

## Report on the outcomes of a Short-Term Scientific Mission<sup>1</sup>

**Action number:**

**Grantee name:**

### **Details of the STSM**

Title: Translation from Dedukti to Minlog

Start and end date: 05/02/2023 to 12/02/2023

### **Description of the work carried out during the STSM**

Description of the activities carried out during the STSM. Any deviations from the initial working plan shall also be described in this section.

*(max. 500 words)*

**During the visit, we did these works:**

1. I presented how I translated The First Book of Euclid from Coq to Dedukti (and to other proof assistants).
2. We compared how the rewrite rules are used in Dedukti and in Minlog.
3. We discussed how we can use a formalization of the real numbers together with the formalization of Euclid's First Book to obtain a formalization of the geometry with the real numbers.

### **Description of the STSM main achievements and planned follow-up activities**

Description and assessment of whether the STSM achieved its planned goals and expected outcomes, including specific contribution to Action objective and deliverables, or publications resulting from the STSM. Agreed plans for future follow-up collaborations shall also be described in this section.

*(max. 500 words)*

<sup>1</sup>This report is submitted by the grantee to the Action MC for approval and for claiming payment of the awarded grant. The Grant Awarding Coordinator coordinates the evaluation of this report on behalf of the Action MC and instructs the GH for payment of the Grant.

We study how the rewrite rules are used in Dedukti and in Minlog and we identify some differences that will be essential to have a good translation from Minlog to Dedukti. In particular, the rewrite rules of Minlog should be explicitly used. The computation rules could be kept, but they can also be made explicit which will lead to a translation with less rules.

The translation from a simple Dedukti encoding of the Predicate Logic into the tactic language of Minlog is still to implement, but will not be difficult, and it could certainly be extended to a translation from an encoding of the Simple Type Theory although we have not really discussed this.