

**Abstract:** The second stage of the ACCURATE project entitled “**External module development for mounting the ACCURATE system on an existent robotic system. The development of the mechanical structure, command system for each needle insertion module. Experimental module realization.**” continued with activities towards the realization of the ACCURATE system for cancer diagnosis and treatment. An mathematical model was determined for the needle insertion and tissue resistance, which was further implemented into a numerical algorithm. Based on the medical procedure and on existing medical robotic systems three needle insertion modules and an external mounting module were developed and validated (functional wise) by medical experts. To determine and achieve a modular command system, an analysis was conducted on the functionality of each module, that lead to the definition of a control system capable to control all the three modules individually. A numerical algorithm for force feedback was also implemented into the control system to achieve an increased safety factor for the tissue penetration. After a careful analysis of the three needle modules, the material was chosen and the components execution and purchasing was partially done. The mechanical assembly and electronic components mounting was also partially achieved. Based on the medical procedure, and on the current state of the art of the project, experimental tests were defined and planed for the ACCURATE system validation.