

Some challenges in container handling

A walk through history

Malcom McLeans Invented the first containers by removing the wheel base of trucks and loading them on ship decks

On April 26th 1956, the Ideal-X left the Port of Newark, New Jersey to the Port Houston,. It carried 58 35-foot on deck of a tanker



In 1966 the first container line was established

In 1967 the ISO standards for containers were established along with the present identifying system

And the rest is history

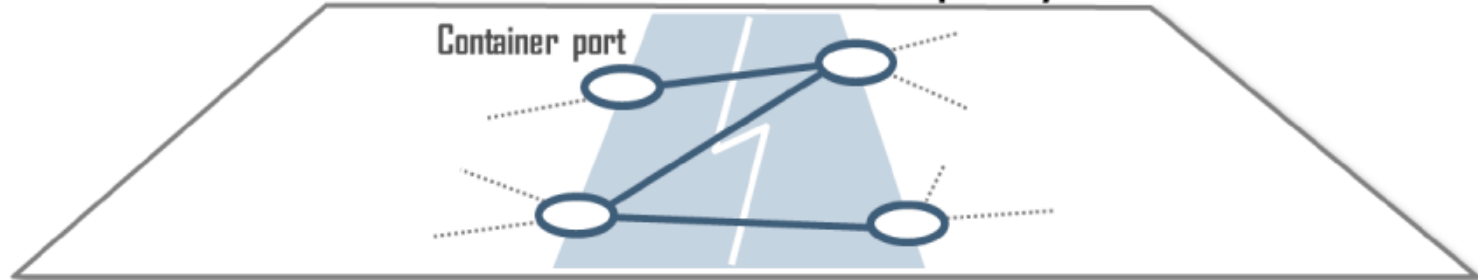


Some Major advantages

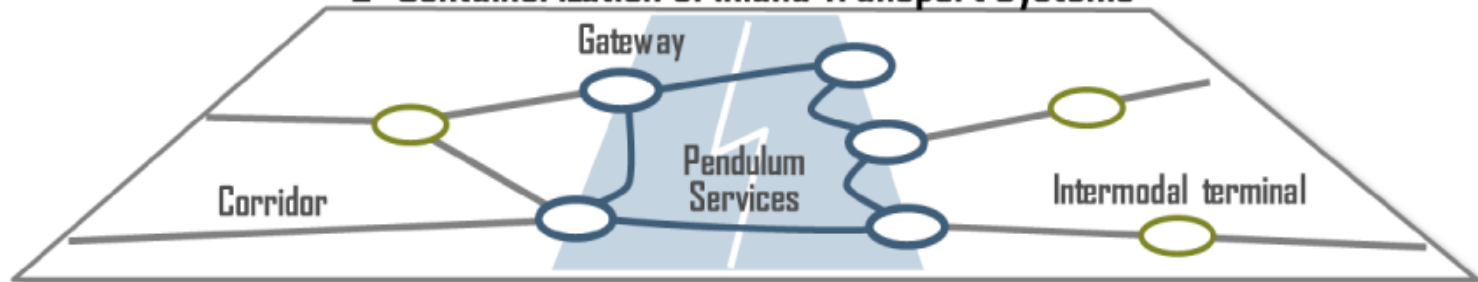
- Increased speed and delivery
- The ability to reach new potential with more delivery points
- Increased safety and security that limited the need for supervision at interchange points
- Literarily enabled the development of efficient supply chains through out the world
- It was said that two inventions have enabled globalisation to flourish one was the cargo container the other was the internet
- However this more integrated system means that there is a lot of handling taking place as containers move form one mode to another creating many challenges :

It developed into a multi layered and integrated transport system

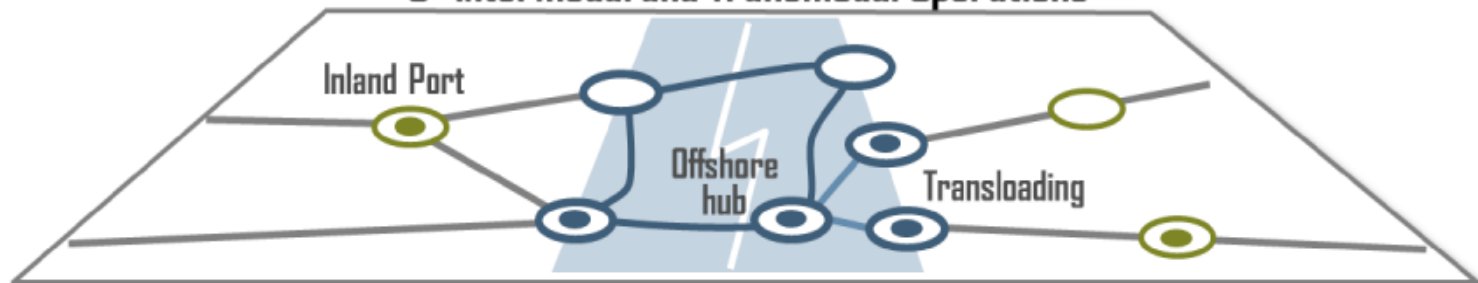
1- Containerization of Maritime Transport Systems



2- Containerization of Inland Transport Systems



3- Intermodal and Transmodal Operations



Size and volume

- Sea going transport benefits from cube law in maths which tells us that an increase in surface area brings in a bigger increase in volume
- As ships become bigger they cost less per container to develop
- The sea has no limitation so ships continue to increase in size the leap from one huge capacity to another has been to some extent exponential over passed 25 years
- On the other hand land based transport modes have there limits with specific road width and railroad gage
- Ports and terminals have limitation in expanding as they compete for valuable real estate with other economic activity and housing
- A natural imbalance between different modes of transport

A few years ago no body thought that 18000 TEU ships will be regularly operated by most major lines



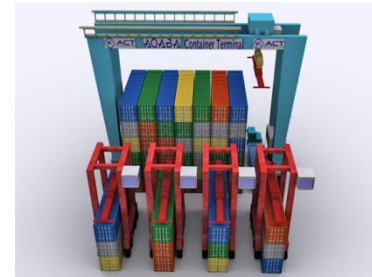
From the beginning special equipment was created to enable container discharge and handling such as :

- Strudel Carriers
- Gantry cranes
- Reach Stackers
- Special chassis



There were many developments over the years to improve handling efficiency and keep up with the vessel size increase such as :

- Rubber tired gantries (RTG) which gets better space utilisation and is faster than straddle carriers



- Rail mounted gantries (RMG) which can store higher and utilise space better than RTG



- Wider gage Gantry cranes to handle more trucks to receive containers up to 8 and 10 instead of 3

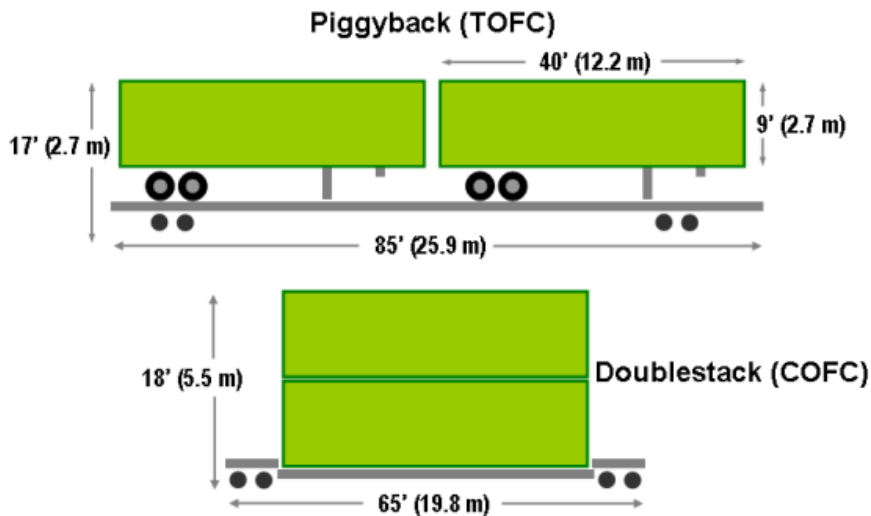


- There were several experiments that did not materialise (e,g double sided discharge, trailer chassis)
- Some terminals do not have the space to accommodate additional type of equipment on the other hand others may have problems with available land and water front

Inventions like the double stack trains helped but it has limits. Can not go three stacks for example

Block trains to transport container between ports and inland terminals has been used to relief ports has been a rising trends

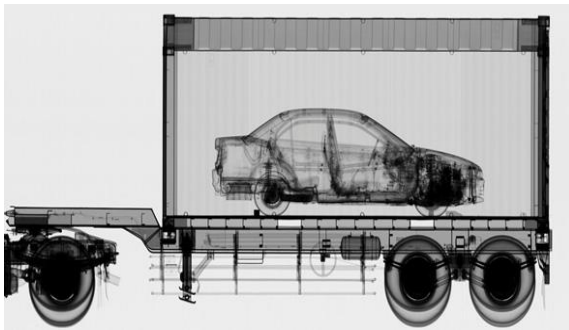
Some innovative ideas such as dedicated smart roads are being considered but still not yet a practical solution



Extremal requirement and regulation

- Environmental laws may impose additional requirements on handling (e.g night time ban on truck movement)
- Security and safety regulation could have an affect
- Customs is one challenge that is faced through out the world
- Some containers are physically inspected and have to be moved from container stack to customs yard creating more handling moves
- The number of containers to be inspected and how, varies form one country to another but always requires some handling

- Many countries have inspections from other authorities such as health on certain cargoes
- A lot of mechanisms have been introduced to help reduce the affect
 - Risk assessment and predetermination
 - X ray machine and other equipment
 - Pre inspection



- Yet it remains a big challenge

Cost

While shipping rate remain almost constant in real terms handling charges continue to increase

Expansion and investment in terminals keeps increasing.

It is still a labour dependant industry that is more sensitive to salary increase and inflation

New terminal development is to some extent limited

Efficiency seems to impose more moves that increase cost

It has become one of the major expenses for shipping lines exceeding fuel cost

As a result there has been a tendency to try and recoup some cost by charging local fees

Damages

- Even though it is very secure mode of transport containers do get damaged at times
- A good share of damages do occur during the process of handling whether in discharging from the ship or during transport
- In the good scenario an incident is report immediately and the extent of damages and potential liability is assessed
- However in many cases the discovery of damage is realised at later time and it becomes difficult to asses at which stage did it happen
- The question will be in who's custody was the container during the incident and who was handling it when the damage took place? A simple question that sometimes is hard to answer

- In principle the less a container is handled the less chances of a damages

Examples of damaged containers



One question the may come up will we see new leap in
ship size or is this this maximum

Thank you

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