Minutes of the Meeting No.1 – 25th July 2018

Participants		Participants
Wolfgang Ansorge (WA) CTA PO		Carla Crovari (CC) – CTA PO
Stephen Brown (SB) – CTA PO		Cesar Ocampo – (CO) CTA PO
Jim Hinton (JH) Project Scientist – CTA PO		Igor Oya- CTA PO
Francesco Dazi (FD) CTA PO		Michael Panter – MPI (remote)
Markus Garczarczyk (MG)- DESY		Gino Tosti (GT) – CTA PO

Chair/ Minutes	David Bristow CTA PO INFRA (DB)

Venue	CTA Offices – Bologna 14.30 Hrs

Action Items

DB to fully scope INFRA short project 1. WA to advise on Interface and Equipment

WA to produce a description of the Array Stop function for power distribution – will be subject to Safety Engineers approval.

WA to produce a description for Interlocks functionality and its interface with the Infra Power Distribution system

WA to layout project plan document for CTAN, including elements additional to Infrastructure

SB to forward FD copy of La Palma seismic design code NCSE-02

SB to talk with IAC Civil Engineer with regards to Codes of Design for Wind for La-Palma – feed back to FD.

JH to add 0.05g as a Seismic a requirement for CTA N in Jama

Gino will send a written concept for Interlocks system

Note:
It was not possible for MP to continue in the meeting due to technical difficulties with the link.
MG-left meeting part way through.

DB Introduced to the CTA N Project and explained the phases and the scope work contained in each phase.

PHASE 1 - Design and Construction process for the CTA-North site:
Start:
The remaining LST foundations (LST 2 – 4), the first MST foundation (MST 3) ,CCF Equipment: Ramon Lidar, All Sky Camera, FRAM, Ceilometer, Anemometers, Weather Station x 3, Illuminator and rain sensors, Roads, Power, Infrastructure and Data networks.

PHASE 2 - Design and Construction process for the CTA-North site:
Threshold Scenario • Start detailed design for phase 2 – January 2019 (provisional), Technical Building, 4 Further MST Foundations (to be confirmed), Roads, Power, Infrastructure and Data networks.

PHASE 3 - Design and Construction process for the CTA-North site:
Commence detailed design for phase 3 – June 2019 (provisional), Remaining MST Foundations, Roads, Power, Infrastructure and Data networks.

JH raised question over the number of MSTs in Phase 2 and this being stated as the threshold scenario. INFRA to remove wording.

CO stated that the number of phases is determined by the availability of funding

DB stated that the CCF equipment is not included in the above scope and CCF foundations, power, network and access are included only.

MG stated the character of the equipment and has been provided Marcus Gaug. This is required as part of the application for build permits for the Phase 1 works. JH stated that Marcus Gaug was co-ordinating the activities

JH stated that requirements for the CCF are incomplete and there is need for optimisation and review. Markus Gaug should be included in the process.

WA stated the CCF was a mix of scientific and safety equipment and system engineering would review this? The weather stations need integrating with external weather station. These things need capturing and recording. A plan is needed to include who's going to use the CCF equipment

MG stated that the Phase 1 scope was clear and was signed off at the Madrid Meeting earlier in the month.

WA stated that a Site Definition and Interfaces document is needed stating co-ords of the scientific equipment and their definitions – this to be signed off by JH-WA
CO stated we need to know what else is required in Phase 1 Infra works that are not in the IAC procurement package.

FD stated that it is important to know the content of the FEDER application in detail, what is included, how the money can be spent, what was agreed in the Madrid meeting together with legal documentation

(Annex 6 MoU). IAC at the moment hold the funding for the project. The content of the FEDR application could impose constraints to the projects relevant to CTAN (e.g. short project, CTAN project plan etc) therefore these constraints should be identified and understood before defining the scope of other projects.

WA stated that he did not want to repeat the work that Infrastructure and did not need to any documents agreed between IAC and CTA.

It was agreed that to help fully understand the project that an Infrastructure Scope document was required defining CTAN phases and that will form part of the Project Plan.

CO- Missing from the global plan are the dates for SE and infrastructure reviews for the detailed design. There also needs to be a CDR review for LST1 that has yet been agreed upon with LST team. This is needed for Jan/Feb as the output of the review of LST1 will be the input for detailed design of LST2 to 4. There is CDR for the MST around February.

WA stated that planning should be expanded to show dates for inputs from SE

CC stated that the Project Plan should include everything not just Infra.

WA to layout project plan document and everyone should contribute to its creation. A similar document is also needed for CTAS. (Action Item)

MG stated that there should be a timeline for the project.

CO offered his assistance with the writing of a strategy document~~?~~

It was agreed without an operation plan the Technical Building for the North site could not be fully designed.

CC stated that the Infra had a developed power concept study. The study carried out simulations and calculations for the cable. A review has been carried out on the various proposals and the next action is to produce a developed design. Power interface to the Interlocks system at the Interface cabinet is unknown at this stage

WA stated that the safety emergency buttons are in the telescope.

The interlock system is currently under GT definition.

JH-stated this was derived from maintenance use cases where power was disabled with a key then this somehow became an emergency stop button,

GT – Machine directives state that each telescope needs access protection – it is at the moment being provided by fencing.

CC – Proposes not to include a Safety Input/Output device in the Interface cabinet (as part of the Interlocks system), and if possible, Interlocks system to be interconnected to the Safety PLC in the Telescopes.

CC requested feedback from SE on the main switch position (for the power on/power off functionality

requested through the 'Cold start up / Cold shut down" use cases) – is this to be before or after the UPS and also for the drive control safety where there is an emergency stop button requirement, additional to the "power cut' requirement for the power system. This needs to be known for October for the detail design of the power.

JH view is that the power emergency stop button should be removed from the interface cabinet.

WA - stated that a Safety Engineer should be in place in October and would be looking at what we need in the Interface cabinet as regards the interlock and safety system. The SE would also look at the entire safety system and ensure that the machine directives are considered against the CTA requirements. As regards the position of the main switch this need be before the UPS.

CC - With regard to the acceptance process - CTA Phase. LST2 to 4 and MST are planned to be connected to LST1 system with regards to power generation, data centre etc. CC asked that an acceptance plan is considered for the Infrastructure that the LST team is providing, which has not gone through a CTA acceptance process,

WA – Stated we must find a way of doing this

FD – FD asked if the Short Project can be considered a CTAO project, therefore not undergoing the acceptance process, even if the money is owned by IAC. His view being that the acceptance is the formal act when the customer accepts a product/service from a supplier. It is a different process from an internal review or from an internal approval.

CC – This what we need to discuss what acceptance is to be done in the future.

JH - The resources obtained for the project are in the CTA name, the fact the money does not flow through the CTA budget doesn't stop it being a CTA activity. To clarify that this is the case is the Annex 6 agreement that becomes the change of letters. The role of the CTA to define the project is accepted.

WA- How are the telescopes switched on, is this sequentially or parallel or in some other way?

CC – Power system has been designed to have simultaneous feed. It has not been determined that the max peak is not on the telescope start up but in the repositioning of the telescope. Worst case scenario if all the telescopes are powered up together then this can still be supported.

JH-It has always been the assumption that telescopes are powered on unless there is a special reason to have them off and there should therefore be no reason to turn them all on at once.

WA- are the cameras switched of when not in use?

JH- Safe state includes some feedback from the Cameras to the Central system. Some electronic devices (inside the Cameras) will still operate in safe state.

CC – As discussed earlier it's in the schedule to have a review of the detailed design and therefore we need to know if SE will require FEA as part of the review process. If it is we need to plan for it. CTA asked for this to be included in the IAC tender but was told this was not included in the FEDER so can't be provided. CC thought there was a possibility of interacting with the designers to provide this but we will need to know exactly what is required by SE

WA asked if we needed one and was confirmed to be the case by FD if his review plan is considered. Moreover, FD commented that in several cases the European law imposes to demonstrate the structural integrity of structures

CC wanted to know exactly what was required by SE so that this can be planned for and then the IAC and telescopes teams that SE need to discuss all these topics.

FD- referred a plan wrote a couple of years ago that was a tailored documentation for CDR plus pre-production CDR for single work packages for the structure and the documents and tools needed to support the teams. SE cannot request FEA without setting the guidelines. This was done and never approved but also there is much more to be done from SE to provide teams with documents and tools required to allow people to provide an outcome. FD felt that if Infra for instance wanted a CDR in 3 or 4 months' time then this would be challenging. People need time to provide information taking for instance the Structural Design Verification document that is not approved or finalised. Once it is teams need to study the document and then produce the information in the timescales being talk about will be difficult. This structural analysis is fundamental for civil infrastructures.

WA believed this part of normal engineering activity.

GT – stated FEA of the foundations is very important.

WA - Stated that SE-leads the review and it was important for the reviews to invite external or other experts and let them review the design to guarantee a good product. Asking SE what is required for the review is completely wrong, the project supplier and the development team must demonstrate that what is being delivered fulfils the requirements.

CO- There is to be a tender process for the detailed design of Phase 1 that details what is to be produced. There may be an opportunity to modify requests but if there is not an FEA we have to decide what to do when it comes to a CDR.

FD Recommended not to decouple the foundation element from the scientific elements such as telescopes because they affect each other. For instance, certain telescope performance requirements or allocation of error budgets could drive the design of the foundations."

CC In respect to the detailed design of the power system for the short project do we check that we comply with the requirements and that's all. CC understanding that when come to the review of the detailed design its SE that leads the review.

GT – now you have the concept study for the power you have the requirements, technical specification and should demonstrate internally you fulfil the requirements.

CC – so what will be the role of SE in the review?

FD – Meeting between the customer and the supplier and you check your business case and whether its worth continuing or not. What is important that it is agreed what the supplier should deliver and what the customer wants to see. You then organise a meeting and check the results and then identify non-compliances and actions to rectify these if this is possible.

FD raised the subject of the Environmental Condition for North – suggested that earthquake requirement of 0.05g from a paper written by Engineers of the IFA. There is no figure in the requirements with DB

suggesting 0.04g

JH to add 0.05g as a requirement in Jama.

FD – Regarding the Geological Site Investigation (GSI) work tender. It is proposed to drill holes to a depth of 12m at 3No positions at each telescope position. If an expert looks at this then that is sufficient, but you need to reach the bedrock.

SB stated that there for La Palma there are specific guidelines for GSI work given the volcanic geology of the island and these determine the position and depths of the borehole. SB to forward document to FD.

FD raised the question of snow load now that he was in possession of the Spanish regulations which is 2.0 KN/sqm but has been advised by Josef Eder that in some causes regulations set this at 2.5KN/sq.m and having investigated this further for altitudes greater than 1800 you must prove snow loading by tests and historical measurements.

JH stated that Infra came up with the figure of 2.0KN/sq.m. DB stated this was the figure suggested from a Civil Engineer engaged by Infra. FD stated this was the figure suggested by Juan Carlos and driven for the LST1 design. JH stated the figure for the requirements came from Infra. DB stated that this figure was confirmed by letter from Infra Engineers.

FD Asked if we need a wind spectre and FEA of telescopes and structures for the North. For instance, FD discovered that the terrain parameter for wind analysis in the past was wrong as it assumed that this was flat. For the South SST Astra are asking an expert to propose a study for the South and for the North this was never done. FD needs this information for his document. SB stated that Eurocodes for the wind loading on structures with local annexes should be referred to although it was unclear if there was a relevant local annex for La Palma. SB would talk to the IAC Yanira the Civil Engineer on this subject and report back.

FD stated you must consider the full system and there could be elements that effect the wind speed. This principle is accepted and is covered in the relevant Eurocodes. CO asked how the changes in requirements effected the design of the telescopes. FD stated it may do.

CC – what are the steps for what comes from the outcome SAS design. The SAS concept is being done by SE with a consultant and then who will implement the work Which work package is responsible for the implementation.

Gino will send a written concept for Interlocks system (Action Item)

FD stated that the implementation of the alarm system has not been clearly allocated to a work package.

NOTE: See Attached diagram of Array Stop function provided by GT

Date for next meeting – Bologna 11th September 2pm

Array Stop Function

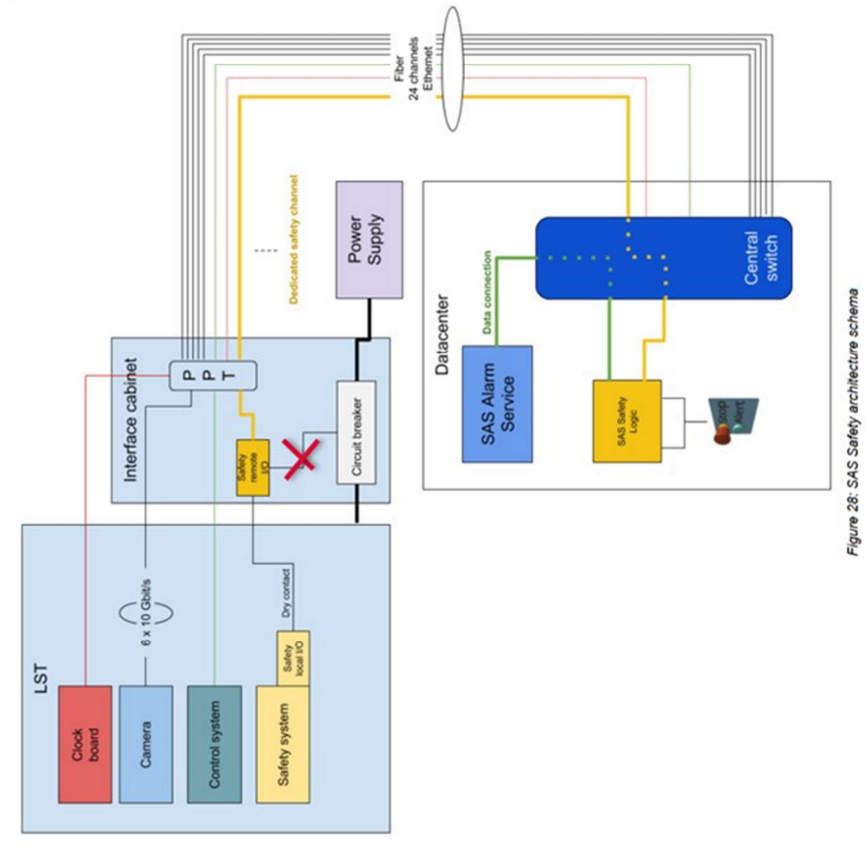

Figure 28: SAS Safety architecture schema