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Awareness Initiative for Agile Business Models in the Dutch Mobility Sector: An Experience Report

Paul Grefen, Oktay Turetken, Maryam Razavian

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Awareness Initiative for Agile Business Models in the Dutch Mobility Sector

An Experience Report

Paul Grefen
Oktay Turetken
Maryam Razavian

School of Industrial Engineering
Eindhoven University of Technology (TUe)

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Contents

1 Introduction

Currently, many developments are taking place in the field of mobility, transportation, and traffic management. Advances in the technology for intelligent transport systems (ITS) where all vehicles and infrastructure systems are interconnected with each other, intermodal traffic management, traffic data collection and fusion have been the topics of attention in the last recent years. The environment is also taken into account through sustainable mobility or green traffic management, to reduce the amount of pollutant emissions of vehicles. In line with that, new technology such as electric-vehicles are also exploited. New information technologies are embodied into networks, such as the Internet of Things.

Many of these initiatives, however, have a hard time finding their way to practical, large-scale exploitation. One of the reasons behind this is that the business model view on this exploitation is lacking. Many of these developments have a technology-push character, where things are developed inside-out, with a focus on the concepts and technology in the mobility transportation from the very start, and with some attention for actual business deployment at the end. This is in line with the asset-centered world of business, where prime attention often is with managing physical assets, like vehicles, ITS, intelligent unit, physical infrastructure and road signage.

Consequently, a clear, explicit view on commercial exploitation is often missing in these developments. This situation is made worse by the fact that complex mobility scenarios involve a multitude of stakeholders, each of which has its own business interests. Consequently, such business models with a great potential to address mobility and transportation challenges are hardly realized.

Recent projects on the design of agile, service-dominant business models in multi-stakeholder contexts in the Dutch mobility landscape has shown that the application of such a business design approach offers a constructive, collaborative way to develop blueprints for the definition of cases of concrete added value of mobility technologies and new forms of business collaboration to realize these cases of added value.

1.1 Purpose of the initiative

The goal of this initiative is to explore and promote the use of agile, service-dominant business thinking in the Dutch mobility sector, such as to promote the awareness of the value of service-dominant, collaborative business models in networks of stakeholders in the mobility domain. In doing so, we aimed at an outside-in business perspective, i.e., starting from the business models and the value they bring to mobility end-customers - moving only after that to core mobility concepts and technology. We explore the applicability of structured business model development in advanced mobility scenarios, starting from the needs of the actual customers in the mobility field.

The purpose is to perform the exploration in a hands-on setting with parties from practice that represent several classes of stakeholders in the sector. From this hands-on setting, first conclusions about applicability of business model reasoning can be drawn. These result in recommendations for enabling business model thinking and inspiring the design of agile, service-dominant business models in multi-stakeholder contexts in the mobility domain.

In order to not be caught in the 'asset-dominant trap' (i.e., to not implicitly start reasoning with an asset-orientation), an approach has been chosen that puts mobility services, seen from the perspective of the customer, at the explicit forefront of thinking. This is service-dominant logic, embedded in service-dominant business engineering (as explained later in this report).

1.2 Structure of this report

The remainder of this report is structured as follows: In Section 2 we discuss how business can be engineered in a service-dominant world by introducing the BASE/X framework. We focus on a specific component of the framework that provides a conceptual tool for designing business models, and we discuss its application in the mobility domain. Section 3 presents the organization of the project work including the setup of the workshops conducted for the collaborative design of business model blueprints. In Section 4, we present the business model blueprints that are designed based on the results of the workshops, including participants' feedback. In Section 5, we present our recommendations to help fostering the design of business models in multi-party mobility settings.

2 Service-dominant business in the Mobility Domain

Many business domains are currently transitioning towards a service-dominant business setting. Before the transition, business settings used to be centered on the delivery of products or stand-alone services [12], [10]. After the transition, they will be centered on the provisioning of solution-oriented, integrated services to customers (either business organizations of individual consumers). Services may require the deployment of products, but these products become part of the delivery channel of services, not the focal point themselves. Ownership of products becomes a less relevant issue. The emphasis shifts from the value of the individual product or service to the value of the use of the product or service in an integrated context – the so-called value-in-use [9]. A representative example of such a value-in-use is the transition from leasing a car (asset) to the provisioning of integrated mobility solutions, including public transportation, flexible work offices, etc. for a hassle-free relocation [15].

This transition has consequences for the very basic characteristics of doing business. First, customers expect coherent solutions, not stand-alone solution fragments. Thus, solution-oriented services are of a complex nature that requires the integration of the capabilities of multiple service providers. This introduces the necessity of explicitly managed business networks, in which traditional mobility and transport service providers, equipment providers, authorities, and user organizations collaborate to co-create the value-in-use. Second, customer-driven requirements to solution-oriented services will evolve much faster than requirements to the underlying products. Rapid developments in information and transport technology will further reinforce this process. Thus, managing agility in service delivery will be a key factor in the market position of a service provider. Third, managing service complexity and business agility requires a tight integration between the structure of business strategy and models on the one hand and the structure of business operation and information management on the other hand. It is not only about what transport or mobility service to sell, but also about how to get it delivered.

Performing the transition to service-dominant business and managing its consequences is a formidable task for any non-trivial business organization. Taking a traditional top-down, business-strategy-to-operations approach will be too slow in the current fast pace of market developments. Taking a quick-win, opportunity-driven, bottom-up approach will result in isolated implementations and chaos in integration efforts. A visionary, industry-strength approach is required that is completely tuned to the service-dominant transition and that has the very basics of service business at its core. BASE/X[1] is such an approach [5], [3].

2.1 The core of BASE/X

BASE/X is a business engineering framework for service-dominant business, i.e., business that puts service management at the forefront of its design and operation. BASE/X covers the entire spectrum from high-level business strategy definition to business information system architecture design, including elements like business model conception, business service specification and business process modeling. The very core of BASE/X is the understanding that to achieve truly agile service provisioning business, these elements cannot be treated in isolation.

[1] BASE/X is the acronym for Business Agility through Service Engineering in a Cross-Organizational Setting.

To capture networked, service-oriented business, BASE/X has two core business principles:

1. Business services and the value-in-use they deliver to customers are the primary building blocks for contemporary business design and execution.
2. To deliver integrated business services as a solution to a customer, networks of providers of basic services are required [2], [4]. Given the volatility of many markets, these networks must be dynamic and explicitly orchestrated. Orchestration of networks is of paramount importance.

To structure business organizations, BASE/X uses two core business engineering principles:

1. An explicit distinction is required between the stable essence of a business organization and the agile market offerings of that organization. These two elements must be explicitly co-engineered in business design.
2. An explicit distinction is required between business structures, organization structures, and information technology structures. These three elements must be explicitly co-engineered in operations design.

Below, we briefly outline business design, organization design, and IT platform design in BASE/X to provide the general flavor of BASE/X. Details can be found in the full documentation of BASE/X.

2.2 Business design in BASE/X

Business design in BASE/X is based on the observation that we need the distinction between business goals (the 'what' of business) and business operations (the 'how' of business) on the one hand and the distinction between the stable essence of an organization and its agile market offerings on the other hand. This leads to a model with four layers, as shown in the figure below (Figure 1).

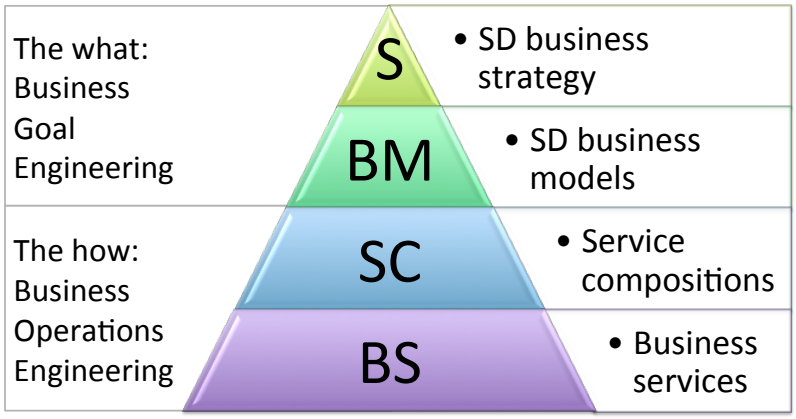

Figure 1. BASE/X Business Pyramid

As presented in the figure, the top half of the pyramid covers business goal engineering, and concerns the 'what' of service-dominant business. It contains the service-dominant business strategy and business models layers. The strategy describes the identity of an organization in a service-dominant market [8], [7]. The identity is relatively stable over time: the strategy evolves. A service-dominant business model describes a market offering in the form of an integrated, solution-oriented complex service: it describes a concrete value-in-use. Business models follow fluid market dynamics and are agile: they revolve – they are conceived, modified, and discarded as required.

The bottom half of the pyramid covers business operations engineering, and contains two layers. At the bottom, we have the business services, each of which contains a core service capability of the organization. As these capabilities are related to the resources of the organization (covering both personnel and large-scale technical infrastructures), they are relatively stable over time: they evolve. The third layer of the pyramid contains the service compositions. Each composition is a combination of business services to realize the service functionality required by a business model: they implement a concrete value-in-use. The combination includes business services from the organization's own set, but also business services of partner organizations in a business network. As service combinations follow business models, they are agile: they revolve with their associated business models [5] [3].

As shown in Figure 2, engineering the stable part of business takes place in the strategic design cycle. In this cycle, the identity and the capabilities of an organization are aligned in an evolutionary fashion. Engineering the agile part of business takes place in the tactic design cycle. Here, business models and their realization in service compositions are created, modified and discarded in a revolutionary fashion. The tactic design cycle 'spins' at a higher speed than the strategic design cycle. Alignment of both cycles takes place by confronting business goals between strategy and business models, and by confronting business means between business services and service compositions. This alignment realizes the co-engineering of stable and agile business elements.

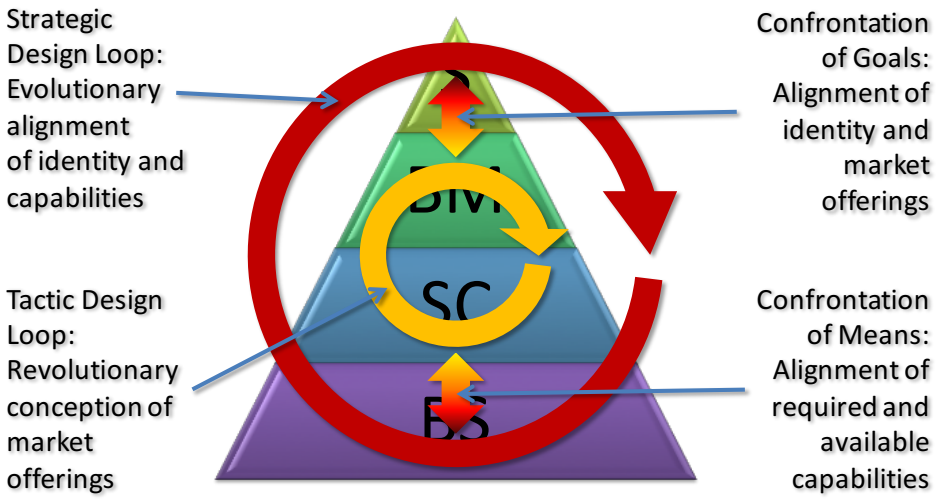

Figure 2. Strategic and Tactic Design Loops in BASE/X

The dual-cycle approach of business engineering in BASE/X allows for harmonized decoupling of long-term strategic thinking and medium-term tactic thinking. It eliminates the need for rigid top-down or chaotic bottom-up business design, as often found in current practice.

2.3 Tooling in BASE/X business design

BASE/X offers more than the conceptual approach outlines above. It also offers a set of business design tools for each of the four layers of the business pyramid:

- For strategy design, a service-dominant business strategy canvas is available. This canvas is inspired by the well-known Business Model Canvas, but focusses on the strategy level in a service-dominant context.

- For business model design, a service-dominant business model radar is available. Like a canvas, this tool is a template for business design. Unlike other business modeling tools, the radar tool has network-centric business model design at its core (shown in its circular design), allowing the composition of service design in multi-party business networks.
- For service composition design, models are available from established business process management practice, applied in a service management context. These include both the support of provider-managed service solutions and customer-managed service solutions.
- For business service design, models, templates and design criteria are available for the creation of well-structured business service catalogs. These catalogs are the basis for the agile creation of multi-party service compositions.

The BASE/X approach has been successfully applied in diverse industrial domains, including transport and logistics services [6], mobility, traffic management, and intelligent transportation systems (ITS) [13] [14], and financial services [5]. More details about the BASE/X approach is available in its Business Modeling Handbook [3].

2.4 Service-dominant business models

A business model describes the way in which an organization along with its providers and partners creates value for all its stakeholders [1]. Well-designed business models that ensure harmonization among business strategy, business processes, and information system are crucial for any business organization to survive and to succeed [11].

The business models in BASE/X are designed using the Service-Dominant Business Model Radar (SDBM/R). SDBM/R has a *network-centric* design at its core, allowing the composition of service design in multi-party business networks. It defines how the actors in the business ecosystem participate in value co-creation and what the cost–benefits distribution is.

Figure 3 presents the elements of the SDBM/R. The co-created value-in-use constitutes the central point in SDBM/R, which defines the proposed solution to the customer's problem or customer's experience. The value-in-use is framed by three concentric circles. The 'actor value proposition' frame defines a value proposition to co-create value by an actor to the solution for the benefit of the same or other actor within the ecosystem. Co-production activity defines the activities that each actor performs in the business for achieving the co-creation of value. The third frame –actor cost/benefits defines the financial and non-financial expenses/gains of the co-creation actors. Finally, the 'pie slices' represent the co-creation actors including the focal organization, core and enriching partners, and the customer. The customer is represented in the rightmost sector of the upper half part of the radar. The focal organization proposes the business model and participates actively in the solution - typically as an orchestrator. A core partner contributes actively to the essentials of the solution, while an enriching partner enhances solution's added value-in-use. SDBM/R accommodates an arbitrary number of actors, suiting the network-centric character of service-dominant business.

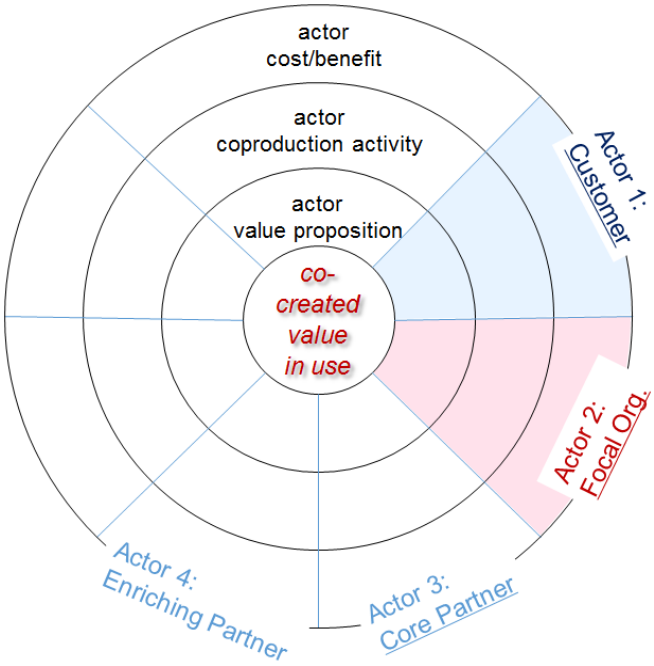

Figure 3. Service Dominant Business Model Radar (SDBM/R) template

Each business model is operationalized by a service composition in the third level; i.e., it is implemented by composing a number of services from the business services layer of the BASE/X pyramid (refer to Figure 1). The activities that take place in a service composition originate from or are tightly coupled with the 'actor coproduction activities' layer of the business model radar.

The objective is to select a prospective business scenario, and design blueprint business models using the SDBM/R as a guiding template. The effectiveness of these workshop sessions depends heavily on the ability of the *moderator* in engaging the stakeholders in active communication and collaboration for innovative ideas.

The initial step in using the SDBM/R is to define and agree on the co-created 'value-in-use'. This goes in line with identifying the customer of the service and the focal organization that orchestrates its provisioning. Next, core and enriching partners that contribute to the proposed value-in-use are discussed and identified. These parties offer their 'actor value propositions' and 'co-production activities' to achieve the co-creation of value. As a final step, parties identify the costs and benefits (monetary or non-monetary) involved in the creation of value-in-use.

3 The Organization of the Workshops

The project work was structured into the following tasks:

1. Scenario selection: With the initiative of Connecting Mobility and Connekt[2], a number of mobility scenarios within the Netherlands were selected and delineated, where business-wise collaboration between stakeholders can yield new added value. A broad set of stakeholders for each of the scenarios - including ITS developers and operators, corporate and private mobility users, value-adding service parties, and government bodies- were identified and invited to participate in the collaborative and interactive business model design workshops.

2. Workshops: Half-day workshops were organized for each scenario, which brought together several experts from diverse industry companies and institutions operating in the mobility domain. To capture a wide extent of the views of stakeholders, the companies included large enterprises and authorities, and those that offer software, IT and consultancy services to the field. Each workshop was led by the working team of TU/e and attended by the representative experts of the main stakeholders in the corresponding business scenario.

Workshops constituted two phases. The first phase involved a tutorial on the concept of service-dominant business, BASE/X framework, and on the use of SDBM/R. The second phase comprised the core of the interactive design of a particular business model using the SDBM/R under the guidance of the project working team. Following a practical approach, large posters and 'post-its' were used to represent the SDBM/R blueprints and its specific elements. The blueprinting involved the analysis of the stakeholders (including the customer, the focal organization that orchestrates the service, and other required parties), their exact added value (in qualitative terms), and the cost/benefit structure in a business network of these parties.

3. *Refinement and consolidation*: All business models were completed and consolidated by the project working team. Next, they were checked with the corresponding stakeholders. The resulting set was analyzed by the team in a qualitative fashion. The resulting business model blueprints are presented in Section 4.

Based on the application of the approach in the workshops and participants' feedback, as well as the experience gained through the application of the approach in other industry projects in this domain, we documented a set of policy recommendations (Section 5) -including also the consolidated set of business models and guidelines for the definition of new business models, to provide inspiration and support for the mobility sector.

[2] www.connectingmobility.nl & www.connekt.nl

4 Business Model Blueprints

In this section, we show and explain the business models that have been developed in the prototyping sessions.

4.1 Business Model: "*Most Efficient Container on the Road"*

In the Rotterdam area, traffic management is quite challenging due to the high-volume of container transportation from and to the port terminals. The regular commuter traffic suffers as a result of the busy roads and traffic jams. Furthermore, container transportation can be delayed, resulting in a decrease in Rotterdam's container throughput, and in turn a decrease in the attractiveness of the port. The business model "Most efficient container on the road" aims to address this problem. The customer in the model is the *Port Authority*, which aims to optimize its container traffic in order to stay attractive and outcompete other ports in the region. Furthermore, a higher throughput of containers through Rotterdam means a higher turnover for the *Port Authority*.

The complexity of the problem that this business model aims to address is reflected on the number of parties that are required to realize the model. The *Receiving Company* provides the business information about the shipment, which includes the details regarding the goods to be shipped and the corresponding schedule. The *Terminal Operator* contributes to the value-in-use with optimal container handling in the terminal and the *Transport Provider* takes care of the reliable delivery. Reliable delivery is only possible if the network has excellent information about the roadways, traffic, arrival times of containers and the current location of the containers. The *Location System Provider* (such as Telco) is a company that can add track and trace material to all containers so that the network is provided with real time information about the container locations. The *Port Communication System Operator (PCS)* accommodates the business model with estimated time of arrivals of containers at the terminal in order to improve the coordination in the port. The *Terminal Operator* can handle the container directly and can deliver it just-in-time to the *Transport Provider.* This coordination will make the container transport more efficient and will contribute to the reduction of waiting times. Furthermore, the *Traffic Info Provider* provides access to traffic information and *Road Management* brings information about road constructions and delivers perfect roadway conditions.

In this case of a complex transportation network, the focal organization that will orchestrate the process can be more difficult to assign, in comparison with less complicated models. There are different parties and dependencies in this network, which asks for an orchestrator that can stay at equal distance to all parties. Accordingly, the *Location System Provider* is selected as the focal organization that will orchestrate the value-in-use.

As discussed above, clear benefits expected for the customer –the *Port Authority,* are the higher turnover, an improved image of the port and a better service to its commuter traffic. At the downside, the *Port Authority* needs to pay for data from all actors in order to offer an overview of activities in the port. This business model furthermore provides the whole network with the innovation of information integration between all actors in the port, which can be a significant competitive advantage relative to other ports in the world.

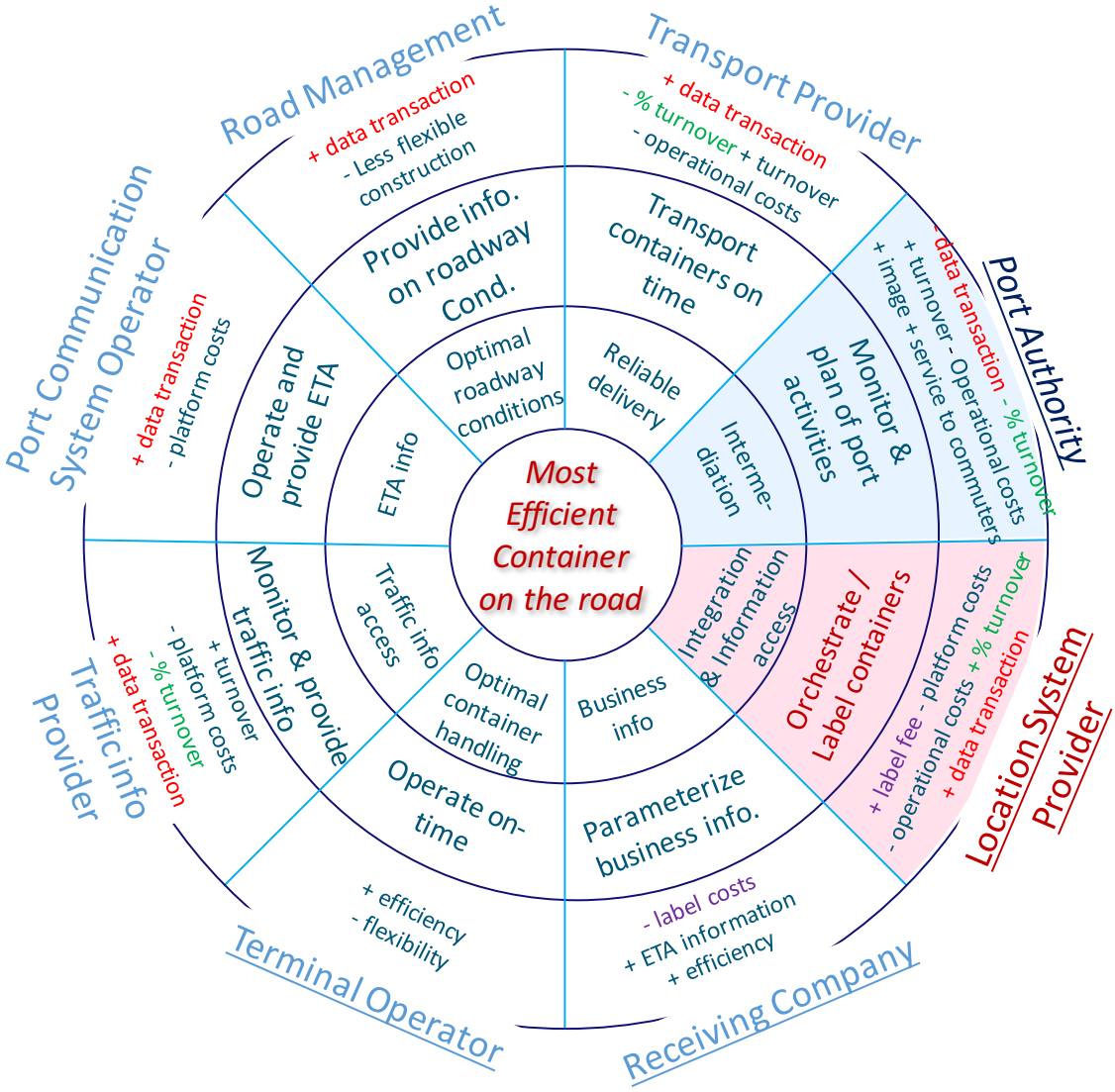

Figure 4. Service Dominant Business Model Blueprint
for Business Model: "Most Efficient Container on the Road"

The focal organization has the cost to install the track and trace system (e.g. a label on every container), while can benefit from providing the *Port Authority* with location data. The *Receiving Company* wants reliable information for their own operations, which may reduce the business costs. Therefore, it will pay to the Focal Organization for the label costs of the track-and-trace information. Furthermore, the *Receiving Company* needs to pay to the *Transport Provider* for the transportation of the containers. The *Transport Provider* benefits further by providing the *Port Authority* with real time data of their location.

The *Terminal Operator*, who plays an important role in the efficiency of the handling and transportation of the containers, benefits from the optimized system in terms of decreased handling costs. However, they will have to give away a part of their flexibility in operations: a container needs to be ready for pick-up when the accompanying truck arrives.

Finally, the information providing actors (*Road Management, Traffic Information Provider* and the *PCS)* make profit with the transactions of their container data to the *Port Authority*. The *Road Management* is less flexible in their road construction as it has to take into account the transportation of containers (some periods have in comparison more container traffic than

other periods). The *Traffic Information Provider* and the *PCS* may both have increased costs related to the operation of their information system.

An important remark about this business model is that it closely represents the existing business conditions and in that way hardly offers a strongly novel solution to an existing problem. However, it clearly highlights an important business opportunity to fulfil the gap in terms of an orchestrating body in the port.

4.2 Business model: "*The Ultimate Festival Edition"*

Events in the form of festivals and sport competitions are effective means to foster a positive image of cities or provinces. However, they come with diverse organizational challenges, which require several parties to come together to create a memorable and pleasant experience for all event participants and involved parties.

The business model 'Ultimate Festival Edition' emerges to address the need to bring together these parties and organize a successful event. The customer in this model is the *Event Owner* who would like a specific event to be held in a particular province. In this scenario, we focus on unique events (such as the Tour De France) that are organized only once in a particular region for a short period of time, where event participants can join without the need to purchase tickets. The success of the event is important for the visitors as this will contribute significantly to province's positive reputation and provide support for the succeeding editions of the event. The *Event Owner* expects also additional benefits such as increased business in the region, job opportunities for inhabitants, returning visitors due to improved image.

In this setup, the *Event Organizer* will play the role of the focal organization orchestrating the activities of participating members of the different actors and thus offering the 'integration' as the value that they provide to the overall solution. As they are experienced in organizing and managing similar events or other festival editions, and they will be the coordinating party which will have the overview of the event in terms of planning, resources and progress.

The business model will also need a number of core and enriching partners to be involved in order to offer a complete solution to the *Event Owner*. A core partner is the *Transport Facilities Provider,* which enriches the value-in-use by providing easy access to the event. This includes parking and transportation facilities like public transport and traffic management. The *Food & Beverage Provider* arranges permits to sell food and beverages at the event location and provides the value-in-use by serving needs to the event visitors. As the focal organization that acts as a hub of information about the event, the *Event Organizer* will provide event intelligence to the *PR Provider* who will contribute to the value-in-use by increasing the public awareness about the event. The *Media Provider* will provide added value to the event experience for non-visiting people, for instance by broadcasting the event on the TV and Internet. The *Government* will also act as a party that provides the focal organization and other key partners with permits for resources and plans of the event, and specifies specific conditions and rules. Finally, there is a need for a *Security Provider* that will provide the public safety and security of all activities required to achieve the ultimate festival edition.

Figure 5 presents the radar for this service dominant business model.

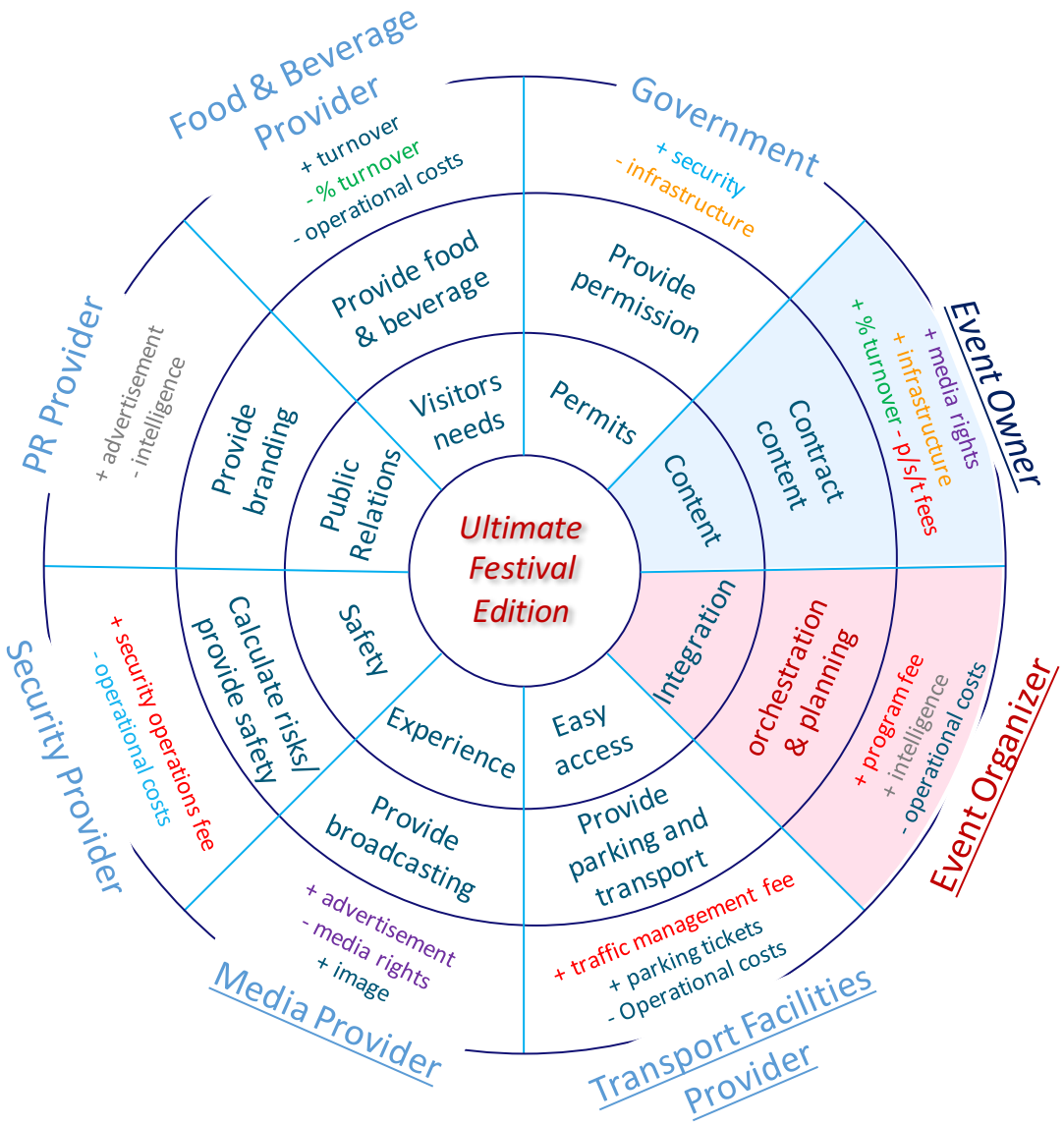

Figure 5. Service Dominant Business Model Blueprint for Business Model: "Ultimate Festival Edition"

The *Event Organizer* will experience operational costs for orchestrating the business model and developing the program. At the other hand, *it* will benefit from the fee that the *Event Owner* (customer) will offer for the management of the event. It will also earn by providing intelligence to the *Public Relations Company*. This company gathers this information about the event and visitor profiles to benefit from offering it to partner companies who are interested to advertise their brand and products to the particular visitors on the route to and during the event.

As the primary partner operating directly in the mobility field, the *Transport Facilities Provider* will manage the traffic and parking at the location and arrange public transport to transit the visitors from surrounding parking facilities and cities to the event location. The benefits are parking fees from visitors and a fee from an orchestrating or organizing partner,

in this case the *Event Owner*. There is also a cost involved for the *Transport Facilities Provider* in operating the public transport facilities.

The *Food & Beverage Provider* will provide catering to meet the visitors' demand for food and drinks and in this way will benefit from increased turnover. The *Event Owner* will also benefit through a fixed percentage of this turnover.

The *Media Provider* will incur the cost of receiving the rights from the *Event Owner* to broadcast their content on television and will benefit from positive branding and fees from advertisements.

The *Government* will provide permissions for the event, which incurs costs involved in terms of people who have to evaluate the event proposal in order to issue the permissions. In return, it will benefit from the value-in-use in terms of the public security and safety achieved by the main parties through abiding the terms and conditions set by the government when accepting the government's permission. The *Event Owner* needs to ensure security, and therefore will pay to the *Security Provider*, to perform all activities in order to ensure security. As a response, the *Security Provider* will incur the operational costs in offering that service.

4.3 Business Model: "*Free Event for the Government*"

As deliberated above in the first business model, events such as festivals or sport competitions, can be suitable means to help build a positive image of certain regions or cities. Such events usually increase attractiveness of the region and contributes in terms of increased business opportunities. Consequently, *Governments* encourage these events and aim to provide support through various means. However, budgets that can be allocated to these events are usually limited, and therefore some attractive events can be left without Government's financial support.

The business model '*Free Event for the Government*' attempts to find a suitable network of parties that can organize such events without the need for a financial support from the Government. In this model, the *Government* is the customer – i.e. the party that benefits from the value-in-use (having events organized in a region without incurring additional cost). The objective is to design the network in such a way that the parties organizing the event will take care of the costs involved. A *Commercial Company* (the "*Gov-Booster*") plays the role of the focal organization orchestrating the package of activities performed by different actors. The *Gov-Booster* will have the overview and will be the central point of contact for the Government and for the *Event Organizer*. This core partner will provide the content experience (the event itself) and takes the initiative for the event organization. Furthermore, there will be a need for a *mobility* party -a *Transport Facilities Provider* – that offers easy event access including parking and transportation facilities. A *Security Provider* is also needed to provide the public safety and security of all activities related to the event, which is at most important for the customer; i.e. the Government.

The radar for this business model is presented in *Figure 6*.

The *Gov-Booster* - the focal organization- will contribute to the value-in-use through orchestrating and integrating the services necessary to enable event to happen as organized. In order to offer a free event to the Government, it will take on the responsibility for all *Government* related costs, such as costs for providing the permits, and operational costs for orchestration and integration. On the other hand, it will benefit partly through the *Event Organizer's* turnover (earned by selling tickets), or food and beverages to event visitors, and

provide commercial PR for the event to increase visitor participation. Another benefit for the *Gov-Booster* is the exclusivity of the event, and the gain of experience in lifting its image.

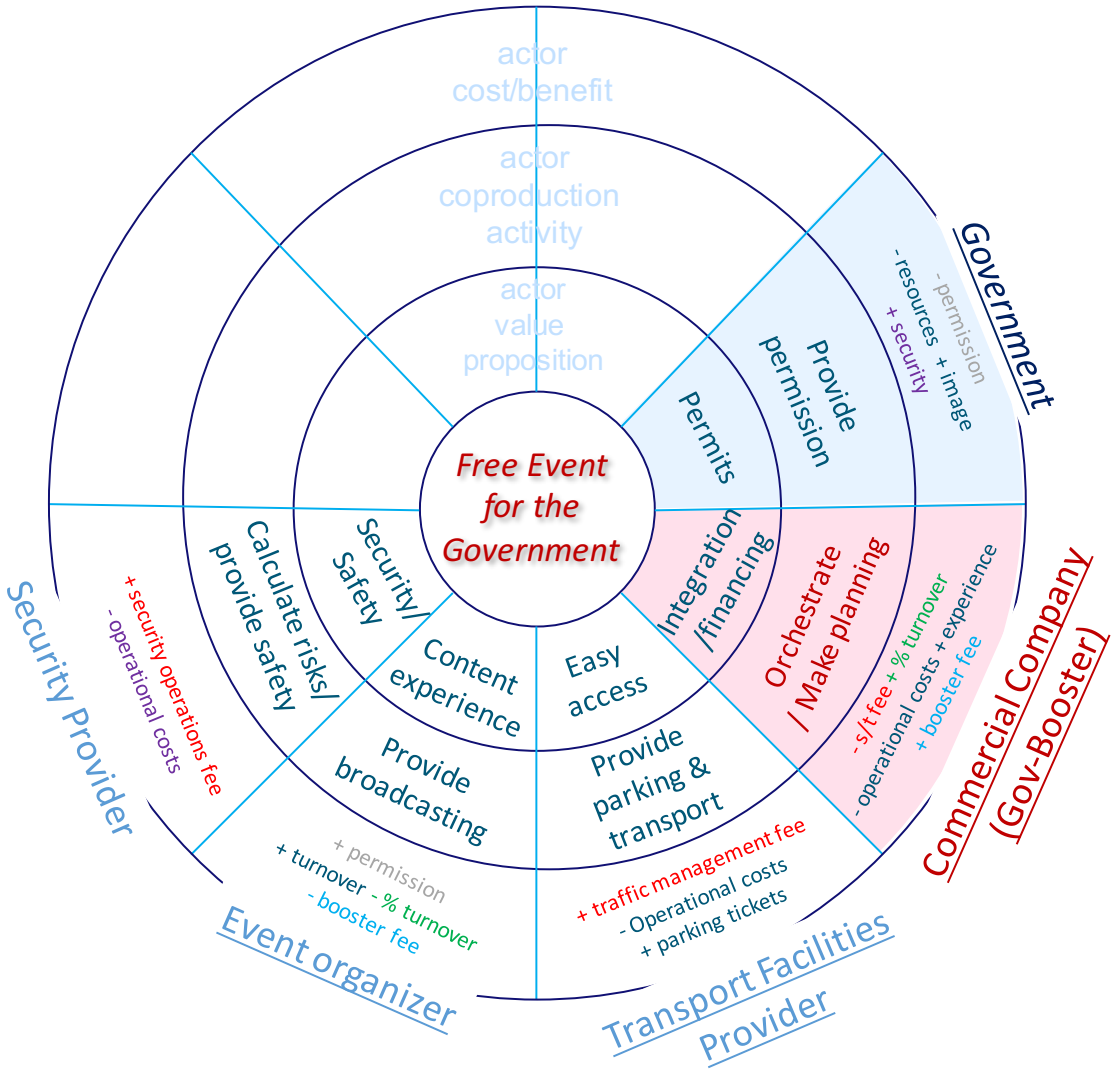

Figure 6. Service Dominant Business Model Blueprint for Business Model: "Free Event for the Government"

The main benefit for the Government (apart from the free event) will be the positive image gained by the event. It will provide different parties necessary permits and resources (e.g. infrastructure, and possibly the event location) to organize the event while ensuring public safety and security related to all event activities, through the Security provider.

The *Event Organizer* will provide the event content, and benefit from the value-in-use in the way that the likelihood that more events will be organized in the future is increased. It will receive the permission for the event from the Government and will make turnover, of which it shares a part with the *Gov-Booster*. The *Event Organizer* will also need to ensure security and therefore will pay a fee to a *Security Provider*, who will perform all activities in order to meet the terms and conditions set by the *Government*.

Finally, the *Transport Facilities Provider* will provide the value-in-use with easy event access. Furthermore, it will manage the traffic at the location, the parking for visitors and they arrange public transportation. It will receive a fee from either the *Event Organizer* or the

focal organization as a benefit to take part in this business model as a transportation company.

4.4 Business Model: "*Convenient City Visit for Shopping*"

Much like events, shopping conveniences coupled with food and beverage services can help building a positive reputation of cities, and to the eventual increase in business opportunities in that region. The business model 'convenient city visit for shopping' aims to increase the convenience for visitors that are traveling by car to the shopping zones, which are typically located in city centers. This is addressed by providing guaranteed and easy parking in close parking facilities supported by special discounts offered by retailers operating in the zones.

The *Service Integrator* will be the focal organization offering integration and acting as the central point of contact for visitors and other parties. It will offer potential visitors with different alternatives of routes including parking services around the shopping zone. The (online) tickets will include guaranteed parking in the selected facility, and special discounts in the retail shops located in the shopping zone. The *Retailers* will provide a special shopping experience including discounts to *Visitors*, which have contributed their profile (that includes visitors' shopping preferences and styles).

The business model radar is shown in Figure 7.

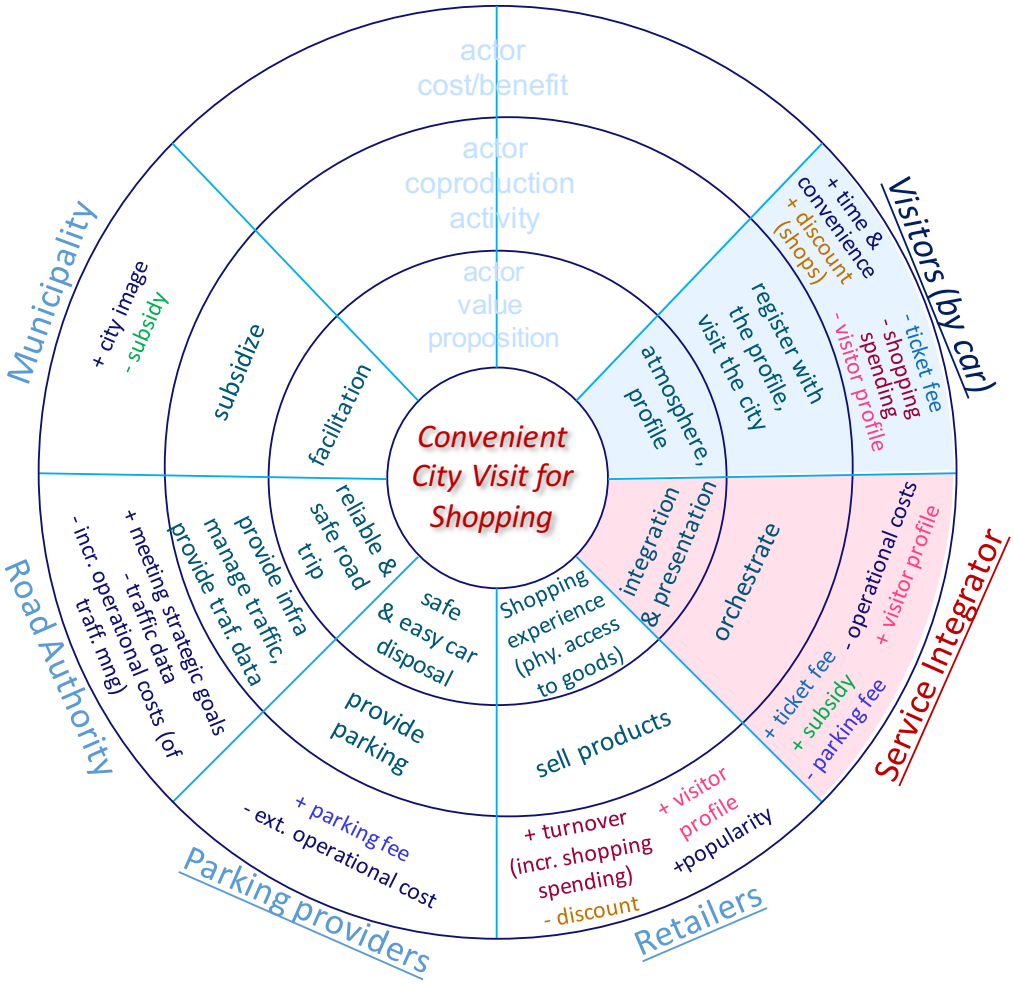

Figure 7. Service Dominant Business Model Blueprint for Business Model: "Convenient City Visit for Shopping"

A *Parking Provider* will simply provide parking services for an easy car disposal, while the *Road Authority* will provide the road infrastructure and traffic management for a reliable and safe car trip. Special services can be arranged by the road operator (e.g. route priority) to facilitate the travel experience of the visitors. The *Municipality* is the actor that would like to create a positive image of the city and provides subsidy to the initiative -particularly at the early phases of operation. The main benefits to the Visitors will be the convenience of guaranteed (and possibly discounted) parking, and the special discounts in specific retail shops.

Retailers will benefit from increased popularity, higher turnover due to increased sales, and being informed (through the service provider) about the profile and the number of visitors for a particular day-time.

4.5 Business Model: "*Just-in-time Presence of Elderly*"

Providing urban access and mobility is one of the main goals of modern cities. Good public transportation systems are essential parts of a safe, clean and affordable mobility solution particularly in urban areas. From a social perspective, public transportation should be usable by all citizens including the *elderly*. While safe, green, and affordable transportation for elderly has obvious benefits for older generation and municipalities, enterprises and institutes (particularly healthcare institutions) can benefit from just-in-time delivery of elderly, as well. Consider one of the common destinations for elderly, namely, hospitals. Hospitals generally have quite high operational costs. Hence, delays in arrival of patients, which is quite common for elderly, leads to major losses. One could argue that the main beneficiary of the just-in-time transportation of elderly are institutes such as hospitals.

The business model *'just-in-time presence of elderly'* is designed as a part of a program, which has been established by a municipality to not only support safe, green, and affordable transportation for elderly, but also ensure their just-in-time delivery to the destination (healthcare) institutes.

One of the key aspects of the model is to provide door-to-door *free* transportation for elderly using *electric cars*. While the program overall has evident social and environmental benefits, its feasibility is a key concern. Considering the aging population of the citizens the related transportation costs are quite considerable. For this reason, the municipality seeks for a business model that its considerable benefits for destination institutes would justify fully covering the elderly transportation costs by those institutes.

The designed business model aims at providing a network of parties such that they benefit from elderly transportation and hence can support it. In this model, the *Destination (Healthcare) Institute* is the customer – i.e., the party that mainly benefits from value-in-use (just-in-time arrival of elderly patients). The idea is that the *Destination Institutes* fully cover the transportation costs. In addition, they provide necessary information (e.g., schedule, delays) and thus supports the required facilities to for smooth receiving of elderly people. In this scenario the *Municipality* is the focal organization orchestrating the package of activities performed by different actors. The *Municipality* will have the overview and will be the central point of contact for the *Elderly* and other parties. This core partner plans the mobility, both drivers (unemployed citizens) and Elderly and integrates all other parties. Furthermore, there is a need for a *Transportation Provider* party that offers easy access for elderly.

The business model radar is presented in Figure 8.

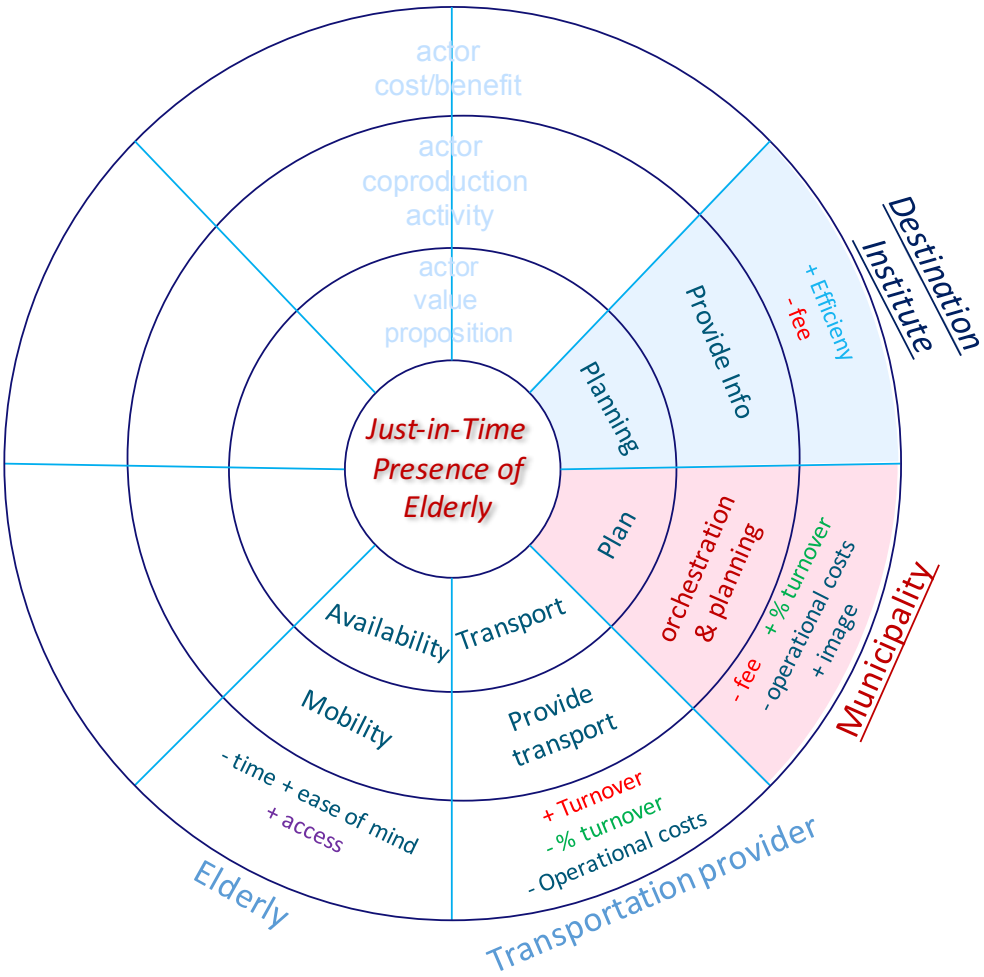

Figure 8. Service Dominant Business Model Blueprint for Business Model: "Convenient City Visit for Shopping"

The *Destination Institute* (e.g., hospitals) contributes to the value-in-use by (i) covering the transportation costs and (ii) providing real-time information about the destination such as changes in the plan or eventual delays and thus supports a smooth reception of *Elderly*.

The *Municipality* – the focal organization - contributes to the value-in-use by planning and orchestrating the necessary services. Such planning comes with operational costs. On the other hand, they benefit partly through the *Transportation Provider's* turnover. Another benefit for the *Municipality* is its unique position in fully supporting elderly transportation while providing opportunities for unemployed citizens and the gain of experience in lifting its image.

The *Transportation Provider* contributes by providing transport services, and benefits by making turnover. Part of the turnover is shared with the *Municipality*. Finally, *Elderly* benefit from this business model by being connected and mobile without costs. In return they provide their time.

4.6 Participants' feedback on the business modeling approach

After each workshop session, we gathered feedback from the participants regarding the use of the approach and its effectiveness. Participants agreed that following an explicit approach that structures the interactive design of business models fostered the creation of innovative ideas. Participants indicated SDBM/R as an effective means for a diverse set of stakeholders to collaboratively design new business models. They further agreed that it created awareness on the value of agile, service-dominant business thinking and provided inspiration for collaboration with different stakeholders. Below are two quotes (in Dutch) from the workshops participants:

> *"Het verhaal sprak mij aan en biedt denk ik aanknopingspunten om onze projecten verder vorm te geven en jullie stakeholder analyse te verbeteren."*
>
> *"Een inspirerende sessie. Na ons onderzoek over vervoersstromen zou een eigenlijk met bedrijfsleven en overheden om de tafel moeten om te kijken naar een business-model voor een dienst."*

We also performed a short survey to investigate participant's view on the usefulness and easy of use of the approach that they practiced during the workshops. Appendix C presents the detailed results regarding each survey question. In brief, participants considered the SDBM/R *useful* in designing business models (see Figure 13 Questions Q1-Q4). They indicated that using this approach would provide an effective solution to the problem of designing business models. Majority also agreed that using SDBM/R would make it more easy to communicate the business models to others. Furthermore, participants found the approach not only easy to use but also considered that it would be easy for them to become skilful at using the approach for business model design (see Figure 13 Questions Q5-Q8). Majority of the participants also indicated their intention to use this approach in practice (Questions Q9-Q10).

Figure 14 and Figure 15 in Appendix C present further details about the participants regarding their domain experience, and their current position, as well as the size of the companies that they work for. The figures show that the participating companies differ significantly with respect to their size, and the workshops were able to attract companies operating at different parts of this spectrum. The figure also confirms the multi-stakeholder nature of the domain with a variety of players each having a unique viewpoint.

5 Fostering service-dominant business thinking in the Dutch mobility landscape

This report focuses on the use of agile, service-dominant business models in the mobility domain. We present a selection of business model blueprints resulted from the business modeling workshops that we executed with a diverse set of stakeholders in the domain. The results of these workshops have been elaborated and analyzed as described before in this report.

From these practical actions, we derive a set of key action points that we describe in this section to fostering service-dominant business thinking in the Dutch mobility landscape.

We discuss our recommendations in four categories related to respectively the strategic positioning in the domain, application of the service-dominant business paradigm in the mobility, the use of multi-sided business models, and the importance of explicit treatment of non-financial costs and benefits in business models in the domain. We end this section with a short indication of possible practical implications.

5.1 Strategic positioning in the mobility domain

The service-dominant business leads companies towards an important strategic decision about where they position themselves in the business domain. In the mobility and transportation domain, the companies can characterize themselves as:

- *Asset suppliers,* which build or develop physical assets, such as roads, rails, and other physical infrastructure components,
- *Technology suppliers,* which produce and supply devices, hardware platforms and software applications to support the mobility and transportation services (e.g. road-side-unit provider, road sensor provider, vehicle manufacturer, IT/software provider),
- *Service providers*, such as the transportation service provider, traffic service provider, content provider, navigation provider, traffic information provider, etc.,
- *Government bodies, policy maker & regulators*, which define the policies and regulations, and monitor the compliance against them (e.g. road authority, municipality, province, police), or
- *Network orchestrators*, which create and orchestrate a network of companies and other parties including the customer to co-create a value. They keep the main connection to the customer – hence control the customer intimacy.

Complex mobility problems require solutions with multiple services that are provided by a network of parties. Such solutions often require parties from each of the stakeholder groups listed above. However, a company should focus its attention and align its strategy to represent only one of these groups, in which it excels and leaves the rest to other domain players.

The practical actions performed in this initiative showed a strong need for the presence of ‘network orchestrators’ in the mobility and transportation domain. Despite a considerable number of players in other stakeholder groups, orchestrators that would act as the main business catalyst are scarce. However, the business models resulted from this action makes a convincing business case for companies to re-align their strategy to become orchestrators.

5.2 Application of the service-dominant business paradigm

The mobility can be considered as an asset-centric business domain, in which business thinking often starts with consideration of assets. Assets can be road-side units, traffic signage equipment and systems, vehicles, and traffic management/information systems, as well as the communication infrastructure and related technology. This often leads to a means-to-goals direction of thinking and an inside-out (provider-to-customer) perception of the market. End customers in the domain (such as road users), however, are mainly interested in the *added value* brought by the mobility services or solutions (such as congestion-free travel, safe journey, fast travel) - not so much in the means to accomplish these. In other words, customers are interested in the *value-in-use* obtained by the execution of mobility services - they prefer the outside-in-view. Assets in the domain are of course required, but to customers, they are of secondary (indirect) interest only. The more complex a market gets, the more different the inside-out and outside-in views become. In the workshops described in this report, participants experienced the service-dominant approach as a fresh, new way to approach business in the domain.

The above observations lead to the following policy recommendations:

1. Promote the service-oriented way of thinking in the mobility domain, i.e., promote thinking that starts from customer value instead of thinking that starts from mobility means.
2. Promote customer-centric design of business instead of provider-centric design of business, i.e., promote outside-in thinking.

5.3 Multi-party business models

Most business settings in the mobility and related domains, are multi-stakeholder settings. For example, from mobility point of view, an event organization involves not just transport providers, vehicles and road authorities, but also event organizers, security providers, municipalities, parking providers and many more. Similarly, in multi-modal international logistics we see collaborative scenarios of shippers, logistics service providers, deep sea shipping companies, road transport companies, rail transport companies, cross-docking terminal handlers, custom services, and insurance companies.

In traditional business settings, collaboration can be modeled and designed in bilateral settings, i.e., by considering pairs of organizations in their business relations. Here, more complex scenarios are created by nesting bilateral relations, typically by means of outsourcing. In contemporary mobility settings, complex business models often only become viable when analyzing them directly in a multi-party setting in which more than two parties collaborate at the same level (i.e., to design *multi-sided business models*). At this collaboration level, several value streams exist between parties that *together* form a viable business system. The business models developed in the workshops of this implementation action and described in this report illustrate this point: both have considerably more than two parties at the same collaboration level. Note that this does not mean that bilateral contracts become obsolete: multi-sided business models can be formalized in a set of bilateral contracts (typically between the orchestrator and each of the other parties).

From the above observations, we can derive the following policy recommendations:

3. Make models and techniques available in the mobility domain for design and analysis of multi-sided business models.

4. Trigger organizations to experiment multi-sided business models in a light, explorative way with multiple stakeholders involved. Experience shows that business model prototypes can be collaboratively designed within a few hours, often leading to interesting new business ideas.
5. Practically explore the full-fledged application of multi-sided business models and their mapping to sets of bilateral contractual agreements.

5.4 Non-financial costs and benefits

In typical business thinking in many domains, the emphasis is often on decreasing financial costs. Sometimes, carbon footprint is explicitly considered, but in many cases this can be mapped onto financial costs (less CO_2 emission means less cost for fuel). However, other costs and benefits often are in play as well, which need to be considered to make a multi-sided business model work. For instance, there may be stakeholders that do not have a direct financial benefit in a business model but that are required to make it work; there may be stakeholders that have financial costs that may be offset by non-financial benefits. One example is formed by government organizations that have societal safety or ecological preservation as a non-financial benefit. Another example is formed by organizations that exchange financial costs for information benefits (i.e., business data) - this example becomes quickly more important with the increasing attention on data analytics and business intelligence (where data availability is a basic requirement).

From this observation, we formulate the following policy recommendations:

6. Promote thinking in both financial and non-financial benefits in business models. Both types can be exchanged for each other where so required. In doing so, start thinking in a qualitative way to keep business model design open. Quantify non-financial costs and benefits in a later stage.
7. Develop concrete approaches/standards for the quantification of non-financial costs and benefits. Most directly, information/data, safety, reduction in ecological impact, image, and visibility as benefits.

5.5 Practical implications

Based on the above policy recommendations, we conclude with a few possible practical implications:

- We suggest to actively disseminate knowledge about service-dominant business thinking in the mobility domain. This can be performed by making handbooks available to the domain, by organizing short courses for business practitioners, and/or have contributions on the topic in professional gatherings (such as trade fairs or professional congresses).
- The workshops organized in the Implementation Action described in this report were received very well by the participants but found *too short* to fully complete business model design (organization was constrained by availability of participants). Therefore, a follow-up action may be to organize a few more workshops with more room for design/discussion - this with the aim to broaden practical experience and generate a larger set of example business models (as inspiration for the field).

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7 Appendix A. Prototype business models

On the next pages, we show photographs of the original business models that were interactively constructed during the two workshops. To be able to adjust the business model during discussion, color-coded post-its are used on a business model radar template by the session facilitators.

The color-coding of the post-its is as follows:

- Yellow: business model value-in-use, actor value propositions.
- Blue : actor coproduction activities.
- Green : actor benefits.
- Pink : actor costs.
- Orange: actor identification.

Figure 9: Interactively constructed business model for "Ultimate Festival Edition"

Figure 10: Interactively constructed business model for "Most Efficient Container"

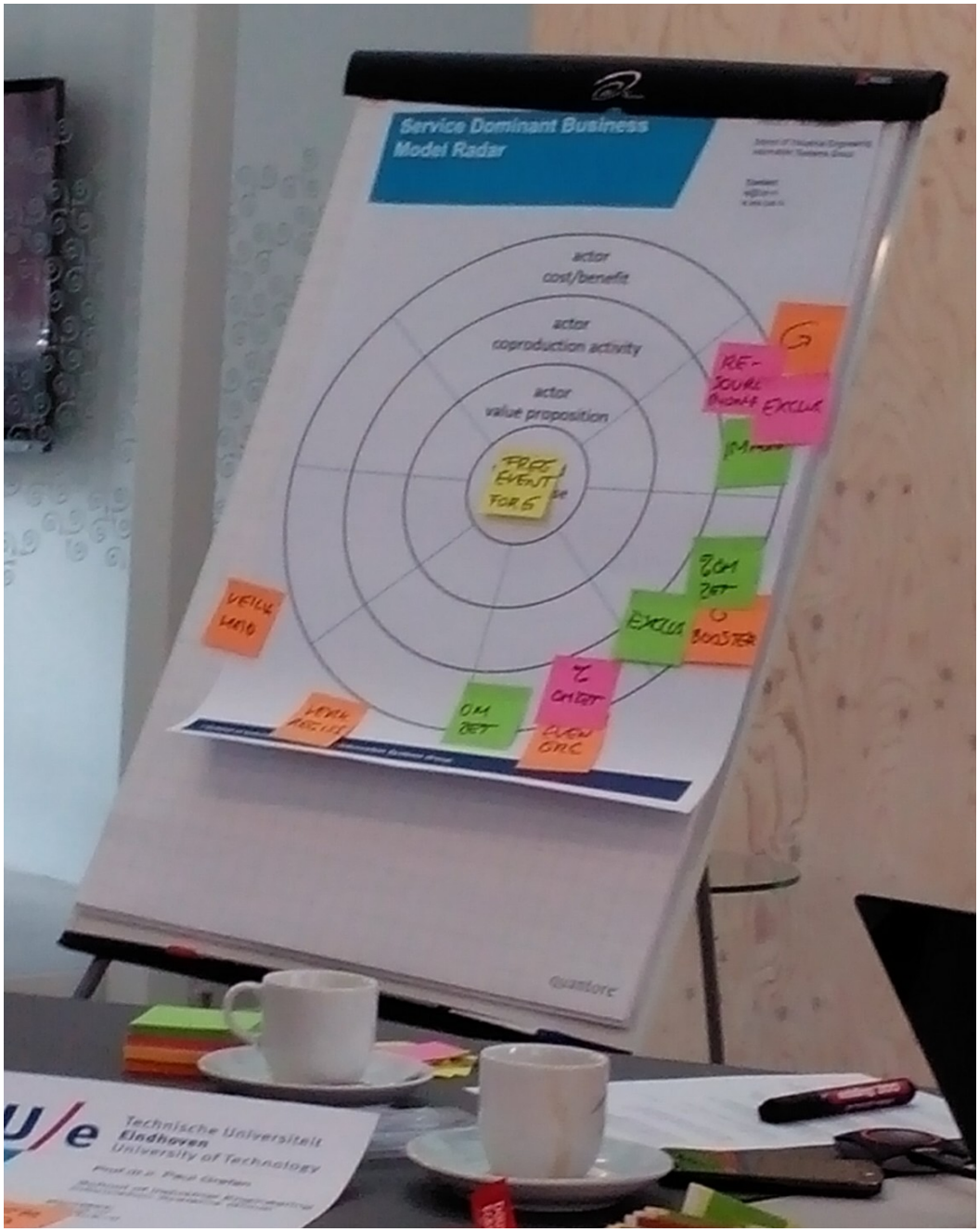

*Figure 11: Interactively constructed business model for "*Free Event for the Government*"*

*Figure 12: Interactively constructed business model for "*Free Event for the Government*"*

8 Appendix B. Results of the questionnaire on the business modeling approach

Q1	I think this approach provides an effective solution to the problem of designing business models.
Q2	Business models designed in this way would be easy for users (colleagues, partner companies, etc.) to understand.
Q3	Using this approach would make it more easy to communicate the business models to others.
Q4	**Overall, I found the business model design approach in this workshop to be useful.**
Q5	Learning to use this way of designing business models would be easy for me.
Q6	I found the way the business models are designed as (un)clear and easy to understand.
Q7	It would be easy for me to become skilful at using this way of designing business models.
Q8	**Overall, I found this way of designing business models easy to use.**
Q9	**I would use this method to design business models.**
Q10	I would intend to use this way of designing business models in preference to another design approach, if I have to design business models in the future.

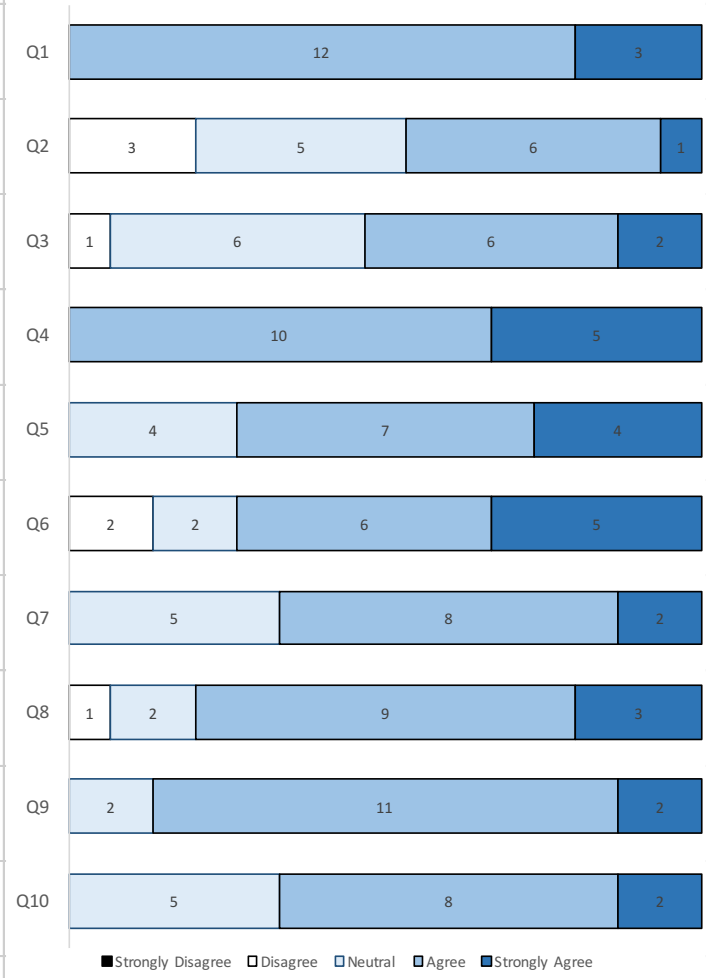

Figure 13. Participants' view on the usefulness and ease of use of the business modeling approach

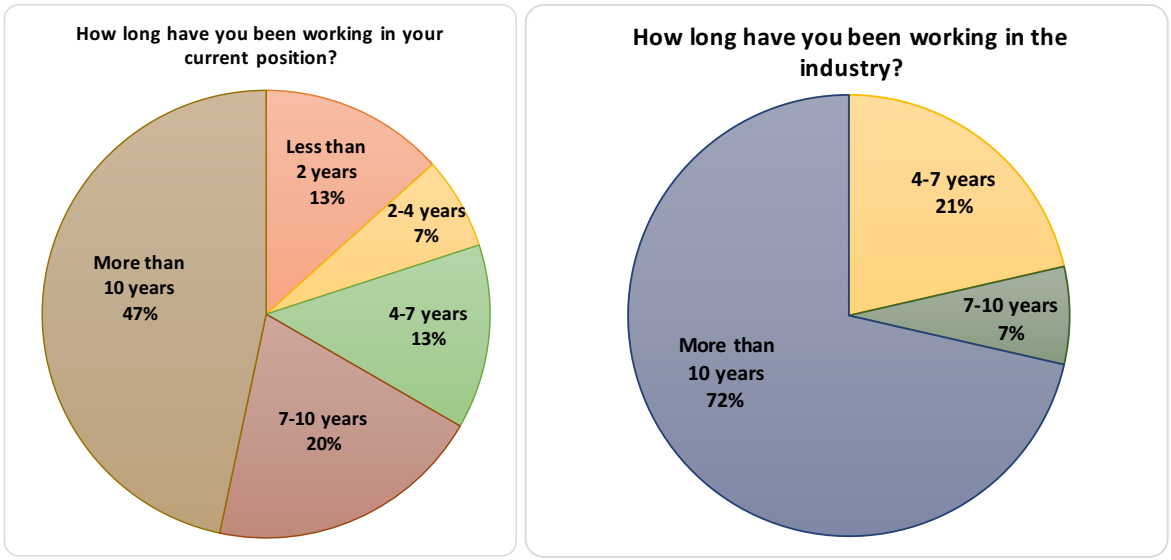

Figure 14. Participants' experience in the domain

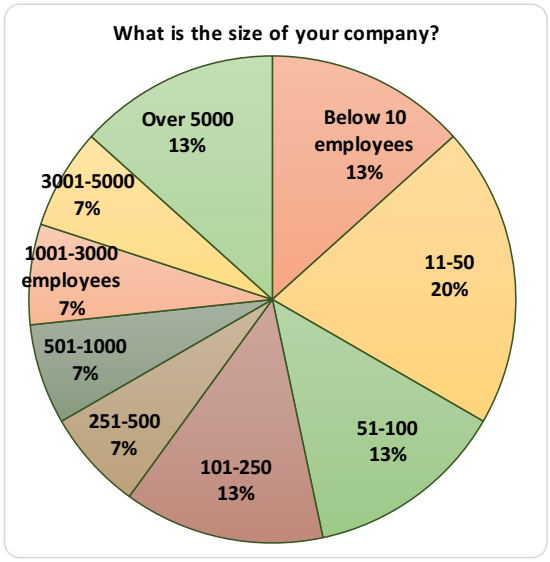

Figure 15. Size of participating companies