



Supply chain integration in real estate

Strategic collaboration between a housing corporation and a building firm, and associated topics.

Ruben Vrijhoef MSc

The development and realisation of real estate is highly dependent on teamwork. Teamwork by people and teamwork by firms. Good cooperation between all parties in the entire supply chain from client to suppliers is essential for the success of any real estate development. However this is not always the case in the building sector. Most projects are one-off endeavours developed, designed and built by one-off coalitions of firms. The amount and variety of firms involved is considerable. Besides most firms have their own ways of working and have often not worked together before. In many cases this leads to many problems, rework, waste and failures. Instead there should be a clear division of tasks, risks and responsibilities among supply chain partners. In other words, it's a matter of mixing the right actors and factors in the supply chain for joint success.

Rationale of supply chain integration

The concept of supply chain integration is to relieve the low levels of repetition between building projects, the high levels of interdependency between activities, and the lack of integration and interaction between actors. The basic problem of a disintegrated supply chain is the sub-optimalisation of individual performances of parties who are not aligned, and therefore harming the total performance of the supply chain as a whole. Instead supply chain integration aims to align business objectives, processes and systems. The premise here is that the supply chain would function better when approached and (re)designed as a single entity in which the supply chain partners in effect become the "business units" of the supply chain, which then becomes an "extended enterprise".

Supply chain integration in other sectors of industry

In other sectors of industry supply chain integration has been widely applied. This includes various sectors such as automotive, shipbuilding, electronics, aerospace, retail etc. In many cases supply chain integration refers to logistics, purchasing and supplier involvement, i.e. the upstream part of the supply chain. However supply chain integration also refers to methods of coordination and integration of processes moving downstream through the supply

chain towards the customer. For instance, this includes interesting practices where customers are becoming co-producers, such as in the fashion industry. In between the downstream part and the upstream part of the integrated supply chain the "system integrator" plays a central role. In most cases this is the manufacturer of the end product such as in the case of the automotive industry, or the retailer such as in the case of the food sector. The approach to the application of supply chain integration varies a great deal per industry sector.

The real estate supply chain

The real estate supply chain is quite different from others in many respects. First of all it is much more a design-to-order supply chain, or even a concept-to-order supply chain. The product is developed, designed and built based on an initial client order. There are many different parties involved in the supply chain and often the division of roles is unclear and ambiguous. Project organisations often tend to "organised chaos". The separation between design and production is a major obstacle. But this is also true for the separation between development and design, and production and supply.

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As a result of extensive outsourcing many external parties are introduced during the course of the entire process, which leads to many interfaces, potential coordination and communication problems. The many parties involved act quite autonomously, applying different approaches to their processes, and different standards to their work. The lack of centrality and leadership in most building projects leads to many open ends and unclear process initiations and endings.

Supply chain integration in real estate

As in other sectors of industry, supply chain integration in real estate is aimed at the alignment of the supply chain from client to suppliers. In first instance supply chain integration needs to bring transparency to the building process and build trust among supply chain partners. In practice this means that all parties are involved from the very beginning to the very end of real estate projects. Moreover supply chain integration goes further. It implies a multi-project approach, so that the group of parties and people involved are able to engage in a learning curve. Firms are then enabled to invest in innovation of products, processes and systems for a longer period of time. Therefore supply chain integration must be supported by long-term focus and strategic collaboration. The effects must be the reduction of lead time, project risks and costs and the improvement of quality, satisfaction and profitability. Another opportunity for improvement is the introduction and reduction of life cycle costs while suppliers and maintenance firms are involved and play their part in the development and the design. The essential final factor is the cultural change which is needed amongst supply chain partners and people involved. The close and intensive collaboration, shared objectives, and the achievement of long-term success and improvement are key issues here.

The case of a housing corporation and a building firm

Since mid 2008 the housing corporation Com-wonen and building firm Dura Vermeer have started the implementation of supply chain integration for the development of new housing areas in Rotterdam. The strategic collaboration is based on a 10 year framework agreement for the development of 5,000 houses. The



aim of applying supply chain integration is to achieve higher levels of quality, efficiency and productivity. After a review of the existing collaboration and a feasibility study of supply chain integration, an integrated process format was designed as a blueprint for multiple projects. The process format was first applied to an ongoing project in Rotterdam, Het Mooie Plan. In the first phase of the project involving 125 houses, the application of supply chain integration to the preparation and the site work already proved to lead to higher quality, lower costs and faster construction. In the second phase of the project including 72 houses, the principles of supply chain integration will be applied to an even wider extent. From the start of the project development it will be a joint effort. The project will be based on joint reference and cost indicators. The next step will be ensuring collaboration between the architect, contractor, co-makers and suppliers. The project has already shown substantial financial improvement, and will show more improvement during construction and the life cycle.

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Application of collaborative tools and working methods

Besides the development and introduction of an integrated process format, the application of new collaborative tools and working methods has been a part of the supply chain integration. The tools and methods shall be applied to all projects which are designated to be developed following the principles of supply chain integration. The first tool applied is a project portal to store and share all project documentation centrally on the internet to be accessed by all supply chain partners. Another ICT tool to be introduced is a Building Information Model (BIM). The 3D object-based model contains all the prevalent drawings and product information, modelled in such a way that all potential clashes and other deficiencies are spotted and resolved on paper before the actual production of elements



and site construction will start. The BIM requires the architect, contractor and suppliers to sit around the design and model it completely including all materials and details. In addition there are a few reference tools to be used in projects. This includes a project management handbook based on the integrated process format developed beforehand. In order to quick-start the project there will be a reference programme for a reference house with a reference budget based on reference cost indicators. The reference is based on existing figures and standards of both the housing corporation and the building firm. With such a reference it's easier to develop and guide the design of a development scheme. Besides this there will be standardised contract formats in order to smoothen the legal procedures.

In terms of collaborative working methods, the integrated process format includes various ways of collaborative working and supportive measures to facilitate supply chain integration on an operational level. The first working method is collaborative design which brings together the architect, contractor and co-makers in the final design stage in order to translate the architect's design into a technically and financially feasible plan. The second collaborative working method is lean construction which in essence aims for the same as collaborative design but then for the planning of the work on site including all co-makers. In addition a life cycle analysis will be done collaboratively, particularly for the rental houses which are part of the project. Besides this a risk/reward scheme will be introduced in order to reduce and control risks and increase extra rewards at the end of the project for the partners involved. The collaborative working methods will be facilitated by a series of joint start and ending sessions in between process stages. Those sessions will involve the collective project team, so to assure the completeness and accuracy of information transferred from the one process stage to the next. To increase the collaborative atmosphere, the project team will be able to sit together in a joint project room.

The integrated and collaborative way of working needs thorough preparation. First of all it will need a selection process of preferred partners and co-makers. Those supply chain partners will be selected

based on previous work, company culture, financial characteristics and technical capabilities. Those partners will be asked to commit themselves to the aims of supply chain integration, and as such become "business units" within the supply chain. Besides the supply chain partners, the housing corporation's employees and the building firm will need to be aware of their roles and be committed to the success of the supply chain. This will lead, in a few instances, to the revision of existing roles of people in the entire process in order to reflect improved working methods and to support the smooth operation of the supply chain. Team building is a key factor here. Therefore a series of training and coaching sessions will be put in place for the supply chain team, as well as peer reviewing and mentoring amongst the team members themselves.

First results

Although the implementation has not been finished as yet, the first results of the supply chain integration have become clear. First the project budget has been modified within the constraints of the original budget without compromising the architecture itself. Cost reductions have been achieved by joint thinking and leaving out the traditional reserves for market risks and price fluctuations of



materials. Some revisions of the technical design of the facades as well as cancelling a few site activities that had become unnecessary



have resulted in substantial cost reductions. Joint purchasing and selection talks with suppliers have lead to a substantial financial reserve of 8% of the project budget. This reserve is to pay for unexpected extra costs incurred and potential risks that may occur during site work, or else it will be shared among the supply chain partners as additional profit at the end of the project. Time-wise the initial delay of the project has been made up for by speeding up the preparation of the site work and starting the construction without completing the contract. The last important benefit was the dramatically improved and positive atmosphere in the project team.

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Main issues of supply chain integration in real estate

To conclude one can distinguish a number of issues that are of great importance for the successful application of supply chain integration in real estate. First of all it is of the utmost importance to select and involve the right supply chain partners and people. Amongst them a positive and constructive atmosphere must be actively created. This implies a fundamental breakthrough of the old "fighting model" and a definitive farewell to the existing "adversarial culture". Establishing trust and transparency is a major prerequisite, combined with the alignment of business objectives and commercial interests of the supply chain partners. Not only on a strategic and contractual level, but also on a tactical and operational level; processes, procedures

and systems must be aligned. In essence this involves thinking and acting as one firm, with everyone involved to be committed to add value to the supply chain. In addition to this, it is important to take a multi-project approach to business activities. Repetitive working must lead to strategic thinking, increased innovation and continuous improvement. This also enables teams to work together for multiple projects, and to learn collectively as a result of continued work. The last issue is to measure the results, and learn from feedback. The end result should be the improvement of the levels and predictability of time, quality and costs, and thus the profits of the supply chain partners, and the satisfaction of the client and the users.

Ruben Vrijhoef MSc

Ruben Vrijhoef is a research scientist, consultant, lecturer and author in the field of process innovation in the built environment. His main area is supply chain integration in construction. On this subject he is doing a PhD research at the Delft University of Technology, and he advises industry partners to apply supply chain integration in practice.

