



Intelligent Transport System for Innovative Intermodal Freight Transport

## Deliverable No. 5.4

### Optimised prototype of modular MegaSwapBox

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<sup>1</sup>R = Report; P = Prototype; O = Other

<sup>2</sup> PU = Public; RE = Restricted to a group specified by the consortium CO = Confidential, only for members of the consortium (including the Commission Services)

Overview	
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History			
Version	Date	Person	Changes
0.1	15.09.2015	Klaus Holz (WECON)	Document draft
0.2	15.09.2015	Oleg Dyck (RWTH Aachen)	Review, format and structure
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## 1. Final MegaSwapBox Prototype

Figure 1.1 presents the final design of the Continental MegaSwapBox. This prototype has the following characteristics:

- Size: 45 ft
- Height (internal): 2940 mm
- Width (internal): Euro-pallet
- Long sides: One open
- Payload: Min. 24 t
- Roof: Hinged
- Handling: Corner castings
- Stackability: 2 times

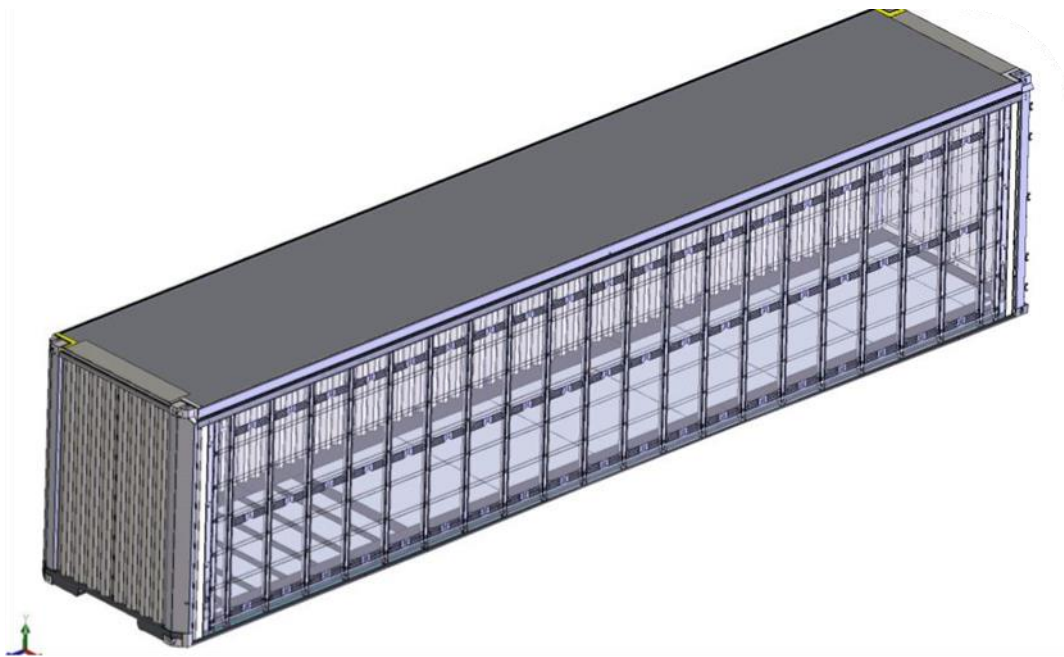


*Figure 1.1: Final design of the MegaSwapBox prototype*

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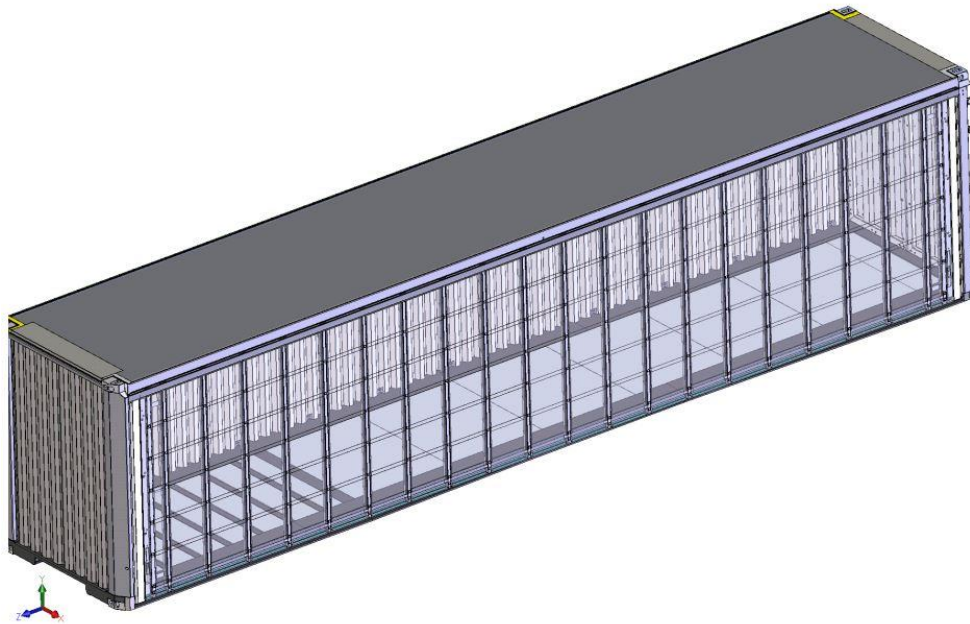
## 2. MegaSwapBox optimisations

Plastic folding elements (cf. figure 2.1) which are mounted between the vertical aluminium bars are removed to guarantee proper sliding performance (cf. figure 2.2). Those elements have in folded condition a undefined internal stress which caused a nonparallel folding property while opening.



*Figure 2.1: Sliding tarp system with plastic folding elements*

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*Figure 2.2: Sliding tarp system without plastic folding elements*

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Test runs shows that an additional handle for opening and closing of sliding tarp system is necessary (cf. figure 2.3). The red pull strap is mounted on top position of each end carriage and its length is equal to the inside height. In case of non-use it can be stored between both vertical end carriage aluminium profiles.

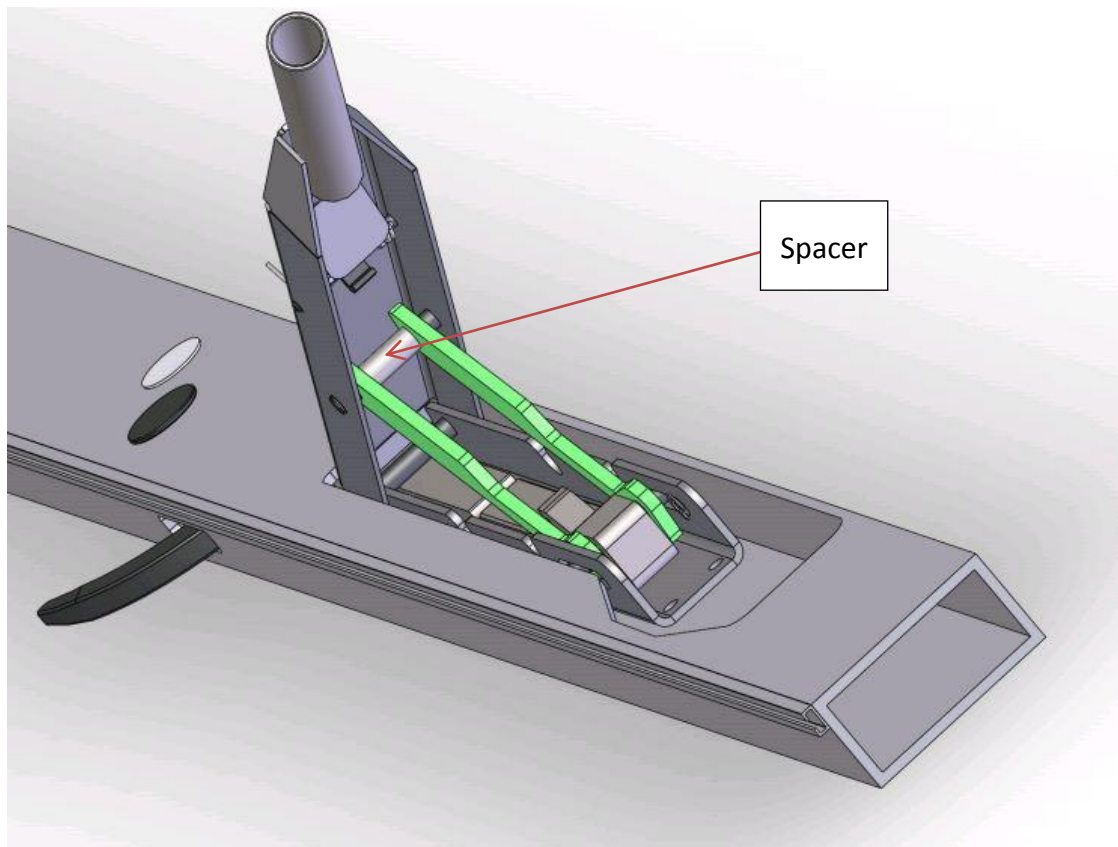


*Figure 2.3: Sliding tarp system for additional handling*

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The locking handle of end carriage is not designed for permanent use as a handhold. Test runs shows that there are some plastic deformations on green strut. The locking unit is redesigned and an additional spacer is added (cf. figure 2.4).



*Figure 2.4: Redesigned locking handle*

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A further outcome of test runs is that the moment of torque for roof lifting mechanism is fore some user to big. To reduce the forces, a parallel to lifting jack mounted gas spring is added (cf. figure 2.5). With this measure the forces are reduced to about 50%.



*Figure 2.5: Roof lifting system with additional gas spring*

A pleated skirt sealing is added to the tarpaulin in overlapping position to bottom frame pallet stopper. Figures 2.6 and 2.7 present the sealing in an open and closed position of the tarpaulin.

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Figure 2.6: Tarpaulin with pleated skirt sealing (opened)



Figure 2.7: Tarpaulin with pleated skirt sealing (closed)

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