Methods for Cost-effective Integration in the Value Chain
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1 | Objectives

This document supports partners in the AZEB project to apply practical methods/tools in the AZEB case studies in WP3 to do small or big steps in integration of the value chain, which should lead to cost reductions and/or extra value creation for the client. This document does not state all possible tools and methods that may be used, but focuses on a few useful and practical ones which may be applied in WP3, the case studies within the AZEB project.

It builds on the experiences and study in WP1, which resulted in D1.2: Overview of Solutions for Cost Reduction throughout the Building Supply Chain.
2 | Method for an integrated design process: Morphological Design

One of the pillars of creating Affordable Zero Energy Buildings is to use a design process that integrates multiple disciplines from throughout the project lifecycle. In essence, this means you think through the whole value chain, implement ideas from perspectives of the whole value chain and optimize the design for it. Although this may sound logical, in reality it often proves more difficult than expected. The project execution process is usually very sequential and each discipline brings in their own ideas, background, professional language and perspective one after another for a specific project phase and a specific purpose only. Attempts to design in an integrated process sometimes result in lengthy meetings with disappointing results, which demotivate participants to continue on this path. Therefore it is wise to use structured methods to focus the effort of each participant towards a common goal, namely an integrated design for optimal costs. In this chapter we show one proven structured method, which is used often in building projects by the Dutch AZEB partner Vereniging DNA in de Bouw: the method of morphological design.

2.1 | Short introduction to the Morphological Design Method

How do you work together with multiple disciplines in a complex problem, for which there doesn’t exist just one right solution? How do you collaborate without ending up in endless discussions, where the strongest debater wins, instead of finding synergy and collectively creating a better common solution? How do you make sure that all knowledge and skills, all perspectives get enough attention? How do you know you have not forgotten anything? That the total spectre of possible solutions has come in sight?

A well-known method to use in this kind of complex, multi-dimensional problem solving situations, with a multitude of possible solutions, is the so-called “Morphological Design. In its original form this problem-structuring and problem-solving technique was created by the Swiss astronomer Fritz Zwicky.

The term morphology comes from classical Greek (morphé) and means the study of shape or form. It is concerned with the structure and arrangement of parts of an object, and how these conform (i.e. fit together) to create a whole or Gestalt. The "objects" in question can be physical (e.g. an organism or an ecology), social (e.g. an organisation or social system) or mental (e.g. linguistic forms, concepts or systems of ideas).

It may be used in the building sector for several purposes, for example to design a building or to design a specific system in the building or to design a business model for value chain integration or to create a strategy for organisational change. Morphological design can be applied stand-alone, but it can also be an element of a complete value engineering process or an element in a lean process to optimize the value chain. In this chapter we will focus on how to apply morphological design in a single project in which one wishes to create an integrated, cost-optimal design for a building, involving multiple stakeholders and experts.

2.2 | Steps in the morphological design process

Usually the morphological design process takes about three sessions of a few hours each. In between these sessions some work will be done to prepare for the next session. In the next paragraphs we explain the six main steps.

2.2.1 | Step 1: Problem Analysis and determining values and criteria for decision making

What is the complete problem or challenge which we are designing for? Make sure that all relevant themes and issues are clear and keep asking questions to the stakeholders until you think you are complete. Examples of themes are technical, financial, social, environmental. Here of course it can be helpful if you already have a very complete stakeholder functional requirements specification. If it does not exist yet, this part of the process can help create this functional requirements specification.
Also, here at the beginning of the process, it is good to already discuss and set the values and criteria that should be used in the trade-off at the end of the process, in the decision making phase. We like to set these criteria at the beginning because nobody is yet committed to a solution and it will be easier to keep the discussion on this transparent and value-driven.

2.2.2 | Step 2: Analysis of the parameters of the solution

The problem may now be categorized in certain aspects or sub-problems to be solved. For the design of the building one can conceive technical aspects like: Facade build-up, roof build-up, ground floor build-up, first-floor build-up, heat generation, heat distribution, electricity generation, electricity distribution, daylighting, window-frames, cooling, hot water generation, water use, ventilation, et cetera.

It is also possible, and often advisable, to include in the morphological design non-technical aspects like: financing, communication, contracting.

2.2.3 | Step 3: Co-creating a spectre of possible solutions

In the next step all stakeholders are involved in a brainstorm session per aspect to think of all possible solutions for this sub-problem or aspect. These solutions are written and drawn behind the relevant aspect. Each solution gets a unique place in the matrix. In this phase no judgements are to be given on these proposed solutions! People may only ask each other for explanation, so that everyone understands the solutions that appear in the field. It is extremely important that everyone gets to see back there own ideas in the matrix. This has to do with building commitment and with maximizing creativity. When your idea is visualized in the matrix it shows you have been heard. So, even if you think somebody suggests a stupid idea: don’t say it, but write it down anyway. And who knows, you might be surprised what this “stupid idea” brings on in the creative process through association. In the next phase these things will sort themselves out.

These first three steps of analyzing the problem and setting decision criteria, identifying aspects and creating a spectre of possible solutions are often done in one session and some preparation for that first session. After this first session stakeholders may go home with “homework” for the next session: Gaining more details or information which is still missing, and preparing for the next meeting the pro’s and con’s in relation to the design challenge, that seem relevant for each proposed solution.

2.2.4 | Step 4: Evaluating individual solutions

In the second session there is an in-depth discussion between stakeholders and experts on the advantages and disadvantages of each proposed solution in relation to the design challenge. These pro’s and con’s are summarized, preferably on the morphological matrix. After this session also some homework may be given to certain stakeholders to gain more information that seems needed to progress in the third session.

2.2.5 | Step 5: Decision making with scenario’s

In this third session solutions on individual aspects are combined into scenario’s, which are in fact a comprehensive solution for the complete problem or challenge. Each scenario is based on specific criteria or a specific concept, for example ‘circular’ or ‘low-cost’, which have been determined in step 1. Several scenario’s are created together, by drawing colored lines between the individual solutions which together form the scenario. Each color represents one scenario.

After the thorough work that has been done in the earlier sessions, the experience is that often the whole group of stakeholders involved, quite naturally moves towards one favourite scenario.

A finalized Morphological matrix could look something like this:
2.2 Methods for cost-effective integrations in the value chain

2.2.6 Step 6: Recording the decision made

This last step might easily be forgotten, but can prove very useful later in the project process. After the final session, make a good report of the complete decision making process and the reasoning that led to the final chosen scenario. The complete morphological matrix in combination with some minutes will usually do. Don’t assume you will remember; you probably won’t and otherwise others won’t. If for some reason later in the project this scenario, or a sub-solution of it, proves to be unfeasible after all, it will be easy to track back what were the main reasons to choose this solution and what other alternative solutions were identified. This will speed up decision making at that point considerably. The report also helps to inform newcomers in the project.

2.3 Leading a morphological design process

When leading these sessions, in order to be effective and efficient, it helps to have a facilitator in place who is relatively independent. It is important to give everybody enough opportunity to speak their minds and hearts, to create a safe atmosphere in which respectful discussions are possible and that everyone’s input gets noted. Also the facilitator can make sure that enthusiastic, but too lengthy elaborations are cut short to serve progression of the process. This facilitator can be someone from the project team, or even a skilled employee from a professional client, but it may also be somebody who is hired for this specific facilitating role. Be sure it is someone that can put their own interest aside when needed and someone with good leadership and process skills.

2.4 Involving the client in the morphological design process

The great thing about morphological design process is that it is possible to involve lay persons and professionals in the same process. Everybody can bring in their ideas and get to understand better what drives other stakeholders and which solutions are available. It enriches the decision making process at the end and the commitment involved enormously. It allows the project team to better argument for the client why some design decision, that the client otherwise might not prefer, is the right way to go for achieving the overall project goal.
There is only one warning in regard to involving clients in step 4, evaluating individual solutions with professionals. It may be recommended not to have the client present in this session, but rather summarize the results for the client as preparation for the next, decision-making session. Clients, especially non-professional ones, can get very uncomfortable hearing so many differences of opinion between experts. Just imagine that you are ill, and you sit in front of two doctors and they start a heavy discussion with big disagreements on what is best to cure you. You will want to run out of the room and will have no faith in the solution offered at the end. This is about what may happen when clients sit at the second session when evaluating solutions. A building project, especially for private home-owners, but also for professional clients, can feel like a huge and risky endeavour. The emotional impact of insecurities and risks (such as differences of opinion between experts) should never be underestimated.

References:


3 | Method for exploring and optimizing the value chain: Lean

Probably one of the most well-known methods nowadays to analyse and optimize any value chain is Lean. This method is introduced in AZEB deliverable 1.2, chapter 4. In this chapter for each principle or element of the lean approach, a technique is shown, that may be used in WP3 in a case study to explore and optimize (in reality or in a simulation) a building value chain. The five different principles or elements of lean are:

1. Defining Value
2. Value Stream Mapping
3. Create Flow
4. Establish Pull
5. Pursuit of Perfection

The most thorough approach to apply lean would be to involve the complete value chain from customer right through to the supplier of materials for the factories of components. However, it is very well possible to start with a part of the supply chain, especially because this is probably easier to influence. It is even possible to identify a supply chain within your own company (think about customer-logistics-sales-production-procurement- et cetera). The different elements of lean and the techniques shown below may help achieve strong optimizations in any of these cases.

General reference for Lean:


3.1 | Defining value

Before trying to analyse and optimize a value chain, first it should be defined what value to the customer actually is, which might not be what you think it is. There are numerous ways to discover this, many are developed within the science of marketing. A good reference book for this is Value Proposition Design by Osterwalder, Pigneur et al. They suggest six methods in their book to gain insights on what customers truly value:

1. The Data Detective; (desk) research of existing information such as third-party research reports, social media analytics, CRM systems, tracking customer behaviour on your website, data mining.
2. The Journalist; interview (potential) customers. But beware that people might behave differently from what they tell you.
3. The Anthropologist; observe (potential) customers in the real world and study how they behave and how the emotionally react to situations.
4. The Impersonator; “be your customer”, spend a day or more in their shoes, draw from your own experience as an (unsatisfied) customer
5. The Cocreator; integrate the customer into the process of value creation or value optimization to learn with them. Work with customers to explore and develop new ideas.
6. The Scientist; get customers to participate (knowingly or unknowingly) in an experiment and learn from the outcome.
All six methods have pro’s and cons, but a combination of some will deliver much insights on what is truly valuable to your targeted customer. Please remember it is very important to be very specific on your target group, because you can imagine that each type of customer had different needs and wishes, different ideas of what value is.

Reference:

3.2 | Value Stream Mapping

Once you have understood what value is to your customers for a specific project, you can map the current value stream: the “as-is” situation. Which activities are performed by which company/person/department and in which order? For each step you identify what is needed to execute this activity (a product, information, a trigger, an activity?) and what the output of this step is. You can use a physical or mental "process walk" to discover all steps and the associated roles, inputs and outputs.

Then you might want to add specific data or information or process metrics to these steps, which is available already or which you might want to gather for the analysis. For example: how many defects are in this step on average, how much stock is there on average, waiting time, how many FTE are needed for this step, how long does the processing in this step take.

An elaborate value stream map for a manufacturing company could look something like this:


When a clear visualisation of the current value stream is created, issues can be identified in this value stream by asking the people involved in this value stream what problems and frustrations they encounter. Then, analyse which steps actually create value for the customer and which steps do not
create value for the customer (in essence these are waste). Can you identify in the value stream map any of the 8 types of waste as described within the lean philosophy:

1. defects: efforts because of rework, scrap or incorrect information
2. overproduction: production that is more than needed or before it is needed
3. waiting: time wasted waiting for the next step in the process
4. non-utilized talent: underutilizing people's talents, skills and knowledge
5. transportation: unnecessary movements of products & materials
6. inventory: excess products and materials not being processed
7. motion: unnecessary movements by people (e.g. walking or reaching for materials)
8. extra-processing: more work or higher quality than is required by the customer

References:
https://bureautromp.nl/value-stream-map-waardestroom-analyse/
https://www.conceptdraw.com/How-To-Guide/value-stream-mapping-examples

3.3| Create flow

Now we want to optimize this value stream to minimize waste and maximize the value creation for the customer. In order to do this, first put the current-state map aside and try to come up with an ideal process. If there weren't any constraints, what would the perfect process look like? This will probably never be achieved, but envisioning it encourages people to step out of their day-to-day reality, challenge preconceptions and think out-of-the-box.

Now go back to the original, current-state value stream map and create the next best process.

Then create an action plan to implement this new process, including timescales and owners of actions. And commit to this by creating accountability.

Reference:
https://www.educational-business-articles.com/lean-flow/

3.4| Establish pull

In lean terminology there is a difference between push and pull. Push means "made-to-stock" and pull means "made-to-order". With pull, production is based on actual demand, not on for example forecasts of demand. Establishing pull will only work when you have created flow in the value chain. It means that you respond to the demand of the customer as quickly as possible without creating excess inventory. A well known system within lean to establish this is Kanban. Kanban is any signalling device (ranging from a simple piece of paper to a fancy digital tool) that gives authorization to a supplying process to know what to produce, or for a material handler to know what items to replenish. There are also other systems, two are described in this article: https://www.allaboutlean.com/different-ways-to-pull-system-1/.

An example of pull in the supermarket:
1. Customer buys a box of cereal.
2. It is immediately replaced by a box that was at the distribution center.
3. The manufacturer delivers a box to the distribution center.
4. Manufacturing manufactures a box of cereal.
5. Vendor delivers the material for a single box.
In building you can imagine similar processes may take place in the value chain, for example in factories or at the building site where materials and machines are collected for use by the tradespeople and sources of waste like stock and (unnecessary) transport and movements are very common.

Reference:
https://business901.com/blog1/establishing-pull-in-lean/
https://www.allaboutlean.com/different-ways-to-pull-system-1/

3.5 | Pursuit perfection

This final principal or element of value chain optimization through lean, is about continuous learning and improvement. The assumption in lean is that perfection will never be reached, but the continuous pursuit is what matters. This means the above principles should be applied continuously: not only for big changes but also for small incremental steps. When all employees in the organisation(-s) involved gain the right mindset and implement continuous improvements, big jumps in value chain optimization may be made over longer periods of time. Truly applying lean in an organisation usually also means implementing a cultural change. A nice article on this is the following:
https://www.lean.org/LeanPost/Posting.cfm?LeanPostId=214. It elaborates on three main aspects for succeeding in lean: leadership involvement, education and cultural dynamics.

3.6 | Lean Planning as a stand-alone technique for improving planning in a project

Lean Planning is a technique to create a realistic planning with commitment of all involved stakeholders, to support the project management. There are several practical translations of this technique available, for instance ‘pull planning’ or ‘last planner’. The steps described below have been taken from a whitepaper by Symbol Building in The Netherlands, specialized in lean planning in the building sector since 2009.

Lean planning is a process which takes four to eight weeks to complete. This intensive preparation of the execution phase of a project aims to prevent waste and optimize the building process. In its full form it might only be reasonable and financially viable to apply this in bigger projects. However, as with most methods, understanding the core concepts in it will help improve any planning, also for small projects. Just apply the technique in a “light” form.

Symbol Building identifies four main in lean planning steps plus an action plan supporting these four steps. The four steps are:

A. Design and Technique: Solve any unclarities on design and technique before starting the planning- coordinated by project team
B. Week Planning: setting milestones, building order and activities to be done per week- done by project team with input from stakeholders
C. Lean Planning: plan all separate activities per week in detail with all stakeholders- big meeting with all participating companies
D. Elaboration & Communication: sharing the results – done by project team.

The action plan to support these four steps involves setting clear goals for the effort with the project team. Exit point should always be to create value for the customer. This includes building according to planning, having an optimal collaboration and creating no waste and zero issues when the project is delivered. But the building parties themselves may also benefit from optimizing the planning, reducing time etcetera. Make sure everybody understands why the lean planning effort is undertaken.

Now a good team should be assembled to execute the steps for lean planning and task should be divided. One of the questions here is if the project team will facilitate the process themselves or if a facilitator is hired, so the project team has their hands free to focus on the complete project picture.
The action plan also defines the different building phases, for example work scheduling, structure works, façade works, finishing works. In general a lean planning session is done for each building phase, with a scope of around 20 weeks. Sometimes the building phases can be partially integrated in the scope of the lean planning. So you also need to plan early in your project the lean planning sessions!

In the action plan the partners that need to be involved are listed and they can then be invited, so they can reserve time and resources for all activities involved in the four steps that will follow.

Each of the four main steps is now explained separately below.

**3.6.1 Step 1: Design and Technique**

For each building phase it should be clear what the program of requirements is, which techniques are used and which technical decisions have been made. In this first step the project team makes sure that all technical issues are solved, or at least clearly specified, before the lean planning session. This way the lean planning session will not be hindered by unclarities of technical or technical-organisational nature. There are several techniques available to identify and solve these issues in this first step. One technique is for example performing risk analysis on the design and technique with the involved stakeholders.

**3.6.2 Step 2: Week planning session**

A week planning method is used by the project team to create a week planning for use in the lean planning session which follows, this way any unclarities on this are solved before the session; Each of the maximum 20 weeks of the scope of the lean planning session is discussed separately and a clear vision arises of the milestones, the building order and all activities to be done per week. In this week planning it is determined which suppliers are involved in each week and building logistics is prepared per week (deliveries, building site arrangements, preparations needed, et cetera). In the lean planning session that follows this may be further optimized with the stakeholders, but this way there is a solid exit point.

Based on the results of the week planning, the participants of the lean planning are asked to prepare the lean planning meeting by assessing the capacity needed in their organization (people, machines, materials) and the availability of these in the relevant period. Also they can decide on their willingness to invest more teams or material if needed to speed up the planning.

**3.6.3 Step 3: Lean Planning session**

The result of the lean planning session should be a detailed planning per participating company including complete commitment of that company on the planning. The frame in which the lean planning takes place is formed by the project plan and its (weekly) milestones. Usually lean plannings are made on a day basis, because in practice week plannings can be to noncommittal and the order of activities is not exact enough and may still lead to problems in the execution phase. The end result could look something like the picture below.
Every company invited usually brings someone from the office who can oversee and decide on planning, and a frontman who will be actually involved at the building site.

The room in which the session is done needs walls to hang up the planning sheets and details of the project (drawings, location-numbers etc) and space to roam for the participants.

The planning sheets usually look like an empty raster, which will be filled with sticky notes by the participants. Usually one sheet per week, with the days specified vertically and the different activities per company horizontally. This means that some companies might get several horizontal rows to fill. Now each company gets their own colour sticky note, so it can easily be identified who owns which activity. The sticky notes are all filled with relevant information in the same predetermined way. This is important because a planning can contain hundreds of sticky notes and would otherwise become very hard to interpret. An example of the organization of information on a sticky note is the following:

```
<table>
<thead>
<tr>
<th>Previous operations, working condition, special preparation</th>
<th>Operation or Activity</th>
<th>Location (block, floor, panell, apartment...)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crane hours (on a day basis)</td>
<td>Amount of hours</td>
<td>Amount of people</td>
</tr>
</tbody>
</table>
```

Picture above: Example of data organisation for the sticky notes to be used in the lean planning session.
Then all participants start filling their rows with their planning. This can be an enormous amount of information. The structure created before the session will prevent it becoming too overwhelming.

After everyone has entered their inputs, the complete planning can be discussed and bottlenecks or opportunities for improvement should be addressed. Also, risks should be accounted for in the planning, such as unworkable weather or unplanned delays. This optimization can be done during the meeting (preferably) or the project team can take home and process some issues and insights later.

Photo above: A Lean planning session at Dutch contractor Heembouw (source: https://hiveminer.com/Tags/heembouw%2Clean/Timeline)

3.6.4 Step 4: Elaboration and communication

Directly after the lean planning session, work out and communicate the results clearly to all participants involved. This may be done by photographing the planning per week, or by putting all information in an excel document, or any other way that helps the participants understand what is expected of them from day-to-day during the building process. The result is binding: all participants should now be committed to work according to planning.

3.6.5 Boundary condition for successful lean planning: Culture

Lean planning sessions can only work when all participants share some cultural values, such as transparency and the will to collaborate and improve together. Also it needs to be clear that everyone is willing to commit to the end-result of the lean planning. The time and cost involved will most likely be wasted if this boundary condition is not met.

Reference:
4 | Costing and Accounting Methods facilitating value chain integration

One of the barriers to implement value chain integration could well be the fact that general costing and accounting practices are often not fit to show the business and financial improvements created by lean. Even worse, they can seriously deter the adoption because of their practices: They sometimes even show a negative impact. This happens for example when reducing factory cycle times lead to a reduction of inventory. In traditional accounting practices this triggers an underabsorption of overhead expenses and actually making the company appear to be less profitable as a result of their lean strategies. Another example is that the benefits of investments for adopting lean manufacturing practices cannot be shown, because the only acceptable financial justification is direct labour reduction; there is no way to show the positive financial impact of improved quality, flexibility or factory throughput.

As a response to this problem, several new accounting practices were developed in the 80's and 90's of the 20th century: Activity Based Costing and Throughput Costing. Activity based costing was a more sophisticated way to allocate costs. However, this proved not to be useful enough because it showed that the allocation of costs was at the heart of the problem with traditional accounting: allocations should be eliminated rather than improved. The Throughput Accounting (from Goldratt, an element of his well-known Theory of Constraints) was much closer, but did not provide sufficient structure and information to drive the elimination of non-value adding expenses, or ‘waste’ in lean terms.

Now the method of Lean Accounting has evolved out of these historical developments. A core principle of Lean Accounting is that the only appropriate cost collection entity within an organization is the Value Stream. This is opposed to the traditional accounting’s use of cells, cost or profit centres or departments normally based on smaller functional groupings of work activities. Other principles are the following:

- Facilitating Management Decision Making first (instead of external reporting first)
- Value centred (differentiating expenses based on ‘value adding’ or ‘waste’)
- Holistic approach of decisions regarding pricing, make-or-buy and capital investments, based on the overall impact the decision will have on the contribution level of the value stream.
- Cash based – plain English (or other language) : present the financial information in a manner that the manager can assess spending as it actually occurs
- Fixed costs: lean accounting is biased towards the assumption that all costs are fixed, as opposed to variable, which increases managerial cost control in a growing organisation.

The primary collection of revenues is done by using Value Stream Costing (VSC). The value stream costing process begins with a value stream map. The value stream mapping process generates the necessary information on material flow and resource allocation that can then be applied value stream costing. The material flow defines which products flow through any particular value stream. The mapping process determines how people, equipment, and space are used by each value stream. From this information, actual value stream costs can be calculated. All costs within the value stream are considered direct costs to the value stream. No effort is made to allocate costs excluded from the value stream into the value stream.
For the AZEB project, as the major goal is to reduce costs for (nearly) zero energy buildings, to measure the impact of applying methods to integrate the building value chain, it will be needed to apply a lean costing and accounting approach. In work package 3, the case studies to test the azeb methodology, we strive to at least apply this approach in one case study to assess its impact and usability.

References:

5 | Conclusion: Overview of tools and methods for use in WP3

In workpackage 3 we will test the elements of our AZEB methodology in different case studies. Some of these will be simulations with material from finished projects, others will involve real time applications and testing in running projects, as well as various scenario simulations. For the topic of reducing costs via integrations in the value chain we propose the following tools and methods to be applied and tested in one or more relevant case studies.

1. **Morphological Design Process**: described in chapter 2, this may be applied either at the initiative or planning phase of an existing project. Alternatively, it could also be applied as an exercise within a case study where a simulation is used. In this case, a group of experts from the complete value chain could do a morphological design process for cost optimization of the existing design and then calculate/simulate the impact of this process. This can then also be used as an evaluation of the already done decisions – if the simulated results are not point out to better results, then the current situation is very good and vice versa.

2. **Lean Analysis and Optimization following the 5 elements of lean**: Described in chapter 3. This may be applied in the initiative or early planning phase of a project to gain opportunities for optimization in the value stream related to the project, either within one company or across different companies. It could also be used to discover new possible organisation of the building value chain with new business models, which could be more cost effective than the current building value chain and business models. To test the true impact is the case study, it is preferably combined with a test of the lean accounting method.

3. **Lean Planning**: Described in chapter 3. This method could very well be tested in a real time project which is approaching the construction phase. It can be applied to the complete project, or it could be tested for a limited part or timeframe of the project.

4. **Lean Accounting**: Described in chapter 4. This non-traditional way of accounting is intended to be used on organizational level firstly. It would be good to find an organisation that is already working with lean, and implementing these accounting techniques and comparing the results with traditional accounting results. It might also be interesting to see if it could be tested on a project level.
Another element of the AZEB methodology with impact on integrations in the value chain is procurement and contracting practices. A procurement method such as Best Value Procurement as well as integrated contracting practices such as Design-Build-Maintain and performance contracting are all practices that stimulate value chain integration and integrated working methods for stakeholders in the value chain. These practices have not been explained in this document, but are part of a separate document: D1.6 Guidelines for Performance Guarantee.