

**A multi-purpose Needle Insertion device for the diagnosis and treatment of cancer**

**(ACCURATE)**

# **Final Report**

## **2015-2017**

**Abstract:** The development of the ACCURATE project " A multi-purpose Needle Insertion device for the diagnosis and treatment of cancer" started the activities of the ACCURATE modules (mechanical and software) for the diagnosis and treatment of cancer through biopsy, brachytherapy and radiofrequency ablation, based on analyses of the world-wide solutions and medical requirements for each procedure. The solutions developed within the ACCURATE project have features such as positioning of specific needles, their ease of use and rigidity (the modules do not introduce unwanted movements). In addition to the mechanical development of the ACCURATE system, software elements have been developed and deployed in the control systems of two medical robots (BIO-PROS 1 and PARA-BRACHYROB developed within CESTER) used for testing the modules. Medical protocols have been created to establish the functionality of the ACCURATE modules in the medical environment and a series of experiments with healthcare professionals have been conducted to test, optimize and validate the modules. During the project, the engineering team organized several visits to the Third Surgery Clinic of the Regional Institute of Gastroenterology and Hepatology "Prof. Dr. Octavian Fodor ", Cluj-Napoca, where CESTER team assisted in performing biopsy and radiofrequency ablation procedures in the liver. The team of doctors from the Surgery Clinic III visited the CESTER research centre to assist with the ACCURATE system experiments and to provide feedback on module development.

Analysing the degree of achievement of the objectives proposed in the ACCURATE project and the delivered deliverables it can be stated that all activities, objectives and deliverables were achieved in 100%. No delays, deviations or corrections were made to the plan of activities initially defined.

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