

SPACE OPERATIONS SYMPOSIUM (B6)
Human Spaceflight Operations (1)

Author: Mr. Giorgio Cabodi
Thales Alenia Space, Italy, Giorgio.cabodi@thalesaleniaspace.com

THE ESA EUROPEAN DRAWER RACK (EDR) MK II: A VERSATILE PAYLOAD SYSTEM
FACILITY FOR THE INTERNATIONAL SPACE STATION UTILISATION**Abstract**

The ESA European Drawer Rack Mk II Project, started in 2011, is a Payload System Facility conceived as an enhancement of the current EDR MKI (launched in 2008 with the ESA Columbus Module) , to be hosted inside the Columbus Module on the International Space Station. The project involves TASI as responsible for the design, development, manufacturing, integration and testing as well as later on-orbit operations support . The system design aims at accommodating up to three sub-facilities defined as Experiment Inserts (EI), by providing the necessary mechanical and functional interfaces. The main design enhancements with respect to the EDR MKI are: • maximum flexibility, ensured by a modular accommodation of EIs with different dimensions and masses; • improvement of the overall performances, by adopting new components for both avionic and fluidic subsystems.; • streamlining of the design to reduce equipment obsolescence by allowing the replacement of the most critical component during the lifetime of EDR2 The EDR MKII is also suitable to transport at launch, dry cargos stowed in standard soft bags, as the Experiment Inserts are not required to be integrated at launch. The concept for Cargo accommodation at Launch implies dedicated structures (panels, brackets) using the ESPR mechanical interfaces on the rack beams to be removed after the rack unloading on orbit in order to free volume and resources for the Experiment Inserts uploaded later. The EDR MKII has successfully completed in Turin the Qualification Campaign and the “Interface Validation” campaign at the Rack Level Test Facility of Columbus in Bremen. After a period of storage, it will be shipped to the JAXA Launch site in order to be transported to the ISS with the JAXA HTV carrier (expected in early 2018, pending launch manifest consolidation). Overall, significant programmatic improvements have been achieved by maximizing the use of commercial equipment properly qualified and adapted for use on the ISS.