

NexTrust Pilot 3.4 Summary Case Study:

Avoiding Empty Barges on an Existing Danube Waterway Service



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Introduction

The freight supply chains across Europe account for 25% of the CO2 and particulate emissions. In addition, the lack of collaboration in the use of motive and warehousing assets leads to high levels of inefficiency when looked at from a European perspective although for individual organisations their operations appear optimised particularly for Customer Service.

NexTrust, a EU grant funded Horizon 2020 project (Grant 635874), was setup to bring together like minded actors in the supply chain to raise asset utilisation levels and reduce Green House Gas emissions through collaborative pilots.

Up to now, actors in the supply chain, such as manufacturers, importers, retailers, exporters and logistics companies are generally reluctant to pilot or utilise new methodologies or new routes to market as there are many examples of costly implementation failure. It is a very fragmented market with 10,000s of people making day to day decisions of freight routing. Collaboration takes time to setup and these decision makers are time-poor as well. In order to overcome actors' hesitation to participate, the most important aspects for successful collaboration were identified prior to the elaboration of the pilots:

- Careful planning of the project
- An agreement to, transparently, share the savings generated net of any additional costs
- Agreements on the planning and administrative processes to be used
- Routes to deal with any disagreements
- Importantly the use of a Trustee to receive data, analyse the best matched routes and distribute back the plans. This would be a daily (at least) dynamic process. The Trustee also covered the confidentiality and anti-trust concerns about the pooling of data.

The research activities of NexTrust in Pilot 3.4 looked at both the supply and demand sides of the Supply Chain to understand whether the horizontal collaboration model with a trustee function could also be applied successfully on multimodal supply chain concepts.

The Multimodal Supply Chains in question for this case study focussed on the barge movements of “bulky” freight loads as these can be technically better transported by barge on an Inland waterway and are part of the so called “traditional” inland waterway market. In 2016 almost 9.1 million tons of goods were transported on the Austrian section of the Danube. There were good traffic volumes for agricultural and forestry products as well as fertilizers or metal products and Austria imported raw materials through this route as well.

The total market:

- The Danube Waterway that can access 90m people.
- It flows through 8 EU Countries
- There are more than 12 major shipping companies
- The Danube’s infrastructure: depth, width of locks and bridge clearance allows vessels of all types: bulk liquid and dry goods carriers, RoRo carriers, container carriers, heavy and high (in comparison to Road or Rail Transport etc.

The examined sector, the pilot concentrated on:

- Bulky’ goods: agriculture: grain, maize, fertilizer
- 2.9m tonnes of flows between Austria, Hungary, Bulgaria and Rumania
- 23 major Companies control tower

Shipper	Commodity	Maximum quantities in MT/a	Direction to or from the factory (upstream/ downstream	Port	Country
Company 1	Grain, meal, maize, fertilizer	150.000	upstream + downstream	entire Danube region	AUT
Company 2	Meal	50.000	upstream + downstream	Pischelsdorf	AUT
Company 3	Grain	50.000	upstream + downstream	Pischelsdorf	AUT
Company 4	Grain, meal, maize, sunflower seeds	30.000	upstream	Enns	AUT
Company 5	Grain, oilseeds	100.000	upstream + downstream	Ruse	BG
Company 6	Products from steelmaking	100.000	downstream	Linz	AUT
Company 7	Slag sand	250.000	upstream + downstream	Linz	AUT
Company 8	Meal	50.000	upstream	Enns	AUT
Company 9	Metal	10.000	downstream	Ybbs	AUT
Company 10	Metal	10.000	downstream	Enns	AUT
Company 11	Fertilizer	250.000	downstream	Linz	AUT
Company 12	Oilseeds, vegetable oil, meal pellets	150.000	upstream + downstream	Swischtow	BG
Company 13	Oilseeds, vegetable oil, meal pellets	100.000	upstream + downstream	Foktö	HU
Company 14	Oilseeds, vegetable oil, meal pellets	150.000	upstream + downstream	Ruse	BG
Company 15	Oilseeds, vegetable oil, meal pellets	50.000	upstream + downstream	Ruse	BG
Company 16	Ore	1.000.000	upstream	Ismajil	UA
Company 17	Grain, oilseeds	250.000	upstream + downstream	Giurgui	RO
Company 18	Paper	20.000	downstream	Enns	AUT
Company 19	Wood	20.000	downstream	Enns	AUT
Company 20	Grain, meal	30.000	upstream + downstream	entire Danube region	AUT
Company 21	Cement	50.000	upstream + downstream	Giurgui	RO
Company 22	Rape oil	10.000	upstream	Wien	AUT
Company 23	Wood	10.000	upstream + downstream	Ybbs	AUT
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Two Companies were willing to share data and be involved in the pilot:

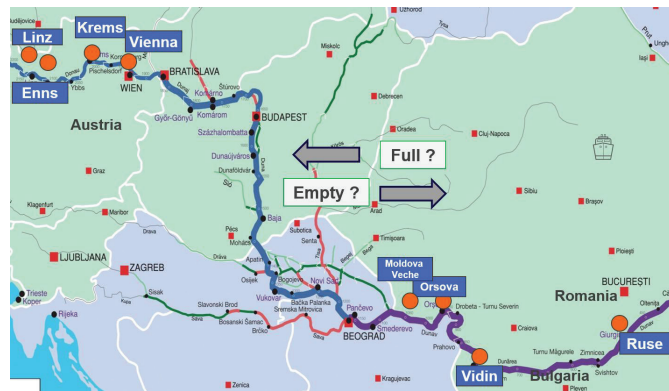
Borealis supplies over five million tonnes of fertilizers and technical nitrogen products each year via its Borealis L.A.T distribution network. Borealis L.A.T has warehouses across Europe and the distribution network stretches from its headquarters in Linz along the Rhine and Danube, all the way from the Atlantic to the Black Sea. There are subsidiaries all across Europe: Czech Republic, Slovakia, Romania, Hungary, Croatia, Serbia and Bulgaria.

RWA Raiffeisen Ware Austria AG is the wholesale and service company of the warehouse cooperatives in Austria, with RWA providing a differentiated range of services. It ranges from marketing agricultural products, trading in

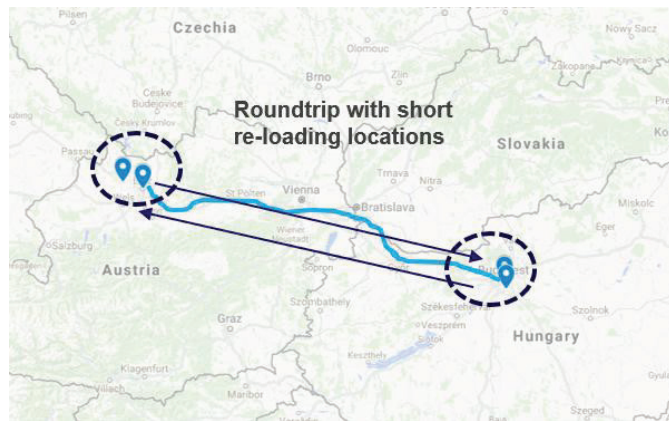
agricultural capital equipment, building materials and products for the home and garden to various services. In addition to these responsibilities for the warehouses, RWA is a holding company with subsidiaries in Austria as well as in certain neighbouring eastern European countries.

The objectives:

- Enabling demand sided horizontal collaboration between shippers in order to bundle freight flows and avoid empty running on the Danube waterway
- Defining the appropriate trusted collaboration business model, which can be applied in the context of the Danube Inland Waterway

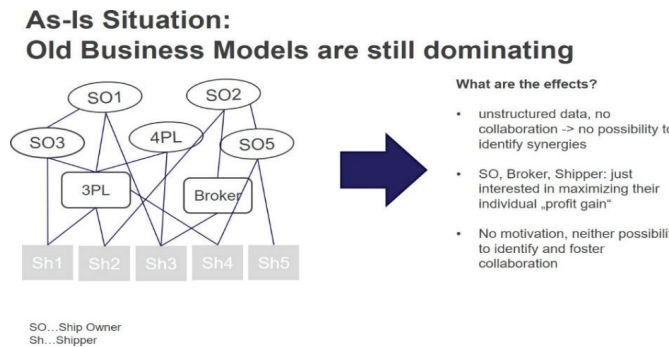


There are non-balanced flows up and down the river. The objective was to create round trips with short radial movements from the ports.



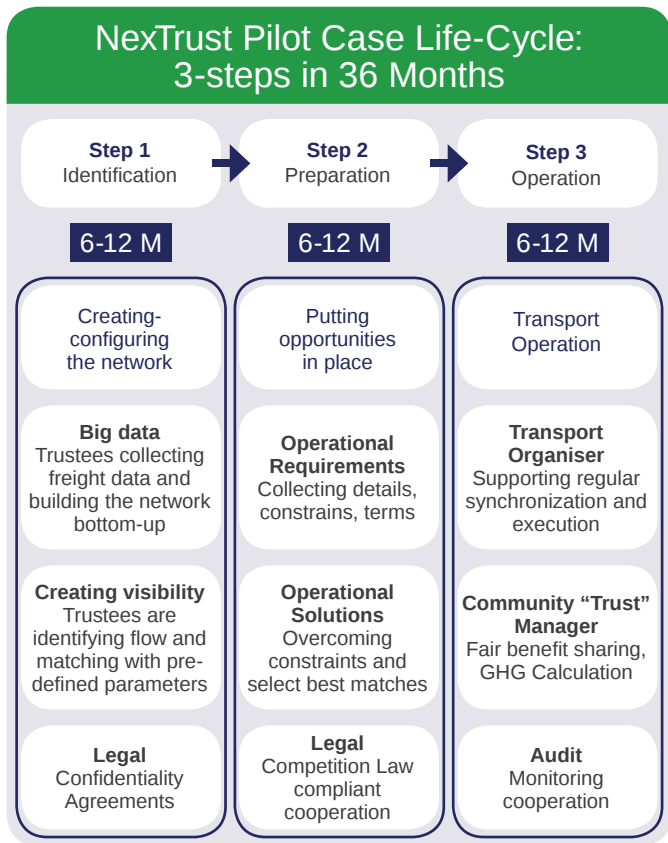
The concept:

The current fragmented decision making with regards to mode of transport, supplier of logistics services and ensuring fully laden vessels in both directions requires a different planning and communications model.



What is missing is an orchestrator, a repository of load data: port of loading, type of product, weight, loading time, destination, customer delivery time, onwards transportation link, etc. NexTrust has resolved this problem and solved the Anti-Trust concerns at the same time by taking the ideas of a Trustee (from CO3) and making them work.

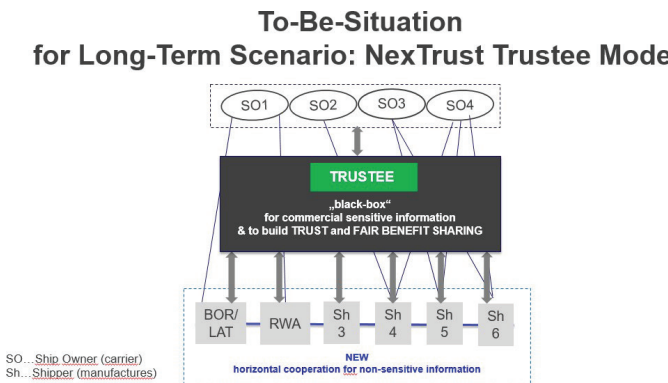
The NexTrust methodology:



A Three-step process:

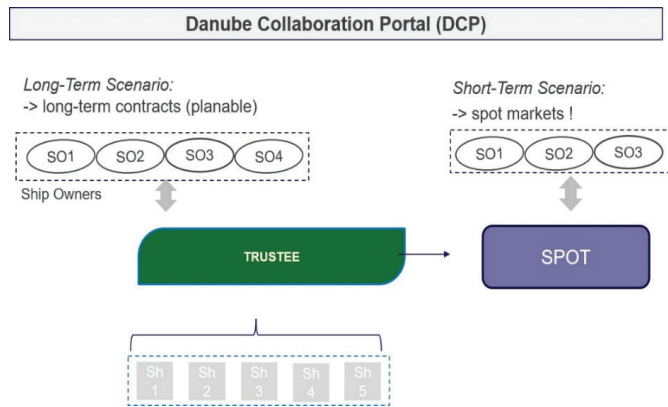
- **Identification:** freight flows and potential partners
- **Preparation:** Selecting best matches, benefit sharing agreement, administration, contracts
- **Operation:** supporting execution, monitoring agreed KPIs

This produces a governance process and a set of organised data flows and decision-making processes.



Given the volatility of loads on the Danube, there is a heavy use of the Spot Market for offering capacity and loads for transportation. The model had to be modified to create a link that would allow

that data to be considered as well. The idea will be to create a Danube Collaboration Portal where spot markets can be observed and incorporated.



The Danube Research pilot:

- Pilot leader: Bluewave GmbH, Vienna,
- Supported by Pastu Consultants Green BVBA, Brussels and Wenzel Logistics GmbH, Graz

The results:

- A detailed survey of the economics and geography of the freight flows on the Danube
- A description of the problems of collaboration to produced matched flows
- The route to viable and workable solutions
- That will bring about a reduction in tn-kms truck movements and empty truck movements

Conclusions

The research activities of the Danube demonstrator followed the 3-step methodology of NexTrust and managed successfully the first two steps of identification and preparation. However, the concept could not be tested out in operations yet, due to the market challenges the Danube and pilot partners had to face.

Today, there are bulky flows on the Danube, but overall the Danube is a volatile market for the freight of the sector of agriculture, chemicals, wood, steel-products, machines, fertilizers or iron ore. The shippers do not know how many tonnes of raw material for the production is needed in advanced. The timing and quantities of freight flows are hard to plan and not structured in terms of regularity. However, the quantities are significant, eg. 25,000 tonnes of raw material, which is

equivalent to 1.000 FTL's can be required to be transported within a compressed period of a couple of weeks. The pilot case therefore has to deal with an unforeseen and spontaneous “spot” market with high market volumes.

Additionally, it emerged that generally for the other companies in scope there is still the old mindset. This is a challenge, and the behaviour is dominant: stakeholders who are not open for changes and see the collaborative business models more as a threat than as an opportunity.

One positive result emerged: this Danube water-way demonstrator, has conceptual synergies with the road FTL bundling pilot cases run inside NexTrust and could adopt similar approach to establish the horizontal collaboration on the Danube water-way. The trustee role can support the horizontal collaboration framework significantly and as the “black box” achieve the breakthrough in efficiency.

However, whilst collaborative models can be built for the Danube Waterway freight movements, to better address the large volatile freight flows on the Danube, the pilot case identified that there is a need to address the spot market. For this purpose, a dedicated Danube Collaboration Portal (short DCP) could be established, which includes the long term and short-term freight scenarios of bulky freight goods.

Next Steps

It is to be hoped that the European Strategy for the Danube River could turn their attention to question of Freight Movements and in conjunction with the River and Road Ministries in the Countries where the Danube flows start the process of helping to engage the various commercial concerns that currently (or potentially could) use the river for transportation in a more sustainable manner.

NexTrust will be advising those Ministries and the relevant trade bodies of the results of this pilot to encourage them to take an interest in a supply chain framework that could bring major benefits to their countries.