

# **Collaboration Agreement concerning the Joint Development Project for LOFAR2.0 between ASTRON and INAF**

## **I. Purpose**

This Collaboration Agreement (hereafter referred to as 'CA') between two astronomy institutes is intended to confirm and arrange the execution of a joint project for the development of instrumentation for LOFAR2.0 (hereafter referred to as 'Project')

The two institutes agencies are:

- 1) The Netherlands Institute for Radio Astronomy, hereafter referred to as 'ASTRON' and herein represented by C. Jackson, ASTRON Director General;
- 2) The National Institute for Astrophysics in Italy, hereafter referred to as ('INAF') and herein represented by Prof. Nicolò D'Amico, INAF president

hereafter referred to as the 'Signatories'.

### **Whereas**

ASTRON has a leading role in the International LOFAR Telescope (hereafter referred to as "ILT") and INAF has the ambition to become full member in ILT and contribute to the instrumentation program for the next phase of LOFAR (hereafter referred as "LOFAR2.0"). Under this agreement, the Signatories will engage in a joint instrumentation project (hereafter referred to as "Project"). The Project Management Plan (hereafter referred to as "PMP") is attached as Appendix to this CA and describes the detailed work plan.

## **II. Description of the Project**

### **1. Objectives**

The primary objective of the Project is the joint development of the RCU for LOFAR2.0 (hereafter referred as RCU2.0). If the budget and progress allows, the joint development of other components such as a new Low Band Antenna (LBA2.0) can also become part of the Project. The inclusion of other components will be arranged after consultation with the LOFAR2.0 Programme Manager, with a Change Request to be approved by the Steering Board.

### **2. Embedding in LOFAR2.0 programme**

The Project is part of the overall LOFAR2.0 Programme as approved by the ILT Board and run by the LOFAR2.0 Programme Team at ASTRON.

- The LOFAR 2.0 Program Manager will be responsible for the cohesion and



integrity of the Project with the LOFAR2.0 Programme

- The LOFAR 2.0 Program Manager will be responsible for the definition of the requirements and interfaces.
- The LOFAR 2.0 Program Manager will be responsible for the definition of the deliverables and the boundary conditions to the Project planning.
- The Project Manager will supply to the LOFAR2.0 Programme Manager periodic reports (e.g., overall progress towards deliverables and resources spent) for the ASTRON Management and ILT Board, in the context of the overall management of the LOFAR2.0 programme.

### **III. Responsibilities**

#### **1. In this CA, the responsibilities of ASTRON are as follows:**

- ASTRON and INAF carry a joint responsibility to deliver a production-ready RCU that is compliant with the requirements, within budget and schedule.
- Executing the activities as defined in the Statement of Work.
- Day-to-day management of the project, including overall project planning and progress monitoring and reporting
- Notify the promptly any significant information, fact, problem or delay likely to affect the project to the Project Manager.
- The LOFAR 2 Programme manager will be responsible for the reporting to ILT.

#### **2. In this CA, the responsibilities of INAF are as follows:**

- ASTRON and INAF carry a joint responsibility to deliver a production-ready RCU that is compliant with the requirements, within budget and schedule.
- Executing the activities as defined in the Statement of Work.
- Notify the promptly any significant information, fact, problem or delay likely to affect the project to the Project Manager.

### **IV. Intellectual property**

#### **1. Background IP:**

- a) Each Party will provide a list of Background IP at the start of the Project.
- b) Each Party (as grantor) grants to the other (as grantee) a nonexclusive, worldwide, royalty free, internal use only license to use grantor's Background IP to the extent necessary for grantee's work under this CA during the time that the CA is in effect.

#### **2. Foreground IP:**

- a) The Signatories will jointly own the Intellectual Property generated by the Project.
  - b) The Project Manager will provide a Foreground IP register at the end of the Project to be approved by the Steering Board.
  - c) The Signatories will negotiate in good faith to reach an understanding on the responsibilities, costs, or required actions to manage and maintain the Foreground IP;
3. Production rights
- a) The Signatories and their related entities have the right to exploit the Foreground IP for commercial or non-commercial use without consultation or approval of the other Signatory for Radio Astronomy purposes.
  - b) The Signatories and their related entities have the right to exploit the Foreground IP for commercial or non-commercial for other domains than Radio Astronomy after approval of the other Signatory.

## **V. Project Management and Governance**

1. The Project is part of the overall LOFAR2.0 Programme as approved by the ILT Board and run by the LOFAR2.0 Programme Team at ASTRON.
2. The Signatories establish a Project Steering Board that oversees the work and has the authority to make decisions with respect to the Project. The Project Steering Board consists of one representative from each Signatory and an observer from the International Lofar Telescope.
3. The representative from ASTRON will be the LOFAR2.0 Programme Manager.
4. The Signatories establish a joint project team, to execute the Project.
5. ASTRON will appoint a Project Manager for the daily management of the Project. The Project Manager oversees the design, manufacturing, assembly, integration and testing of the instrumentation.
6. The Project Manager is responsible for the delivery of the project results, the budget and the schedule.
7. The Project Manager is accountable to the Project Steering Board.
8. The two Signatories provide a list of initial members of the project team. The list of team members will be maintained and updated by the Project Manager.
9. The project team members of both ASTRON and INAF can escalate to the Project Steering Board in case of issues or conflicts between the developers or between the developers and the project manager.
10. Changes to the PMP will be approved by the Steering Board after submission of a Change Request by the Project Manager.
11. The Signatories will comply with the current CA on their respective responsibilities as described in the PMP.
12. The Signatories will not try to change the confirmed items on the task execution, funding support and work schedule to avoid a negative impact on the other side. If the changes are inevitable, the induced negative impact will be minimized by taking adequate measures in terms of planning, manpower and budget.



13. The Project Manager will provide monthly progress reports to the Steering Board, and reporting as relevant for the LOFAR2.0 Programme.
14. The Signatories will provide monthly status information to the Project Manager on the budgets used.

## **VI. Implementation**

1. The PMP that defines the implementation of this CA in more detail and will be signed by the Signatories, as an annex to this CA.
2. Any changes to the PMP will have to be approved the project steering board.

## **VII. Confidentiality**

1. Either Signatory cannot divulge the contents of this CA without the written permission of the other Signatory, including any form of disk or media; divulging the other Signatory's responsibility in the CA to a third party is not possible either. If this is required by law in their respective countries, the Signatory can report the whole or part of this CA to the relevant authorities or organizations in its respective country.

## **VIII. Personnel exchange**

1. The Signatories will provide support for the exchange of personnel required to implement the activities under this CA.
2. The Signatories and their respective science teams will provide work space required for the exchange of personnel. During the Project, the salary and personal expenses such as living expenses, transportation expenses, life and health insurance, or other expenses, are paid by their own employer.
3. The staff of one Signatory will comply with the security regulations and other rules of the other Signatory during the Project lifetime period.

## **IX. Financial terms**

1. Financial problems encountered by one of the Signatories that may affect the implementation of activities in this CA, are promptly notified to the other Signatory and the LOFAR2.0 Programme Manager.
2. Deviations of the contribution within 10% of the agreed contribution from a Signatory do not need any renegotiation.
3. INAF contributes development effort, the use of equipment, materials, test laboratories and travels. The total value of the INAF contribution is **400 k€**.
4. ASTRON contributes development effort, the use of equipment, materials, test laboratories and travels. The total value of the ASTRON contribution is **550 k€**.

## **X. Disclaimer**

1. During the period of the implementation of the activities in this CA, one Signatory cannot claim compensation from the other Signatory and its related entities (such



as contractors, subcontractors and partner organizations) for the injury, death, property damage or loss of the employees hired by them or their related entities, no matter whether such injury, death, damage or losses are caused by negligence, with the exception of gross negligence and willful misconduct.

2. The disclaimer under point X-1) applies to all the related entities of the Signatories.
3. The disclaimer under point X-1) does not apply to the following situations:
  - a. The claims between a Signatory and its related entities, or among their related entities;
  - b. The claims lodged by a natural person, his family or subrogation for the injury or death of this natural person;
  - c. The claims of intellectual property.
4. The disclaimer will not apply to fulfilling the duties in this CA for both Signatories.

## XI. Dispute settlement

1. A dispute caused by the interpretation or application of this CA or a dispute related with it, will be resolved by the Project Steering Board. If the dispute cannot be resolved by the Project Steering Board, it will be escalated to the higher-level management of the Signatories.

## XII. The final terms

1. Upon signing, the CA will come into effect until the end of lifetime of the Project as described in the PMP.
2. This CA will expire if both Signatories consent in writing to end the CA before the end of lifetime of the Project, or expire six months after a written termination notice has been submitted by one of the Signatories to the other Signatory.
3. This CA can be amended or extended via the written consent of the Signatories.
4. The working language under this CA is English.

This CA is signed on 6 April 2018 in Dwingeloo and Rome, in duplicate.

For ASTRON



Prof. C. Jackson  
Director General  
ASTRON

For INAF



Prof. N. D'Amico  
INAF President

Initialized by  
Dr. Filippo Maria Zerbi  
INAF Scientific Director

