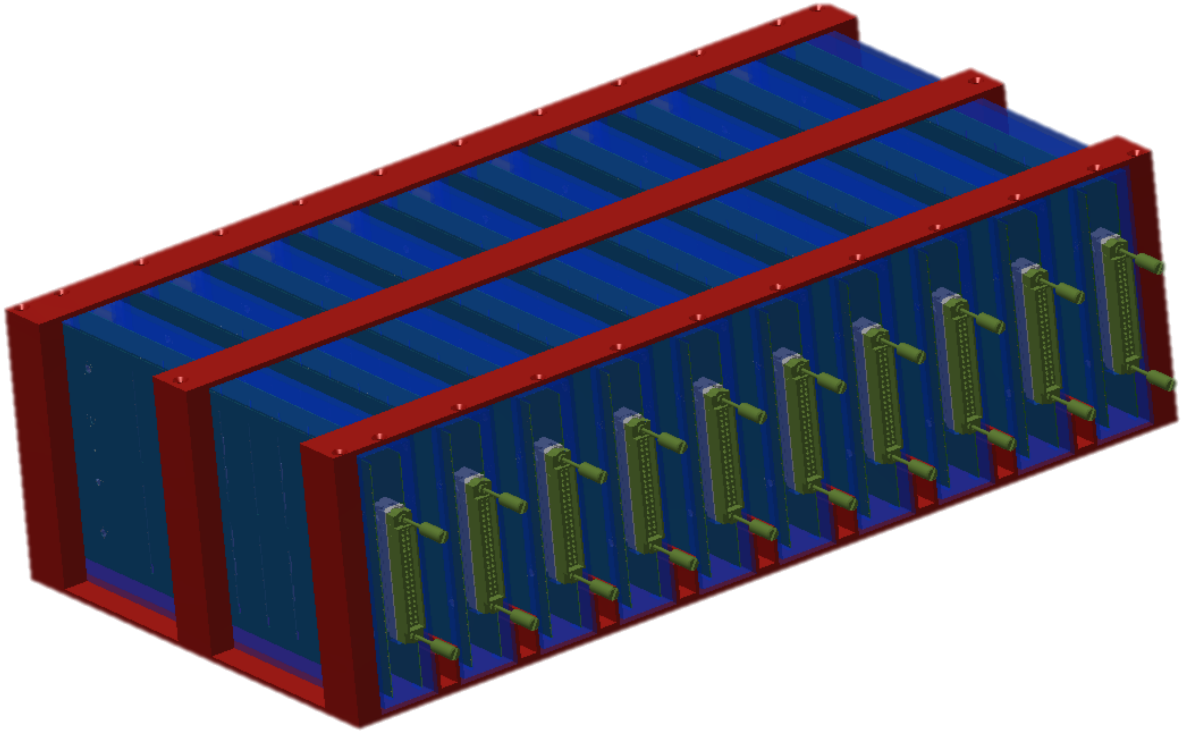
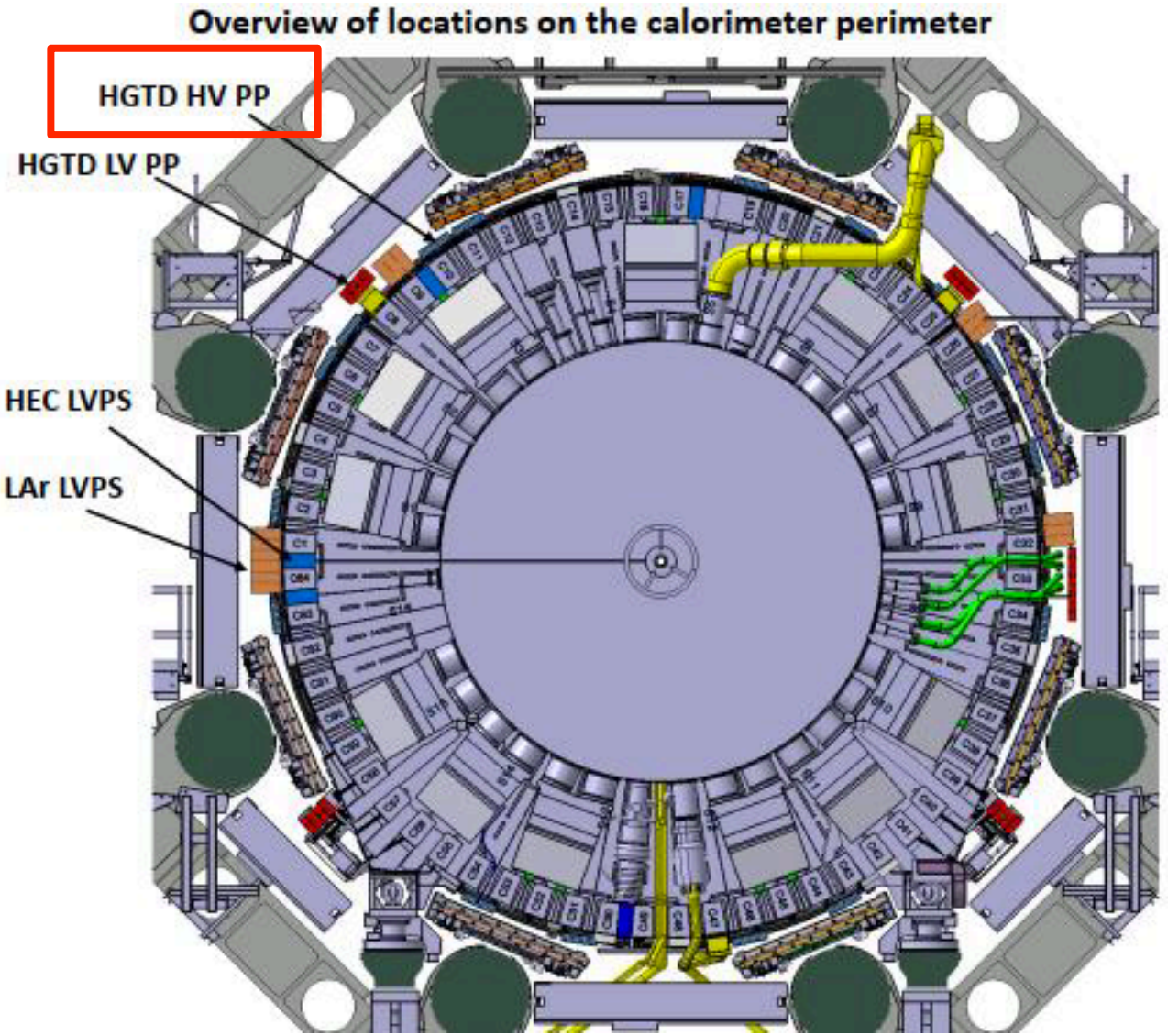
HGTD Patch/Filter Panels



Luis Lopes, Orlando Cunha, Ricardo Gonçalo

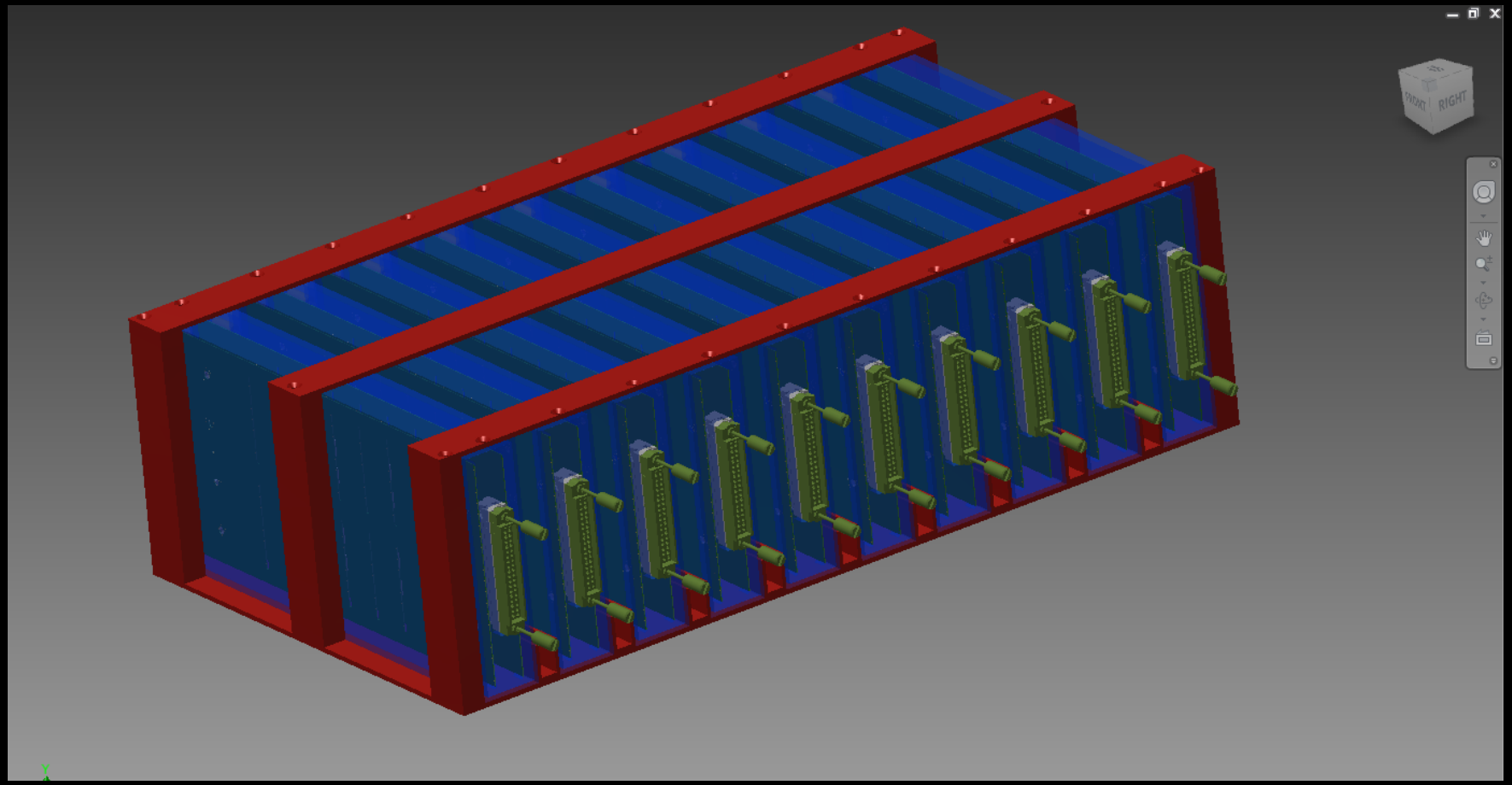
LIP - Portugal

- 16 Patch Panel boxes
- Routing of HV channels from sources to detector
- Filtering AC noise
- Proposed design shown in next few slides



Modular box

Dimensions: 360 x 195 x 104 mm^3 Weight: 7.5 kg (final around 10 kg)

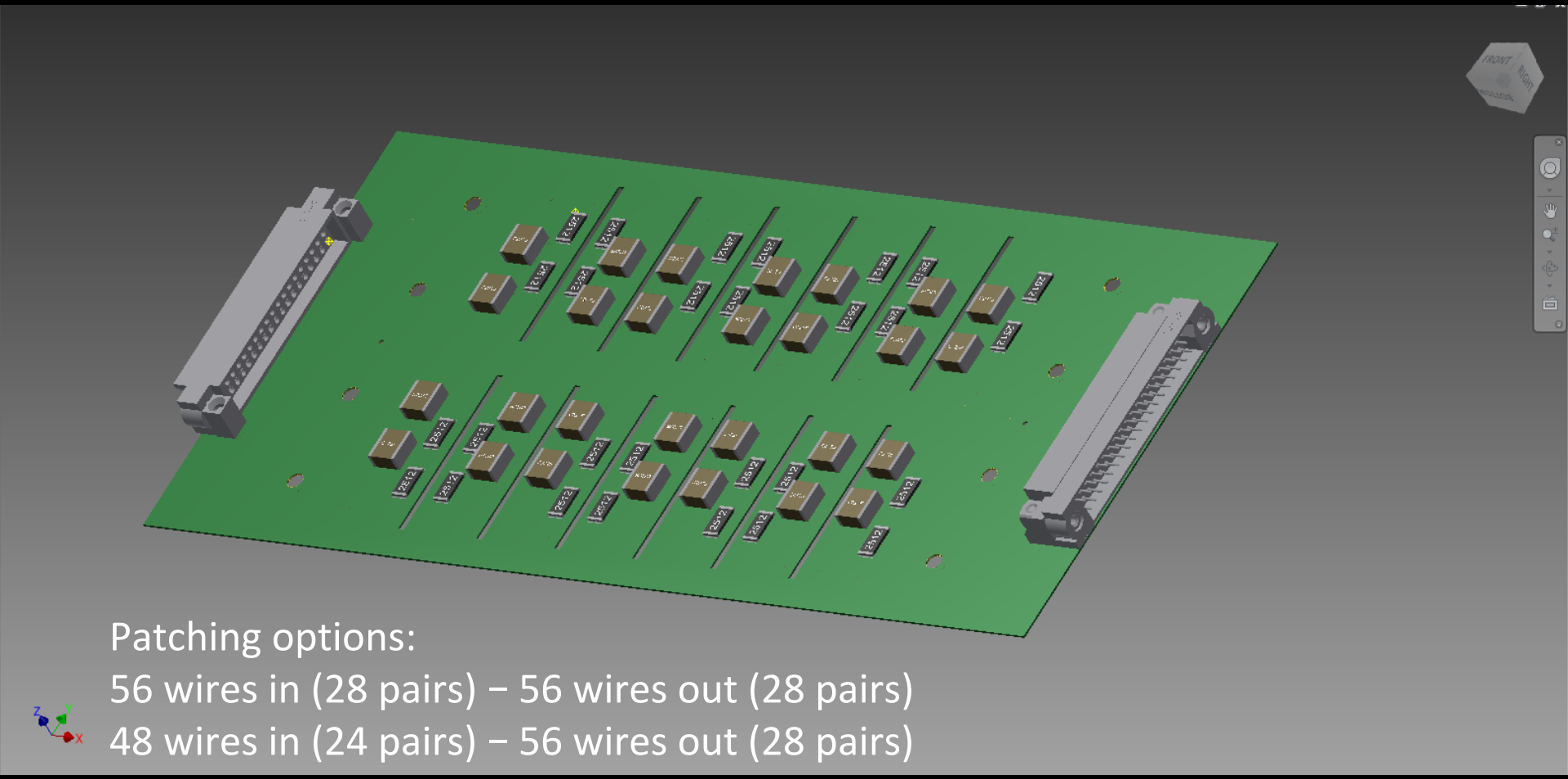


56 wires in (28 pairs)

For insulation: male pins on USA15 side; female plugs on sensor side

PCB with filters

14 RC-RC filters per PCB – 28 per module / Wire routing from connector to filter



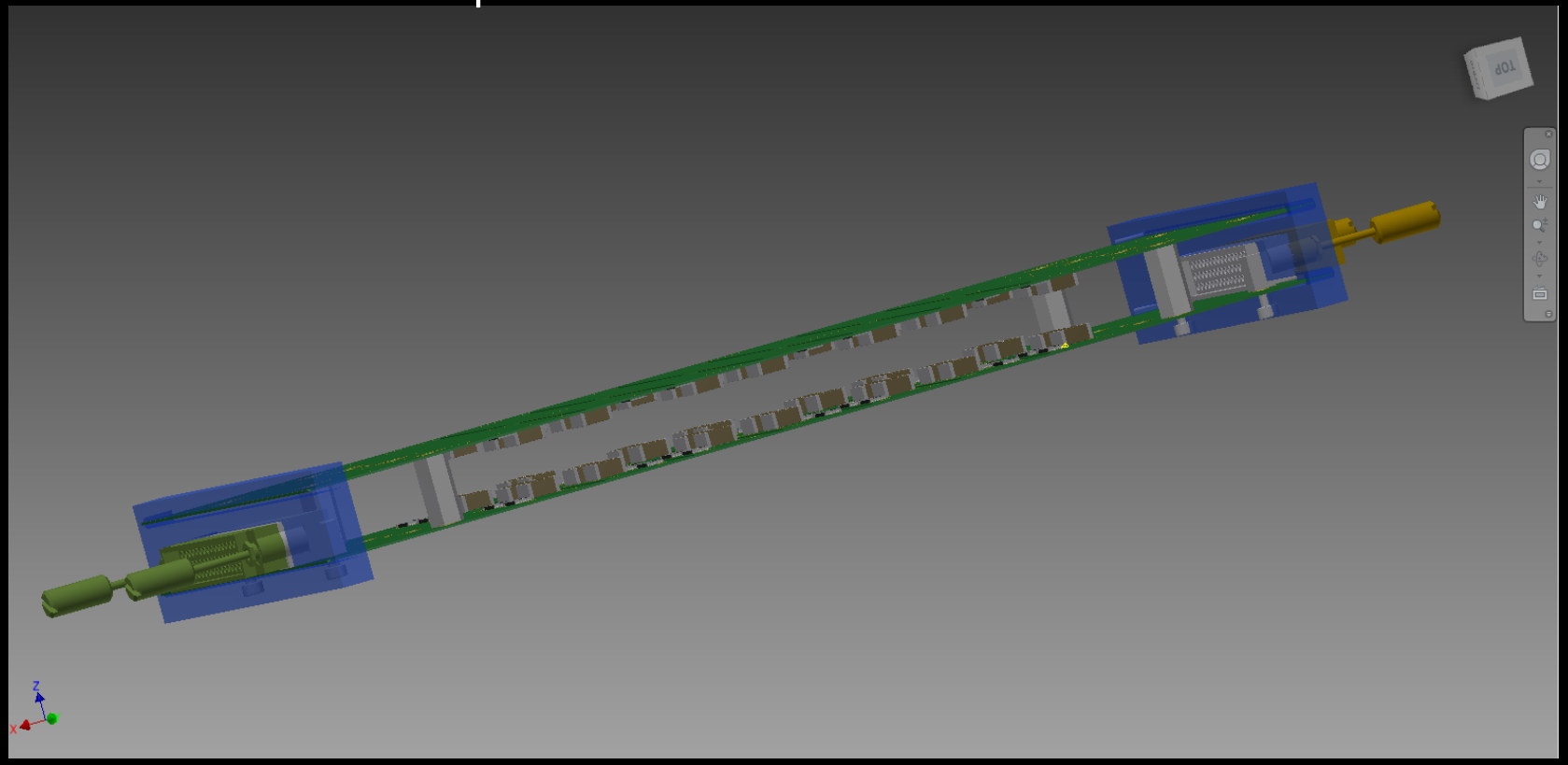
Patching options:

56 wires in (28 pairs) – 56 wires out (28 pairs)

48 wires in (24 pairs) – 56 wires out (28 pairs)

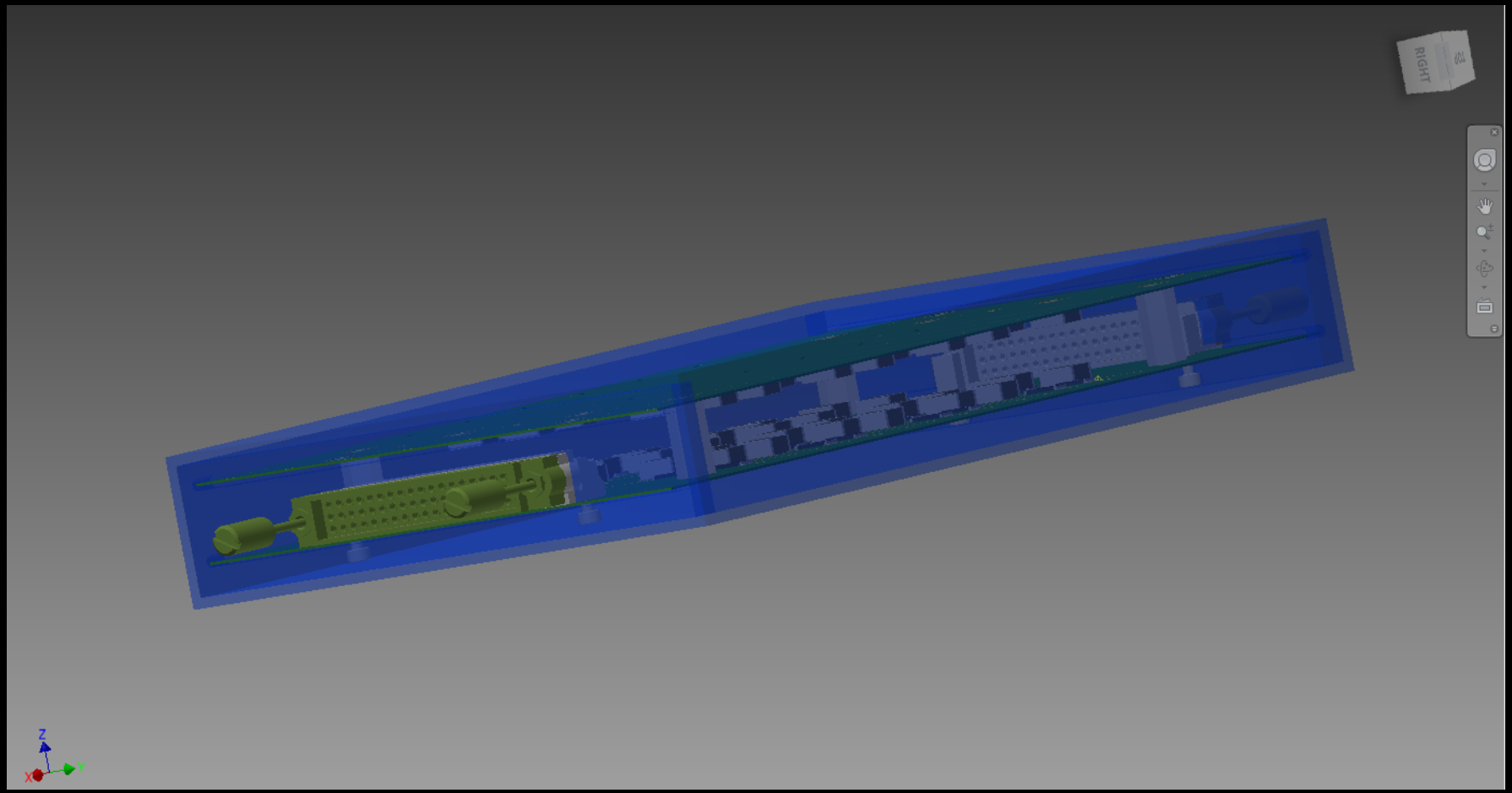
Filter module

Initial idea: two PCBs per module with filters



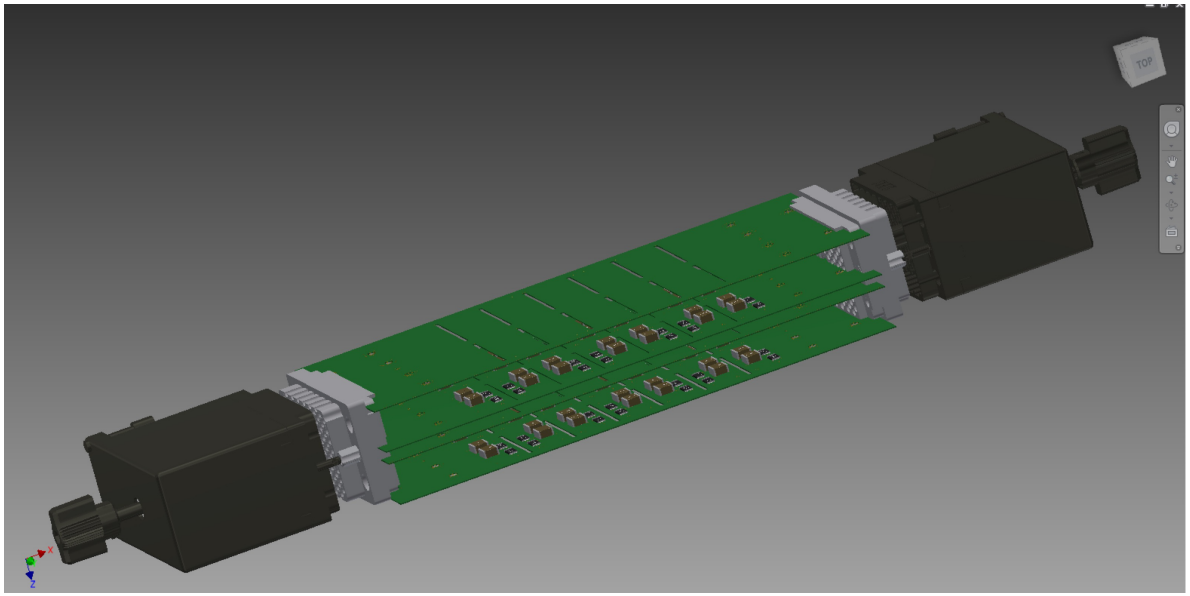
Filter module

Mechanically independent and insulated modules



Status of development

- Preparing to build initial “Prototype 0”
- Will produce 2 equipped boards for basic tests of insulation, mechanics, grounding, noise before end July
- I.e. 2 × 14 RC-RC filters mounted 1/RC = 450 Hz
  - Initial guess (to be corrected): R = 100 kΩ; C = 22 nF
  - To be replaced with final values later



Connectors

- Found potentially interesting connectors from Farnell:
  - http://www.farnell.com/datasheets/2916873.pdf
  - Unit price (120 pins, small quant.): 53 € plug; 45 € pins; 26 € connector
  - To be used for this prototype and replaced later

EDAC

516 SERIES

RACK AND PANEL CONNECTOR (PLUG AND RECEPTACLE)

Specifications:

Insulator Material	Diallyl Phthalate, Thermoplastic Polyester or Polycarbonate UL 94V- 0
Color	Green or Grey
Contact Material	Copper Alloy
Contact Plating	Gold Plating over Nickel over entire contact
Current Rating	8.5 Amperes
Contact Resistance	10 milliohms maximum
Withstanding Voltage	2000 VAC rms at sea level
Insulation Resistance	5000 Megaohms minimum
Operating Temp	-40°C to +125°C (Diallyl Phthalate Only)
Operating Temp	-40°C to +105°C
Insertion & Withdrawal Force	2 to 16 Oz (0.56 to 4.45N) per contact position