**Taskforce Weekly Plenary Meeting**   
***Agenda, 24 February 2025***

**Meeting time:** 14:30 – 16:00 CET

**Zoom meeting room:**

<https://cern.zoom.us/j/64071474060?pwd=ZjZSaGJwVUZJSjU0b1p3WHllU3Nudz09>

Attendees: All task force members

Chair: Fiodor Sorentino

* **Brief recap on science case**

***14:30-14:40 CET***

**Point presented by:** F. Iacovelli and U. Dupletsa

**Point submitted for:** information

A few sample PSDs among those generated by the noise budget team during the Pisa meeting to derive scientific requirements on design parameters were analyzed; we will show and discuss the corresponding figures of merit. The analysis will then be extended to additional instrument design parameters.

**Summary of discussion:**

Francesco provided a recap of the discussion on the science case analysis and metrics from the previous meeting. A tool was developed to quickly compute various performance metrics like number of detections, localization, and sensitivity to different astrophysical sources. They found that changing the low-frequency sensitivity had a larger impact on metrics like stochastic background detection than on compact binary detections. The task force members agreed to expand the analysis to consider broader changes in the PSD rather than just specific parameter variations.

* **Updated detector layout**

***14:40-15:05 CET***

**Point presented by:** M. Majoor and J. Bratanata

**Point submitted for:** information

A preliminary version of the detector layout, modified with the inclusion of filter cavities in main tunnel, is now ready. We will review main features and discuss possible issues and open points

**Summary of discussion:**

Jonathan gave an update on the changes to the detector layout, including a significant reduction in the volume of the HF filter cavity tunnels. The task force members discussed the need to account for additional space requirements beyond just the detector components, such as for clean rooms, scaffolding, and logistics. Further work is needed to finalize the layout and volume claims.

**Actions:**

* Further work will be done during the coming weeks on the additional space requirements and finalisation of this work will be handled during the first in-person meeting in Amsterdam (18-20 March).
* **Summary of civil engineering discussion at Pisa meeting**

***15:05-15:25 CET***

**Point presented by:** J. Bratanata

**Point submitted for:** information

**Summary of discussion:**

Jonathan summarized the discussion from the in-person meeting on civil engineering requirements, including the need to better understand the impact of water management, lining, and other infrastructure decisions on the overall cost. The task force members agreed to continue working on defining these requirements to feed into the cost estimation.

* **Guidelines for Overleaf document editing and next steps**

***15:25-15:35 CET***

**Point presented by:** F. Sorrentino

**Point submitted for:** information

The 3rd section in the shared overleaf document will contain input from individual tasks. We will summarize common guidelines to edit the document, who are people in charge of the various sections, and how to link them to background information.

We will then recap on main open points and actions in preparation for the next in-person meeting in Amsterdam.

**Summary of discussion:**

Fiodor provided guidelines for how the task force members should organize and write up the work in the shared Overleaf document, including using a consistent structure based on the work breakdown, referencing existing documents, and designating leads for each section.

The task force members discussed a number of open items to be addressed, including finalizing the double-cavern concept, defining cryogenic system options, understanding clean room requirements, and conducting technical risk and flexibility analyses. The task force plans to have these items progressed before the next in-person meeting.

**Actions:**

* People can already summarise the work that has been done in the Overleaf document, that contains different files for each section.
* **Plan for flexibility analysis**

***15:35-15:55 CET***

**Point presented by:** G. Mahmoud

**Point submitted for:** information and discussion

We will introduce two complementary concepts to measure the flexibility advantage of a given instrument configuration vs alternative configurations. We will first determine a rigidity matrix by proper system decomposition, and by identification of subsystems interdependencies. The system rigidity versus design changes is measured as the cumulative value of off-matrix elements in the rigidity matrix.

An alternative concept to be possibly developed – if compatible with task force timeline – is the Penalty Of Change (POC) which is determined after identification of a large number of potential occurrences producing changes to system design/structure: the POC is then measured by the cumulative sum of POC elements, given by the product of probability and cost for each identified occurrence.

**Summary of discussion:**

Ghada introduced the plan to perform a flexibility analysis using a design structure matrix to identify interdependencies between subsystems and components. This will help identify areas with high rigidity versus flexibility and inform strategies for gradual technology upgrades. The task force members agreed to hold a dedicated meeting to set up this analysis.

**Actions:**

* A meeting needs to be set up to identify these risk analysis components.
* **A.O.B**

***15:55-16:00 CET***