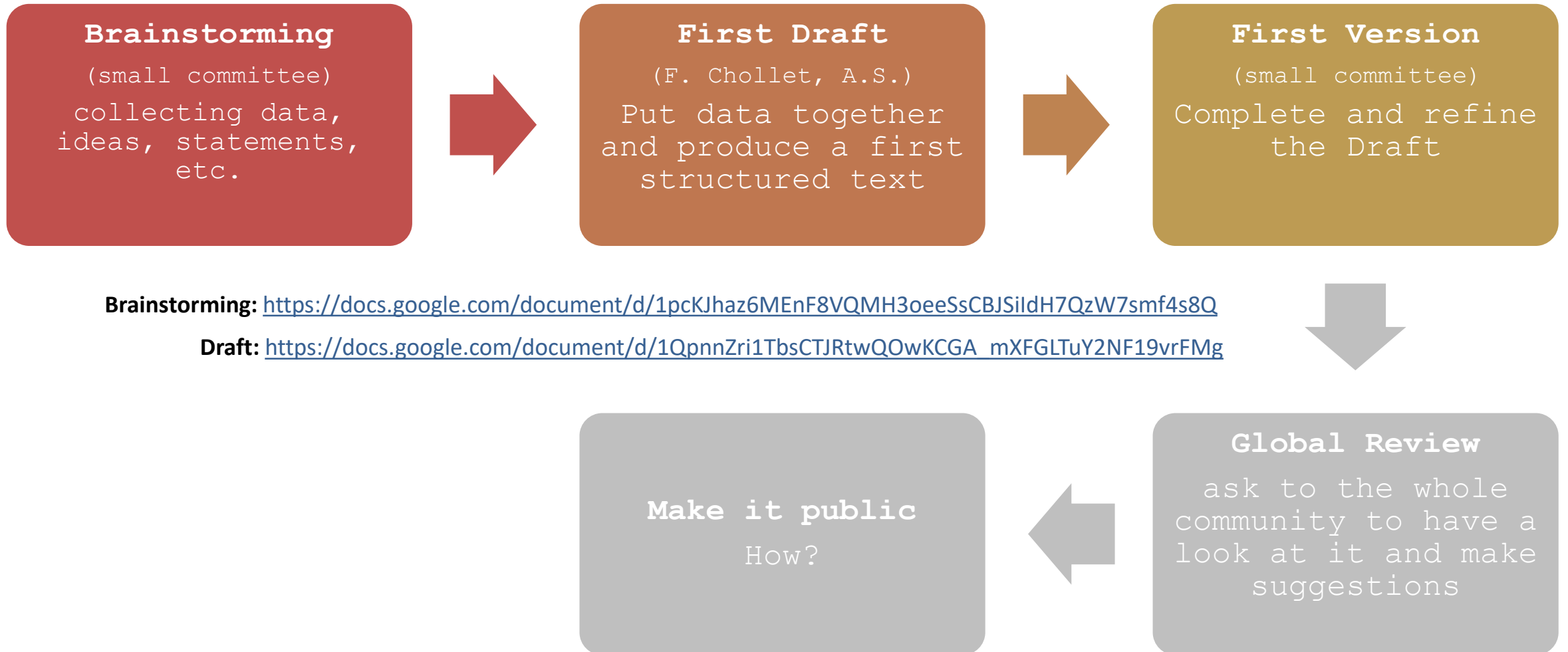
➢ Webdav deletions problems (LAPP)

DPM News:

*migration to DOME and **white paper**.*

Why a DPM white-paper?

➢ During **2019 DPM workshop** in Bern

  ❖ (further) **manpower reduction** of the DPM team was announced

   ❑ this casts some **doubts on the sustainability** of the DPM project in the medium and long term;

  ❖ round table about **long terms DPM Dev and R&D** in the context of **DOMA**

   ❑ do we have a **common vision**? DOME assures us with a bright future in the short/middle term. Where do we go then?

   ❑ does it even make sense to have a long term vision?

➢ … proposed to write a **DPM community white-paper**

  ❖ make a **point on the current status**;

  ❖ collect **plans and visions** from the community;

  ❖ make some **statements on the sustainability** from our p.o.v.;

  ❖ **seek answers** from CERN and WLCG.

The context.

➢ **Periodic review of CERN-IT** planned for the end of the year
  - ❖ would (have) be(en) good to have the doc. ready in time for this;
  - ❖ not clear if has already happened, in any case we are late…

➢ **WLCG** is preparing a **similar doc** from operations p.o.v.
  - ❖ the two docs are supposed to be **complementary**;

➢ Ongoing **DOMA activities**
  - ❖ TPC: DPM sites participate in the R&D activity
    - ❑ for the auth. part (tokens) this may be the first task to require some adaptation beyond DOME;
  - ❖ Access: DPM sites working on cache testing
    - ❑ volatile pools not exactly aligned with the DOMA cache models;
    - ❑ still no clear statements on the DOMA architecture;
  - ❖ QoS: DPM not much concerned so far.

DPM
Disk Pool Manager

Brainstorming

(small committee)

collecting data, ideas, statements, etc.

First Draft

(F. Chollet, A.S.)

Put data together and produce a first structured text

First Version

(small committee)

Complete and refine the Draft

Brainstorming: https://docs.google.com/document/d/1pcKJhaz6MEnF8VQMH3oeeSsCBJSildH7QzW7smf4s8Q

Draft: https://docs.google.com/document/d/1QpnnZri1TbsCTJRtwQOwKCGA_mXFGLTuY2NF19vrFMg

Make it public

How?

Global Review

ask to the whole community to have a look at it and make suggestions

DPM
Disk Pool Manager

Current Status

- **The worldwide infrastructure**: status of deployed DPM sites. Their role and contribution in WLCG.

- **The storage technology**: status of the software. Statements on DOME performances and scalability.

- **The collaboration**: role and contributions of the collaboration.

Statements for the Future

- **Sites evolution**: how sites are going to evolve on the 5 and 10 year time scale. Which are the foreseen issues and critical points.

- **Middle term view of DPM evolution**: short term development needs.

- **Long term view of DPM evolution**: longer term (HL-LHC) needs.

- **Statements on sustainability**: final statements summarizing our vision and our questions to CERN/WLCG.

- ➢ **2 meetings to come (12/12 and 20/12)**
  - ❖ finalize and validate the list of statements;
  - ❖ the goal is to finalize before the end of the year;

- ➢ **call for review** on the dpm forum

- ➢ **collaboration wide meeting**
  - ❖ final green light
  - ❖ how to diffuse?
  - ❖ from who we would like feedback?