

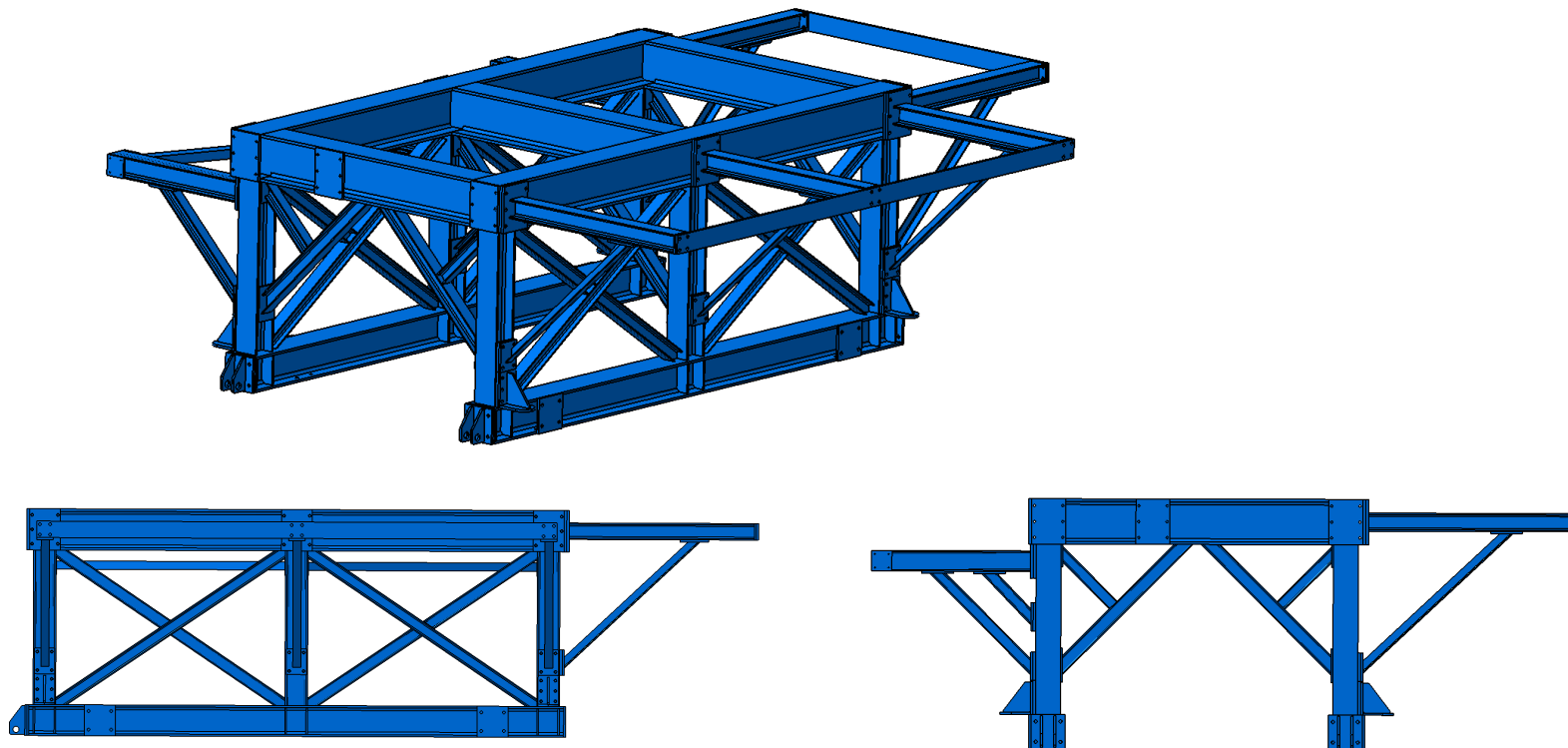
## Suggestion for design and movement of the Forward platform

## Task:

- It has to carry the forward-detectors
- the Forward-platform has to move from the maintenance position to the experimental area
- the total weight of the platform with detectors and components will be approximately 110 tons
- the precision regarding to the final position should be in the range of 2-4mm

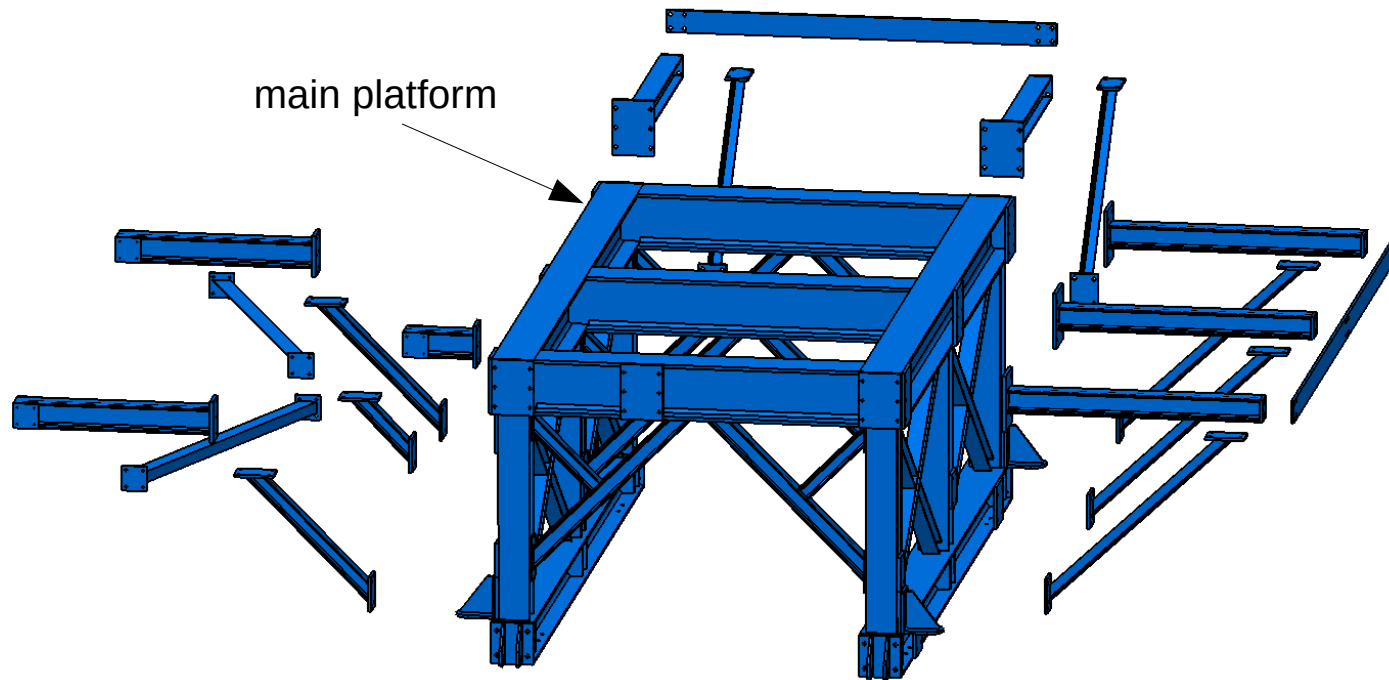
## Design of the platform:

The following pictures show a revised Design of the platform



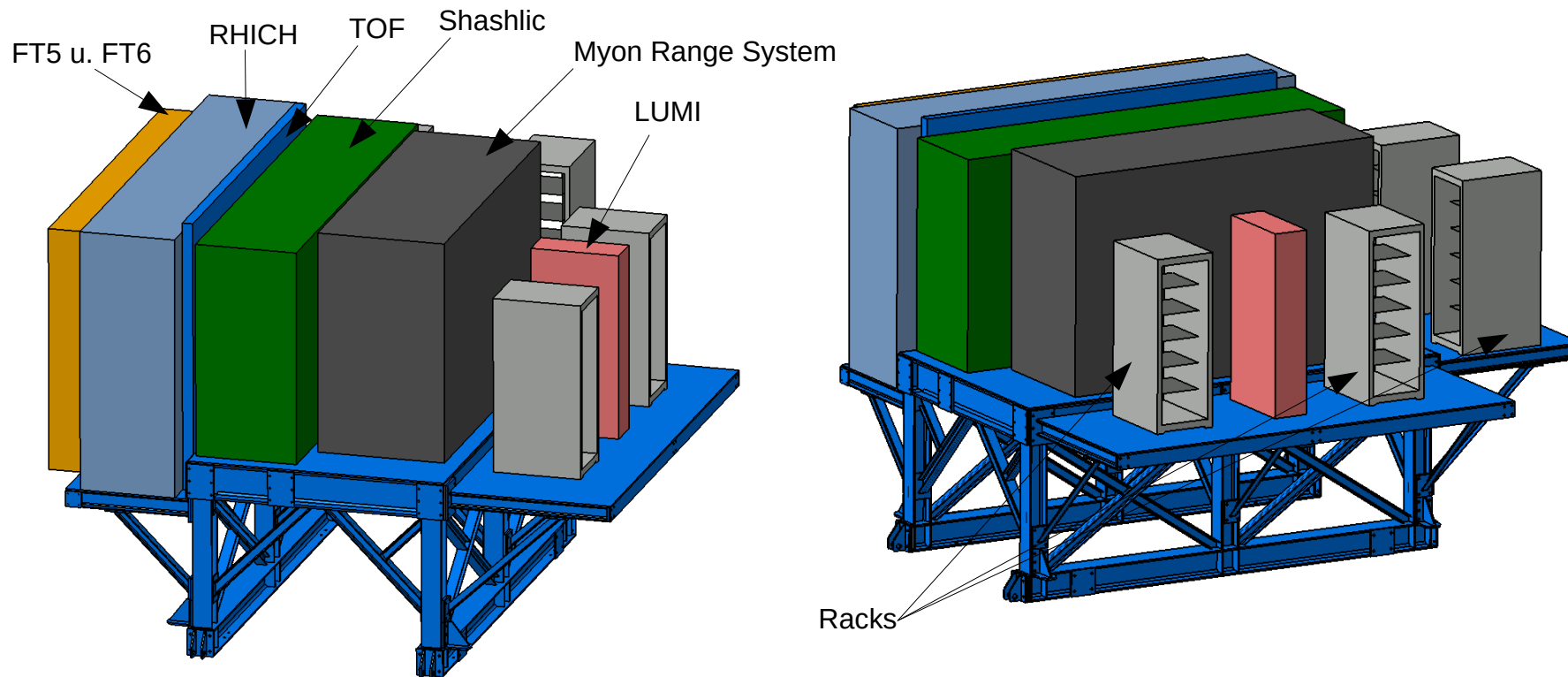
## Design of the platform:

The platform is divided into a welded main platform and several screwed segments



## Design of the platform:

The detectors in this presentation are only shown as placeholders, the exact dimensions of the platform have to be adjusted when the designs of the detectors are final



# 1. Concept

## Suggested solution for moving:

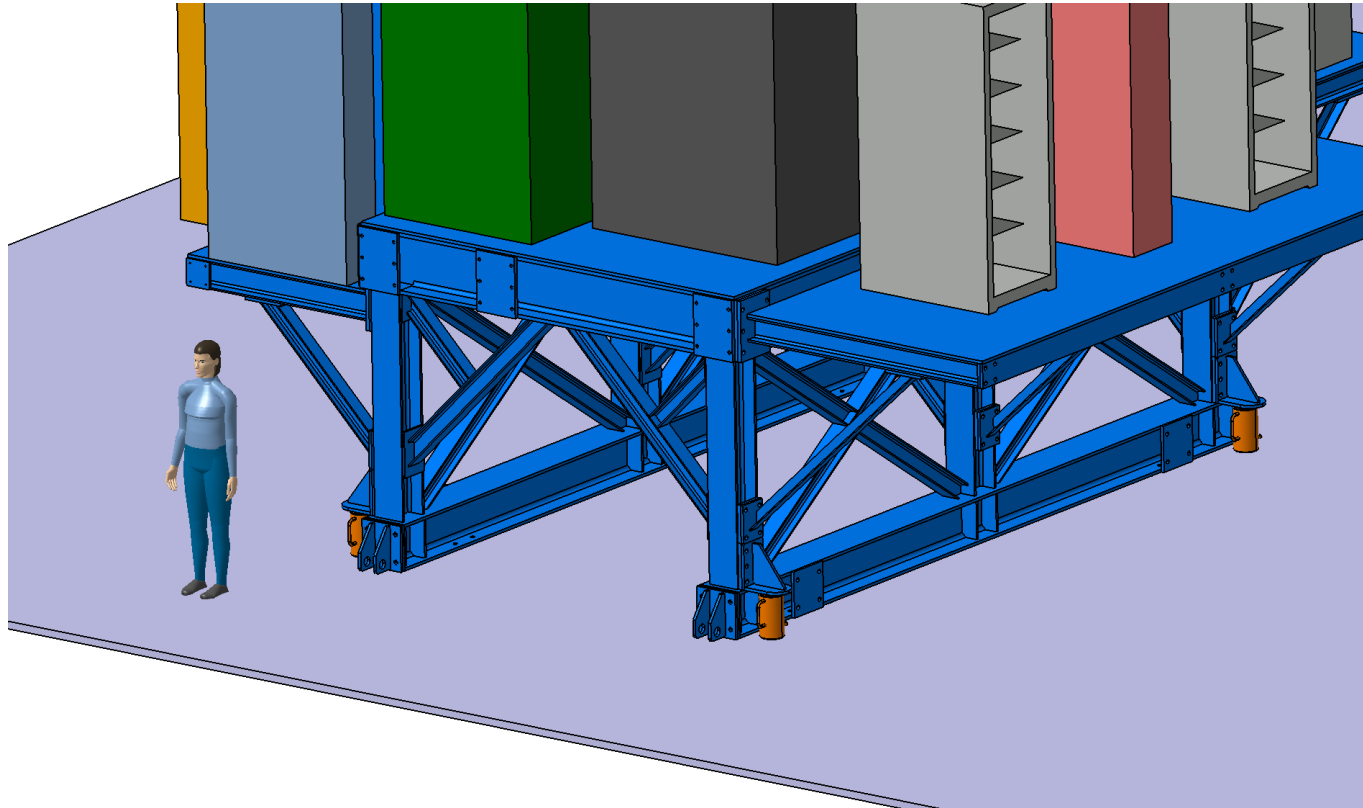
Moving the platform by a hydraulic skidding system, for example from the Company Holmatro



# 1. Concept

## Suggested solution for moving:

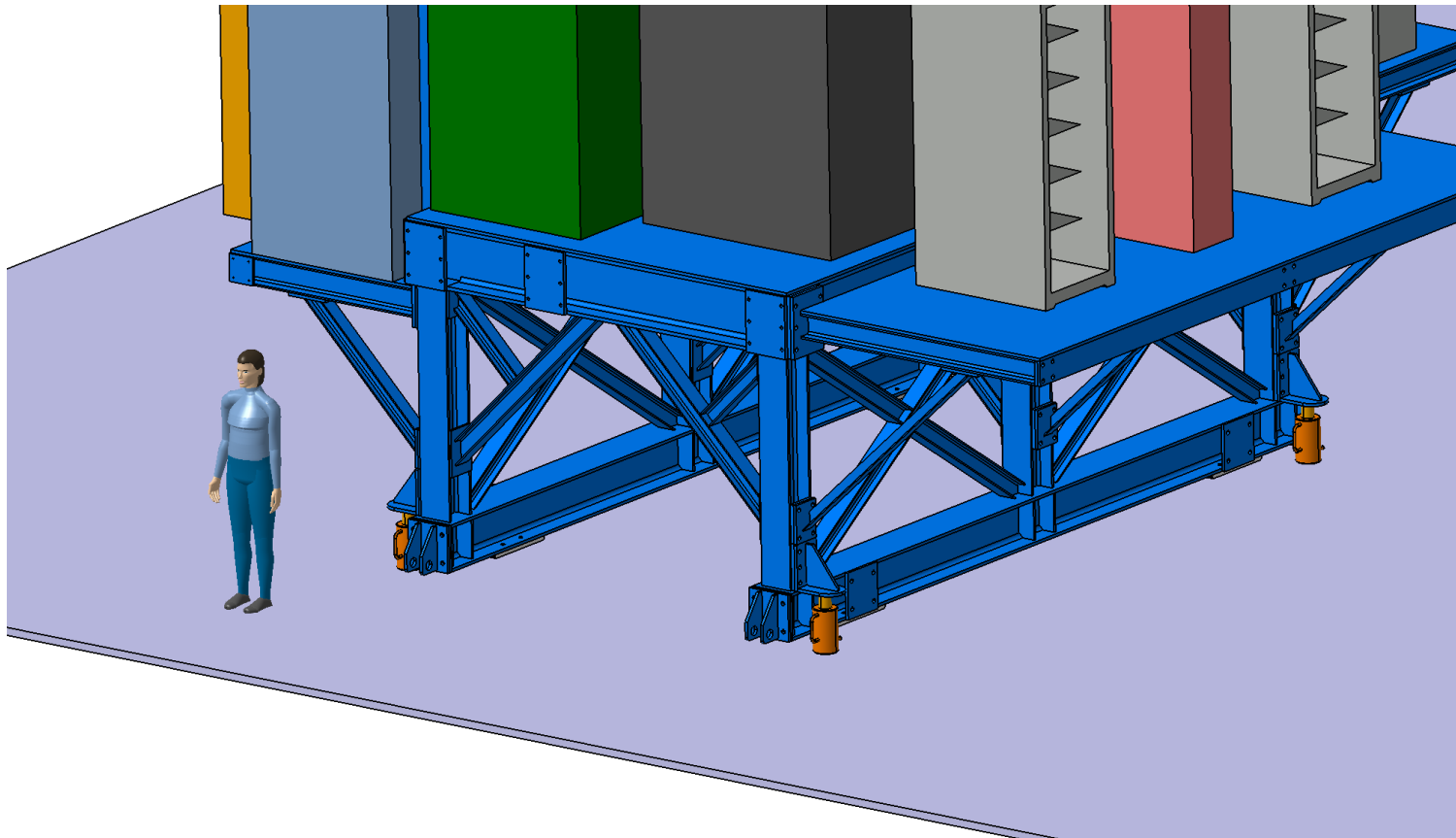
In the first step, four hydraulic cylinder are positioned under the platform and lift it up by some cm



# 1. Concept

## Suggested solution for moving:

In the first step, four hydraulic cylinder are positioned under the platform and lift it up by some cm

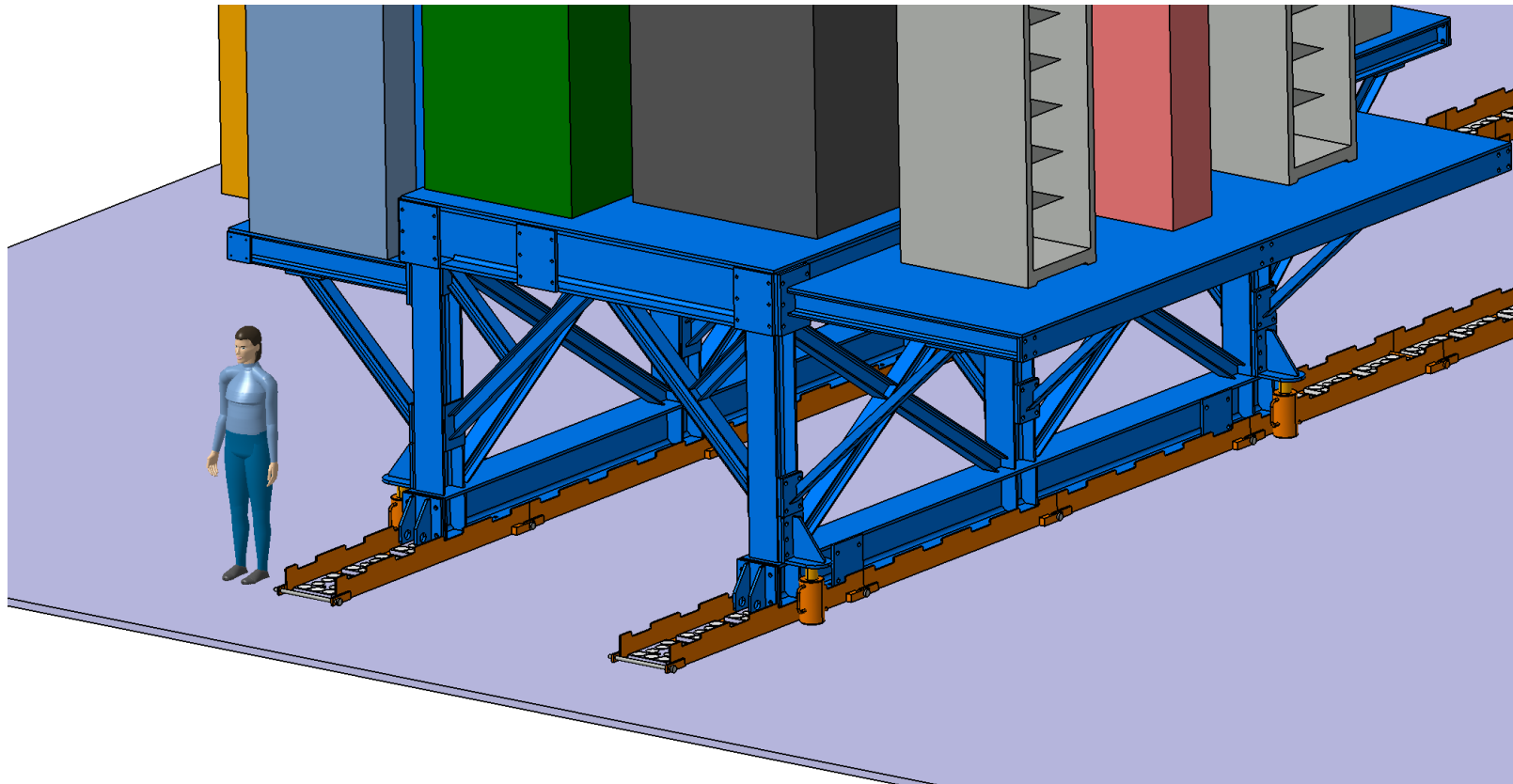




# 1. Concept

## Suggested solution for moving:

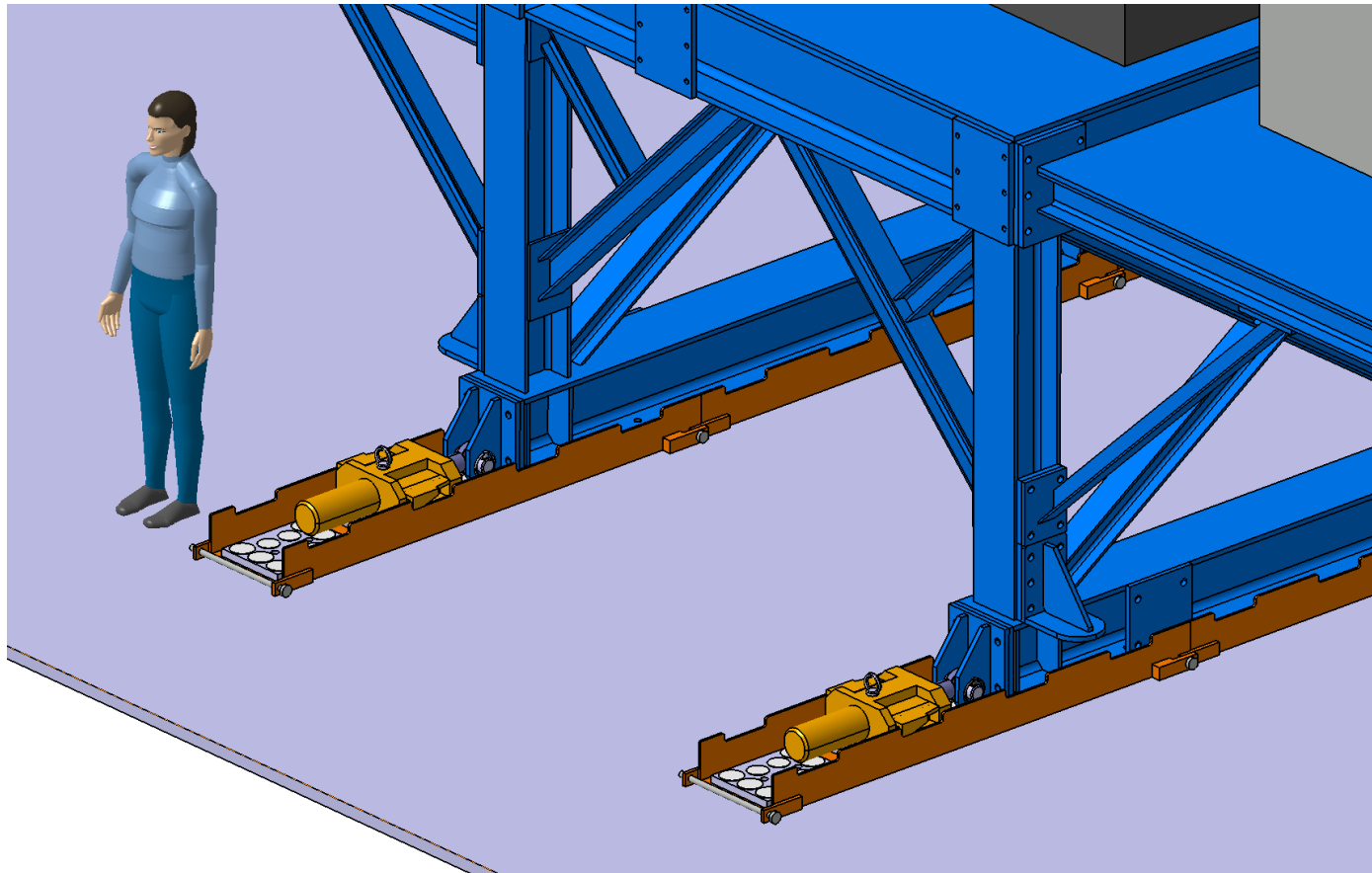
After that the stacks of the skidding system will be placed under the platform and the cylinders lower the platform on the teflon-plates of the skidding system



# 1. Concept

Suggested solution for moving:

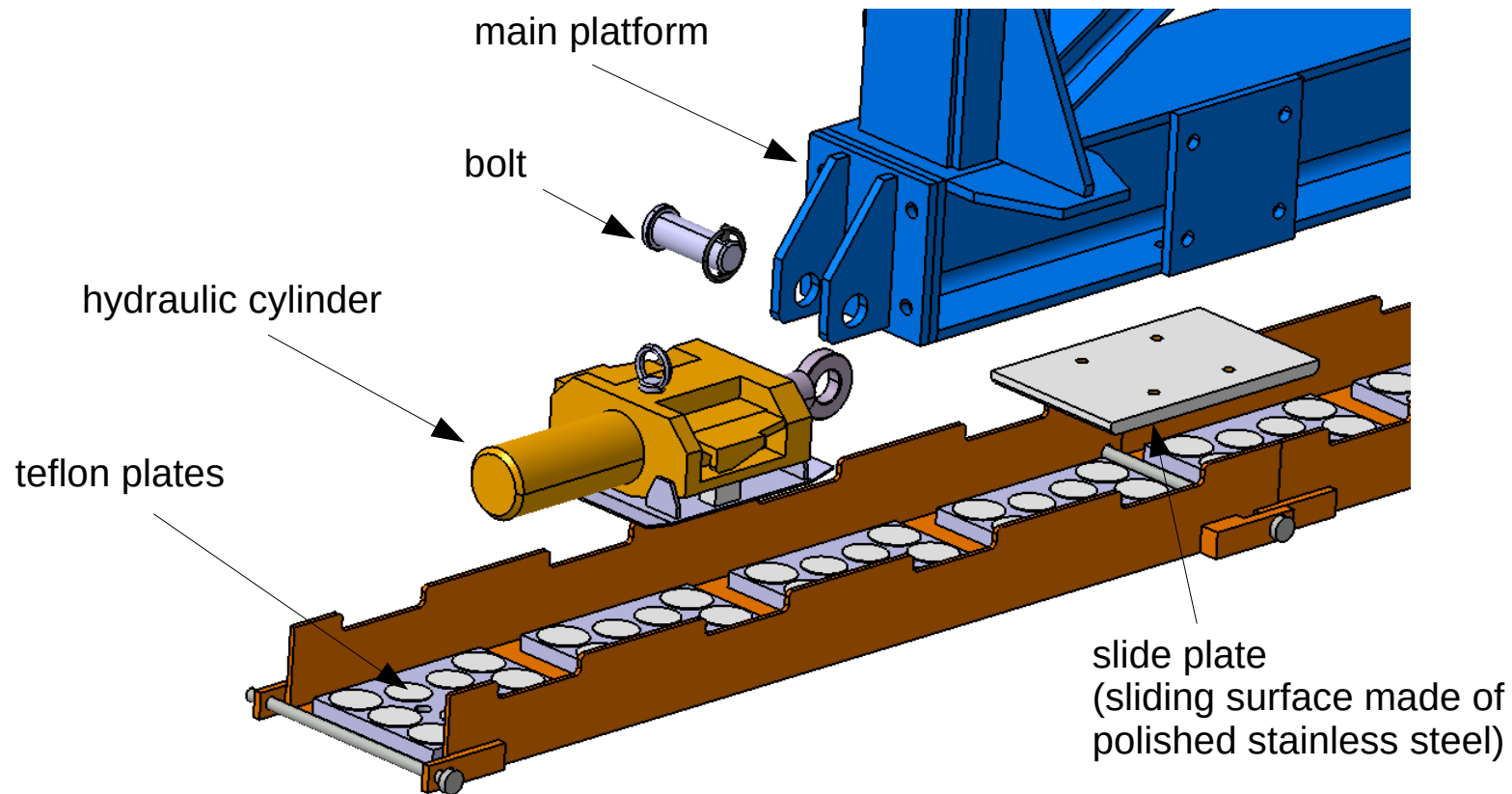
Then, two hydraulic cylinder will be attached to the platform



# 1. Concept

## Suggested solution for moving:

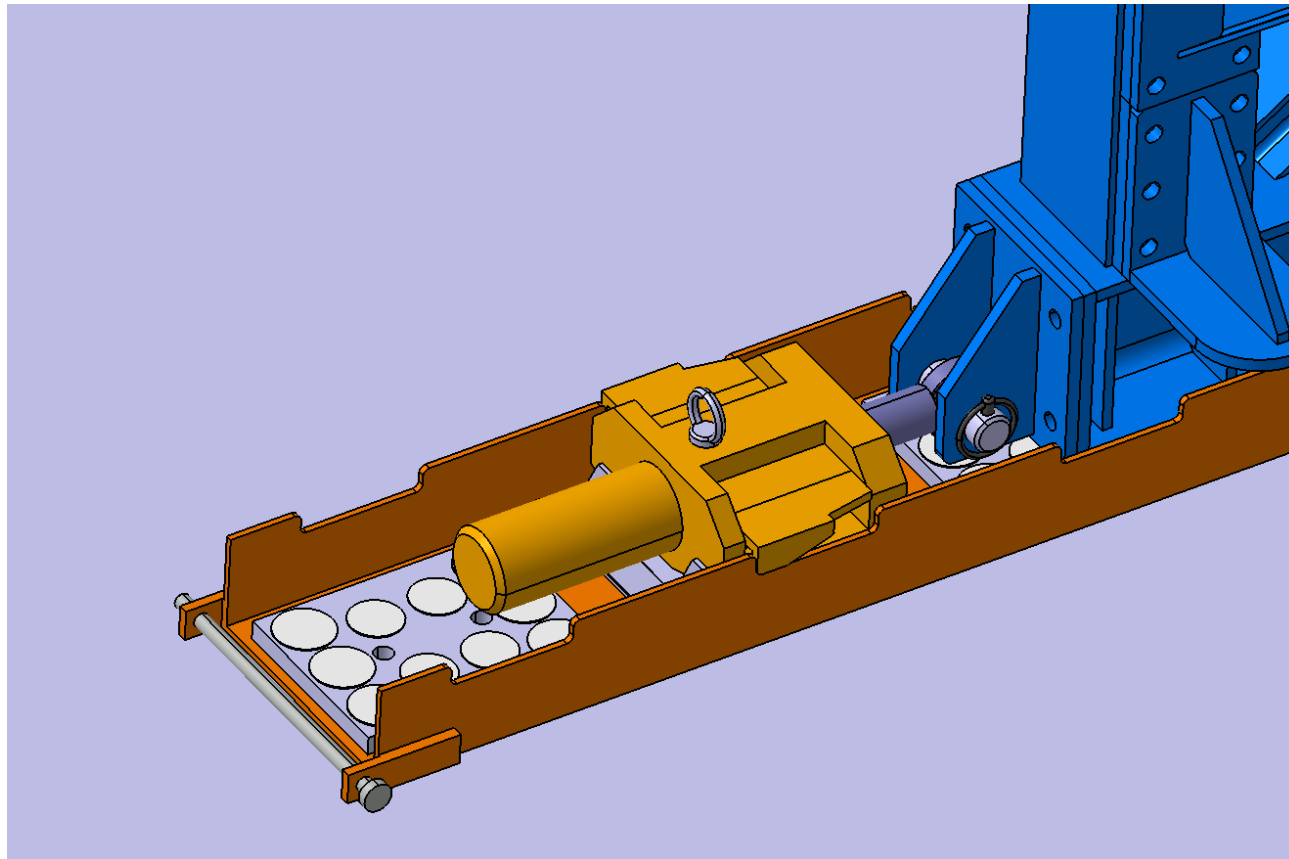
The movement itself takes place via teflon plates on the stacks and sliding plates made of polished stainless steel



# 1. Concept

## Suggested solution for moving:

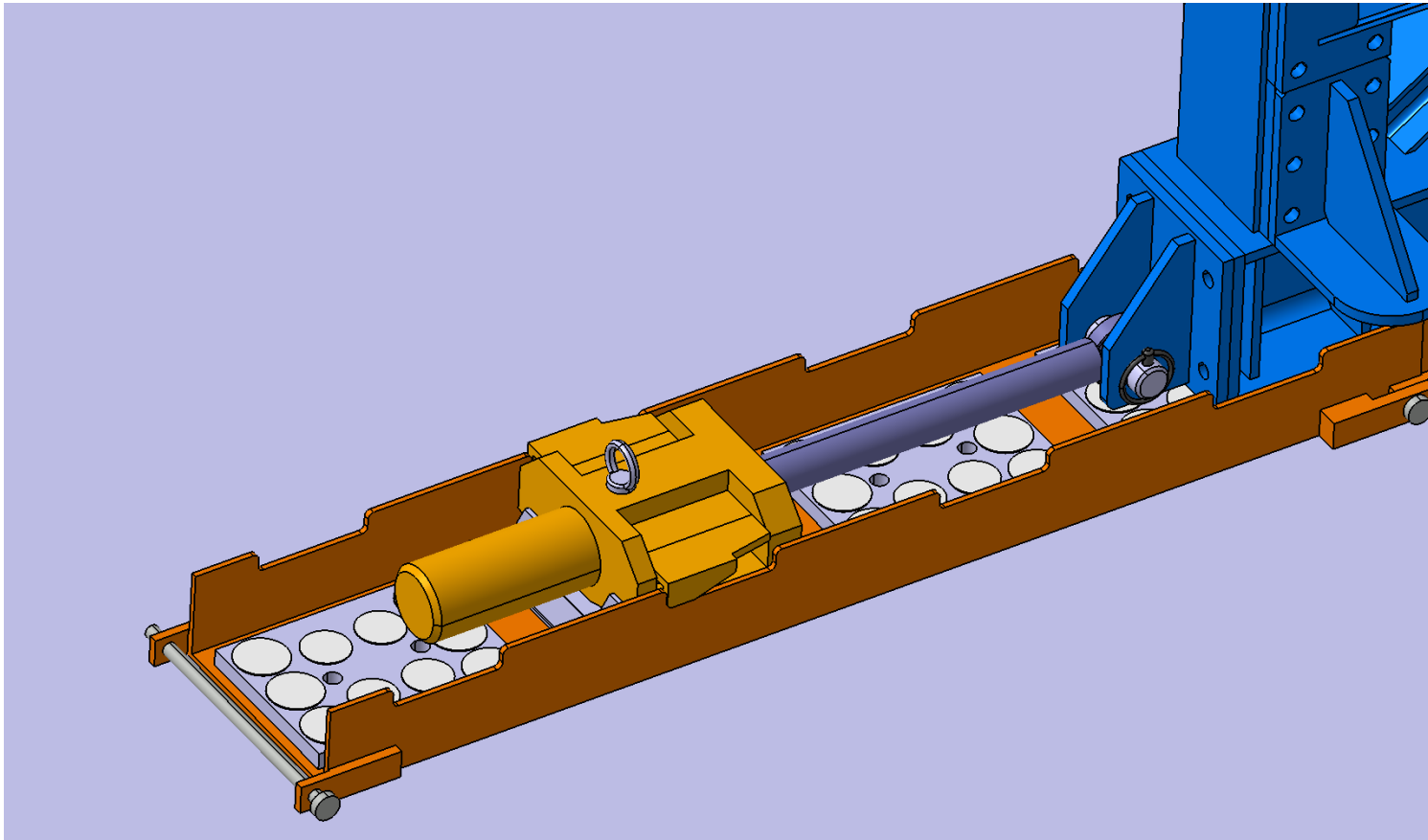
For the movement, the cylinders push the platform 500mm forward, while they are locked to the stacks



# 1. Concept

## Suggested solution for moving:

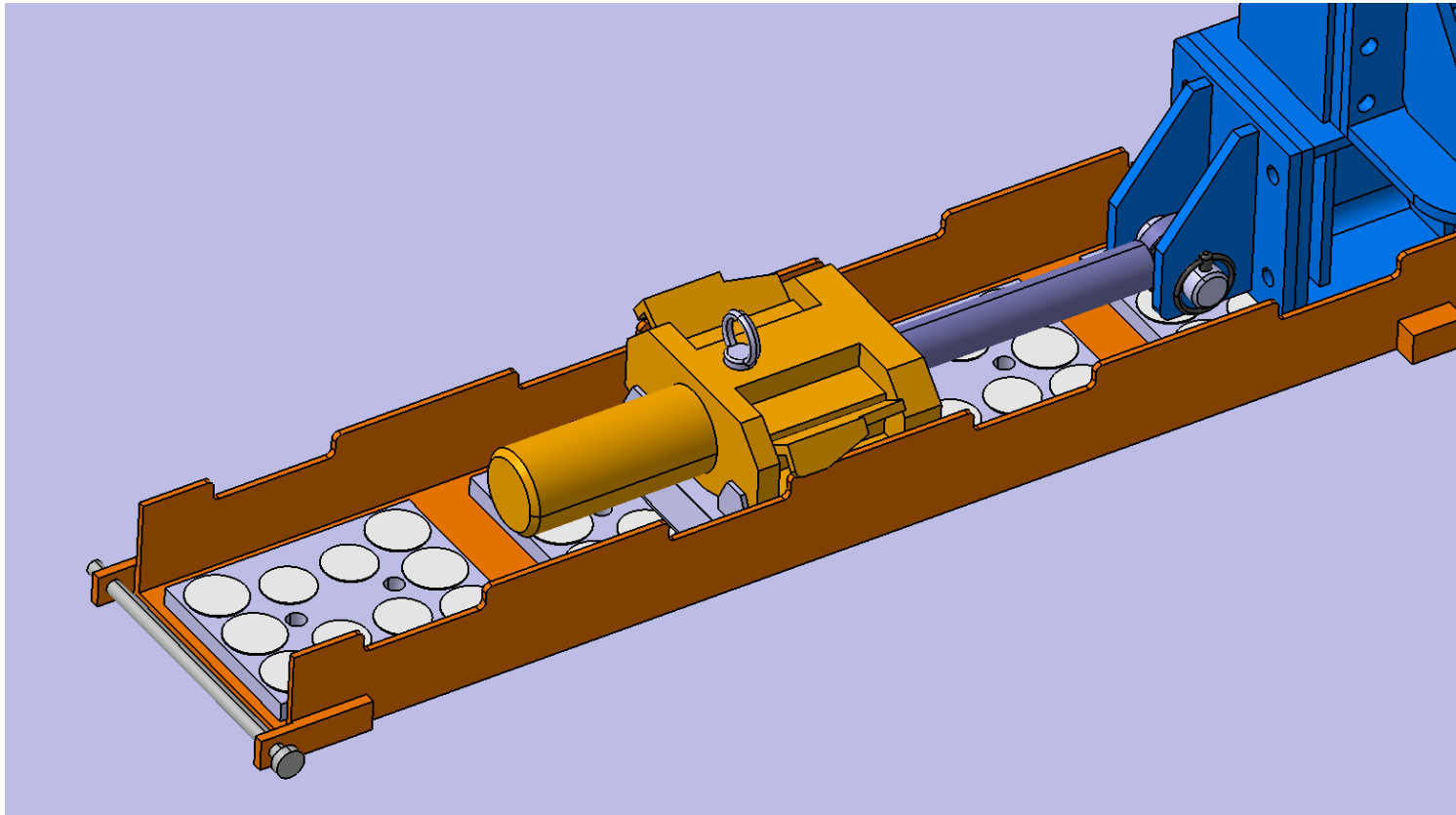
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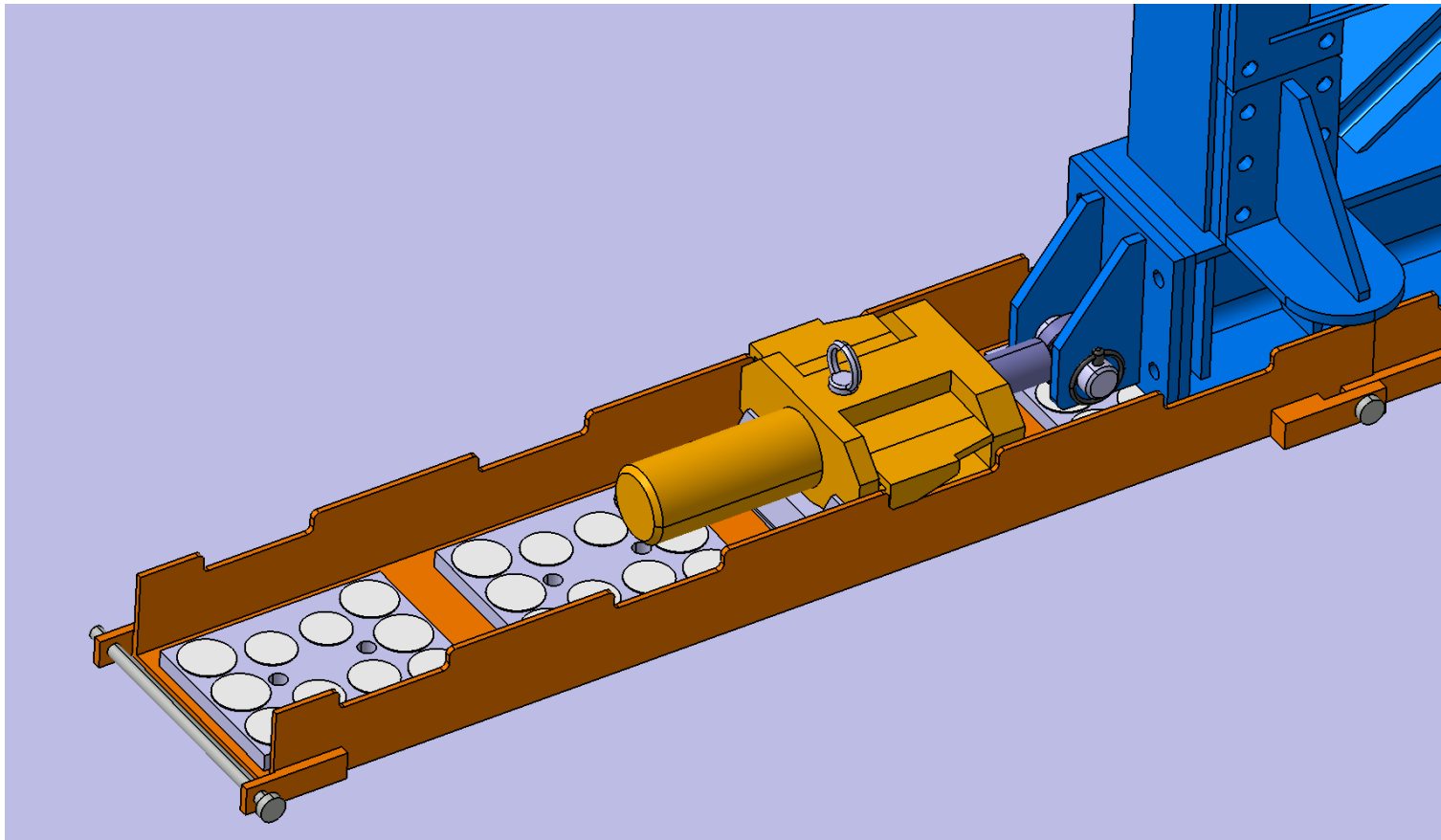
In the next step the cylinders act in the other direction and draw themselves to the platform while the wings on the cylinder swing up and lock the cylinder to the stacks in 500mm again



# 1. Concept

## Suggested solution for moving:

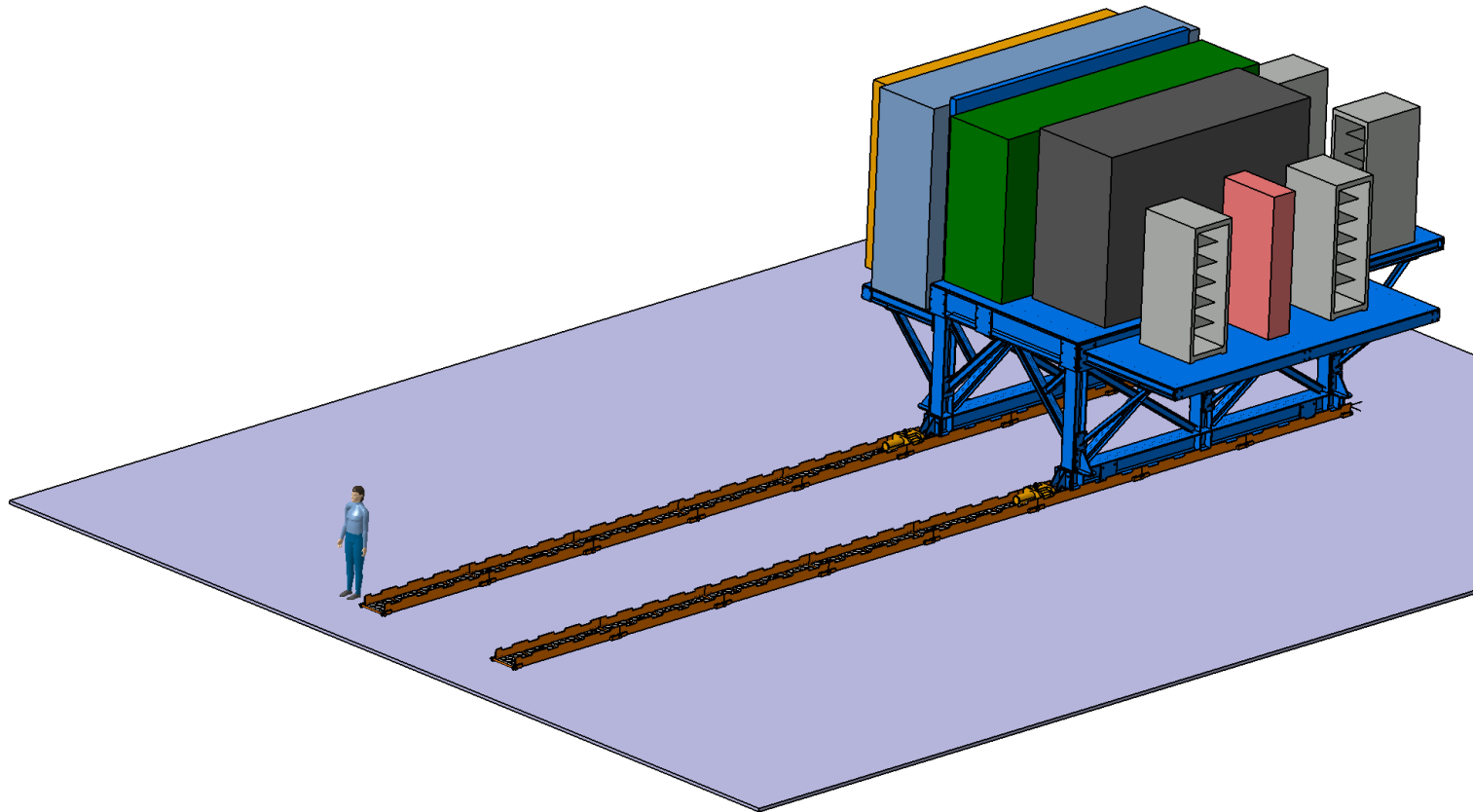
In the next step the cylinders act in the other direction and draw themselves to the platform while the wings on the cylinder swing up and lock the cylinder to the stacks in 500mm again



# 1. Concept

Suggested solution for moving:

So it goes on, step by step until the final position is almost reached

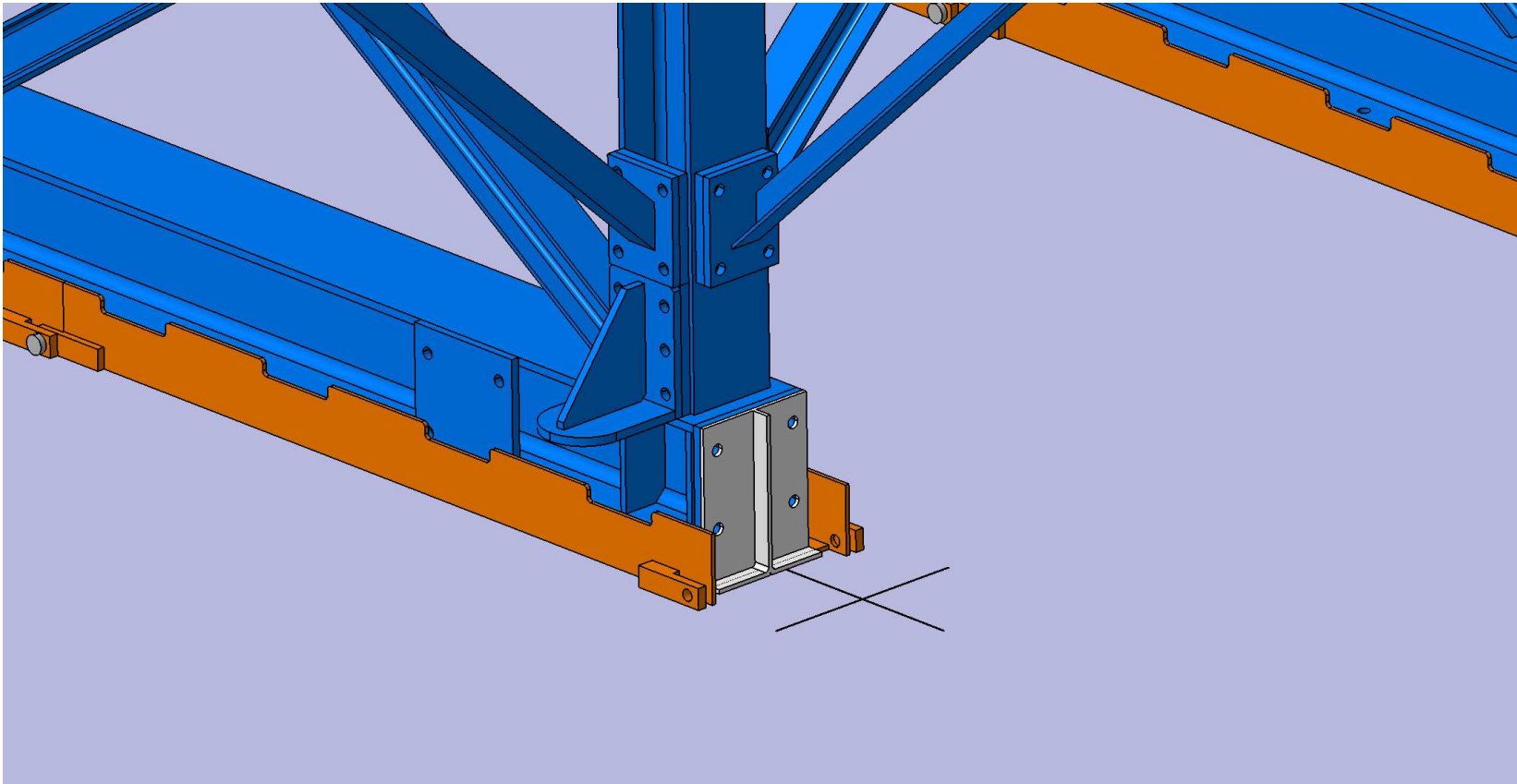




# 1. Concept

## Suggested solution for moving:

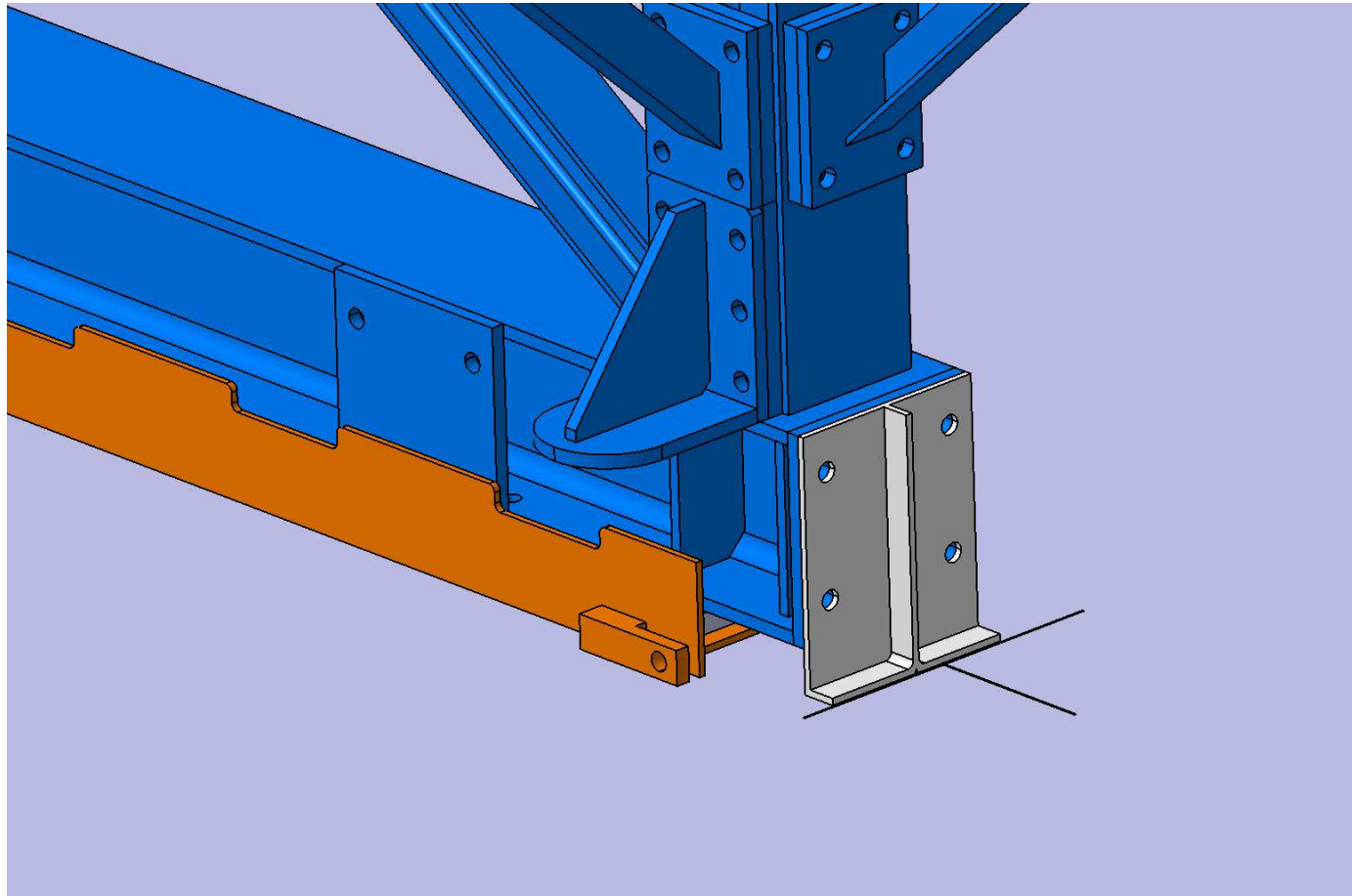
Then a reference plate is attached to the platform, which will be positioned in relation to a mark on the floor



# 1. Concept

## Suggested solution for moving:

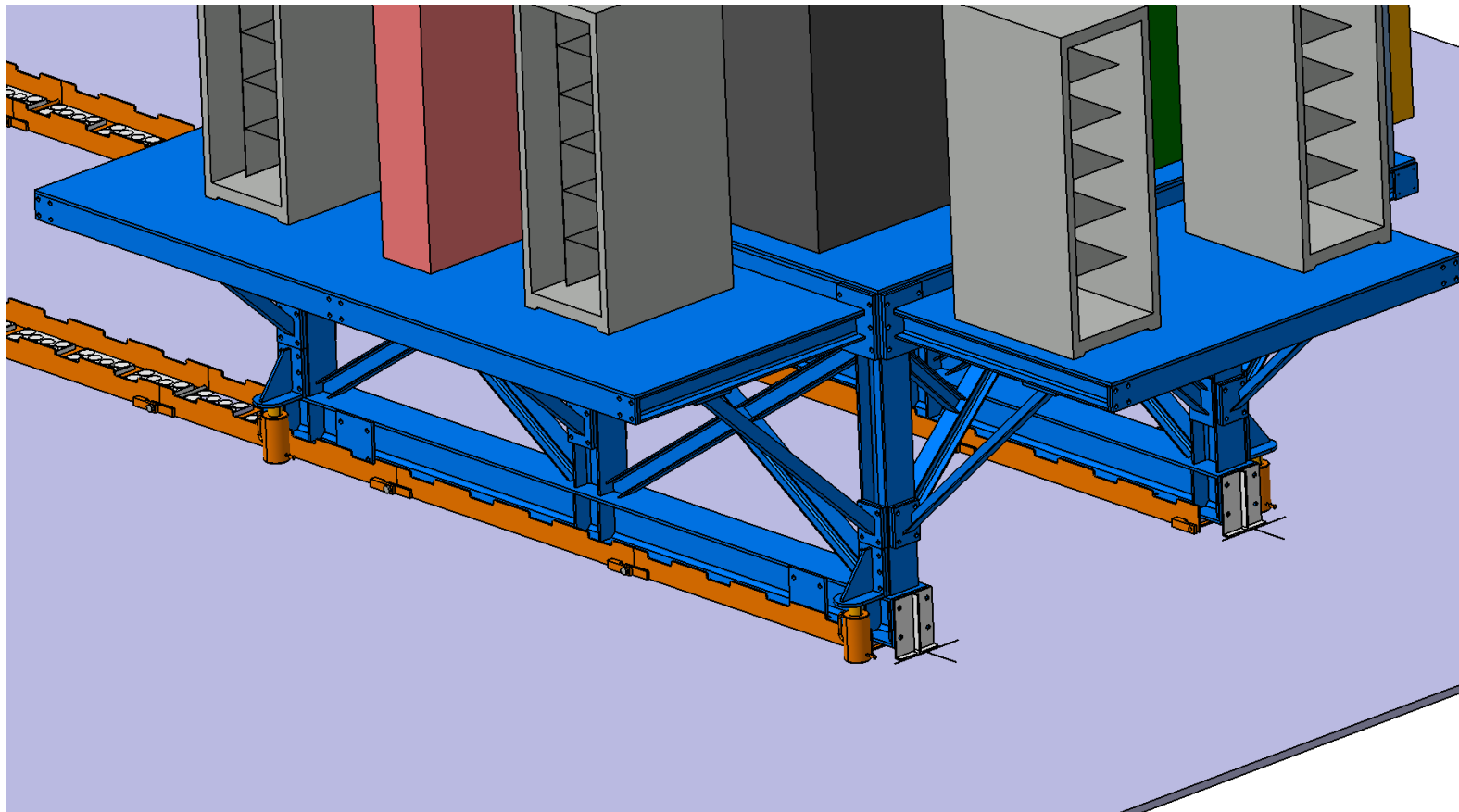
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# 1. Concept

## Suggested solution for moving:

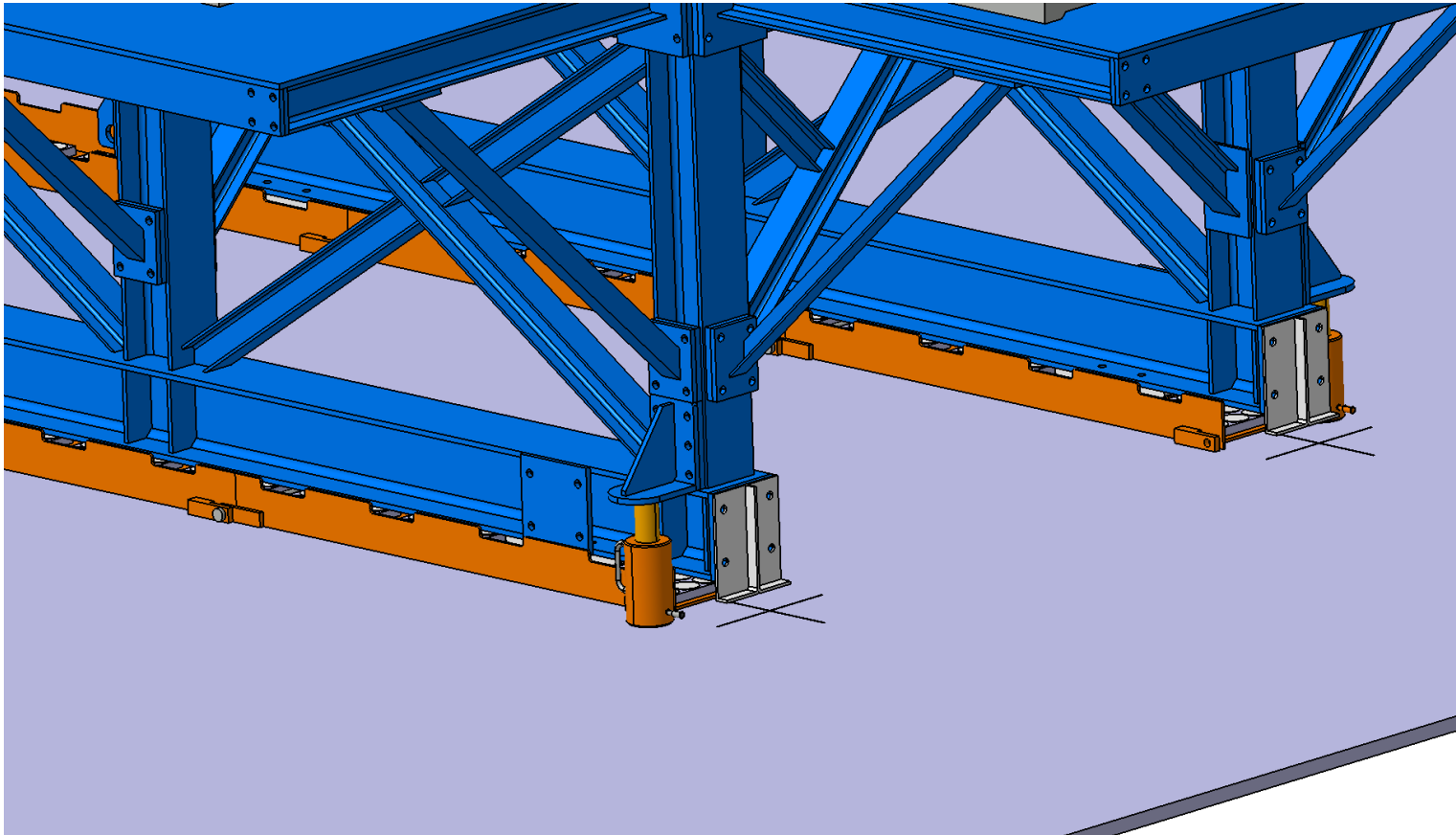
When the final position perpendicular to the beam axis is reached, the four lifting cylinders are positioned under the platform again and release the platform from the stacks



# 1. Concept

## Suggested solution for moving:

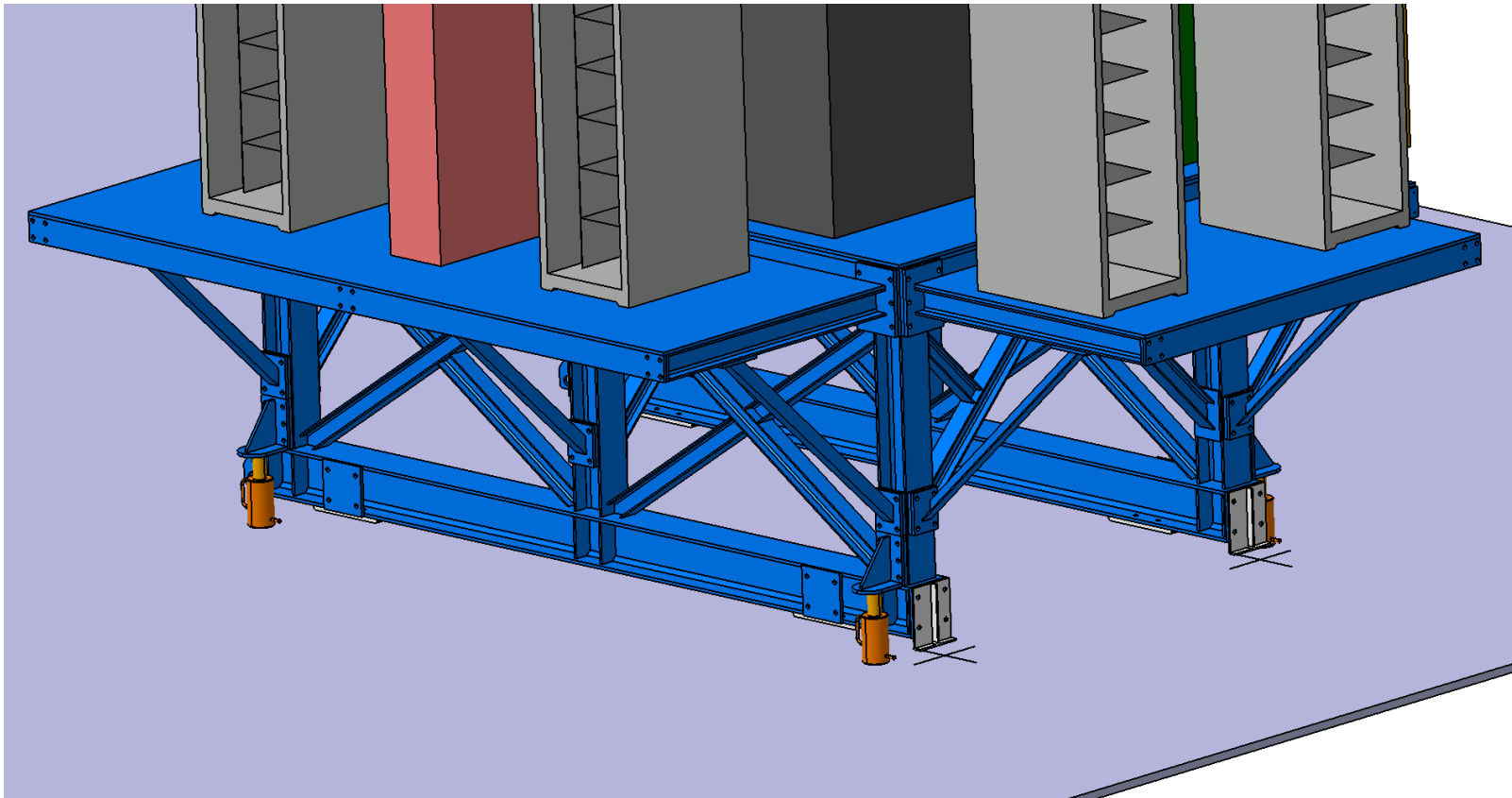
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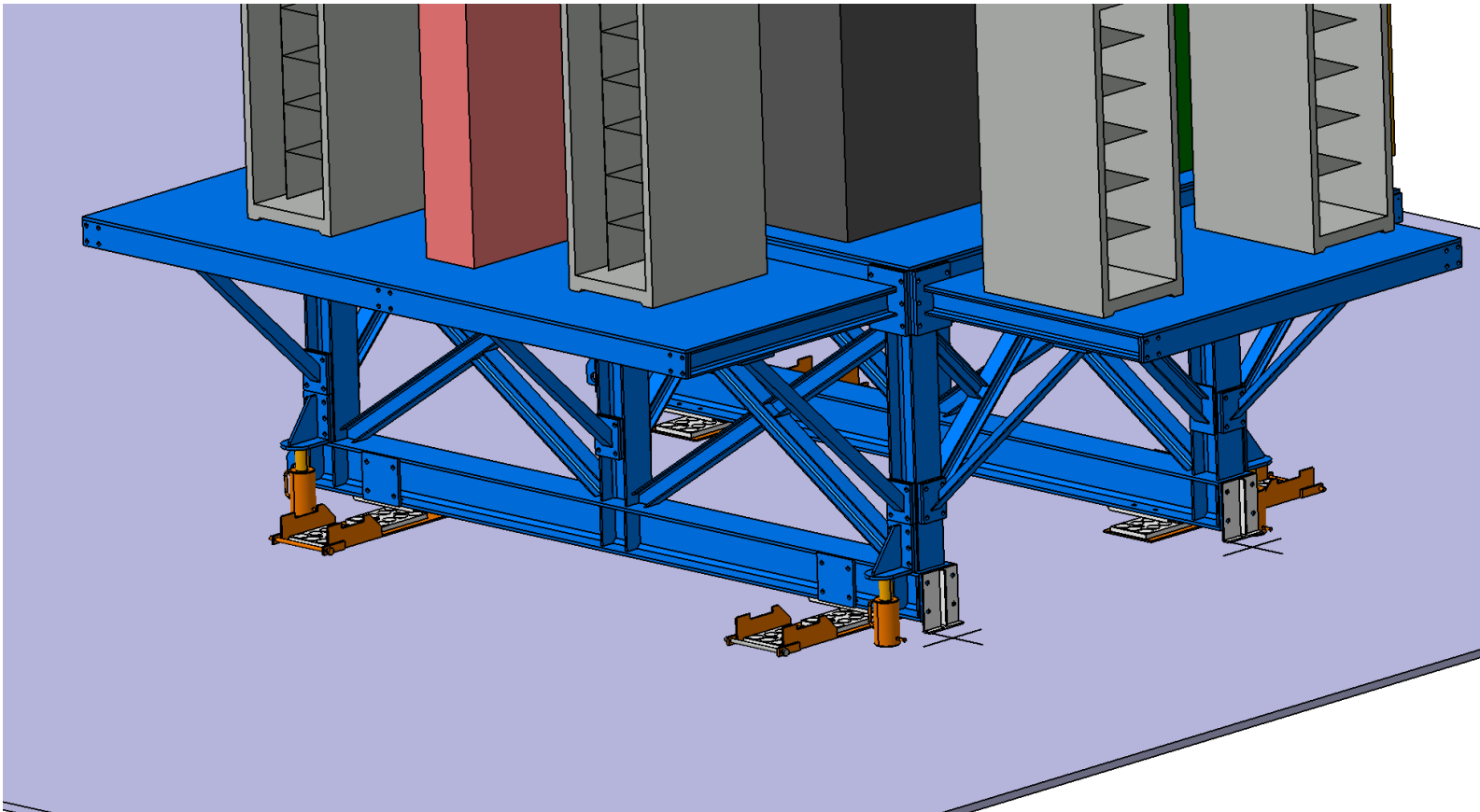
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# 1. Concept

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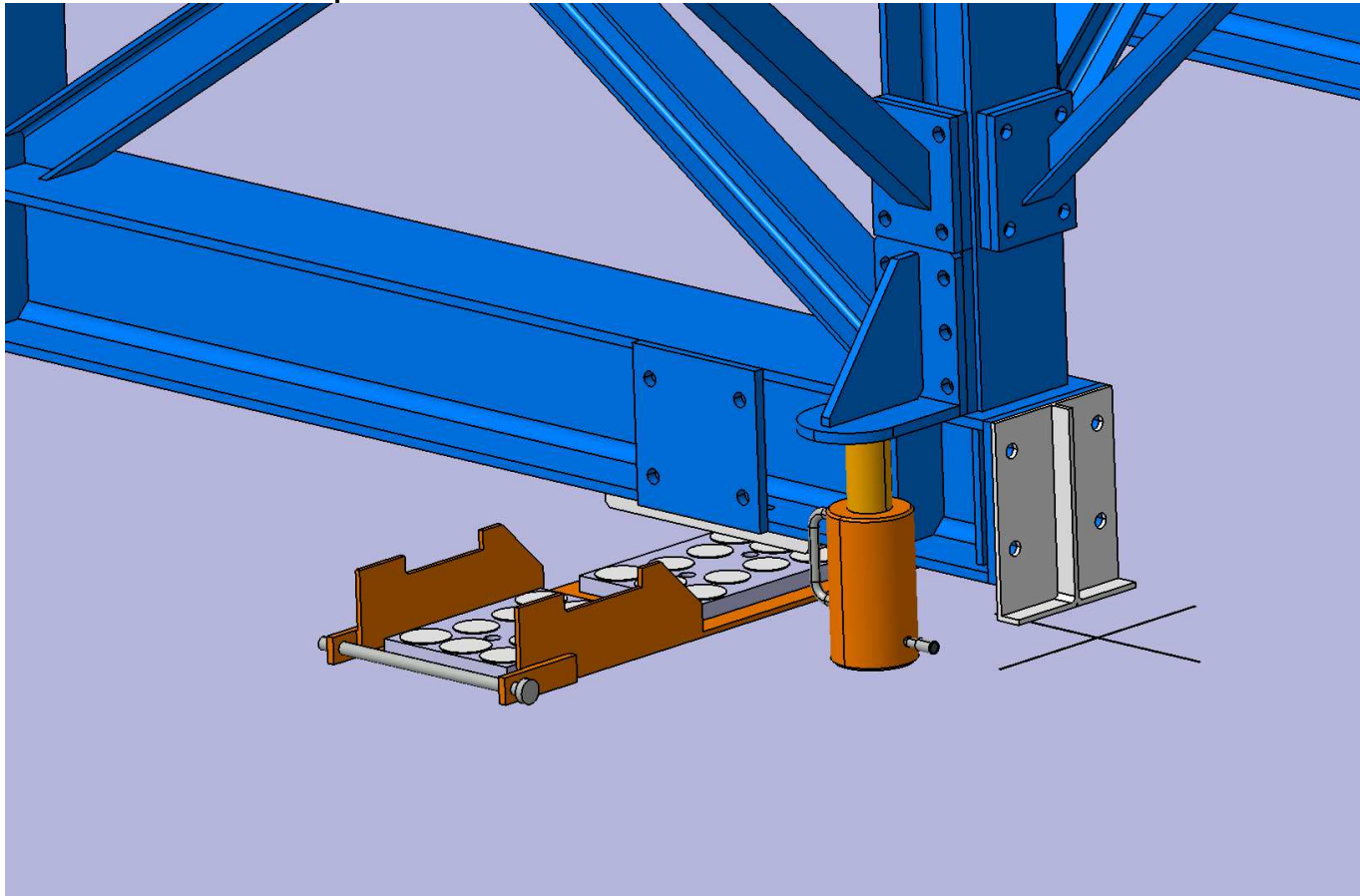
Then, four special stacks will be put under the platform, and the cylinders lower the Platform onto the teflon plates



# 1. Concept

## Suggested solution for moving:

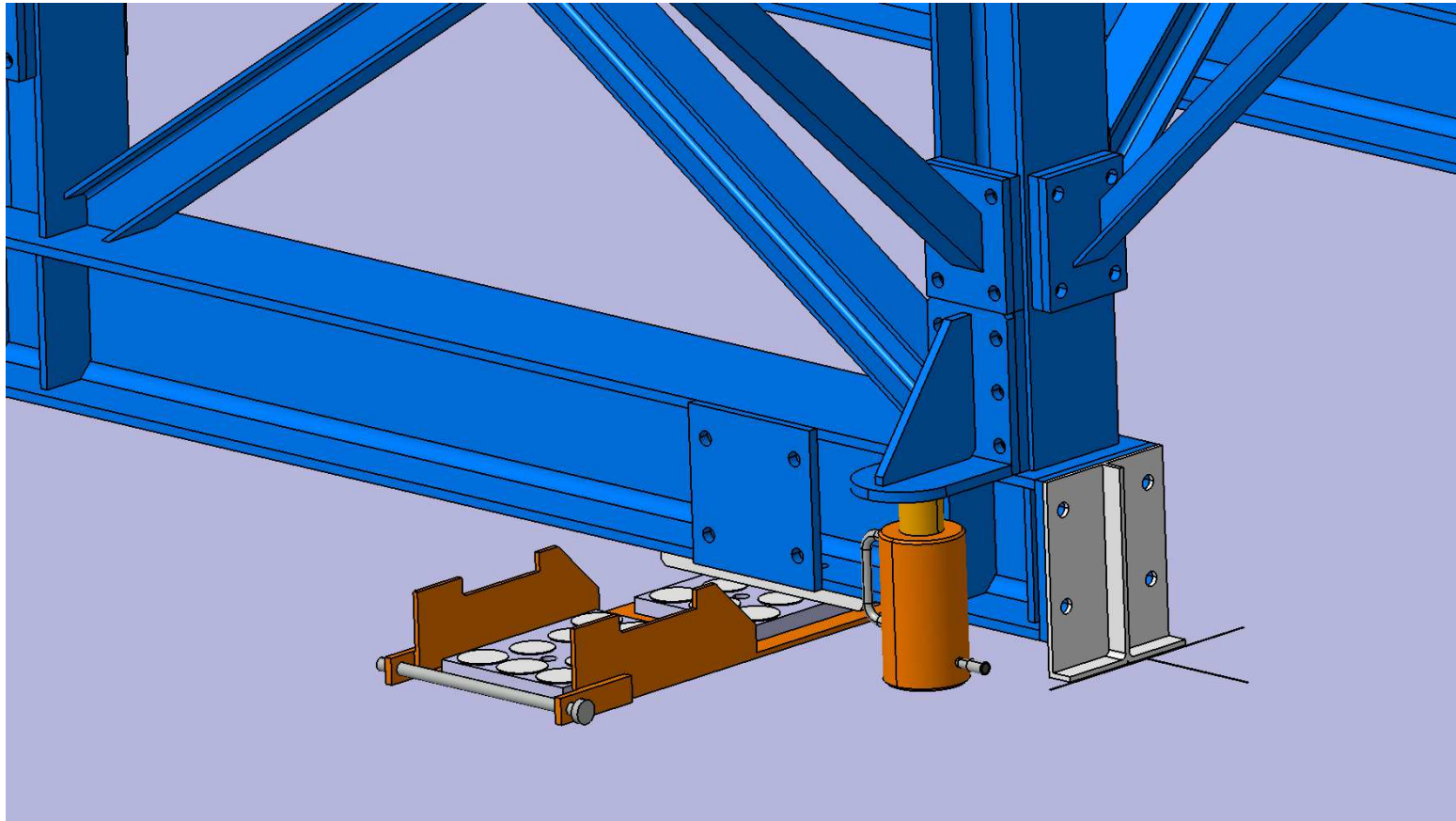
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# 1. Concept

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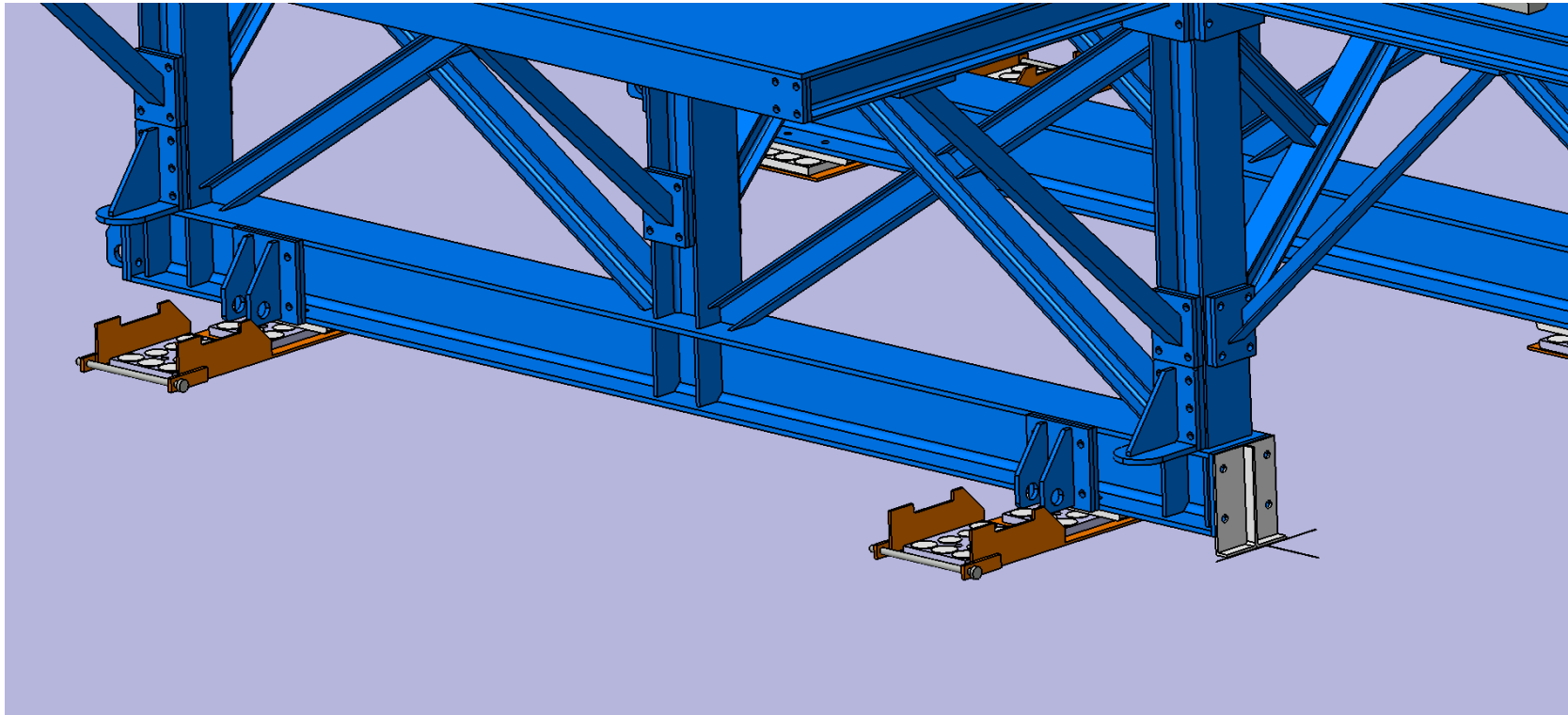




# 1. Concept

Suggested solution for moving:

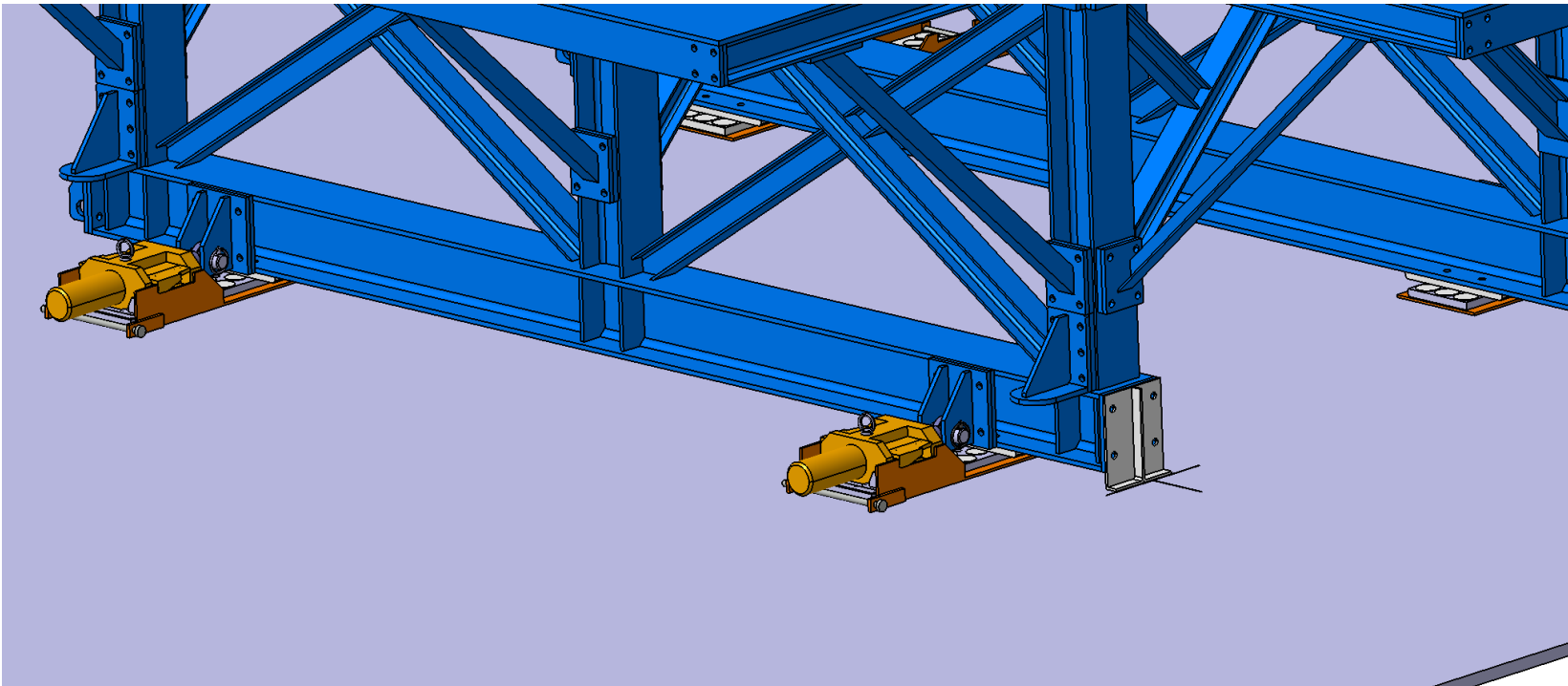
Then two fasteners and two cylinders are attached to the platform



# 1. Concept

Suggested solution for moving:

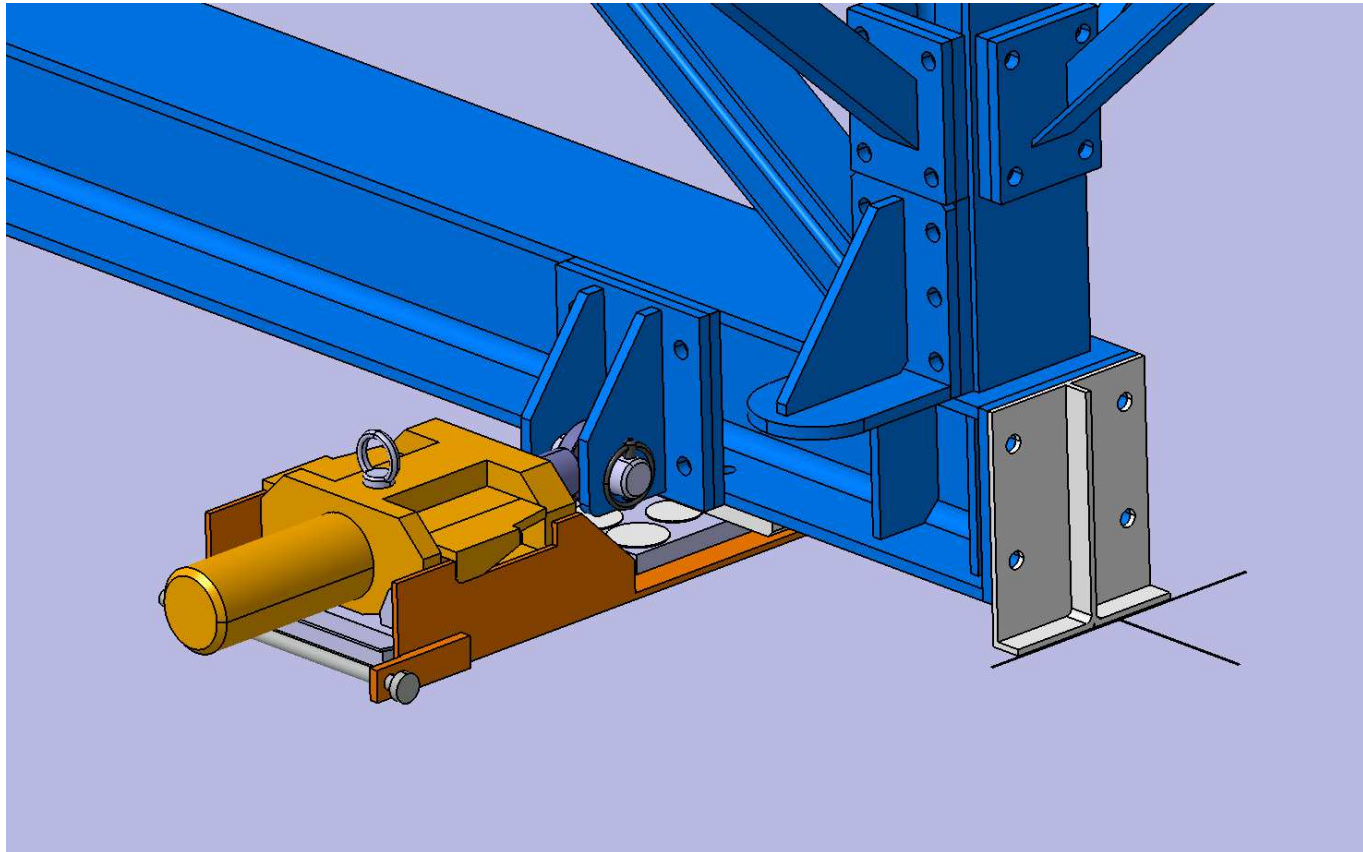
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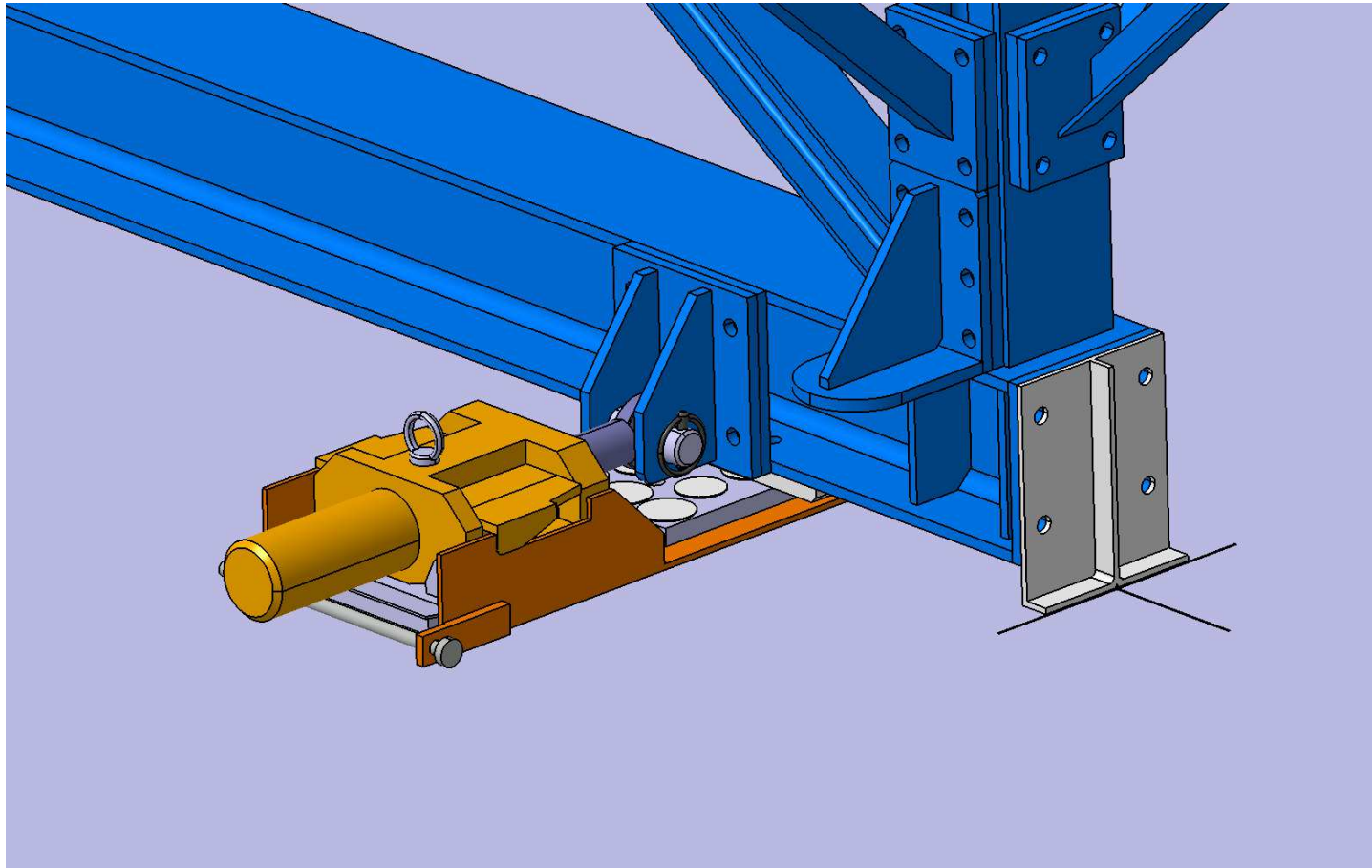
After that, the two cylinders push the platform to the final position in beam direction



# 1. Concept

Suggested solution for moving:

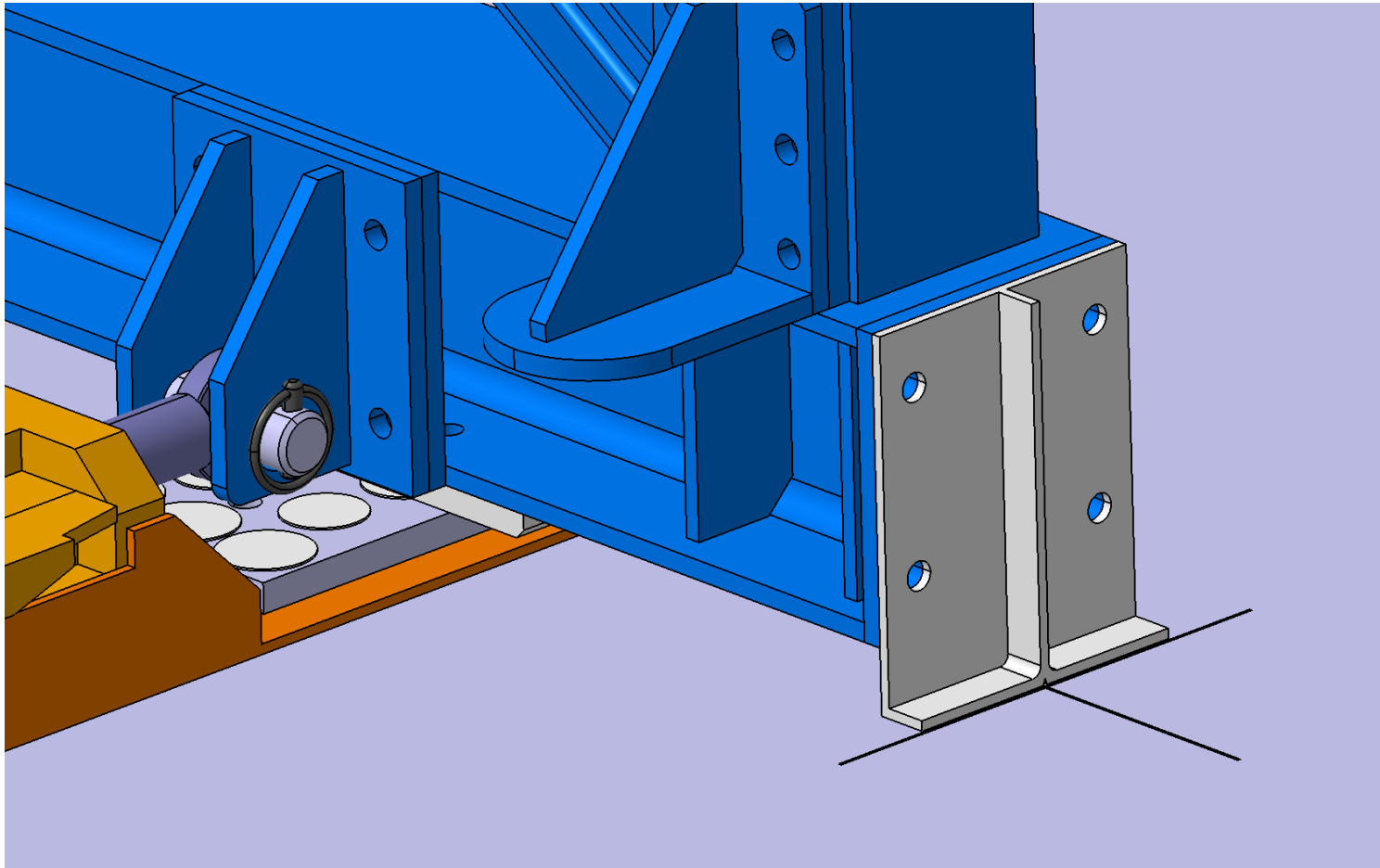
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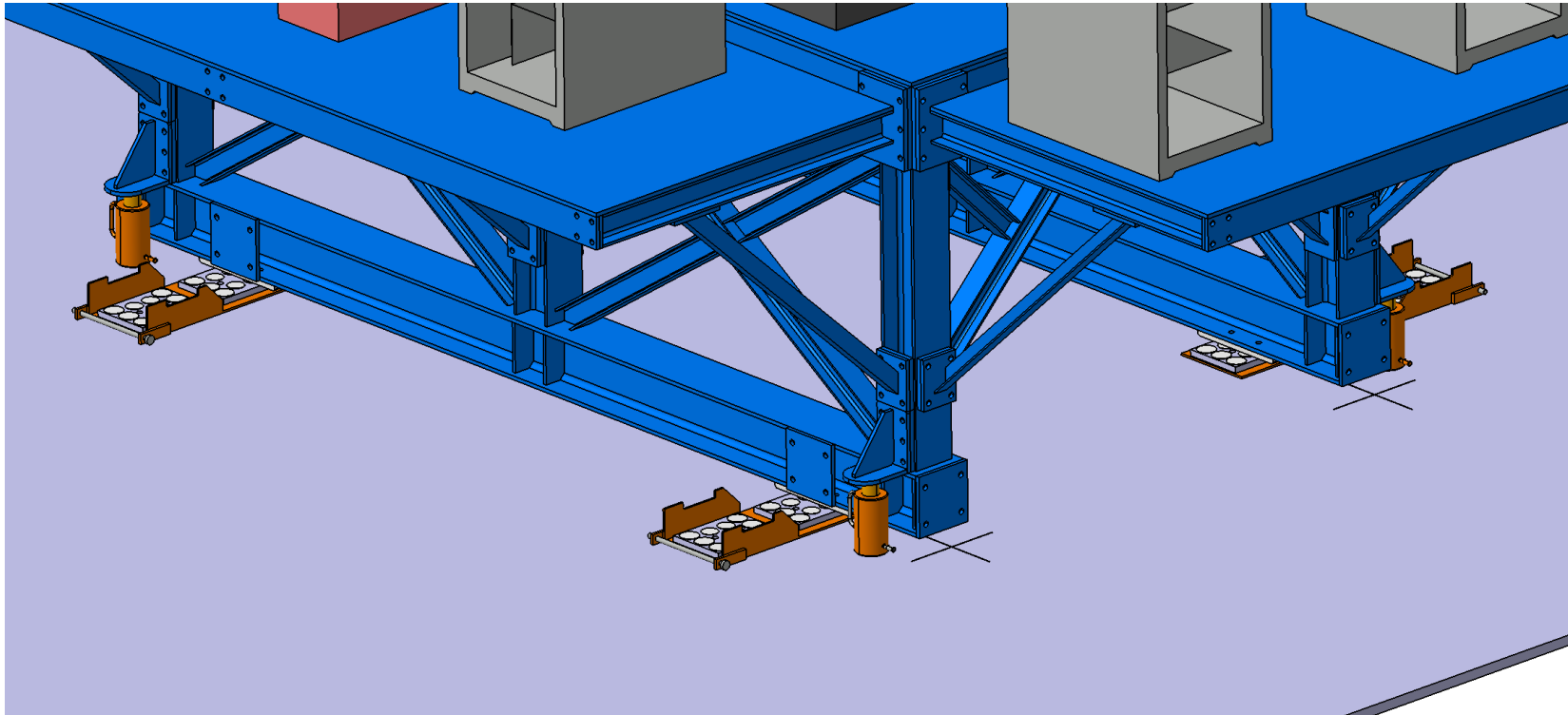
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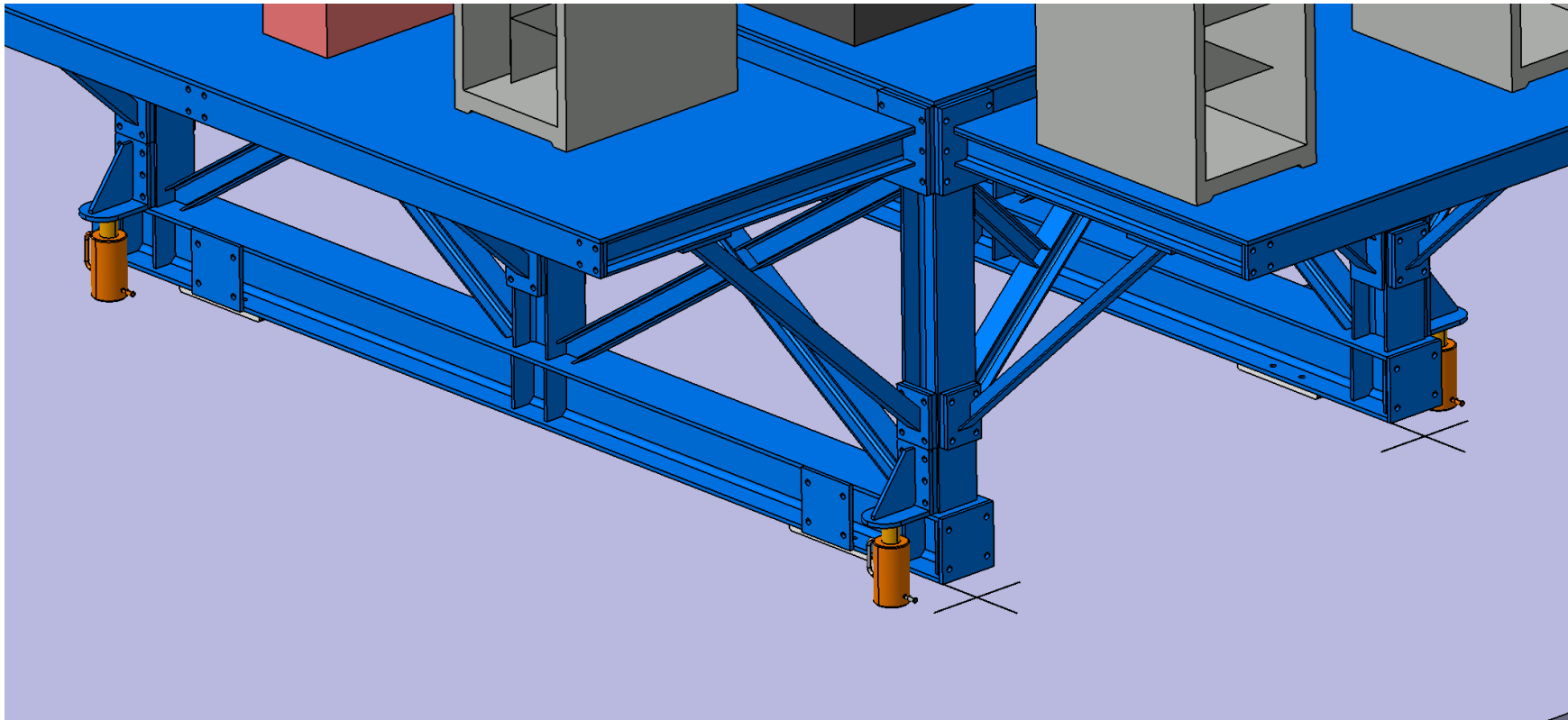
In the last step the four lifting cylinders raise the platform and lower it on the floor after the stacks and the polished sliding plates are removed



# 1. Concept

## Suggested solution for moving:

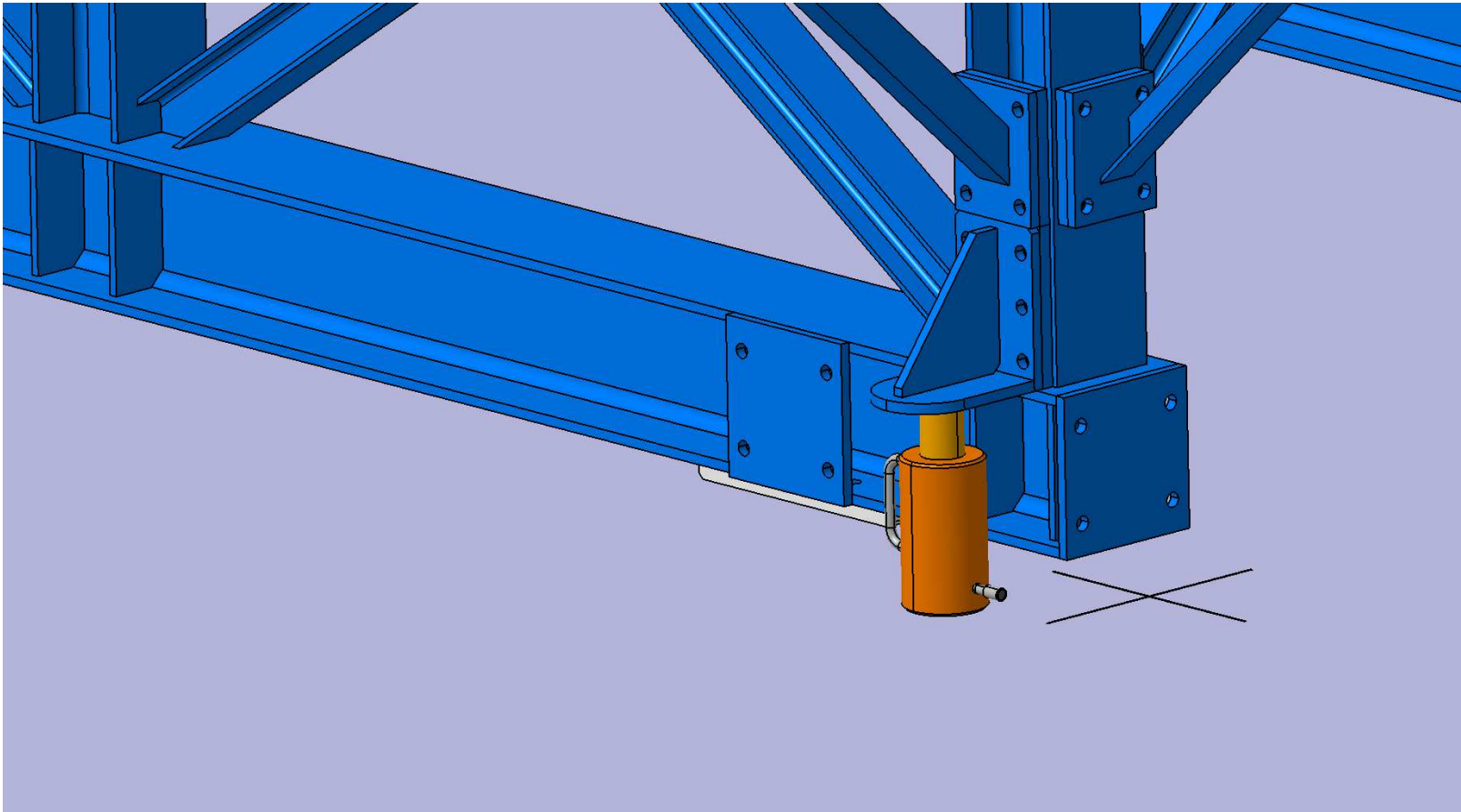
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# 1. Concept

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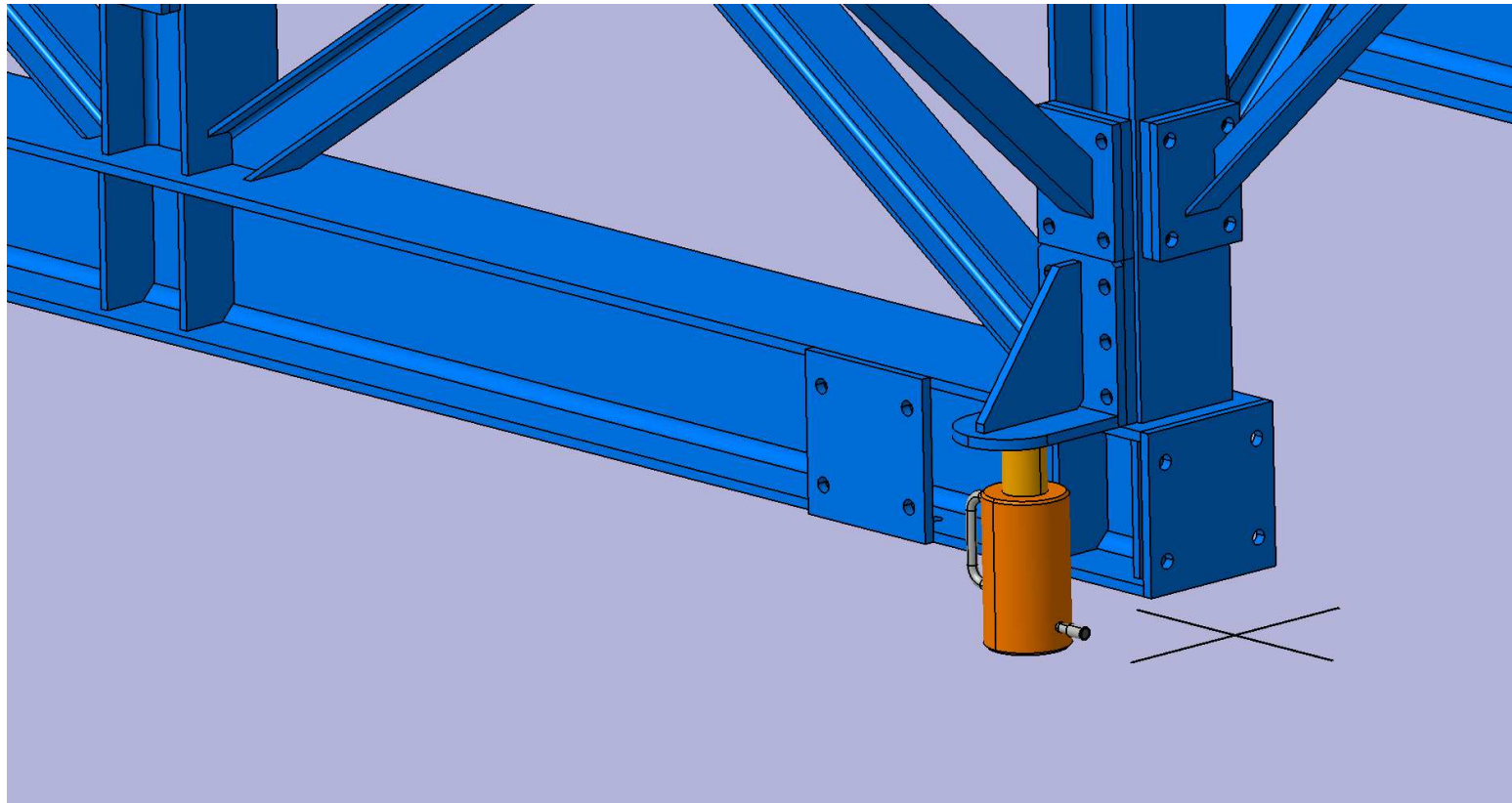




# 1. Concept

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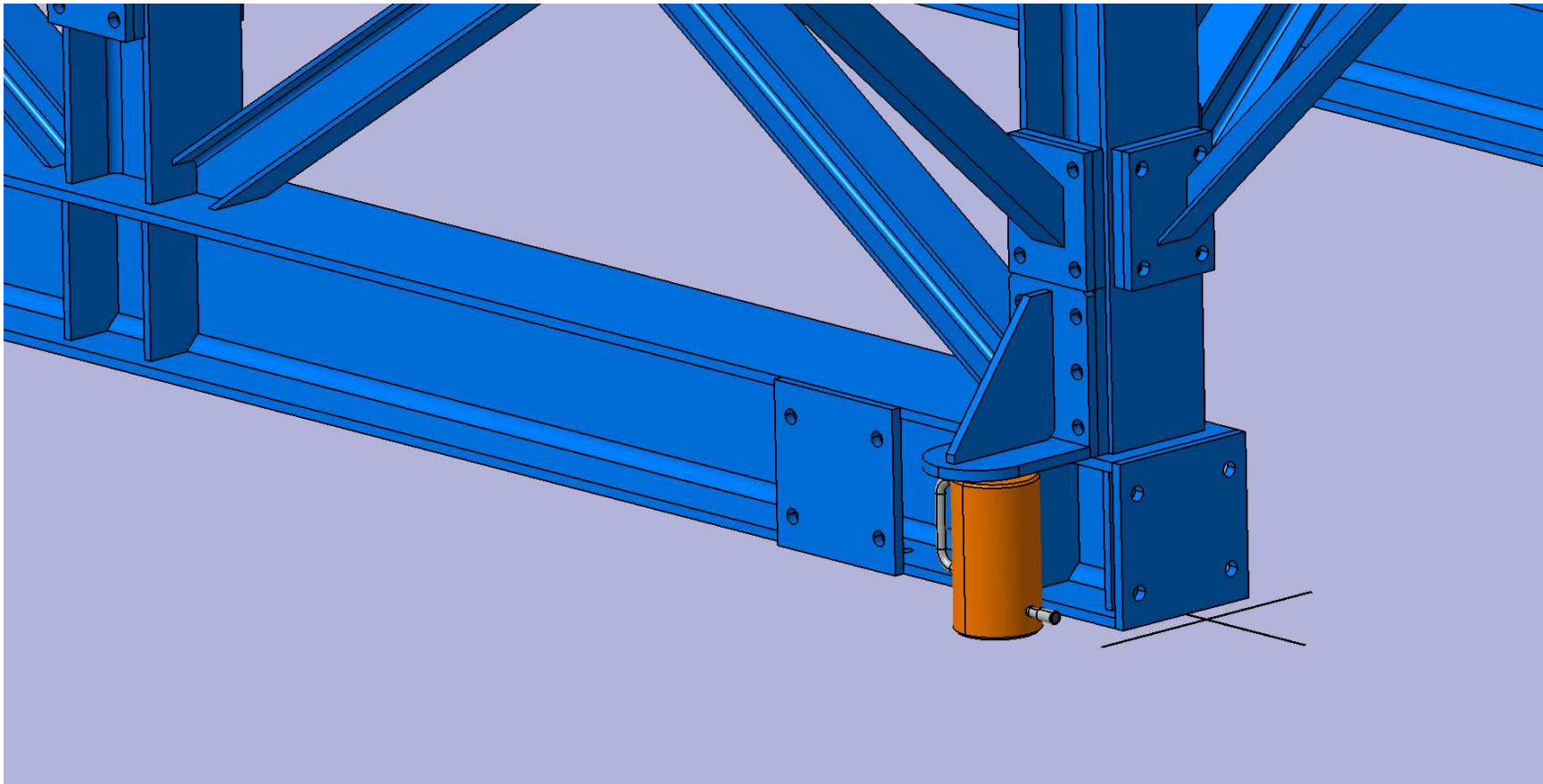
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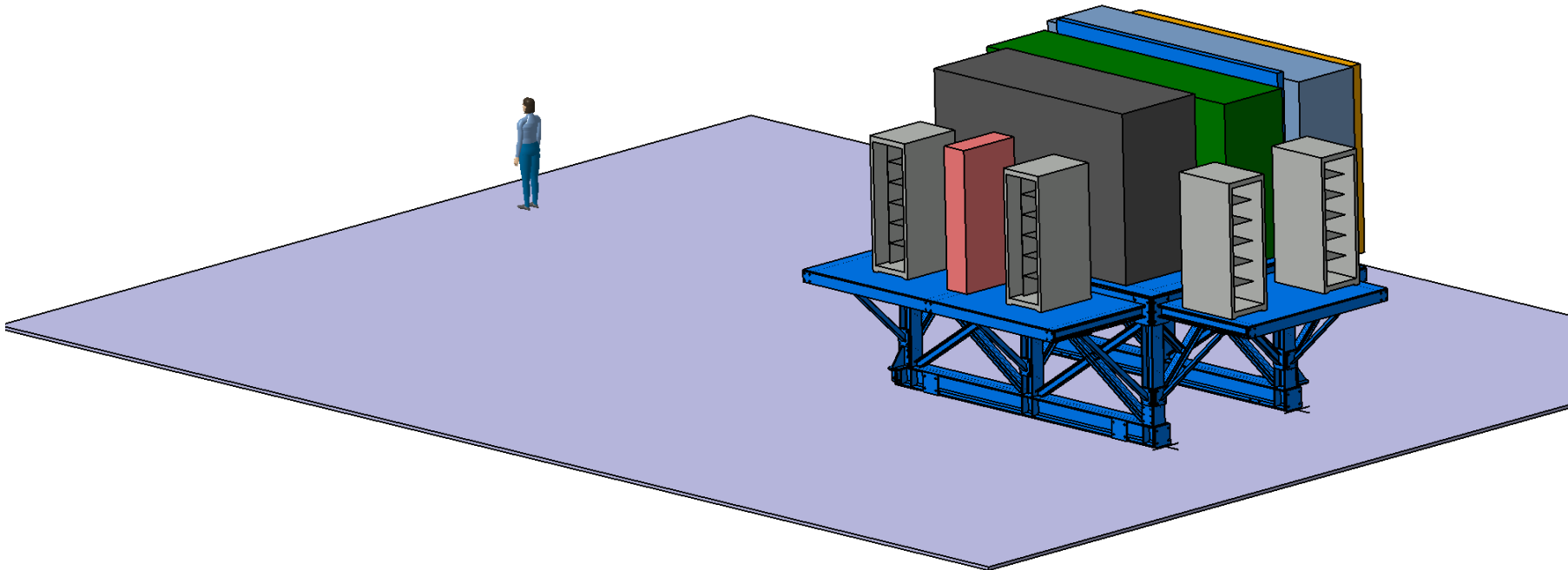
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# 1. Concept

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In the last step the four lifting cylinders raise the platform and lower it on the floor after the stacks and the polished sliding plates are removed



# 1. Concept

## Suggested solution for moving:

The following links show the principal process of skidding systems in various videos:

[https://www.youtube.com/watch?v=FEnxTs0\\_jnk](https://www.youtube.com/watch?v=FEnxTs0_jnk)

<https://www.youtube.com/watch?v=RQQEZ1K0KIM>

<https://www.youtube.com/watch?v=uvmbPQ-HImc>

## 2. Conclusion

### Conclusions:

#### Advantages of the skidding system:

- the complete system is removable, so there is more space on the floor for maintenance
- there are several companies that sell complete systems
- such systems are practically proven
- there is no need for any anchoring on the hall floor
- there exists a system designed for 400 tons, so we could use the system for moving and positioning of the target spectrometer as well