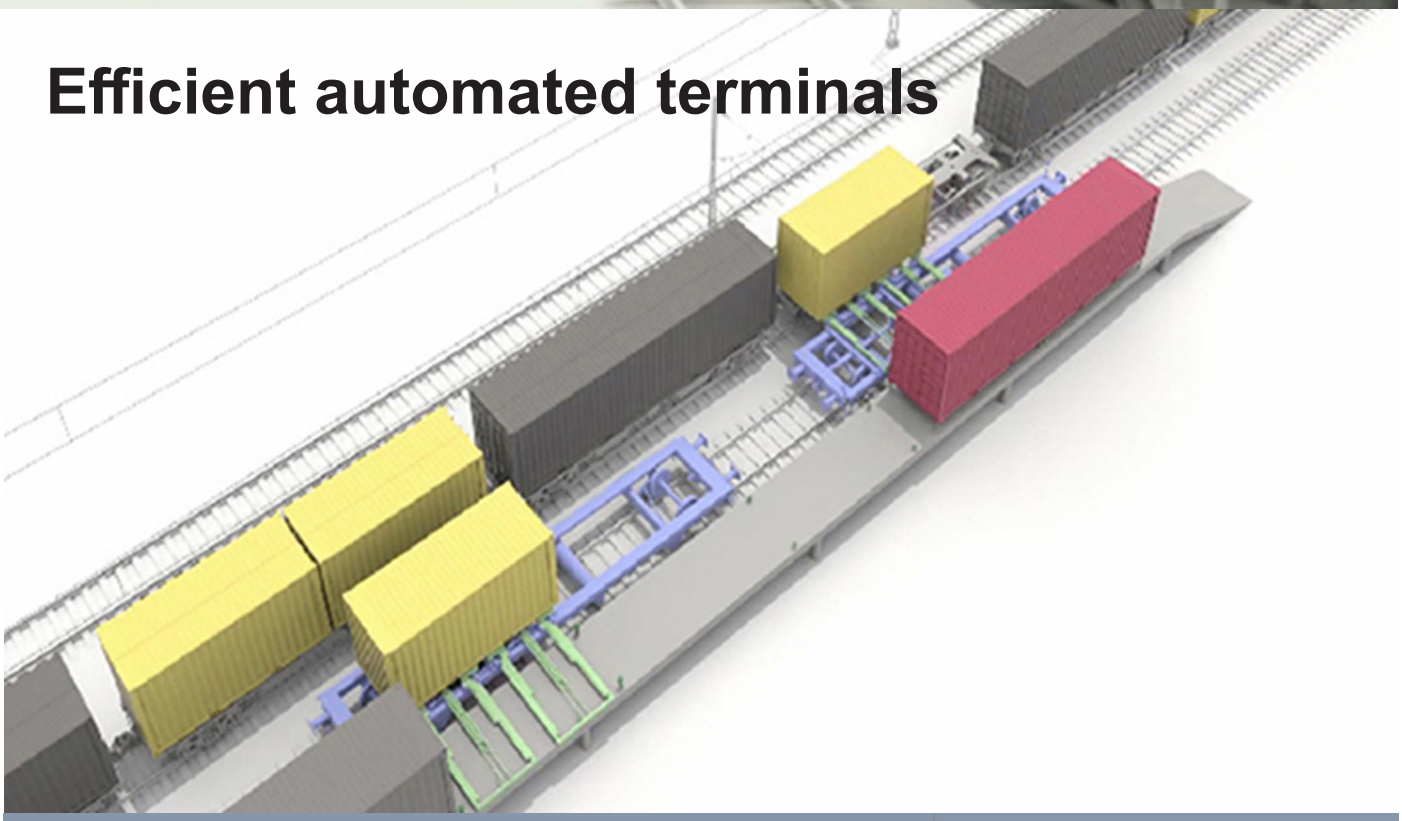
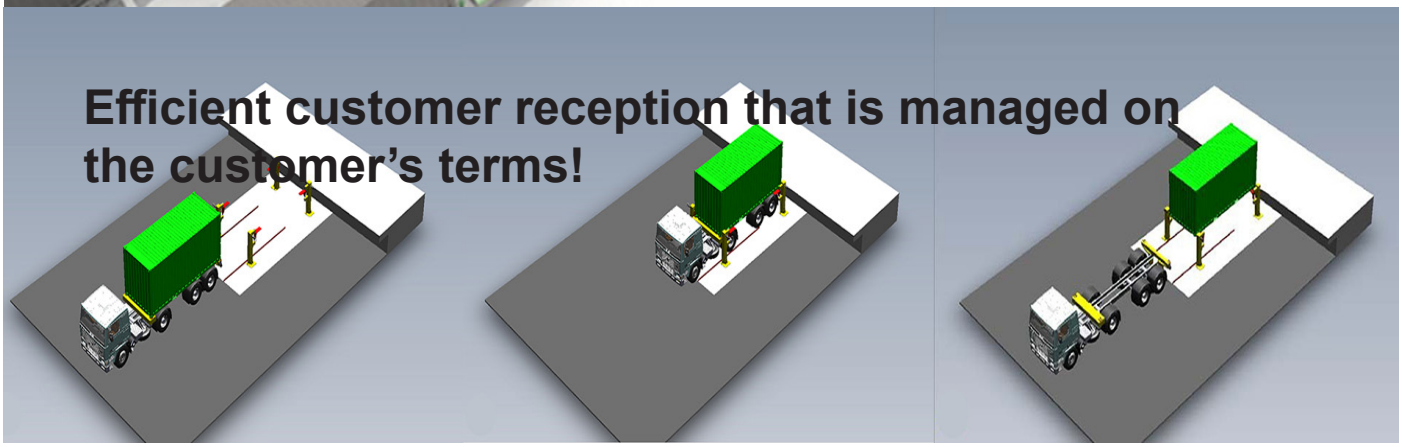
Efficient automated terminals



Efficient customer reception that is managed on the customer’s terms!



CCT system components based on the "Ant – Technology"

In order to be able to run rational combined transport according to the CCT system "Ant", the following devices are required on the equipment involved.

Rail transport.

The wagons participating in the train must be equipped with their own lifting devices to be able to raise the container and create a space underneath it for the transfer equipment to pass underneath.

This means that the jvg wagons must have both electricity and hydraulics on the wagons.

The electricity is for some sensors and the hydraulics are a unit on each wagon.

In addition to this, there must be the stopping devices that are available that hold the container in place in case of an accident. They are dimensioned to withstand 2 g. Today's container pins do not meet the safety regulations that apply today. So today all container transports on rail are carried out illegally.

The CCT equipment is designed so that they can be placed on all wagons today. Everything that is required for construction is above the wagon's loading level. The hydraulic unit can be placed anywhere on the wagon.

The railway carriages connected together in a composite unit

The railway wagons are driven in blocks of assembled units. There is no shunting. The entire train is driven into the terminal, under the existing overhead line, and there a reloading takes place automatically and quickly and the train immediately goes out onto the main track again. A train stop of perhaps 10-15 minutes. Which contributes to overall fast and rational transport.

Below is an example of assembled wagons for a complete train. Where the wagons share a bogie and become a rational solution. The picture below shows assembled wagons for a train.

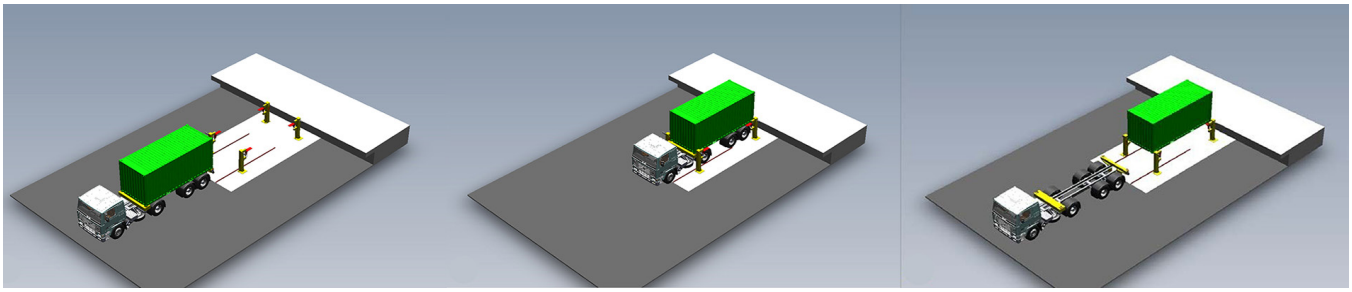
Below is an example of assembled wagons for a complete train. Here the train consists of individual wagons connected together to form a train.

The distribution vehicles

They have the same requirements for lifting equipment and electricity as the railway wagon. This lifting equipment has been tested for 4 months of daily traffic between terminal and customer. We used a 40 foot container for all the transports.

All distribution vehicles will be electric and will be part of the terminal's equipment.

The customer had special posts that received the container and it could be placed on the posts and the customer could load and unload the container at the right time. The distribution truck could drive straight to the next assignment and did not have to wait for the unit load to be unloaded.



When the customer has unloaded the container and possibly filled it with new cargo, a signal is sent to the distribution company to pick up the container.

The container is so securely positioned that loading and unloading can be handled with smaller trucks.

Container location at customer's location

Below is an image from the samples that were run daily for 4 months.

A 40-foot container standing to be loaded at the terminal with goods for onward transport to a customer.

The container is then driven to the customer for delivery of the contents to the customer. There are also opportunities to unload at the quay, even parts of the cargo for onward transport to the next customer. No difference from today.

A very rational handling which frees up the distribution vehicles to go directly to the next assignment. The customer receives a hot load standing at their transhipment location and can empty the container or load the container as needed.

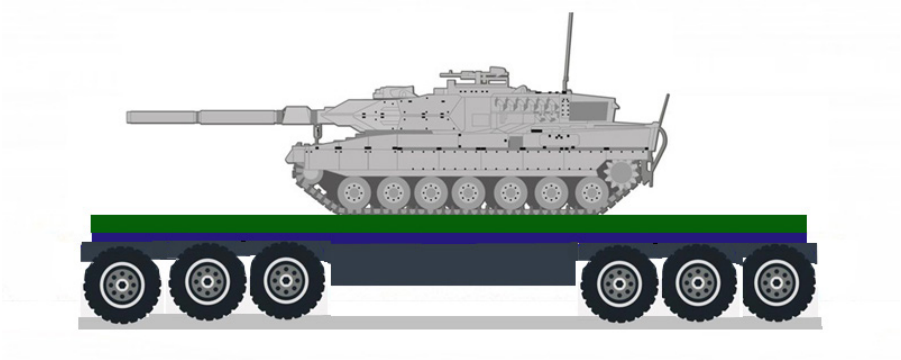
With poles, transportation also opens up for military customers

With poles assembled on site, temporary reception areas can be created. They can contribute to a rational arrangement for transport in war.

The container is delivered to be placed in the posts. The container can then be lowered to ground level and the war material can be unloaded on site and as close to the war site as possible.

It does not have to be containers, but it can just as easily be what is called "flats" a flat loading surface that has ISO container brackets. Below is a sketch of a railway wagon that has a "flat" load unit that has been loaded with a tank. The flat can then be transported to the temporary posts that have been set up and the flat can be lowered to the ground level and the tank can then be driven off to site.

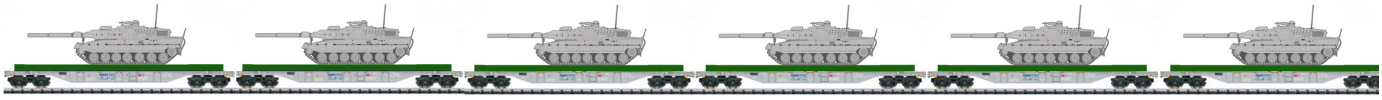
Below is a picture of an ant that has been loaded with a flat and that has a tank as its load. It has been picked up by a train with a wheeled ant and with load units of tanks.



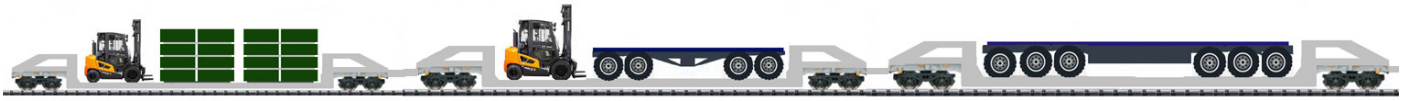
The picture showed a stronger version of the ant, also wheeled, to be able to handle the load unit of about 70 tons.

With the help of wheeled ants, transhipments can take place anywhere along the train line. All that is required is hard-surfaced ground on the side of the track. If a bridge is blown up, terminals can be created on each side of the blown up bridge and material can be moved to the other side on pontoon bridges using the ants. There is every possibility of quickly creating temporary terminals to continue the transport of war material. An important factor in a war situation.

There are opportunities to build up service units that can be available for military purposes and used if a crisis comes. Below is a train loaded with tanks.



Below are some service units with the equipment needed to quickly build terminals in the forest. Reinforced versions of the ants. The ants were normally used on terminals.



The Ant is the key component of the entire system

The Ant is the key component in the entire system. It automatically takes care of transferring unit loads, containers, flats, swap bodies between the different modes of transport. It is available in several variants, both in length, how heavy the units are to be handled and it is available in both a rail version and a wheeled version.

The Ant must be able to raise and lower its transfer plane in order to be able to operate against different units. It requires being able to compensate for the load plane during a transfer when a load unit is transferred, the entire height difference changes gradually. The ant is designed so that it follows the entire load transfer by automatically adjusting the height position.

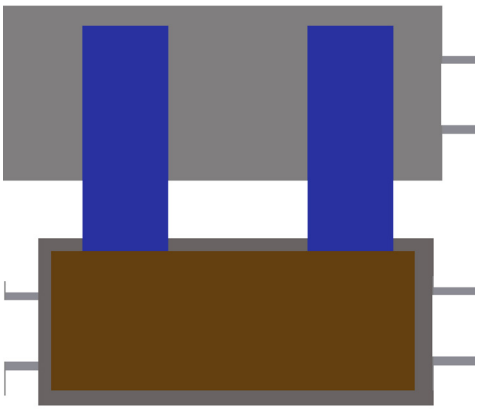
The ant also has equipment for raising the load units and it is the same equipment as on the railway wagons and distribution vehicles. This makes service and maintenance considerably easier.

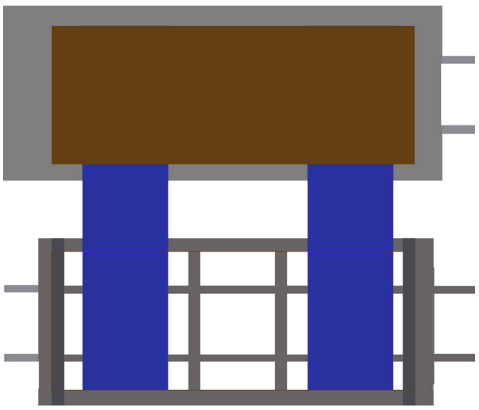
Below is a sketch version, of the Ant in 20 foot version, and of the rail-mounted ant ready for operations.

It will now also be available in a longer version adapted to 40 - 45 foot containers. It will also be available in wheeled versions to be adapted to terminals where there are no tracks available,

On the left, the lifting devices have been lowered so that the ISO container rests on the cushions/sleds and can be transferred to the railway wagon or to the distribution vehicle. Everything is done automatically.

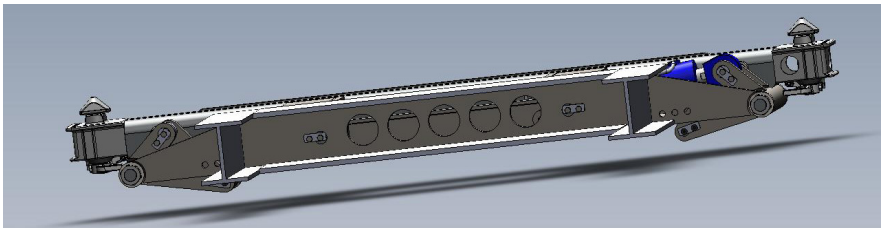
Above is a sketch of the Ant loaded with a 20 foot container. The ant looks for the right loading location to transfer the ISO container. The Ant adjusts its height in relation to, for example, the railway wagon and a transfer can be made. The Ant compensates for the height difference that occurs between the Ant and the railway wagon during the entire transfer process. These are two different vehicles and with different suspension characteristics.





The above sketches show that the Ant has connected to the railway wagon and the blue transfer arms have found their position. The load is lowered as above and the sled (the brown surface together with the container) moves over to the railway wagon and with the container as load. When the sled has found a central position, the wagon's lifting devices lift the container. The empty sled can be taken back to the ant and also the loading booms. The transfer is complete. The ant can go to the next mission. The lifting devices on the railway are lowered to their lowest position and the container is locked onto the railway wagon. Wagon and load ready for rail transport.

The lifting devices are the same on all equipment involved and they were tested thoroughly during the test period that was run in Gothenburg in daily traffic for 4 months. Worked without problems during the entire test period.



The load unit is moved by being supported by a magnetic field.

We have developed a completely new technology for transferring unit loads and they are supported by a magnetic field. This means that very little energy is required to move a unit load. In principle, you could move the unit load with just the strength of a child. Therefore, minimal energy is required to move a fully loaded container of 20 tons.

This means that we will really be able to keep the costs of transferring a unit load down.

Our goal is for a transfer cost to be between 50 - 100 SEK. With the long transport by rail, with our technology in the terminals and with distribution trucks that are powered by electricity. The entire transport chain will be able to be carried out with 0 - CO2 emissions.

On the railway, there are freight wagons that can currently handle 160 km/h. We aim to be able to increase that speed to 250 km/h. All in all, this will indicate that truck transport will become completely uninteresting.

CCT transport and focus on Terminals and functions in an efficient structure that meets the demands of the future, both in terms of time and energy.

How can future rational intermodal transport be implemented, if one places an economic, environmental requirement on the implementation.

Future intermodal transport can be done with a significantly simpler number of products to implement all the functions.

The train

A composite train that is constantly connected and runs at 160 km/h or rather at 250 km/h in order to be able to interact with passenger trains.

Terminals

Equipped with x number of ants to handle the transfer of unit loads between, for example, trains and distribution vehicles.

Distribution vehicles

Distribution vehicles that can handle 20-foot containers and containers up to 45 feet long.

Unit loads

Containers/swaps/flats with lengths up to 45 feet.

What is not included in a future system is:
Container cranes, too slow and very expensive reloading. Destroys the transport structure because it requires wire-free terminal areas.

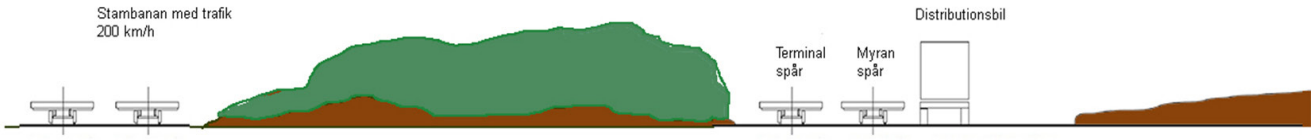
The same applies to Container trucks that require wire-free space and expensive handling costs. Hardened large spaces, which is reduced investment costs.

The trailer does not fit into a future transport structure. Requires special trolleys and requires lifting on a wire-free terminal. Expensive, complicated and causes major damage.

CCT Terminal

Efficient terminals based entirely on Ant's technology for transshipment. Can be done completely automatically which allows a high throughput through the terminal function.

The CCT terminals require minimal space to be able to function as a terminal. In principle, it should be possible to lay a simple terminal according to the sketch below.

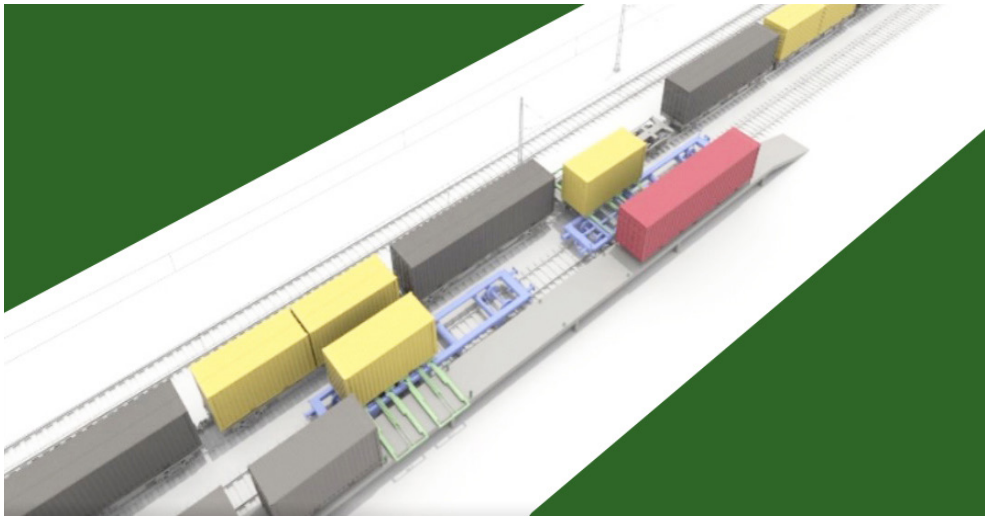


The sketch shows a simple terminal that has been laid at a siding and where a track for the track-running ant has also been laid. On the side of the track for the ant there is a paved terminal area where the distribution vehicles can operate. It will be a very simple terminal but which can clearly function as a terminal. The limited investments mean that several terminals can be placed.

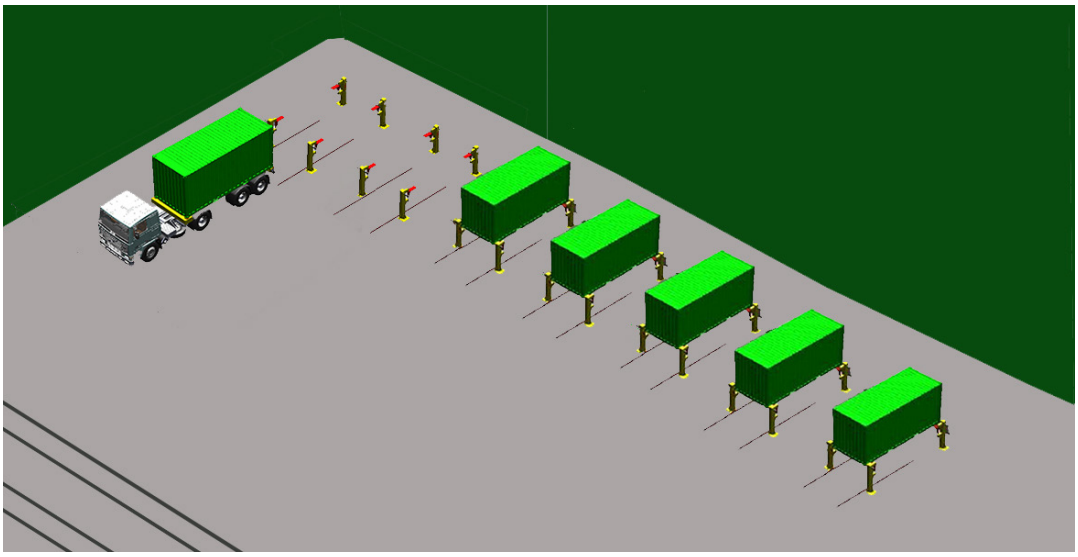
The above pictures show a transfer of a 20 foot container to a temporary location that only consists of a paved surface. It couldn't be simpler. In this case, the distribution truck is equipped with the functions of the "ant".

The pictures shown may be interesting from a military function where the Ant in the form of a truck can handle unloading or loading containers anywhere along the line. This means that terminals can be created where the war situation requires reloading of the trains.

You can also imagine if a bridge has been blown up that reloading takes place on one side of the now non-existent bridge. The Ant with the load is moved over pontoon bridges to the other side and loaded onto a new train set and the transport can continue.



But to achieve rational transport and functions, the ant should remain at the terminals. Partly to be able to tranship between all train connections and at the same time be disconnected to be on hand when the train arrives. The ant has been given a permanent terminal function.



The sketch on the left shows what a simple small terminal with posts that allow temporary storage of ISO containers might look like.

There may be a number of poles as intermediate storage at terminals. They can partly serve as intermediate storage after unloading from the train, and before distribution.

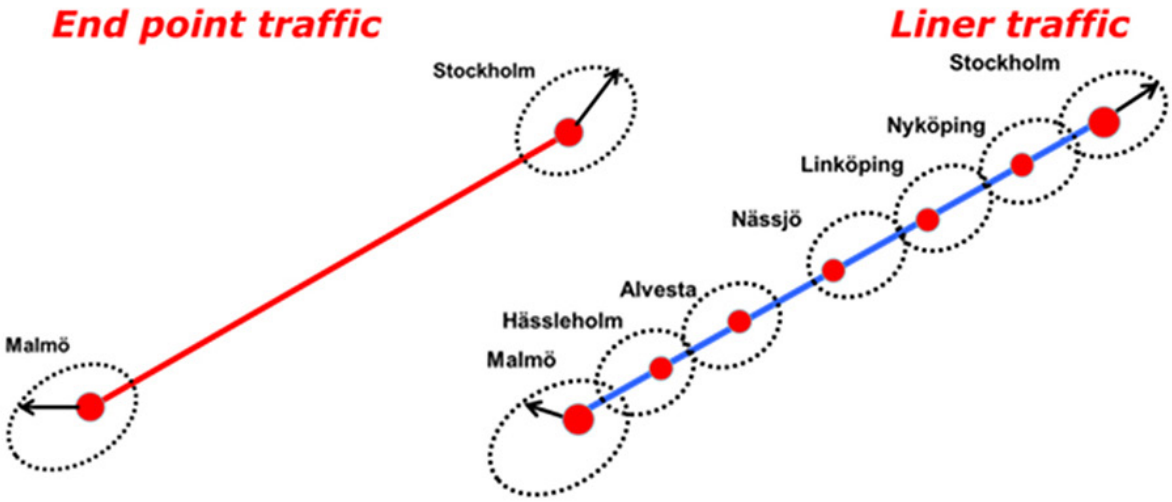
The poles can also serve as intermediate storage before the load unit is transferred to the train for further transport of the unit load. This provides great flexibility for the function of the entire terminal. Corresponding poles must be available for the larger units 40 to 45 foot containers.

The distribution vehicle for 40 foot containers has been tested in Gothenburg for 4 months of daily operation between two terminals. The results report is available from KTH.

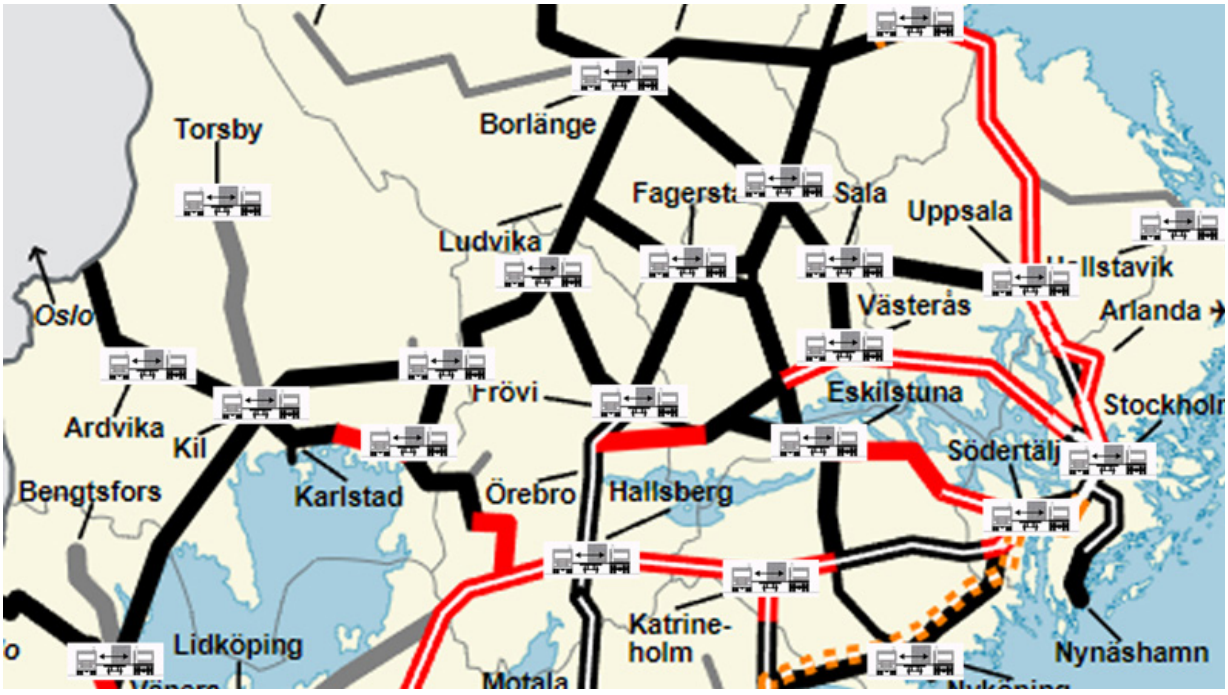
At one of the terminals, posts were set up to allow the customer to leave the loading unit so that the customer could unload the container and partly fill it with new cargo.

With a system of transport via the system and with the ant as handling equipment, very rational transport can be set up. A very important factor is that the transports are transferred to line traffic and not, as is the case today, end-point traffic. End-point traffic destroys intermodal transport, which to a large extent consists of very expensive and time-consuming terminal costs. Even though the state currently subsidizes terminal costs, the time factor has a great impact.

With a system of transport via the system and with the ant as handling equipment, very rational transport can be set up. A very important factor is that the transports are transferred to line traffic and not, as is the case today, end-point traffic. End-point traffic destroys intermodal transport, which to a large extent consists of very expensive and time-consuming terminal costs. Even though the state currently subsidizes terminal costs, the time factor has a great impact.



Using CCT technology, you can build a terminal structure that works throughout the country, but also outside Sweden's borders.



With the above parameters we can build an interesting structure based on intermodal transport. A future transport structure and with 0 CO2 emissions.

Terminals in CCT system

Must be located at a density of maximum 150 km. The terminal company can be completely independent but also owned by the railway carrier.

Distribution vehicle

Distribution vehicles for 20-foot containers and 40-45-foot containers. Each terminal shall own its own distribution vehicles. Shall be responsible for ensuring that the distribution meets the requirements of the entire system.

Terminal time and costs

Terminal time at the terminal should be a maximum of 15 minutes. The number of ants indicates the terminal's capacity. Handling costs should be between 50 – 95 SEK.

Rail transport

Shall consist of wagons that can handle, in the first stage 160 km/h but shall be modernized so that they can handle traffic at 250 km/h. This means that freight trains can be run together in the traffic system and will not become a brake block as it is today.

The wagons shall be equipped with our new container locks and that can handle the standards from the railway inspection regarding strength. There is a requirement of 2g in the horizontal direction. Today's container pins, according to several design reports, do not meet those requirements. In addition, the containers on the railway wagons are completely loose. They have caused a number of accidents.

How can we continue to develop freight transport in Sweden?

I can answer that question directly with a simple answer.

It is not possible to develop freight transport by rail in Sweden. It must happen outside Sweden's borders and without the influence of Swedish institutions, companies and politicians! The railway must be closed down!

I have unique insights and experiences from developments in the area. I know from long experience that it is completely impossible, it is just a matter of giving up and trying to influence other countries instead of moving forward.

What is wrong with the country Sweden?

We have two major truck manufacturers and nothing should interfere with their operations!They are protected by the politicians! Look at the insane decision about 34 m equipment that is destroying our road system! The taxpayers pay!

We have a great deal of cooperation between politicians (it doesn't matter what they call themselves. All politicians collaborate), believe nothing else, and they collaborate with the Swedish so-called "wheel mafia". It goes back a long way. In 1994, the government at the time made a government declaration in which they injected 500 million per year in exchange for the wheel mafia responding with the same amount. Then what is called FFI was formed. Vehicle Technical Research and Innovation. This is still going on. Which is very strange. Today, FFI has grown strong and has departments at the three institutions that distribute money for research and innovation. The Swedish Transport Administration, the Swedish Energy Agency and Vinnova. They have a front row seat and can control who will receive money and what the projects will be about. They strangle most of what goes to railway research. It is no wonder that nothing happens on the railway side.

During the same period, they made sure that the railway industry had to go bankrupt or leave the country. AGEVE, the manufacturing industry in Gävle of railway wagons, wanted support from the government to survive. Didn't get a penny. So the plan to put them bankrupt worked. ASEA's railway industry left Sweden for abroad in order to survive.

I had a collaboration with Volvo Trucks for the development of CCT. A collaboration that existed with the then AGEVE and Kalmar Lagab. Volvo's attitude at the time was that if you couldn't be involved in truck transport, you should be involved in the distribution side. The work went well and a prototype was developed and I had access to an early prototype with Volvo Trucks' new truck version with air suspension.

I was called to the IRU headquarters together with a representative from Volvo Trucks. IRU stands for "International Road Transport Union". An interest organization for all hauliers "worldwide". A major organization in the transport sector. They had hired the Dutch consulting company NEA to look at how future freight transport would be carried out. They had identified CCT as the best system to form the basis for future transports, primarily within Europe. IRU also issued a press release to present IRU's position.

Below is the press release that IRU issued, signed by their general manager. It was too much for Volvo Trucks, Scania and other truck manufacturers. Orders were sent out to the manufacturers' lobby organizations. Stop that fool "Sten Lövgren and his CCT", he will destroy our entire market.

The result was that Volvo Trucks quickly withdrew from our project. Our entire development came to a halt. The truck that Volvo had put forward was transferred to my company and with the knowledge that I could not continue without I had to simply sell the truck.

News and Press Releases

N° 450 -6 February 1998

CHEAP, SIMPLE AND SAFE

Combined transport was not viable in the past over shorter distances. IRU shows that it now is viable using cheap, simple and safe transshipment techniques.

The INTERNATIONAL ROAD TRANSPORT UNION (IRU) believes in combined transport as a complement to the use of the road since rail is not, in most cases, used to its full capacity, while roads often are. This is why the IRU has published an "Inventory of transshipment technologies in intermodal transport".

This study identifies the Car Con Train PLUS horizontal trans-ship-ment technique created by Proveho, a Swedish rail supplier, as containing the best solution for increasing combined transport by matching road transport's performance. The horizontal shipment tech-nique is based on the corridor system, whereby freight trains have stops at 100-200 km intervals, increasing the number of opera-tors and regions that can access the service. To be of benefit, it is essential that the trains run according to a precise and fixed schedule and that stops are short.

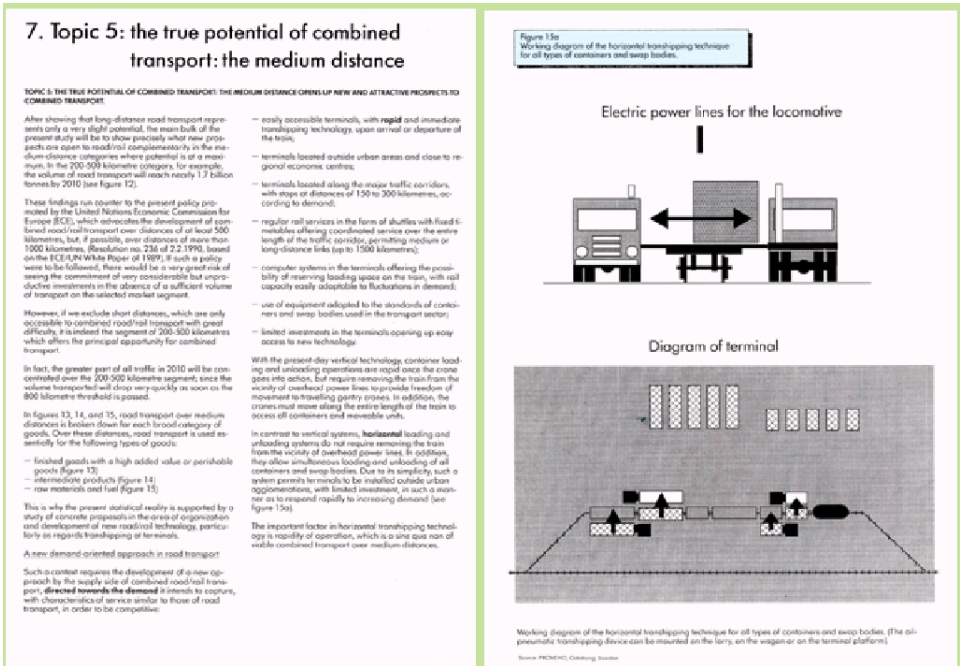
The conclusion of the inventory's author, Mr Johan WOXENIUS, is that Car Con Train PLUS technology receives the highest evaluation in completing the corridor concept while fulfilling the practical require-ments of cheap, simple and safe (horizontal) transshipment. This tech-nology is based on the same principles as passenger train transport, that is, load units, like passengers, wait at a terminal to "get on" the train and, when the train arrives, units are unloaded on one side and loaded from the other. Using this technique, a train can be unloaded and loaded safely, in only 15 to 20 minutes!

The corridor concept makes it possible for combined transport to become economically viable over shorter distances, while providing the service to many more areas than is currently the case with shuttle trains that only benefit regions close to two otherwise distant termi-nals. There is nowadays considerable European freight traffic in mid-range distances of between 300 and 500 km which would offer excellent opportunities for combined transport.

The study (in English only) can be ordered for CHF 25.- from the IRU Documentation Centre

It was therefore a revolutionary step by the IRU to declare that CCT was the best system to form the basis for a future technology and a solution for how transport would develop.

I must admit that the Dutch consulting company was very far-sighted and also brave to dare to present their views. But they probably did not understand that this will not be accepted by the trucking industry and they will do everything to oppose that development.



7. Topic 5: the true potential of combined transport: the medium distance

TOPIC 5: THE TRUE POTENTIAL OF COMBINED TRANSPORT: THE MEDIUM DISTANCE OPENS UP NEW AND ATTRACTIVE PROSPECTS TO COMBINED TRANSPORT.

After showing that long-distance road transport represents only a very slight potential, the main bulk of the present study will be to show precisely what new prospects are open to road/rail complementarity in the medium-distance categories where potential is at a maximum. In the 200-500 kilometre category, for example, the volume of road transport will reach nearly 1.7 billion tonnes by 2010 (see figure 12).

These findings run counter to the present policy promoted by the United Nations Economic Commission for Europe (ECE), which advocates the development of combined road/rail transport over distances of at least 500 kilometres, but, if possible, over distances of more than 1000 kilometres. (Resolution no. 236 of 2.2.1990, based on the ECE/UN/White Paper of 1989). If such a policy were to be followed, there would be a very great risk of seeing the commitment of very considerable but unproductive investments in the absence of a sufficient volume of transport on the selected market segment.

However, if we exclude short distances, which are only accessible to combined road/rail transport with great difficulty, it is indeed the segment of 200-500 kilometres which offers the principal opportunity for combined transport.

In fact, the greater part of all traffic in 2010 will be concentrated over the 200-500 kilometre segment, since the volume transported will drop very quickly as soon as the 800 kilometre threshold is passed.

In figures 13, 14, and 15, road transport over medium distances is broken down for each broad category of goods. Over these distances, road transport is used essentially for the following types of goods:

- finished goods with a high added value or perishable goods (figure 13);
- intermediate products (figure 14);
- raw materials and fuel (figure 15).

This is why the present statistical reality is supported by a study of concrete proposals in the area of organization and development of new road/rail technology, particularly as regards transhipping at terminals.

A new demand-oriented approach in road transport

Such a context requires the development of a new approach by the supply side of combined road/rail transport, **directed towards the demand** it intends to capture, with characteristics of service similar to those of road transport, in order to be competitive:

- easily accessible terminals, with **rapid** and immediate transhipping technology, upon arrival or departure of the train;
- terminals located outside urban areas and close to regional economic centres;
- terminals located along the major traffic corridors, with stops at distances of 150 to 300 kilometres, according to demand;
- regular rail services in the form of shuttles with fixed timetables offering coordinated service over the entire length of the traffic corridor, permitting medium or long-distance links (up to 1500 kilometres);
- computer systems in the terminals offering the possibility of reserving loading space on the train, with rail capacity easily adaptable to fluctuations in demand;
- use of equipment adapted to the standards of containers and swap bodies used in the transport sector;
- limited investments in the terminals opening up easy access to new technology.

With the present-day vertical technology, container loading and unloading operations are rapid once the crane goes into action, but require removing the train from the vicinity of overhead power lines to provide freedom of movement to travelling gantry cranes. In addition, the cranes must move along the entire length of the train to access all containers and moveable units.

In contrast to vertical systems, **horizontal** loading and unloading systems do not require removing the train from the vicinity of overhead power lines. In addition, they allow simultaneous loading and unloading of all containers and swap bodies. Due to its simplicity, such a system permits terminals to be installed outside urban agglomerations, with limited investment, in such a manner as to respond rapidly to increasing demand (see figure 15a).

The important factor in horizontal transhipping technology is rapidity of operation, which is a sine qua non of viable combined transport over medium distances.

Figure 15a
Working diagram of the horizontal transhipping technique for all types of containers and swap bodies.

Working diagram of the horizontal transhipping technique for all types of containers and swap bodies. (The oil-pneumatic transhipping device can be mounted on the lorry, on the waggon or on the terminal platform).

I had also gained insights into trucks and their development. I once sat in on their product development and discussed it with several people. Two of them had to leave for a meeting about the future of trucks and their development.

They came back and said “it didn’t work this year either”. They wanted to introduce particle filters for diesel engines but they were rejected. Their comments were unequivocal “Sten, if you knew how fucking dirty diesel engines are you would be scared. What was the argument against not introducing the particle filter. “We don’t make any money from it”. Instead, they let a lot of people die prematurely. So when someone tells me that Volvo is doing good environmental work, I can’t help but say “Volvo doesn’t do anything other than what they make money from. They completely give a damn about people, that’s for sure!”

Now the development has taken frightening directions so now it will take more or less a revolution for something to happen.

That they had previously decided to close the railway is completely clear. That the former Director General Lena Erixon tried to pursue that line is also confirmed. Her participation in the investigation ”We must dare to close the railway” only reinforces what is happening.

The government is involved and is acting in that direction. Large sums were decided for the expansion of the East Coast Line. The Swedish Transport Administration took that money and invested in the expansion of the E4 in Norrland and moved the decision on the East Coast Line 10 years forward. The Swedish Transport Administration has based its calculations on incorrect forecasts that favor the road side for years. They also refuse to change their forecast systems. Then we come to Sweden’s view on the expansion of High Speed Rail. Where Sweden says stop and we have lost billions in support for expansion from the EU. Sweden has been fined heavily for not meeting their demands for infrastructure development and environmental laws. The entire African region is building extensive high-speed train networks. What will become of Sweden with a rapid phase-out of the industry that cannot remain due to poor communications and sky-high logistics costs. We are no longer a pioneer country but are now considered part of the EU’s backyard.

There needs to be more or less a revolution in transport and logistics!

Radical decisions must be made to ensure an efficient infrastructure and with a transport structure and cost level that speaks to the industry.

* Stop the idiotic 34-meter trucks. A regular truck combination is estimated to have road wear equivalent to 10,000 passenger cars. There is reason to estimate the road wear here at perhaps 20,000 passenger cars. With a tax on a passenger car equivalent to 3,000 SEK, a 34-meter combination would receive a tax of 60 million. Do the trucks pay their costs = not at all. Taxpayers will have to foot the bill.

* Abolish the trailer as a unit load. It does not fit into an intermodal infrastructure. It causes large terminal costs and extends transport times. Creates a need for large, expensive terminals as it requires lifting by container cranes or forklifts in a wire-free area.

* Create cheap, simple terminals where transhipment of ISO containers can take place under existing power lines. Enable short terminal stops. Switch to line traffic instead of end-point traffic as is the case today.

* Base unit loads on ISO containers 20 – 45 feet long. Can be distributed on trucks or skellet trailers.

* Build an entire network with simple terminals and with a terminal distance of max. 150 km between them. Will greatly increase the service level to customers.

* Ban truck transport over 300 km.

* Equip railway wagons with the ability to be transported at 250 km/h

* Equip railway wagons with valid container locks that meet the railway inspection standards. Today there are no approved container locks so transport of containers today on railway wagons is carried out illegally. In addition, in Sweden all containers are loose. Completely illegal and unbelievable!

* According to the EU, there should be terminals where there is a population base of 250,000 inhabitants. Should be ready in 2029. What do you do in Sweden? Nothing will change the situation, but truck traffic will increase

* Discontinue the support to FFI of 500 million per year!

* Discontinue all FFI institutions at the Swedish Transport Administration, the Swedish Energy Agency and Vinnova.

* Divide today's Swedish Transport Administration into the Swedish Rail Administration, the Swedish Road Administration, the Swedish Maritime Administration and the Swedish Civil Aviation Administration. It is enough to realize that the current situation does not work at all.

There is much more to write about this development that should be started immediately and given top priority if we want to keep any industry in the country. Or we will completely adapt to a tourist country and show our poor infrastructure as a deterrent example. How to destroy a former pioneer country and which is now a developing country.

At the computer on January 6, 2025
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