Detector Load transferring to the transport configuration

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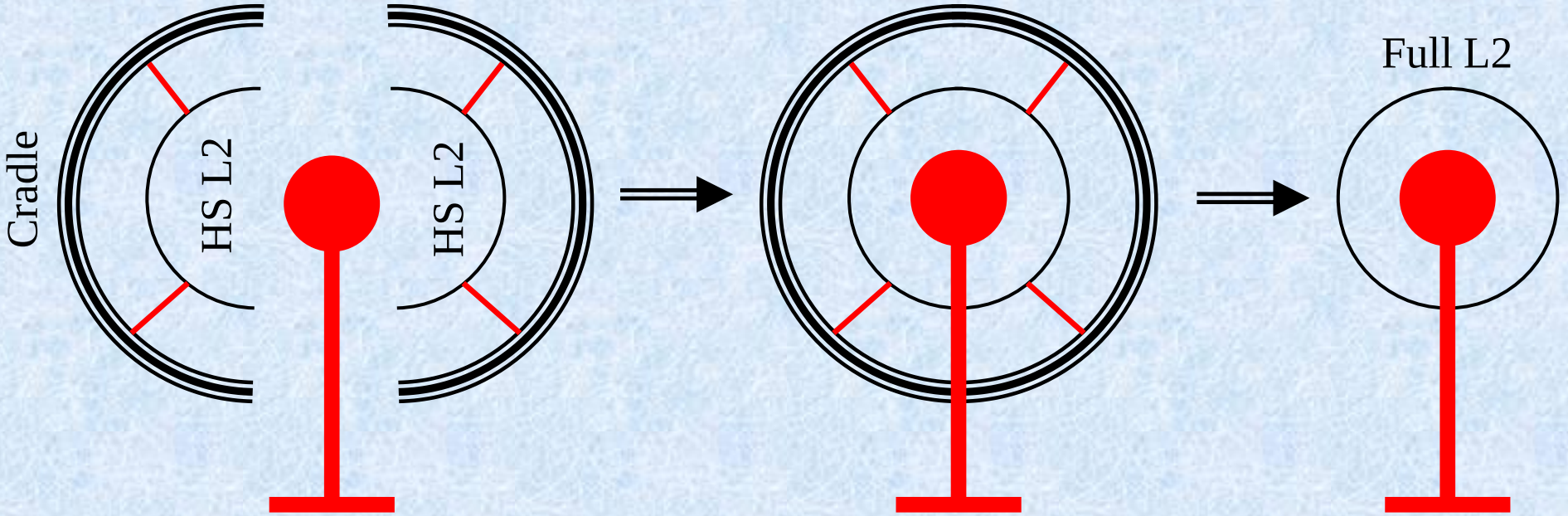
Outline

- In some extends we are actually in a phase where some reverse-engineering is required to finalize the tools and set the procedures.
- Some integrations aspects are not clear yet and those should be baselined for the GM review.
- One of them is related to the configuration shipment of the two OEC's to CERN.
- Also testing configurations of the full layer(s) must be finalized.

- Take the following slides as the "status of understanding" and proposals to coherently reach a common approach.

Integrating, testing and shipping [HS ➔ layer]

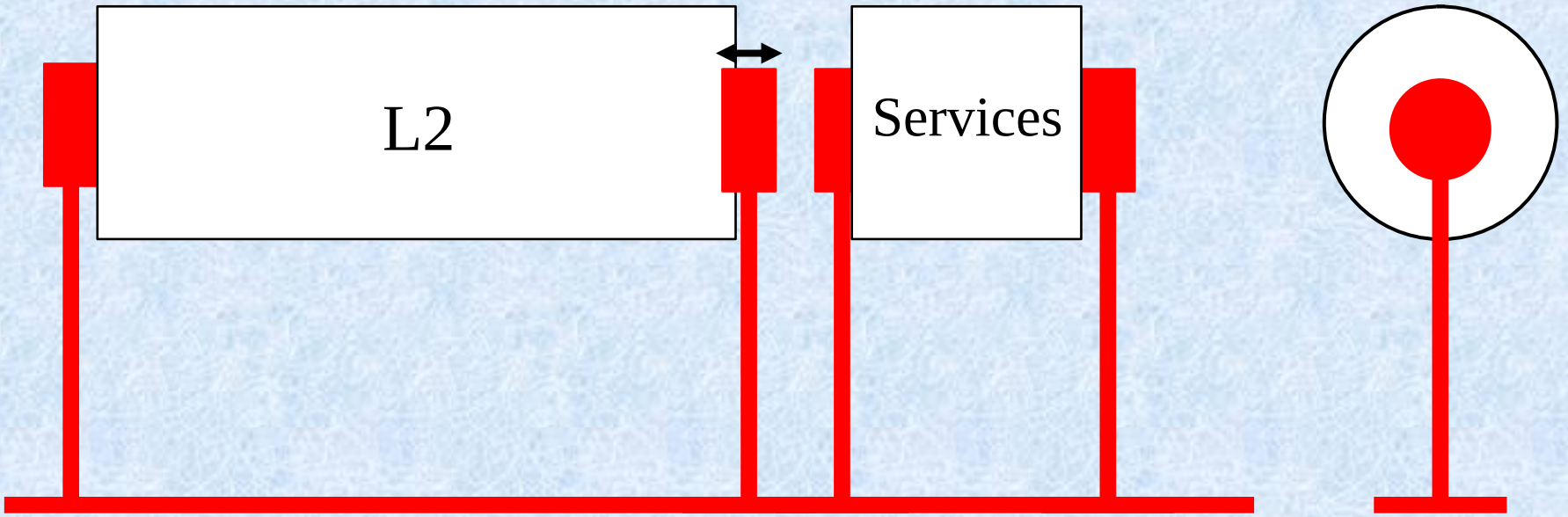
- The support scheme of the parts of the detectors varies vs. the integration phases.
- We go from supporting the HalfShell from an external cradle during the Half Rings loading…
- … to the layer clamping where the load is transferred from the cradle to the axial support on the integration tool.



Integrating, testing and shipping [HS ➔ layer] (2)

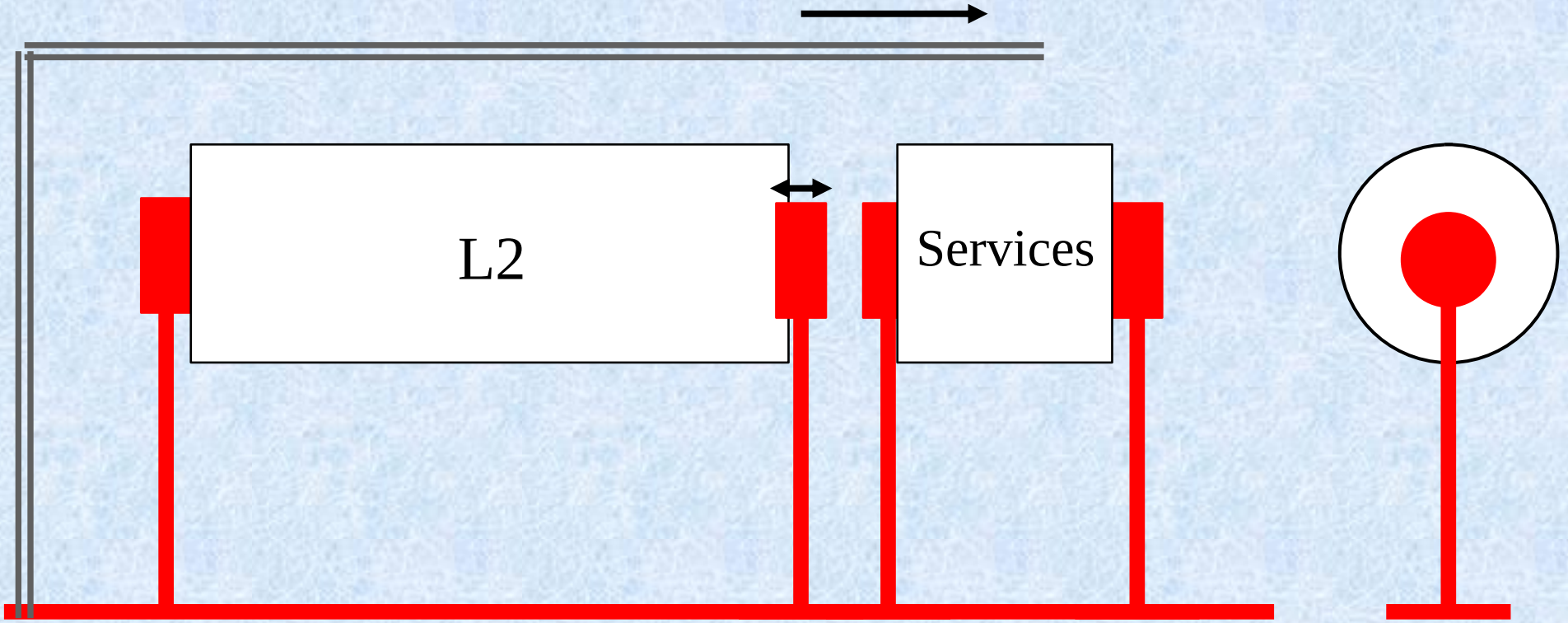
- One side of the support of the detector let the flange to slide axially and can take the contraction of the basement during the cool down.

- For testing and cycling we have, at this point, two options:



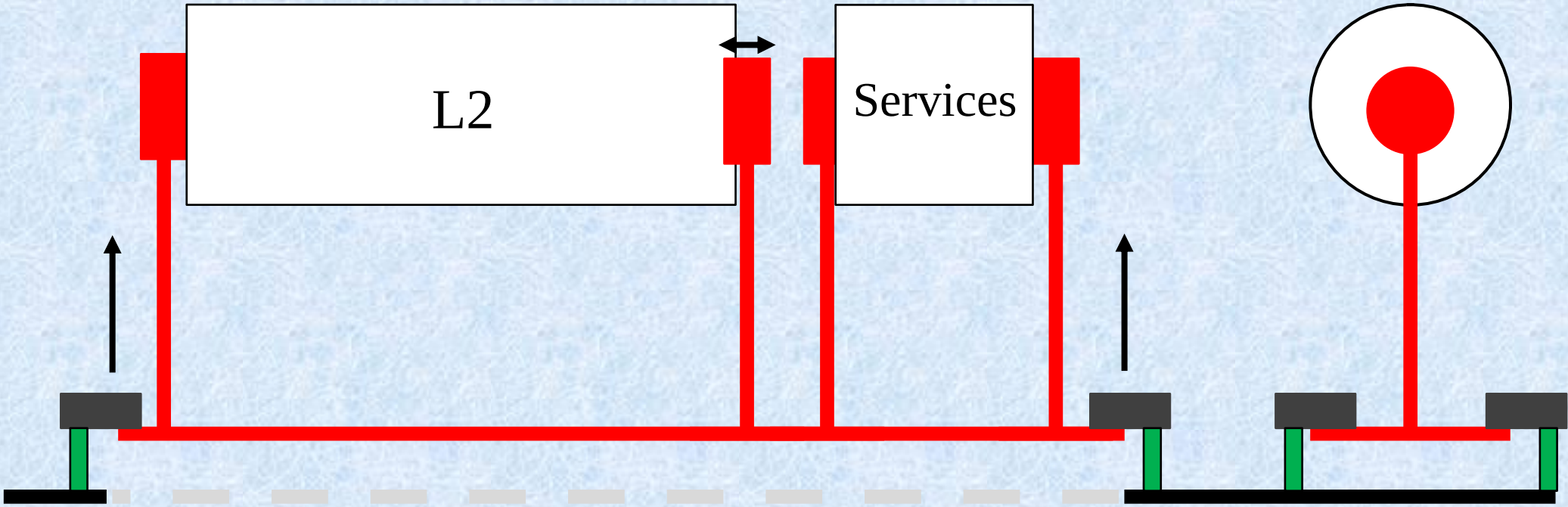
Integrating, testing and shipping [HS ➔ layer] (2)

- Option 1
  - Drop the thermal cycling on the full L2 and slide over the detector a dry box and do the testing
  - Thermal cycling is done on the HS assembly only.



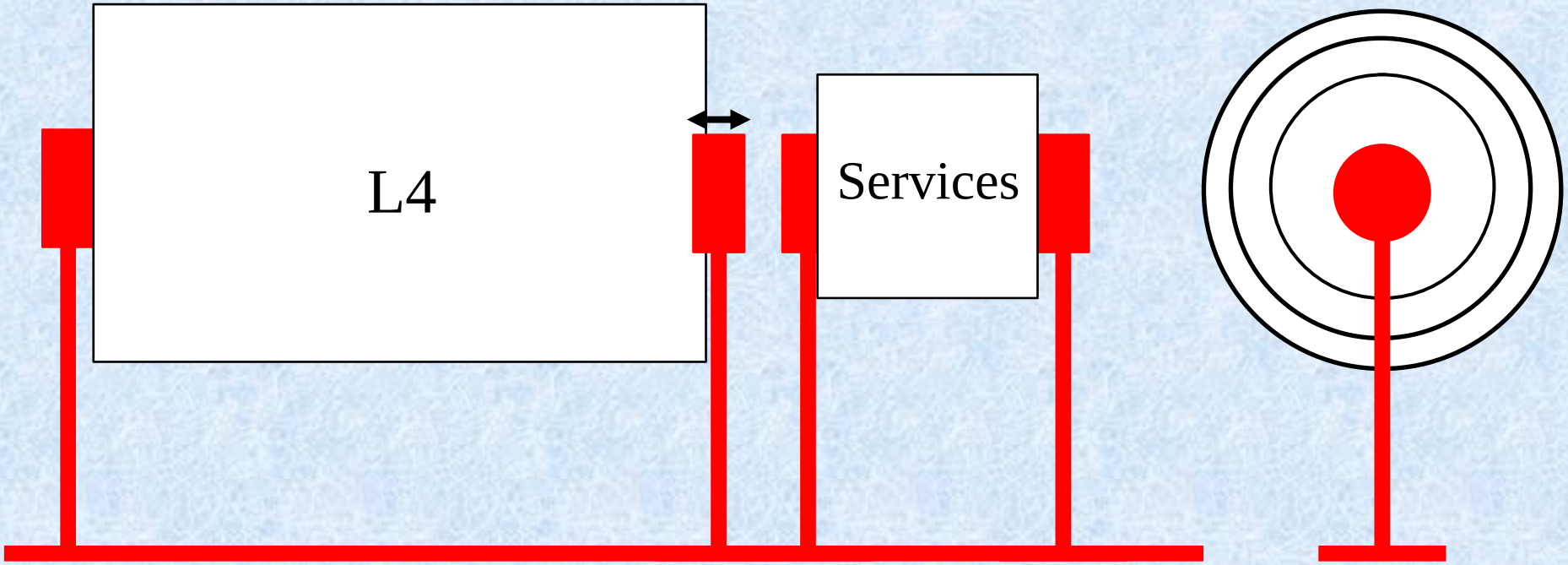
Integrating, testing and shipping [HS ➔ layer] (2)

- Option 1
  - Drop the thermal cycling on the full L2 and slide over the detector a dry box and do the testing
- Option 2
  - Thermal cycling is done on the Full Shell too. The detector can be jacked-up via spring loaded wheels and the entire layer is moved to the climate chamber for cycling and testing carrying the bottom panel of the integration tool



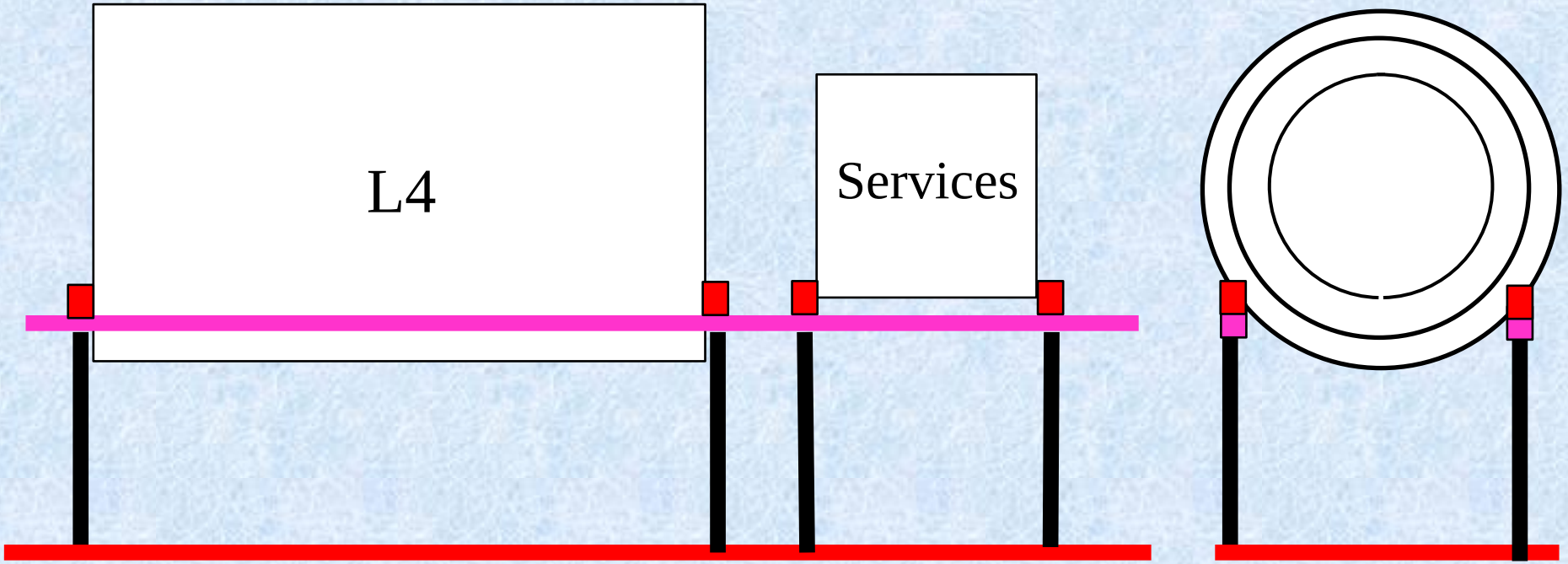
Shipping configuration

- Regardless the testing paradigm for each full layer, at a certain point the detector should be configured for shipping
- I would say that the detector should be supported in its *natural* configuration during the shipping. I.e. off its supports points to the rail system. This also reduce the workload in SR1.
- So, in the clear room we should be going from this configuration to…



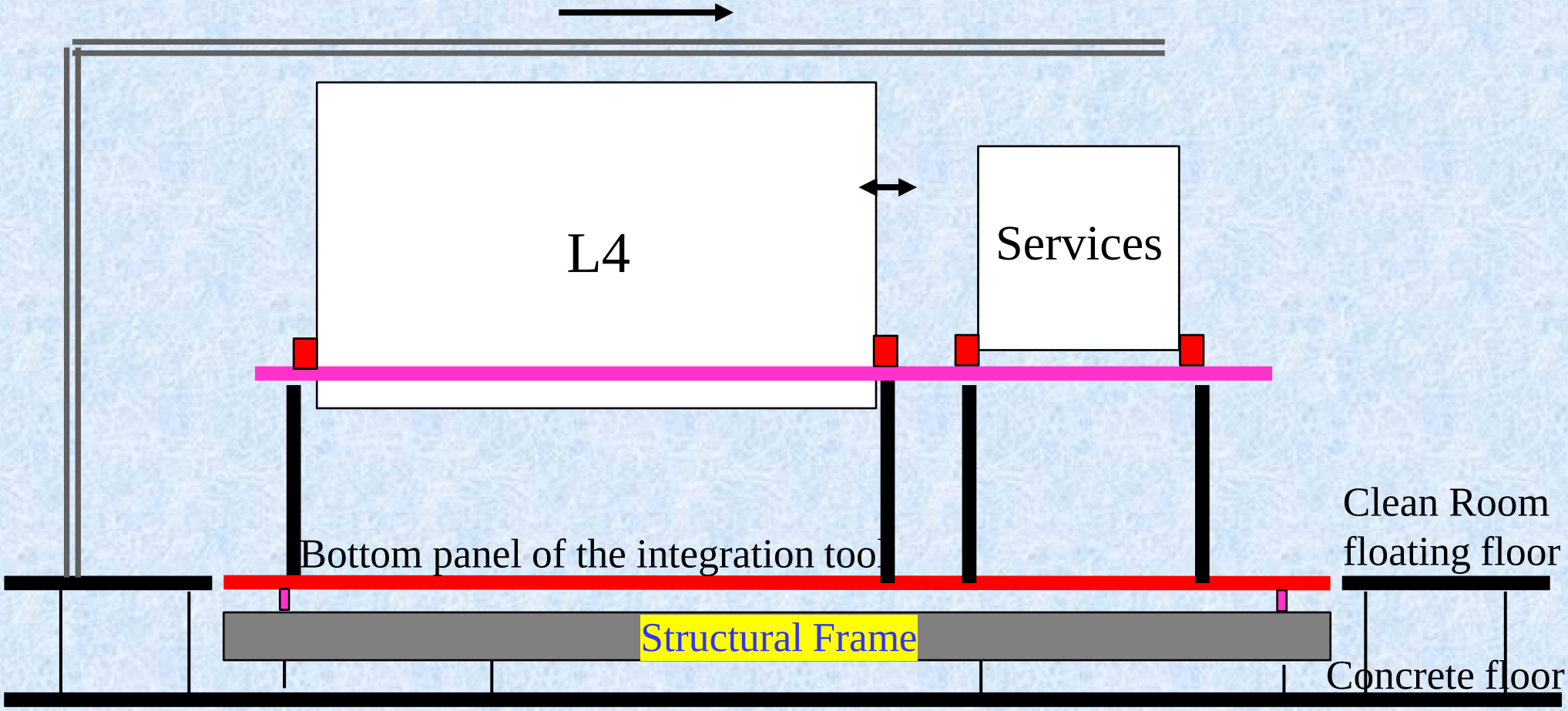
Shipping configuration –Load Transfer-

- … this one.
- Sliders mounts and the rail system must be installed, and load must be transferred from the axial flange to the rails.
- However, regardless the discussions I had with people here working on the integration, it is unclear how this can be safely done.
  - I think we should put some effort to baseline the process for the GM review.



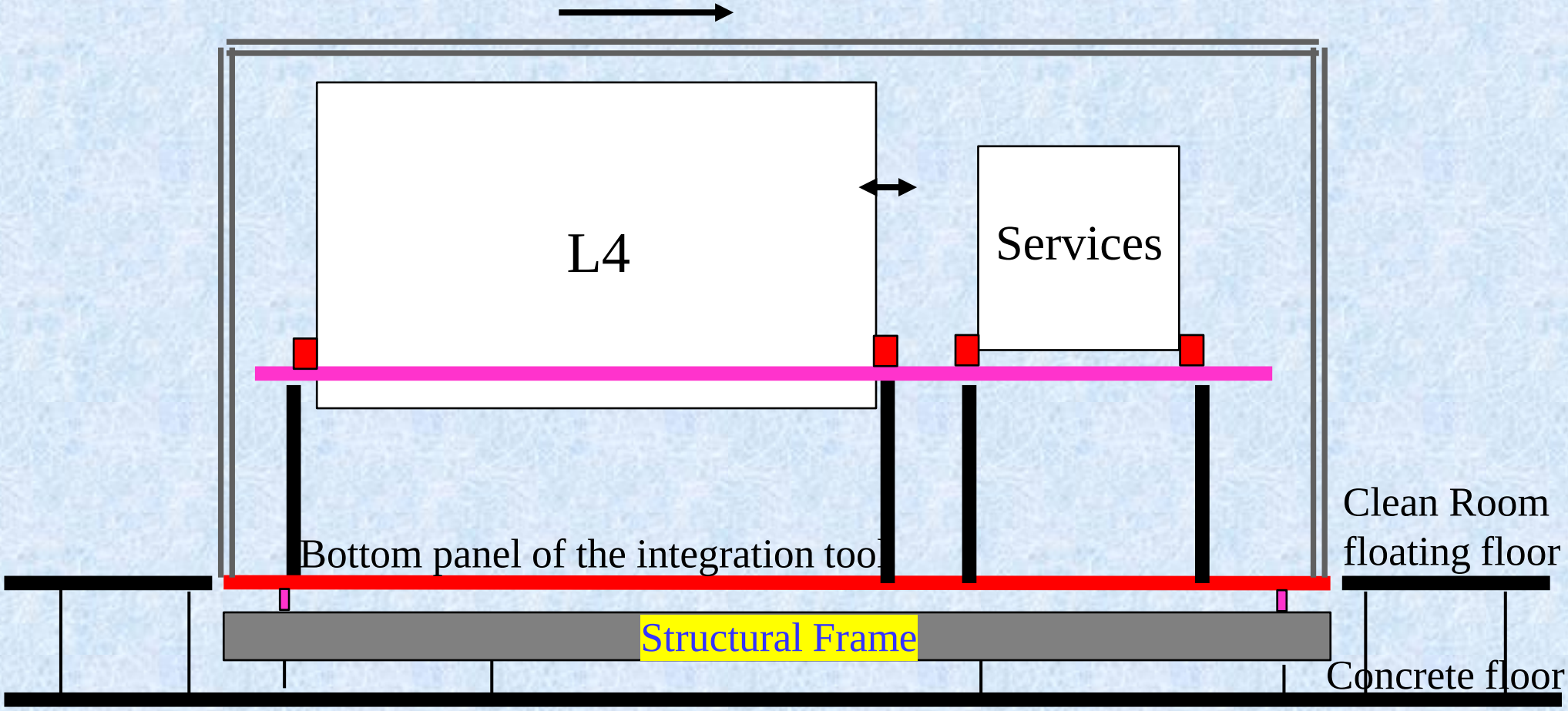
Adding the shipping box

- The shipping box share the integration tool basement.
- I suggest to slide the top structure from the side.



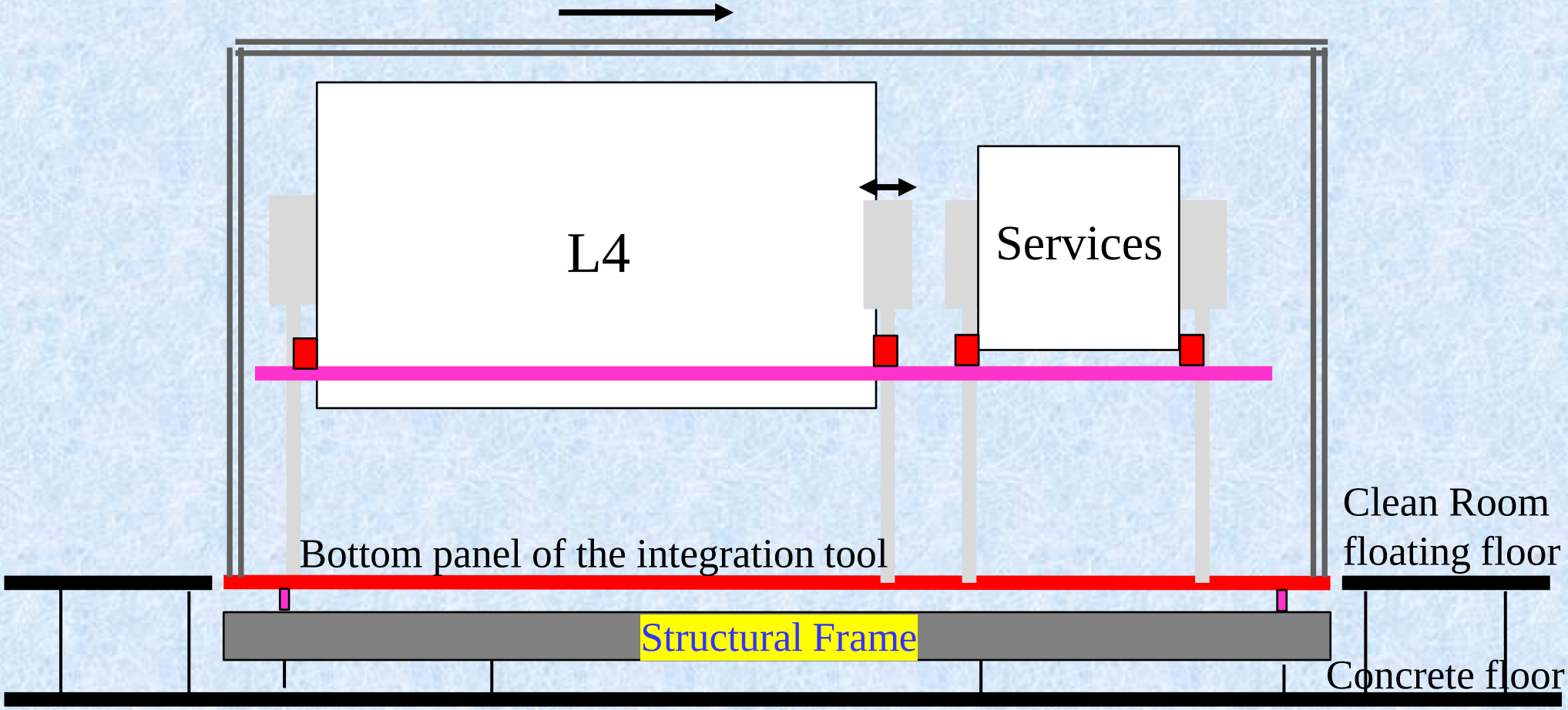
Adding the shipping box (2)

- And work around the detector to add the last front panel only



Below the shipping box

- A structural frame is foreseen below the botton panel of the box.
- It is there since the first phases of the integration and it rests rigidly on the concrete floor



Configuration for exiting the Clean Room

- The spring and dumpers between the bottom panel of the box and the structural frame are activated for the transport by removing the locks.
- Spring loaded wheels are also mounted on the structural frame and jacked down unto the concrete floor
- To take the detector out of the Clean Room part of the floating floor must be removed.