DeepU

DELIVERABLE D7.6

Report on the first year activities

Subtitle

Lead Beneficiary: WP leading partner acronym

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ABBREVIATIONS AND GLOSSARY OF ACRONYMS

Acronym	Extended definition
CA	Consortium Agreement
D	Deliverable
DCM	Dissemination and Communication Manager
D&C	Dissemination and Communication
DPM	Data Management Plan
EC	European Commission
FAIR	Findable, Accessible, Interoperable and Reusable
GA	Grant Agreement
HE	Horizon Europe
IPR	Intellectual Property Rights
M	Month
PC	Project Coordinator
PDEC	Plan for Dissemination and Exploitation including Communication activities
PM	Program Manager
PO	Project Officer
SC	Steering Committee
VRE	Virtual Research Environment
WP	Work Package

EXECUTIVE SUMMARY

The DeepU project started in March 2022 and will run for three years. It involves six participants coordinated by the University of Padua, Italy. The project structure is based on seven work packages (WPs). Five of these (WP1 to WP5) address the technological and scientific development of the project and are assisted by two WPs devoted to dissemination and communication (WP6) and management (WP7). DeepU is expected to achieve technical and environmental/standardization innovation goals. The former focuses on developing a lightweight drill string to transport the cryogenic gas and sheath the laser beam (WP1) and creating a scaled U-tube heat exchanger model by deflecting the laser beam using a special mirror optics (WP2). The latter aims to assess the thermal effects of the laser beam and cryogenic gas on hard/soft rocks in terms of borehole wall vitrification (WP2-WP3), to characterize the drilling residues generated by the laser (WP3), to define the regulatory aspects and the environmental, health and safety (EHS) evaluation of the DeepU technology (WP4), to assess the commercial attractiveness of DeepU (WP5).

This deliverable report on the first 12 months of project activities.

The introduction focus on (i) summarizing the context and overall objectives of the project, (ii) showing the work performed from the beginning of the project to the end of the period covered by the report (12 months) and the main results achieved so far, (iii) presenting the progress beyond the state of the art, the expected results until the end of the project and the potential impacts.

Then, the core of this deliverable highlights the activities performed on the first year of the project, pointing put the main achievements reached up to now, in agreement with the project workplan. Proceeding by WP, an overview of the work carried in each WP is provided, together with an explanation of the main outcomes.

Finally, an overview of the next Project steps taking into account the cooperation between different WPs is presented.

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