CLUSTERS 2.0

Transport Modularization, a Cluster perspective

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 723265.

CLUSTERS 2.0 Vision

Transport planning and optimization within logistics clusters and across networks of clusters through collaboration, co-ordination and standardisation

CLUSTERS Terminology

Agglomeration – Clusters – Logistics Clusters

Agglomeration: grown structures of industry attracting related industries

Clusters: Local competing companies co-operating for growth and innovation

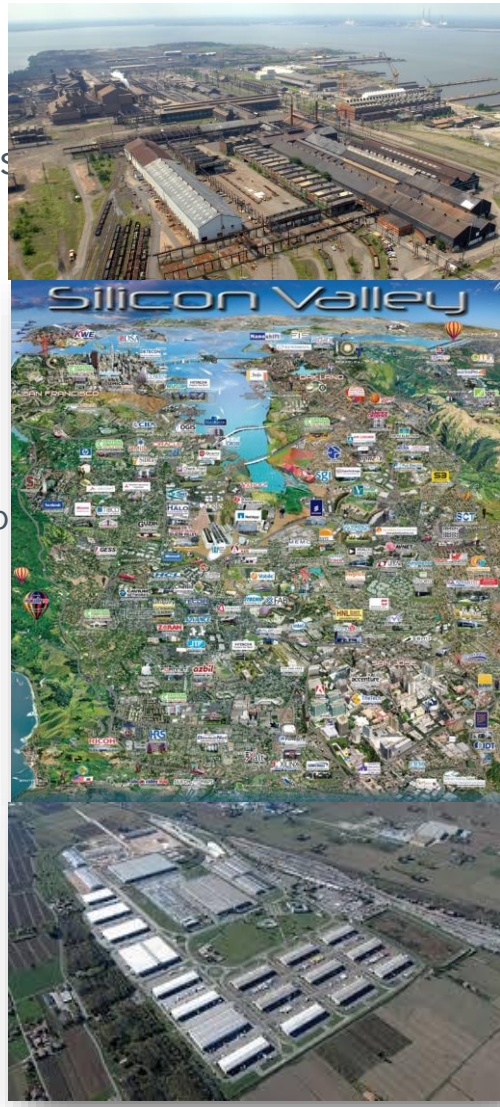
Logistics Clusters: Nodes along major trade routes co-operating to reduce transport costs and superior levels of services

Well established clusters

- Advance in competition: from imitation to innovation, from low investment to high
- Productivity through
  - specialisation and better access to specialised information
  - Better linking with institutions and public goods
  - Lowering transaction costs

Logistics clusters, less researched:

- Some agglomeration grow, some not
- Growth can be observed in ports and airports, but transferable?
- Good access to auxiliary industries as main benefit?
- What about collaboration, information sharing, knowledge exchange….



PI nodes

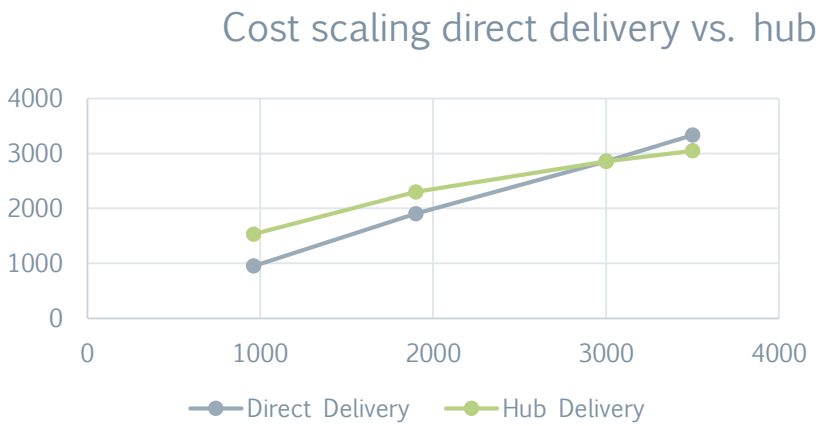
- PI nodes are high performance logistics centers aiming towards „universal interconnectivity“
  - Fast, cheap, easy and reliable interconnection of PI containers
  - Avoid load breaking
  - Targeting price level: FTL prices equal intermodal LTL
- PI nodes are routing and accumulating sites within the PI network and gateway for entities outside the PI
- Automation of loading, sorting and storage operations through standards applied on PI-containers

- PI nodes a „Vison towards efficiency“ but
- How to move from existing nodal structures to PI?
- How to establish collaboration there?
- What business model for modular units and automated operations?

PI nodes efficiency

- Interrupting transport process to increase load efficiency:
  - Consolidation increase consignment per stop
  - Consolidation to increase load efficiency of truck
  - Transfer to adapted vehicles
- Inefficiencies
  - Waiting time at cross docks and warehouses
  - Time consuming processes and handling
  - (Timely) synchronisation of incoming and outbound flows

Truck driving is only 30% of its operation time!



CLUSTERS2.0 Modularisation

CLUSTERS 2.0 aims to overcome inefficiencies at hubs

- Unstructured cargo
  - Limit the possibilities to stack
  - Not in line with vehicle dimensions
- Fast transshipment
  - At cross docks and warehouses
  - On trip
- No changes in trailer measures and dimensions
- Business model and exploitation
  - Take into considerations role and business models
  - Exploitable products
- Develop and test prototypes
  - NMLU functional testing
  - NMLU operational testing
  - Intermodal testing

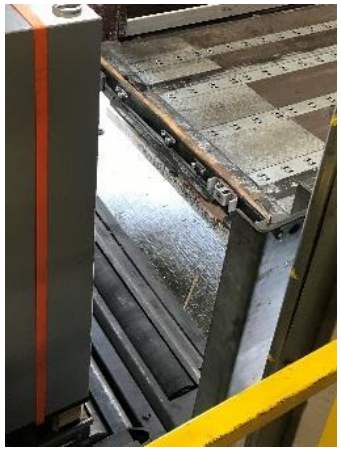
NMLU Prototype Testing

Findings

- Handling the proto hoods is impossible without a fork lift, plastic version must be light weight
- All handling tests succeeded, handling is safe
- 5 pallets fit easily on NMLU bottom and can be secured.
- Tests with all storage types succeeded

› **Handling of the hoods for covering loose cargo, but not optimal. Hoods as additional element to enable stacking in addition to Modular Load Units and stackable cargo.**

NMLU Prototype Testing



Findings

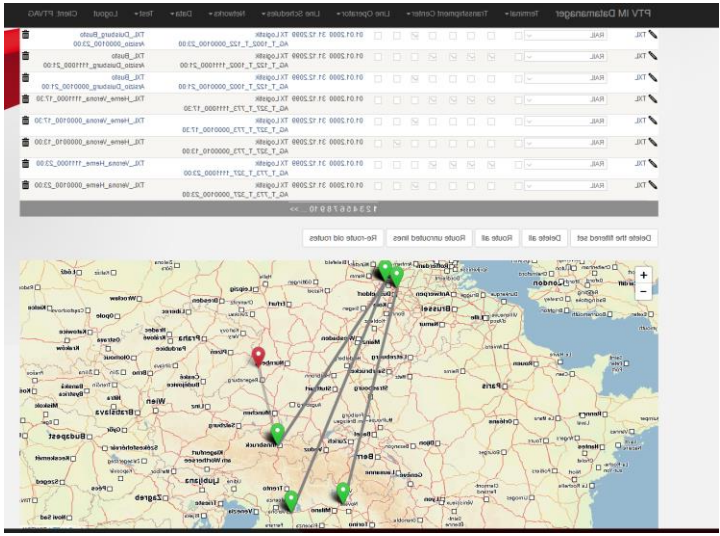
- NMLU can be used on existing roller bed equipment
- Loading and unloading of 1 NMLU (5 Euro pallet footprint) in less than 1 min
- Building of a NMLU (5 pallet footprint) in less than 5 min
- Pallet with hood no problem in warehouse
- NMLU lifting would need equipment up to 5t
- Space at the end of warehouse conveyor can be a limitation

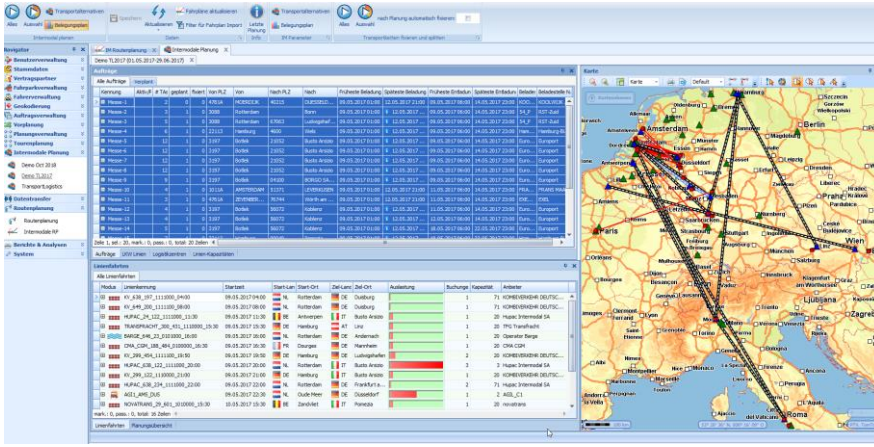
› **If the trailer fits to the ramp semi-automated (un-)loading and moving is easy and fast**

Cluster Mode Shift Concept

Modularisation provide the basis for freight sharing and modal shift:

- Quick Check: Macro Stream analysis for matching
- Massification: Set up intermodal Stakeholder workshops applying the massification concept in Pireus, Trelleborg, Dourges, Trieste, Bologna, Zaragozza
- Intermodal Scan: Assess potential at shippers to make use of Clusters and intermodal services: data, business model and network planning





CLUSTERS 2.0 Consortium

PTV GROUP
the mind of movement

Project Co-ordinator


Clusters 2.0

PTV GROUP
the mind of movement

Marcel Huschebeck, Chief Logistics Research
Marcel.Huschebeck@ptvgroup.com

www.clusters20.eu
info@clusters20.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 723265.