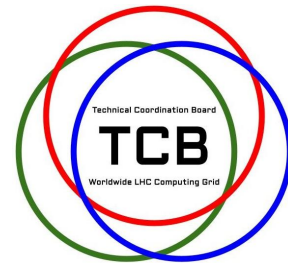


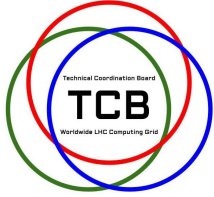


**WLCG**  
Worldwide LHC Computing Grid



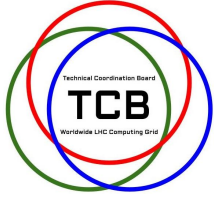
# Introduction to WLCG Technical Coordination

**A. Di Girolamo (CERN) and J. Letts (UCSD) - WLCG GDB - September 11, 2024**



# Motivation

# Current Capabilities: Run 3

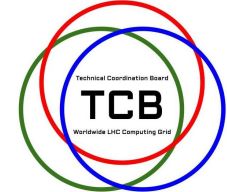


Imagine a set of current capabilities, services, etc.



**What we do.**

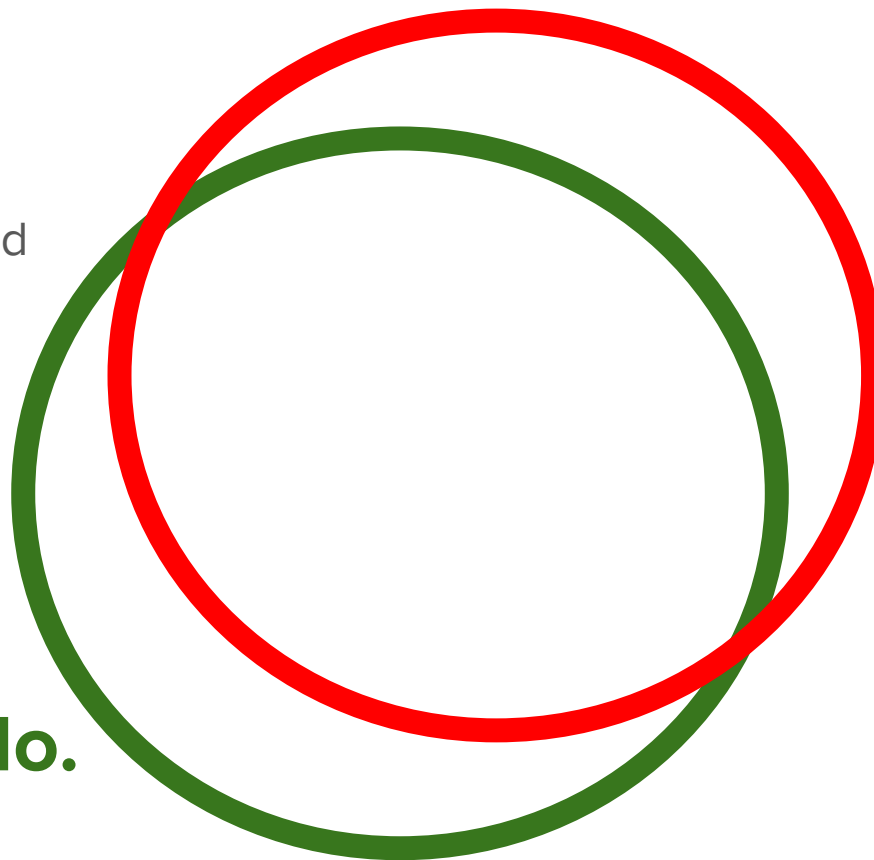
# Future Needs: HL-LHC



And then the set  
capabilities and  
services we will need  
in the future ...

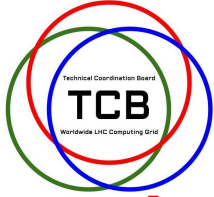
**What we need  
to do.**

**What we do.**



The differences define  
the “**gaps**” that need  
to be understood,  
planned for, and filled.

# Needs vs. Interests

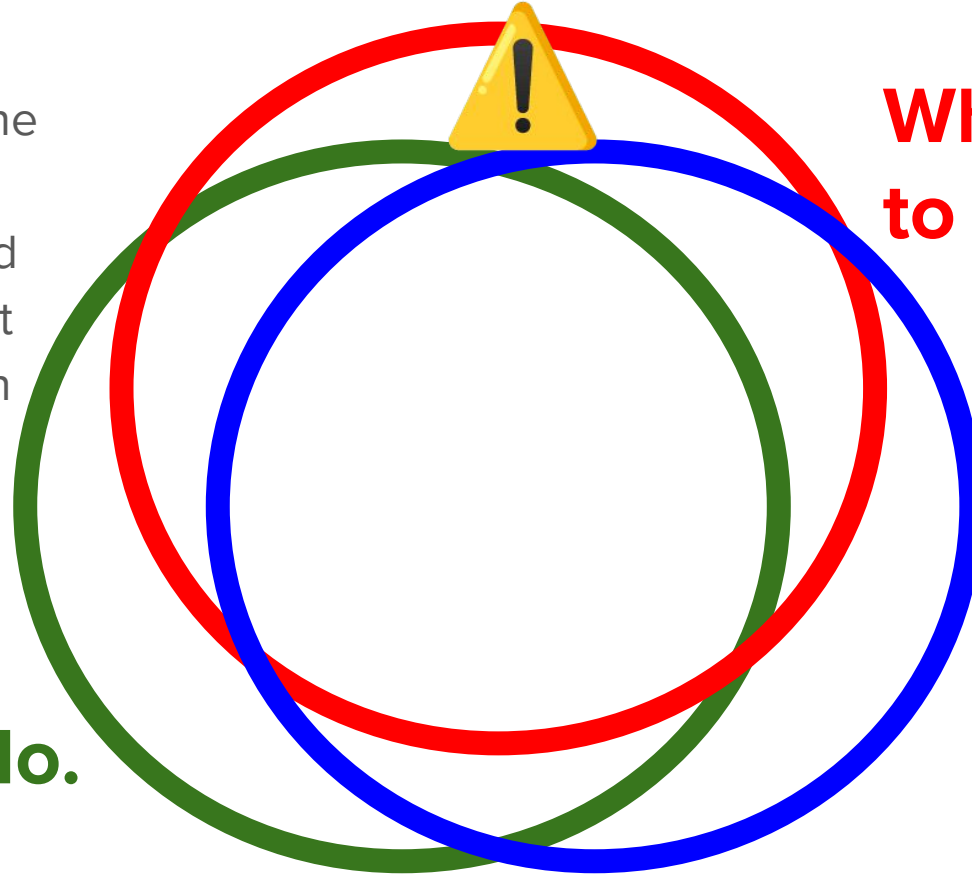


And then figure in the interests of our collaborators around the world, that might not necessarily align with either!

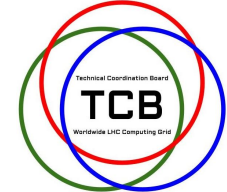
**What we need to do.**

**What we do.**

**What we would like to do.**

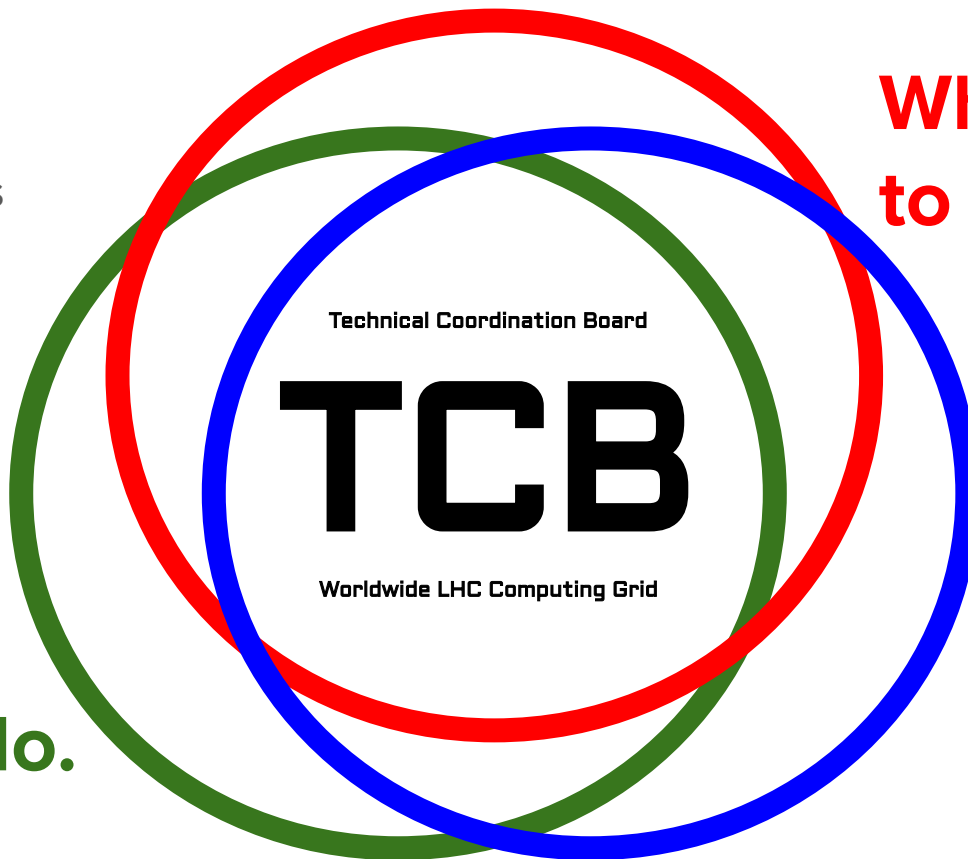


# Bringing Capabilities, Interests, and Needs into Focus

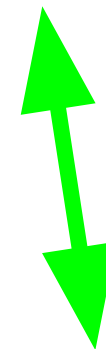


The TCB aims to:

- Identify the gaps
- Develop the Technical Roadmap
- Facilitate the coordination of stakeholders to execute the Roadmap.

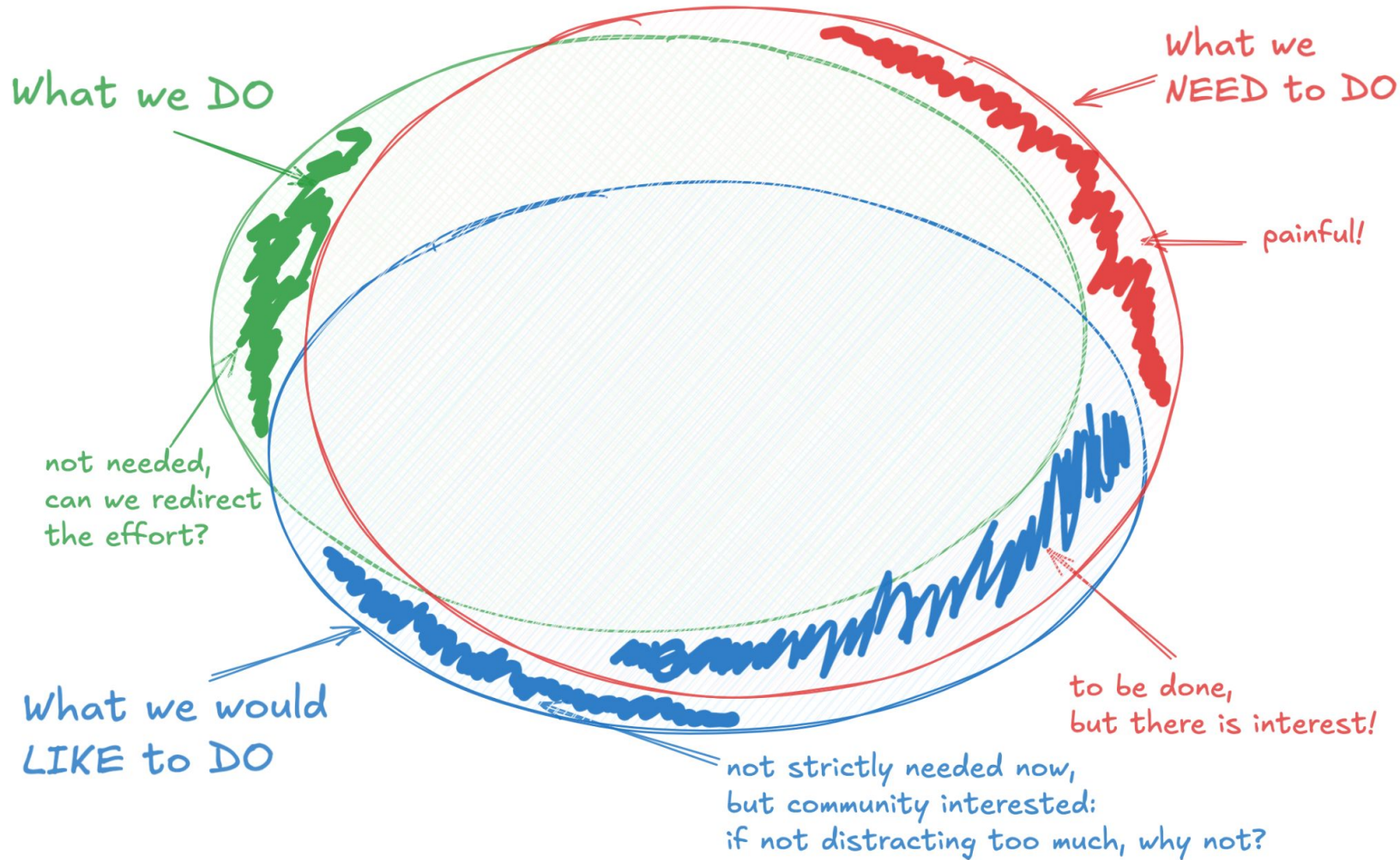


**What we need to do.**

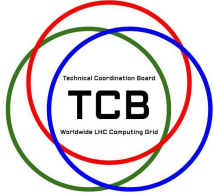


**What we would like to do.**

**What we do.**



# Current Distributed Infrastructure



The WLCG distributed computing infrastructure has remained rather stable over the past decade:

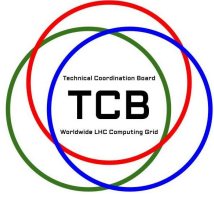
- Production and analysis activities run on the same physical infrastructure, which is quite homogeneous: x86 CPU co-located with HDD disk storage, active archival tape, all connected by LHCONE & LHCOPN networks using FTS and xRootD for scheduled and unscheduled bulk data transfers.

**What we do.**

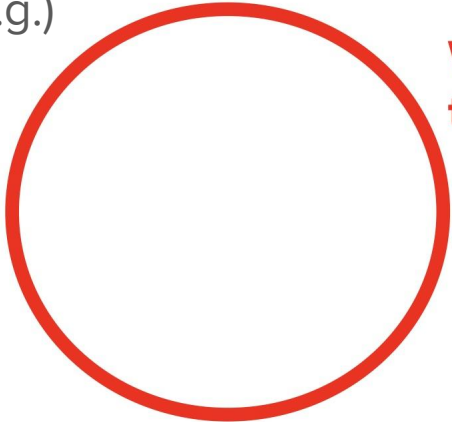




# The Future: Heterogeneity & Higher Scale



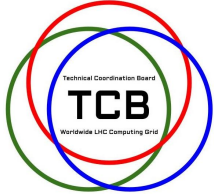
The future infrastructure will be much more complex. A *non-exhaustive* list:

- Non-x86 CPUs, accelerators (GPUs, FPGAs?)
  - Non-co-location of storage and CPU (in HPCs e.g.)
  - Consolidation of storage endpoints
  - Managed networks (SDNs)
  - Not clear how much analysis will share the same physical infrastructure or use specialized facilities.
  - Technical consequences for accounting, performance benchmarking, and therefore pledging resources.
- 
- What we need to do.**
- Order of magnitude increase in scale as well.

# Bridging the Gaps



# WLCG Technical Coordination

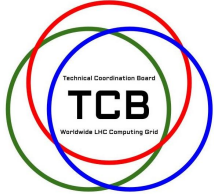


WLCG MB appointed us as WLCG Technical Coordinators and tasked us with drawing up the charge (still being discussed) for the Technical Coordination Board, which should be endorsed by the WLCG MB.

3.1. The WLCG Technical Coordination Board (TCB) is responsible for the technical evolution of WLCG services in line with the needs of the experiments and the capabilities of the infrastructure providers. The TCB defines a multi-year roadmap for such evolution and is responsible for its implementation. The TCB achieves these goals with a bottom up approach through an Open Technical Forum (OTF) which welcomes the participation of all contributors to the technical evolution in the WLCG community. The TCB may establish ad hoc technical working groups and projects as deemed necessary to accomplish its responsibilities. The MB appoints the chair(s) of the TCB, for a period of four years and endorses its composition. The members of the TCB should include representatives from the WLCG experiments, infrastructure and technology providers.

*Draft of WLCG MoU Annex 3.1, shown at the July WLCG MB#319 [[Indico](#)].*

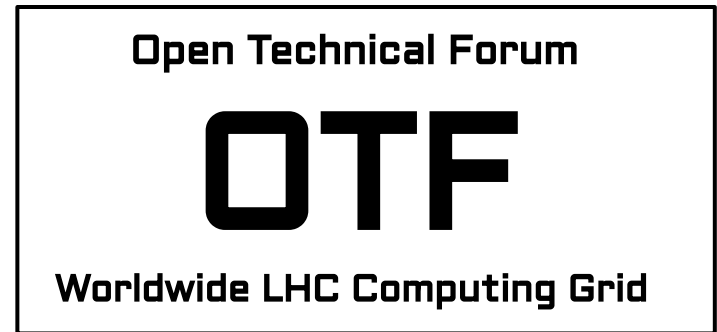
# Open Technical Forum



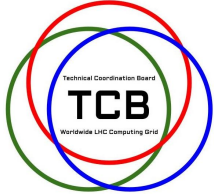
The Open Technical Forum (OTF):

- “Bottom up” topical forum open to all contributors to the technical evolution of the WLCG and its services.
- Regular meetings which focus on particular topics, approx. every 2 months.
- Topics will be prepared well in advance, to allow travel. We aim to make the meeting worth to attend in person.

**This is a great opportunity to influence and be involved in the technical evolution of WLCG!**



# Membership of the TCB



We envision a **core board** made up of colleagues who are interested in every aspect of the technical evolution of the WLCG:

- The two WLCG Technical Coordinators as co-chairs of the TCB
- WLCG leads & deputies as ex-officio observers
- Experiment computing coordinators *ex officio*, or their delegates, e.g. distributed computing coordinators or facility (site) coordinators. *We would still ask the computing coordinators to attend some of the core TCB meetings.*
- Liaisons from WLCG Operations Coordination and HEPiX
- We will need TCB Members from different sites/countries/federations heavily engaged in relevant R&D in facilities, storage technologies, workflow & data management. We will make a proposal to be discussed in the WLCG MB. Please provide us with your suggestions!

*The idea would be to keep the core board small enough to engage in meaningful discussion but inclusive and open enough to forge preliminary consensus on topics.*

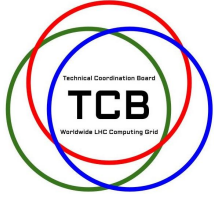
We envision calling meetings of the TCB which would be organizational, and other meetings where we would invite additional colleagues to focus on a particular topic, taking into account input from the OTF. This is when we could decide to create new task forces or working groups, or liaise with existing ones, e.g. [DOMA](#), [HEPiX Benchmarking Working Group](#).

Non-exhaustive list of possible focus sessions:

- Data challenge strategic goals
- Token transition
- Distributed computing infrastructures
- New storage architectures
- Analysis ecosystems
- Networks
- Heterogeneous architectures
- HPC/Cloud/external resources integration
- Environmental sustainability
- Data and Workflow management
- Services provided by sites, e.g. dCache (DESY), FTS (CERN)
- Onboarding new WLCG sites

We will try to keep all meetings focused and interesting, of appropriate length and frequency, avoiding repetition of material presented in other forums.

# TCB Guiding Values



The TCB aims to be:

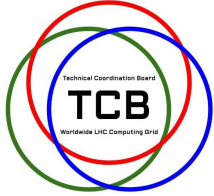
- Transparent
- Consensus-building
- Open and Inclusive

all while being focused on driving the technical evolution of WLCG.

The TCB will make *recommendations* for endorsement in its reports to the WLCG MB, as well as reporting to other stakeholders.

We also need to be aware of the recommendations of our reviewers such as the WLCG LHCC Referees and the C-RSG (RRB).

# Next Steps



- The [TCB draft charge document](#) needs to be finalized, discussed, and agreed upon by the WLCG MB (next meeting on September 17th).
  - then write the mandates for the various TCB Members and ask the relevant persons for participation.
- Hold an initial meeting of the core TCB to plan the initial meetings and topics of the OTF, and iterate from there...



# Questions or Comments

