



NIMBLE Value-added Business Services



D5.5

Business Process Templates and Accelerators

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Abstract

The NIMBLE project aims to perform research leading to the development of a cloud and IoT federated platform specifically targeted at supply chain relationships and logistics. Core capabilities will enable firms to register, publish machine-readable catalogues for products and services, search for suitable supply chain partners, negotiate contracts and supply logistics, and develop private and secure information exchange channels between firms, in a B2B only environment. The intention is to support a federation of such NIMBLE instances, all providing a set of core services, and each potentially specifically tailored to a different aspect (regional, sectorial, topical, etc.).

The main goal of this document is to report on the services developed in NIMBLE so far and in what way they help accelerating the platform. In addition we present potential future services that would further improve as well as facilitate acceleration of NIMBLE adoption.

Identified accelerators in NIMBLE are:

- *NIMBLE offers flexible configuration of relevant features in various levels. Specifically, business workflows, contract clauses and individual negotiation terms can be customized per company based on their trading preferences. NIMBLE provides the functionality so that each company can have its own set of business processes supported throughout the B2B collaborations.*
- *NIMBLE has a default set of Terms and Conditions, but companies can also define their own set of clauses to be applied in the B2B activities.*
- *NIMBLE provides a contract clause generator for modifying the available clause content or to define new clauses from scratch.*
- *NIMBLE also contains fixed trading terms that are used during the negotiation process such as incoterms, payment means, payment terms, delivery terms, etc. Users can also define default values for these via the overall company settings configuration functionalities.*

Additional accelerators are:

- *NIMBLE offers a grouping functionality for the B2B collaboration threads.*
 - *NIMBLE provides shopping cart functionality to create negotiations/orders for all products included in the basket at the same time.*
 - *NIMBLE offers frame contract functionality. Companies could create a frame contract for the product with the agreed terms.*
 - *NIMBLE has an Unshipped Orders section for the possibility to follow-up orders to deliver the requested product.*
 - *NIMBLE calculates corresponding numbers from the past dispatch advices and displays them, i.e. in Fulfilment Statistics.*
 - *NIMBLE automatically applies negotiated discounts/charges to the total price in Negotiation process.*
 - *NIMBLE allows the seller to create catalogue offers where attribute choices refer to products from the NIMBLE catalogue.*
 - *NIMBLE has a logistics services form that is designed and implemented so that collection of logistics-related services such as storage, palletisation, transport and many others can be publicised.*
 - *NIMBLE offers comparison of products and services published in the platform, which enables the buyers to take decisions in a more agile manner.*
-

- *The definition of default values for some particular company settings accelerates the functions performed by the users through the platform.*
- *The auto completion functionality provides a valuable acceleration especially during the publishing and search processes.*

Possible future services, suggested by users, which can accelerate the uptake of NIMBLE are:

- *Support accessing and understanding legislation in other countries.*
- *Improved flow of information and information storage, i.e. NIMBLE can be a place for fast and reliable exchange of different types of data and offer coordinated information flows.*
- *Communication and collaboration tools. NIMBLE could develop and offer the service of a real time virtual working place.*
- *Adaption to mobile devices, i.e. it would be preferential if NIMBLE also worked on mobile devices.*

NIMBLE in a Nutshell

NIMBLE is the collaboration Network for Industry, Manufacturing, Business and Logistics in Europe. It will develop the infrastructure for a cloud-based, Industry 4.0, Internet-of-Things-enabled B2B platform on which European manufacturing firms can register, publish machine-readable catalogues for products and services, search for suitable supply chain partners, negotiate contracts and supply logistics. Participating companies can establish private and secure B2B and M2M information exchange channels to optimise business workflows. The infrastructure is being developed as open source software under an Apache-type, permissive license. The governance model is a federation of platforms for multi-sided trade, with mandatory interoperation functions and optional added-value business functions that can be provided by third parties. This will foster the growth of a net-centric business ecosystem for sustainable innovation and fair competition as envisaged by the Digital Agenda 2020. Prospective NIMBLE providers can take the open source infrastructure and bundle it with sectorial, regional or functional added value services and launch a new platform in the federation. The project started in October 2016 and will end in March 2020.

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Acronyms

Table 1: Acronyms

Acronym	Meaning
B2B	Business to Business
NIMBLE	Collaboration Network for Industry, Manufacturing, Business and Logistics in Europe
PaaS	Platform as a Service
UX	User Experience

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1 Introduction

The overall objective in NIMBLE is to create a B2B platform that will improve the efficiency of supply chain creation and operations for industrial SMEs. Among the services provided by the platform are publication of digital versions of product catalogues as well as what business services a firm is offering. Through NIMBLE, companies are able to efficiently search and find required counterparts, initiate negotiation processes, and establish supply chain relationships, including the creation of private information exchange channels.

1.1 Objective

The purpose of this deliverable is to outline business process templates and accelerators for the NIMBLE B2B-platform, in order to visualize the offering of value added business services to SMEs and other stakeholders of the platform. The business process templates and accelerators aim to bring forth added values in supply chain creation and operations.

More specifically, this deliverable identifies and describes (1) automated services enabling reusable flows of business processes assuring efficient transactions on the NIMBLE platform, and (2) additional accelerators for improving workflows in the core business processes thereby creating value-added business services in NIMBLE.

1.2 Platforms for accelerating digitalization

Accelerating customers' digital transformation is a central role of industry-related platforms such as NIMBLE. The digital maturity is low in many industrial SMEs today. Great efforts are made to increase the digital transformation and automation in companies. Many manufacturing SMEs do not have the capacity, infrastructure or the competencies to do this by themselves. The NIMBLE platform aims to improve and accelerate this journey and to be a good partner in the digital transformation of the industry, towards industry 4.0.

As such, the technology and innovation management activities in the NIMBLE project contribute not only to the implementation and best use of the platform technology, they also enforce digital best practice. Companies in the ecosystems of the NIMBLE use cases are characterized by low degrees of digitalization in their businesses and operational activities. A central part is to make use of B2B platforms, and make them to become normal practice for enabling the companies to remain competitive (Chron  er et al. 2017).

We argue that there are tremendous opportunities attached to the digitalization process through the use of business platforms and particularly the opportunities attached to development of national and international communities. NIMBLE enables development of business communities beyond the companies' current boundaries. It also enables strengthening of current business relations through deepened communication, co-creation and exchange. There is a need for new and higher types of interaction between companies and their customers that may take place through business platforms. As such the platform enables companies to acquire capabilities that allow them to collaborate and communicate.

NIMBLE may fit well into the production process of companies involved in the supply chain. Platforms may provide possibilities for stable order processes, communication and exchange from established partners while also offering possibilities (if willing to) to gain access to new suppliers, this in order to answer to the need of flexibility. Use of the NIMBLE enables organizational change. The platform may be used in different parts of one organization, synchronizing the logistic chain as well. The platform also offers opportunities for serving as a common ground of internal data and communication.

The four use case companies in NIMBLE, found in the construction, white goods, textile and furniture industry act as leaders in their industry guiding others towards digitalization. The work is carried out in co-creation where the use case companies invite suppliers and/ or customers. The main part of the companies taking part in the collaboration start by inviting suppliers since the relationship is either well balanced or because the lead company has sufficient power to impact the suppliers. Co-creation is primarily based on these relationships. A second step would be to invite customers to a higher extent. The first step is as such to enable suppliers to accelerate their businesses and to improve the relationship and exchange with the use case lead company.

To sum up, NIMBLE aims to support the digital transformation in the manufacturing industry through the following:

- NIMBLE contributes to the development of capabilities for digital transformation and for the use of logistic platforms.
- NIMBLE provides series of solutions for B2B companies to grasp and manage the supply chain.
- NIMBLE has a role as connector of companies and product and services offered by different companies.

1.2.1 Acceleration of platforms

The market with digital platforms is stepwise becoming more and more mature. There is a large number of successful platforms on the business to consumer market such as Amazon, while the B2B market still is in an earlier phase of this development. The development of a mature market of digital platforms is an ongoing work. A larger number of mature business platforms that exists improve the maturity in use of such platforms. The work in NIMBLE is one effort that contributes to development of maturity in this market. Development of mature B2B platforms increases the market potential of buying, selling and collaborating on the platform.

We can see that companies find it crucial to adapt, embrace and integrate digitalization into their companies to be able to keep up and comply which is in line with (Parviainen et al, 2017) while companies do not know how to do this. Digitalization is broad and not concrete.

- Acceleration of SMEs network through the platform.
- Acceleration of potentials for benchmarking through the platform – in case of open mass-markets.
- Acceleration of potentials to market offerings through the platform.
- Potentials to provide signals to stakeholders on the platform (e.g. signals to customers that they have other highly legitimated customers, signal the willingness to implement and assure for digital transformation of the company.
- Acceleration of market potential – new countries to target – also decreasing potential costs of targeting new markets.

- NIMBLE trains “digital innovators” including producers on the platform (coordinators), designers (proposers) and developers (technical experts). These three groups and capabilities attached to the groups are central.

Acceleration of revenues is a central part of companies for long-term survival and success is to maintain or increase the income and to limit the costs. Digital transformation is a key to tackle such challenges. This lead to an increase willingness to take part of and carry out exchange on digital platforms and as such take part of business to business exchange and relationships and as such contribute to increasing of revenues through digital transformation.

Increasing revenues by improving efficiency:

- NIMBLE offers a value based model for companies to accelerate their revenues.
- Improve the organizations operational workflows and work in order to improve efficiency e.g. decreases costs of production.
- The access to new types of customers and to new markets may increase the company’s sales and the income.
- May identify new types of offerings- identify offerings that not were planned for, substitutes for current products / services.
- Improving revenues by improving efficacy.
- Gain access to a larger market and increase the sales.
- Potential to increase the companies’ revenues.

2 Value added business services on NIMBLE

The NIMBLE aims to offer value added business services by providing flexible and reusable processes using modular systems to produce customized services cost efficiently, this in a standardized production system enabling mixing and matching users' constantly changes needs on the platform, e.g. answering to the needs of buyers, sellers and logistic suppliers. It implies satisfying the needs of heterogeneous customers using the platform. The NIMBLE business services may include parallel production by the seller and the buyer using the services i.e. selling and buying on the platform. There may also be a parallel consumption at the same time on the NIMBLE where different types of potential users take part of exchange on the platform. The services may also be co-produced by the users of the platform for instance sellers and buyers may co-produce an order and attached terms and conditions for a particular order. The processes of exchange are processual and interactive. The modules illustrated in the figure below may contain of business elements or business processes.

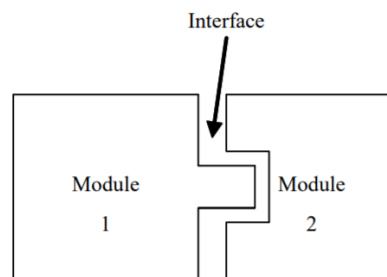


Figure 1: Modules of business services (Picture from Pekkarinen & Ulkuniemi, 2008)

The B2B platform brings forward specific features e.g. in terms of high complexity in the customers' decision processes where many people may be involved in selling or buying of products. The inter-organizational exchange offered through the NIMBLE may take place between companies in highly competitive markets but also through exchange based on close, long term collaborations between the selling company and the buying company (cf de Reuver et al 2018). The degree of standardisation of the service offerings and the business services are central from the NIMBLE providing services in both a flexible and cost-efficient way. The standardized production of service at the platform enables cost efficiency in service production. In this, the modularity principle used enables further standardization of service products in order to provide customer value and profitability. The different modules of service offerings on the NIMBLE with parts and components enable the modules to be easily interchanged and replaced. The services offered on the platform may be separated and recombined in many different ways while offering high functionality. NIMBLE offers a supply chain of "build-to-order" where the modularity improves the platforms ability to meet users' needs and wants. The modules include both service elements and processes. The service element is the smallest unit that a service may be divided into. One illustrating example on logistic services may be the warehouse as the service module and the need of space in the warehouse as the service element¹. When regarding process modules, an example

¹ For the example and more on modules in business services see Pekkarinen, S., & Ulkuniemi, P. (2008). Modularity in developing business services by platform approach. *The International Journal of Logistics Management*, 19(1), 84-103.

related to the ordering process may be the two standardized process modules of sending and receiving orders with use of a smartphone.

3 Initial Requirements and registration for using NIMBLE

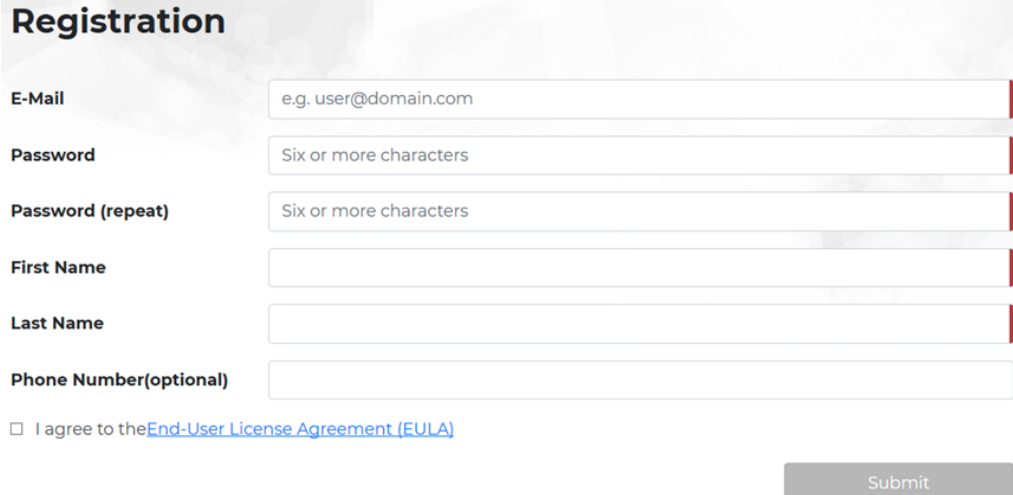
This section includes a presentation of initial requirements and steps of registration for using and collaborates on the NIMBLE platform. For this, a description of the initial processes, workflows, and data that need to be performed before using NIMBLE's business processes is outlined.

3.1 Initial registration

The initial steps before using and collaborating on NIMBLE includes 1) register of an account on the NIMBLE-platform, 2) register initial company settings, and 3) register users' roles taken by the company representative using the platform and 4) register regulative clauses to suit the company's terms and conditions.

3.1.1 Company settings

First, the user needs to create an account in NIMBLE and provide some user data, see **Figure 2**.



The screenshot shows a registration form titled "Registration". It contains several input fields: "E-Mail" with a placeholder "e.g. user@domain.com", "Password" and "Password (repeat)" both with a placeholder "Six or more characters", "First Name", "Last Name", and "Phone Number(optional)". Below these fields is a checkbox labeled "I agree to the" followed by a blue link "End-User License Agreement (EULA)". At the bottom right is a grey "Submit" button.

Figure 2: Screenshot of the user account registration.

When the account is established, the legal representative can login with the account and continue to register its company data and information in accordance with the description below. The company selects the business type (Supplier, manufacturer, logistics provider etc.) and activity sector.

Figure 3: Screenshot of the company registration information.

Thereafter, the legal representative selects more specified settings for the company. In “Company setting,” the legal representative specifies all *company data* and *details* (including social media, events, images, etc.), the *trade details* and chooses which processes that are to be included in the company’s workflow:

- Item information request
- PPAP (Production Part Approval Process)
- Negotiation
- Order
- Transport Execution Plan
- Fulfillment.

As a next step in the company registration process, the legal representative can choose different pre-prepared regulative clauses that are appropriate for their line of business. It is possible to edit these clauses to suit the company’s *terms and conditions*. The clauses are further illustrated below.


Figure 4: Screenshot of the company setting information.


Edit clauses:

Title of clause WARRANTIES 

WARRANTIES

7. WARRANTIES: Seller represents and warrants that (a) all goods and services are free of any claim of any nature by any third person and that Seller will convey clear title to Purchaser, (b) all services are performed in a manner acceptable in the industry and in accordance with generally accepted standards, are free from all defects, are fit for the particular purposes for which they are acquired, and are provided in strict accordance with the specifications or other requirements (including performance specifications) approved or adopted by Purchaser, (c) all goods sold will be of merchantable quality, free from all defects in design, workmanship and materials, and fit for the particular purposes for which they are purchased and that the goods and services are provided in strict accordance with the specifications, samples, drawings, designs or other requirements (including performance specifications) approved or adopted by Purchaser, (d) the prices for the goods or services sold to Purchaser under this Order are not less favorable than those currently extended to any other customer for the same or similar goods and/or services in equal or lesser quantities, and (e) Seller shall not act in any fashion or take any action that will render Purchaser liable for a violation of any applicable anti-bribery legislation which prohibits the offering, giving, or promising to offer or give or receiving, directly or indirectly, money or anything of value to any third party to assist it, them or Purchaser in retaining or obtaining business or in procuring the goods or services. Purchaser's inspection, test, acceptance, or use of the goods shall not affect Seller's obligations under these warranties. Seller shall replace or correct, at Purchaser's option and at Seller's cost, defects of any goods not conforming to these warranties. If Seller fails to correct defects in or replace nonconforming goods within **\$warranty_seller_id** from the date the Purchaser notifies Seller of the defect or defects, Purchaser may, on **\$warranty_buyer_id** prior written notice to Seller, either (i) make such corrections or replace such goods and charge Seller for all costs incurred by Purchaser, or (ii) revoke its acceptance of the goods in which event Seller shall be obligated to refund the purchase price and make all necessary arrangements, at Seller's cost, for the return of the goods to Seller. All warranties of Seller herein or that are implied by law shall survive any inspection, delivery, acceptance, or payment by Purchaser. Any attempt by Seller to limit, disclaim, or restrict these warranties or any remedies of Purchaser, by acknowledgment or otherwise, in accepting or performing this Order, will be null, void, and ineffective without Purchaser's written consent.

\$warranty_seller_id	10	day(s)	Edit	
----------------------	----	--------	------	---

\$warranty_buyer_id	10	day(s)	Edit	
---------------------	----	--------	------	---

Add Trading Term

Figure 5: Screenshot of clauses that can be changed.

Information in these clauses links in some parts to the business processes, i.e. data can be reused in the order process. For instance:

Purchase Order Terms and Conditions: The following Purchase Order Terms and Conditions (“Terms”) is duly executed by both parties, these Terms provide \$seller_id (“Seller”) with the guidelines and legal stipulations of your purchase order (“Order”) with the \$buyer_id (“Purchaser”) for the goods and/or services that are described on the Purchase Order.

Other details that need to be given are: delivery address, and specific certificates.

3.1.2 User roles

The legal representative continues to specify different business roles and invite other company members that need to get access to NIMBLE. Roles can for instance be; monitor (the person who administrates the platform at the specific company), publisher, purchaser, and sale officer. The company may use the platform for different purposes implying that companies can register many different roles on the platform and through this involve many company members. One person may also have different roles in a SME with a limited number of people involved and for instance use the platform as both purchaser and sales officer. It may also be the sales-officer who publishes information on the platform.

Send Invitation

E-Mail: e.g. user@domain.com

Roles:

- ☐ Legal Representative
- ☐ Monitor
- ☐ Publisher
- ☐ Purchaser
- ☐ Sales Officer

Submit

Company Members

E-mail	Status	Assigned Roles	Options
--------	--------	----------------	---------

Figure 6: Screenshot of company roles.

3.2 Registration of products or services by seller

As a start, the seller uploads their offerings of products or services on the NIMBLE-platform, product/service or logistics services. This takes place through selecting the “PUBLISH” button and hereafter choosing among pre-registered categories of products or services. A category is selected also including a specification of details of the selected category. An illustrating example is provided below.

Publish Product / Service

All published products / services must belong to at least one category, which will describe the product / service and help customers find your offering.

Furniture Sector Categories Search Category... Search Categories

Products

Categories

Furniture Sector Favorite Recently Used

Products

- Assembly hardware
- Auxiliary equipment
- Building elements
- Components
- Furniture
- Home textiles
- Household appliances
- Machines

Details for Products

Select Category

Code: Product

TaxonomyId: Furniture Sector

Remark: This category includes all the goods considered as commercial items, which can be offered by companies.

Properties:

- Technical Specifications TEXT
- EAN Code ☺ TEXT
- Color TEXT
- Description Of Materials ☺ TEXT

Selected Categories: None. Please add a category above to proceed.

Continue With Selected Categories

Figure 7: Screenshot of product / service publishing.

Single Upload Bulk Upload

Categories: Frames Add Category

ID: dade2c1b-1811-4ffa-bbb1-cc2d12fcb0c

Name: en

Description:

Add Name & Description

Add Image

Details Price Delivery & Trading Certificates

Dimensions

No selected properties. Select properties from product / service categories.

Cancel Publish & Continue Publish & Exit

Figure 8: Screenshot of product publishing details.

It is here of importance to notice that some functions are disabled until the platform manager approve the function to be used. It is possible to upload a single product, in different languages as well, or “bulk” uploading more than one product of the same category at the same time, saving lot of time.

In sum, much of the illustrated processes and workflows are reusable for the company when uploading new offerings to customers on the NIMBLE platform.

4 Business Processes in NIMBLE

This section describes different business processes in NIMBLE with reusable workflows and data.

4.1 General business processes

In general, business processes in a supply chain has a main focus on buying and selling products and services, i.e. management of flows of goods from the point of origin to the location of consumption to meeting the requirements of customers or companies. Specifically, logistics involve two types of activities, Inbound Logistics and Outbound Logistics.

Inbound Logistics (left side of **Figure 9**) refers to the sourcing, transport, expediting, storage, and receiving of goods into a business i.e. procurement. Inbound Logistics is the primary activity, which focuses on purchasing and scheduling the inflow of materials, machines and final goods, from suppliers to the production unit, warehouse or retail store. Inbound Logistics starts with sourcing the list of items needed for the manufacturing plant, and the creation of a purchase order. The process continues with choosing vendor, and when supplier is selected, negotiation on price and delivery date takes place. When this is set, the next step is to progress with the transportation of those items to the local warehouse and collect them.

Outbound Logistics (right side of **Figure 9**) refers to warehousing, packaging and transporting of goods going out of the business. Outbound Logistics relates to Customer Service and Distribution Channels. The outward movement of final or finished goods, from the company to the end user, constitutes the Outbound Logistics. It concentrates on the transportation of finished goods or products from the company to the final consumer. The interaction usually takes place between the firm and the customers. Outbound Logistics is a completely separate set of processes. This part of logistics relies profoundly on transportation and storage of finished goods. Typically, it centres on two concepts, that is, warehousing and transportation. The finished products are stored in the warehouse and when receiving a customer order, the dispatch process starts when a delivery order is initiated. What follows next is the selection of transportation, a selection typically based on the volume of the goods, urgency, and the location the delivery. Finally, the order is sent to the end user.

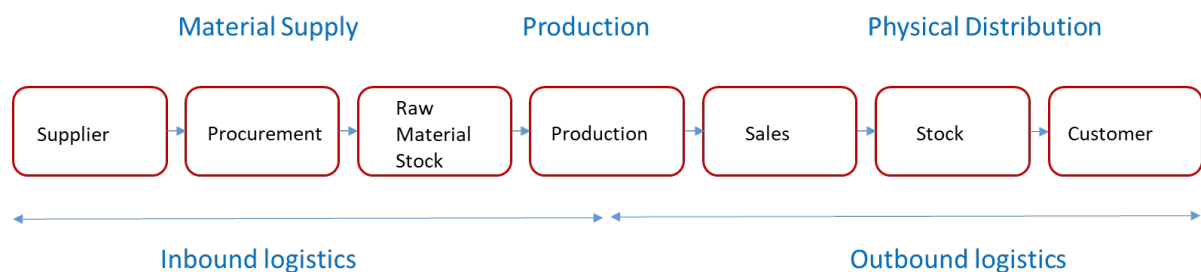


Figure 9: Basic Business Process Logistics.

Inbound Logistics includes all the activities that are involved with order placing to the suppliers. On the other hand, Outbound Logistics covers all those actions that involve dealing or trading of products manufactured by the company.

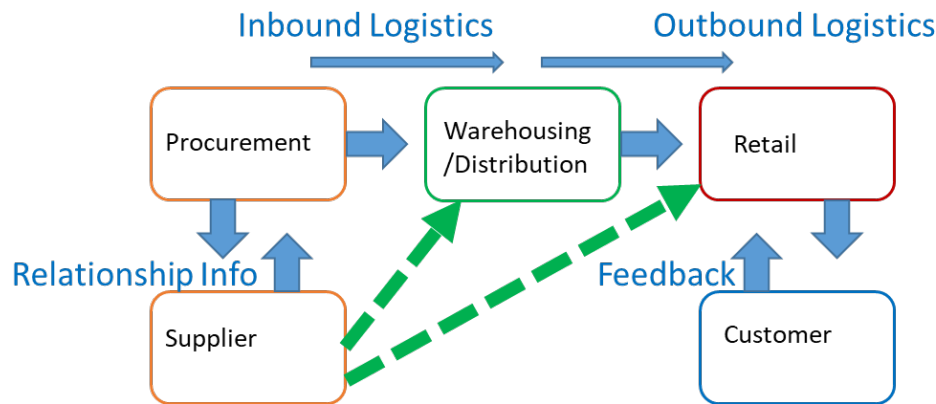


Figure 10: The Logistics Process Description of procurement (order and negotiation process) and distribution flows.

Figure 10 above also describes the Logistics Process with added distribution flows (green arrows) as well as information flows between supplier and manufacturer (to the left) and feedback between customers and retailers (to the right). As such **Figure 10** describes the Order and Negotiation process.

For to elaborate on what Nimble as a B2B digital platform can contribute with, and where it can provide value-added services, each part of the basic Business Process needs to be broken down into all the activities necessary in each step, to get this specific part of the process running. When the activities are set further elaboration concerning what digital functions could support and facilitate the process can happen.

4.1.1 NIMBLE Business Process

In NIMBLE, the main business processes focuses on information related to an order and negotiation process, namely, a) finding suppliers for products and services, negotiating price and terms, create and dispatch orders, and b) finding suitable transport providers that can deliver the product to the customer.

The sequences of activities currently found in NIMBLE (**Figure 11** below) starts with a customer identifying a product on the NIMBLE platform. Here an efficient Search function is key, with possibilities to filter the search in accordance with the customers' preferences.

When the customer has found a suitable manufacturer in NIMBLE, s/he can request more information about the product, a request that reaches the manufacturer whom can answer to the request. Hence, initial information exchange is possible in NIMBLE.

If the customer decides to purchase from the manufacturer, s/he can request special terms about price and delivery (blue box to the right in **Figure 11**) before sending the order. In turn, the manufacturer indicates whether the order is accepted or not.

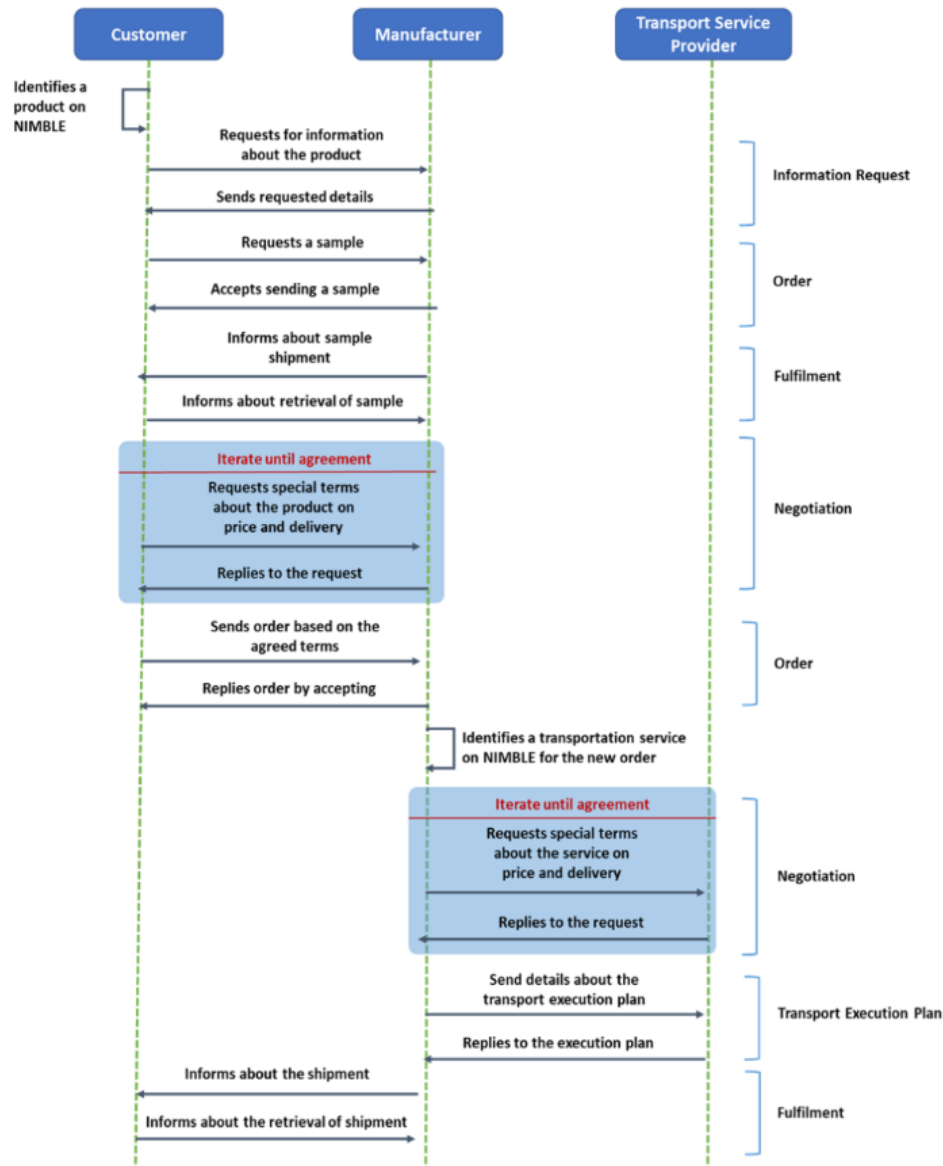


Figure 11: Sequence of activities performed in NIMBLE (from D3.4).

Now the seller, or manufacturer, can search for transportation of the products bought. A new Order and Negotiation process starts, now between the manufacturer and a logistics company. The process works in a similar way, until agreement is reached. In addition, both the buyer and the manufacturer can view details from the Order and Negotiation process regarding the products, with the related Transportation Execution Plan details, constituting a complete view of the sold/bought products with transportation arranged.

Taking the basic business flows according to the **Figure 12** above, some automated workflows exist in NIMBLE, some not yet. Below each process is described in more detail.

4.1.2 Order and Negotiating Process in NIMBLE

This section describes the information and data for the order and negotiating process. We will discuss what information and data that is automated and reusable today in the order for the process to be efficient for the users (buyers and sellers).

In general, a procurement process begins when a business has a need for a good or service specified in an e.g. purchase specification. How many, when it is needed, and approximately how much they should cost are input variables in the order process. In NIMBLE, both suppliers and product can be searched for, that is sourcing potential suppliers and determining their ability to provide the best value and quality for the required goods or services. In this stage, it is important to be able to view a company's reputation. This step can be a start in building a mutually beneficial relationship that can last long-term. In the supplier selection process, the buyer needs to be able to weigh cost, quantity, reputation, speed of service, dependability, and customer service, so that the best fit can be selected.

The next stage in a procurement process involves filling out the order, negotiating, and agreeing on terms. In specific, purchaser's location or department (name of branch), the quantity and description of supplies requested, the name of the supplier that is providing the goods, and the price. The supplier will then view this order for approval, rejection, or further negotiation. Information may vary, e.g. the description and quantity of the goods or services, price, delivery address, and payment information and terms (to be paid in 45 days). As a buyer starts the order process by searching for a product or service in NIMBLE, details about the product or service are shown and some data stated in the company registration is linked to the product information, e.g. general terms and conditions.

The buyer starts the negotiation and order process by requesting some additional information about the product and possible delivery time. The seller answers and the buyer agree with the delivery terms and continuing with the negotiation in the order process. The price is negotiated on, and the delivery address is changed (the primary information was filled in at the company registration), then the order is accepted by the buyer and the seller. The contract can be downloaded.

The seller starts the process of finding a suitable transport service provider when the order has been approved by the buyer. The seller chooses a provider and fills in the "Transport Service details" and sends a request. The information about the product (quality) follows into the transport service details. Both the seller and the transport provider review the Transport Service agreement.

Parties agree on many terms during the negotiation, but precise timing of the shipment is specified via a transport execution plan.

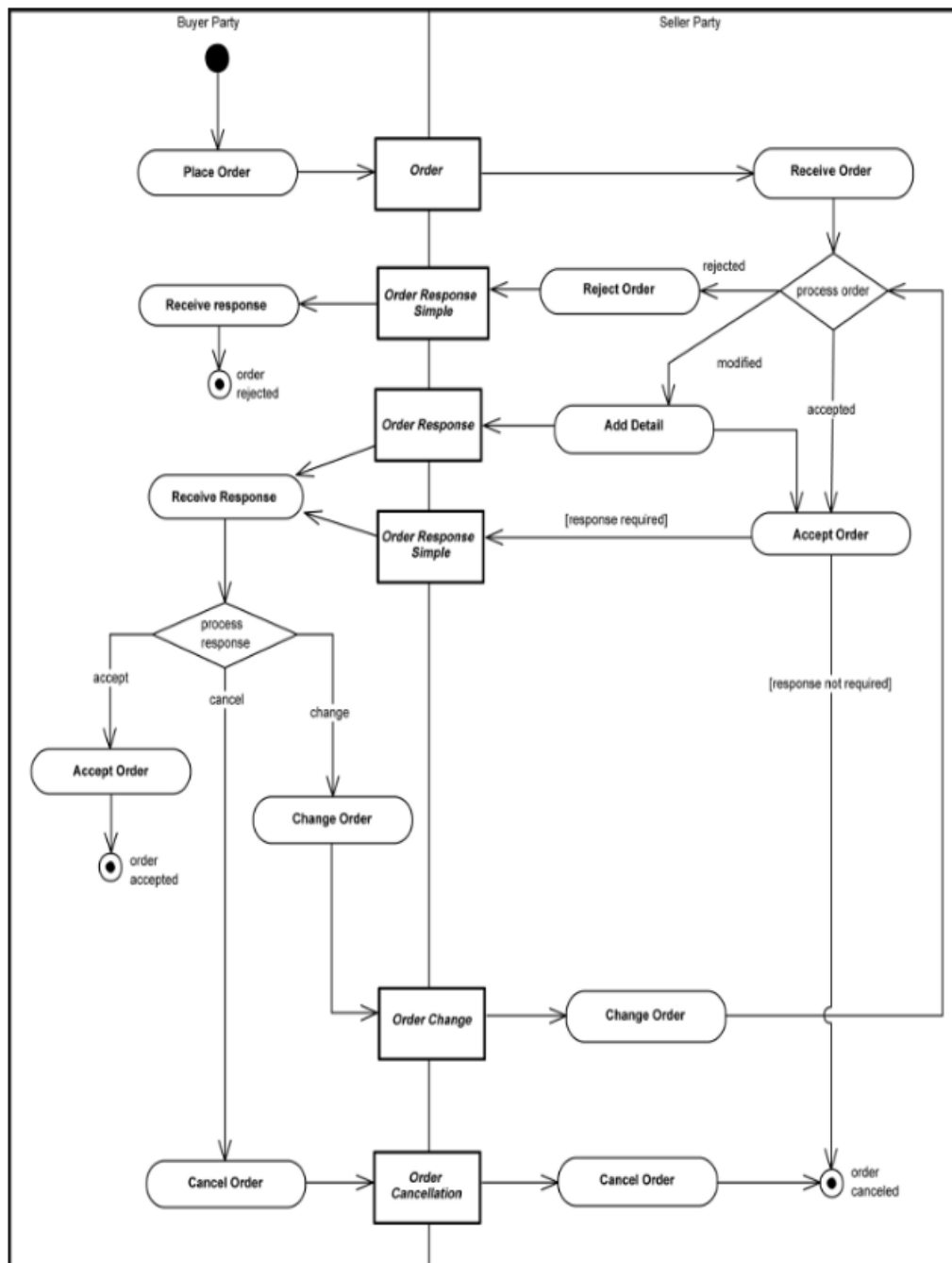


Figure 12: The Order Process (from D3.4).

The entire Negotiation & Order process is possible to download as a pdf file by both parties and thus can be saved locally.

4.1.3 Identified accelerators

B2B Workflows

Workflows let companies to perform B2B activities towards ordering a product or arrangement of transport service. From a more technical perspective, a workflow is a sequence of business processes. And a business process is nothing but a data exchange between trading companies. Concerning the NIMBLE terminology, each business process consists of one request and one response.

Workflows represent successful or unsuccessful collaborations between the trading companies. In this sense, a workflow is considered as successfully completed if all individual processes included in it are completed i.e. positively responded. On the other hand, workflows can be cancelled explicitly. Users then can indicate reasons for cancelling the workflow and rate the corresponding company.

In NIMBLE, we have mainly two different workflows, one for **regular products**, and the other for **transport services**.

Workflow for Regular Products

Item Information Request and PPAP are two steps which are used to establish trust between both parties by exchanging information about the product / production-related details. After these steps (Item Information Request and PPAP are optional, therefore the company can skip them), Negotiation process where parties negotiate on specific terms comes in. After they agree on the terms, in Order process, they approve the purchase and inform each other about the shipment in Dispatch Advice process.

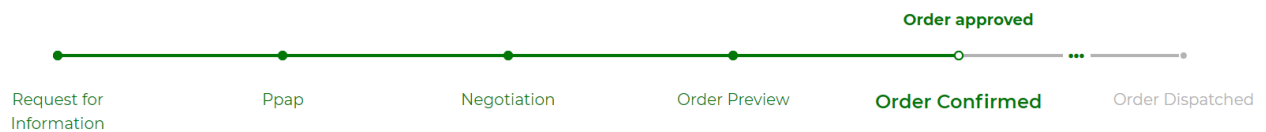


Figure 13: Workflow for Regular Products

Item Information Request:

The seller and buyer exchange information about the product details that are not listed publicly in the NIMBLE platform or any other question raised. Sensitive information like composition of products can be an example. Via such a process sellers/manufacturers would only share the requested sensitive information with only the companies they trust.

Production Part Approval Process (PPAP):

Like the item information request process, PPAP also enables sellers to expose production-related details only with the companies they trust. PPAP defines a set of production related concepts for which additional details can be requested/provided such as Control Plan, Design Documentation, Process Flow Diagram or Part Submission Warrant.

Negotiation:

Following an (optional) inquiry phase and establishing an initial trust, companies would negotiate on the terms of product such as price, quantity, payment means, delivery terms or any other custom term.

The buyer could request data monitoring and they can agree on a frame contract.

Each product may have some discounts/charges on the ordered quantity, incoterms, delivery location etc. At this step, we show the applied discounts/charges to the user and update the total price accordingly.

Order:

At this step, the buyer requests a purchase order approval from the seller party for the terms they agreed on during the Negotiation process.

After an approved order, you can ask NIMBLE to generate a contract bundle for this order. It simply contains the agreed terms and conditions and details of previous steps such as Negotiation.

Dispatch Advice:

The seller informs the buyer about the quantity of goods that have been sent to them, the details of carrier party etc.

4.2 Logistics in NIMBLE – Distribution process

This section describes the information and data that is automated and reusable today in the logistics process, i.e. finding a logistics providers in NIMBLE, from a buyer as well as supplier perspective.

4.2.1 Identified accelerators

Workflow for Transport Services

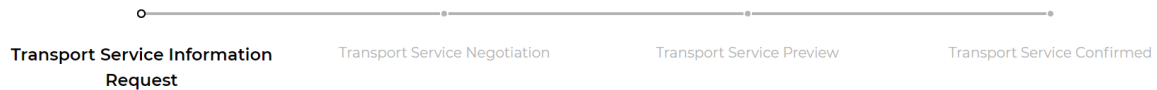


Figure 14: Workflow for Transport Services

Item Information Request:

This process is used to exchange information about the transport service between the buyer and transport service provider. The provider could share the transport specific details such as storage and clearance.

Negotiation:

Parties negotiate about the terms of service such as price, delivery period, pick-up/drop-off dates/addresses etc.

Transport Execution Plan:

The buyer asks a final approval from the transport service provider for the transport service on the agreed terms during the Negotiation.

Levels of Configuration

For frictionless B2B connectivity, NIMBLE offers flexible configuration of relevant features in various levels. Specifically, business workflows, contract clauses and individual negotiation terms can be customized per company based on their trading preferences.

Workflow Configuration:

NIMBLE provides the functionality so that each company can have its own set of business processes supported throughout the B2B collaborations. This lets companies to remove the business processes that are not required or of interest based on the way they want to do business on NIMBLE. This also lets platform providers to set platform-level configuration for the supported business processes considering the responsibility they take over. For example, in the FMP instance of NIMBLE, companies are not supposed to perform order step. So, the platform is configured such that the order step is eliminated from the complete product B2B workflow. Company specific workflow (different from the default ones) could be defined by selecting the processes to be included in the workflow.

Business Workflow

Choose processes you want to include in your workflow:

- ☒ Item Information Request
- ☐ PPAP
- ☒ Negotiation
- ☒ Order
- ☐ Transport Execution Plan
- ☐ Fulfilment

Figure 15: Company Settings – Trade Details tab

Contract Clause Customization:

Although NIMBLE has a default set of Terms and Conditions, companies are likely to define their own set of clauses to be applied in the B2B 2activities. NIMBLE provides a contract clause generator which for modifying the available clause content or define new clauses from scratch. It is possible to embed negotiable variables inside clauses e.g. the warrant periods in **Figure 16** can be negotiated during the negotiation process.

WARRANTIES

WARRANTIES

If Seller fails to correct defects in or replace nonconforming goods within \$warranty_seller_id from the date the Purchaser notifies Seller of the defect or defects, Purchaser may, on \$warranty_buyer_id prior written notice to Seller, either (i) make such corrections or replace such goods and charge Seller for all costs incurred by Purchaser, or (ii) revoke its acceptance of the goods in which event Seller shall be obligated to refund the purchase price and make all necessary arrangements, at Seller's cost, for the return of the goods to Seller.

\$warranty_seller_id 10 day(s) Edit

\$warranty_buyer_id 10 day(s) Edit

Add Trading Term

Figure 16: Clause with negotiable variables.

Terms Customization:

NIMBLE also contains fixed trading terms that are used during the negotiation process such as incoterms, payment means, payment terms, delivery terms, etc. Users can also define default values for these via the overall company settings configuration functionalities.

In order to accelerate reaching agreement on the final terms between trading companies, default settings are reflected to several processes to ensure that the company defaults or (previously agreed terms, if exists) are being used. For example, in PPAP request, NIMBLE automatically selects the documents to

be requested according to the company settings. In negotiation request or shopping cart, terms and conditions and delivery address are automatically filled using the default values initially. Similar to the default settings, as described below; frame contracts and discount / charges are also reflected into the negotiation processes.

4.2.2 Additional accelerators

Grouping Related B2B Activities (Projects):

Companies need to track related B2B activities e.g. all purchase-related operations for many raw material or semi-products required to manufacture a relatively more complex product without trying to locate the corresponding business processes presented in the NIMBLE dashboard. In order to accelerate management of such related activities, NIMBLE offers a grouping functionality for the B2B collaboration threads. Via this feature, buyers can merge multiple collaborations into a single thread presented in the dashboard. For each merged collaboration, corresponding product, trading company, status and next action to be taken are presented. Furthermore, a timeline is generated based on the timing of each communication activity so that users can also track the overall course of the activities related to production of the ultimate product.

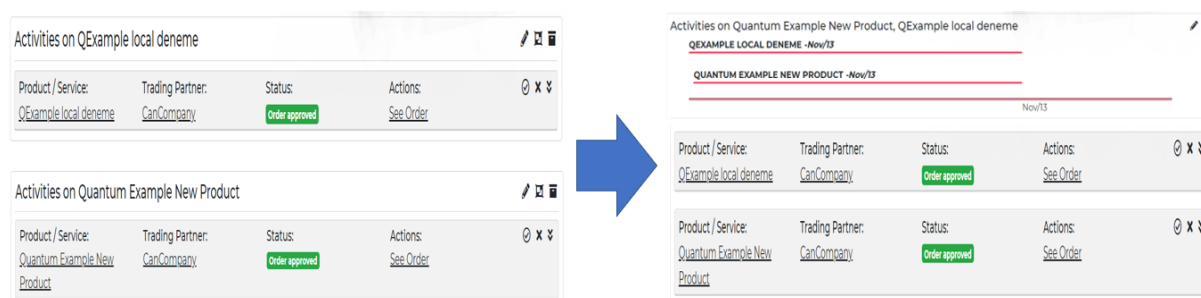


Figure 17: An example of project consisting of two different collaborations.

Shopping Cart:

Companies sometimes need to negotiate/order for multiple products (for example, chairs and cradles) from the same seller company. In this case, it makes sense to create a single negotiation for those products rather than creating different negotiations for each one. Therefore, NIMBLE provides shopping cart functionality to create negotiations/orders for all products included in the basket at the same time. For each product, it has a small negotiation view which lets the buyer company to define different terms. Moreover, there is another section called Common Terms which allows us to define same terms for all products in the basket.

In addition to that, products from the different sellers could be added to shopping basket. In this case, products from the same seller are put into a single negotiation and one negotiation is started for each seller.

Furthermore, of course, the company could start a negotiation for a single product instead of all products in the basket.

Frame Contract:

When two companies agree on the negotiation terms for a product once, it's cumbersome to set these terms for the next negotiations about this product again. Therefore, NIMBLE offers frame contract

functionality. Companies could create a frame contract for the product with the agreed terms. During the next negotiations for this product, if the frame contract is valid (i.e., frame contract duration is not expired yet), the buyer party could use frame contract details to automatically fill in negotiation terms for associated product.

Unshipped Orders Management:

Some companies need to make follow-up orders to deliver the requested product. For example, a company selling a customized bathroom unit may need to buy toilets from Company A and mirror cabinet from Company B. To trace these orders, NIMBLE has an Unshipped Orders section. It displays the associated products (i.e., toilet and mirror cabinet in this example) with the total quantities. Each entry could be expanded to see related sales orders and how much these orders contribute to the total amount of the quantity.

Associated products				
Seller	Product	Quantity		
Company A	Toilet	10 items	Negotiate & Order	View Sales Orders
Order id	Ordered by	Ordered product	Ordered quantity	
4bacdfdc-29d7-4ee6-88db-ae97426a268	Buyer Company	Bathroom Unit	10 items	
Company B	Mirror Cabinet	10 items	Negotiate & Order	View Sales Orders

Figure 18: Unshipped Orders tab with associated products.

Fulfilment Statistics:

The seller company could deliver the requested products through multiple dispatch advices. Therefore, to keep track of the how many items are dispatched and how many of them are accepted or rejected becomes crucial. To show this information in dispatch advice view, NIMBLE calculates corresponding numbers from the past dispatch advices and display them as you can see in the following figure:

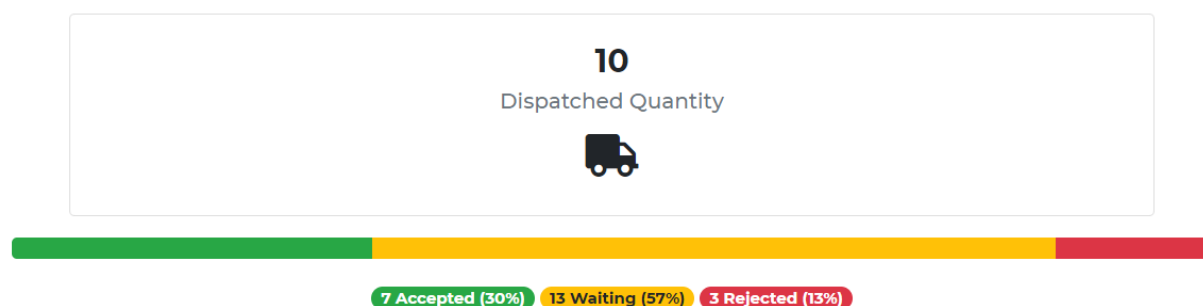


Figure 19: Fulfilment Statistics.

Term-Specific Discounts/Charges

Companies can offer discounts for ordering a large quantity of product or charges for using credit card. Therefore, NIMBLE enables companies to add discounts / charges on various options such as ordered quantity, payment means or delivery location during product publishing.

NIMBLE automatically applies those discounts/charges to the total price in Negotiation process.

Price options on ordered quantities ⓘ

Minimum Order Quantity:

Discount Amount: on ⓘ

[Delete](#)

Figure 20: Discount on ordered quantities.

Mostly Universal Business Language (UBL) standards are being used to represent product, messages exchanged throughout B2B activities, frame contracts, product discounts and trading terms. Only a NIMBLE-specific data model is being used to display the B2B dashboard. For further information about the NIMBLE-specific data model, please have a look at this documentation:

<https://www.nimble-project.org/wp-content/uploads/2019/01/Business-Process-Service-REST-API.docx>

This section describes and illustrates additional accelerators for improving workflows in the all core business processes thereby ensuring value-added business services in NIMBLE.

Frame Contracts (frame agreements)

Figure 21: Frame contract tab in the dashboard.

An important improvement for recurring orders of the same product is the introduction of frame contracts. These contracts represent an agreement between buyer and seller for the order conditions of a particular product. Frame contracts (agreements) are common in many industries, because they serve as a template for orders where the involved parties negotiate a fraction of parameters only. An example is the negotiation about quantity and delivery dates, while the price, delivery and payment conditions are fixed. The frame contracts are valid until a defined date. The advantage of this accelerator is mainly that the involved parties avoid the repetitive negotiation of general order parameters in the case of recurring orders.

Unshipped orders

Dashboard

Purchases Sales Projects Frame Contracts **Unshipped Orders** Catalogue Favourite Compare Performance

Unshipped orders Associated products

Order id	Ordered by	Ordered product	Ordered quantity
073133f5-eaaf-4051-9279-a498c5aac166	Lindbäcks Bygg Aktiebolag	Customizable Bathroom	15 item(s)
cc0f85da-db6b-44bd-b6b4-660959d93cd4	IFÖ	Customizable Bathroom	75 item(s)
92d81220-838b-40e0-9ee1-c7579dcbabaa	IFÖ	Customizable Bathroom	50 item(s)
d57fca70-90b8-4415-9bf7-1024fe182494	IFÖ	Customizable Bathroom	50 item(s)

«« « 1 » »»

Figure 22: Unshipped orders tab in the dashboard.

The unshipped order view in the dashboard allows the seller to see which orders he/she shipped to the buyer. This view has the advantage that the seller can recognize incomplete orders faster. The view will be more useful if the number of simultaneous orders increases.

Associated products

Associated products are an improvement that allows the seller to create catalogue offers where attribute choices refer to products from the NIMBLE catalogue (see **Figure 23**). This function introduces basic product configuration capabilities to the NIMBLE platform.

Customizable Bathroom ★

Product / Service by: Podcomp AB

Categories: Products

Catalogue: default

Description: Test for 20191017 - 1. price on request, 2. Associated products for sink, toilet and tiles

Sink: Sence Spira Spira - no cupboard

Tiles: Rewind Tobacco Prisma Glossy Prisma Matte

Toilet: Spira Sign

ID: 658aa3df-c74f-40bc-aa73-d2e5766d0fla

Figure 23: Bathroom with three customization attributes.

Accepted orders for a product with “associated” products result in entries of the associated products in the “Associated products” tab under “Unshipped Orders” (see **Figure 24**). This view accumulates the amount of all associated products and links to the negotiation & ordering. This is useful if multiple buyers order different configurations of the same product, such as multiple bathrooms with the same sink but different tiles and toilets. The new tab allows the seller to see how many associated products

he/she must order from their sub-suppliers to fulfil all accepted orders. Without this accelerator, the seller has to calculate the total of the associated products by hand.

Seller	Product	Quantity	
MyTiles	Prisma Glossy	15 item(s)	Negotiate & Order
IFÖ	Spira - no cupboard	15 item(s)	Negotiate & Order
IFÖ	Spira	15 item(s)	Negotiate & Order
MyTiles	Prisma Matte	75 item(s)	Negotiate & Order

Figure 24: Associated products view in the dashboard.

Logistics services form

During the logistics validation with users the complexity of publication of logistics services was detected. The companies that offer this kind of services usually offer a collection of logistics-related services such as storage, palletisation, transport and many others, so an individual publication of each service in a platform is not practical and friendly for them. In order to accelerate the publication of these services, a logistics services form is designed and implemented.

Single Upload Bulk Upload

Transport Warehousing Order Picking Reverse Logistics In-house Services Customs Management Logistics Consultancy

Road Transport
Maritime Transport
Air Transport
Rail Transport

Destination

- ☐ All over the world
- ☐ Regions
 - ☐ Europe
 - ☐ Asia
 - ☐ Africa
 - ☐ North America
 - ☐ South America
 - ☐ Oceania
- ☐ Only selected countries

Select country

Origin

- ☐ All over the world
- ☐ Regions
 - ☐ Europe
 - ☐ Asia
 - ☐ Africa
 - ☐ North America
 - ☐ South America
 - ☐ Oceania
- ☐ Only selected countries

Select country

Figure 25: Publication of logistics services.

Logistics services are structured around seven main types that cover the offering of services of logistics companies: transport, warehousing, order picking, reverse logistics, in-house services, customs management and logistics consultancy.

Comparison of products/services

The comparison of products and services published in the platform enables the buyers to take decisions in a more agile manner. This functionality is available in the platform dashboard and means a valuable shortcut in the purchasing/negotiation processes.

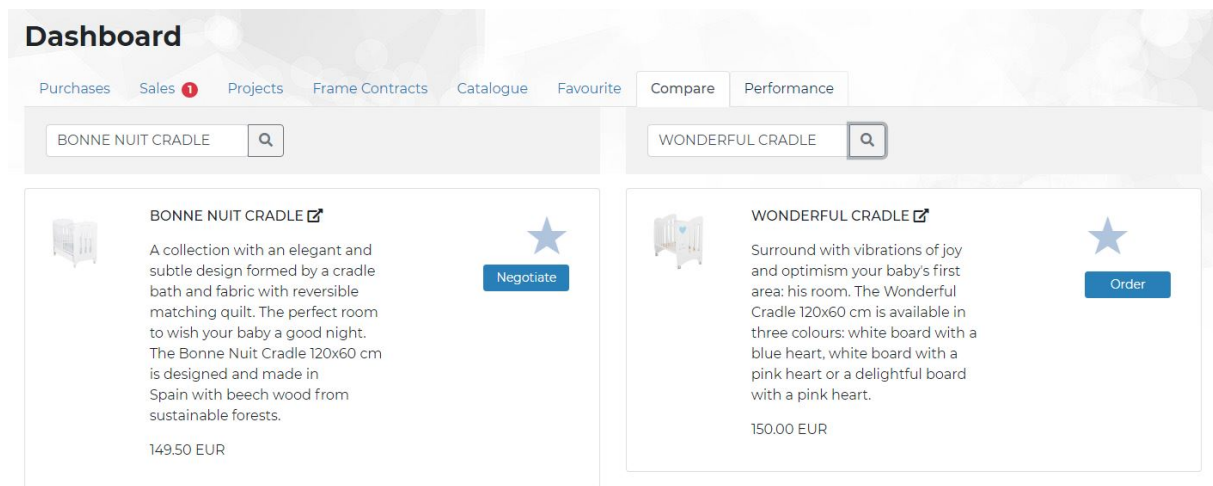


Figure 26: Product/service comparison view in the dashboard.

Track changes

The highlight of the changes made by the purchaser or the seller regarding different aspects such as the price, delivery and other conditions during the negotiation process eases the monitoring of the progress of the negotiation by the actors involved in the collaboration process.

Product Defaults		Customer Request	Producer Response
Warranty:	None	None	<input type="text" value="Enter value here..."/> <input type="text" value="month(s)"/>
Incoterms:			<input type="text"/>
Payment Terms:	PIA - Payment in advance	PIA - Payment in advance	<input type="text" value="PIA - Payment in advance"/>
Payment Means:	Credit Card	Credit Card	<input type="text" value="Credit Card"/>
Quantity:		4 piece	
Net Total Price:	2240.00 EUR (560.00 EUR per piece)	2240.00 EUR (560.00 EUR per piece)	<input type="text" value="2240"/> <input type="text" value="EUR"/>

[Terms and Conditions](#)
[Delivery Details](#)

[Delivery Address](#)
[Delivery Date](#)

Street Name:

City / Town:

Postal Code:

Building Number:

State / Province:

Country:

[Notes and Additional Files](#)
[Purchase Order](#)

Figure 27: Track changes in delivery conditions during negotiation.

This functionality is being improved to cover the different areas where the conditions proposed by the seller or the purchaser may vary during the whole collaboration process between the two parties.

Default company settings

The definition of default values for some particular company settings accelerates the functions performed by the users through the platform. As an example, the default trade details define the level of collaboration with which a company enables to negotiate.

Company Settings

Profile Completeness:

38%

[Company Data](#)
[Company Details](#)
[Trade Details](#)
[Terms and Conditions](#)
[Delivery Address](#)
[Certificates](#)
[Catalogue Categories](#)

Business Workflow

Choose processes you want to include in your workflow:

☒ Item Information Request
 ☐ PPAP
 ☒ Negotiation
 ☐ Order
 ☐ Transport Execution Plan
 ☐ Fulfilment

[Save](#)

Figure 28: Track changes in delivery conditions during negotiation.

In the example illustrated in the figure above, the company allows to be contacted to collaborate by requesting information and negotiate conditions.

Auto completion feature

The auto completion functionality provides a valuable acceleration especially during the publishing and search processes. The word completion in product/service publication detects the name of categories in the selected ontology that matches the entire or part of the text introduced by the user, what eases the publication process. The same applies to the search of products and services in the platform, so particular items of the product repository are prompted to the user to enhance the search process.

Publish Product / Service

All published products / services must belong to at least one category, which will describe the product / service and help customers find your offering.

Furniture Sector Categories
pal
Search Categories

Click on a category to see its path

Categories
Furniture Sector
Products
Services

Packaging
Paint strippers
Paints
Palette knives
Pallets
Panel doors
Paper
Paper filling
Paper holders
Park benches

Click on a category to see its details.

Selected Categories: None. Please add a category above to proceed.

Continue With Selected Categories

Search

cral
Name

CRADLE DRAWER 120 X 60
CRADLE DRAWER 140 X 70
CRADLE SET OF WHEELS R-60
CRADLE VISCOELASTIC MATTRESS 120X60
ScrapMetalManagement
ISTAR CRADLE 120 X 60 cm
UB Aircraft 2019
LUXURY CRADLE DRAWER 120 X 60 cm
VALENTINA CRADLE
WONDERFUL CRADLE
Products (245)
Logistics services (23)
Services (21)

«» « 1 2 3 4 5 ... 35 »»

Per page: 12 Style: List Sorting: Relevanc

Mediland XL
MEDILAND XL is made of 100% of Landes Pine selected wood fibres (MDF). All the products of the Mediland range are

18.00 EUR
Add to Cart

Finbrett
★★★★★
★★★★★

Fincircuit Moisture Resistant
Fincircuit Moisture Resistant is made of selected wood fibres (MDF). It shows a lower abrasiveness and thickness tolerance.

18.00 EUR
Add to Cart

Finbrett
★★★★★
★★★★★

Figure 29: Auto completion feature in publishing and search views.

This closes the account of business processes in Nimble. We now turn towards the future – and other aspects that would improve and accelerate NIMBLE beyond the project.

5 Possible future services

In this section we discuss some services that would accelerate NIMBLE further. The suggestions are derived partly from the NIMBLE project use cases, but mostly from interviews conducted with 9 Swedish companies during spring 2019 (see Appendix A for the Interview guide).

5.1 Interesting services for the future NIMBLE

5.1.1 Help to access and understand legislation in other countries

As suggested by the furniture use case, and later confirmed in interviews with Swedish companies; considering that NIMBLE is developed for a European market, a service that would offer information on legislation for entering new markets in other countries would be beneficial. Laws and regulations are often country specific, and as such constitutes a barrier for entering new markets. NIMBLE could provide assistance and act as a facilitator that speeds up the company's adoption of the e.g. cultures, norms and legislation in another country. This requires a database with updated legal requirements attached to different parts of the value chain. This database should enable fast and quality assured knowledge transfer from authorities and certification bodies on norms and regulative requirement in specific geographical areas (D1.1).

5.1.2 Improved flow of information and information storage

NIMBLE can also be a place for fast and reliable exchange of different types of data and offer coordinated information flows. There are many advantages offering common documentation solutions for collaborators. Today many express that e-mailing is on its way to become out of control. A document management system would reduce the e-mailing while simultaneously facilitate for platform members to keep track of latest versions of e.g. agreements, contracts etc.

SMEs are asking for one place for important documents, thus a platform that offers this would be attractive. SMEs witness of a range of systems that are neither coordinated nor compatible. This kind of service requires the platform to guarantee security, by accurate management of access rights. The platform must also be trustworthy, and user friendly (D1.1).

5.1.3 Communication and collaboration tools

Today there are several solutions for collaboration on distance. NIMBLE could also develop and offer the service of a real time virtual working place. This would allow companies to interact with new customers/suppliers without having to set up new channels of communication. For example, suppliers can share design or production data with customers, whom in turn can modify and send it back. This process can go on iteratively until they reach agreement. In this case, data changes must be tracked and available for all eligible users. Distributed communication and collaboration technologies ensure that information reaches the right people at the right time and in the most appropriate way (D1.1). Moreover, these kinds of technologies support users with various communication skills, thereby broadening the range of different views and knowledge. Such a service, or tool, would be an attractive feature that could contribute to creativity and foster innovation, lead to competence building and facilitate and speed up decision making for the issue on which collaboration happens. It would also make it easier to reach

agreements and a common view, as well as to build networks. Combined with improved flows of information as described above, a virtual work space has potential to really accelerate the use of NIMBLE.

5.1.4 Adaption to mobile devices

It would be preferential if NIMBLE also worked on mobile devices. Today, the mobile is “always with you” and mobile solutions make it possible to stay updated. Instant contact is important for SMEs, and they do not want to be stuck to the office since they many times are needed in other places. Also, those working for the SME can rest assured that they have access to the latest information when meeting the customer. A mobile solution would also speed up businesses, quick solutions on customers’ problems are vital for many SMEs.

5.1.5 Some concluding comments

For a platform to accelerate it is vital to demonstrate its usefulness, value and trustworthiness. The tricky part is the creation of a community feeling. As expressed by the interviewees, it is imperative to work on developing a spirit, based on Codes of conduct, that make it possible for companies to be confident that all companies that are members in NIMBLE stand for certain values. One important part in the supply chain is that the companies with whom to collaborate are trustworthy when it comes to security, delivery, financially, quality and employee ship. As platform owner this is something you can only try to facilitate – the rest lies in the hands of the platform members.

6 Platforms as accelerators

This chapter outlines and illustrates mechanisms for accelerating the efficiency and efficacy of B2B platforms in general and for the NIMBLE B2B platform specifically in order to provide value added services. It sums up what is needed to make NIMBLE attractive to adopt and use in B2B collaborations.

6.1 Mechanisms for accelerating the platforms

We find four mechanisms to be of particular importance for accelerating NIMBLE, i.e. making the platform; 1) meaningful, 2) affordable, 3) accessible and 4) acceptable.

6.1.1 Acceleration by making the platform meaningful

The first critical mechanism for accelerating the platform is to offer a platform that is meaningful for the users as potential customers of the platform. The limited number of B2B platforms that are up-running and the low number of B2B platforms that are mature and working in full scale cause a limitation in meaningfulness. The users are not able to estimate values and make sense of how it can be used to improve efficiency and efficacy in their company.

NIMBLE provides guidance in digitalization of industry ecosystems and companies in these ecosystems and offers as such possibilities for accelerating the meaningfulness of what a B2B platform may accomplish for SMEs (Chron  er et al. 2017). This provides a base for companies to make sense of what digitalization may imply for them and their partners. To improve the SMEs digital competence do primary not imply focusing on the technology itself. The functionality and the opportunities with use of the platform services are the core focus. The intent to improve organizational responsiveness and performance is central. (See e.g. McLaughlin, 2017). The project and the dissemination of information on the platform enable such sense-making processes to take place.

Workshops in the NIMBLE project, where customers test the platform enable companies to become more aware of the potential of such platform in their work processes and how digitalization may be used in a concrete and specific manner. Many of the participating companies are paper based and do not use logistic platforms. NIMBLE may act as a trigger in the digital transformation, starting companies' digitalization processes. Companies are reluctant to try. They do not know how to handle the platforms. Coaching in the use of platform do not only provide values for industry 4.0 in a short time perspective it may also serve as an accelerator of digitalization in the industry. Important values are:

- NIMBLE increase knowledge of what a B2B logistic platform may be and what it can offer.
- NIMBLE increase the knowledge of how to use B2B platforms.
- NIMBLE improves the developers. Knowledge of how to bring forth platforms that match the need of current and potential users – platforms that are meaningful for companies as customers and users of the platform.

Maturity in platforms increase the meaningfulness of using platform – users of platforms get to know what a platform is and how it can be used and actually add value for them in their companies.

NIMBLE offers value added services by serving as a potential accelerator for SMEs in order to support development of the companies' dynamic capabilities. The dynamic capability imply in this case to purpose fully adapt the digital platform, to know how to apply the resources offered and to see the

potential of using digital tools in the company's operational business. (Cf Cenamor et al 2017) More specifically:

- NIMBLE aims to guide companies to improve the sense-ability of how to recognize opportunities that exist on the NIMBLE platform and how to match these with the companies' internal preconditions.
- NIMBLE aims to guide companies in seize –ability, i.e. to capture the right opportunities on the NIMBLE platform and successfully integrate them into the business.
- NIMBLE aims to guide into reconfigure – the ability to, based on the use of the NIMBLE platform, perform changes of structures and resources.
- NIMBLE aims to guide into development of a dynamic digital capability in the organization will be facilitated.

The NIMBLE platform appear in the current stage be meaningful for exchange between companies in closed business relationships where the companies already know one another and have worked together. The next step is to improve the meaningfulness for use of the platform in open contexts for mass-markets to be developed. It is central to have in mind that trustworthiness in relationship is central for the participating use cases and their customers. They do currently select their suppliers carefully.

6.1.2 Acceleration by making the platform affordable

Planning, design skills and personal competence are essential in the digital transformation and in making the market of logistic platforms more mature. This is also the case for improving the maturity of the NIMBLE platform and as such facilitate for the platform to accelerate value creation in companies digital transformation in general in in exchange between B2B in particular.

The need of investment in the company is a factor impacting on the ability and willingness to actually start using and incorporating the platform in their own work, i.e. to make use of the value added services offered. The platform may be considered as affordable when the need of use of resources or need of investment is limited. It may also be reducing of resources needed when comparing to the current mode of work. There are possibilities to introduce the platform stepwise into different parts of a company.

NIMBLE increases the possibility to provide value added services and supports as such SMEs in their organization of the digital transformation of their logistic chain in the company.

NIMBLE allows for accelerating of communication between two or more partners in an ecosystem, as for instance:

- NIMBLE offers one channel for all communication:
- NIMBLE assure for decreased time to search for collaboration information and to keep track of communication
- NIMBLE allows for high degrees of communication on the platform
- NIMBLE allows for co-creation together with close customers and suppliers
- NIMBLE allows for easily finding out roles and people to contact in organizations. The users of the platform do not need to search for person / people to collaborate with – roles are clearly specified on the platform.
- NIMBLE is a learning environment where potential users and customers can learn about digitalization and the potential of platforms. This implies that companies do not need to pay

for the competence development; they only need to use part of internal resources. Internal capabilities are developed.

NIMBLE allows for accelerating exchange, as for instance:

- NIMBLE decrease the time for exchange of information through the collaboration
- NIMBLE assure for quality in communication – clear exchange in terms of channel, possible to carry out directly – timely, direct collaboration
- NIMBLE assure for clarity in what, when, how, terms and conditions
- NIMBLE may be used for acceleration of information collection through use of IOT – sensors
- NIMBLE provides opportunities for SMEs to financial bootstrap, i.e. to limit the own resources in the digital transformation and hereby decreasing the need of attracting external finance for investing in use of a B2B. - NIMBLE provides potential for companies to gain return on their investment.

Providing of such values on the platform makes the use of the platform affordable for SMEs as customers and users of the platform. Use of time and resources are made efficient.

In order for this to come through NIMBLE need to continue to attract both buyers and sellers on the platform. The platform is not affordable for any company if nobody act on the platform. In line with this we suggest that the platform in a first stage is used by already established business relationships in order to improve the communication between the companies and thus increase efficiency in use of resources. The use case companies and their established business partners involved in the exchange on the NIMBLE platform currently sees a need for closed platform improving their exchange. The next step may be to stepwise open up for collaboration to a broader use in mass-markets. This implies bringing in other types of companies than the current use cases, i.e. companies in need of open platforms.

6.1.3 Acceleration by making the platform accessible

The core of NIMBLE is to gather a large number of stakeholders in different ecosystems. This provides values for all participants taking part of the collaboration and exchange. The different types of stakeholders' offer different things into the platform system, making 1+1 to 3. Examples of stakeholders and what they provide into NIMBLE are:

- *Producers:* provide understanding on the environment, holds organizational skills, provide business management.
- *Designers:* contribute with creativity, planning and building skills and facilitation.
- *Developers:* provide prototypes, enhancing the technology, contribute with surveying technology and development of technology applications. (See e.g. Kunii & Hasegawa, 2019)

There are competence based mechanisms connected to the aspect of making the platform accessible. Two such criterions are the current access to competence and the required competences. Collaboration on the platform may provide access to new types of competences externally. It is also central to improve the users' competence in order to make the platform accessible.

- Technological mechanisms are critical for making the B2B platform accessible. Maturity of the platform services offered

- Accelerating accessibility through providing a developed support infrastructure
- Development of standards and policies
- Training and skills development.

NIMBLE makes B2B platforms accessible, as for instance:

- NIMBLE improve competence on how to use the platforms – case companies learn their suppliers and customers how to collaborate on the platform - reduce their time to learn how to use the platform and increase as such the accessibility of the platform.
- NIMBLE aims to offer a UX friendly web based platform – self-instructive.

Digital maturity of the potential users on the platform and their organization is critical for making the platform accessible. We suggest that the NIMBLE-platform continue to work with the branding and the marketing of the value added services for making the platform visible. A core issue is thus the potential of mixing digital exchange and relationship based exchange in a first stage of the platform development in order to make the platform more accessible.

6.1.4 Acceleration by making the platform accepted

A core issue for accelerating the platform is to make it acceptable by those aimed to use it.

There are social mechanisms affecting the acceptance of the B2B platforms. The institutional ways of working is critical. Highly institutionalized companies reluctant to change are less motivated to actively work for changing the workplace and operational routines. The degree of motivation (high motivation - lack of motivation) impacts on if the users find B2B platforms accepted or not.

- There is a need to make the NIMBLE B2B platform highly UX-friendly in order for the users of the platform to accept it as a value adding mode for exchange in business relationships.
- There are many different actors in the value chain of suppliers, buyers and logistic partners that need to find the platform acceptable for the platform to accelerate. Different groups inside and outside the company aimed at using the platform need to accept use of the platform e.g. employees, customers, suppliers, owner and financiers.

There are financial mechanisms impacting on if the platform is considered accepted or not. Such critical mechanisms are for instance that;

- The platform needs to show that it makes an impact in the company and actually add value. NIMBLE provides opportunities for companies to increase revenue, decrease cost, communicate more efficiently, increase the quality of the exchange etc.
- In order for the platform to be acceptable, the users need to understand the value of the platform, they need to find it affordable to use and also easy to access and use.

In general, safety and security are central aspects for making the B2B-platform acceptable. An extended work for assuring security has been carried out in NIMBLE.

We suggest the NIMBLE B2B platform to continue the work, making the use of digital platforms in general and the use of the NIMBLE platform in particular more acceptable. It takes time to become trustworthy and the NIMBLE platform has taken a large leap in this direction.

6.2 Increasing alignment and reducing misalignment

The NIMBLE platform will continue to work for improving the alignment and reducing some misalignment that users see as value in using NIMBLE. There are a large number of issues to be dealt with in this work while there also are many opportunities that open up through the use of digital platforms in B2B exchange.

SMEs find it difficult to use digital elements as B2B platforms as a core part of their business processes despite clear possibilities of gaining access to benefits. Many companies have a long way to go from use of paper based processes and are in need of much guidance in this work. NIMBLE and the use cases in the project have high potentials to contribute with such guidance.

Some reflections on requirements for attracting industrial SMEs as users of the platform:

- SMEs using the platform become dependent on the platform management. This implies that the platform management must be validated and assured for. Many of the users are currently reluctant to start using the platform due to the uncertainty if the platform will become sustainable.
- Development of contracts and agreements are central. The platform needs to assure for safety and security.
- The main part of the current users of the platform asks for closed collaboration on the platform. How open, if at all, must be decided in each case, in the different industries, in companies' strategies and in the specific B2B relationships.
- There is a need to continue to develop the organizational processes in NIMBLE in order to increase customer value through user interaction. The relatively immature platform needs to be developed and further adjusted to the users' needs, wants and expectations.
- Reducing of expectation gaps is central. The platform may not be able to provide all types of value added services as expected, it may not work to 100% but there are values that may be added and exchanged e.g. connected to the collaboration in B2B relationships.

Transforming the technical capabilities of the NIMBLE platform into value creation still has a long way to go. There is a need for managing challenges and shortens the NIMBLE platform's road to implementation on the market and for service offerings to be commercialized on the platform.

In sum, there are different ways of viewing and categorizing accelerators. Platform owners and developers need to design accelerators that are related to the technical, collaboration, and business model perspective.

- Technical accelerators are related to making work flows effective with e.g. automated information flows. For instance, functions for reuse of data in work flows as in order and negotiation process.
- Accelerators related to collaboration are for instance services that support collaboration between actors in the supply chain (e.g. coordinating and communication services).
- Finally, accelerators related to business models strengthen building relations and company competitiveness.

We can finally conclude that the use case companies' leadership when bringing in real users on the platforms, together with the developers' patient and skilful work and the supporting actors' commitment has made the progress of the NIMBLE platform possible (see Chroneer et al 2017). The collaborative work based on high engagement and the commitment has been necessary when navigating in the fuzzy

and uncertain landscape of business platform development when developing the NIMBLE B2B platform. The variety of competence has also been a critical part in the complicated and complex journey addressing different B2B NIMBLE instances according to different sectors and company' types. Entrepreneurial actions and innovativeness has been and will continue to be a core of the development towards the value adding platform. NIMBLE continues the journey towards meaningfulness, affordability, accessibility and acceptance.

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Appendix A: Interview Guide

Briefly tell us...

1. ... about your company
 - a) Industry - describe your business
 - b) National / European / international

2. The nature of the supply chain
 - a) Number of partners? (in which industries - categories / types)
 - b) Categories / types of transactions (goods / services / knowledge, etc. what do you exchange? That is, what do you collaborate / interact with)
 - c) Through what channels do you interact / communicate? What channels do you use? Most / least (ex. F2f - mail - skype - phone etc.)
 - d) Experience of / know about... Do you use any kind of B2B / collaboration platform today? Why / why not?

3. In the best of worlds - how would a B2B collaboration platform work, ie. what can you do through it, obtain what values?
 - a) Support / help, with what? (Publish catalogues, search products, collaborate with partners, exchange of information, offer communication channels, etc.)
 - b) Support in which business processes and with what? (quality assurance, streamlining of streams / exchanges of different kinds, creating transparency, reducing redundancy)
 - c) What are you prepared to share, resp. not share (platform open-closed)
 - d) What are the advantages and disadvantages/risks of B2B Platforms?
 - e) Difficulties? (Challenges in the production process, business model, need for skills, interests, etc.)

4. Business models: how could a B2B collaboration platform support business development?
 - f) In what way? Ex. team up with other companies and create package offers... (co-create),
 - g) What values do you want to see for your own business? Offers?
 - h) Where in your value chain?
 - i) Competitive advantage or disadvantage of using a platform?

5. What does it take for a B2B to be attractive / meaningful to your business? What is an attractive B2B platform for you / your business?