



**ERA-NET Eracobuild project**

**(1<sup>st</sup> September 2010 - 31<sup>st</sup> August 2012)**

<http://www.one-stop-shop.org>

**One Stop Shop - “From demonstration projects towards volume market: innovations for one stop shop in sustainable renovation”**

## **WP 4 – A guide to One Stop Shop pilot model**

**Case Study Belgium:**

**PB calc & consult bvba**

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31.08.2012

This report was written in fulfilment of the ERACOBUILD project entitled “One Stop Shop – From demonstration projects towards volume market: innovations for one stop shop in sustainable renovation”, supported by IWT - the Flemish agency for innovation by science and technology, Tekes and Nordic Innovation.

Project Website: [www.one-stop-shop.org](http://www.one-stop-shop.org)

Start date project 01-09-2010; duration: 24 months

Publication date of this report: 31<sup>st</sup> August 2012

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## 1. Introduction to the case study

PB calc & consult bvba is a construction management company. The activities of PB calc & consult include coaching of building project teams, in order to obtain efficiently cost-managed construction. In this framework, cost estimation and guarding cost efficiency is a core competence of PB calc & consult. For guiding project teams different services are offered such as the setup of the list of building requirements, accompanying budget estimations and budget monitoring, coaching in the development of the final design, supervision on the building cost during the realization and analysis of the building cost for the benefit of the following projects.

Key person of PB calc & consult is Peggy Bovens, the founder of the company. She graduated in 1992 as a civil engineer architect at the University of Ghent and has established cost management expertise in several building projects and companies (Antwerpse Bouwwerken, Ibens, Bolckmans), thus becoming familiar with the overall issue of estimation and optimization of the building cost and project budgeting. She was also involved in the generation of several estimation and quality manuals, thus generating sufficient material for a course on construction cost.

In 2008, the company applied for an SME Innovation Project at IWT-Vlaanderen to examine the feasibility of developing an integrated construction supply chain bookkeeping system. The intended goal was that the communication between partners in a project team - through all project phases (project definition, structural design, design, detailed design, execution, commissioning, ownership, management and use) - can be improved by standardization. As a result, it is expected that the quality and cost management of projects will improve. An integrated material, object and project development coding system was thus developed that allows standardizing communication codes for the purpose of managing building projects, connecting different (Belgian and Dutch) standards on cost related to investment, cost related to a design, and cost related to run a facility. This development resulted in PB calc & consult's BouwData PB<sup>®</sup>. BouwData PB<sup>®</sup> is a building process management system (not a software) structured mainly around standard coding of all different construction activities and related costs. It is now the intention of PB calc & consult to use this (software-independent) coding system in different building process management tools, like "groupware" and building information modeling (BIM) systems, in order to facilitate the information stream. Questions now arise how such supply chain bookkeeping system could be used for single-family housing renovation.

Recently, also a study was done for Leonardo Energy/ European Copper Institute (ECI). In this research project, PB calc & consult investigated - with partners BECO, Elektriciteit Vochten and Ecopuur – cost issues in four types of housing: newly built family apartment, a renovated loft in an ancient building, a two-façade newly built terraced house and an old two-façade terraced house with a newly built extension on the back. In the long term ECI would like to use this research to provide customers with a tool to estimate cost benefits due to energy-saving measures for houses (also renovations). For small single-family houses it was suggested that the use of for example BIM would be too expensive, therefore low-cost alternatives are now searched to guide customers towards finding and executing energy saving measures.

The idea of providing project management services and tools for owner-occupants in renovation is a novel strategic option for PB calc & consult, which could be developed as an innovation. Whereas PB calc & consult has gained relevant expertise to act as a project manager and cost estimator for larger housing projects, the work for ECI and the prospect of further collaboration inspire PB calc & consult to consider new services and a new tool that addresses the specific market segment of renovation of single-family houses. However, the targeted market segment is very different from PB calc & consult's

usual clients. Therefore PB calc & consult needs to find a suitable strategy to enter this market segment, possibly by using new marketing strategies and adapted tools that can easily be understood by owner-occupants. For example, whereas larger projects usually 'invest' in a project manager, single-family owner-occupants are often not used to do so. New services and tools would need to find a link with the motivation of customers (why they would want to renovate using project management). Also, owner-occupants need to be informed and persuaded about possible project management benefits and services. Cost efficiency is an obvious marketing argument, but the issue of cost is further connected to energy saving. This means that proper tools need to be developed to find a way to guarantee energy performance and related energy savings. Since existing tools and services were mainly built around cost estimation for large projects, the estimation of energy saving (particularly for single family housing renovation) as an additional or equivalent decision parameter is still an important challenge for PB calc & consult.

In the vision of PB calc & consult, experience with BouwData PB<sup>®</sup> could be used as a general framework for developing a tool for single-family housing renovation, possibly resulting in a new or adapted low-cost tool, and integrating energy efficiency. It is understood that single-family house-owners would need simple ready-made information, related to their renovation expectations. In this framework, PB calc & consult considers usefulness of a web platform as a service portal connecting client's motivation (e.g. proposing renovation measures related to building typology), estimating cost and energy saving of renovation measures, promoting project management services. Furthermore, Web 2.0 services could be considered. For example, to PB calc & consult the development and/or integration of low-cost e-learning services, advice apps and consumer portals for exchanging experiences is an option to be explored. Furthermore, PB calc & consult does not exclude working together with other market players for developing such a portal (for example ECI, members of user group of One Stop Shop).

In brief, in the vision of PB calc & consult a one-stop-shop portal (with an strong emphasis on cost estimation and promoting project management services) could be developed around guiding an owner-occupant towards project management services, using additional tools and services that can be marketed in themselves. In order to better understand the position, potential and direction for a one-stop-shop business, different market analysis tools were used, such as the 6-forces model and PEST and SWOT analysis.

## 2. Methodology

To define key elements for business model development an interactive process was used involving the lead company, One Stop Shop researchers and different market players.

The report is the result of the following process of interaction between the OSS researcher and the company:

- a) The researcher had an introductory meeting with PB calc & consult to explore the company's vision and to discuss opportunities for business development of innovative services for the specific segment of single-family house renovation.
- b) A first draft of a PEST-analysis was presented to the company for clarification and ideas of input to the Six Forces model and SWOT-analysis were discussed and adjusted in two further meetings.
- c) Furthermore, developing a business model generation canvas was discussed, as well as the development of an innovation study. However, the company did not want to pursue in developing the business model and study.

## 3. Analysis

### 3.1. PEST-analysis

PEST is an acronym for Political, Economic, Social and Technological factors, which four perspectives used to assess the market for a business or organizational unit (see also WP4 final report). The PEST analysis headings are a framework for reviewing a situation, and can also, like [SWOT analysis](#) (Strengths, Weaknesses, Opportunities, Threats), and [Porter's Five Forces<sup>1</sup> model](#) (in the next section extended to the Six Forces Model), be used to review a strategy or position, direction of a company, a marketing proposition, or idea, encouraging proactive thinking, rather than relying on habitual or instinctive reactions. Keeping to four fundamental perspectives imposes a discipline of considering strategic context and effect. As PEST factors are essentially external, completing a PEST analysis is helpful prior to completing a SWOT analysis, since a [SWOT analysis](#) is based broadly on half internal and half external factors.

In Table 1 the PEST analysis is presented as a grid, comprising four sections, one for each of the PEST headings: Political, Economic, Social and Technological.

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<sup>1</sup> The five forces were originally identified and developed by Michael E. Porter while working for the Harvard Business School and the Boston Consulting group. Porter's five forces that drive competition can be defined as:

- 1.Existing competition
- 2.Threat of new market entrants
- 3.Bargaining power of buyers
- 4.Power of suppliers
- 5.Threat of substitute products (including technology change)

See also:

Michael E. Porter, "The Five Competitive Forces that Shape Strategy", Harvard Business Review, January 2008, p.86-104

Michael E. Porter, "Competitive Strategy. Techniques for analysing industries and competitors", The Free Press, New York, 1980.

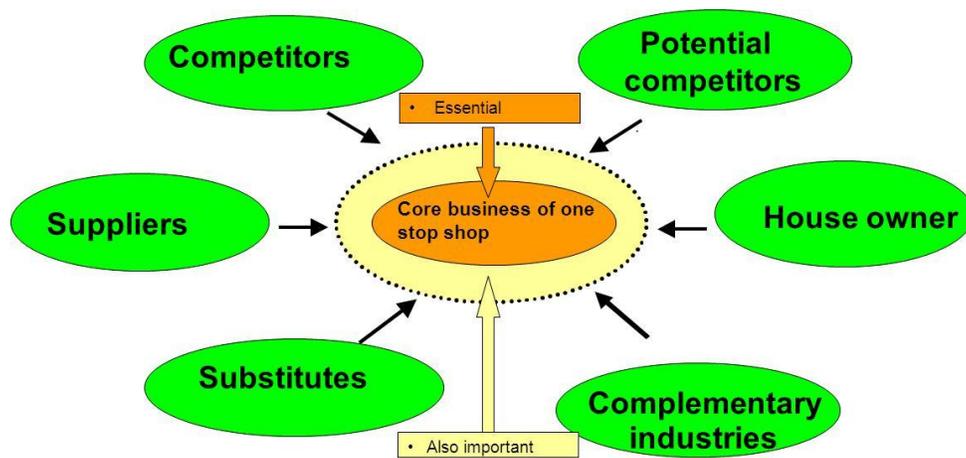
Table 1: PEST analysis

<b>Political factors</b>	<b>Economic factors</b>
<ul style="list-style-type: none"> <li>- European policy steers towards required nearly-zero energy housing</li> <li>- Flemish energy performance certificate needed when a house is sold or rented; use of official Flemish energy performance software obligatory for renovations requiring a building permit</li> <li>- Belgian income tax reduction for energy efficient renovations was deleted</li> <li>- House tax ('kadastraal inkomen') is expected to be lower in future for houses with better energy performance</li> <li>- Innovation policy stimulates SME developments</li> <li>- Policy instruments (e.g. grants) are changing often, unstable framework</li> <li>- ..</li> </ul>	<ul style="list-style-type: none"> <li>- Real market value of houses is still largely dominated by location and largely independent on implementation of energy saving measures</li> <li>- People who bought a house to renovate usually have only limited budget remaining, so often a phased approach is preferred</li> <li>- Flemish grants focus on a few energy saving measures (e.g. roof insulation); energy distribution net managers offer additional grants, also on building level</li> <li>- House-owners are not expected to spend a lot on information about renovation</li> <li>- Realistic life cycle and living costs are becoming more important, but are not well known</li> <li>- ..</li> </ul>
<b>Social factors</b>	<b>Technological factors</b>
<ul style="list-style-type: none"> <li>- Architect is required for renovation with building permit: architect often perceived as project manager, but does not always act as such</li> <li>- Different customer segments and dispersed information from different sources; renovation mainly triggered by non-energy issues</li> <li>- House-owners find their information via different channels (DIY-stores, internet, forums, contractors, architect, building fairs)</li> <li>- The Flemish renovation market is very fragmented, this sometimes results in coordination difficulties and possibly low quality when different executors are involved</li> <li>- Owner-occupants are largely unfamiliar with 'building teams' which might be required</li> <li>- Owner-occupants not aware of project management services</li> <li>- Low public opinion that high energy efficiency can be reached with low extra cost for all renovations, but demonstration projects exist</li> <li>- Different market players interested in One Stop Shop collaboration</li> <li>- Application of grants can be cumbersome because of fragmentation</li> <li>- ..</li> </ul>	<ul style="list-style-type: none"> <li>- Project management and cost estimation services are currently only sporadically used in housing renovation</li> <li>- Current project management services allow management standardization, these services are not often applied by owner-occupants</li> <li>- Energy consumption can be estimated with different tools</li> <li>- Automatic 3D building measurement available that can be coupled with BIM/CAD</li> <li>- E-learning tools emerging</li> <li>- Low-barrier/low-cost information systems appearing, for example apps for smart-phone applications, wiki's, and so on</li> <li>- Voluntary quality assurance schemes exist for energy renovations (passive house certification)</li> <li>- Smart and speedy housing renovation solutions exist</li> <li>- 'Analytics as Service' is emerging: shift of information towards the 'cloud', for example Q/A can trigger analysis</li> <li>- Development of imaging tools that create awareness (e.g. thermal imaging on city level, fine dust measurement using cell phones)</li> <li>- ..</li> </ul>

### 3.2. Six Forces Model: competitive arena

As part of the One Stop Shop research project the competitive arena of newly established or potential new business models for holistic renovation of single family houses is studied. As an important tool for identifying opportunities and threats for each pilot studied, the 'Six Forces' model is used (see WP4 final report). The model is an extension of Porter's famous five forces model (suppliers, customers, competitors, potential competitors and substitutes), as the sixth force complementary actors is added<sup>2</sup>. In addition it defines the company's offer (service and/or product) in respect to the customer's "real needs" (see Figure 1).

Figure 1: 6-forces model (general, how to read)



Setting up a 6-forces model is very useful in order to identify potential partners for establishing a holistic service for renovation of single family houses. The results of the analysis are shown in Figure 2.

The discussion with the company led to defining the business idea of offering tailor made services for sustainable renovation of single-family houses, next to the already existing ideas and implementations for larger projects. The possible core business for the innovation was defined as an integrated renovation service offering unburdening of customers in the form of project management services and tools (thus using the available knowledge and tool how to organize the work in a cost-effective way). At the same time the company would seek collaboration with competent firms who can offer the practical services, which should include renovation of the building envelope (insulation, windows, materials, heating and ventilation systems and so on).

The light yellow area represents additional services/added value: a response to customer wishes like additional knowledge and quality assurance. Within the framework of the discussion on additional

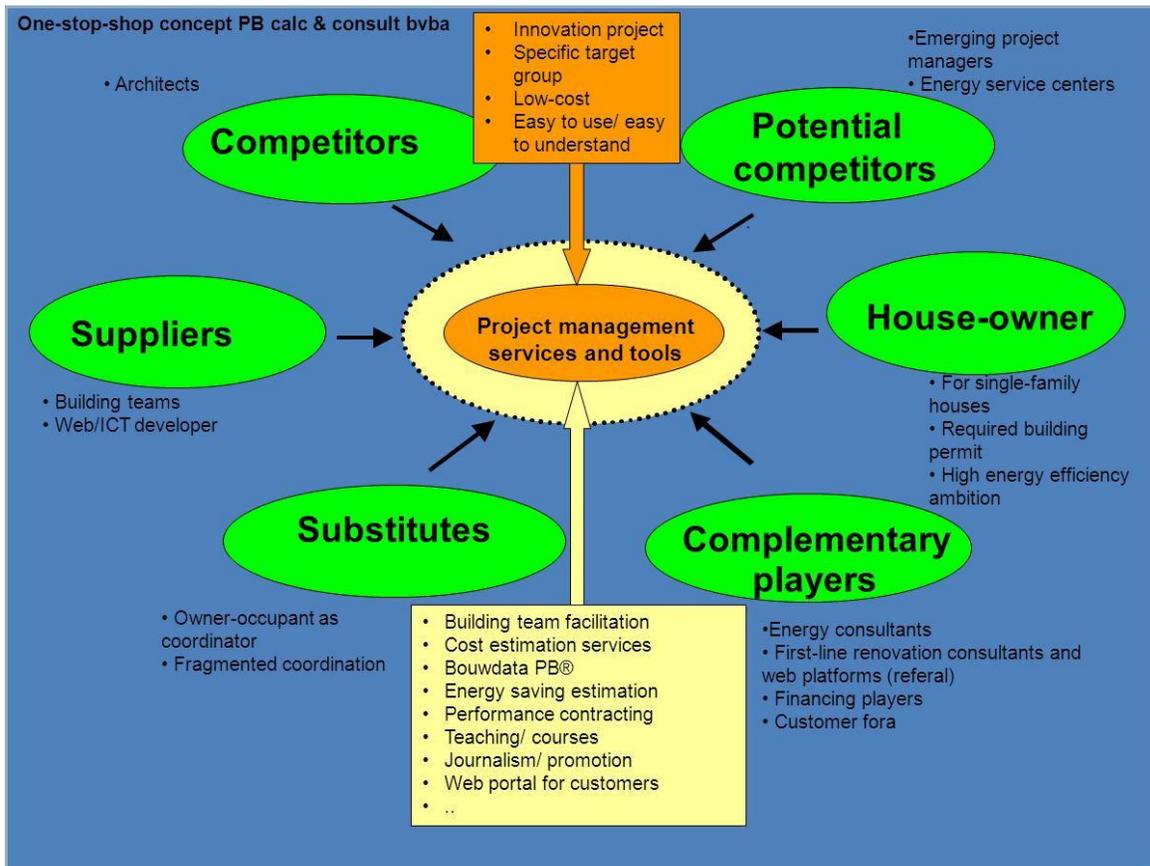
<sup>2</sup> See also: Andrew S. Grove, *Only the Paranoid Survive: How to Exploit the Crisis Point That Challenge Every Company and Career*, 1996

Nalebuff and Brandenburger, *Co-opetition*, 1995

McAfee, R. Preston, *Competitive Solutions*, Princeton University Press, 2002

services, an idea emerged that these additional services could also be for example personalized e-learning services that offer more technical information to the client. For example, a low-key web application can be consulted for free by clients who appoint the company for the project management services, but similar information could also be sold in a more specialized format as tool for contractors to aid collaborators with costing, technical specification and management. In a later phase, the company also envisaged to externalize service development: after successful introduction PB calc & consult would focus on educating new project managers that would want to use the services and tools (train-the-trainer).

Figure 2: 6-forces model (PB calc & consult bvba)



### 3.3. SWOT-analysis

In Table 2, a SWOT analysis is presented.

Table 2: SWOT analysis

<b>Strengths</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"> <li>- Project management experience for larger housing projects</li> <li>- Availability of an integrated material, object and project development coding system</li> <li>- Current project management services allow standardization of renovation management and LCC</li> <li>- Current project management services allows defining short questions and answers to allow easy access to customers and creating confidence</li> <li>- Potential to integrate energy consumption estimation in project management services</li> <li>- ..</li> </ul>	<ul style="list-style-type: none"> <li>- Enterprise currently involves only one active person with limited financial resources</li> <li>- Limited experience for single-family housing renovation</li> <li>- Coding system does not include tool to estimate energy consumption</li> <li>- System based on short questions and answers does not necessarily lead to integrated renovation</li> <li>- Estimation of energy consumption needed for different energy saving technologies, available innovations and on project level</li> <li>- ..</li> </ul>
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>- Innovation funding from IWT, good experience with previous application</li> <li>- Standardization of project management services</li> <li>- Development of services for a large market of single-family housing renovation</li> <li>- Company can find entrance in single-family housing renovation market</li> <li>- Shift of renovation towards high energy efficiency</li> <li>- Emerging building teams for highly energy-efficient housing (e.g. passive houses)</li> <li>- Quality assurance system existing for energy performance</li> <li>- Collaboration opportunities with complementary market players</li> <li>- Creation of ad-hoc building teams allows more creativity and involvement of different architects and different contractors</li> <li>- BIM might be available in large enterprises</li> <li>- New IT allows fast communication with owner-occupants and cloud analysis</li> <li>- ..</li> </ul>	<ul style="list-style-type: none"> <li>- Limited resources for innovation development, economic crisis</li> <li>- Market probably not ready to go towards standardization of project management</li> <li>- Market needs adapted low-cost services and tools</li> <li>- Market of project management for single-family houses is dominated by architects.</li> <li>- Energy efficiency is not the most important motivator for renovation</li> <li>- Competition of business-as-usual, fragmented and phased renovations</li> <li>- Quality assurance system does not include cost guarantee</li> <li>- Partners have to commit to joint effort and share innovation risk</li> <li>- Not all contracting parties are in-house, might be difficult to manage responsibilities</li> <li>- Usually SMEs carry out small projects (which often do not have BIM)</li> <li>- IT applications still have to be developed and marketed (might be costly)</li> <li>- ..</li> </ul>

## 4. Conclusion

We used the initial analyses as PEST and 6-forces to help to identify business opportunities and some of the SWOT factors. The SWOT analysis summarizes the most important factors which have to be taken into consideration for the further business modelling and defining of strategies. The main conclusion from this case study was that further business model development was stopped, because some of the weaknesses/threats were found to outweigh the strengths and opportunities.

The company considered that business development would involve starting an innovative business focusing on small housing renovation projects and tool development focusing on lower cost, shorter project management contributions and application of e-tools. The company saw the opportunity of launching such a service for many housing renovation projects. Given the company's previous experience with an application for innovation funding, ideas were worked out up to the level of an application for innovation funding, which was absolutely needed for this company to be able to cover R&D expenses.

Although the potential for market development was not too little and the already developed project management solutions fitted well to (bigger) projects, the economic crisis and the fact that the company only consisted of one active person with limited resources were found to have the most important impact on the stop decision. In Flanders the company already got money from the innovation agency to develop BouwData PB<sup>®</sup>. In this contract it was stated that the company needed to accomplish a certain valorisation. Due to the crisis and immobility of the construction business this valorisation was not yet developed. A spokesman from the innovation agency was contacted and the new innovation proposal was explained but the innovation agent stated that the chance of getting supplementary money from the government to pursue this new business model development was very slim - if not none - because of the lack of valorisation of the first contract so far. As the company didn't have any reserves left, the business development was stopped and the company focused on attracting business-as-usual.

On the other hand, the position of the architect in Belgium was considered to be very dominant. The profession of architect is protected in Belgium and every customer who requires a building permit legally needs to consult an architect. The architect is considered to do the job of a project manager. In larger projects, the extra cost for an external project manager annex cost controller annex coach of the building team is starting to be perceived as an asset but very, very slowly. It was found to be too soon to develop a similar business for privately owned houses.

The example confirms the hypothesis that in order to succeed in a One Stop Shop development, innovation funding or a strong capital is needed (as in the Norwegian example company Bolig Enøk, which is owned by a big insulation company). In the case of innovation funding it is needed that enterprises deliver the proposed valorisation. The example is also relevant for the One Stop Shop project, since it tells us that if national governments want One Stop Shop developments to happen, they should follow this up with adequate measures.