***"Intelligent and distributed control of 3 complex autonomous systems integrated into emerging technologies for medical-social personal assistance and servicing of precision flexible manufacturing lines"* – CIDSACTEH - COMPLEX PROJECT CDI - Agreement no.: 78PCCDI / 2018, CODE PROJECT: PN-III-P1-1.2-PCCDI-2017-0290, Domain: New and Emerging Technologies**

Complex project manager: Adrian FILIPESCU

a). Component Project Title 5 (Pr.5): *"Intelligent control structure and navigation system based on the performance sensors, video-biometric and video-servoing systems for complex autonomous system CAS-IW (Complex Autonomous Systems – Intelligent Wheelchair) integrated into the technology for assisting people with severe neuro motor disabilities*" - 2018-2020.

Component project manager (Pr. 5): Răzvan ŞOLEA

Objectives:

- Kinematic and dynamic model for the complex autonomous system (CAS-IW) integrated into the technology for assisting people with severe neuro-motor disabilities;
- Intelligent control structure for CAS-IW integrated into the technology for assisting people with severe neuro motor disabilities;
- Navigation system for CAS-IW integrated into the technology for assisting people with neuromotor disabilities (based on the combination of the video-biometric system with and laser system);
- Video-servoing system for the robotic manipulator integrated in CAS (requiring for precision of positioning of the gripper);
- Control, navigation and obstacle avoidance structures for the complex autonomous system (CAS-IW), integrated into the technology for assisting people with severe neuro-motor disabilities - implemented and tested in real time under laboratory conditions.

Estimated results:

- Simulation results of the complex autonomous system CAS-IW integrated into the technology for assisting people with sever neuro-motor disabilities (CAS-IW modelled as a 2DW/2FW mobile robot + robotic arm with 7DOF);
- Functional model of intelligent control system and navigation system for "Cirrus Power Wheelchair" – as integral part of CAS-IW;
- Functional model of the real-time obstacle avoidance system (using the laser and video sensors) for the Cirrus Power Wheelchair - as integral part of the CAS-IW;
- Functional model of the advanced control system based on performance sensors and visual serving systems - for the Cyton 1500 integrated as part of the CAS-IW;
- The laboratory results of the intelligent control system, the navigation system (based on performance sensors) and the advanced control system based on real-time visual

servoing systems for CAS-IW integrated into the technology for assisting people with severe neuro-motor disabilities.