Deliverable:

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| **Analysis of the business models that will be developed for the platform and its corresponding services implementation based on the needs and requirements of the users** |
| **of the Project:*****“*Shared freight transport services connecting shipper and carrier operations*”******“SCOPE”*** |

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# INTRODUCTION

A business model defines how a business works and the logic that creates its value. It provides the vital links between an organization’s vision and strategy with its structures and processes (Li, 2007). Business models are essential for translating commercial opportunities into revenue generating activities, but despite the apparent focus on commercial sustainability, any sustainable business models for freight exchange platforms development need to consider the divergent nature and unique characteristics of the transport sector. The business models need to effectively address the tensions between creating commercial value and generating social and economic values; and the distribution of the benefits amongst different stakeholders. However, the recent developments of freight exchange platforms and the high rates of failure experienced by the most of these new web-based intermediaries justify interest in their future viability. This could be achieved by the development of appropriate business models that provide the strategic choices and the competitive positioning of transport electronic marketplaces and their potential relevance for viability in the long term. Moreover, with regards to the current global COVID-19 pandemic, digital platforms have already proven their disruptive potential in other industries. The application of new technologies enables market players to increase efficiency in operations and administrative functions. Something more, by deploying new digital freight exchange platforms, transport companies may introduce new service offerings that have not been possible before. These strategic options provide opportunities for established players to “improve their play”, but there is an additional alternative to gain more and more traction as well, as it allows market participants to entirely “change the game” in the transport industry (Baron, et al., 2017).

# FRAMEWORK FOR DEVELOPING BUSINESS MODELS FOR FREIGHT EXCHANGE PLATFORMS

The framework for the business-models’ establishment suggested by Ostenwalder and Pigneur (Ostenwalder & Pigneur, 2002) includes 4 main elements: Products and Services; Infrastructure and the network of partners; Relationships (relations) capital; and Financial aspects.

In addition, the sustainability of every business-model depends to a great extent on *stakeholders’ credibility* as suggested by Giannoutakis and Li (2011*)*, which include both internal and external stakeholders. For any business model project to be sustainable, these elements have to be addressed.

* ***Product and services***

The products and services provide the base for revenues and benefits for different stakeholders’ groups and categories (see figure 1). The benefits of freight exchange platforms’ (FEP) deployment start from the exchange platform service providers. The second level represents the benefits for the platforms’ users, including using better and efficient transport services, time savings, improved agreement procedures and other benefits. This level includes also all the benefits for the people and companies willing to pay for freight exchange services. Thus, business opportunities for more companies wishing to enter the market such as mediators (forwarders) and service providers could be created. On the top level, benefits for the transport sector as whole could be created in the form of external positive effects such as savings for transport companies, less time response spending, reduced empty runs, higher transport efficiency etc.

**Value**

-time savings for the carriers and loaders;

- less time response spending;

- reduced empty runs;

- higher transport efficiency etc.

-Services’ quality improvements;

- time savings;

-service convenience for route choice;

-Benefits from the platforms ;

-Platform management;

-Reduced emissions etc.j

-smart services

-information and communication infrastructure etc.

Figure 1 Value proposition for freight exchange platform

Source: Based on the idea of Giannoutakis & Li, 2011

* ***Network of partners***

This element refers to the identification of the main stakeholders behind freight exchange platforms and management. A network of partners could include stakeholders like the transport operators (carriers), transport groups and organizations, individual transport companies, ICT technology companies, forwarders, the transport users, payment services’ providers and others. All of them are interested in the answer of the question: How could freight exchange platforms be used to provide benefits? (Skersys, et al., 2011).

* ***Relationships capital***

Relationships aspect is related to converting the value that the platform providers offer into revenues and profits, i.e. the pricing models they adopt, how the company makes efficient use of its tangible and intangible assets, how it converts the value of its products and assets into money. In the internet era companies’ interests are shifting more rapidly to investments in intangible assets (e.g. reputation, network of suppliers, intellectual property, value of information), while tangible or physical assets constitute a decreasing percentage of the total company value (Li, 2007). This contributes to cost reductions and to more effective work of the systems with the same or even fewer resources.

* ***Financial aspects***

The financial aspects are very important as they sit upon all the previous three elements and affect them. It is therefore necessary to secure a sustainable business plan, able to offer satisfactory returns and benefits to the investors and provide assurance that the contributors will be rewarded.

* ***Stakeholders’ credibility***

The successful development of freight exchange platforms also depends critically on the support of all key stakeholders, which goes beyond financial aspects. A particularly important aspect of the stakeholders’ credibility in freight exchange platforms development is about the distribution of potential benefits amongst different interest groups, and the wider economic benefits at the transport sector level. This challenge could be addressed by establishing the appropriate framework for FEP deployment and especially by using adaptive business-models.

The freight exchange platforms aggregate buyers and sellers of transport services and facilitate transactions between them (Marasco, 2005). This study suggests the opportunity to explore existing business models to find out the potential features positively affecting the platforms’ capability to survive in a period of fierce competition and consolidation. On the other hand, the main purpose of this study is to gain a deeper understanding of different characteristics of business models applicable for transport electronic marketplaces (freight exchange platforms) and their potential relevance with regard to long term viability of these marketplaces. To this end, a reference framework encompassing several descriptive dimensions of FEP business models is identified (see figure 2) through an extensive review of existing platforms. Such frame has been used to analyse different samples of freight exchange platforms that are currently operating in different countries.



Figure 2 Framework for freight exchange platforms deployment

# TYPES OF BUSINESS MODELS APPLICABLE FOR FREIGHT EXCHANGE PLATFORMS

There is a significant variety of business models applied for different freight exchange platforms and provider types in the market. In order to distinguish between the various types, three key differentiating dimensions can be considered based on the Baron et al (2017) study. These are as follows:

*1). Business models with value-chain focus*

These business models are focused on the non-contracted part of the market, or so-called ‘spot business’. The providers of these types of platforms need to guarantee they cover *the new value-chain elements.* For example, key account and operations management for which forwarders and carriers have experienced senior sales and operations management structures in place. This allows them to manage continuous improvement, handle escalations and trigger corrective actions. On the other hand, *some of the value-chain elements possess a very different nature in the contracted business –* for instance, large shippers expect their legal, commercial and other requirements to be followed rigorously instead of receiving standard service. This may require platforms to meet specific electronic data exchange (EDI), reporting or invoicing requirements.

*2). Decision-making quality*

Among the different (digital) business models applied in different freight exchange platforms, quality of decision-making varies strongly. For instance, basic platforms display only basic information, but the advanced ones allow for integration of real-time data and/or advanced analytics to make automated decisions. Many forwarders, logistics providers and carriers still base their operational and commercial decisions on manual data collection and heuristic methods. However, advanced digital players find optimums in large data sets and immediately adjust network structures and routes to increase asset utilization. In spot pricing, it usually takes a carriers or forwarders hours or days to provide a response to a client rate request, but the modern platforms can calculate and offer rates in seconds based on smart algorithms.

*3). Commercial ownership*

For the successful FEP’s business model development it is of particular importance whether providers take full responsibility for the information provided (e.g., via third parties) and services offered. Particularly, simple platforms act as information brokers only. They neither validate offer details nor take any liability or risk for the actual service provided to the client. Actually, the carriers or the forwarders are those who take over responsibility, which is a key asset for shippers as it increases confidence.

Based on the differences in the functions and elements we could distinguish between the functions covered by the business models applicable for contract and non-contract business operations as presented on figure 3.





Figure 3 Differences in the contracted and non-contracted business models

Source: Adapted from Baron et al. (2017).

With regards to the different functions described above, five different business models could be systematized (Baron, et al., 2017), answering the needs of stakeholders and respectively defining different types of freight exchange platforms, namely:

## Generic marketplaces

These are large marketplaces with strong brand names entering freight forwarding. They possess the necessary digital infrastructure and they could easily include transport offerings in their portfolio of services; however, the platforms’ functions are not tailored towards transport operations. These platforms cannot offer automated matching of freight supply and demand and they do not provide specific value-added services. Hence, they position themselves in the spot segment for small or irregular shippers that intend to compare and purchase simple freight services.

## Specialized marketplaces

These platforms are focused on transport offerings and can accompany the end-to-end processes. They usually do not offer automated matching of supply and demand. However, clients can choose from a variety of different offers and book them accordingly. The platforms of this type offer associated functions such as booking, shipment assignment, tracking and tracing and invoicing.

## Crowdshipping platforms

The crowdshipping platforms predominantly target business-to-customers and users intending to ship small cargo units. They work with private users to provide freight capacity or associated services. The platform scope and technological functionality level are usually comparable with specialized marketplaces.

## Digital freight exchanges

The first types of digital freight exchanges platforms were focused on spot business and supported regular (contracted) business. They were concentrated on road freight. Decision-making process is usually based on static information (“post & match”). Many platforms supported integration of real-time data, but this was not used on a broad scale, as a large amount of transport assets are still simply not equipped with localization technology and sensors. The forwarders and carriers often use specific ratings to ensure market presence in the platforms.

The more sophisticated types of digital freight exchanges deployed in the recent years encompass the same features as the older generation of platforms. However, they make extensive use of advanced algorithms to calculate and predict rates, capacities and means of optimization. They tend to have wider value-chain focus. Some of them offer key account and operations management functions. Moreover, many platforms in this segment take commercial responsibility for their offers. Many smart platforms even provide instant binding freight transport rates that are purely based on historic data analysis and forecasting.

Three more specific types of digital platforms take place at the freight transport market as concluded by Baron et al. in their survey from 2017, but they do not represent the classic e-marketplace. These are **carrier integrators**, **traditional logistics service providers** and **digital logistics service providers**. These types of platforms do not represent a new business model for freight exchange platforms. They could be characterized as providers of transport management systems and they are highly relevant players on contemporary transport markets. They create a “walled-in” market environment for a group of authorized logistics providers, forwarders and carriers. These types of platforms allow full integration of data between transport companies and shippers to automate most of the transport management process: from booking, over shipment assignment and tracking and tracing, up to invoicing and reporting. The latter three types of platforms serve as single-source providers, they can integrate all transport modes and they enable virtual end-to-end collaboration – for both spot and contracted shipments. Information is typically automatically fed into the shipper’s ERP system, and all procedures run system-based, with very limited “personal” interaction between the parties.

# APPLICATION FIELDS OF IDENTIFIED FRAMEWORK OF EXISTING FREIGHT EXCHANGE PLATFORMS IN BULGARIA

The main objective of the analysis in this paragraph is to sum-up the experience and the competitive positioning of existing freight exchange platforms and to provide insights into the business models and the relevance of their different characteristics with regard to the long-term viability they could achieve. The common features of the described freight exchange platforms in the Deliverable 3.1 of the SCOPE project that have been identified are as following:

* *they are international marketplaces* – the objective of the SCOPE project is to develop a new freight exchange platform that aims to simplify and more efficiently manage the business processes between the stakeholders (carriers – loaders – freight forwarders) and to provide live information about their assets. On the other hand, as a public marketplace it should achieve the transactional volumes necessary to long-term survival. So, the business models chosen for comparison should be of same type;
* *their proposition is primarily targeted towards the aggregation and matching of supply and demand of transportation services* – the new platform will be a pure transport exchange platform but not only an electronic transportation market, providing IT solutions for the transport industry and aggregating buying power to purchase transportation-related equipment and supplies at bulk rates over the Internet;
* *they are currently operational*.

The study of the framework for the new freight exchange platform deployment gives an opportunity to systematize the features of different business-models, that could be adapted to the new conditions and needs. For example:

## SPEDITOR.Net platform

The freight exchange platform SPEDITOR. Net is intended for road carriers, shippers and freight forwarders. It provides customized information to the users, such as on route selection, options for modal choice for transport services, information about the destination and warning messages for potential dangers during travelling. The home page of the platform provides up-to-date news and events throughout Europe in the scope of transport, summary of the number of the new offers, announcements and discussions for the day and even the actual fuel prices of different petrol stations for the major types of fuel. The main menu consist of several sub-menus as follows: Personal information in the diary; Who is here? – the user could check the presence of the other shippers and carriers; Order – to create new orders; Mail; Settings; Chat; Information by countries; Exchange; Partners; Discussions; Subscription; Announcements; Companies; Contacts; Guide; FAQ; News; and Exit. It offers information on products of third parties (e.g. adverts), or even operating as platforms for added services, such as reporting defects on the road and updating online information about routes. The platform incorporates road information for popular destinations, such as suggestions for avoiding toll roads, or online parking lots booking.

The platform SPEDITOR.Net actually runs under a form of a mobile and web-based end-user application which offers not only the necessary functions for freight exchange services, but detailed information related to freight carriages and specific requirements as well. It supports matchmaking and contracting but it does not offer opportunities for real bidding (auctions).

The freight exchange platform is completely automated freight exchange for publication of loads and transport ordering, with possibilities for searching of freight and transport by selected criteria. The platform makes it possible to search for cargoes or trucks, as well as to order. The offers of the users reach simultaneously to all other users in the system. This saves considerable amount of money and time.

The services that are provided by the SPEDITOR.Net end-user application are the following:

*o Entry cargo and available truck;*

*o Exchange messages between shippers and carriers;*

*o Transport offering and agreement concluding.*

The platform provides as well useful internet addresses and links sorted by categories such as websites of different transport institutions and organizations, international organizations, news and media, mobile operators, online trade, web portals and browsers, legislation, postal codes, accounting services, software providers, financial services etc.

The scope of the application is twofold: to develop a framework that allows data form different data sources to be processed in a common way and develop an end-user application which does not mainly focus on the provision of a fully matured solution, but also aims at giving developers an overview on the possibilities of the whole framework.

The annual registration and subscription fee for Bulgarian companies is 480 BGN and respectively - 205 EUR for the foreign companies.

## TIMOCOM platform

This platform offers an access to the Europe's largest freight exchange (Hänel, 2017). The freight forwarders and transport operators could select from up to 750,000 international freight and vehicle offers daily. They could find business partners amongst over 130,000 users and could avoid expensive empty runs. The possibilities offered by the platform are related to two main areas: freight and vehicle space.

The services provided by the platform include:

* *Shippers services:* Main advantages of the platform are related to the opportunity to profit from new business connections, increased turnover and fewer empty runs. The platform offers as well to its users to take advantage of special offers for courier express package services (CEP) or to use its transport barometer app to find freight and vehicle space whilst on the go;
* *Carriers services:* To support the transport operators as they make full use of vehicle capacities, the platform presents to them vehicle entries section within the Smart Logistics System. As service providers, the companies can enter vehicle space offers with information on vehicle type, volume/weight, date, current location and destination of the vehicle. This way they could avoid both empty runs and unnecessary costs.
* *Tenders and bids:* The shippers and carriers can arrange e-tenders by creating new tenders choosing between the options for routes and areas.

The freight exchange provides mobile applications for its subscribers to cover their needs on the go, as well. The apps have the same menus as those in the web-based platform.

The platform TIMOCOM requires a registration and licence and offers its services free of charge for up to 4 weeks. The monthly rate for subscription to the Platform is 159 EUR, and the provider offers quarterly instalments of 430 EUR per user, including 3 registered officers. The freight exchange and its login software provide quick and efficient action on the spot market. Whether service provider or transport customer the user can find the business partner he/she are looking for.

## Trans. Eu platform

The Trans.eu platform is a transport exchange platform with modern tools facilitating transport management. Over 6 000 shippers offer cargo, 25 000 carriers create Community and 9 000 freight forwarders actively use the platform.

The freight exchange platform Trans.eu provides three different products with tools dedicated to shippers (Trans for Shippers), forwarders (Trans for Forwarders) and carriers (Trans for Carriers). It covers the specifications of the work of the target group and automates the management of road transport. The Platform includes a transport exchange, enabling the publication of available loads and vehicles to the Trans.eu community. It introduced modules that not only systematize work, but also require quick orientation in the current state of all freights sent by users’ offers. The platform provides the following modules:

* *Shippers services:* The Shippers module is where the shippers add load offers and publish on the Exchange or they send offers to selected operators or forwarders. The platform provides for the shipper offers with actual prices as well as an easy and fast carrier search. The international community of transport companies allows faster finding of a carrier.
* *Forwarders services*: The menu of the platform provides an opportunity for load monitoring. “Trans for Forwarders” menu is easily associated with any type of telematics on the market. The platform provides security and evaluation system as well. Only verified companies have access to the exchange. The rating system allows the users to check how other users evaluate their cooperation. The forwarders can specify the price and currency, select the carriers and publish the freight. The statuses show what is happening with the offers. The users can find all offers submitted by contractors in one place. As an ordering party, the forwarders can require a cargo monitoring from their subcontractors, and they can check what is happening on the route directly from the Platform by using the Monitoring module the same way as shippers. They can use the Rating and TransRisk functions as well.
* *Carriers services*: In the Freights module of the Platform the carriers can find various load offers. Depending on the type of load, they can accept, reject or negotiate the offers. The SmartMatch proposal means that the offer has been matched by an algorithm that has analysed the carrier’s company and fleet data. Using the Platform, the shipper can ask the carriers to provide load monitoring to track the transport route and its statuses on an ongoing basis.
* *Exchange messages*: The Platform offers a convenient instant messenger to match details on contracting transport services. This is an easy way to determine all the details of the transaction.

The Trans.eu platform requires a registration and subscription. The monthly access price is 109 EUR and the annual fee is 981 EUR.

The concluded framework of functionalities and other characteristics of the above-mentioned freight exchange platforms are presented in the table 1 bellow. Based on the main features revealed, we are going further to develop a framework and suggestion for an appropriate business model for the new freight exchange platform that will be deployed under the SCOPE project.

Table 1 The main dimensions of the most popular freight exchange platforms in Bulgaria

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Name of the platform** | **Year** **of establishment** | **Country of origin** | **Market focus** | **Functionalities** | **Registration and subscription fee** | **Number of registered costumers** | **Number of Users**  | **Daily offers** |
| **Speditor. NET** | 2004 | Bulgaria | Road freight | Registration;Customized information for users:* modal choice;
* on route selection;
* information about destinations;
* warning messages;
* up-to-date news about road conditions in Europe;
* number of new offers by type;
* fuel prices;
* advertisements etc.;

Publication of loads;Publication of free transport spaces and trucks;Searching for cargoes by types and destinations;Searching for trucks by types and destinations; Transport offering;Submitting offers for cargo;Agreement concluding;Searching for registered users by profiles;Discussion menu;Exchange messages;Mail. | 480 BGN(205 EUR) | 11 243 | 2 895 | 7763 offers for freight load1292 offers for transport |
| **TimoCom** | 1997 | Germany | Road freight | License login software;Shippers services:* freight entry;
* freight offering by company profile;
* receiving request quote by carriers;
* receiving transport offers;

Carriers services:* searching for freight by origin and destination;
* vehicle space offering;
* registration of available trucks with carrier contact information;
* searching and offering for available warehouse spaces;

Tenders and bids:* creating new tenders by routes and areas (using different dimensions as duration of the tender, payment terms, vehicle requirements, routes, transport frequency);
* receiving information about the current bids.

Tracking and tracing of the trucks and loads - maps;Transport monitoring;Companies profiles and information. | 1720 EUR(430 EUR quarterly) | 36 000 | 130 000 | 750 000  |
| **Trans.eu** | 2004 | Poland | Road Freight | Subscription;Trans for Shippers module:* publishing and offering loads for transport;
* SmartMatching;
* searching for carriers;
* specifying price offers;
* negotiating;
* accepting offers;
* cargo monitoring;
* offers archive;
* list of contractors;
* publication of automatic rules;
* rating module with rated transactions.
* TransRisk module estimating companies’ payment credibility.

Trans for Forwarders module:* receiving loads proposals;
* negotiating offers with both shippers and carriers;
* searching for carriers;
* creating and ordering freights and transport on the exchange;
* receiving offers from carriers;
* creating groups of contractors;
* rating transactions.

Trans for Carriers module:* searching, accepting, rejecting and negotiating on freight offers;
* accepting, rejecting or negotiating offers with a price proposal;
* sending proposals for transport;
* sending and receiving SmartMatch proposals;
* rating transactions;
* tracking and tracing the transport;
* adding vehicles’ offers by routes and areas.

Exchange messages; | 981 EUR | 41 000 | 41 000 | 300 000 |

As a result of the analysis we could summarise that among other technologies, the increased use of internet by the society as whole has led to new business models known as business-to-business (B2B) marketplaces, also called electronic marketplaces (e-marketplaces or EMs). E-marketplaces allow buyers and sellers of a product or service access to a website or platform to interact and exchange business (Janita & Miranda, 2013).The freight exchange platforms are typical e-market places and represent online platforms or applications designed to provide software, tools and services that establish and facilitate buyer-supplier relationships and transactions on the freight transport market. These relationships are often trilateral, involving the buyer (shipper), seller (transport service provider or forwarder) and a third-party exchange service provider (e-marketplace provider). Sometimes customers (the product vendor or buyer) can also access the FEP but is not the norm.

The most of the existing freight exchange platforms using e-business models following the e-marketplace business model (figure 4). It helps consumers to sell their assets (truck space), loads, etc., or rent a truck space by publishing their information on the website. Website may or may not charge the consumer for its services. In most of the cases the freight exchange platforms require paid subscription. Another consumer (shipper) may opt to buy the product (transport offered) of the first customer by viewing the post/advertisement on the website.

Costumer

Physical flow

Information flow

Relationships

Figure 4 Freight exchange platform business model

Generally, an e-marketplace is the meeting point for three main parties: the buyer, the seller and the technology provider. In the freight exchange platforms, the parties are the transport services’ buyer (shipper), the transport service provider (TSP) and the technology provider. In some cases, the technology provider can also be either the shipper or the TSP. Also, in some cases the customer may also be involved in the e-marketplace; however, this is not the norm (Rios, 2018). There can also be additional parties involved (e.g. freight forwarders and financial service providers) depending on the complexity of the services provided by the platform. The ultimate purpose of these platforms is to bring interested parties together and provide a reliable service to final customers. Lastly, this figure shows the dynamics taking place through platform participation: the physical flow of goods and services, the information flow and the relationships.

On the other hand, the freight exchange platforms can be public (open) or private (closed) depending on whether all interested parties can participate or if participation is limited to a selected group (Nandiraju, 2008). In a private platform, only the shippers contracted, in-house and preferred carriers could participate; most closed electronic exchange platforms are initiated by shipper(s) as they are in a more powerful position to pull in the carriers they want to work with (Wang, et al., 2007). Conversely, in public freight exchange platforms all approved carriers can participate (Wang, et al., 2011). Some platforms have a certified base group of carriers. Of course, the reliability of the platforms increases if all the participants, both shippers and carriers, have been certified on their business credentials.

Based on the analysis made above, the most important factors for successful implementation of e-business models of freight exchange platforms could be systematized as follows:

* They provide lower operational costs for both the shippers and the carriers;
* Besides the freight exchange platforms guarantee better use of time and better vehicle and consignments’ time management;
* The platforms ensure immediate communication between the interested parties as well as fast negotiation procedures and agreement concluding;
* The platforms increase market exposure of carriers and shippers and are of crucial importance for small and medium size enterprises (SMEs) to attract customers and to gain market shares;
* There are no geographic boundaries for the participants. Practically, the platforms provide matchmaking for transport operators and potential shippers form different countries and regions;
* The e-business models used by the platforms provide access to real-time information about the transactions and the fulfilment of freight transport agreements.
* The European Road Freight Transport Market features high demand for direct shipper-carrier engagement (Baron, et al., 2017), i.e. commercial relationships with no intermediary which favours the application of digital freight exchange platforms.

Notwithstanding the current developments in the sphere of e-commers and e-business models, there are some specific issues that could be counted as drawbacks of freight exchange platforms use (Rios, 2018). For example:

* There is no protection of participants and some of these platforms do not assume responsibility beyond the matching of shipper demand and carrier capacity;
* There are still some security and safety concerns related to data protection, identification and authentication of the participants regarding the information sharing, transparency, perceived risk and disclosure of sensitive data involved with platforms participation;
* The platforms enhance price-driven competition but there still exist some quality uncertainties as the users couldn’t prove the quality of transport services in advance;
* Many freight exchange platforms still suffer from lack of transparency as many users believe trust is vital for good relationships, and find difficult to build it without person-to-person negotiations;
* There are still many cases of reclamations cause of poor service quality, inadequate expertise and service performance and inability to deal with special product needs and emergency circumstances;
* Many users still report communication issues related to the platforms and the freight exchange services still suffer from a lack of credibility. As services are intangible and consumed at the time they’re produced, there is often a lack of knowledge of what has been agreed upon in terms of service specifications and freight volume (Andersson & Norrman, 2008). Furthermore, there is no learning outcome by participating on bidding and auction markets; the information obtained cannot be incorporated for future behaviour, but it only fosters price cutting behaviour. Transport service providers (carriers) who believe that a buyer is behaving opportunistically have fewer incentives to share information and engage in mutually beneficial cooperation (Anand, 2005). It is often the case that the second lowest bidder is provided an opportunity to move the freight because the bidder with the lowest cost is unable to deliver the capacity or the service level required by the shipper (Song & Regan, 2003). For this reason, transport operators are often reluctant to join open freight exchange platforms as they fear their service quality is reduced to price.

Furthermore, based on the feedback given by the stakeholders during the local workshop held on 02.07.2020 in Sofia and based on the gathered input and stated needs and requirements of the potential users of the future platform, the following main areas are to be considered in the business model and the following recommended measures to more confidently participate in online platforms could be summarised:

* the future platform to provide opportunities for connections and integration with other similar platforms and with transport companies from other modes of transport (rail, air, inland waterways, maritime). These opportunities will help to increase the added value of the platform and the provision of functionalities for the negotiation and implementation of combined shipments;
* the stakeholders declared a need of implementation of an online payment system as an integrated module in the platform;
* potential users and stakeholders declare their desire for the higher digitalization of the transactions in the platform;
* mandatory registration and identification of the users in order to ensure the reliability of the information, including counterparty verification options – e.g. date of initial registration, licenses, latest annual turnover reports, etc.;
* ensuring high security and protection of data and information shared in the platform;
* opportunities for tracking the satisfaction rating of the users of the platform – transport companies, freight forwarders, shippers;
* the possibility of issuing electronic transport agreements, invoices and bills of lading directly in order to achieve the objectives of the European Transport Policy related to a higher degree of digitization of the transport process. To protect themselves from negative experiences and potential financial losses both shippers and carriers use contracts as key measures to the establishment of relationships in transport. These measures are reflected in the inclusion of contractual clauses that explicitly outline the framework, responsibilities and pay rate of the services providers (Boyson, et al., 1999). Usually long-term relationship with suppliers are bound by a contractual agreement; thus, they are strategic sources. These long-term relationships are characterized by a sense of mutual trust and open exchange of information; conversely, on an arm’s length relationship, as is often the case with electronic marketplaces, the short duration of the relationship hinders familiarity and personal ties (Skjøtt-Larsen, et al., 2003). While some see FEP’s participation as a way of developing a network of partnerships, other suppliers and strategic partners may perceive their use as moving to an arm’s length relationship (Standing, et al., 2010).
* The stakeholders share their desire for the future platform to provide an opportunity for the transport companies to consolidate digitally their logistics capabilities within a single digital office to maintain better organizational control of these relationships.
* The future platform could provide as well key account management functionality with an opportunity to perform thorough up-front review, audit and control of the systems and capabilities of external service providers. For this, the use of metrics tools is necessary to manage and evaluate the service levels, performance and financial stability of external service providers (Boyson, et al., 1999) (Song & Regan, 2003). Consequently, it is important that going forward the decisions leading to FEP participation go beyond bargaining for the lowest price. Other intangibles, such as buyer-supplier relationships, the quality of the service provided, the supplier’s reliability should be assessed before awarding a transport contract (Anand, 2005).

As a conclusion it could be summarized that digital freight exchanges penetrate only selected market segments (road freight), but the focus of potential stakeholders is broadening.

# APPROPRIATE BUSINESS MODEL FOR NEW FREIGHT EXCHANGE PLATFORM – RECOMMENDATIONS AND OPPORTUNITIES

With regards to the analysis of the existing business models for freight exchange platforms, the framework and their common features, the following dimensions of FEP business model could be summed up:

* Type of operator;
* Participants;
* Market focus;
* Transaction operating mechanism;
* Source of revenue.

The combination of these dimensions and the revealed preferences of the stakeholders stated in the previous paragraph help us to determine the main attributes of the business models for establishing a new freight exchange platform (see figure 5).



Figure 5 Freight exchange business model dimensions

1). The first dimension concerns *the type of operator running the platform*, which can be an autonomous operator, a group of market participants (consortia) or a single service provider (Grieger, 2003). Based on the analysis of the existing platforms and their business models and having in mind the type of relationships between participants supported by them it could be concluded they are all run by independent operators. They main purpose of the platforms is to allow participants to maintain existing long-term, collaborative relationships with trading partners along with spot relations. This encourages participation of the potential users and allows to combine the advantages of spot transactions for the allocation of excess capacity or extraordinary loads with the possibility to exploit the marketplace’s platform for process automation and better integration with actual providers/customers, without the necessity of undertaking high IT investments (Marasco, 2005). The appropriate business models for the deployment of the new freight exchange platform should be particularly focused on addressing shippers’ desire to shift large volumes of freight from the spot environment to the electronic marketplace, which will boost the new platform viability.

2). Another important characteristic of an electronic freight exchange platform is related to its *participants*. With regards to the recommendations and feedback received from the potential stakeholders during the workshop held on 02.07.2020, the freight exchange platform is recommended to involve not only the respective service provider, the carriers, shippers and forwarders, but to incorporate as well:

* Electronic payment service providers in order to facilitate and provide fast electronic payment and transactions between the partners;
* National Regulatory Bodies (Resp. National Licensing Organizations) – in order to guarantee the identification and authentication of the participants and provide higher level of safety and security of transactions.

3). The *market focus* is another important dimension for categorizing business-to-business electronic marketplaces and it distinguishes between vertical and horizontal marketplaces (Barrat & Rosdahl, 2002), with the first type serving only a specific industry and the latter providing goods and services to different industries. In this respect freight exchange platforms are viewed as inherently horizontal, as they have applications in numerous industries. This dimension includes also the mode focus of the marketplace. In this respect, most FEPs are specialized on a single mode of transport (i.e. road transport), with few of them providing services across different modes. The recommendations of the stakeholders regarding the market focus of the new freight exchange platform are to provide interfaces with other modes of transport and platforms in order to enhance the cargo transshipments from road to maritime, rail, inland waterway and air transport and thus to facilitate intermodal transport services.

4). The next important element of freight exchange business model is the *transaction operating mechanisms*. The new platform may implement one or more of the following mechanisms to operate transactions between carriers and shippers:

* Request for quote,
* Auctions;
* Exchanges;
* Negotiating procedures;
* Payment processing; and
* Key account management.

The analysis brings into evidence that with regard to their transaction operating mechanisms examined some of the existing freight exchange platforms do not implement auction formats, only relying on negotiations and/or exchange methods to operate transactions. While auction formats represent the most efficient instrument to conclude transactions (for example TimoCom platform), competitive bidding results are a bit controversial in high price pressures and sometimes they discourage the participants. The adoption of other mechanisms rather than the auction appears to be particularly relevant for new platforms’ capability to reach critical mass when considering carriers’ reluctance to participate due to their fear of having profit margins heavily eroded by bidding (Goldsby & Eckert, 2003).

Another important task when establishing freight exchange platform business model is to provide a functionality which allows shippers to form communities and to share and coordinate shipping plans. Of course, the most important task of the new platform is to provide transportation services purchasing from the registered carriers and shippers. The system should guarantee full visibility across multiple shippers and carriers and help participants to find their best partners by scoring and ranking lane matches. Furthermore, it could provide a functionality ensuring key account management and thus enhancing the long-term attractiveness and loyalty of the users.

Something more, the stakeholders raise the question about the functionalities permitting the instant electronic payments and settlements after the fulfilment of transport transactions.

In comparison to the previous models, based on the combination of open and private infrastructure within the marketplace, such an approach is recognized to be even more valuable for users as it ensures full collaboration among participants to be achieved, meant as the dynamic combination of both vertical (between shippers and carriers) and horizontal (between shippers or between carriers) collaboration (Langley, 2001).

5). The last but not the least, an important determinant of the freight exchange platform business model is the provided *sources of revenues*. The most common sources of revenues of the existing platforms are as follows:

* transaction fees, usually they are levied as a percentage of the gross amount of each transaction conducted throughout the platform and can be charged to the carriers, to the shipper or to both;
* subscription or membership fees, which are collected from registered users on a monthly, quarterly or annual basis;
* advertising revenues, which are mainly used in marketplaces offering community features such as news, forums, directories and other content;
* fees for value-added services, that may include credit, payment guarantee, tracking and tracing, insurances, consulting services, etc.;
* revenues from software sales and licenses.

The new freight exchange platform success and viability will depend to a great extent on the decision-making quality it provides through the selected business model and the adaptability of the platform to the contemporary business conditions in transport sector going from pure information brokering to smart decision-making, the technological maturity level and the quality of decisions taken by its participants. Finally, another factor of success is to provide a technological opportunity for the participants to take commercial responsibility for their offers thus ensuring greater level .

# CONCLUSIONS

Studying the framework for freight exchange platforms’ deployment provides important insights for their developments. It also highlights the diversity of the business models used in the deployment of a wide spectrum of platforms and applications with increasing popularity. “Freight exchange platform” is a very broad term, each platform and application have its own special characteristics and involves the action of different groups of stakeholders. The framework presented in this deliverable can serve as a guideline for constructing future business model for a new freight exchange platform.

For ensuring its viability and competitiveness a new freight exchange platform should develop an appropriate business model so that it could ensure sufficient funding, to be prepared for a severe competence from the existing players on the market. On the other hand, it should rapidly expand into other transport modes and close remaining functional gaps in order to answer the stakeholders’ requirements for ensuring opportunities for higher quality and even for intermodality of services. The new platform will face the challenge to gain critical mass in focal segments to benefit from volume effects like traditional logistics service providers do. Furthermore, it should build confidence by creating more transparency on its financial stability and existing business footprints. Besides, the platform has to build reputation through “buying into” large client businesses, executing them flawlessly and promoting them as reference cases. And finally, it has to attract experienced players to get access to new clients and smart service offerings.

# **REFERENCES**

Li, F., 2007. *What is e-Business: How the Internet Transforms Organizations.* 1 ed. Oxford: Blackwell Publishing.

Ostenwalder, A. & Pigneur, Y., 2002. *An eBusiness Model Ontology for Modeling eBusiness.* 1 ed. Bled, Slovenia: Bled.

Skersys, et al., 2011. Building the e-World Ecosystem. *IFIP Advances in Information and Communication Technology,,* Volume 353, pp. 200-211.

Hänel, G., 2017. *Top 10 freight exchanges - a free comparison.* [Online]
Available at: https://impargo.de/en/blog/top-10-freight-exchanges/
[Accessed 10 Janyary 2020].

Rios, A., 2018. *Exploring the Use of Freight Exchange E-marketplaces in Sweden: The Perspective of the Transport Service Provider,* Helsingborg, Sweden: Lund University.

Janita, M. S. & Miranda, F. J., 2013. The antecedents of client loyalty in business-to-business (B2B) electronic marketplaces. *Industrial Marketing Management,* Volume 42, pp. 814-823.

Nandiraju, S. &. R. A., 2008. *Freight Transportation Electronic Marketplaces: A Survey of the Industry and Exploration of Important Research Issues.,* Los Angeles: University of California.

Wang, Y., Potter, A. & Naim, M., 2007. *An Exploratory Study of Electronic Logistics Marketplaces and Its Impact on Customised Logistics,* Cardiff: Cardiff University Innovative Manufacturing Research Centre, Cardiff Business School.

Wang, Y., Potter, A., Naim, M. & Beevor, D., 2011. A case study exploring drivers and implications of collaborative electronic logistics marketplaces. *Industrial Marketing Management,* Volume 40, pp. 612-623.

Anand, N., 2005. Emerging internet-enabled auction mechanisms in supply chain. *Supply Chain Management: An International Journal,* 3(162).

Andersson, D. & Norrman, A., 2008. Procurement of logistics services—a minutes work or a multi-year project?. *European Journal of Purchasing And Supply Management,* Volume 8, pp. 3-14.

Song, J. & Regan, A. C., 2003. *An Auction Based Collaborative Carrier Network.,* Irvine: University of California Irvine.

Boyson, S., Corsi, T., Dresner, M. & Rabinovich, E., 1999. MANAGING EFFECTIVE THIRD PARTY LOGISTICS RELATIONSHIPS: WHAT DOES IT TAKE?. *Journal of Business Logistics,* 20(1), p. 73.

Skjøtt-Larsen, T., Kotzab, H. & Grieger, M., 2003. Electronic marketplaces and supply chain relationships. *Industrial Marketing Management,* 32(3), pp. 199-210.

Standing, S., Standing, C. & Love, P. D., 2010. A review of research on e-marketplaces 1997–2008. *Decision Support Systems,* Volume 49, pp. 41-51.

Marasco, A., 2005. Business Models of Transportation Electronic Marketplaces: An Empirical Survey. *Institute for Service Industry Research (IRAT),* 42(1), pp. 77-92.

Baron, R., Zintel, M., Zieris, M. & Mikulla, D., 2017. *Digital platforms in freight transportation: A true industry disruptor?,* Paris: Arthur D. Little.

Langley, C., 2001. Analising Internet Logistics Markets. *Global Logistics & Supply Chain Strategies,* Volume 10, pp. 50-62.

Goldsby, T. & Eckert, J., 2003. Electronic transportation marketplaces: a transaction cost perspective. *Industrial Marketing Management,* Volume 32, pp. 187-198.

Grieger, M., 2003. Electronic marketplaces: A literature review and a call for supply chain management research. *European Journal of Operational Research,* Volume 144, p. 280–294.

Barrat, M. & Rosdahl, K., 2002. Exploring business-to-business marketsites. *European Journal of Purchasing & Supply Management,* Volume 8, pp. 111-122.