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EUROpean Laboratories for Accelerator Based Science

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MILESTONE REPORT

WP3 – SERVICE IMPROVEMENTS TO RIS IMPLEMENTED

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Abstract:

The present document reports on the implementation of the planned service improvements at the RI Facilities participating in Work Package 3 of EURO-LABS. Service improvements were scheduled for seven facilities as outlined in MS19 document. At the five facilities, the work is progressing as planned, while at the other two, technical issues have prevented any progress.

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Executive summary

The key goal of the EURO-LABS project is to provide Transnational Access (TA) to major Research Infrastructures (RI) in Europe. WP3 groups thirteen facilities focused on High-Energy Accelerator Research. Beyond the TA, service improvements were planned for seven facilities aimed at enhancing the performance capabilities of the provided beams or instrumentation, and for facilitating access to the benefit of the users.

Details of the planned service improvement works were provided in the Milestone #19 document. Presently at five facilities, the work is progressing as planned, while at the other two, technical issues have prevented any progress.

1. INTRODUCTION

EURO-LABS is a network of 33 research and academic institutions (25 beneficiaries and 8 associated partners) from 18 European and non-EU countries, involving 47 Research Infrastructures within the Nuclear physics, Accelerators and Detectors pillars. In this large network, EURO-LABS ensures diversity and actively supports researchers from different nationalities, genders, ages, and a variety of professional expertise.

Work Package 3 (WP3) provides Transnational Access (TA) to a broad spectrum of installations, enabling the testing of concepts for future accelerators by improving existing facilities, as well as supporting R&D studies for future colliders such as CERN/FCC or the Muon Collider. The WP3 facilities provide beam lines for testing advanced accelerator materials, superconducting or normal Radio-Frequency cavities, magnets, and acceleration schemes. These tests use different particles and energies (low-energy protons, low-energy electrons, ultra-soft electron bunches, and high-intensity high-energy electrons and could also have connections to industrial applications.

As detailed in MS19, service improvements in a wide range of activities from improved instrumentation, new hardware, or upgraded control systems and software tools were planned for seven facilities within WP3, aimed at enhancing the performance capabilities of the provided beams and instrumentation, and facilitating access to the benefits for users.

2. SERVICE IMPROVEMENTS

The table below shows the facilities and planned service improvements.

Table 1: List of WP3 facilities with scheduled service improvement works.

Index	Facility	Service Improvement
1	HiRadMat - CERN	Improved control of the beam parameters at the experimental area
2	FREIA - UU	- Construction of an anti-cryostat, - A magnetic flux sensor for cavity testing new magnetic flux sensor - Solid state amplifier for cavity testing, and - LLRF for cavity testing
3	INFN-LASA - IT	- control system performances - automatized data acquisition procedures - new data storage and analysis networks - more comfortable HMI facilities
4	INFN-THOR – IT	- Dedicated cryostat and equipment for magnet testing
5	CEA/IRFU Synergium -FR	**MACHAFILM** - a more robust pump for long halides deposition for the ALD facility, and - installation of new low-noise electronic for the RRR set up to enable high RRR (>150) samples to be measured **CRYOMECHA** - software update of the tensile machine,

		- new sensors for mechanical measurements at cryogenic temperatures
6	KIT(KARA-FLUTE) – GE	- develop an integrated simulation and measurement framework
7	CEA/LPA-UHI100 – FR	- update of the pumping system of the interaction chamber hosting the acceleration process to work at 1Hz
8	CLEAR – CERN	- improvements on beam detection system - installation of second beam line

The present status of the service improvement work is described in detail in the following deliverable reports:

D3.5 Report on the service improvement for material testing RIs, WP3, Task 3.1

D3.6 Report on the service improvements for Technology Infrastructures, WP3, Task 3.2

D3.7 Report on the service improvement for electron and plasma beams, WP3, Task 3.3 and Task 3.4

In summary, the facilities at indices 1, 5, 6, 7, and 8 of Table 1 are progressing well, and despite some delays, they will be completed as planned. At the FREIA facility, the SI has been partially implemented, aligning with the needs of the accepted TA projects. In the two INFN facilities, technical issues have prevented any progress.

ANNEX: REFERENCES

MS19 WP3 Work on Service Improvements Started (published on: https://web.infn.it/EURO-LABS/results-milestones/)