

S.E. Grønland:

Logistical terminology

Some typical used terms related to the Norwegian and Swedish logistical models

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This paper is written for the “Norwegian Transportation plan – analysis group” as support for the work with the Norwegian and Swedish logistical models. Questions can also be sent to the author: Stein Erik Grønland, SITMA, P.O.Box 312 Skøyen, N-0213 OSLO Norway; e-mail seg@sitma.no.

Introduction

Various definitions of terms used in logistics were used. There are several alternative definitions used by various authors in this field, and people from various professional backgrounds may also tend to use different terminology. As a response to this, it was asked for a list of definitions/descriptions of the most common used terms of relevance to the future work with the logistical model. This memo is worked out as a first outline for such a list. Further refinement will be needed.

Supply chain:

There are several definitions made of the term “supply chain”. Examples from the literature are: “The total flow of a distribution channel from supplier to ultimate customer” (Cooper, Ellram)

“The sequential flow of logistical, conversion and service activities from vendors to ultimate consumers necessary to produce a product or service” (Stenger, Coyle)

In short, we mean in our context the total flow of materials (and information) from the original suppliers to the final customers. Physically, a supply chain consists of a set of transportation, warehousing and conversion activities.

Supply network:

The complex nature of many supply chains are often better represented as a network rather than a chain. In this respect, the term supply network is used. An example of a definition is “A network of connected and interdependent organisations mutually and co-operatively working together to control, manage and improve the flow of materials and information from suppliers to end users” (Aitken)

Transport flow:

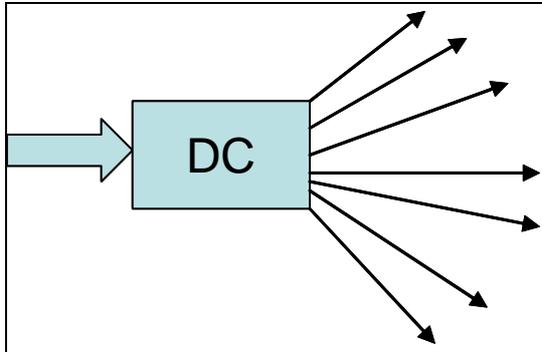
A transport flow is a flow of products and materials being transported between an origin and a destination. In general, a supply chain may contain several transport flows. The term transport flow may be applied both to the total flow between an origin and a destination, or for a limited flow (for example for a specific company or a specific transporter). The total flow will be an aggregate of the specific flows.

Product flow, material flow:

The terms product flow or material flow are used for the physical flows of a given product or material (or product group/material group) between given origins and destinations. The term is often used in a generalised sense to include all supply chain flow activities, not being limited to transportation only.

Distribution centre (DC):

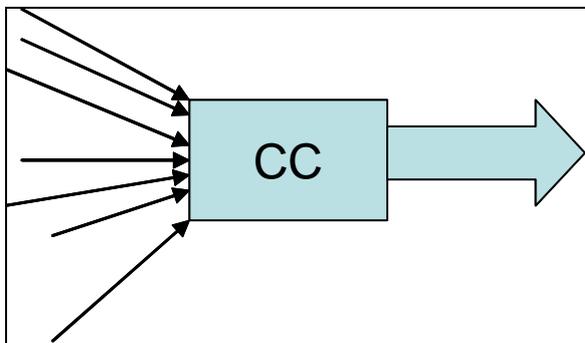
A distribution centre is a node in a supply chain where the transport flows are broken and changed to a more dispersed pattern.



One example may be a distribution warehouse receiving consolidated flows to a market from a producer, and sending out these flows in smaller lots to the individual customers. Another example may be a terminal used by a general cargo transporter. The terminal receives consolidated transport flows, e.g. delivered from a central terminal and distributes the cargo in small lots by distribution vans locally.

Consolidation centre (CC):

In many ways the opposite of the distribution centre. A consolidation centre is a node in the supply chain where the transport flows are broken and changed to a more consolidated pattern.



The figure below gives a simplified illustration of the functionality related to DCs and CCs.

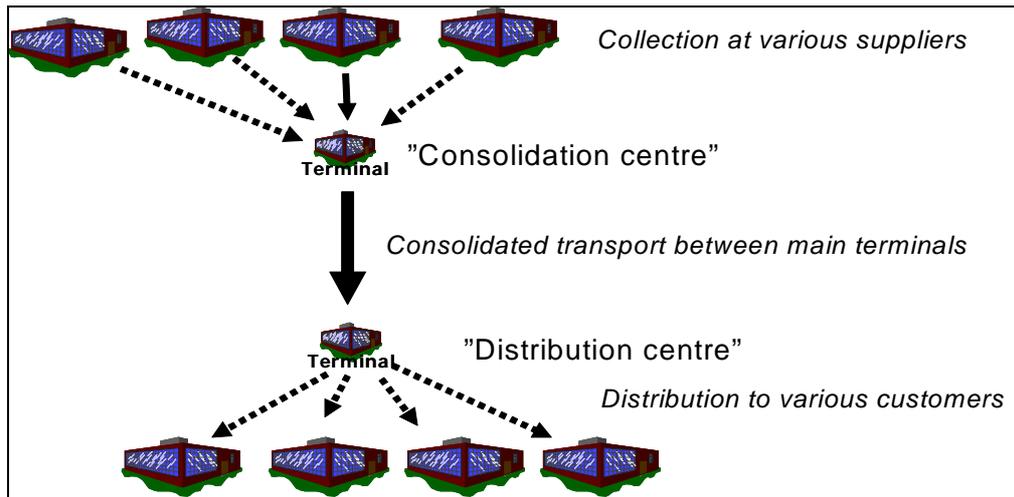


Figure 1: A simplified illustration of transport flows within a supply chain

Terminal:

A terminal is in general a breaking point in a transport flow. A terminal can have one or several of the roles:

- Consolidation centre
- Distribution centre
- Change in transport mode

Physically a terminal may have one or several of these activities:

- Unloading
- Loading
- Warehousing
- Order consolidation
- Allocation of materials to orders

A terminal without inventories (without warehousing) will in practice serve as a direct transfer point between incoming and outgoing transport. Terminals with direct transfer are often called "cross-docking terminals". The name cross-docking comes from the notion that transport is directly "crossed" from the incoming to the outgoing docks in the terminal.

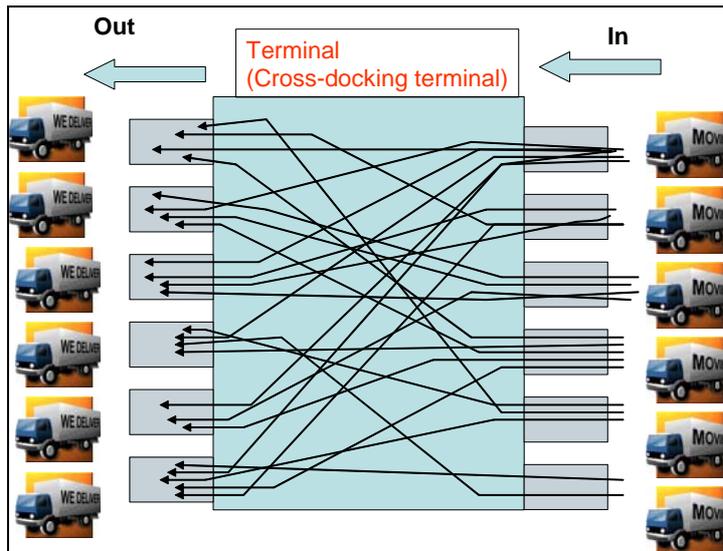


Figure 2: Illustration of cross-docking

A terminal will generally be able to handle one or several transportation modes in terms of loading and unloading:

- Trucks
- Rail
- Ships
- Air

If the emphasis for a terminal is to work as a transfer point for one transport mode (between units of the same mode or intermodal), it is normally indicated by naming:

- Truck terminal
- Rail terminal
- Port (seaport terminal)
- Airport terminal

It may also in practice be named according to cargo units mainly served:

- Container terminal (container units)
- Timber terminal (handling timber products)
- Ro/ro terminal (handling various cargo units which can be put on rolling units like roll-trailers and/or semitrailers)
- General cargo terminal (handle general cargo units, e.g. palletised, in bags, in pallet boxes etc.)
- Bulk terminal (handle bulk products, dry bulk and/or liquid bulk. Is often specialised to certain commodities)

This list is not extensive and is used as an illustration. In practice, a terminal may serve several types of cargo units, several modes and have several functions. On the other hand, a terminal may also be limited to one product group (for example an oil terminal).

Additional information in the naming may refer to ownership or accessibility to public usage:

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- Traffic port – A port open to commercial traffic. Normally owned by public bodies as e.g. municipal port authorities
- Industrial port – normally owned by a company, in many cases the use is mainly restricted to the company's own needs, although some companies may try to commercialise and open up their services to public use

One should be aware that the same terminal may be characterised in several ways, depending on the main purpose for the characterisation.

Warehouses

A warehouse is a storage facility in the supply chain. We can divide between:

- Company warehouses: Warehouses run by or for a specific company
- Public warehouses: Warehouses open to interested users, normally on commercial terms. Public warehouses are often operated by third party logistics providers (see below).

A warehouse will normally have the same physical activities as previously listed for terminals:

- Unloading
- Loading
- Warehousing
- Order consolidation
- Allocation of materials to orders

The difference is that for a warehouse, the main function is warehousing (holding and handling of stocks). However, the implication is that a warehouse may also at the same time serve as a DC, a CC or both.

Based on the main characteristics, we may differentiate between various warehousing roles:

- “Company warehouse” – DC for the company's finished products, often located on or near by main production plants
- “Distribution warehouse” – in principle a warehouse set up in a distribution network for the minimisation of transportation cost (balancing between low cost consolidated transports and high cost dispersed transports)
- “Nodal point warehouse” – in principle a warehouse which combines deliveries from several sources, and combines those into consolidated deliveries to receivers further downstream
- “Local warehouses” - mainly set up for market reasons (closeness to customers, e.g. if the final customers pick up the products and take care of the last transport leg themselves)

Short about different roles for structural elements which may have an impact on the model

The structure of material flows in various supply chain will differ, as outlined in the next figure. The arrows indicate transportation flows.

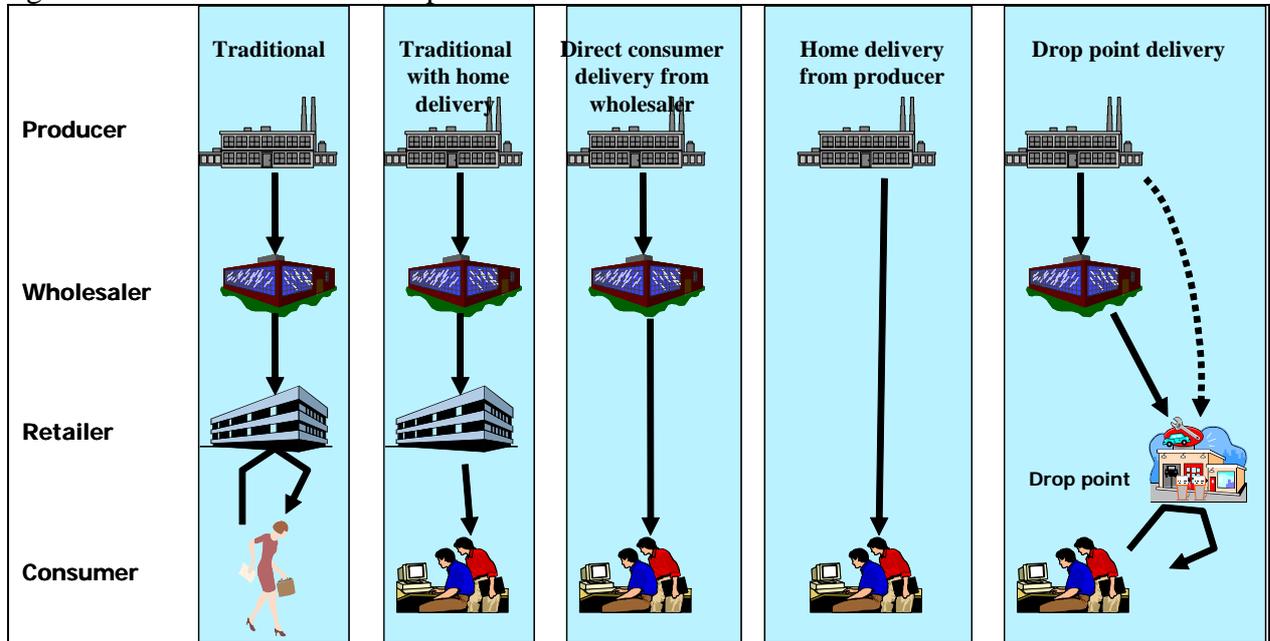


Figure 3. Examples of alternative supply chain structures

Within this framework, there are several alternative ways of organising transport, warehousing and terminal activities. We may as an example use a supply chain where a wholesaler is the controlling unit. One way of organising the transports would be to transport directly from the producers to the wholesaler's warehouse. In the warehouse, direct transport of goods to the retailers are organised, and the customers do their own pick-up of the products at the retailing level. Another way of organising the transport from the warehouse to the retailers could be as follows: A third party transporter picks up the deliveries from the warehouse as a part of a collection from several senders. These are taken to a CC, where consolidated deliveries go to the transporter's main terminal and main sorting unit. In the main terminal, the product flows are cross-docked to transports that go from the main terminal to local DCs. From the DC they are delivered to the individual retailers and the customer would finally pick up the products at the retailers. These are just two examples. Several examples of transport structures are outlined in figure 4 (not extensive).

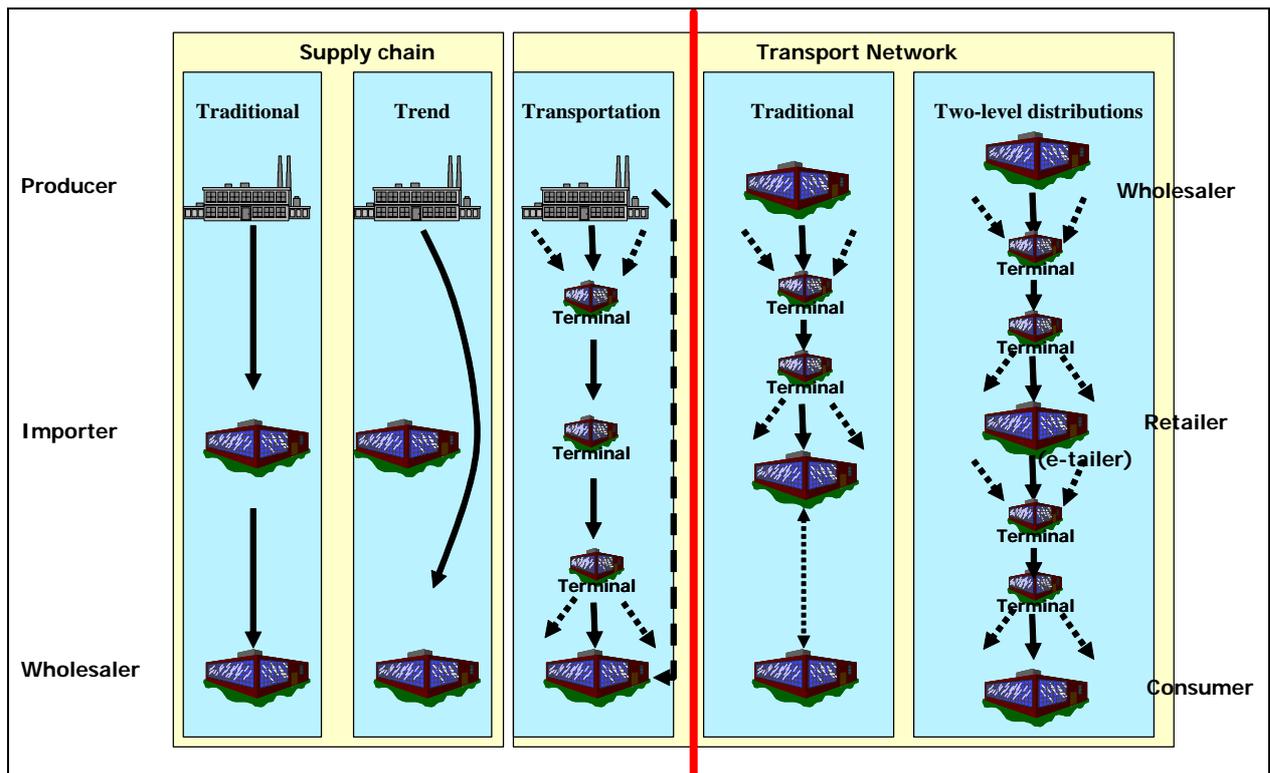


Figure 4: Examples of alternative transportation patterns in various supply chains

Third party logistics (3PL)

Logistics services provided by a third party (not the seller or buyer of the products). This may cover transport, warehousing and other services as order management etc. Although transport being provided by an external contractor would qualify as a 3PL, the term is normally used when the provider at least delivers one additional feature to transportation.