

A scientific Information System for REFIMEVE

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Summary-- REFIMEVE, the French national research infrastructure for time and frequency dissemination over fiber, is vying at mid-term for ESFRI landmark status. It requires an interconnected information system, which we are developing. Within this system, we showcase three applications, as network monitoring, optical clocks comparisons and seismic observations, demonstrating its versatility and utility. Our work not only fulfills immediate needs but also opens doors to broader and more exciting possibilities for REFIMEVE's future endeavors.

MOTIVATIONS

As the REFIMEVE infrastructure expands in scale, welcoming more users and becoming increasingly complex, there emerges a critical need for automating network monitoring processes. This automation ensures streamline communication and maintains the integrity and functionality of the growing infrastructure in a dynamic and interconnected environment. This is also a mandatory compliancy to EU data policies.

INFORMATION SYSTEM DESIGN AND SETUP

The system is based on a computing software communicating with our internal database through an Application Programming Interface (API), our data repository, and any other relevant information system. Details of the implementation, and its interface with subcontractor parties as Exail, will be shown at the conference.

SCIENTIFIC APPLICATIONS

We show, for the very first time to our knowledge, the ability to supervise all the subsystems of a Time and frequency fiber network from source to user using robust software procedures. This system allows a REFIMEVE's user to autonomously access data with a minimal coding effort. It also allows to cross-correlate data from various Information Systems to improve network monitoring capacities (see Fig. 1).

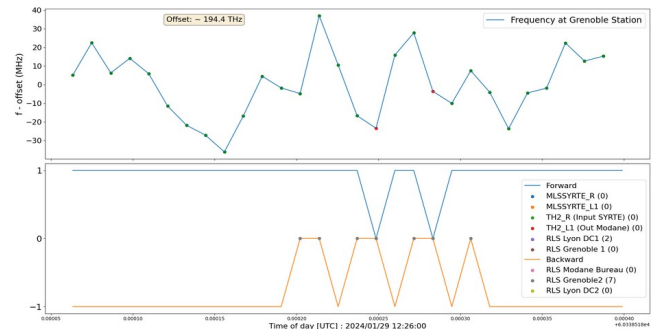


Fig. 1: This figure shows the frequency received at the Grenoble Repeater Laser Station (top). The cycle slips detected along the path from the source (SYRTE) to the end of the signal looped back are registered by Exail Information System and shown here with colored dots (bottom).