

ISTITUTO NAZIONALE DI FISICA NUCLEARE

CONSIGLIO DIRETTIVO

DELIBERAZIONE N. 13601

Il Consiglio Direttivo dell'Istituto Nazionale di Fisica Nucleare, riunito in Roma il giorno 26 marzo 2015, alla presenza di n. 32 dei suoi componenti su un totale di n. 34;

- premesso che, in base all'articolo 2 del proprio Statuto, l'Istituto Nazionale di Fisica Nucleare promuove, coordina ed effettua la ricerca scientifica nel campo della fisica nucleare, subnucleare, astroparticellare e delle interazioni fondamentali, nonché la ricerca e lo sviluppo tecnologico pertinenti all'attività in tali settori, prevedendo forme di sinergia con altri Enti di Ricerca e il mondo dell'impresa;
- premesso che nel perseguimento della propria missione l'INFN promuove e partecipa a collaborazioni, stipula convenzioni e contratti in materia di studio ricerca e servizi con enti, società ed imprese pubbliche e private, nazionali, comunitari, stranieri e organizzazioni internazionali;
- premesso che l'INFN collabora con l'INAF al Progetto CTA (Cherenkov Telescope Array) condotto da un Consorzio di istituzioni scientifiche appartenenti a più di 20 nazioni, che mira a realizzare una infrastruttura di oltre cento telescopi installati in 2 siti, negli emisferi sud e nord;
- visto lo schema di Memorandum of Understanding (MoU) tra INFN e INAF "*For the joint development of software tools for Cherenkov astronomy data management*", finalizzato tra l'altro a definire il quadro della collaborazione tra i due Istituti nel contesto del Progetto CTA, nel campo dello sviluppo di software scientifici e dell'analisi, archiviazione e simulazione dei dati;
- visto il paragrafo "*INFN Responsibilities*" del suddetto schema di MoU, in base al quale "*The amount of the financial and the in kind contributions will be defined in details in a later agreement*";
- vista la comunicazione del 10 marzo 2015, con la quale il Prof. Antonio Zoccoli ha chiesto la stipulazione del sopra menzionato schema di MoU;
- visti gli intensi rapporti di collaborazione tra INFN e l'INAF;
- su proposta della Giunta Esecutiva;
- con n. 32 voti favorevoli;

DELIBERA

Di approvare lo schema di Memorandum of Understanding tra INFN e INAF “*For the joint development of software tools for Cherenkov astronomy data management*”, allegato alla presente deliberazione della quale costituisce parte integrante e sostanziale. Il Presidente dell’INFN, o persona da lui delegata, è autorizzato a sottoscriverlo.

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**MEMORANDUM OF UNDERSTANDING
BETWEEN
ISTITUTO NAZIONALE DI FISICA NUCLEARE (INFN)
AND
ISTITUTO NAZIONALE DI ASTROFISICA (INAF)**

**FOR THE JOINT DEVELOPMENT OF SOFTWARE TOOLS FOR CHERENKOV
ASTRONOMY DATA MANAGEMENT**

BACKGROUND

Italy participates with a number of Countries worldwide to the design and construction of the Cherenkov Telescope Array (CTA). The Italian participation is coordinated by INAF with contributions by INFN.

The CTA project is an initiative to build the next generation ground-based very high energy gamma-ray instrument. It will serve as an open observatory to a wide astrophysics community and will provide a deep insight into the non-thermal high-energy universe. Italy is expected to contribute to CTA providing a number of 2-mirror small telescopes (SST-2M) and selected general services including Data Reduction Software and Archiving.

The SST-2M technology has been validated with an end-to-end prototype single unit within the ASTRI project, the INAF flagship project. The Prototype has been installed in Serra la Nave Observatory in fall 2014 and is intended to be the test bench for CTA SST-2M units.

The program foresees an intermediate validation step between the single-telescope ASTRI Prototype and the full deployment of CTA array: the “mini-array”. The mini-array will serve a test bench for the multi-telescope operation model including simulation, data processing and curation.

The INFN computing infrastructure comprises one Tier-1 centre, hosted at CNAF in Bologna, and 10 Tier-2 centres located at Bari, Catania, CNAF, LNF, LNL/Padua, Milan, Naples, Pisa, Rome and Turin. The infrastructure and the know-how on computing has served in a very efficient way the data management of the LHC experiments.

INFN has a long lasting experience on detector and physics simulation, trigger, data acquisition and data processing of high-energy physics experiments.

PURPOSE and SCOPE

INFN and INAF intend with the present MoU to set-up a framework for the collaboration in the area of scientific software development, data analysis and archiving and simulation in the context of the CTA Project.

INAF and INFN intend to pursue the integration of expertise and competencies as well as computing and archiving infrastructures through a modular approach along the phases of the CTA program: a) INAF single telescope prototype (SST-2M), b) mini-array multiple

telescope precursors, c) the full SST-2M deployment within CTA, d) extensions to the full array of telescopes in the context of a “CTA Data Center”.

The final purpose of the collaboration is to set-up a fully operational Italian solution of the CTA General Data Center based on: a) the existing computing resources integrated in the INFN-TIER system, b) the use of the state-of-the-art expertise in data reduction, data analysis and large database handling, specific in Cherenkov Astronomy, available at INAF and for high energy physics at INFN.

INFN Responsibilities

INFN contributes to the collaboration: in the early stages (prototyping and precursors deployment) by providing computing infrastructures already available at the TIER2 located in Laboratori di Frascati and at the TIER1 located in CNAF in Bologna, for both data analysis and simulations.

INFN will support the collaboration by providing resources hosted in INFN computing infrastructures needed for the CTA Program (full CTA deployment).

INFN contributes the technical support (software development, software maintenance and operations) to the activities object of the present MoU.

The amount of the financial and the in kind contributions will be defined in details in a later agreement.

INAF Responsibilities

INAF contributes to the collaboration the existing Cherenkov-specific Data Reduction, data analysis and archiving software developed in the context of the SST-2M prototype (ASTRI project).

INAF commits to further develop the aforementioned software to follow the needs of the further steps of the CTA Program (Mini-array prototyping phase and full CTA development).

INAF contributes to the resources with technical and scientific support to the computing and archive activities.

Entry-in-to-force, duration and termination

This MoU will come into force on the day following the date of the last signature by the INAF or INFN. It will remain in force until the completion of the program.

Amendment

This MoU may be modified or amended as deemed necessary by written agreement of INFN and INAF.

Confidentiality and Intellectual Property

“Confidential Information” means any and all information and/or data in any form and of any nature whatsoever – including, but not limited to, all written or printed documents, samples, models, and/or information whether or not patentable - disclosed by INFN or INAF to the other one.

For the duration of this MoU, INFN and INAF will share information and technology in a way that respects and preserves intellectual property rights and agree to abide by the following principles:

- (i) INFN and INAF shall treat any information, agreed or noted by both to be confidential, for the duration of this MoU, as strictly confidential.
- (ii) INFN and INAF shall take all appropriate steps to safeguard the confidential information.

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Points of Contact

INFN Representatives

Prof. Antonio Zoccoli

INAF Representatives

Dr. Paolo Vettolani

INFN		INAF	
By _____	Date _____	By _____	Date _____
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By _____		By _____	
President		President?	

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