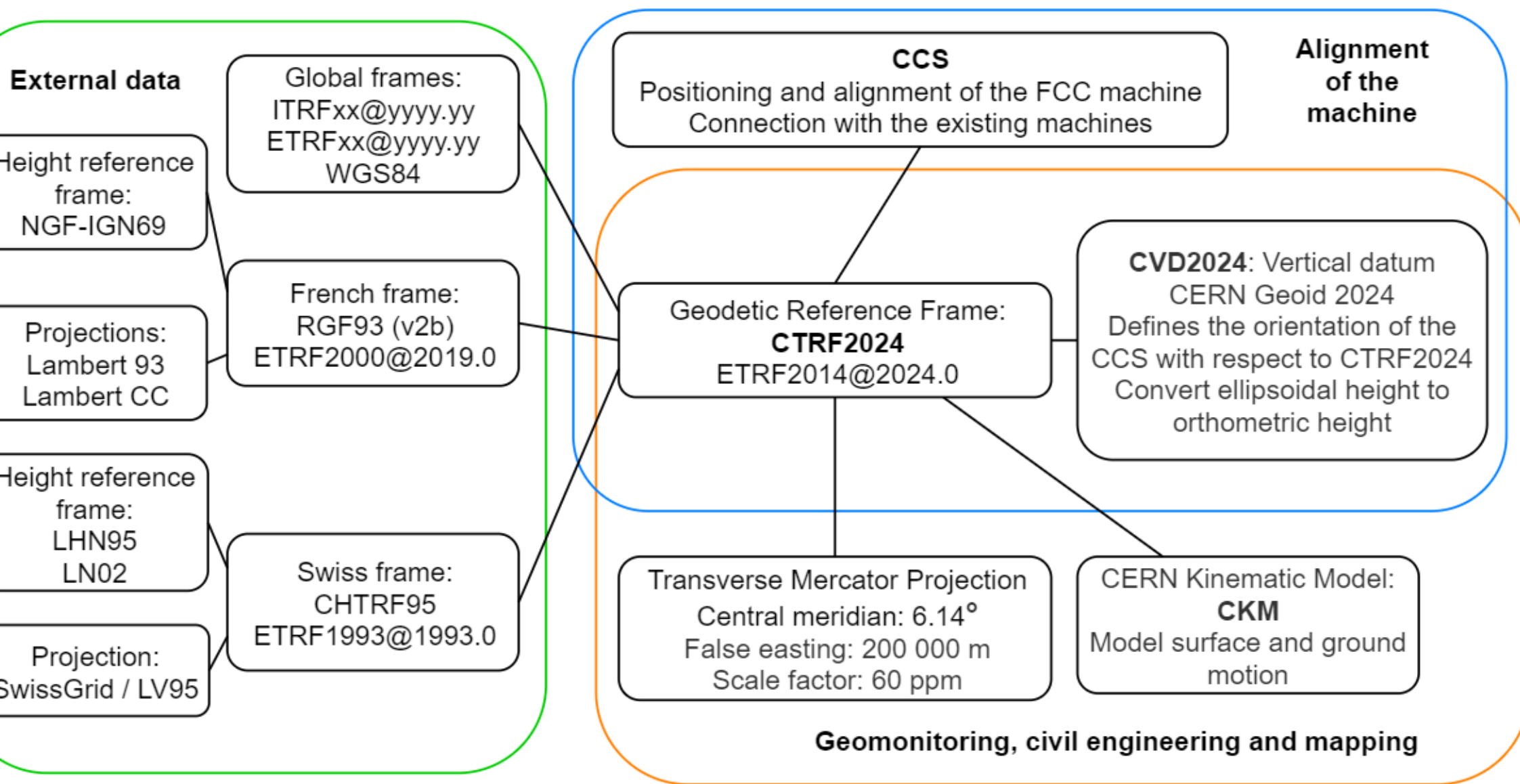


AN ENHANCED GEODETIC INFRASTRUCTURE

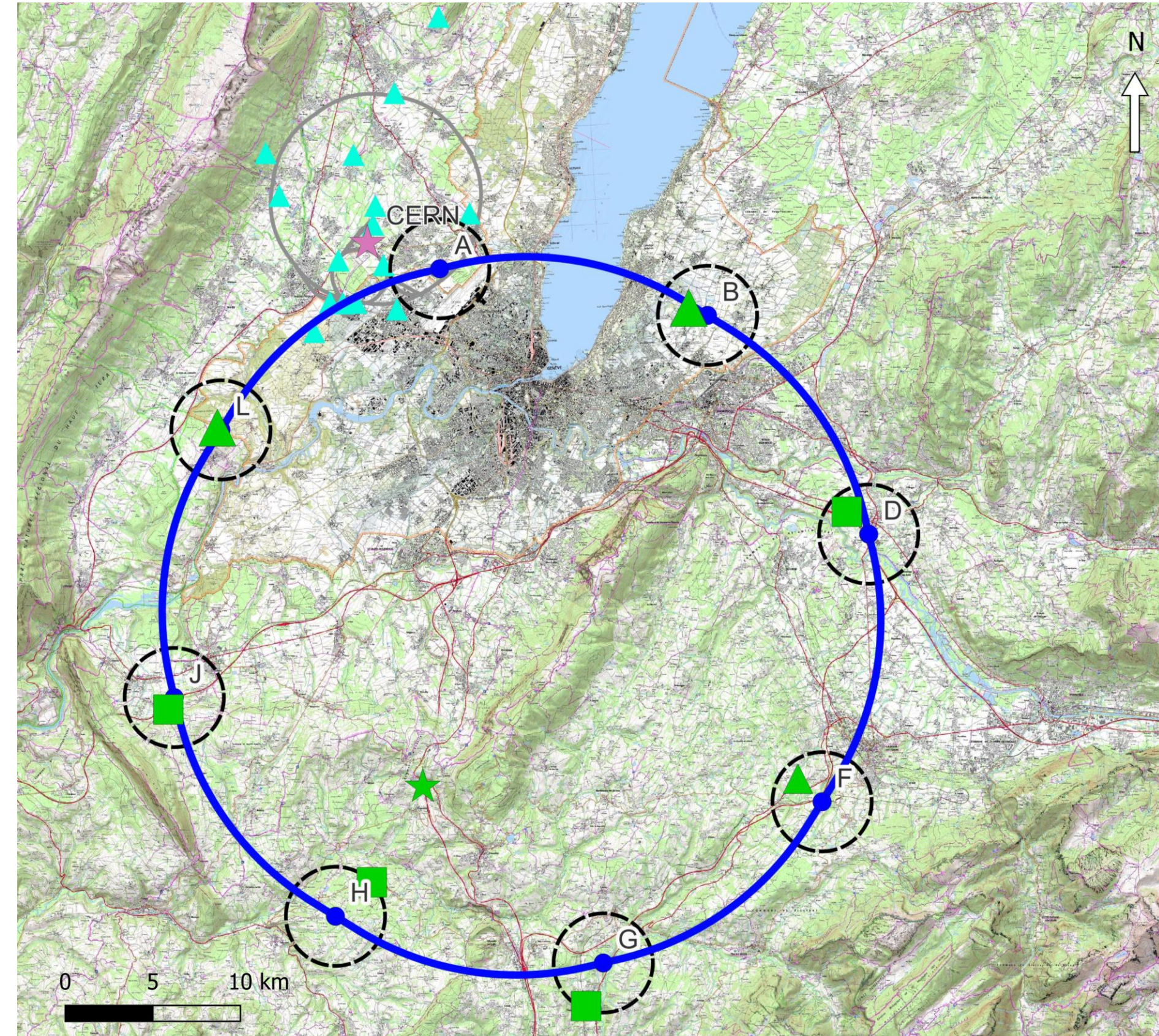
Creation of new coordinate reference system and frames

The custom coordinate reference system is compatible with the different phases of the project.



Implementation of the surface geodetic network

Reference markers for all survey works.



New gravity field model

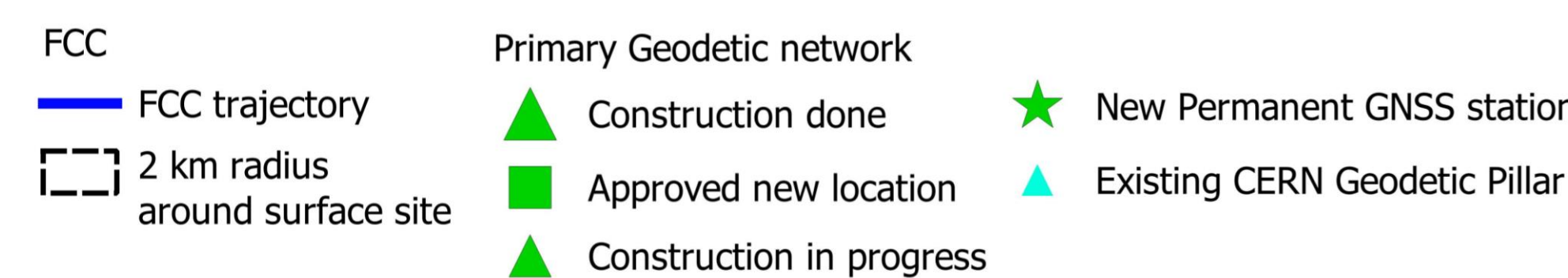
Cover the entire FCC area (10 times bigger than the current CERN LHC area).

Required for the rigorous alignment of the machine in a Euclidean plane.

Perspectives for future development

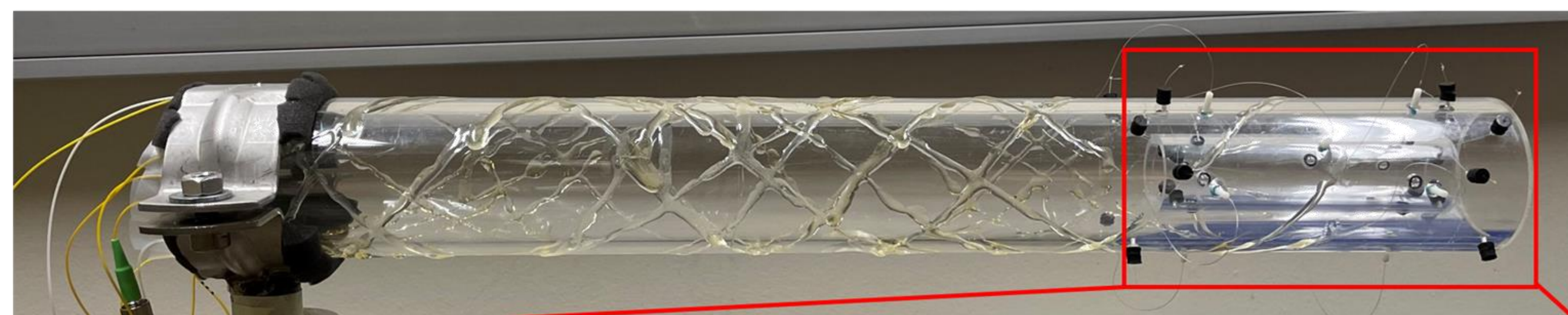
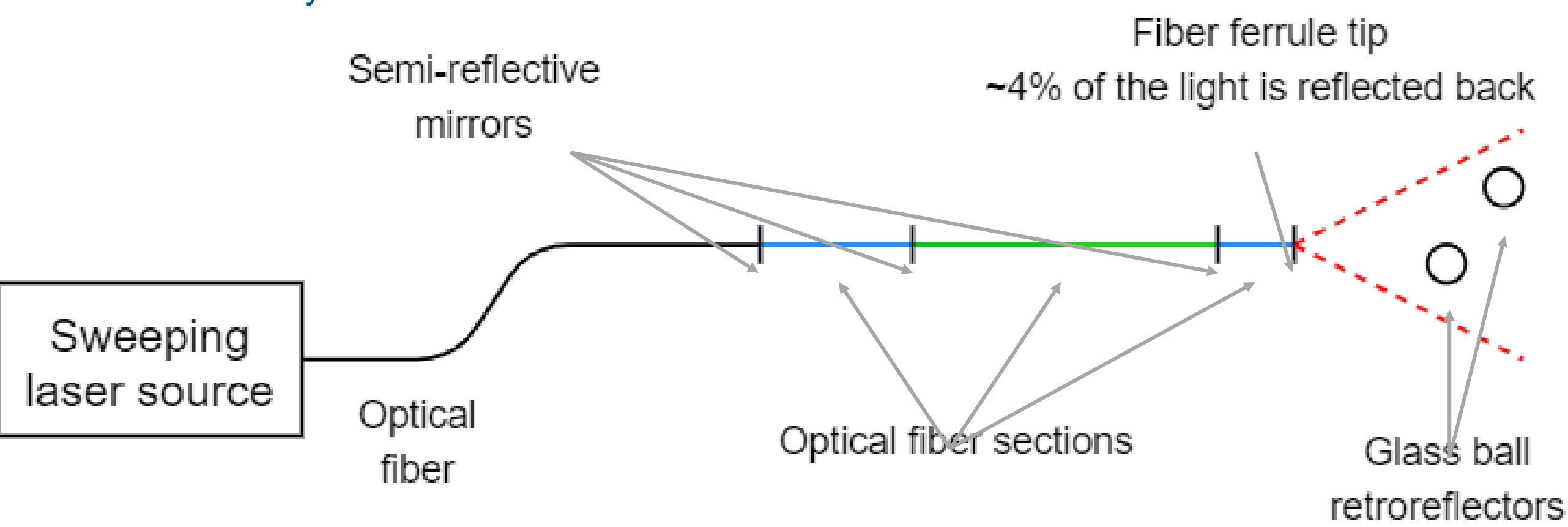
Improvement of gravity field model to reach alignment accuracy requirements.

Geomonitring study: evaluate the stability of the FCC area before starting civil engineering work.



UPDATE ON THE ALIGNMENT MONITORING OF THE MACHINE DETECTOR INTERFACE (MDI)

FSI measurement system.



Prototype implementing in-lined multiplexed and distributed measurements in fiber and in-air measurements on glass ball retroreflectors.

Deformation system development

System based on the Frequency Scanning Interferometry.

Performs in-lined multiplexed and distributed measurements in fiber between semi-reflective mirrors, and in air, on glass ball retroreflectors.

Evaluation of assembly procedure and sensor capabilities thanks to a set of prototypes.

Prototypes tested

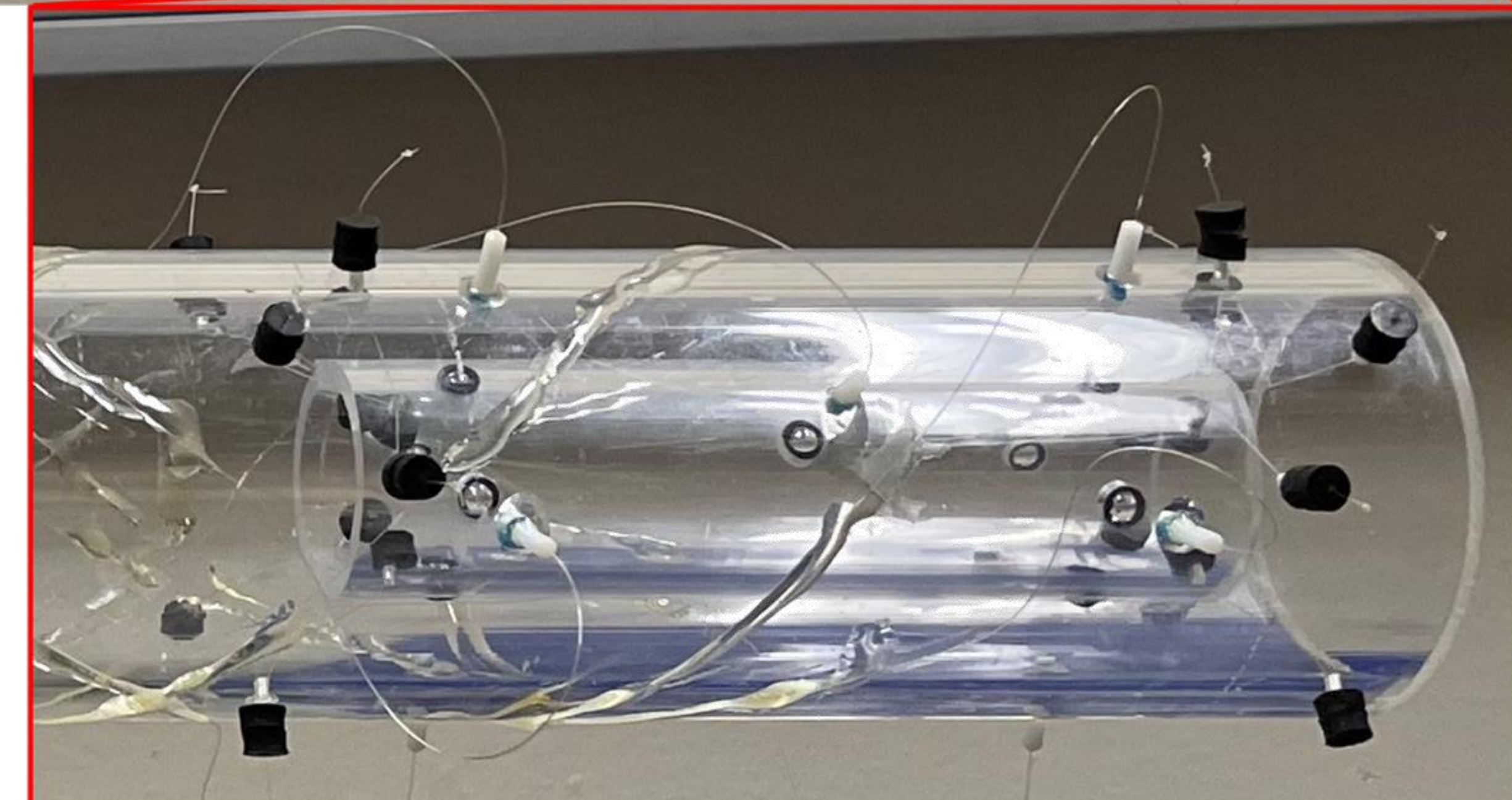
Validation of the in-lined multiplexed and distributed FSI for basic deformation monitoring.

Simultaneous validation of multiple measurement types (in-fiber and in-air).

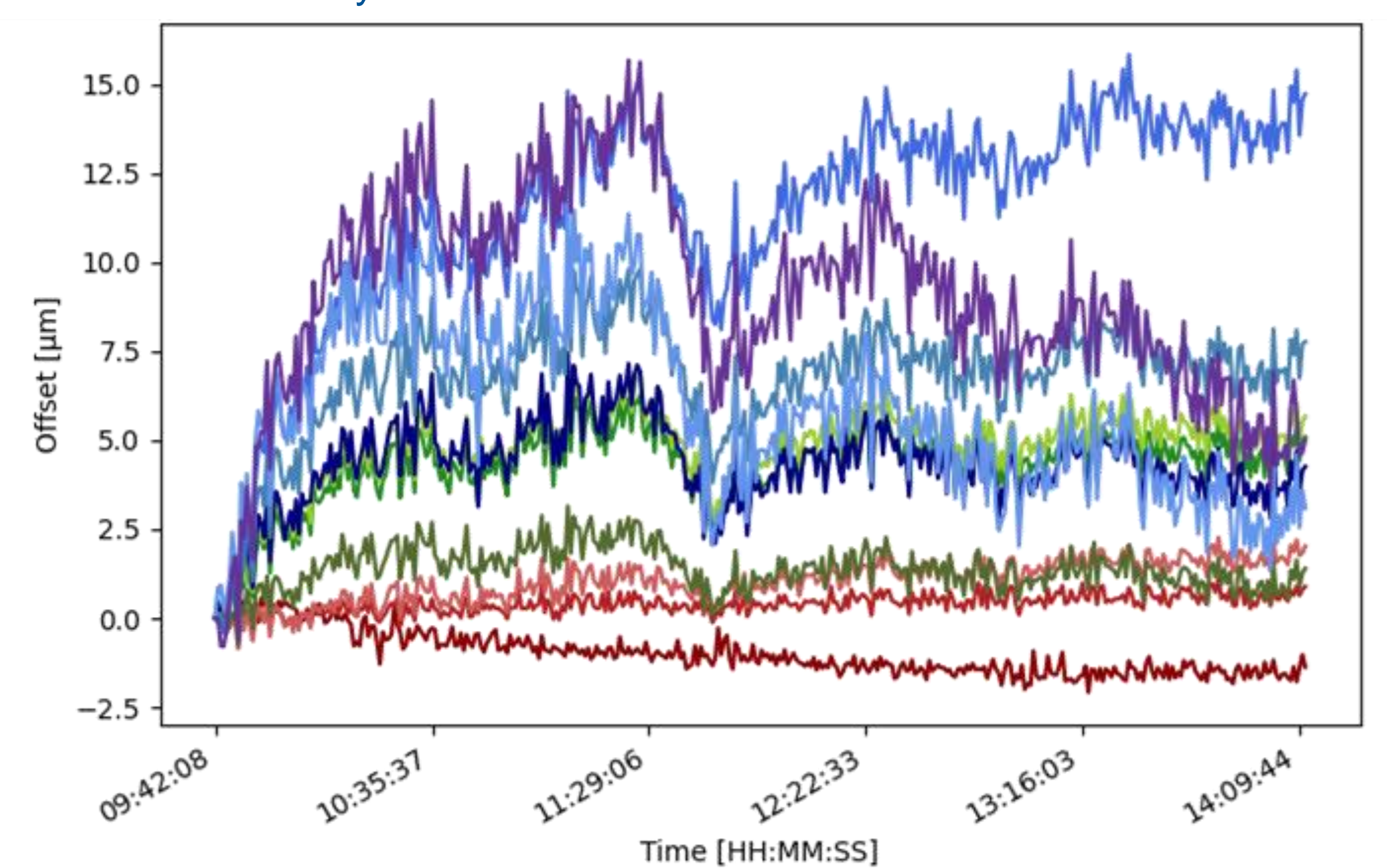
Challenges in handling and installing optical fiber have been identified and recorded for future reference.

Future prototype to validate the entire measurement chain

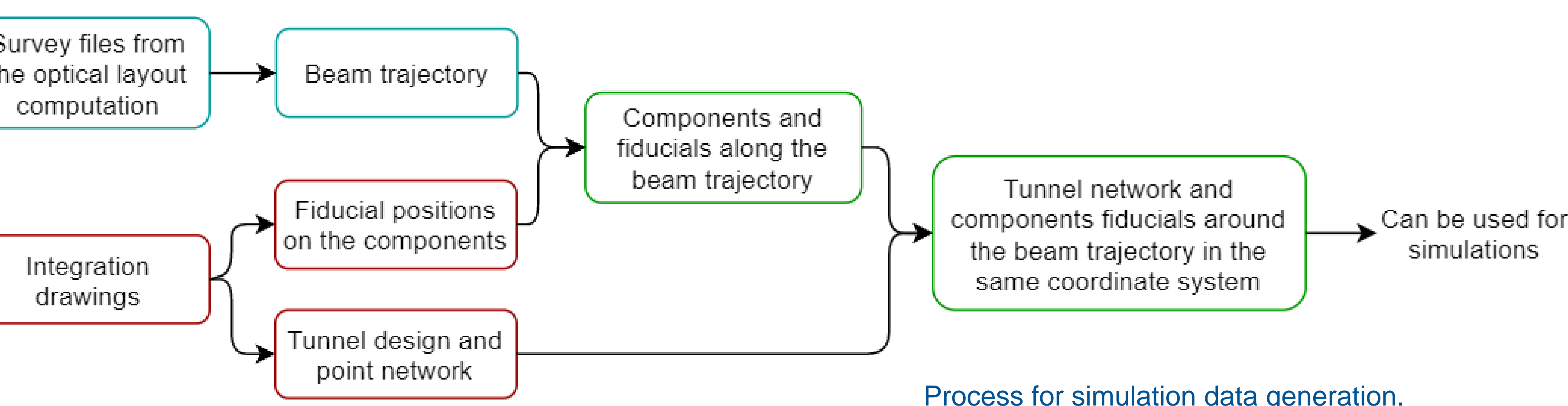
2 m long prototype (1/2 scale) for comparative assessment being designed and assembled.



Example of measurement performed by one fiber: plot of simultaneous in-air and in-fiber measurement with micrometric uncertainty.



TOWARDS AN ALIGNMENT STRATEGY FOR THE ARCS OF THE FCC



Starting the simulations

Data gathering and initialization of the simulations.

Tuning and optimization of CERN adjustment software (LGC++).

Simulations on tunnel lengths ranging from 10 km to 90 km ongoing.