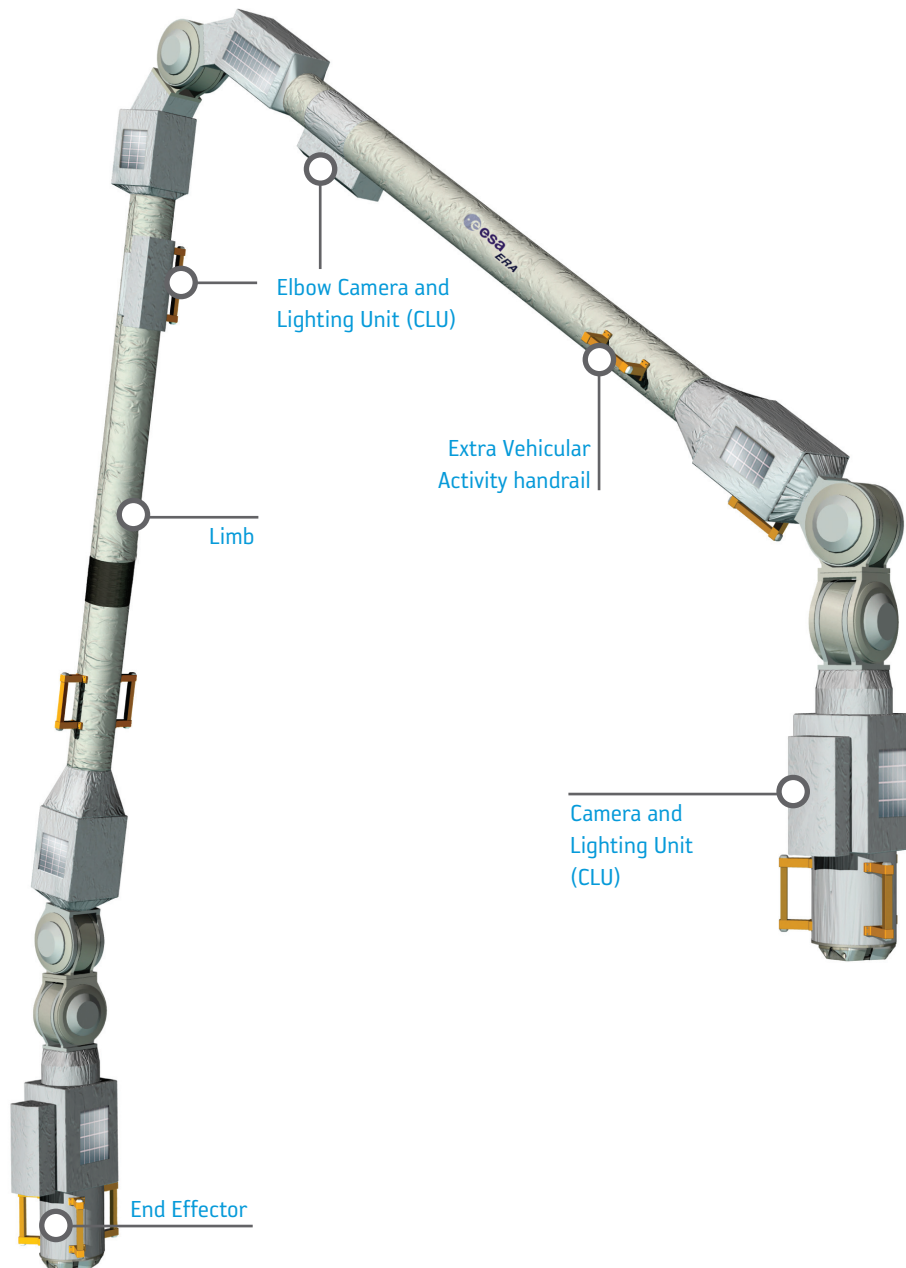


→ EUROPEAN ROBOTIC ARM (ERA)

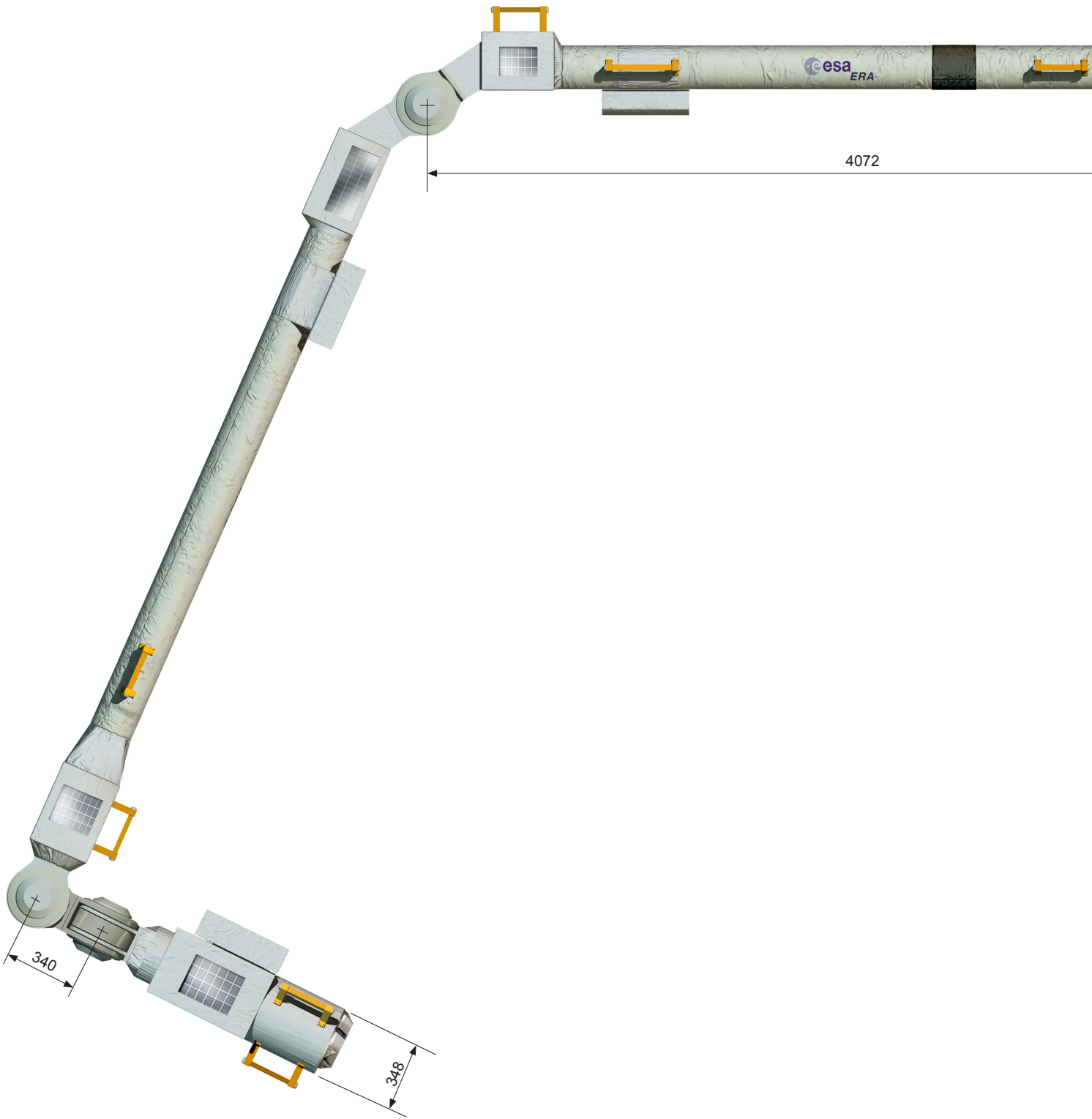
Large relocatable symmetrical robotic arm with 7 degrees of freedom

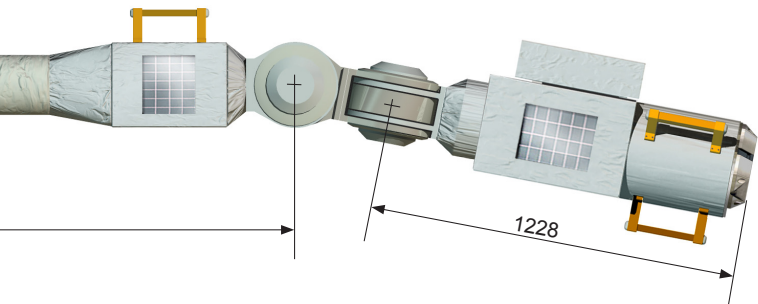
ERA acts as a tool for: Installation, deployment and replacement of elements of the Russian Segment of the Space Station, inspection of the Russian Segment, support/transfer of EVA cosmonauts, transfer of Orbital Replacement Units and other assembly tasks.

The arm consists of 2 End Effectors, 2 Wrists, 2 Limbs and 1 Elbow joint together with electronics and cameras. Both ends act as either a "hand" for the robot or the base from which it can operate.



| | | | |
|---|----------|-----------------------------|---------------------------------|
|  | PROJECT: | International Space Station | |
| | TITLE: | ERA | DOCUMENT N°: ESA-HSO-COU-007 |





Specifications

DIMENSIONS

| | |
|--------------------------------------|-----------|
| Total length: | 11,300 mm |
| Reach: | 9,700 mm |
| Tip position accuracy: | 5 mm |
| Maximum tip speed: | 100 mm/s |
| Mass budget launch mass: | 630 kg |
| Max. P/L handling capability: | 8,000 kg |

COMMUNICATIONS INFRASTRUCTURE

Power, data and video signals cabling and special fixtures on End Effector and Base Point.

ELECTRICAL POWER

| | |
|---------------------------------|------------------|
| Average operation power: | 475 W (120 V DC) |
| Peak operation power: | 800 W (120 V DC) |

MAIN CONSTRUCTION MATERIALS

| | |
|---------------------------------------|--|
| Limb: | Carbon fibre tube and Aluminium interfaces |
| Wrist, Elbow and End Effector: | Composed of many different materials |
| Thermal Protection: | Beta Cloth Blankets |

MAIN CONTRACTOR

Dutch Space (Leiden, The Netherlands), leading a consortium of many subcontractors



PROJECT: **International Space Station**

TITLE: **ERA**

DOCUMENT N°:
ESA-HSO-COU-007

REV.
2.0

Utilisation Relevant Data

LAUNCH CONFIGURATION

- Launched in so called «Charlie Chaplin» configuration with power off

Launch vehicle: Proton

Launch site: Baikonur

Launch date: 2012

ON-ORBIT CONFIGURATION

- Attached to different locations on the Russian Segment
- Home base: Permanent Multipurpose Module (PMM)

FLIGHT HARDWARE

- End Effector with electronics box (2)
- Base Points (2 on launcher interface and multiple on ISS)
- Wrist (comprising roll, yaw and pitch joints) with joint electronics (2)

CLU:

Camera and Lighting Units (4) are provided for proximity control and overviews

IMMI:

Intra Vehicular Activity Man Machine Interface via a laptop computer

EMMI:

Extra Vehicular Activity Man Machine Interface via a control panel

CONTROL INFRASTRUCTURE

- From the inside of the station with the IMMI via a laptop computer and the Control Post Computer
- From the outside of the station with the EMMI via a control panel and the Control Post Computer

