Business models for construction logistics optimisation and CCC introduction

Version 1.1

Sustainable **U**rban **C**onsolidation **C**entr**ES** for con**S**truction

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Contributor(s)	
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Project Coordinator:

Luxembourg Institute of Science and Technology (LIST)

5, Avenue des Hauts-Fourneaux, L-4462 Esch-sur-Alzette, LUXEMBOURG

Contact Persons:

FERRERO Francesco, +352 275 888 22 27, francesco.ferrero@list.lu
GUERLAIN Cindy, +352 275 888 67 46, cindy.guerlain@list.lu

1 Executive Summary

1.1 Introduction

The construction industry is one of the biggest consumers and producers of freight transport in the urban areas. This industry is normally very fragmented in a huge number of suppliers and distributors that deliver their materials and goods in different construction sites that they serve around a specific area. Some of the direct consequences of the fragmentation of the construction industry are the raise of the transport and production costs and the increase of the problems caused by the urban freight transport (i.e. noise, pollution, congestion, etc.).

In response to this problematic caused by the construction industry, the project SUCCESS aims to reduce the negative impacts caused by the freight distribution in urban areas and have a better understanding of its logistic supply chain. In order to do this, the SUCCESS project focuses on the improvement of the supply chain management (i.e. supplier's cooperation schemes) and the introduction of Construction Consolidation Centres (CCC) to reduce the logistics costs of the construction industry.

The main objective of the Work Package 3 is to provide tools and methodologies to design innovative solutions for construction logistics in urban areas. More specifically, the deliverable "D3.3 Business Models Development and Analysis" focuses on the study of business models for the implementation of CCC's analysing the cooperation and coordination of the Supply Chain stakeholders from three different perspectives: economic, commercial and organisational point of view.

1.2 Objectives

The main objective of the deliverable is to describe the work carried out in the "*Task 3.3 Business Models Development and Analysis*" included in Work Package 3. Thus, the main objectives of this deliverable are the following:

- Elaborate a state of the art of Urban Consolidation Centres (UCC) and CCC analysing the business models applied in different case studies.
- Select the most suitable business models taking into account its commercial, financial and organizational feasibility.

1.3 Methodological Approach of T3.3

The "*Task 3.3 Business Models Development and Analysis*" focuses on the study and the analysis of the business models that have been applied in previous UCC's and CCC's experiences. This information is useful to detect those Business Models that are suitable for the implementation of CCC's by the construction industry. Under this framework, the process and the methodology that has been followed in this task was:

1. Identification of different experiences in UCC's and CCC's
2. Elaborate a state of the art in UCC's and CCC's with their most relevant information.
3. Elaborate a preliminary analysis of the aforementioned experiences in UCC's and CCC's (SWOT Analysis).
4. Definition of the general features of the business models for CCC's and UCC's and data requirements identification (*General Model Template*).
5. SWOT analysis for the implementation of CCC's in each of the local pilots
6. Definition of Business Models for each pilot site and for each scenario
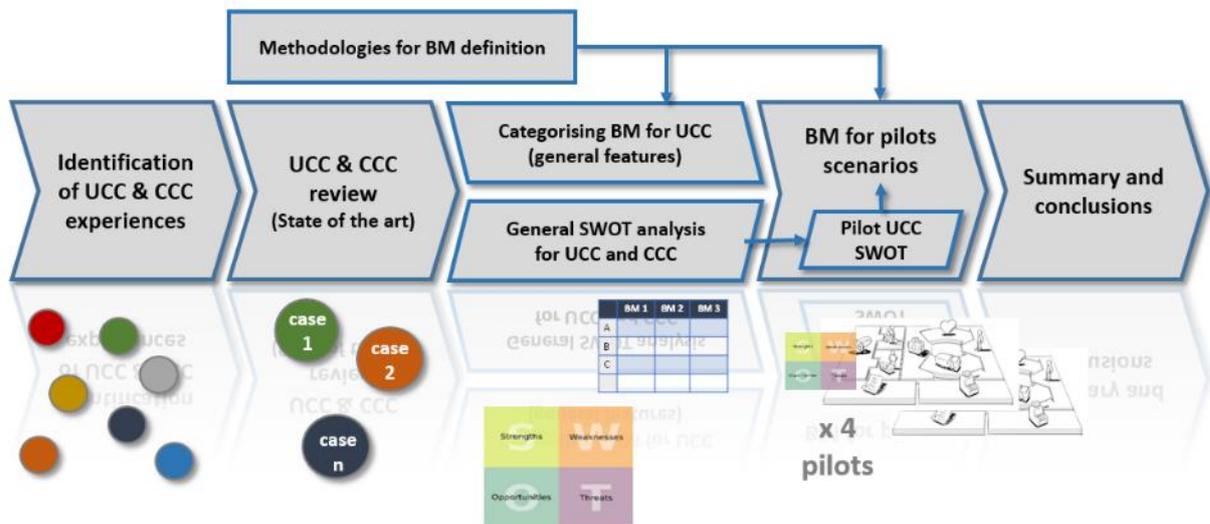7. Summary and conclusions

Figure 1. Illustration of the methodological approach of the task 3.3

2   Business Models

The concept of business model became popular in the 1990s in the IT sector, mainly used by dotcom companies during its search of investors. Currently, the concept has become widespread to practically all sectors in the industry and has focused more attention from the academic world.

Different methods can be found in the literature to either identify the existing business model of an already created company (mainly for software development purposes) or as an assistant tool to identify the most convenient structure to be adopted by a starting company. Considering that a business has become a management tool, it is also possible to define a business model as a conceptual instrument containing a set of objects, concepts and their relationships with the objective to express the business logic of a specific firm

Different methods can be found in the literature to either identify the existing business model of an already created company (mainly for software development purposes) or as an assistant tool to identify the most convenient structure to be adopted by a starting company. Currently, there are no obvious standards for business modelling notation, however the purpose of several techniques is the visualisation of the processes that take place in a business and they mainly differ in the methods and tools used to accomplish this objective.

2.1   Canvas

The goal of any Business Model is to describe the rationale of how an organization creates, delivers and captures value (Osterwalder, 2010). The Business Model Canvas (BMC) consists on a strategic management and entrepreneurial tool that uses a visual chart/template to describe the structure of a business plan. Importantly, it describes a business' value proposition, infrastructure, customers, partners and finances, which, when combined, provide a coherent view of a business' key drivers. It has three main advantages over the traditional business plan (Cowan, 2014):

- Focus: Traditional business plans are bulky with important information getting lost in translation, the BMC offers clarity and conciseness in what is driving the business.
- Flexibility: It is simpler to tweak the business model using the BMC (from a planning perspective) on a single page rather than 40+ pages of text.
- Transparency: Users and viewers of the BMC will understand the business model easier and much more likely to buy into an idea that is explained easily.

The BMC can be printed onto a large surface so that groups of people can formulate ideas and discuss business model elements together, using pens and

post-it notes amongst other implementing tools. Its hands-on approach makes it ideal for business model understanding, discussion, creativity and analysis.

BMC has a structured methodology to describe any business through the systematic description of nine basic building blocks that show the logic of how a company intends to make money. The nine blocks cover the four main areas of a business: customers, offer, infrastructure, and financial viability. The contents of the nine blocks are identified from a series of questions which should be answered by the promoters of the business, and they are graphically represented using a predefined template. The following Figure shows the main structure of the original business canvas
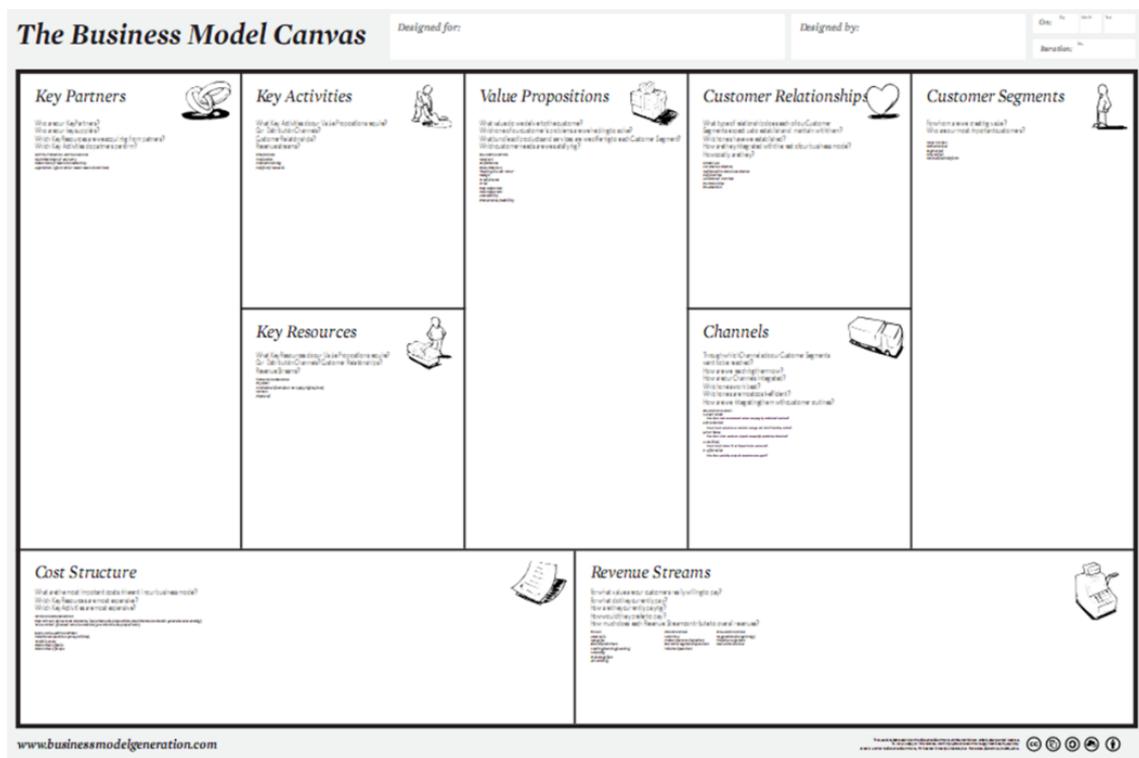

Figure 2.Template used in the methodology Business Model Canvas

3   Pilot Approach for Business Models

In this section, the SUCCESS partners contribute to the deliverable by providing a pilot analysis of the different scenarios to be assessed. Each of the scenarios proposed by the pilots has a particular business model analysed depending on the CCC and city characteristics with the aim to provide a specific solution to the existing problematic of the city and challenges of the construction industry.

The pilots assessed in the SUCCESS project have their own problematic concerning the construction supply chain due to the different city characteristics. Besides, each region participating in SUCCESS project has its own main objectives and because of this, different scenarios have to be

proposed in order to find those solutions that fit the better accprding to the features and objectives of each pilot of the SUCCESS project. Once the scenarios have been defined, it is necessary to analyse the corresponding business model to be implemented according to the main scenarios' characteristics.

The methodology proposed to identify the scenarios to be analysed and to define the best business model for each of the pilots is divided in four main parts:

1. **Introduction:** in this part, the main city characteristics that have an influence on the urban and construction logistics are identified providing an overview of the city and pilot characteristics.

2. **Specific SWOT**: The construction logistics and the construction supply chain share common problems that affect the majority of the constructions sites, such as lack of space on site, production of urban congestion in the cities, etc. However, each construction site is different and they have specific problems that vary depending on the time, location, etc. In this section, the different city pilots carried out **a specific SWOT analysis for its own city that identifies** the most relevant problems to address and the opportunities to be taken for a CCC implementation.

3. **Scenarios**: Once the problems affecting each city are identified, the next step is to analyse possible improvements to the construction logistics that can come by the introduction of CCCs. Thus, at least two different scenarios are proposed by the each of the city pilots in order to be assessed even though **more scenarios are recommended**.

4. **CANVAS**: The last step is the selection of the most suitable business model for each of the scenarios defined by using the CANVAS methodology. **Business Model CANVAS** is a structured methodology that describes any business model through nine basic building blocks (See annex 1 for more detailed information) showing schematically how a company intends to make money. This nine blocks are graphically represented using a predefined template (see annex 2) divided into the four main areas of a business: Customers (Demand), Offer, Infrastructure and Financial viability.

4 Conclusions

The objective pursued in this deliverable D3.3 is to set a framework for the development and analysis of business models for Construction Consolidation Centres (CCC). Then, several business models have been developed considering the needs and characteristics of the different pilot cities evaluated in the SUCCESS project: Paris, Luxemburg, Verona and Valencia. The methodology proposed for the development of business models can be easily

replied and adapted to any city wanting to assess the possible implementation of a Construction Consolidation Centre to improve its urban logistics.

First of all, it has been done a review and analysis of the business models of several experiences of CCC's implemented in the past in different cities around Europe. Then, the advantages and disadvantages of the Urban Consolidation Centres (UCC) and more precisely, of the Construction Consolidation Centre (CCC) were identified by the realization of their corresponding SWOT analyses. These analyses helped to determine the general features that can be improved due to the implementation of Consolidation Centres. Next, CANVAS Business Models was selected as a general methodology for the business model elaboration: CANVAS consists of a strategic management tool and methodology which describes and illustrates the essential components of a business in an easily understandable chart. Finally, following this methodology, each of the city pilots of the SUCCESS project defined the most suitable scenarios for the development of business models of a CCC to be implemented in the different cities, elaborating a CANVAS model in which is detailed the Business Model for each scenario.

In general, urban environments face the same common problems regarding the urban logistics, even though, the level of intensity of these problems and the peculiarities vary in each city. Thus, the possible Business Models for a CCC implementation also vary depending on the city in which it is going to be deployed. In particular, one of the most repeated business models proposed by the partners of the SUCCESS consortium is the Public-Private-Partnership (PPP) for a CCC implementation that is operated by an external and specialized logistic operator in a permanent basis. In this scenario, the CCC serves several sites of different construction companies and appears as a possibility that counts on the support of construction industry for their operations. In addition, another additional advantage of this scenario is that can reduce the transport externalities in urban environments (e.g. accidents, noise, congestion, pollution, etc.), being this an aspect to be taken into account by the local and public administrations. Besides, this possible solution introduces a new actor in the supply chain, and thus new business possibilities and potential of job creation in a sector that has been struggling in the recent years. Finally, this type of organisation can favour the increase of use of ICT tools and the degree automation in a sector reluctant to change.

Another common business model considered by the partners of the SUCCESS consortium is the implementation of a private CCC for one single construction company that wants to improve its logistics processes in a particular area with an important rate of activity, considering the CCC as a competitive advantage against its competitors (e.g. environmental benefits, optimization processes, etc.). In this particular case, the approach is different depending on the CCC

management. On the one hand, the CCC is operated by the construction company itself and is considered as a cost centre that does not need to be profitable by its own. The profits will come from the optimization of the processes of the main core business which is the construction activity. In addition, the same scenario can also be managed by a third party logistic company that will be in charge of the CCC operations and will charge the construction company for its services (e.g. urgent deliveries, work pack creation, etc.). In both cases, the private initiative is the project promotor pursuing a process optimization, but this particular solution may have the support of the public authorities in future projects and tenders due to the benefits for the urban logistics.

Finally, some other scenarios of Business Models capable of solving specific problems in each of the cities of the SUCCESS project have been considered. Some examples of this particular business models are the business model transformation for construction material suppliers in Valencia into CCC for small construction projects or the temporary basis or the concealed CCC in Luxemburg for the development of a major project in the city centre following the example of the CCC implemented in Hammarby, Stockholm.

In conclusion, the selection of the most suitable business model for a CCC implementation will be based on different parameters that have been listed previously in this deliverable. These parameters have to be considered in advance by the different actors of the construction supply chain, taking also into account the degree of involvement of the local authorities in the urban logistics policies and the main city characteristics regarding the layout of the urban road network and the urban constrains.