New PS East Area IRRAD – Installation and cabling

- **Outline**
  - Preliminary cables list
  - Feedbacks
  - Actual cables list
  - Test procedure
  - Installation in the control room
  - Cable holder chain
  - Connections inside irradiation facility

Preliminary cables list

- **Preliminary list (Previous RadWG)**
- **Number of cables per station** (probably 3/4 stations will be available)

NE48	4
Profibus	4
Optics Fibers	12
Ethernet connections	12
CB50 (remote reset)	10
CB50 (For SETs)	20
WorldFIP	4
MCA36 (Shielded Twisted Pairs)	4
Single phase (220 V)	10
3-Phase (16A – 400V)	4
Tyco Blue Ribbon (µcoax) or equivalent	4

- **Your feedback will be very useful (before the end of July – Perfect !)**

Feedbacks

- **Additionnal requests from users since last RadWG:**

Requests from Users	Number of cables	Group
Ok with the list		*TE/MPE (QPS)*
CBH50 (high Voltage)	12	*BE/BI (BLM)*
Unipolar Cable	4	*TE/EPC*
Cable for cooling (water)	2	*TE/EPC*
ND26 (Analog and Digital signal)	6	*TE/EPC*
RG58 (Coax cables 50 ohms)	18	*TE/EPC*
CA50 (Small coax 50 ohms)	20-30	*BE/RF*

- We got feedbacks from the TE/MPE, BE/BI, TE/EPC and BE/RF groups.

- **Other feedbacks ?**

Actual cables list

- **Only 1 station will be used**

Cable type	Number
NE48	4
Profibus	4
Optics fibers	12
Ethernet connections	12
CB50 (remote reset)	10
CB50 (For SETs)	20
WorldFIP	4
MCA36 (Multiconducteur - Torsadés - Blindés)	4
230V	10
Triphasé	4
Tyco Blue Ribbon (ucoax) or equivalent	4
CBH50 (High Voltage)	12
Unipolar cable	4
Cable for cooling (water)	2
ND26 (with DB25 connectors)	6
RG58 (with LEMO 00 connectors)	18
Small coax CA50	30

- **Cable standardization: CB50 – CA50 (CERN catalog) – RG58 (Not in CERN catalog)**
  - **Could we have only one CERN reference (CB50 for instance) ?**
  - **Possibility to use adapter COAX → LEMO and LEMO → COAX**

Test procedure

- 3 phases:

1) Preparation of the test:

- Connection of the test setup, installation of the material

2) Pre-test, dry run:

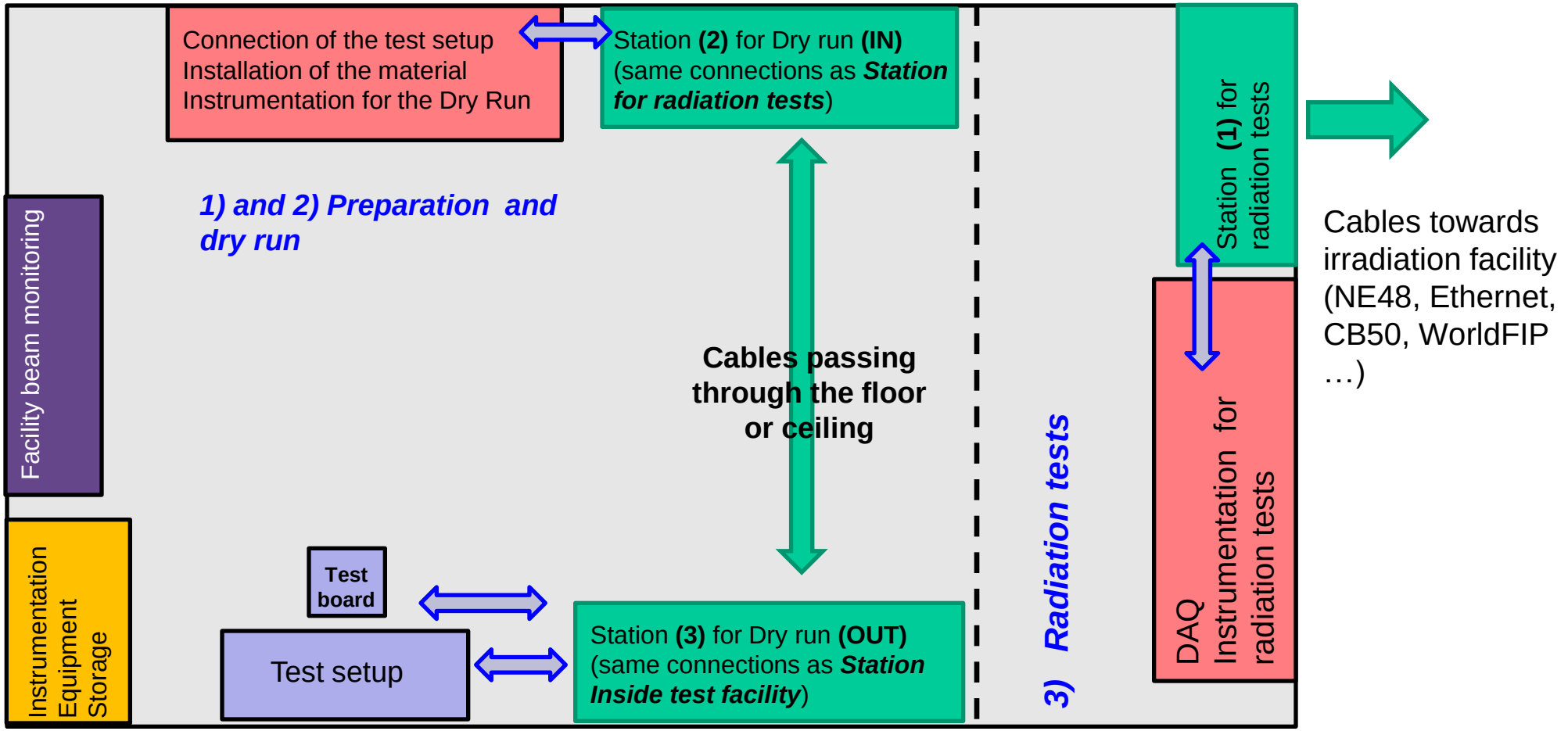
- Test that will be carried out in the control room to test all connections, data acquisition system and test setup → **Without irradiation**

3) Radiation test:

- Installation of the equipment in the PSEAIRRAD facility and radiation test

Installation in the control room - option 1 (1/2)

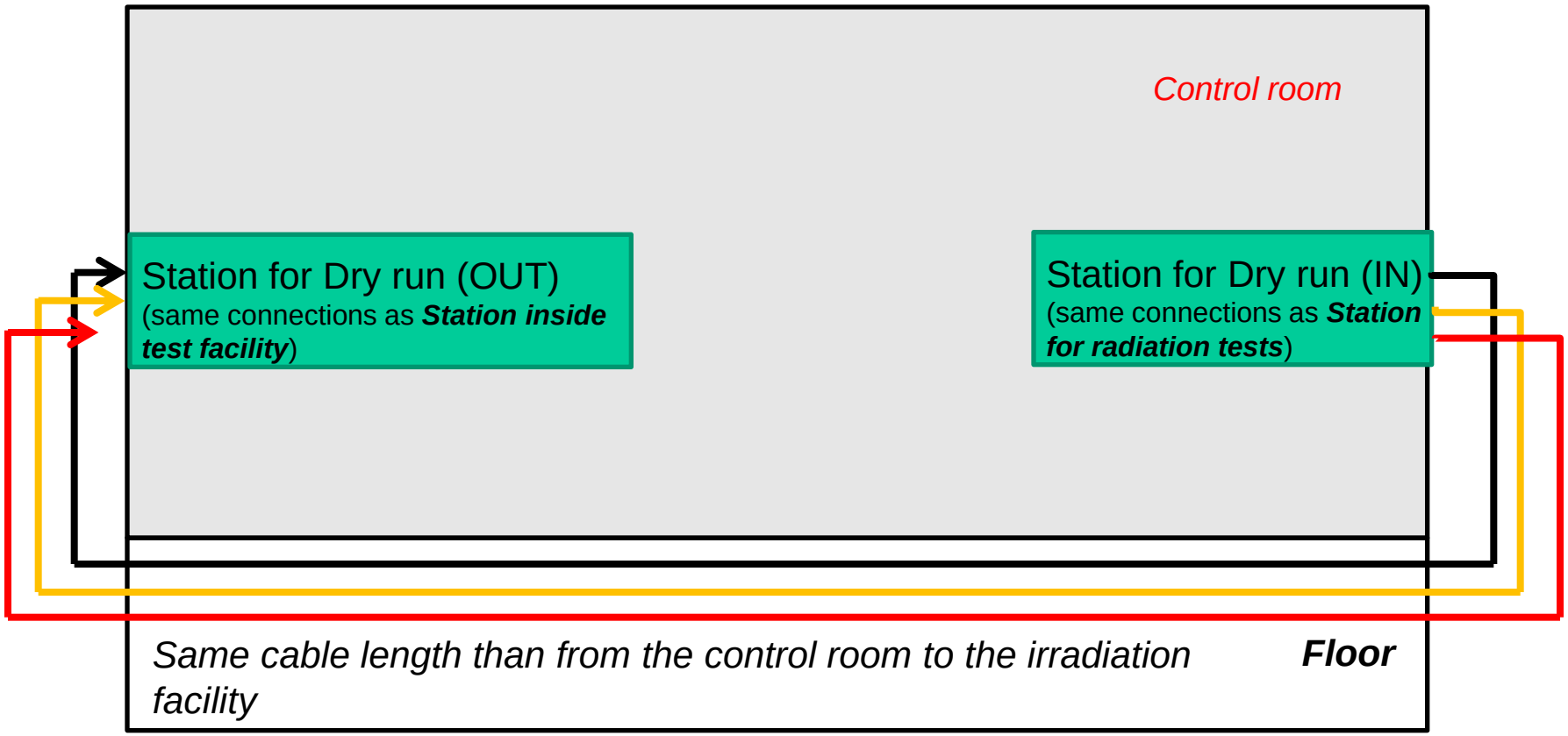
View from the TOP



- Cables passing through the floor → Same length than from Station (1) to the irradiation facility

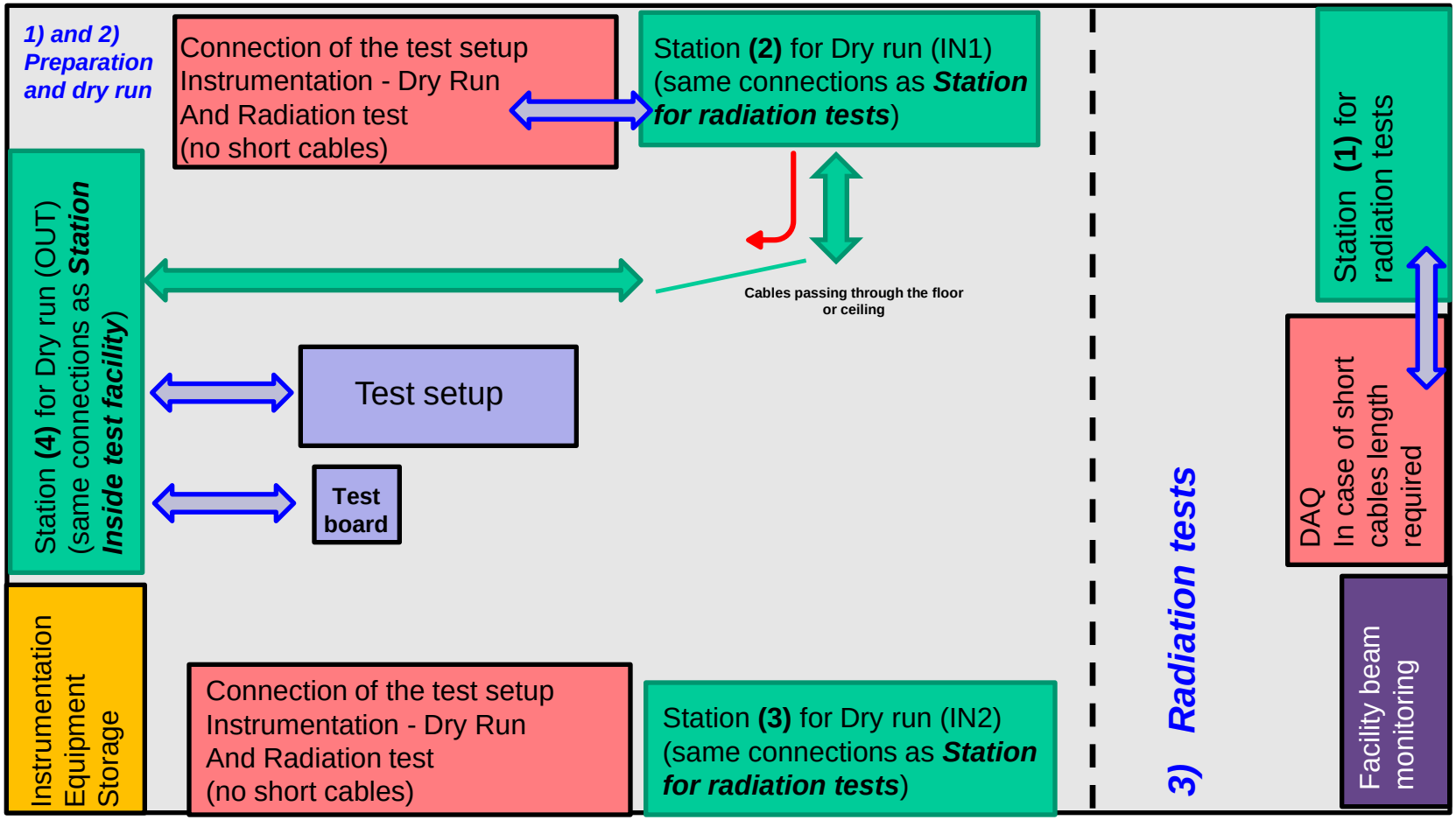
Installation in the control room - option 1 (2/2)

Side view



Installation in the control room - option 2 (1/4)

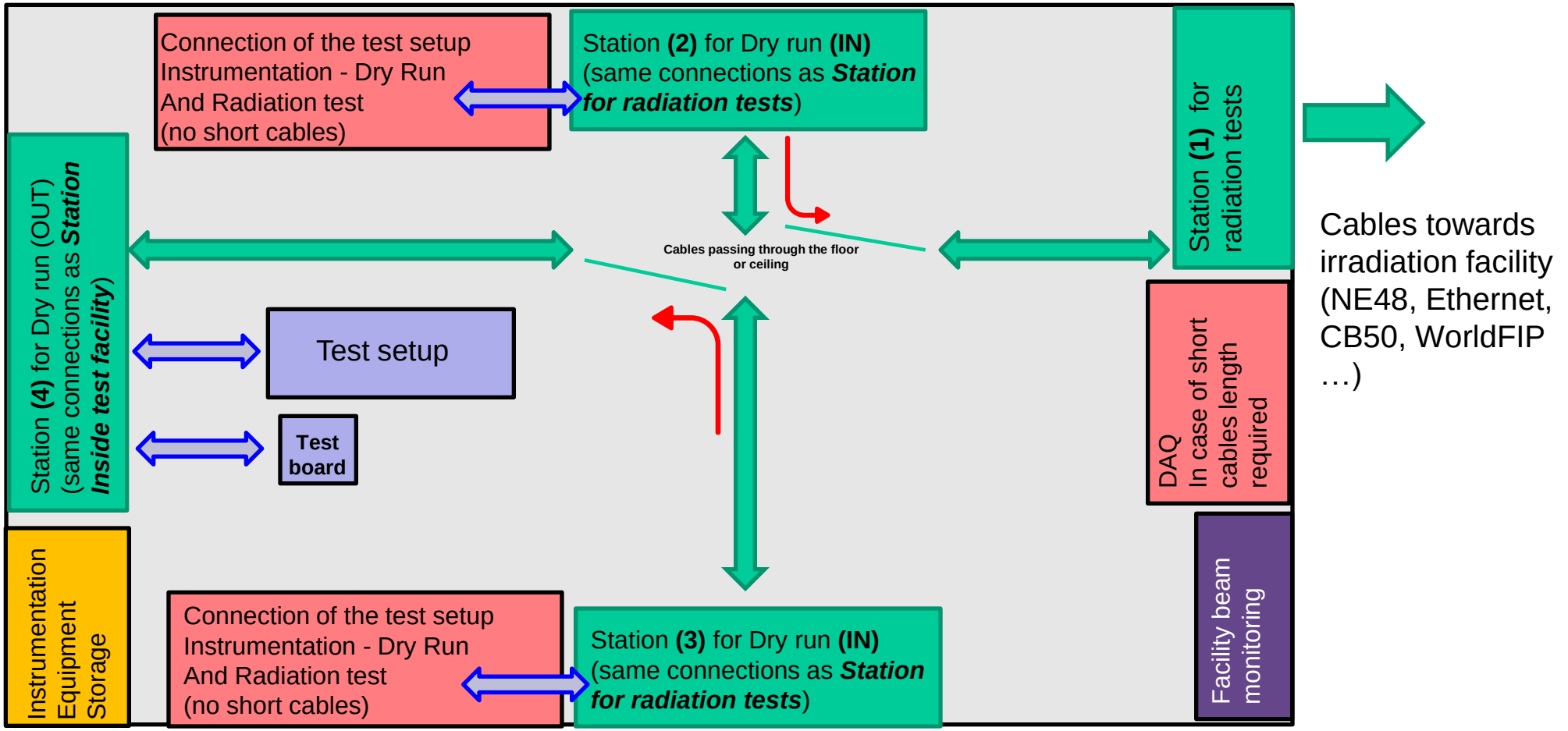
View from the TOP



- Cables length from Station (2 or 3) to Station 4 = Cables length from Station (2 or 3) to irradiation facility

Installation in the control room - option 2 (2/4)

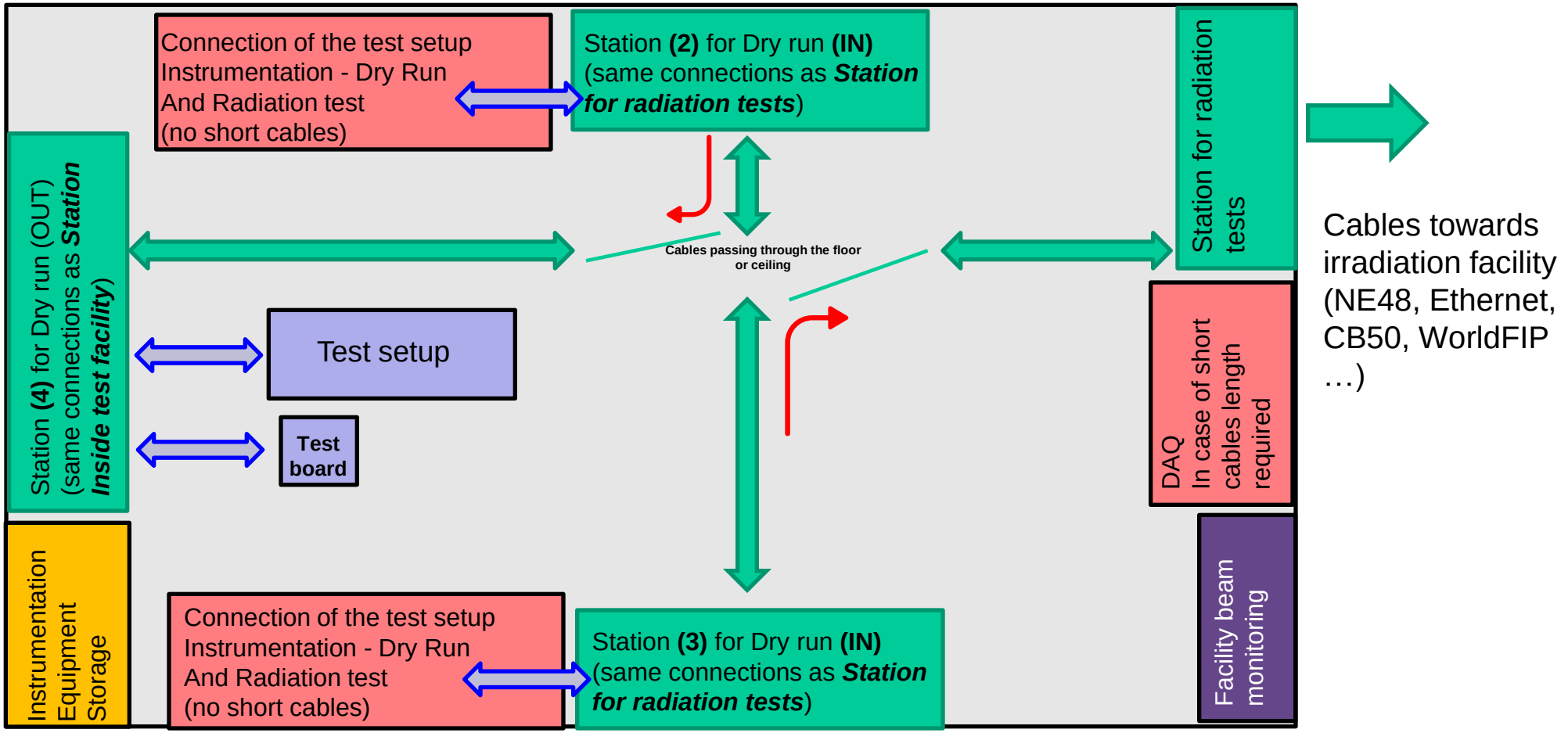
View from the TOP



- Cables length from Station (2 or 3) to Station 4 = Cables length from Station (2 or 3) to irradiation facility

Installation in the control room - option 2 (3/4)

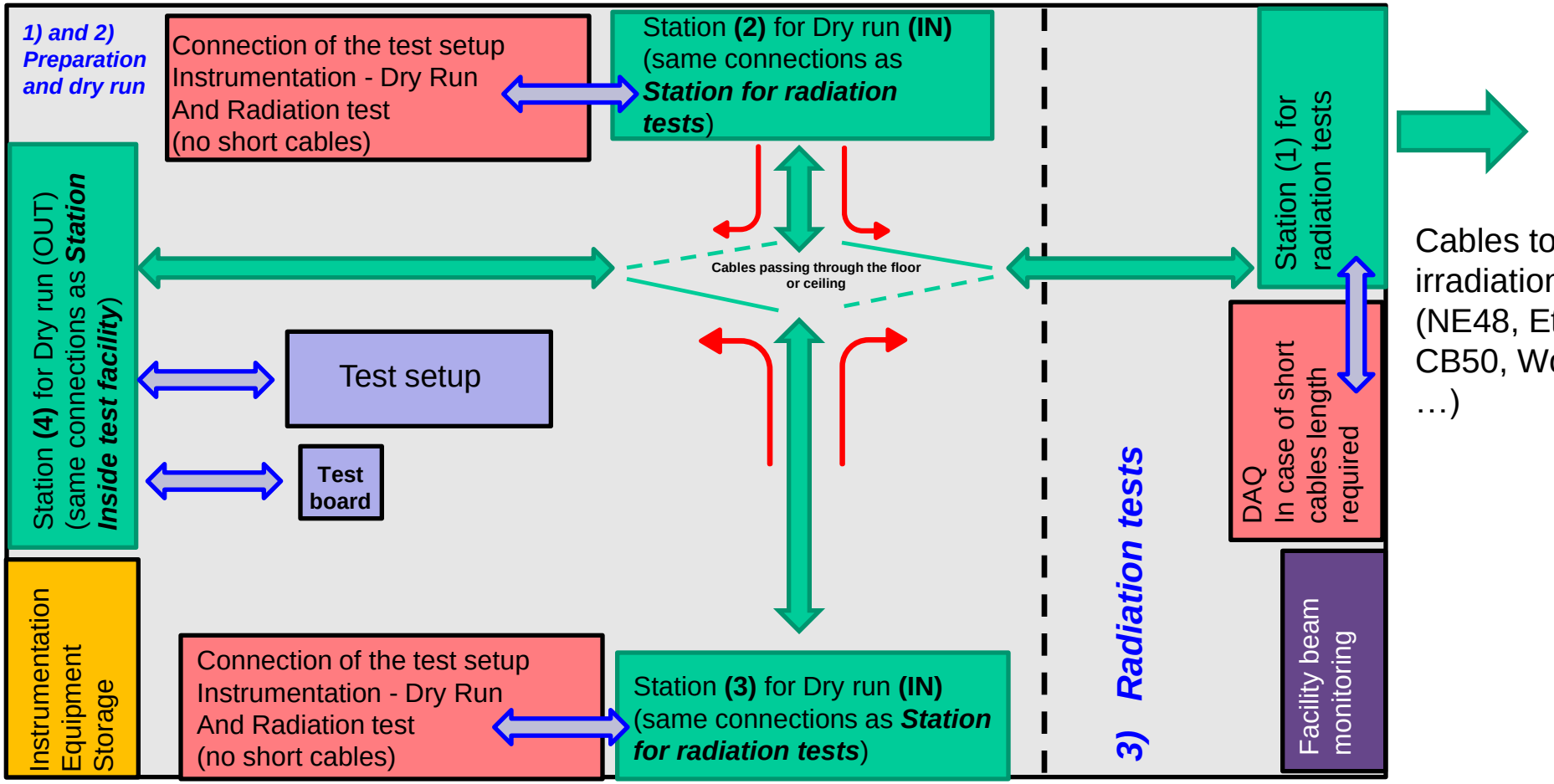
View from the TOP



- Cables length from Station (2 or 3) to Station 4 = Cables length from Station (2 or 3) to irradiation facility

Installation in the control room - option 2 (4/4)

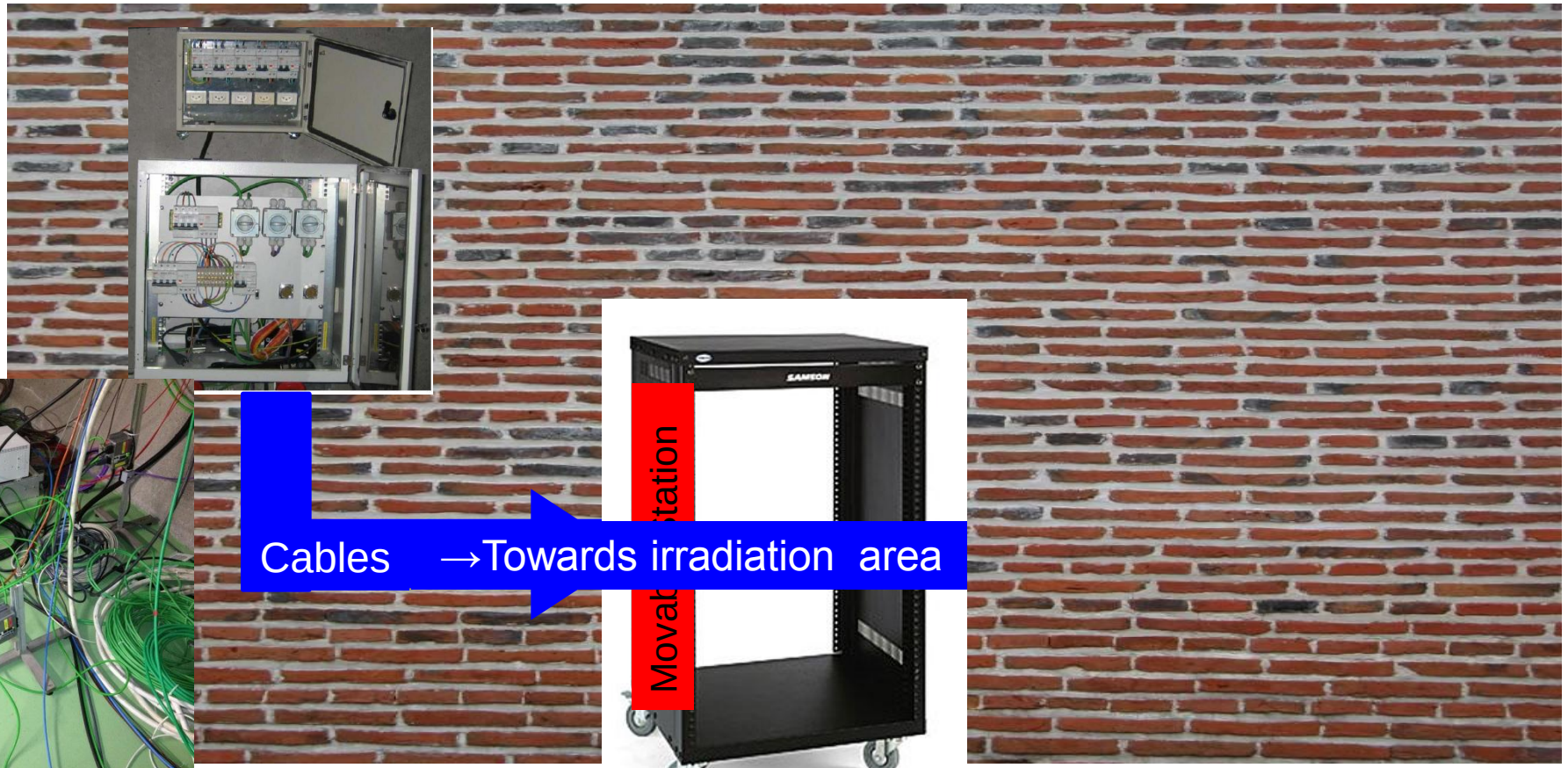
View from the TOP



- Cables length from Station (1 or 2) to Station 4 = Cables length from Station (1or 2) to irradiation facility

Movable station

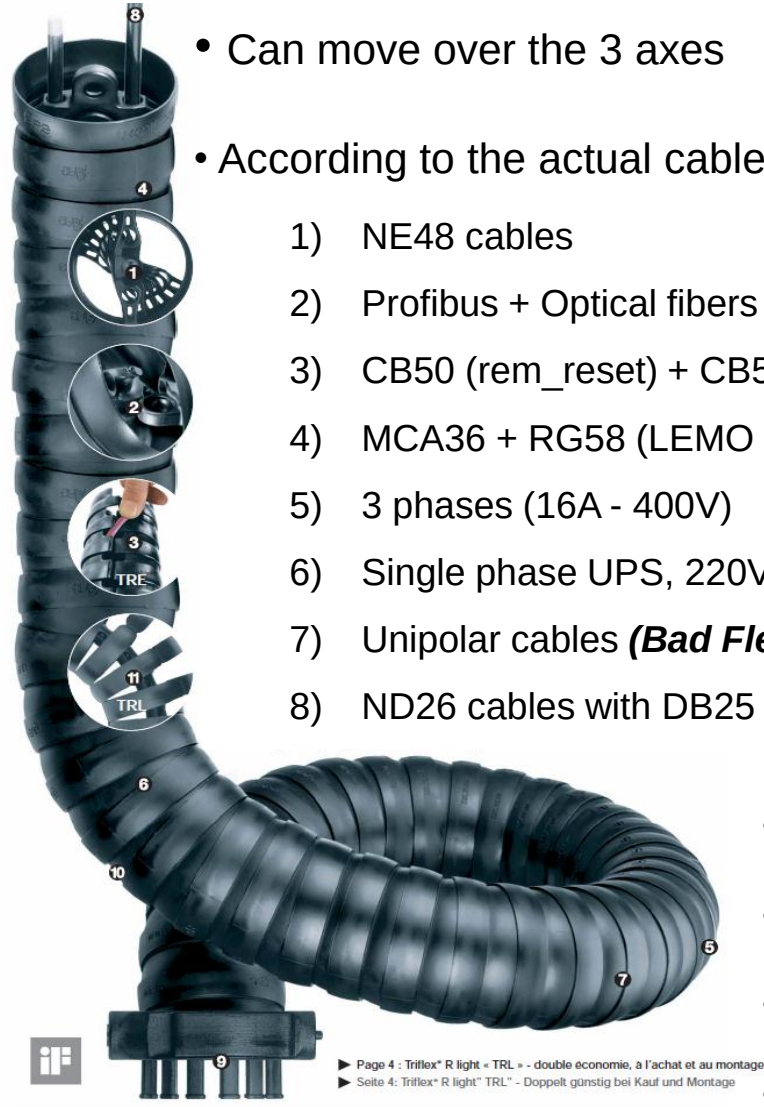
• The idea is to attach the station to the rack that will enter in the irradiation zone



• We don't want that

• **Solution ?**

Cable holder chain



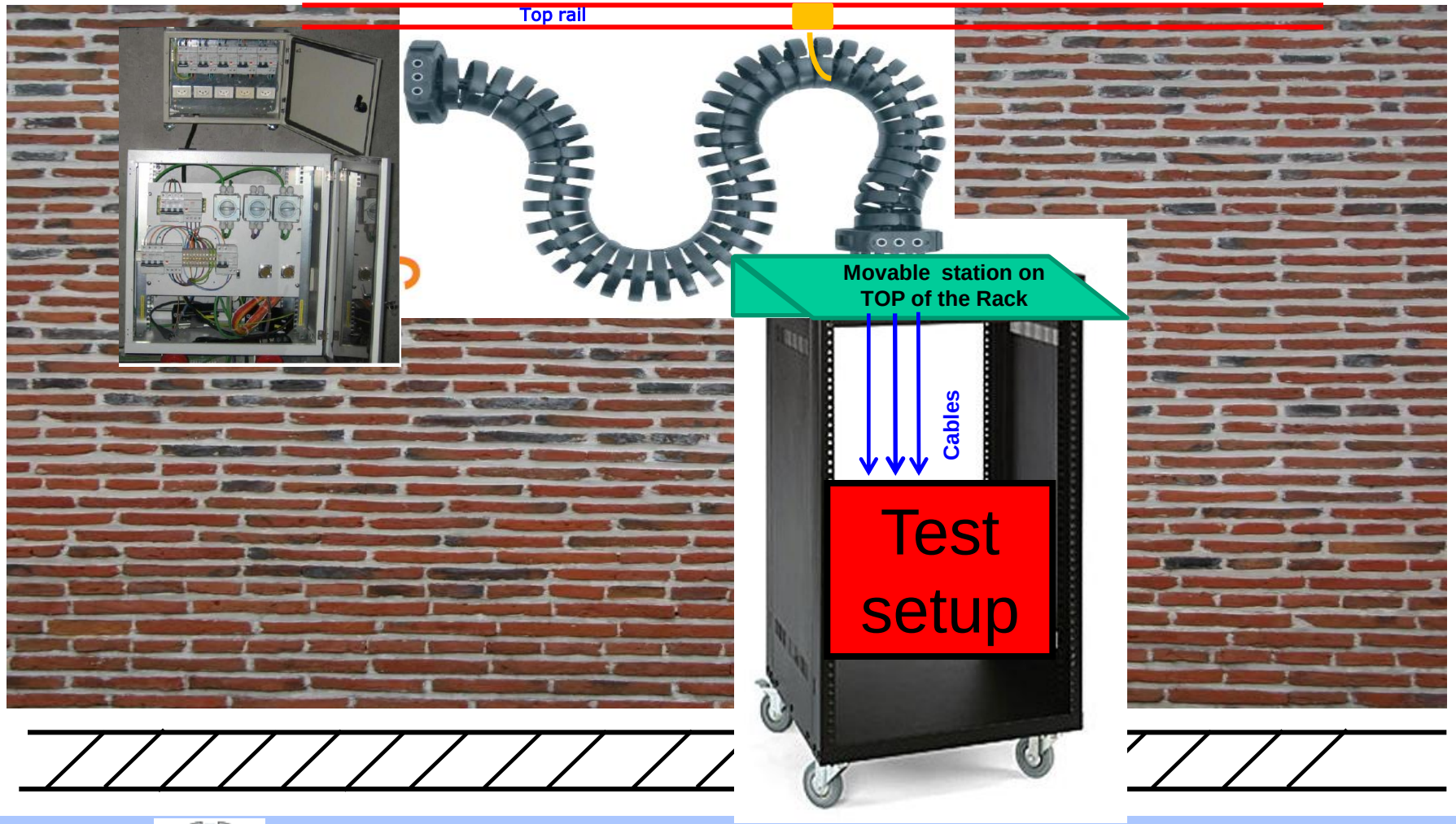
- Can move over the 3 axes
- According to the actual cable list, we will need 8 cable holder chains

1) NE48 cables
2) Profibus + Optical fibers + Ethernet connection + WorldFIP
3) CB50 (rem_reset) + CB50 (SETs) + Tyco Blue Ribbon (ucoax) or equivalent
4) MCA36 + RG58 (LEMO 00 connector) + Small coax (CA50)
5) 3 phases (16A - 400V)
6) Single phase UPS, 220V
7) Unipolar cables ***(Bad Flexibility)***
8) ND26 cables with DB25 connectors ***(Bad Flexibility)***

- Diameter :108 mm
- Length: 8 meters
- Total volume for the 8 : 0.6 m^3
- With safety margin of 5: 3 m^3 (at least)

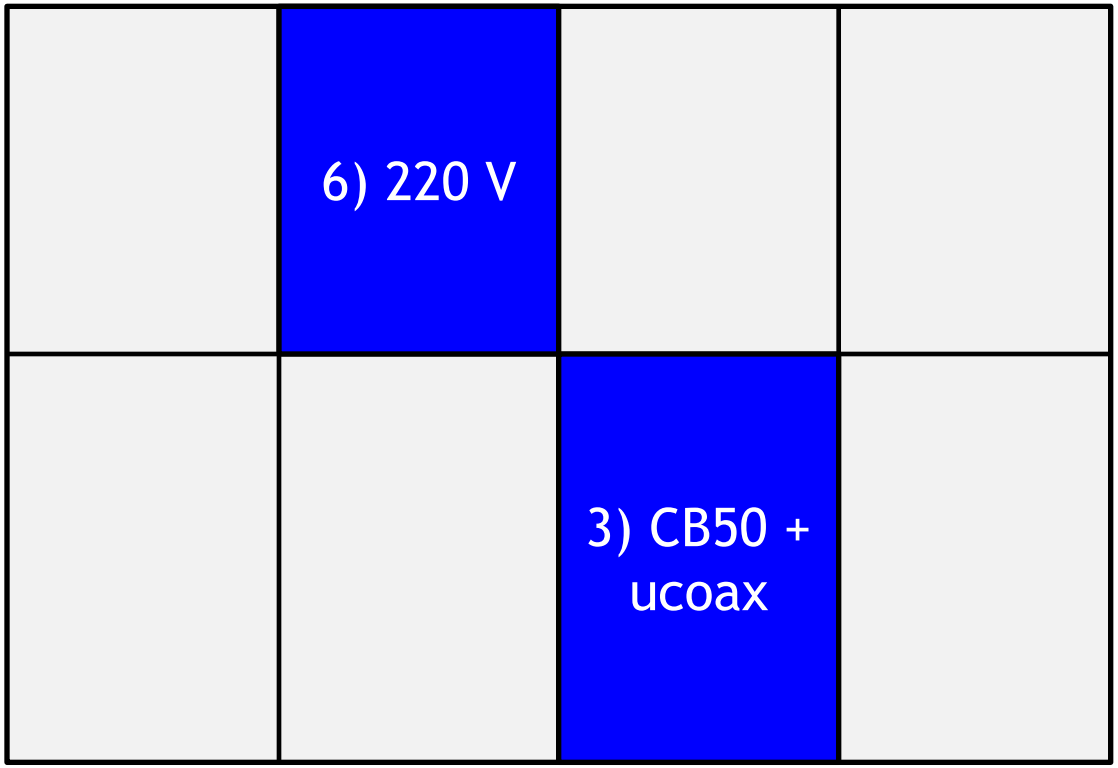
Solution

- Movable station could be fixed to the Top of the rack
- Connection to the test setup will be done from the movable station



Movable Station (Example 1)

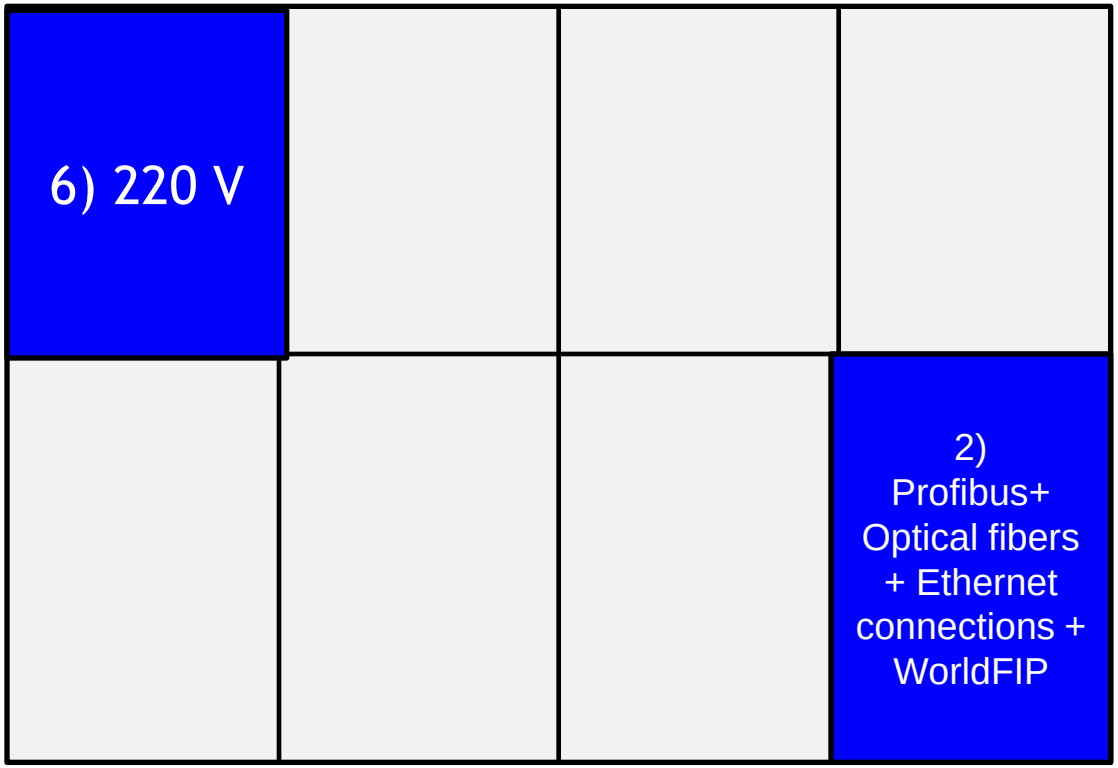
TOP view
Only required cables for the test



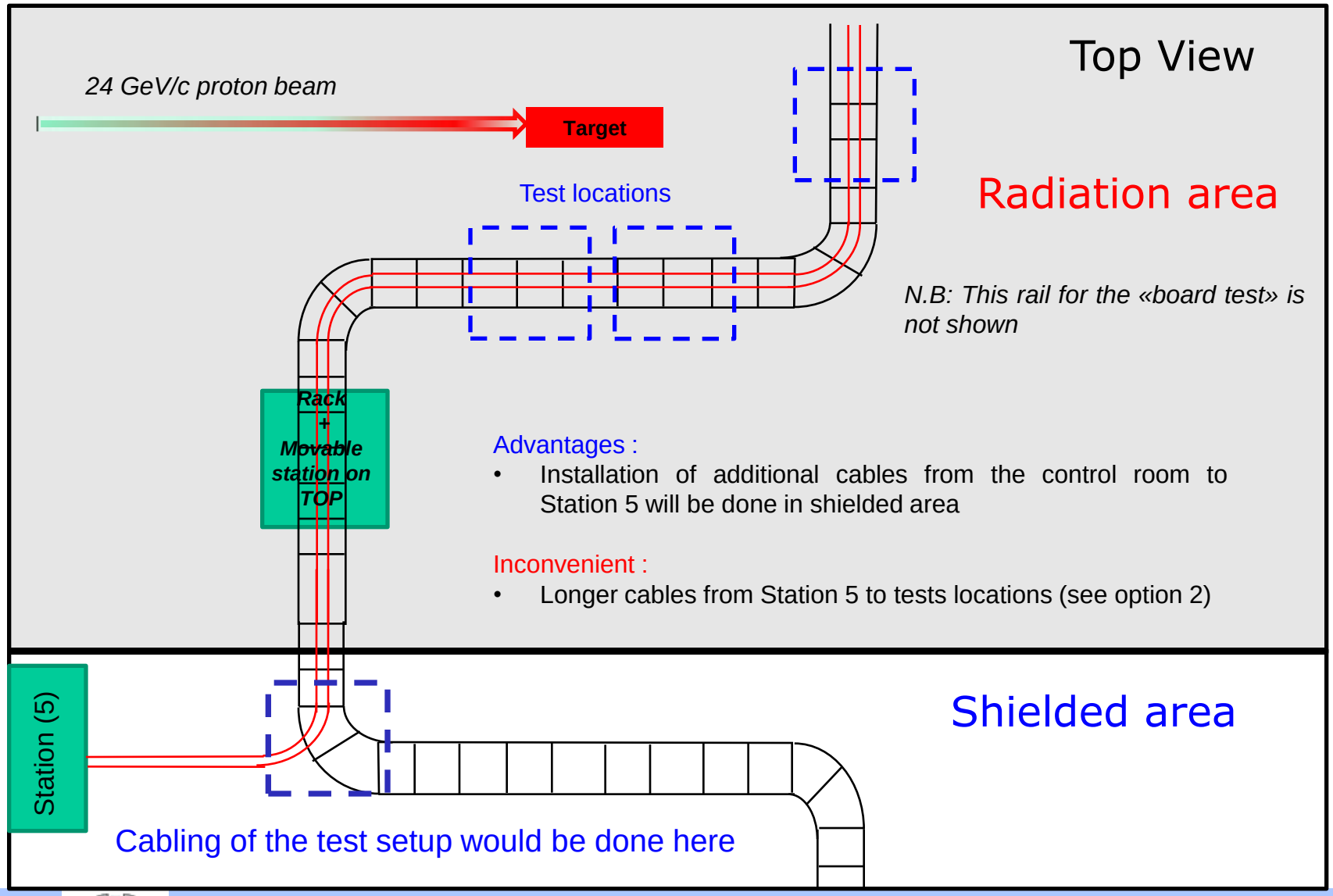
Movable Station (Example 2)

TOP view

Only required cables for the test



Connections inside irradiation facility – option 1



Connections inside irradiation facility – option 2