# Prototype timber cassette with foldable stanchions

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| **Dissemination Level** | | |
| **PU** | Public | **X** |
| **PP** | Restricted to other programme participants (including the Commission Services) | |
| **RE** | Restricted to a group specified by the consortium (including the Commission Services) | |
| **CO** | Confidential, only for members of the consortium (including the Commission Services) | |

# Involved partners / Version control

Following project partners have been involved in the elaboration of this document:

| Partner N° | Organisation short name | Involved experts |
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# Abbreviations

| | |
|---|---|
| m | Metre |
| m² | Square metre |
| Roos | Four-axle timber wagon with fixed stanchions and headboards |
| Snps | Four-axle timber wagon with fixed stanchions |
| t | Tonne |

# 1 Background and objectives

## 1.1 Wagon types in rail freight transport

The efficiency of non-containerised single wagon rail freight often suffers from empty car transports: the needed wagon type for the transportation of goods differs depending on the respective origin/destination relation.

Because of this, freight wagons in single wagon load production schemes run a lot of their mileage empty, without payload. If the amount of empty mileage could be reduced by more flexible wagons able to carry different cargo, single wagon load freight traffic could be much more efficient.

## 1.2 Timber transports in single wagonload traffic

For timber transport on rail, usually special wagon types as Snps and Roos are used.

Due to their maximum axle load of 20 tonnes, the majority of these wagons in Europe can only be used for timber.

## 1.3 The Wascosa flex freight system©

**The multifunctional car is based on two elements:** a core platform and a superstructure solution; a range of removable, swappable and stackable bodies for a wide variety of cargo. The core platform is a full-featured 60' light container car that can be used without restrictions for transporting a variety of containers in intermodal traffic. With a tare weight of little over 17 tonnes, the car delivers the highest payload in its class in Europe.

**Figure 1: General concept of Wascosa flex freight system©**


*Source: Wascosa*

Thanks to the system's modularity, the core platform can be equipped with a range of compatible superstructure solutions for particular tasks and in response to seasonal fluctuations in the freight market. The available superstructures range from open and covered containers to flatbed-car and vehicle transporter superstructures; other

superstructures can be added at any time for the haulage of standard and specialised freight.

## 1.4 Objectives and development concept

The benefits of the WASCOSA flex freight system® are manifold: on one hand, it improves standardisation of a rail transport company's car fleet by reducing its complexity, thus improving the fleet's utilisation, productivity and overall operating efficiency while reducing its size at the same time. The flexible utilisation of the container cars and superstructures according to the type of freight allows for instant responses to seasonal or cyclical fluctuations. Additionally, the WASCOSA flex freight system® allows significant cost savings: storage charges, fixed service costs as well as maintenance overheads are decreasing.

In order to reduce the empty mileage cost (and thus making timber transport in single wagonload more efficient), cassettes need to be stackable when empty (cp. Figure 2). Consequently, the stanchions need to have a foldable design.

**Figure 2: Non stackable timber cassettes on Wascosa flex freight system©**


*Source: Wascosa*

# 2 Prototype timber cassette with foldable stanchions

## 2.1 Concept

The main characteristics of the timber cassette are as follows:

- The basis of the module is a 20' frame to be placed on a standard 20' position with container spigots.
- The module can be handled by both fork lift and reach stacker.
- The empty modules can be stacked on each other.

When not needed for transport, the cassettes will be stacked and therefore only use a few 20' positions on the train. The remaining load positions of the train can be, for instance, used for containers, swap bodies instead of running empty.

## 2.2 Technical data

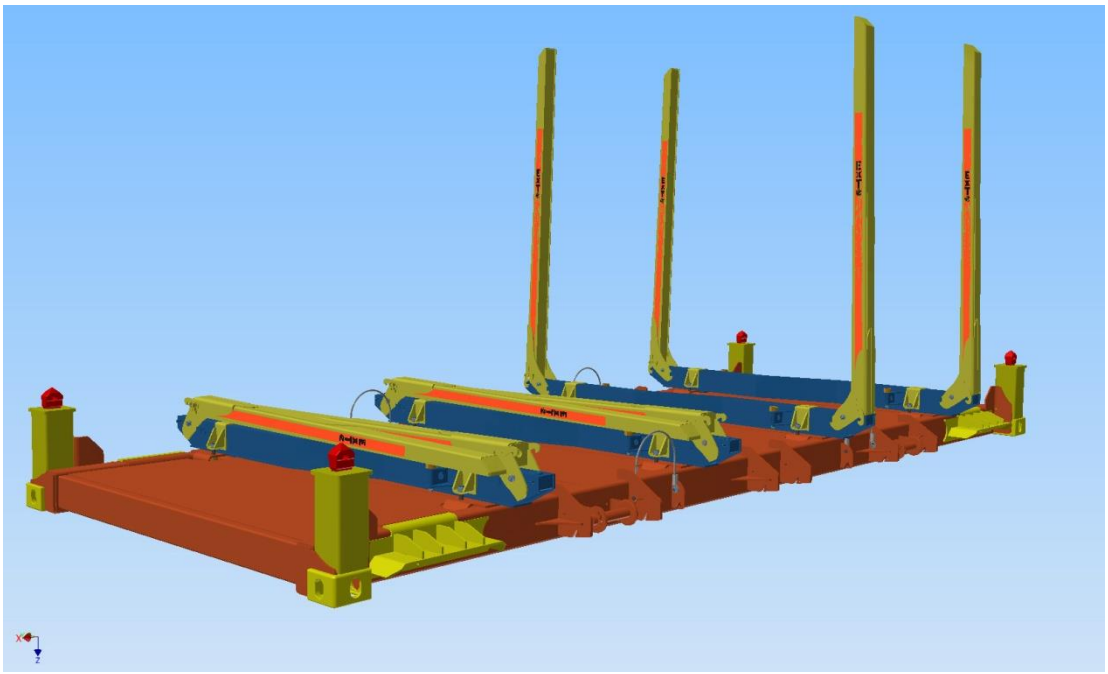
The main technical characteristics are summarised in Figure 3 below.

**Figure 3: Timber cassettes – technical data**

| Parameter | Dimension & Related standards |
|---|---|
| Timber cassette | 20' |
| Cassettes / 60' container wagon | 3 |
| Tare per cassette | 2,13 t |
| Tare per wagon | 23,80 t |
| Max. pay load per cassette<br>- Handling of loaded cassettes with fork lift<br>- No handling of loaded cassettes | <br>17,87 t<br>29,87 t |
| Pay load per 60' unit<br>- Handling of loaded cassettes with fork lift<br>- No handling of loaded cassettes | <br>53,61 t<br>66,20 t |
| Loading lengths | 2, 3, 4, 5, and 6 metres |
| Loading area (G1) | 5,00 m² |

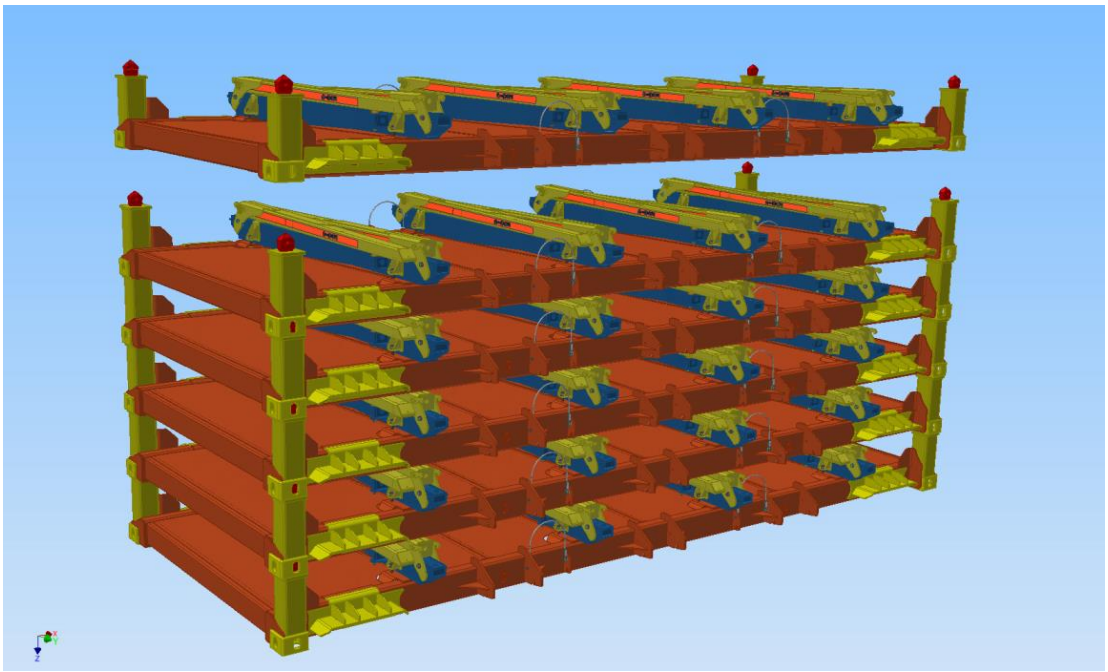
*Source: Wascosa*

**Figure 4: Design study stackable timber cassette**



*Source: Wascosa*

**Figure 5: Design study of stacked timber cassettes with stanchions folded down**



*Source: Wascosa*

## 2.3 Documentation of prototype delivery

For the development of the prototype platform the following steps have been carried out:

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| January 2014: | First concept elaborated |
| March 2014: | Technical concept finalised |
| April 2014: | Tender process started |
| May 2014: | Manufacturing Company selected / Subcontract signed with MHS Serwis Mikulski Hydraulika Sitowa (MHS), Poland |
| May 2014: | Technical details in collaboration with manufacturer specified |
| June 2014: | Prototype production started |
| July 2014 | Prototype production concluded |
| August 2014 | Prototype delivery to Wascosa |

**Figure 6: Prototype timber cassettes with foldable stanchions**

*Source: Wascosa*

## 2.4 Outlook to training/demonstration

Testing of the three prototype timber cassettes is ongoing, currently with the Swiss company Forstlogistik Partner AG. A detailed documentation on training and demonstration activities will be carried out within WP 9/10.