

# Operations and Utilisation

## Accommodation & Transport:

The European Transport Carrier will be launched inside the European Columbus Laboratory. After launch it will remain in Columbus for the duration of first use, serving as a flexible stowage facility for the ESA payload facilities Biolab, FSL, EPM, and EDR. The secondary objective for the ETC will be its use within the Multi-Purpose Logistics Module - MPLM. After replacing ETC within the Columbus Laboratory by an active experiment rack, ETC will support the expected continuous logistic supply needs between the ground and the ISS for the European payload racks inside Columbus. ETC can be reconfigured on ground to accommodate the specific transport and stowage needs of each flight. ETC is designed to serve for up to 15 flight missions.

## Operational Concept:

ETC will be loaded on ground, and installed into Columbus. Before beginning with nominal stowage activities in orbit, ETC has to be checked and some initial installation tasks completed. At the end of the planned mission time ETC will be prepared for download and therefore has to be moved to MPLM. After landing ETC will be reconfigured and outfitted for the next planned mission. From then on upload and download, as well as all stowage activities are performed within the MPLM.

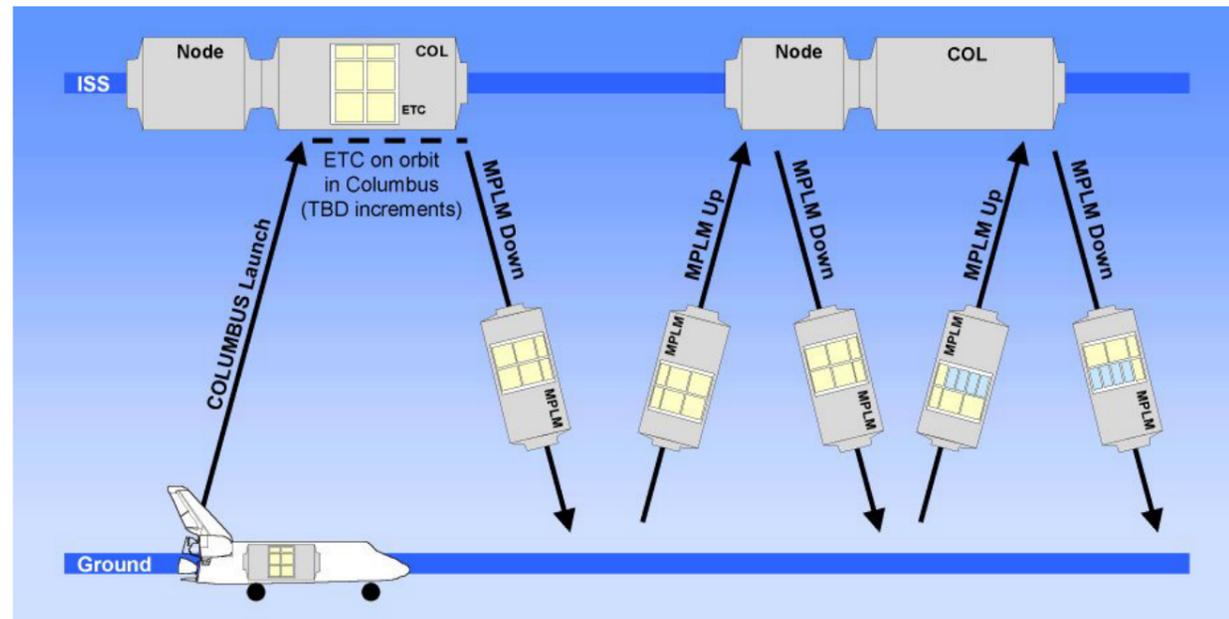
## Utilisation Scenario:

Once onboard the International Space Station the doors of ETC have to be unlocked for access to the facility. Then, the Zero-g Stowage Pockets (ZSP) in the upper and lower part of ETC, which can only be used in weightlessness, are set up. From now on the stowage containers can be used for various kinds of payload stowage activities.

When ETC is prepared for download, all the Zero-g Stowage Pockets (ZSP) have first to be emptied, then the pockets folded, and stowed away. The doors can then be locked again and the whole ETC rack will be transferred to MPLM for landing inside that module.

## Schedule:

According to current planning, the European Transport Carrier will be launched inside the Columbus Laboratory as part of the 1E mission complement of five ESA payload racks and two external payloads. The provisional launch date is March 2007. Following initial utilisation inside Columbus, ETC will be launched on a regular basis inside the Multi Purpose Logistics Module (MPLM).



Mission overview.

# European Transport Carrier (ETC)

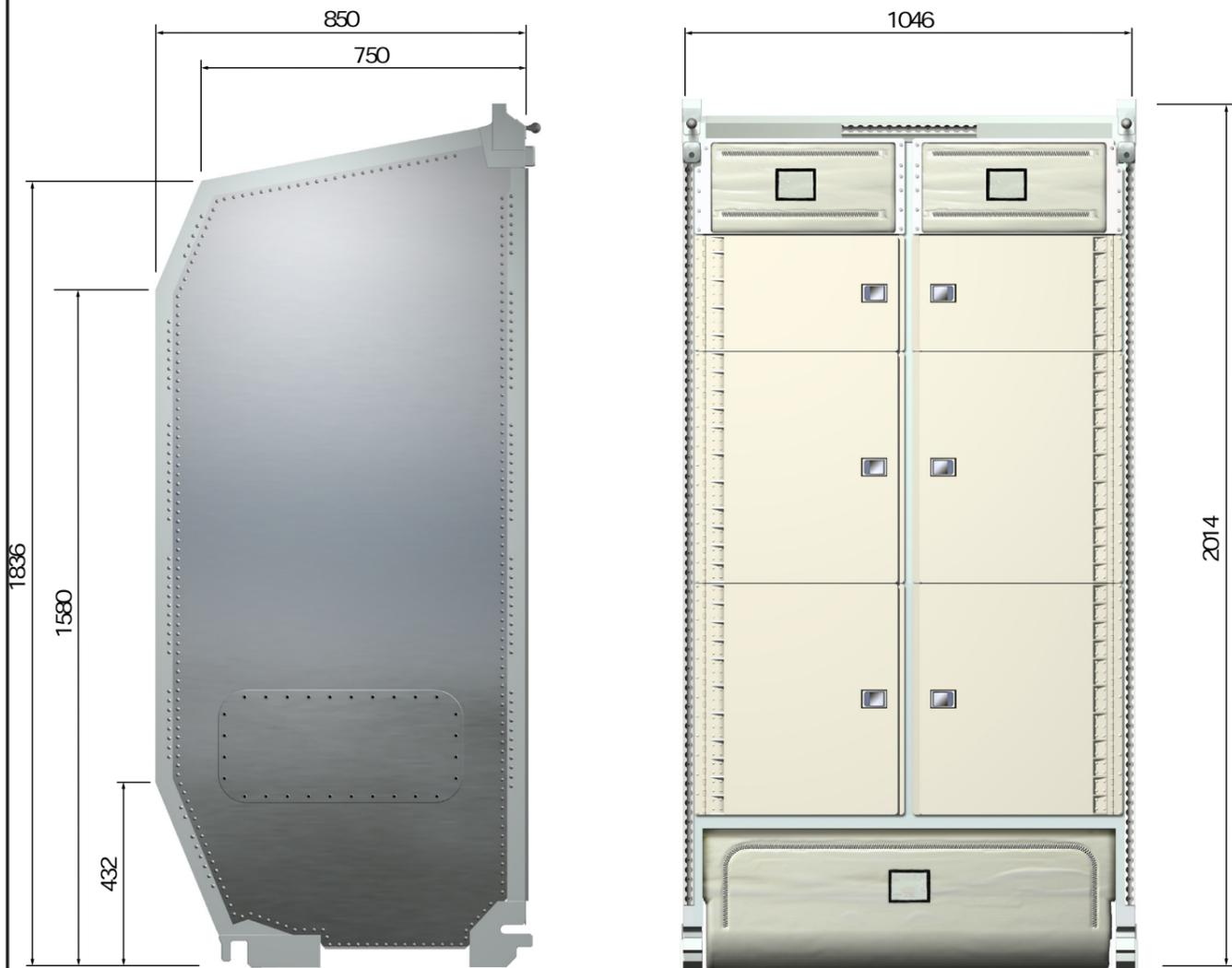
## Multi-User logistics carrier in Columbus and MPLM

The European Transport Carrier accommodates ESA payload items, which cannot be launched within the active ESA facilities due to stowage or transportation limitations. In orbit, ETC will serve as a workbench and stowage facility.



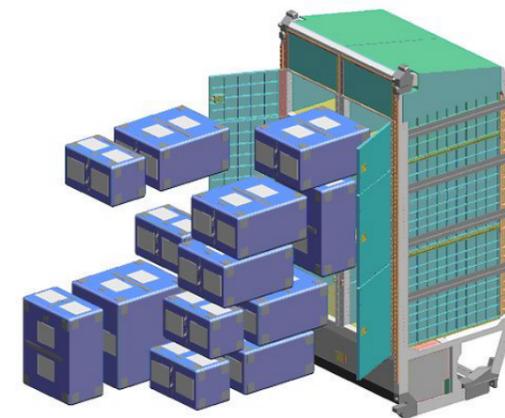
Illustrations: ESAD, Ducros/OHB System

	PROJECT : <b>International Space Station</b>	
	TITLE : <b>European Transport Carrier</b>	DOCUMENT N° EUC-ESA-FSH-032
		REV. 1.0



## Specifications

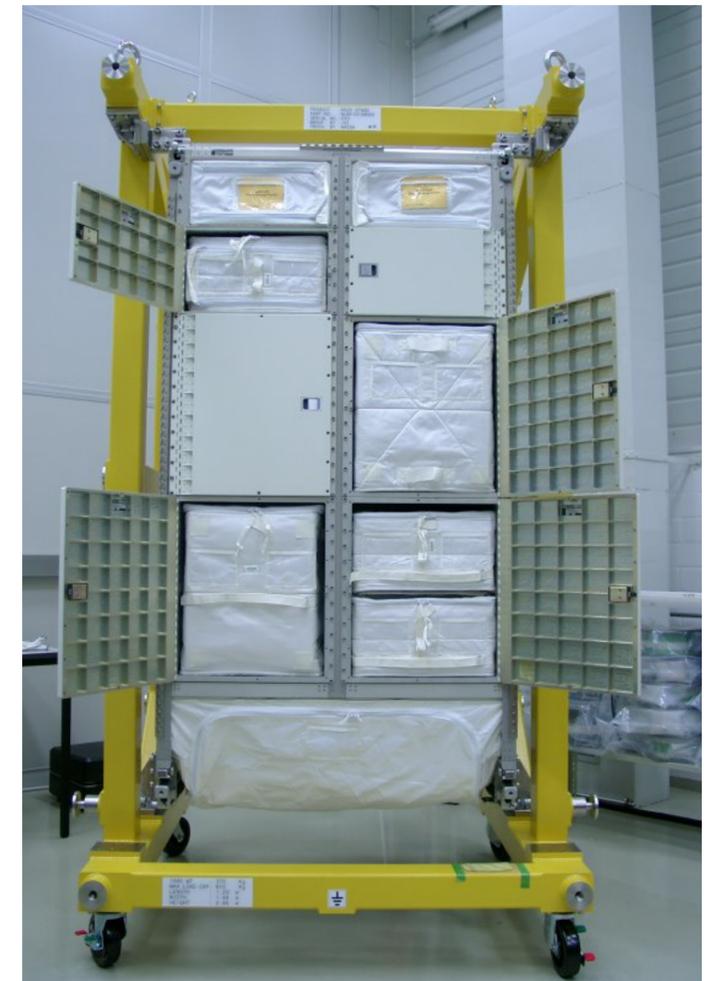
Dimensions				
Width:	1,046 mm			
Height:	2,014 mm			
Depth:	850 mm			
Mass budget				
Up/download capacity:	410 kg			
Total transport/stowage volume:	797 litres			
ZSP volume:	200 litres			
Total usable volume on-orbit:	997 litres			
Cargo Transfer Bags Dimensions				
CTB	Approximate Sizes		Mass	
	External Dimension L x W x H [mm] / [l]	Internal Dimension L x W x H [mm] / [l]	Maximum Load [kg (lbs)]	Bag & PL [kg]
Half (1/2x)	248 x 425 x 235 / (24.8)	232 x 410 x 219 / (20.8)	13.62 (30)	1.0 + 12.6
Single (1x)	502 x 425 x 248 / (53)	486 x 410 x 232 / (46.2)	27.24 (60)	1.7 + 25.5
Double (2x)	502 x 425 x 502 / (107)	486 x 410 x 460 / (91.6)	54.48 (120)	2.0 + 52.5
Triple (3x)	749 x 425 x 502 / (159.8)	733 x 410 x 460 / (138.2)	81.72 (180)	2.7 + 79.0



Stowage Concept of Cargo Transfer Bags



Different sizes of Cargo Transfer Bags



## Facility Description

The European Transport Carrier will stow and transport various kinds of payload items such as commissioning items, science instruments, consumables, orbital support equipment, orbital replaceable units, re-supply items and science items such as experiment containers. This applies especially to European payload items that cannot be launched within their payload facility racks due to limited stowage and transport capabilities. In orbit, ETC will serve as a workbench and stowage facility to support experiments with Biolab, Fluid Science Laboratory (FSL), European Physiology Modules (EPM) and European Drawer Rack (EDR).

After its first utilisation phase in Columbus, ETC will be used as a transport rack within the Multi-Purpose Logistics Module - MPLM. It will provide the capability for regular up- and download of all experiment and service items needed for continuous operation of the European payload facilities inside Columbus.

The European Transport Carrier can carry up to 410 kg of payload and experiment items, accommodated in

standardised Cargo Transfer Bags - CTBs. The CTBs are NOMEX® bags in four standard sizes: Half, full, double and triple. They are compatible with the ISS standards for transport in MPLM and ATV and the use onboard the ISS partner modules like Destiny, Kibo, or Columbus.

The European Transport Carrier is equipped with six rigid stowage containers in optimised sizes. There are two smaller containers of 6 PU (1PU = Panel Unit = 44,45 mm height) for full and half-size Cargo Transfer Bags, and four 12 PU containers which can be filled with any combination of Cargo Transfer Bags, up to the triple-size.

In addition the European Transport Carrier is equipped with Zero-g Stowage Pockets, one on the bottom and two on the top. These pockets extend the stowage volume capacity up to 1,000 litres instead of 800 litres in standard configuration but can be used and filled only in weightlessness.