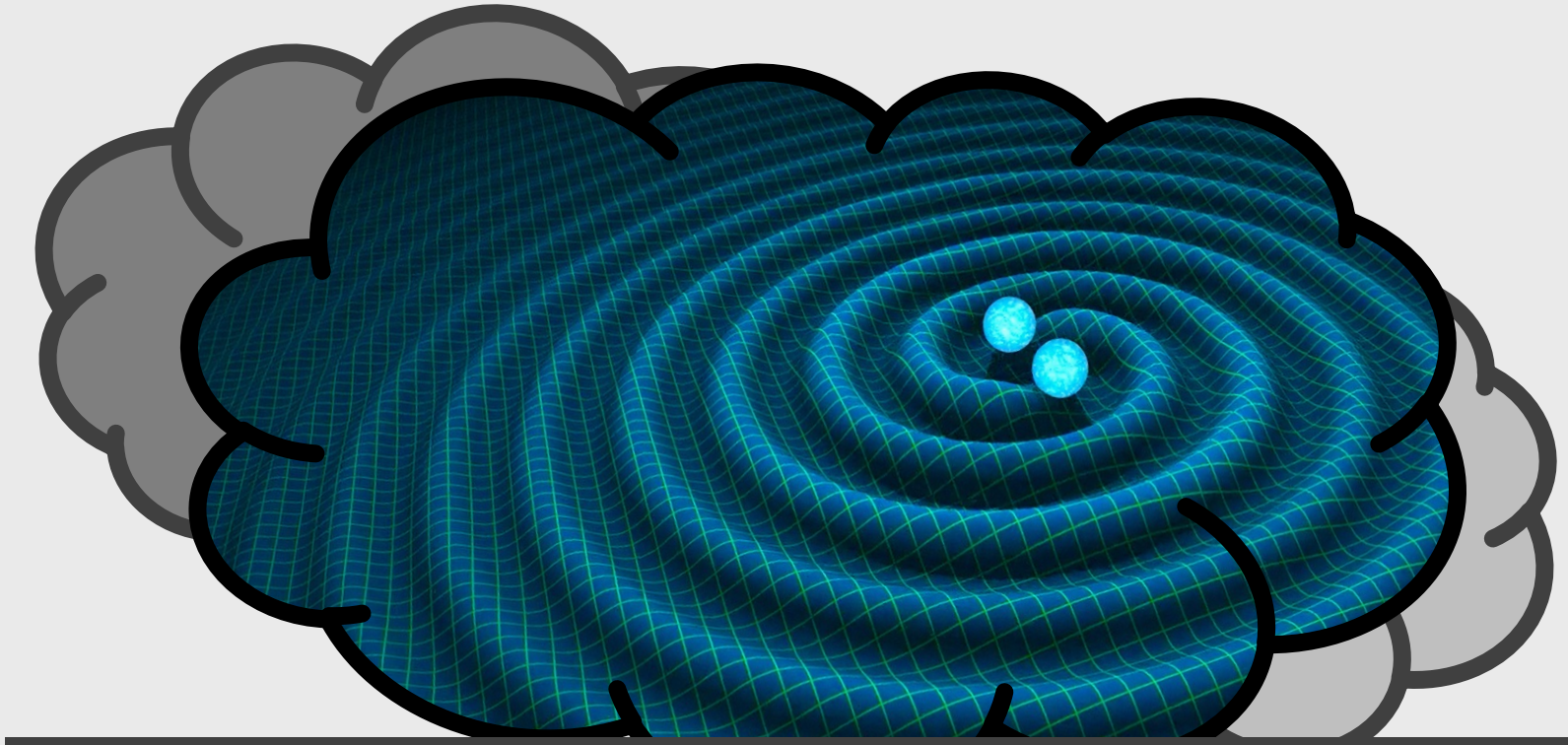


NEWS FROM EIB

Stefano Bagnasco, Patrice Verdier,
Nadia Tonello, Achim Stahl

REQUIREMENTS WORKSHOP

- Organized by ET-PP WP8, hosted by University of Geneva dept. of Astronomy in Versoix, Oct 26th-27th
  - Alba Gonzalvez Rubio (BSC), Paul Laycock (UniGE)
- https://indico.ego-gw.it/event/590/
- Collecting input from ISB and OSB, and from other stakeholders (WLCG, Virgo, supercomputing centres, ESCAPE, HSF,...)
- Wide participation also from outside the EIB is encouraged
- Significant preparatory work beforehand
  - Be prepared to answer questions!

CC BY-NC-SA

ET-PP

Computing and data requirements document (D8.1)

Deadline Dec 23': release to ET collaboration
Deadline Feb 24': final submission

– Structure of document:

1. Introduction
    1.1 Scope
    1.2 Future ET Computing Model
2. Template for requirements collection
3. Summary tables
4. Technological assessment
5. Conclusions
6. Reference

D8.1 available link: https://b2drop.bsc.es/index.php/f/2653972

Barcelona Supercomputing Center
Centro Nacional de Supercomputación

alba.gonzalvez@bsc.es

BY-NC-SA

ET EINSTEIN TELESCOPE
ET-PP

Computing a

Deadline Dec 23': r
Deadline Feb 24': f

– Structure of doc

1. Introduction
   1.1 Scope
   1.2 Future ET Comput
2. Template for requirem collection
3. Summary tables
4. Technological assessment
5. Conclusions
6. Reference

D8.1 available link: https://b2drop.bsc.es/index.php/f/2653972

Deadline June 24': detailed requirements in spreadsheet format
– Template format:

PBS.id	Name/title	Description	Motivation	Absolute value	Preferred value	Cost impact	Risk assesment

Combination of PBS.id and Name must be unique!

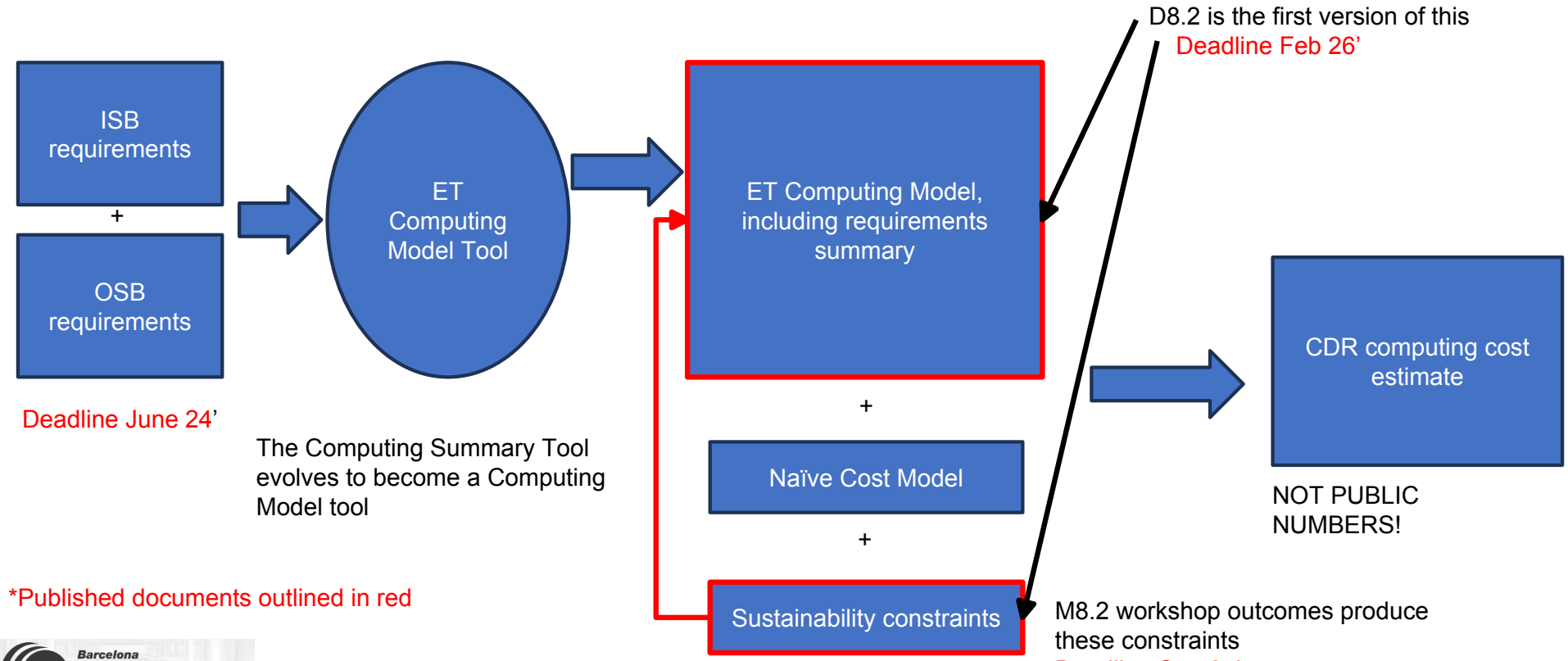
Barcelona Supercomputing Center
Centro Nacional de Supercomputación

alba.gonzalvez@b

BY-NC-SA

ET EINSTEIN TELESCOPE
ET-PP

From computing requirements to computing model



*Published documents outlined in red

Barcelona Supercomputing Center
Centro Nacional de Supercomputación

alba.gonzalvez@bsc.es

BY-NC-SA

ET application to join the ESCAPE consortium was approved in July

ESCAPE parties: pan-european ESFRIs and world-class RIs

BY-NC-SA

The new ESCAPE Collaboration work programme

ESCAPE CC
Operating the community-based "Competence Center" for EOSC-alignment, train and support, extended outreach, financial model for services and networking with other SCL-CCs

ESCAPE EVSI
R&I for an "European Virtual Institute for Research Software" for advanced technologies

Entities

VRE services

Programmes

ESCAPE COSO
Challenging "Open Science Objectives" by RI commitments in Open Science Projects (OSP) as well as Cross-Cluster Open Science Projects (COSP)

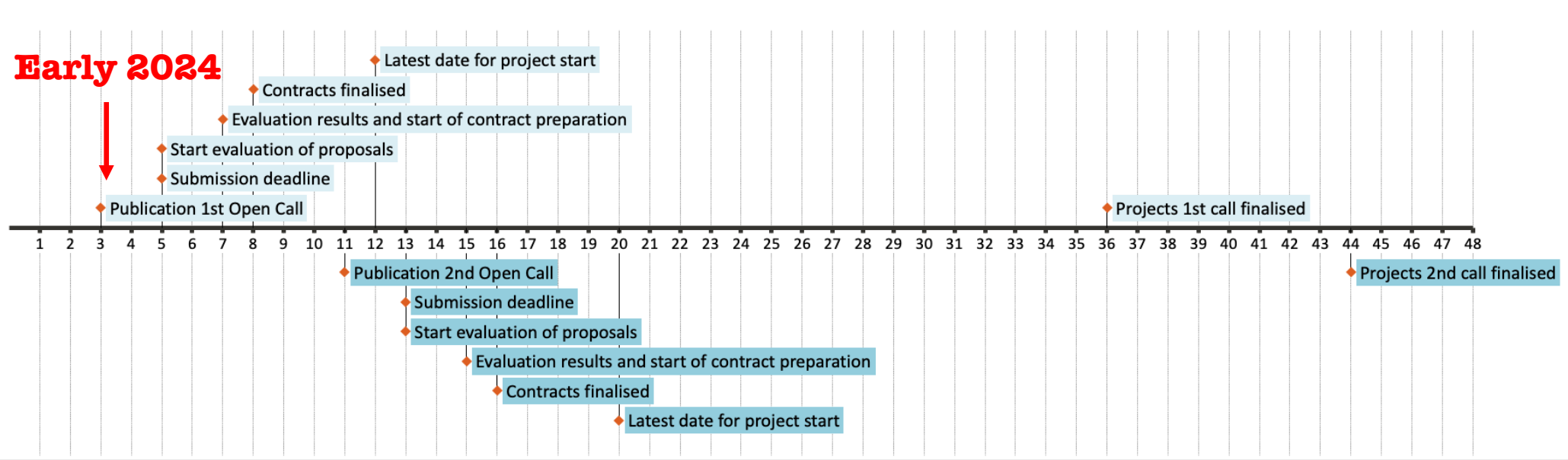
ESCAPE TECH
Bring the FAIRness within technology, R&D and innovation projects as well as explore new "close-to-sensors" low-latency open-data science

ESCAPE CARS
Career development and rewarding for researcher committing in Open Science. Planning, tracking, and assessing scientific knowledge production

ESCAPE SDSS
Building synergies on "Sector Data Spaces" for Society: Green deal, Health, Manufacturing, Education and Skills

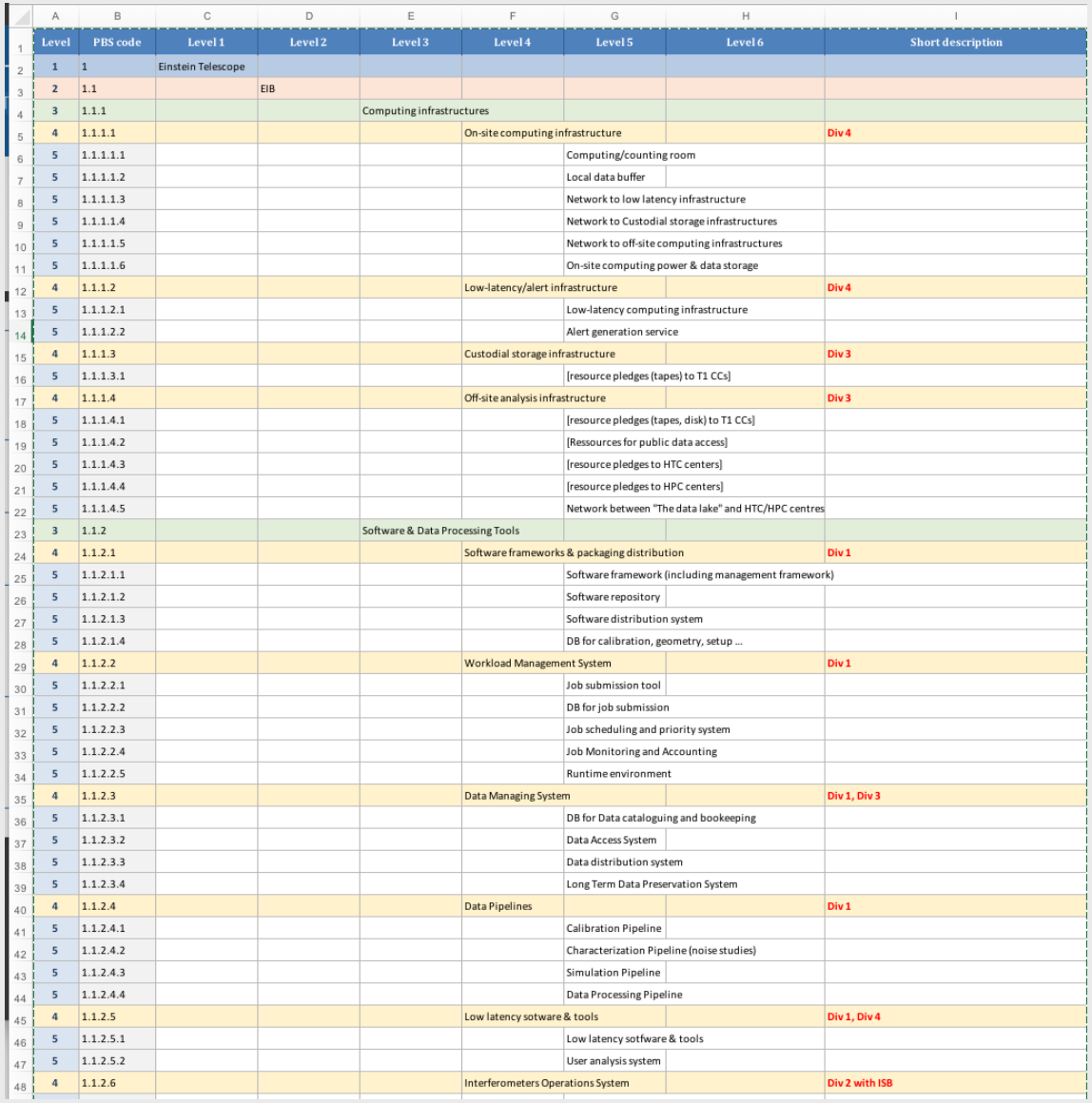
BY-NC-SA

- ESCAPE consortium expects ET to provide a list of topics we would like to work on and a list of people interested in working within ESCAPE:
  - EIB chairs are going to collect this information during the next 2 weeks
  - People interested should discuss with their RU Leader / Institute
  - This process is just informative and it is not a commitment: participation to ESCAPE proceeds through projects **funded** by Open Calls in OSCARS



BY-NC-SA

COMPUTING WBS



Level	PBS code	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Short description
1	1	Einstein Telescope						
2	1.1		EIB					
3	1.1.1			Computing infrastructures				
4	1.1.1.1				On-site computing infrastructure			Div 4
5	1.1.1.1.1					Computing/counting room		
5	1.1.1.1.2					Local data buffer		
5	1.1.1.1.3					Network to low latency infrastructure		
5	1.1.1.1.4					Network to Custodial storage infrastructures		
5	1.1.1.1.5					Network to off-site computing infrastructures		
5	1.1.1.1.6					On-site computing power & data storage		
4	1.1.1.2				Low-latency/alert infrastructure			Div 4
5	1.1.1.2.1					Low-latency computing infrastructure		
5	1.1.1.2.2					Alert generation service		
4	1.1.1.3				Custodial storage infrastructure			Div 3
5	1.1.1.3.1					[resource pledges (tapes) to T1 CCs]		
4	1.1.1.4				Off-site analysis infrastructure			Div 3
5	1.1.1.4.1					[resource pledges (tapes, disk) to T1 CCs]		
5	1.1.1.4.2					[Ressources for public data access]		
5	1.1.1.4.3					[resource pledges to HTC centers]		
5	1.1.1.4.4					[resource pledges to HPC centers]		
5	1.1.1.4.5					Network between "The data lake" and HTC/HPC centres		
3	1.1.2			Software & Data Processing Tools				
4	1.1.2.1				Software frameworks & packaging distribution			Div 1
5	1.1.2.1.1					Software framework (including management framework)		
5	1.1.2.1.2					Software repository		
5	1.1.2.1.3					Software distribution system		
5	1.1.2.1.4					DB for calibration, geometry, setup ...		
4	1.1.2.2				Workload Management System			Div 1
5	1.1.2.2.1					Job submission tool		
5	1.1.2.2.2					DB for job submission		
5	1.1.2.2.3					Job scheduling and priority system		
5	1.1.2.2.4					Job Monitoring and Accounting		
5	1.1.2.2.5					Runtime environment		
4	1.1.2.3				Data Managing System			Div 1, Div 3
5	1.1.2.3.1					DB for Data cataloguing and bookeeping		
5	1.1.2.3.2					Data Access System		
5	1.1.2.3.3					Data distribution system		
5	1.1.2.3.4					Long Term Data Preservation System		
4	1.1.2.4				Data Pipelines			Div 1
5	1.1.2.4.1					Calibration Pipeline		
5	1.1.2.4.2					Characterization Pipeline (noise studies)		
5	1.1.2.4.3					Simulation Pipeline		
5	1.1.2.4.4					Data Processing Pipeline		
4	1.1.2.5				Low latency sotware & tools			Div 1, Div 4
5	1.1.2.5.1					Low latency sotfware & tools		
5	1.1.2.5.2					User analysis system		
4	1.1.2.6				Interferometers Operations System			Div 2 with ISB

- High-level structure in place
- In the process of assigning responsibles to items
- Will map the PBS items to EIB organizational structure (we don't have any funding constraints yet, unfortunately)

BY-NC-SA

Division 1: Software, frameworks, and data challenge support

- Access to MDC data through CVMFS/OSDF seems to be working smoothly. No complaints received so far.
- R&D plan (partially in synergy between Div1, ETIC and Virgo)
- Starting to explore/test the ESCAPE computing infrastructure Virtual Research Environment (https://vre-hub.github.io/):
  - Storage Data Lake
  - JupyterHub interface
  - REANA computing cluster

andres.tanasijczuk@uclouvain.be

BY-NC-SA

DIV1 CONT'D

- A small fraction of the MDC data has been successfully uploaded to the ESCAPE Data Lake.
  - Uploading all the data (~1.3 GB) would not be a problem.
  - Some technical issues on the ESCAPE side were found in the process and feedback has been provided to ESCAPE VRE developers to solve these problems. This helped to start building a relationship with ESCAPE developers.
- Now learning how to access the data from the JupyterHub interface for interactive analysis and how to run an analysis on the REANA computing cluster.
- Once all the workflow is tested, the rest of the MDC data will be uploaded and some documentation will be prepared for potential ET users.
- Will ask OSB Div 10 if they could get a group interested in re-running their analysis on ESCAPE.

andres.tanasijczuk@uclouvain.be

CC BY-NC-SA

Division 3: Computing and data model, Resource Estimation

- Preparation for the workshop in Geneva through Coordination with ET-PP WP8.
- Contact with ET members that expressed interest in participating in Div3 to make sure they are aware and they participate in the workshop.
- Specific contact with MDC coordinators (John, Tania) to ensure some of them participate in the workshop, to get the MDC input.

gonzalo.merino@pic.es

BY-NC-SA

Division 4: multimessenger alert infrastructure

- Recent division 4 activities have been heavily oriented around the re-submission of M2Tech
  - M2Tech, or MultiMessenger Technology, was an EU INFRA-TECH proposal submitted in March 2022
  - INFRA-TECH: European call unifying ESFRI-recognised research infrastructures for common developments
  - M2Tech involved ELI (minor), LST+CTA, KM3NeT, and Virgo+ET
  - Total value of roughly 10 M EUR (EU contribution) + 2 M CHF (Swiss contribution) + in-kind contributions
  - Result: above threshold for funding, but not funded as lower ranked than others → aiming to re-submit 03/2024
- The computing work package, WP6, was the largest in terms of person-power - this was criticised
  - Not as large financially as other work packages that need to buy hardware, but much larger in person-power
  - We therefore have gone through a significant restructuring process to try to be more comparable
- New computing work-package has addressed criticism from first round, and will focus on:
  - Fast data processing & edge computing: **early robust processing = less to process later = better energy efficiency**
    - Mostly supervised ML to enable fast/real-time data processing to enhance MM event identification
  - Sustainable large-scale computing: **how to sustainably scale computing to handle large volumes of MM events**
    - Work with large computing centres to study heterogeneous/hybrid computing for large MM event rates
  - Multimessenger alert tools: **how to ensure the different research infrastructures can communicate effectively**
    - Common alert formats, brokers, databases, etc - all while ensuring alerts follow FAIR principles
- Cross-RI discussions ongoing to finalise the transversal activities to pursue, then will define partners

1

steven.schramm@unige.ch

CC BY-NC-SA

OTHER BITS & PIECES

- **TTG**: re-starting computing Technology Tracking seminars
  - Aimed at the whole collaboration (announcements will be distributed)
  - Tue 9.30-10.30 slots, more or less monthly
- Relationship with the IGWN effort
  - The LIGO-Virgo-KAGRA common computing infrastructure
- Relationship with WLCG Collaboration
  - Manages the LHC Computing Grid, Virgo is “Observer experiment”
- Synergies with Virgo computing
  - Whatever ET Computing develops now is in the timescale of O5/post-O5
  - And what ET uses for MDCs even earlier
  - Many possible synergies, both in development topics and resource

CC BY-NC-SA

THANKS!

CC BY-NC-SA