Introduction

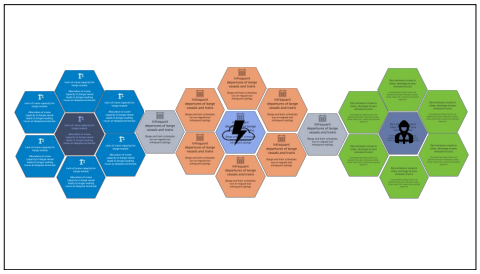
Jan Michels has been working in a trading company in Rotterdam for fruit and vegetables for decades. At present he is director of the company and widely known in the port logistics industry in Rotterdam. His company is one of the largest trading companies for fresh produce from all over the world. The demand for sustainable transport solutions is imminent, urgent, and irreversible. More than 600,000 truck movements per year are made from the port of Rotterdam into the European corridors, which causes traffic congestion and significant CO2 emissions. But apart from that the shortage of truck drivers is becoming an issue. Even trucking companies acknowledge that it doesn't make sense for a long haul to have a driver on the truck. Some of these companies are experimenting with trailer-on-train concepts, others are using the short sea connections as an alternative. None of these concepts can beat the flexibility of road transport. Then there is the push from the retailers themselves. To satisfy consumers their supply chain footprint will have to be smaller. A modal shift from truck to rail (next to barge and short sea) is a significant part of it. Recently, Michels organized a stakeholder meeting where 20 people from across the industry, both traders, terminal operators, freight forwarders, trucking companies and rail operators met to pull off a new business initiative, called CARDS AGAINST CO_2NGESTION.

Your Aim

The aim of the game is to solve the congestion on the transport corridor. The transport corridor suffers from various bottlenecks leading to traffic jam (congestion). This results in delays, inefficient use of transport infrastructure and poor reliability, which is also bad for the air quality, because trucks exhaust CO_2 emissions. Your task is to solve this congestion by removing bottlenecks on the transport corridors. You must solve this congestion as a **team**, by taking immediate action.

You are part of a working group with representatives from companies in the entire transport chain. Your primary objective is to solve the bottlenecks in your own part of the transport system, but that cannot be done in isolation. You must pull the resources together from other actors as well. Which bottlenecks receive priority from the players is a matter of negotiation as well as cooperation. In the long run, your ambition is to become the smartest and greenest transport corridors from Rotterdam into the European hinterland.

Playing Board



The playing board consists of a schematic map of a corridor which consists of three parts: port, corridor and inland Each of these parts suffers from bottlenecks which are reflected by hexagon tiles. The colours reflect where the bottleneck occurs.

- **Port:** Blue hexagon show the bottlenecks at container terminal operator, customs, and port handling.
- **Corridor**: Yellow hexagons show the bottlenecks at transport operators, truck, train and/or barge.
- **Inland**: Green hexagons show the bottlenecks at the retailer, wholesaler and traders, whose distribution centres and retail shops are in the hinterland.

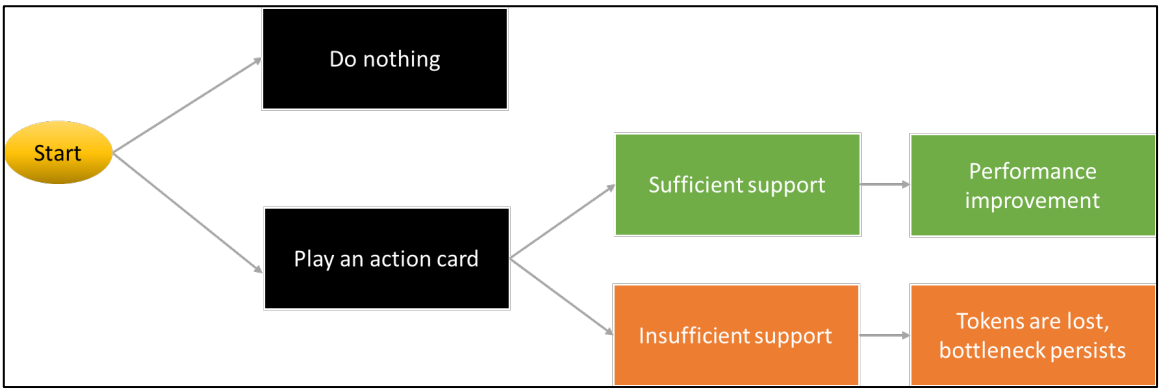
The above subsystems of the transport system are interlinked. Only solving bottlenecks in one part will not solve the congestion in the entire transport system. A higher level of efficiency can happen on the corridor when problems in the port are solved. This relates for example to timeliness of the arrival process on the deep sea side, more lenient rules for demurrage and detention, use of empty depots in the hinterland. Likewise, consignees in the hinterland determine the boundaries in which logistics operations need to be fulfilled, such as sharing of order data, time criticality, transport mode selection. In short, the pivot in between two subsystems need to be solved for the entire system to succeed in becoming smart and green transport corridors.

Bottleneck cards

Port	Corridor	Inland
B16: Lack of crane capacity for barge vessels B17 Lack of communication from customs on containers under inspection B18 Stack capacity is full B19 Drugs smuggling in reefer containers B20 Long loading and waiting times at departure of trains and barges B21 Shortage of dock workers in the port	B1 Infrequent departures of barge vessels and trains B2 Lack of electric reefer connection with barge and trains B3 Shortage of truck drivers B4 Paper based transport bookings and exchange of documents B5 Traffic congestion on the roads to inland destinations B6 Old infrastructure, not accessible for heavy transport	B9 Poor quality of transport documents leads to delays and stockouts B10 No reefer containers dedicated to empty depots in hinterland B11 Zero emission zones in cities, shortage of zero emission trucks and charging facilities B12 Regulatory measures in place leading to costs for CO2 emissions B13 War risk increases due to Russian invasion B14 Shortage of employees in the warehouses
EVENT: *B22 Container Ship Ever Given blocks Suez Canal, tsunami of containers expected* *B27 Heavy fog prevents ships from entering the port for three days*	*EVENT:* *B7: Extreme weather leads to low water levels on the River Rhine* *B26: Cyber Attack on the Dutch Railway System*	*EVENT:* *B15: Strikes at Retail Distribution Centres* *B25: A heavy snowstorm prevents stores to be delivered*

Gameplay

1) At the beginning of each round, the player can decide whether to play an action card or remain inactive.
2) After this decision, the player shares his/her decision with the other players around the table by placing the action card in front of him/her.
3) Each player pays for his action card by adding one or more tokens on top of the action card. The player will then ask other players for a contribution in such a way that the required amount of tokens to activate this card is collected.
4) For the card to be activated, it requires 3 tokens in total. At least one token is required from another player.
5) When the action card is not selected, the tokens which are invested upfront are lost and the card is taken back on hand.
6) At the end of the round, the player throws a dice which will determine the event.



Corridor improvement

- The corridor is dependent on the performance of the port system on the one hand, and the inland system on the other hand. The purple hexagon tile illustrate the pivot in between two parts of the transport system.
- The purple hexagon tile only comes into play when at least 4 bottlenecks have been resolved in the port or inland.
- If the pivot (purple tile) is already in place, the event will not have an effect on this part of the transport system.

Throwing the Disruptive Event Dice

- The dice determines the event that may occur. Depending on the difficulty level, players can decide how often a disruptive event will occur.
- When a disruptive event happens, players will need 5 tokens to solve the disruptive event. As long as the disruptive event is not solved, other solutions in that system (port, corridor or inland) cannot be built.

Difficulty level	Dice	Instruction	Chance for an event to happen
Easy		Throw 6 for an event to happen	Chance 1/6.
Mediocre		Throw 1 and 6 for an event to happen	Chance 1/3.
Difficult		Throw even (2, 4 and 6) for an event to happen	Chance is ½.

Role cards

Each player draws a **role card**. Each player aims on improving the performance of a specific part of the transport system. The ambition on the role card explains what drives the player: efficiency, sustainability, digitalization.

Where	Stakeholder name	Type of player	**Ambition Sustainability**	Ambition Efficiency	Ambition **Digitalisation**
Inland	SLOGRI	Wholesaler	**	***	*
Inland	SCHARPHOUSE	Wholesaler	***	***	
Corridor	SLAGER GROUP	Importer/Exporter	**	***	*
Inland	JAMBA	Retailer	***	**	*
Corridor	HDL	LSP – Road forwarder	**	**	**
Corridor	COLD RAIL	LSP – Rail forwarder	****	*	*

Corridor	CONTIGO	LSP – Intermodal operator	****	*	*
Port	CUSTOMS	Customs		***	***
Port	BAERSK	Shipping company	*	***	**
Port	WORLD CT	Container Terminal Operator	**	*	***

How to win the game?

1) The players decide the duration of the game, e.g. 60 minutes.
2) If both pivots (interconnectors) are in place and all parts of the transport system are solved, the game ends. The outcome is a synchronous transport system, where port, corridor and inland actors have synchronised their transport planning and operations.
3) At the end of the game, players sum up their own scores. Subsequently players compare their scores and determine the winner.
4) How to win together? The more imbalanced the scores are over the corridors, the less optimal the transport system is from a holistic point of view. You win together by supporting each other in solving bottlenecks.

Scoreboard

The score ladder will be placed on the table. On this ladder, the progress on efficiency, sustainability and digitalization will be monitored. Players can use this information in their negotiations.

We use an excel-spreadsheet to calculate the overall results in order to determine who have contributed most to their own performance and overall corridor performance.

Preparation

Game materials:

- 3 sets of 6 bottleneck cards
- 3 sets of 6 solution cards
- 6 congestion event cards
- 9 role cards
- 1 playing board with 3 parts: port, corridor, inland
- 1 scoreboard (printed)
- 1 scoreboard (excel)
- 3 sets of tokens (50 tokens per colour: blue, yellow, green)

Start situation:

1) Sort the colours and place the hexagon tiles with the bottlenecks on the table. You can randomly place the tiles on the table as long as the colours are clustered together.
2) A player draws a role card and places it open in front of him/her
3) Each player receives 2 tokens to start with.
4) Players place the cards open in front of them.
5) Players can choose who starts with the game.

Colophon

This game is developed by:
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