Presentation of the Study
“Transport of semi-trailers in UCT through Switzerland”

Bern, 28.11.2012

Programme

Introduction	**Frank Furrer, VAP**
Development of Combined Transport: **From the early stages to the most important production form of rail freight transport**	**Martin Burkhardt, UIRR**
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Subject “4-metre-corridor”	**Rolf Büttiker, CargoForum**
Questions & Answers	

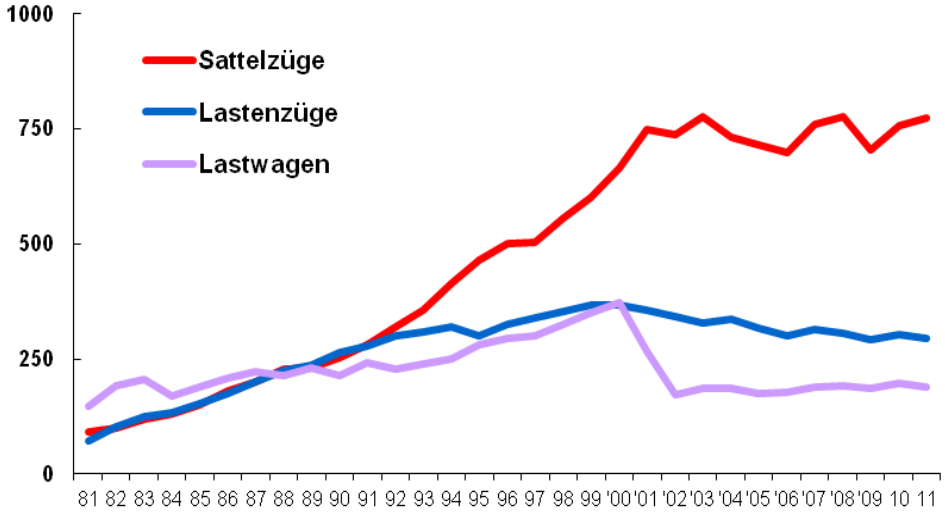
Introduction

Frank Furrer, Secretary General of VAP Verband der verladenden Wirtschaft

Bern, 28.11.2012

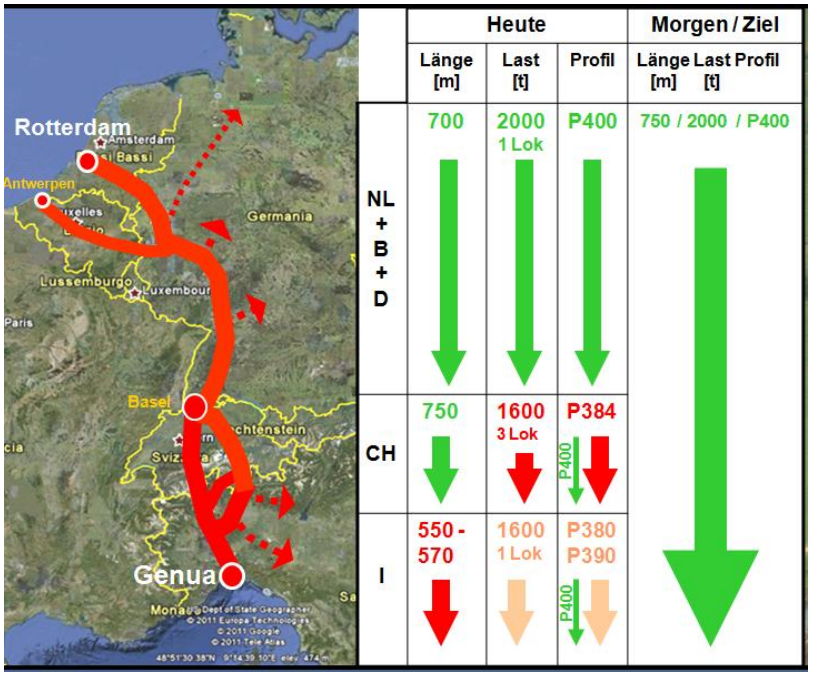
Transhipment potential semi-trailers

Transalpine road transport CH per vehicle categories Vh/Year



BAV, freight transport through Swiss Alps, 2011

Infrastructure bottleneck for P400 transports



> Corridor Rotterdam-Genoa: Parametre for freight transport

> Feeder lines to Gotthard-Base tunnel

> Consultation 4-metre-corridor September 2012

The development of Combined Transport:

From the early stages to the most important production form of rail freight transport

Martin Burkhardt, Director General UIRR
28 November 2012, Bern

UIRR: Organisation and tasks

International Union of combined road-rail transport companies (UIRR)

Supporting the development of Combined Road-Rail Transport in Europe

The UIRR-members carry out around 50% of the CT in Europe.

Liaison Office Brussels

- Promotion
- Coordination
- Services
- Projects

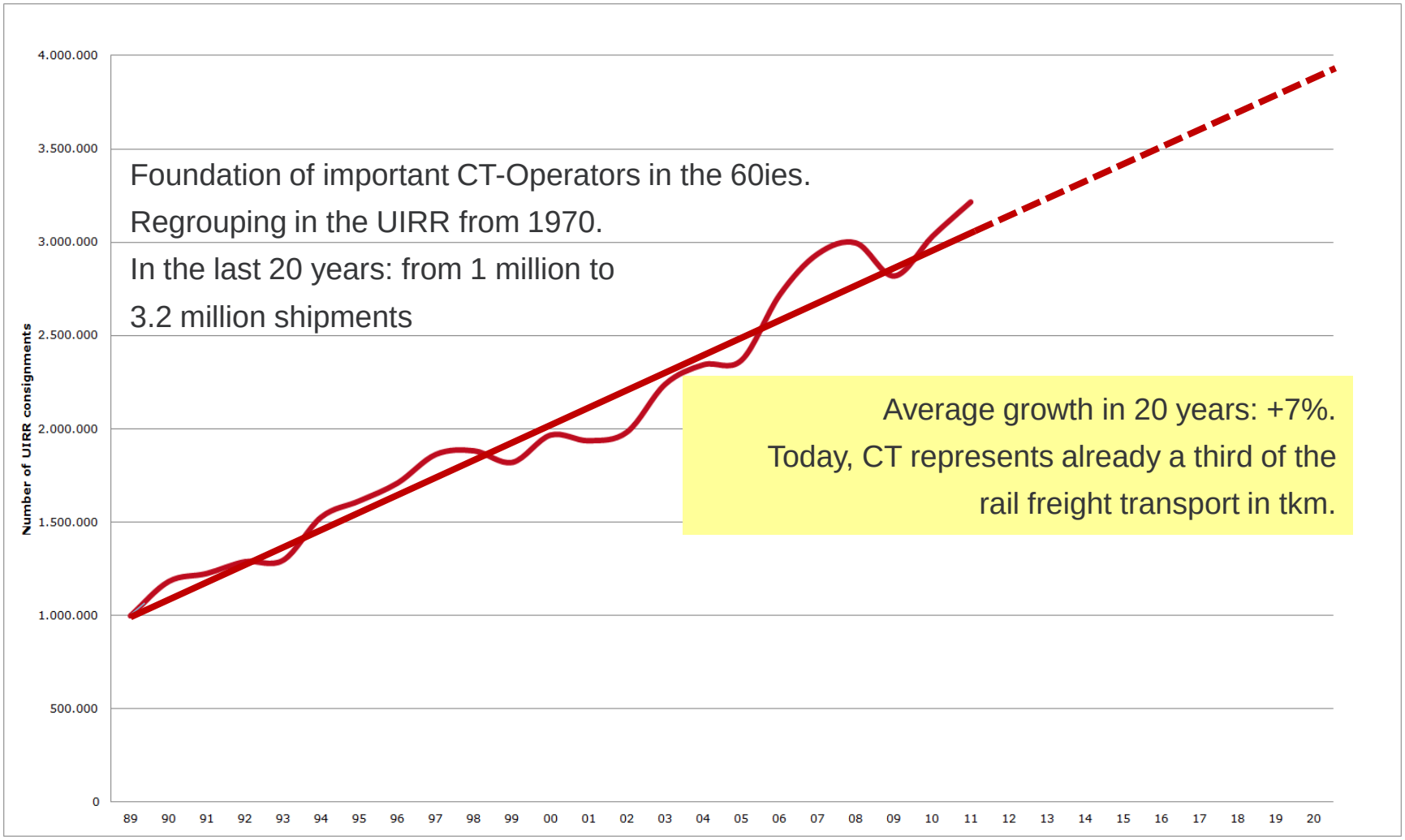
- Address: Rue Montoyer 31 box 11
  1000 Brussels (Belgium)
  www.uirr.com
  headoffice.brussels@uirr.com

Member companies (17 CT operators)

- Organisation and marketing of CT
- Making available of complete trains on a European network
- Investments in wagons and modern IT-systems
- Management of terminals

- Headquarters in 15 (EU/non EU) countries

The success story of Combined Transport



A UIRR shipment is equivalent to the capacity of a truck on the road (2.0 TEU).

Average distance of a CT shipment on rail: 600 - 700 km.

UIRR traffic flows – Unaccompanied transport 2011

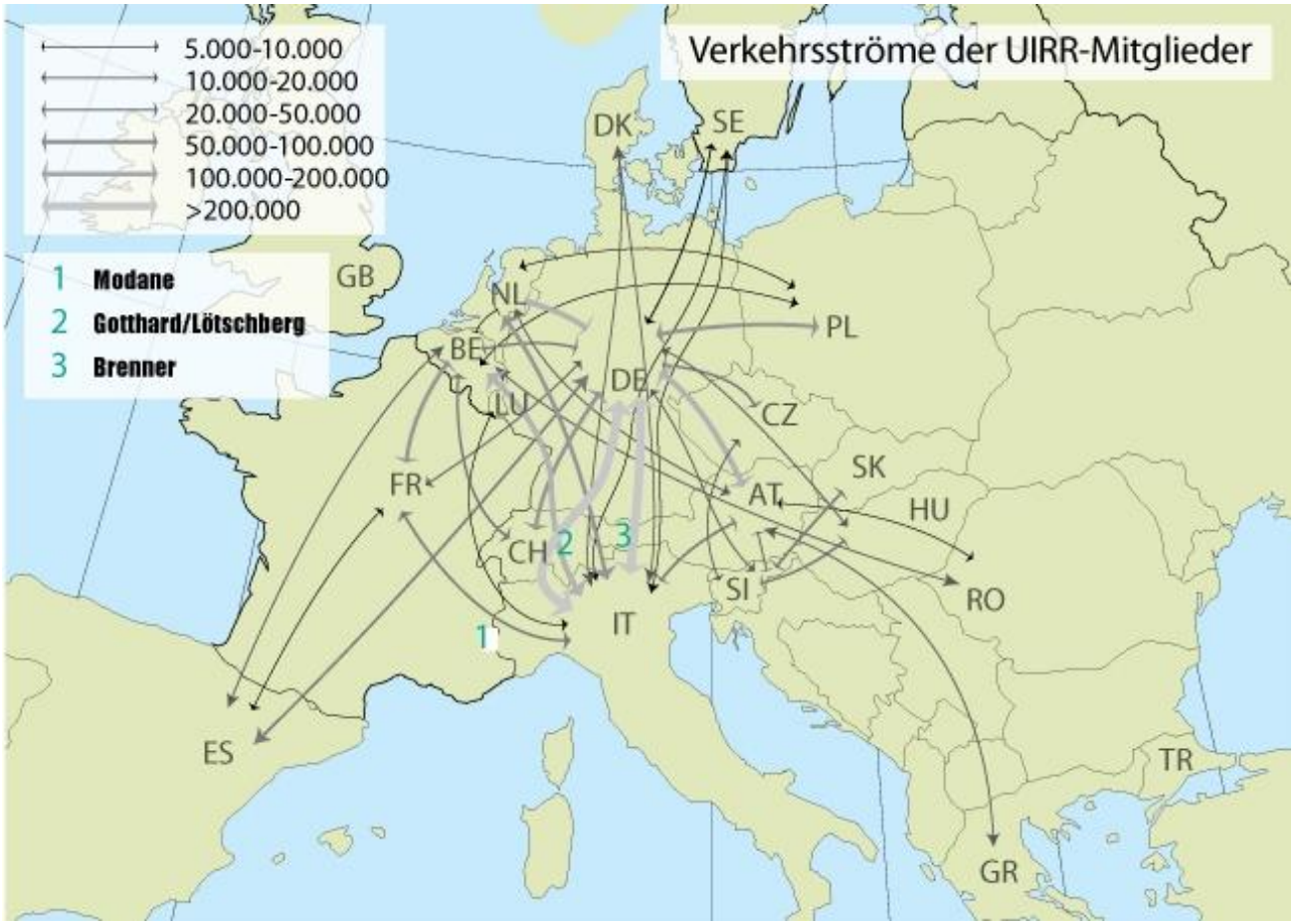
Alpine transit

The North-South transport prevails.

2/3 of the international transports on transalpine corridors.

Reasons:

- Better framework conditions
- Increased competition
- Good railway infrastructure



The opening of the Alpine Base tunnels Lötschberg, Gotthard, later Brenner and Lyon-Turin offers CT new growth possibilities on the most important axes.

EU Policy: 2011 Transport White Paper

The main objectives for long distance goods transport and CT

- 30% of the long distance road freight transport over 300km should be transhipped to rail, inland navigation or short distance maritime transport by 2030 and 50% by 2050.
- Reduction of the dependence on oil through modal shift.
- Reduction of the GHG emissions of transport (current CT already -75% CO_2)

The modal shift objectives mentioned in European Commission's White Paper are reachable. They require a 5% yearly CT-growth. The UIRR is working out an action plan on how to reach the modal shift objectives.

Main tasks for Member States and EU-Commission:

- Long-term stable framework conditions, i.e. Regarding weights and dimensions as numerous stakeholders must invest in CT
- Fair competition conditions between the transport modes for prices reflecting all the costs
- Measures to support modal shift
- Liberalisation and interoperability of rail transport
- Investments in an efficient rail network for freight


International Union of Road-Rail Combined Transport Companies

Position Paper:

UIRR's Combined Transport Roadmap 2050

inspired by the EC's 2011 Transport White Paper

- December 2012 -

Truckload

Unimodal

Wagonload

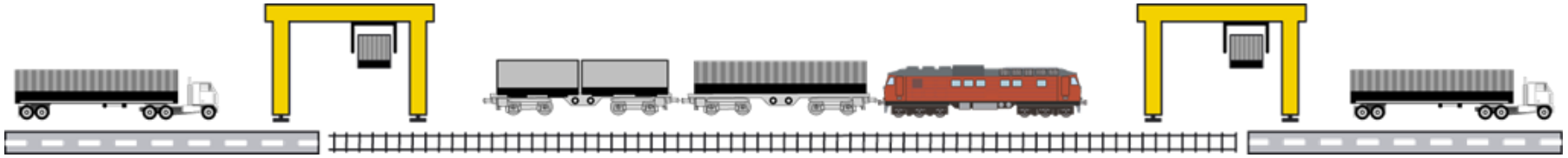
Multimodal

Containerload

Page 1 of 6

Conditions for the success of CT until today

Until now the development of Combined Transport was marked by standardisation. Transition from horizontal transhipment of road vehicles to vertical transhipment of intermodal UCT* loading units.



The only horizontal technique remaining is the Rolling Motorway/Road, which does not require any particular terminal and which can universally accept semi-trailers and road trains, for specific markets and as starting technique for UCT.

Recently, more and more new concepts of horizontal transhipment are being proposed, i.e. CargoBeamer and Modalohr.

As a basis for the elaboration of the action plan for the future modal shift to rail, UIRR has ordered a study to examine the operational and economical aspects of these two new techniques in comparison with UCT.

**UCT Unaccompanied Combined Transport with loading units: swap bodies, containers, semi-trailers*

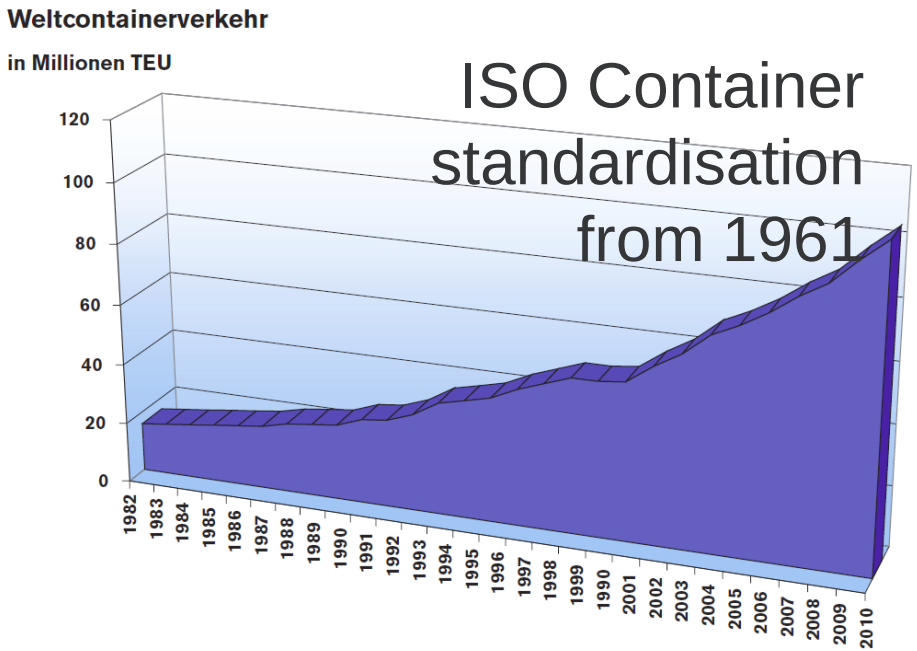
CT: from the early stages to a standardised system

Historical CT-techniques 1964-1986

Example of techniques with horizontal transhipment which were abandoned because the loading was time and staff consuming.

Transition to vertical loading and introduction of the universal pocket-wagons from 1973 which can transport semi-trailers, swap bodies and containers.

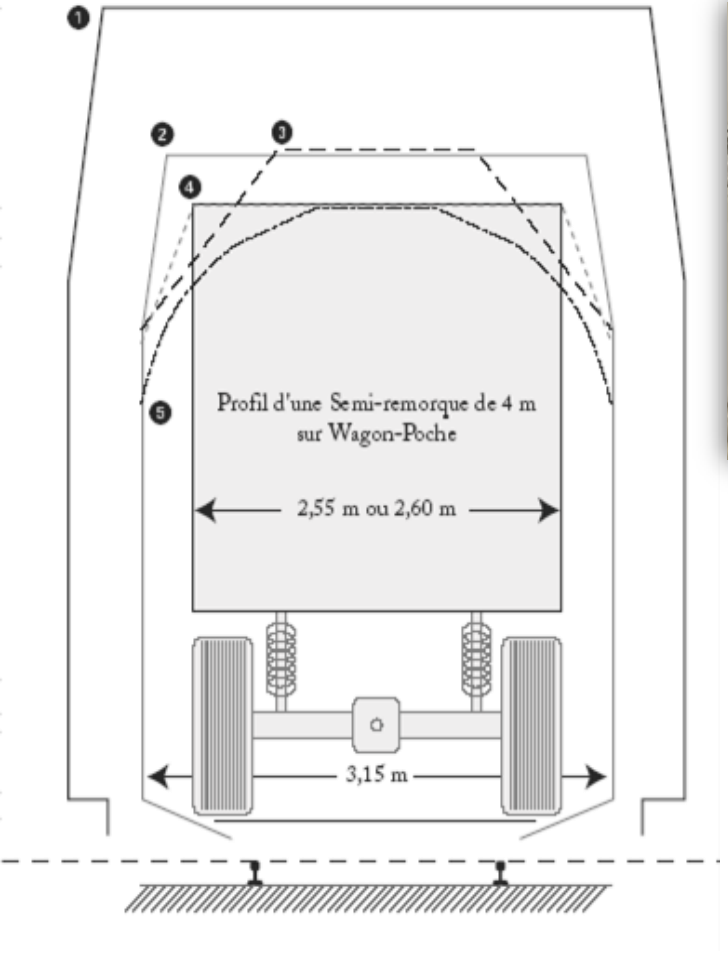
Standardisation: basis of the success of worldwide container transport



ISO Container standardisation from 1961

Standardisation is also the basis of continental CT‘s success

CT: from exceptional transport to regular transport

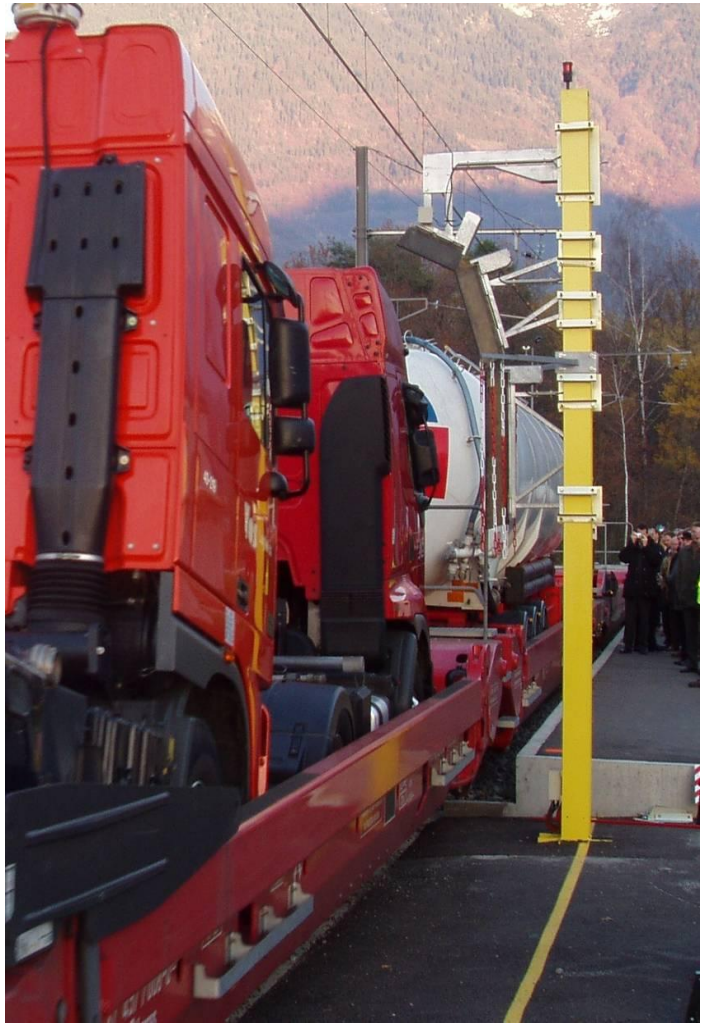


Tunnels in particular limit the loading gauge. CT exceeds the normal loading gauge of railway undertakings

Safety issues: see accident in USA

Adapting the infrastructure is expensive. The alternative: wagons with lower platforms and small wheels require higer investments and operational costs. Where does the system optimum lie?

Measurement in transport of non-codified loading units



At road entry – rail exit on terminals i.e. in Rolling Motorway – Modalohr – CargoBeamer

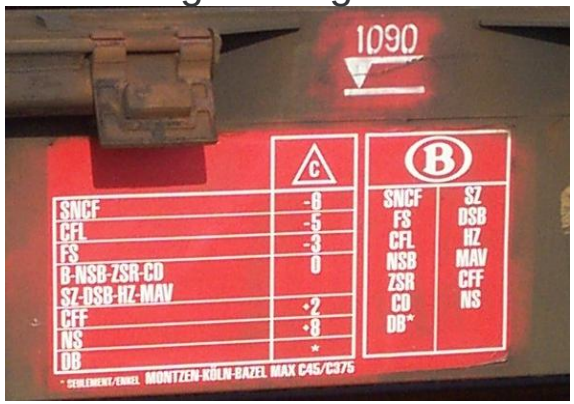
Standardisation through codification in UCT

In order to carry out CT on an industrial scale and to prevent from constantly re-measuring loading units, codification was introduced in the 70ies.

A system composed of three elements for efficient and safer operation.

1. Codification plate on the loading unit

2. Marking on wagons



3. Codification of the lines

Flexible as the truck through a multiplicity of standardised loading units

CEN standardised swap bodies and containers

craneable semi-trailers

ISO-container (maritime)

Joint elements for compatibility and safety

Corner fittings and spigots for an easy transfer between transport modes

Container with corner fittings

Wagons with spigots

Cranes with grappler arms (swap bodies with grapple zones and corner fittings below)

Standards also for the infrastructure

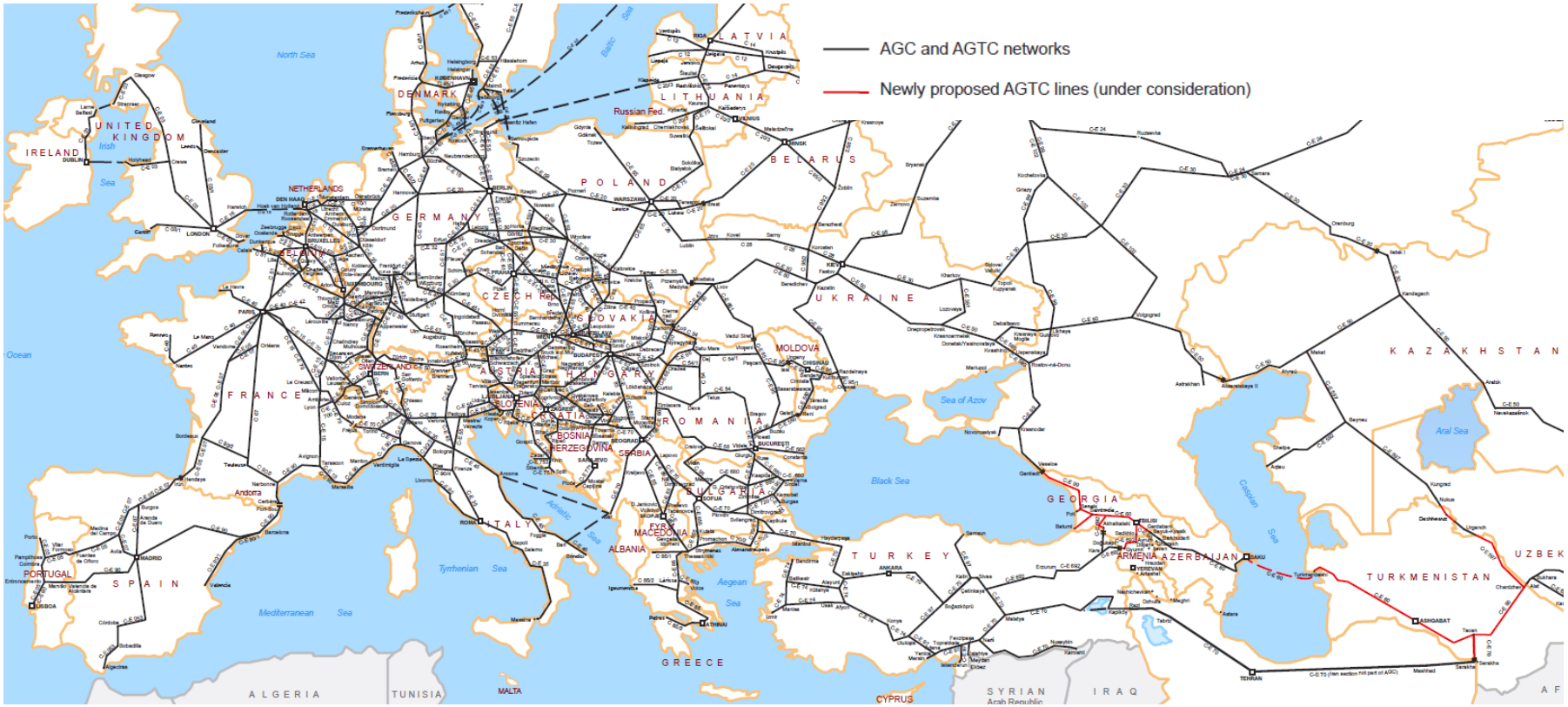
UN/ECE: AGTC-Agreement
EU: TSI-Infrastructure (route categories)

Aim for construction of new routes and on goods corridors is loading gauge C, enabling the transport of semi-trailers in standard pocket wagons and of road vehicles on low floor wagon.

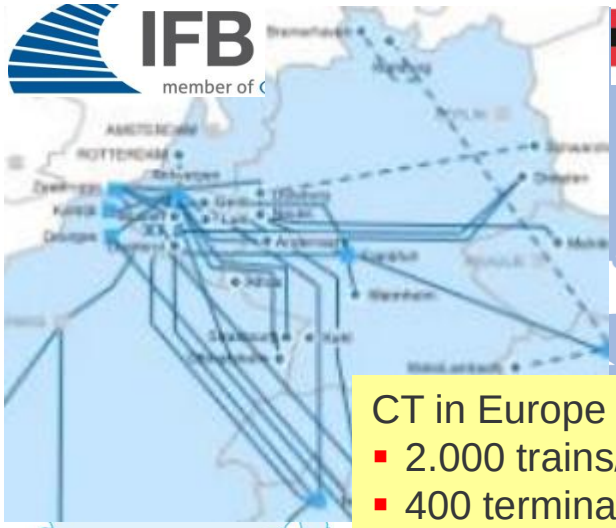
United Nations Economic Commission for Europe
UNECE

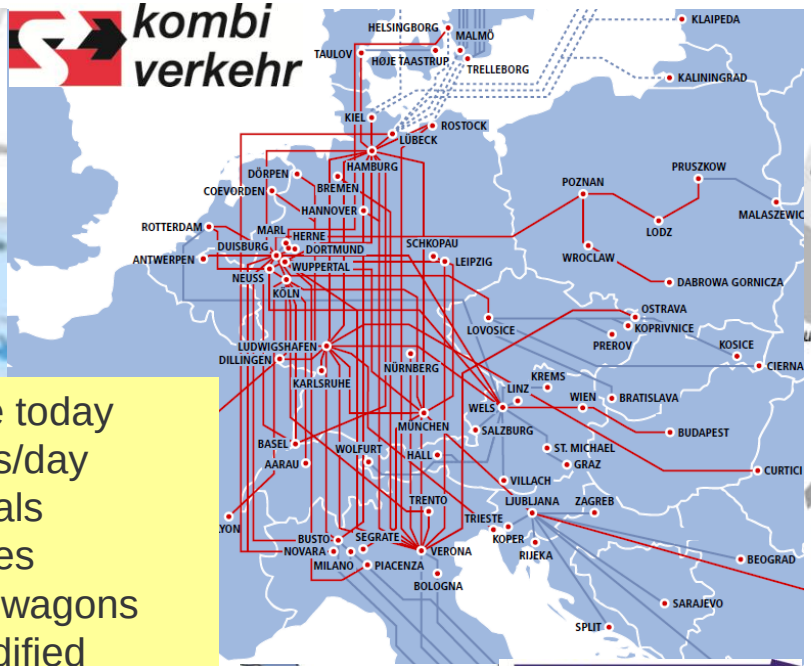
IMPORTANT INTERNATIONAL RAILWAY AND COMBINED TRANSPORT LINES

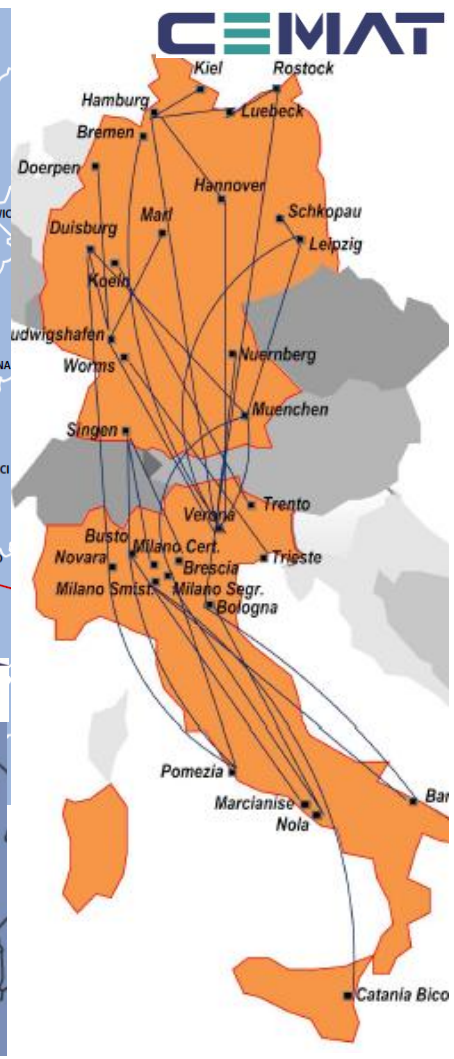
European Agreement on Main International Railway Lines (AGC)
European Agreement on Important International Combined Transport Lines and Related Installations (AGTC)



Network of CT-direct trains in Europe – Train change per Gateway

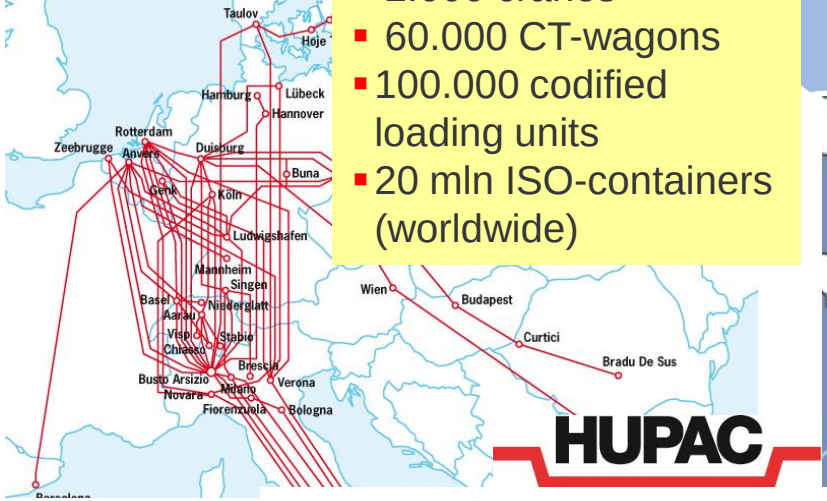


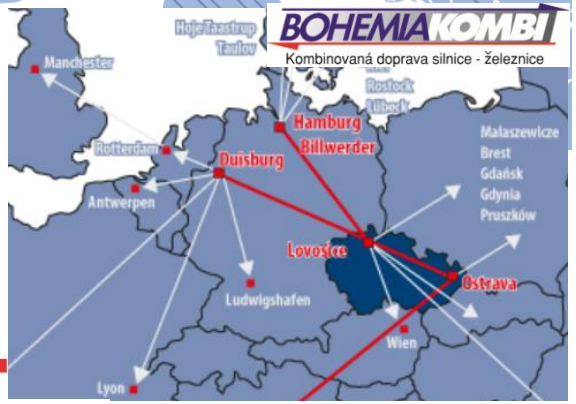


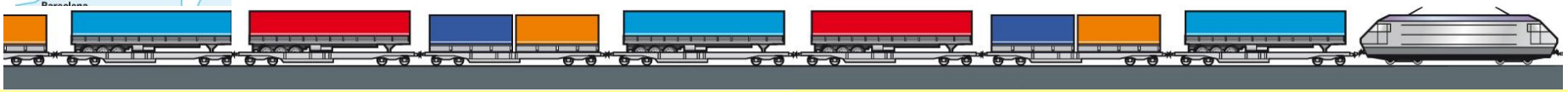


CT in Europe today

- 2.000 trains/day
- 400 terminals
- 2.000 cranes
- 60.000 CT-wagons
- 100.000 codified loading units
- 20 mln ISO-containers (worldwide)







Mixed transport of all loading units to reach complete train volumes

Combined Transport yesterday - today - tomorrow

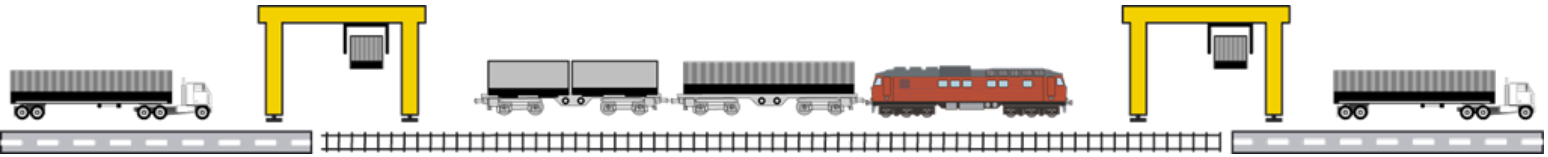
During the last 40 years, CT has been marked by

- Standardisation of loading units, wagons, cranes, infrastructure for an industrial production system.
- Extension of the offer through specific techniques on specific markets.

Are these also the foundations for the future?

Which role can innovations and horizontal transhipment techniques play for the future evolution of CT?

Thank you for your attention!



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beraten planen umsetzen

Presentation of the UIRR Study

Bern – 28 November 2012

Transport of semi-trailers in unaccompanied Combined Transport through Switzerland

Rainer Mertel – KombiConsult, Frankfurt am Main

Presentation of the studied technologies

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UCT-actual: vertical transhipment of craneable semi-trailers on pocket wagons

Source: Kombiverkehr

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Modalohr NA for horizontal transhipment

Source: Lohr; KombiConsult

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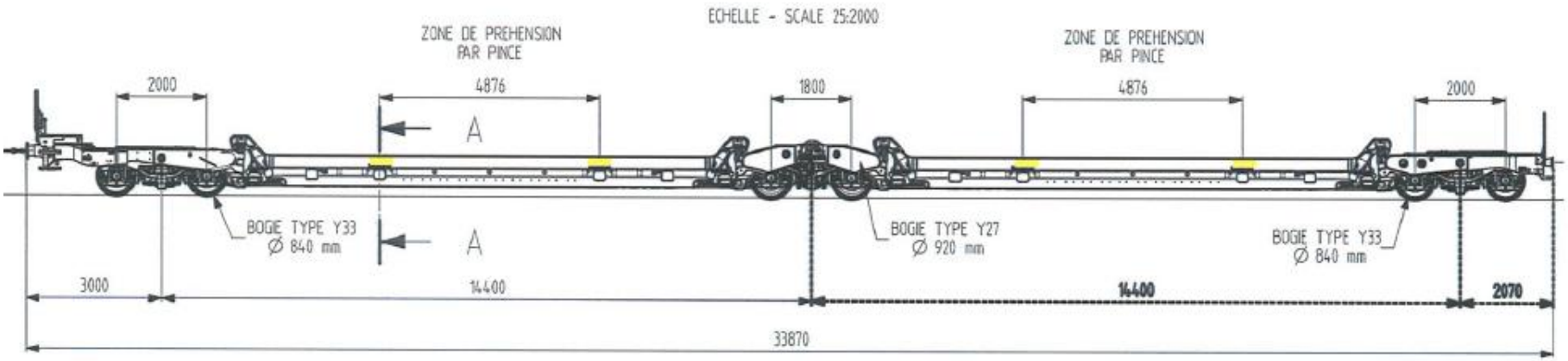
Modalohr UIC: vertical transhipment of craneable semi-trailers on specific pocket wagons (also horizontal transhipment?)



Source: Lohr

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CargoBeamer: horinzontal transhipment of semi-trailers

Source: CargoBeamer

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Description of the tasks

- System comparison of the four technologies, especially regarding their specific cost components
- Comparative cost analysis of appropriate technologies to reach the Swiss traffic transfer objective through the transfer of semi-trailer transports

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Determination and comparison of performance parameters

- Train capacity
- Capacity of a transhipment yard
- Surface requirements and investment costs of a transhipment yard
- System costs for a Terminal-Terminal CT-transport

▶ Assumption for all technologies: they are all implemented in a dedicated system (terminal, wagon), thus only semi-trailers are handled and shipped.

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Train capacities

- Max. number of semi-trailers per train, which could be shipped by full exploitation of the train-parameters of the corridor (700 m; 1.800 t)

Technologie	Ladeeinheit (LE)			Wagen	Σ (LE + Wagen)	Max. Zug-gewicht	Max. Anzahl LE je Zug
	Ladung	Tara	Gesamt				
	(Tonnen)						(LE)
UKV-Ist Sattelanhänger	20	7,5	**27,5**	17,3	**44,8**	1.800	**40,2**
Modalohr horizontal	20	7,2	**27,2**	20,3	**47,5**	1.800	**37,9**
Modalohr UIC	20	7,5	**27,5**	20,3	**47,8**	1.800	**37,7**
CargoBeamer	20	7,2	**27,2**	31,0	**58,2**	1.800	**31,0**

Source: KombiConsult

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Transhipment capacities

Technologie	Sattelanhänger je Zug (LE)	Be- + Entladezeit Zug (min)	Zugfolgezeit (min)	Zugpaare je VT	Umschlagkapazität (LE je VT)	Umschlagkapazität (LE p.a.)
UKV-Ist Sattelanhänger	34	68	78	16	1.088	272.000
Modalohr horizontal	32	256	316	4	256	64.000
Modalohr UIC	32	96	106	12	768	192.000
CargoBeamer	26	10	180	7	364	91.000

Assumption average train load of 85%

Source: KombiConsult

System comparison

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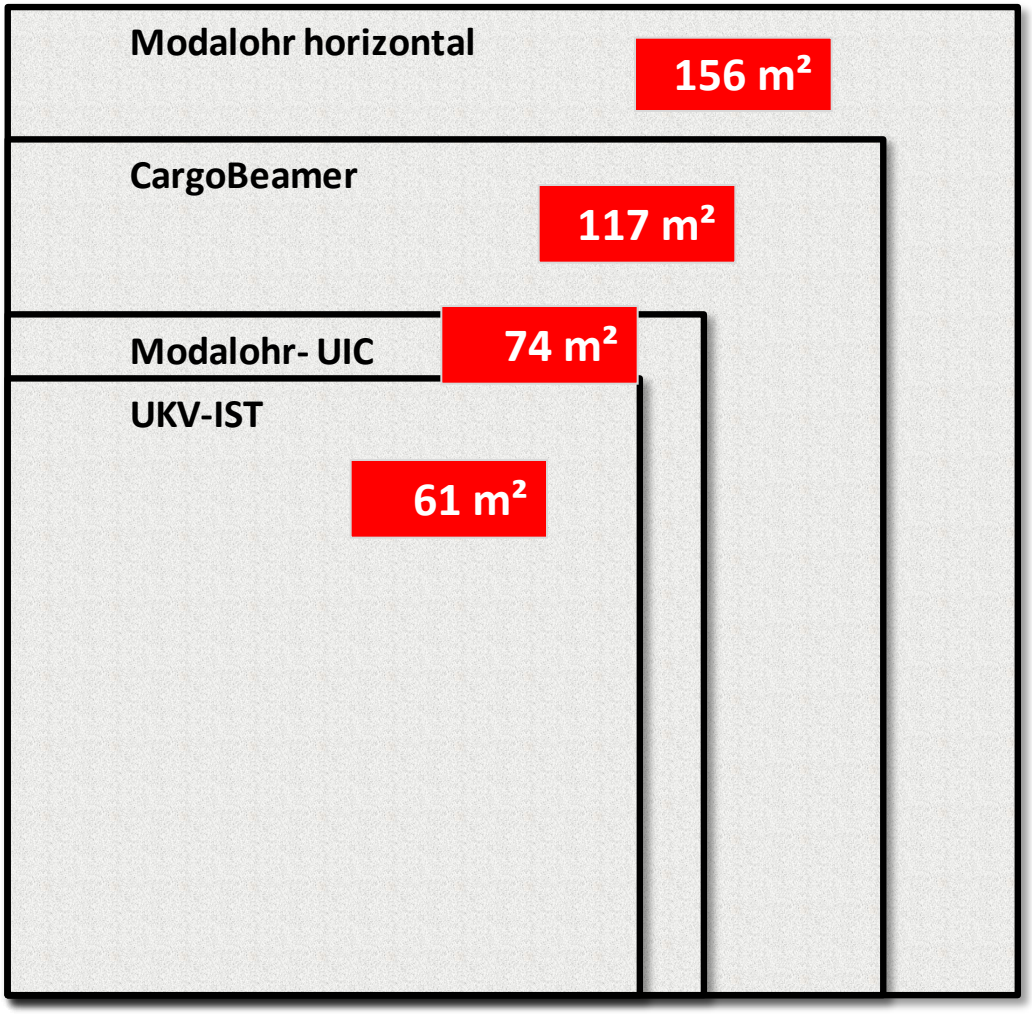
Specific surface requirements for the transhipment capacity of 1 semi-trailer



Source: KombiConsult

System comparison

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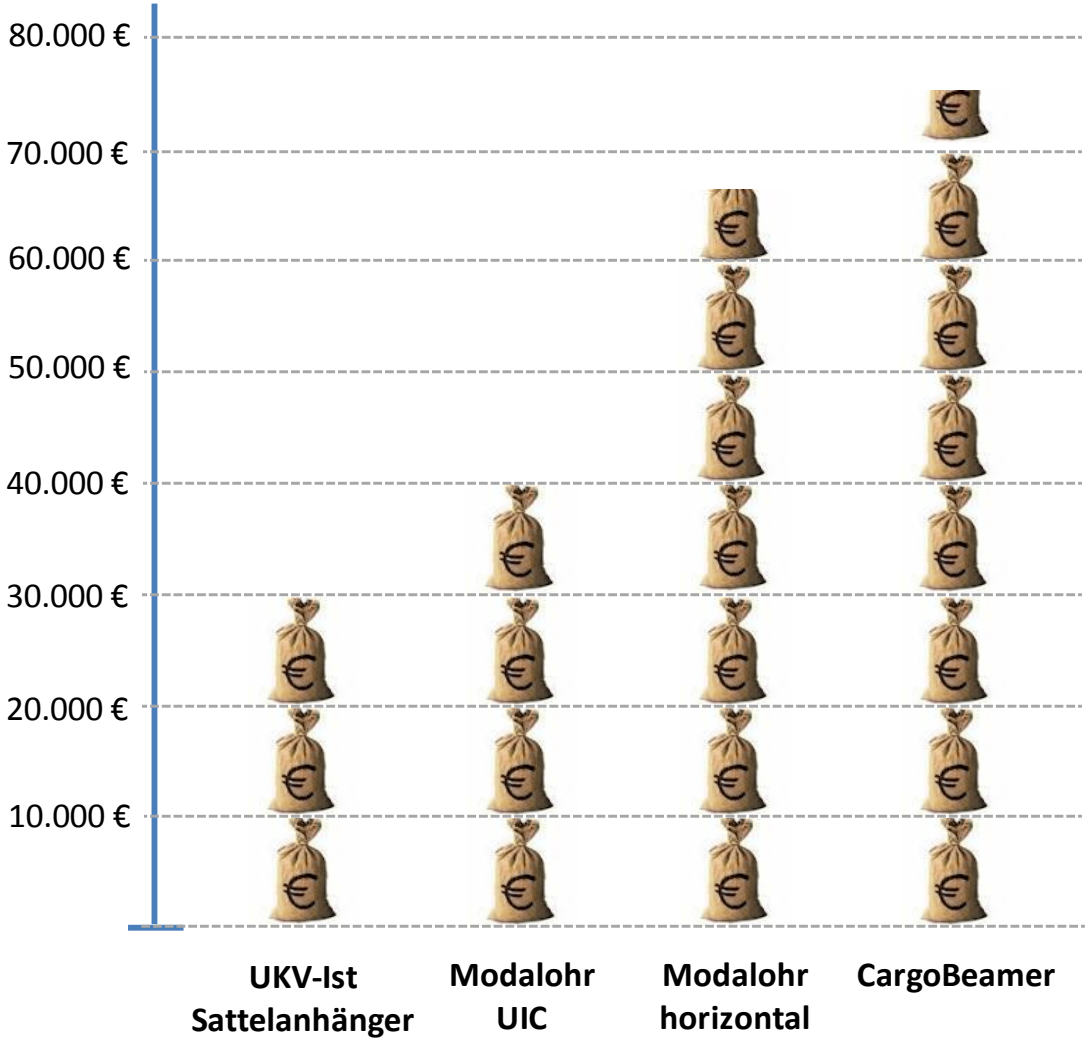
Specific investment costs for the transhipment capacity of 1 semi-trailer



Source: KombiConsult

System comparison

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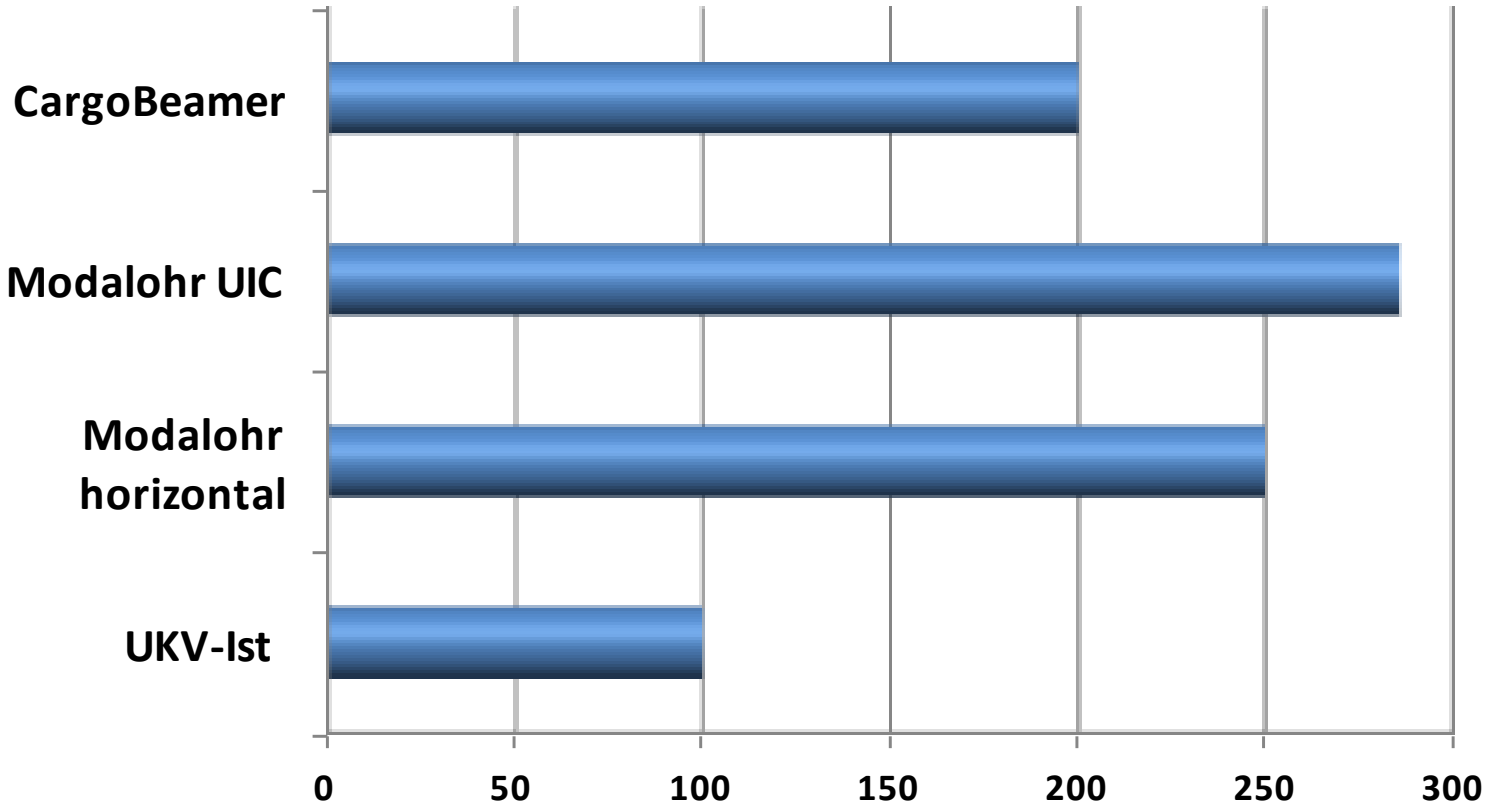
Investment costs for wagons per semi-trailer space (indexed)



Source: KombiConsult

System comparison

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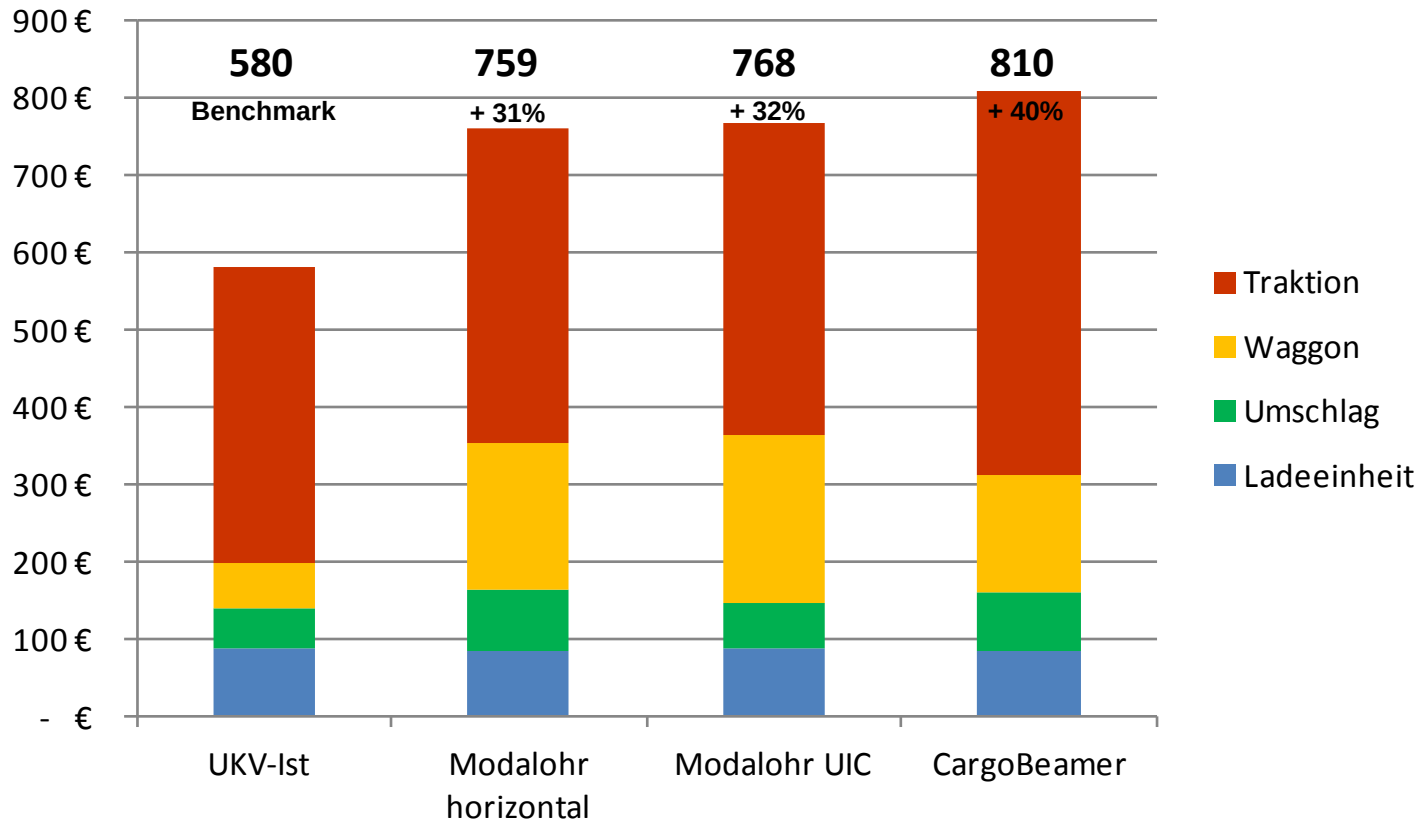
System costs for the terminal-terminal transport of a semi-trailer on the Köln-Milano route



Source: KombiConsult

Costs of the transfer of semi-trailer transports via CH

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Assumptions

- Appropriate technologies:
  - UCT-actual, if 4-meter-corridor is implemented on the Gotthard-axis
  - Modalohr-UIC, if feasibility is certain and wagon is authorised
- Technologies considered as not appropriate:
  - CargoBeamer: requires a higher increase of gauge than UCT-actual
  - Modalohr-horizontal: adaptation of the whole rail infrastructure DE-IT
- Calculated tanshipment requirement of 639.000 semi-trailers in 2020 for a semi-trailer share in transalpine road freight transport of 75% (2011: 70%)
- Optimal operating conditions, i.e. sufficient train paths; the train can be reloaded immediately after unloading.

Source: KombiConsult

Costs of the transfer of semi-trailer transports via CH

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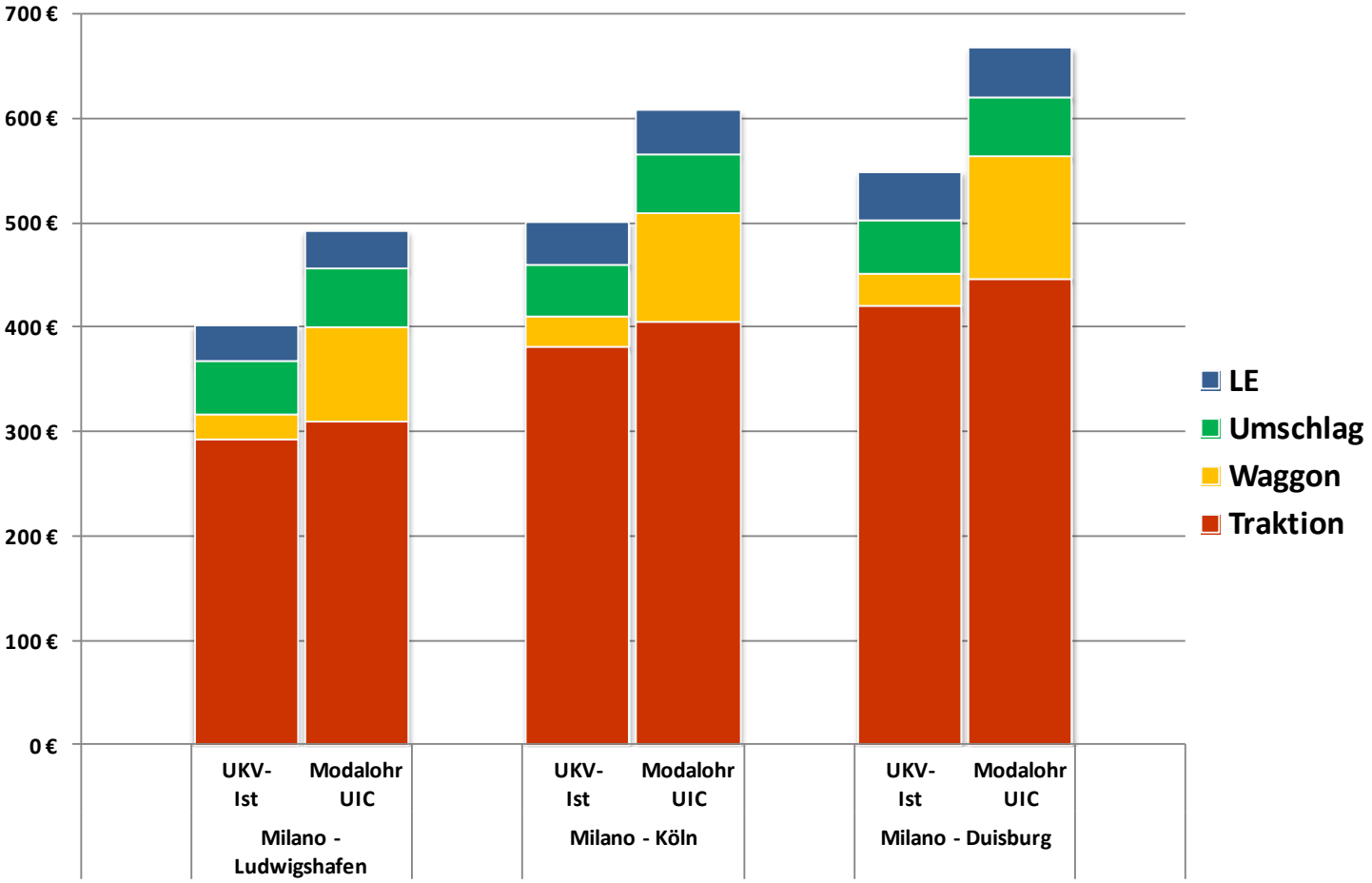
Costs of UCT-actual and Modalohr-UIC for transport of semi-trailers on three sample routes Milano – Duisburg/Köln/Ludwigshafen



Source: KombiConsult

Costs of the transfer of semi-trailer transports via CH

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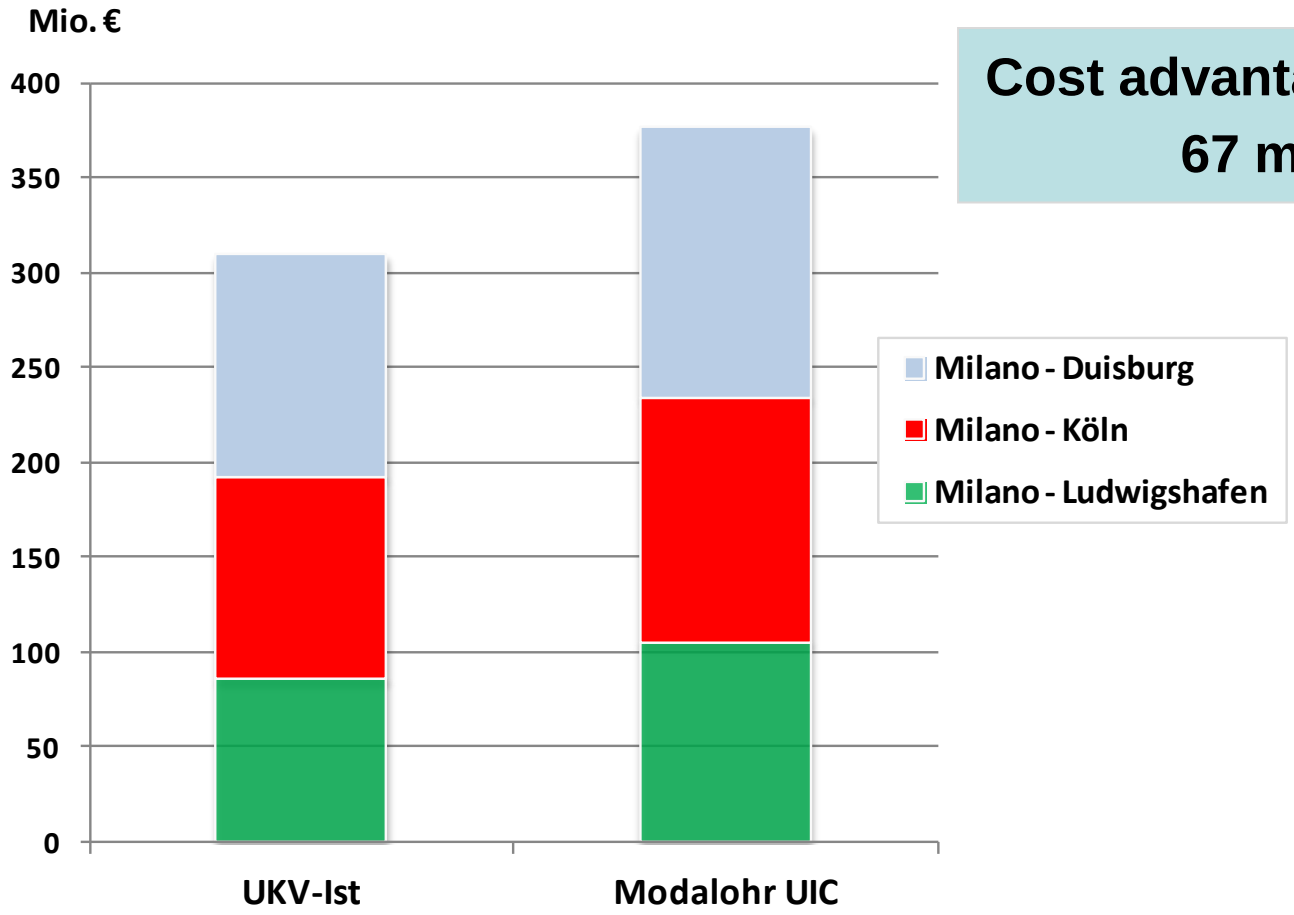
Yearly total costs of UCT-actual and Modalohr-UIC if implementation of the 2020 transfer requirements



Cost advantage UCT-actual: 67 mln € p.a.

Source: KombiConsult

Costs of the transfer of semi-trailer transports via CH

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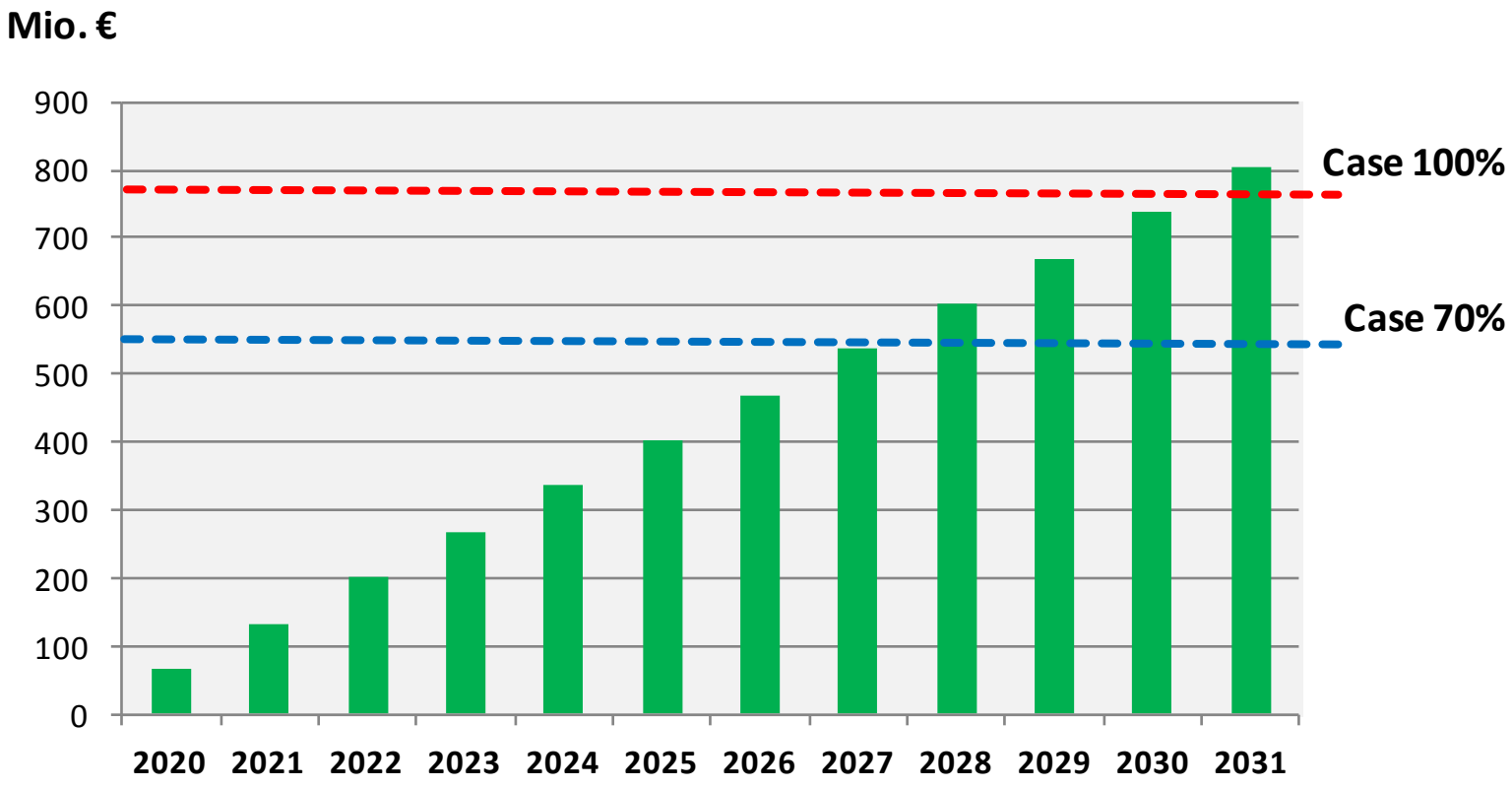
„Pay-back-Period“ for the investment costs for 4-metre-corridor of 940 mln CHF (783 mln €) when using UCT-actual vs. Modalohr-UIC



Source: KombiConsult

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Conclusions

- CargoBeamer and Modalohr-horizontal cannot:
  - solve loading gauge problems;
  - transport craneable semi-trailers, this however comparatively leads to high and probably long-term subsidy needs.
- Modalohr-UIC (insofar as feasibility proven) can solve gauge problems without infrastructure investments but some questions remain:
  - more than 20% higher costs than UCT-actual (additional subsidy needs?);
  - still considerably more expensive, if vertical and horizontal Modalohr-systems would have to be combined; and also no interoperability with UCT-actual;
  - „Exceeding“ the gauge tolerances increases vulnerability (safety?) and complexity and goes against the success of standardisation, the simplification of CT-technologies and the structuring of operations

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Conclusions

- UCT-actual needs the 4-m-corridor in order to reach the transfer objectives. The required infrastructure investments amount to:
  - „Payback“ after 8-12 years in comparison with the extra costs for Modalohr-UIC
  - Building of a sustainable competitive infrastructure
- UCT-actual has greater flexibility – Transport of all sorts of CT loading units – and therefore better meets the demands of various logistics markets.
- If a „provisory solution“ to increase the transfer effect is seen as (politically) absolutely necessary, shouldn‘t then the exceptions (giving up safety tolerances in lower gauge) also apply for UCT-actual with pocket wagons?


Thank you!
smits
LKW WALTER

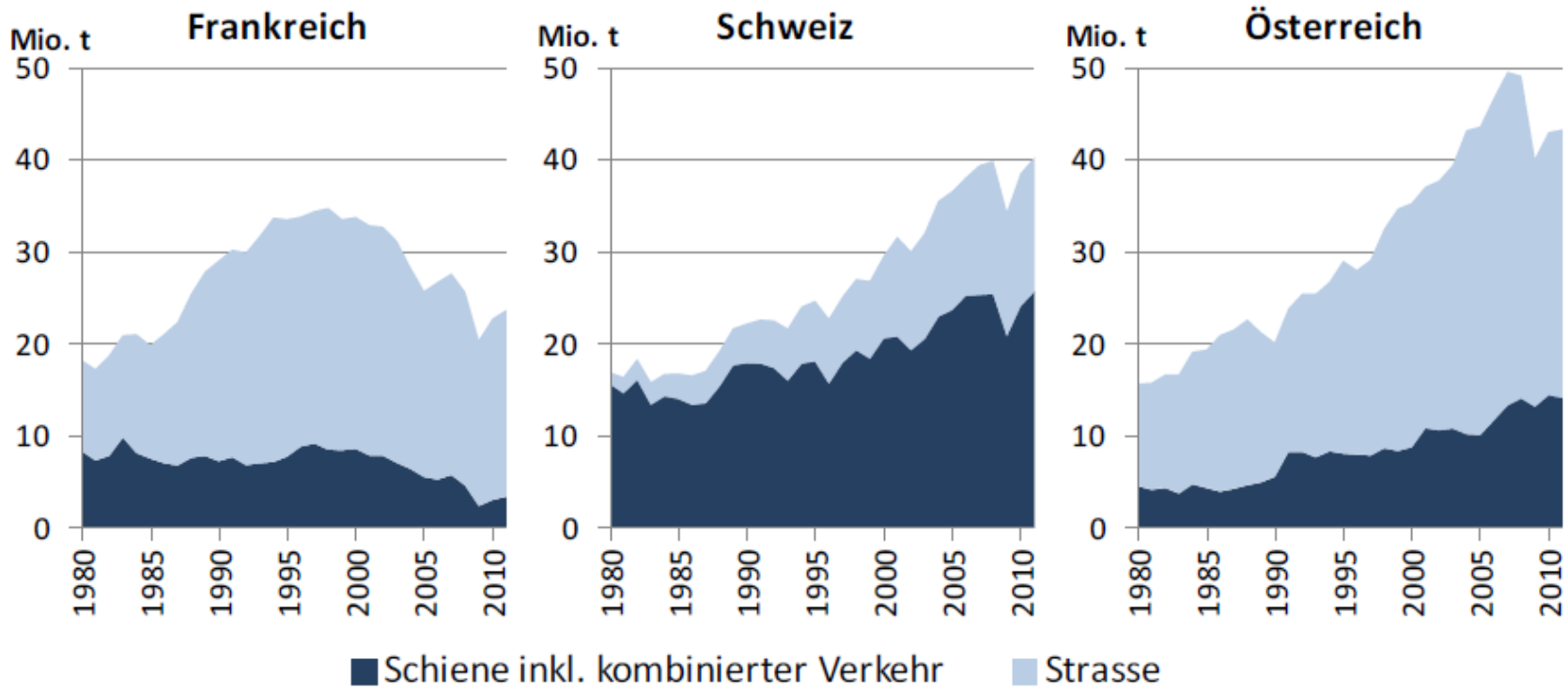
Topic „4-metre-corridor“

Rolf Büttiker, former Council of States and Chairman of Cargo Forum Switzerland

Transit-transport policy of Switzerland in international comparison

Alpenquerender Güterverkehr 1980-2011

Mont-Cenis / Fréjus - Brenner Mio. Tonnen/Jahr (Netto)

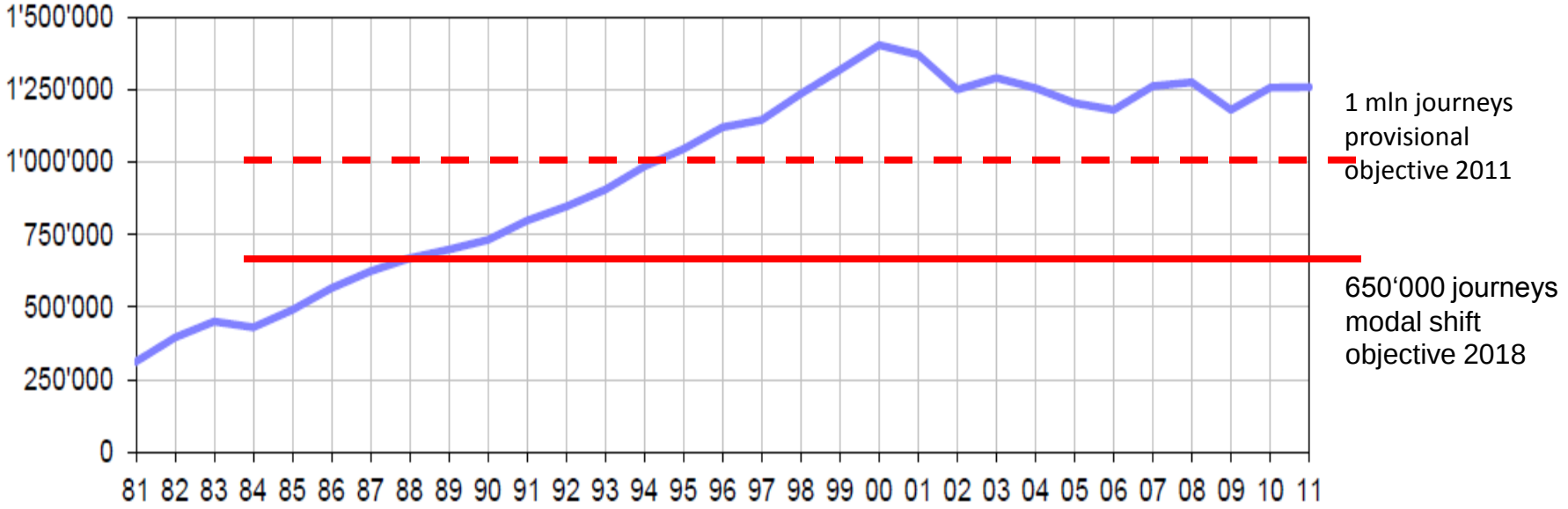


	2011 *		2011		2011	
Strasse	20.3 Mio. t	85.7%	14.5 Mio. t	36.1%	29.3 Mio. t	67.5%
Schiene	3.4 Mio. t	14.3%	25.6 Mio. t	63.9%	14.1 Mio. t	32.5%
Total	**23.6 Mio. t**		**40.1 Mio. t**		**43.3 Mio.** t	

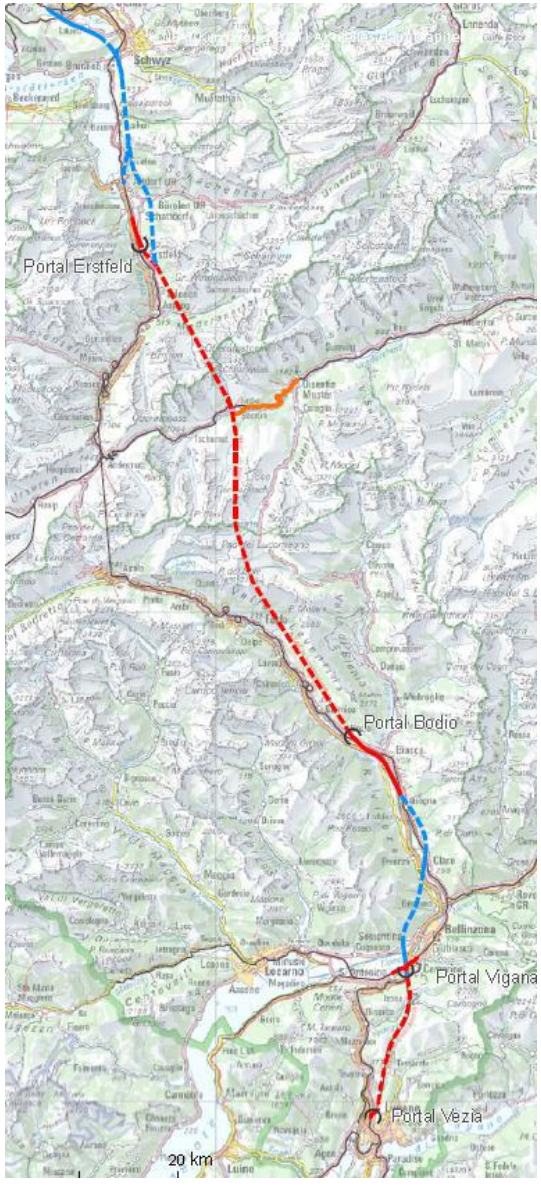
Further measures required for approaching the modal shift objective

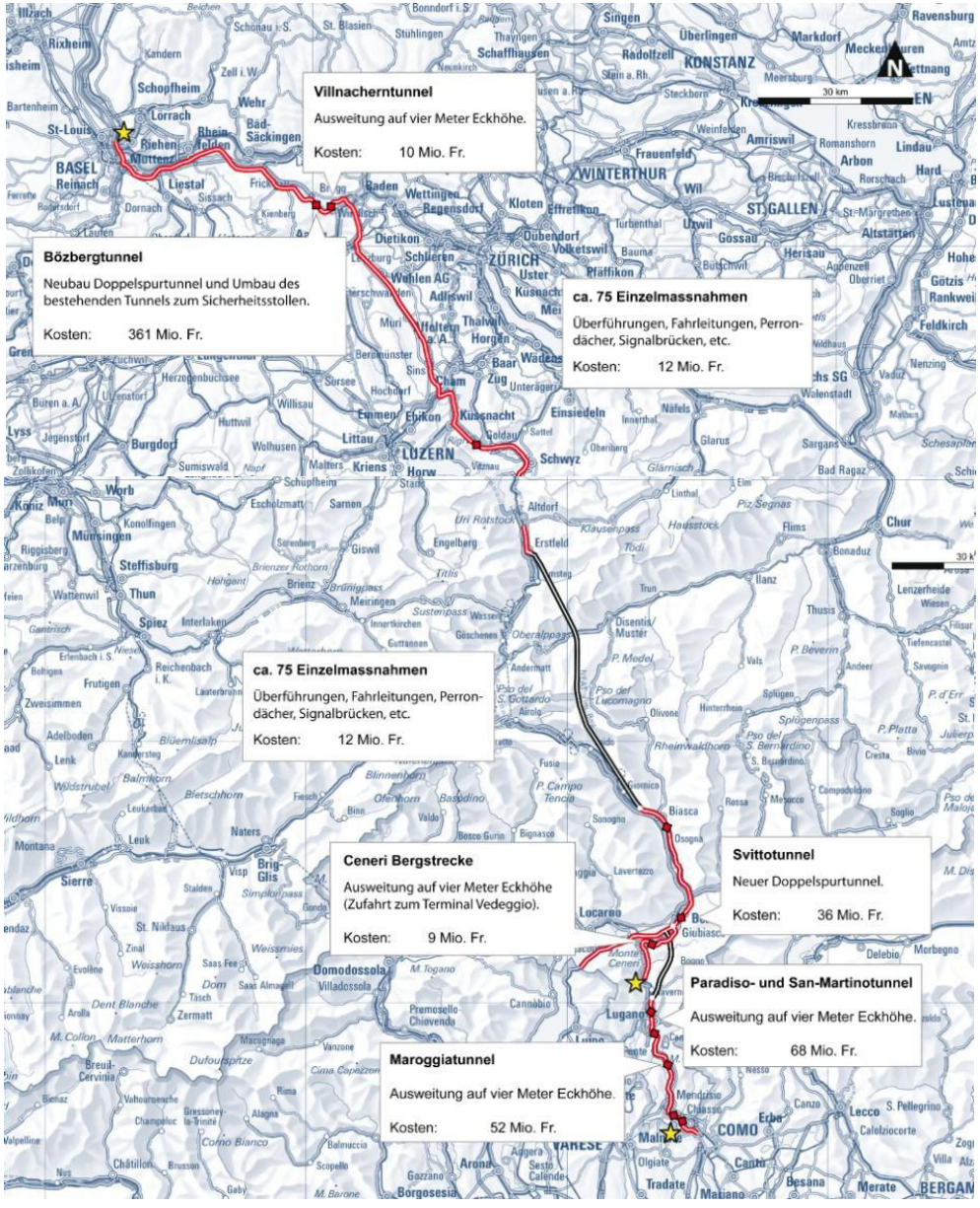
Heavy freight vehicles via the Swiss Alps 1981 – 2011

Vehicles per year



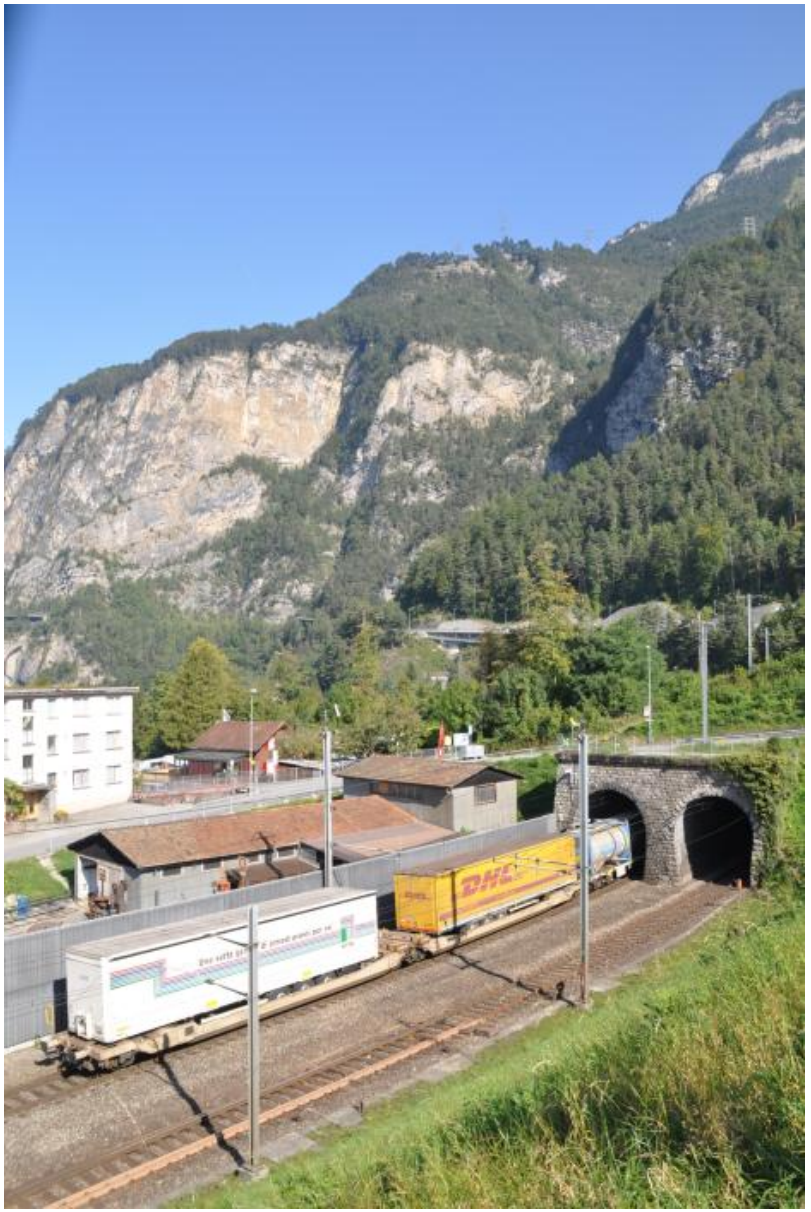
Gotthard 2016, Ceneri 2019, 4-metre-corridor 2020-2022?





Four-metre-corridor Gotthard-Axis

- Rail transport of trailer trucks with 4 metre corner height
- by 2020, 210.000 truck journeys could be avoided instead of 70.000 with NEAT alone
- Costs 940 mln CHF/ Financing through FinöV-Funds/BIF
- Inclusive pre-financing of the required gauge increase in Italy



Solutions with specific rolling material: can Switzerland afford another isolated solution?

- Capacity limited, isolated solutions
- Provisional solution and supplement to four-metre-corridor
- Higher costs and higher subsidy needs in comparison to UCT-actual

Modalohr

Open questions

- Subsidy efficiency?
- Commercial viability?
- Market acceptance transport of not craneable semi-trailers?
- Safety risk?

Rolling Motorway

Questions & Answers