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The goal of opportunity framing is to add value by (re)framing the project concept, using new technologies or concepts, or adding scope. However, in many situations solutions are too quickly chosen without investigating any other attractive options. We call this 'premature convergence'. Values can be calculated by (social) cost-benefit analysis (CBA). Value Engineering (VE) is an interesting approach to optimise value throughout the lifespan. Crucial is the function analysis, in which functions are determined without thinking of solutions, and the creative phase to generate ideas. Ideally, opportunity framing starts at the very beginning of a project (front-end development), but organisations should stay open for opportunities during the planning, realisation, and operational phase (by far the longest period).
Opportunity framing is highly dependent on the goal, characteristics and context of the project. Opportunity framing should lead to project success. The latter requires the iron triangle (schedule, budget, quality), yet other criteria are also important. In general there is not one universal perspective on project success. This differs from project manager to project manager and seems to depend on the characteristics of their project.

Chapter 6 | outline

Chapter 6
Opportunity framing

by Marcel Hertogh

6.1 | Introduction

Opportunity framing is a structured approach to understanding and defining an opportunity. It is the starting point for a robust, decision-driven process for the realisation of the opportunity. For projects this is first of all setting the boundaries on what the project is and is not. The essence of opportunity framing is to decide what the project will include and what not. This process is performed together with stakeholders.
In addition, opportunity framing can be about adding scope and (re)framing the project concept. It can also be the application of a new technology, or any new concept to be considered by the client/sponsor, project team or stakeholder. Important at opportunity framing is the interaction with stakeholders to secure project success.

Crucial at opportunity framing is:
- To define the project scope.
- To involve stakeholders.
- To define when the project will be successful (project success).
- To create value drivers.
- To identify risks: threats as well as opportunities.

To illustrate the concept of opportunity framing and these important elements, we will give the following example. The busy highway A2 runs through the eastern part of the Dutch city of Maastricht, dividing the city into two parts and creating unacceptable levels of air pollution. For decades there have been plans to bring the highway underground at the current location, or even outside the city, but sufficient support and funding were lacking. At the beginning of the 21st century, the plan was reframed. The opportunity was to look at the project in a new way. From an infrastructure project it became a city development project. By bringing the highway underground in a tunnel, new space could be created for real estate, housing and an environmental upgrade of the area *('scope')*. In this plan, which is now under construction, the city development contributes financially to the infrastructure to make the project feasible (*'value driver'*). A major part of the new space that is created by bringing the highway underground will be designed as a green zone that has been generating extra support for the project (*'value driver'*). The project is named after this green zone: the 'green carpet' (Figure 6.1).

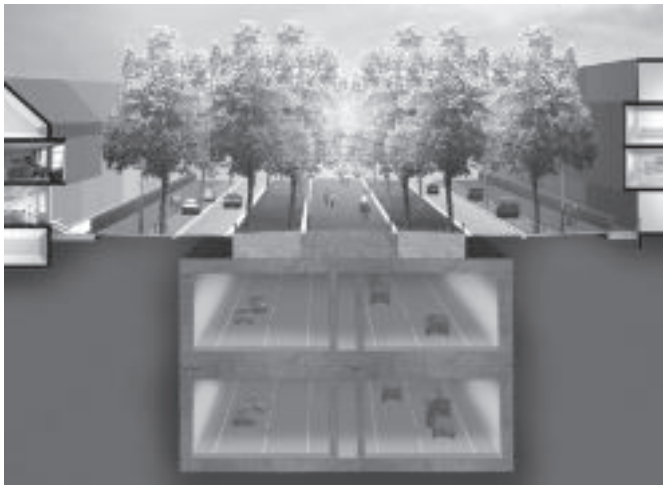

Figure 6.1:
A2 Maastricht 'Green Carpet'

The 'Green Carpet' is an example of opportunity framing. The opportunities at the Green Carpet were the adding of extra scope and the reframing of the project. The result was sufficient political and societal support (*'stakeholders'*), a financially feasible project, improvement of the living environment, better traffic flow, new apartments (1,100) and extra commercial real estate (30,000 m^2) (*'project success'*). Major threats to the project are the technical risks at the construction of a double-deck tunnel, and the financial risks at the timely sale of the real estate (*'risks'*).

An opportunity is a favourable or advantageous circumstance or combination of circumstances. A threat is the opposite. If a threat is the downside or disadvantage, then an opportunity is the upside or benefit. Threats and opportunities are two sides of a coin, a coin named uncertainty. An uncertainty can have a positive result (opportunity) or a negative result (threat), see also Chapter 8. Interestingly, a threat can turn out to be an opportunity.

The threat of abandoning the A2 in Maastricht, led to looking for opportunities and finding new solutions. Whereas a threat can overcome you, you yourself need to look actively for an opportunity to improve the business and living environment, as illustrated by the quote of Kyle Chandler *'Opportunity does not knock, it presents itself when you beat down the door.'*

After giving the successful example of the A2 'Green Carpet' in the city of Maastricht, we will show a major pitfall of opportunity framing. It is called premature convergence (6.2). As we saw, an important element in the approach is to define and ensure project success. What are the 'success criteria', and by which 'success factors' can these criteria be reached (6.3)? Value drivers are an important element (6.4). The process of opportunity framing starts in the early phase of a project, and interestingly is this is also beneficial during the following phases, before and after delivery (6.5). At opportunity framing, where the scope of the project originates, interaction between people is a key factor in creating the scope and realising project success (6.6). Finally, opportunity framing is highly dependent on the specific situation: starting points, ambitions and preferences of stakeholders, characteristics of the environment, etc. This leads to a fit-for-purpose approach (6.7), where we also present an overview of the examples we discussed in this chapter.

6.2 | Premature convergence

Opportunity framing can result in project enrichment. However, in many situations a solution is chosen early in the process, thereby 'killing off' many other options present at that point in time. We call this 'premature convergence'. In an international research of six large infrastructure projects (rail and highway projects) 14 critical events were examined (Hertogh, Westerveld, 2010). They were identified by asking respondents to identify important events in their projects that changed the course of the project. Premature convergence was found at 10 of these 14 events, without sufficient interaction with other stakeholders. This 'keep it simple' mindset in extreme cases removes the possibility of exploring other, possibly promising, alternatives.

The upgrade of the West Coast Mainline in the United Kingdom was a major project that started around 1990 and was delivered in 2008 (total costs € 10.2 billion). The project delivery organisation wanted to use ERTMS (European Rail Traffic Management System, a new signalling system) and that was the main starting point in the cost calculations and the passenger train contracts. However the development of this new technology turned out to be too costly and time-consuming. The project organisation had chosen for the ERTMS without sufficient research and without having a Plan B. The problem with the development of ERTMS was one of the reasons that the project came into a crisis, prompting reorganisation in 2001. By then, a more traditional train safety and communication system was chosen.

The oil industry too observed premature convergence: 'Reviews of previous opportunities show that with the pressure to deliver results there is a tendency to jump in with both feet and execute without having a full clarity of purpose. For instance is the team, group, or stakeholder fully aligned on objectives, have the real value drivers and critical issues been identified?' In other words, in many cases the opportunities have not been sufficiently framed.

6.3 Project success

Opportunity framing is an important element to achieve project success. Two questions emerge: What is project success? and how to facilitate project success?

In his article (2003), Westerveld linked success factors and success criteria into one coherent model known as the 'Project Excellence Model' (Westerveld, 2003). This model has been adapted from the EFQM Excellence Model. The European Foundation for Quality Management, EFQM, was founded in October 1989. The Foundation set up a team of experts, from the industry and academic world, to develop the EFQM Excellence Model, a holistic framework than can be applied to any organisation, regardless of size or sector (www.efqm.org).

The Project Excellence Model (Figure 6.2) is designed to link into one coherent model (Westerveld, 2003):

- six result areas covering project success criteria. These are 'hard factors': time, costs, quality and safety, as well as 'soft factors': satisfaction of five groups of stakeholders. Satisfaction concerns both the outcomes and the process.
- six organisational areas covering critical success factors. These enablers are crucial in realising in the success criteria.

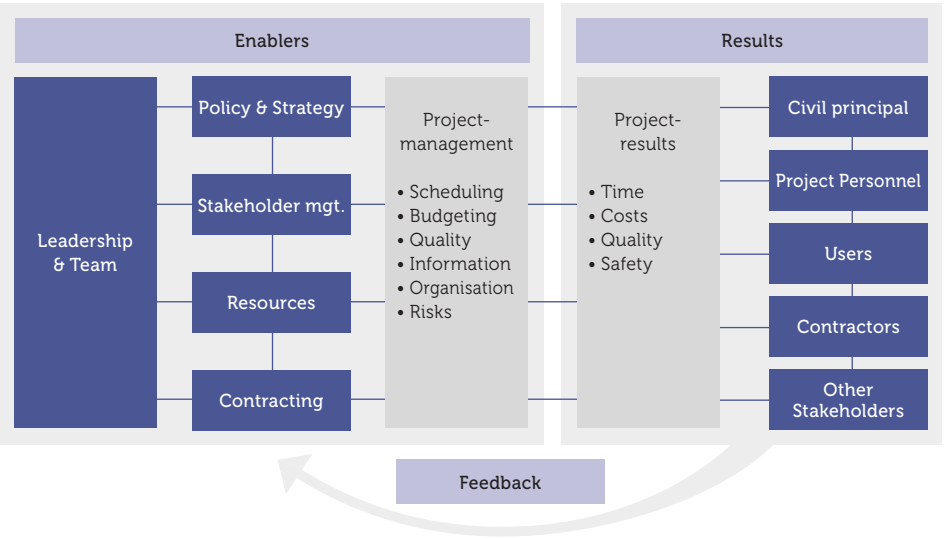

Figure 6.2: Project Excellence Model (Westerveld, 2003)

Later on IPMA also developed a Project Excellence Model with similar contents and layout. Halfway into the first decade of the 21th century, IPMA began to conduct assessments with this model awarding annual prizes to the best performing projects.

Early work on success criteria assumed that the main criteria for success were the so-called 'iron triangle' of being (1) on schedule, (2) within budget and (3) achieving the quality or functionality required. However, project success turned out to be far more subtle than this. Van Aken (1996) defines project success as 'The satisfaction of all stakeholders'. Perceiving project success simply as the compliance with time, cost and quality constraints can be qualified as a more 'narrow' view in this respect. Westerveld distinguishes six result areas, see Table 6.1. One of these is the iron triangle, the five others concern satisfaction of involved parties.

Success criteria will differ from project to project depending on a number of issues such as size, uniqueness and complexity (Wateridge, 1998). So a less 'fixed' and more flexible approach seems appropriate in studying project success. Westerveld concluded from literature that a more flexible approach to project success is to develop clusters of possible success criteria – assuming that (while criteria defining project success can be different for each project) a universal clustering of criteria can be formulated to cover the whole issue of project success. This is exactly what was done in a research to study the public project manager's perspective on project success (Koops et al., 2014, Van Loenhout, 2013). From an extensive literature survey and interviews with Dutch public project managers, she developed a subset of 19 relevant public sector criteria, see Table 6.2.

Table 6.1: Result areas of the Project Excellence Model (Westerveld, 2003)

No.	Result area	Explanation
1	Project results Budget Schedule Quality	The original iron triangle of project goals. Most projects will have specific scheduling, budget and quality constraints.
2	Appreciation by the client	The client initiates the project to fulfil a specific need. What aspects and factors does the client value in judging the success of the project.
3	Appreciation by project personnel	Project staff will be concerned with reaching their personal goals as well as having a good working atmosphere.
4	Appreciation by users	Users are concerned with their overall influence in the project and the functionality of the end product.
5	Appreciation by contracting partners	Contracting partners try to make a profit at the project. They are also concerned with getting new orders and learning possibilities.
6	Appreciation by stakeholders	Parties that are not directly involved in the project but which do have a large influence (e.g. environmental groups, citizens and government agencies). These parties manage their specific interest.

Table 6.2: 19 relevant public sector success criteria (Koops et al., 2014)

Success Criteria	
Well-known criteria from literature: 1. Delivered on time 2. Efficient use of available resources 3. Fit for purpose 4. Learning opportunities for client organisation 5. Personal growth and development 6. Profitability for contractor 7. Quality 8. Safety 9. Satisfies needs of project team 10. Satisfies needs of stakeholders 11. Satisfies needs of users 12. Within budget	**Sporadically mentioned in literature, but presumed relevance for public sector:** 13. Effect on the professional image of client organisation 14. Good working relationship with contracting partners 15. Impact on the environment, sustainability 16. Right process is followed **Derived from interviews or perceived relevance:** 17. Continuation of client organisation 18. Project specific political or social factors 19. Satisfies needs of shareholders

The Q-methodology has been used for showing the respondent's view on prioritising in the subset of criteria. Each respondent was asked to rank the 19 criteria from most to least important in determining project success. The authors analysed the response of 26 public project managers of infrastructure projects in the Netherlands (national and regional level) and extracted three collective perspectives on project success. A collective perspective is shared by a group of respondents with similar views (highly correlated with each other), and shares only limited correlation with respondents holding any of the other perspectives. We will briefly discuss the three perspectives.

Perspective 1: Holistic and cooperative leadership
This perspective is shared by a group of public managers who keep a holistic view, not focusing on details, but rather on the project as a whole. They give immediate attention to those issues threatening the project objectives and end result, instead of losing themselves in details. They stress the importance of cooperation and stakeholder satisfaction. They value safety above all other criteria, whereas no value is attached to the so-called 'right' process.

Perspective 2: Socially engaged, ambiguous manager
Public managers at the local and regional level share this perspective. They aim at improving their city or region, not just executing a project. Finishing the project within budget is the most important criterion in this perspective, however it is not clearly separated from the other criteria. These public project managers have an ambiguous view in which there exists no clear prioritisation and their project success is largely determined by criteria they cannot influence. They see the right process as a way to end up with the right result.

Perspective 3: Executor of top-down imposed assignment
These public project managers are very much influenced by politicians and their decisions, although they have no direct contact. The political promise is translated into a quantifiable goal in project execution: the timely delivery of the project. Both shareholders and stakeholders are unimportant in this perspective. The public project manager executes the project in a well-defined environment and is able to keep priorities clear throughout the project and focus on these to reach the end result.

Interesting is to look at the rankings of distinguishing success criteria (total 10). These illustrate the three perspectives, see Table 6.3. The other 9 criteria are less distinctive.

When we take a close look at Table 6.3, we see that the three criteria of the iron triangle:
- are distinguishing criteria;
  this means that the perspectives differentiate particularly in terms of time and budget.
- are important;
  but others can be of more importance to the public project managers.

The conclusion is that the iron triangle matters, but that other criteria are also significant. In general there is not one, universal perspective on project success. It differs from project manager to project manager and seems to be dependent on the characteristics of the project involved.

Table 6.3: Factor scores of distinguishing criteria with corresponding ranks

Success criterion	Perspective 1 Rank	Perspective 2 Rank	Perspective 3 Rank
Within budget	2	1	10
Delivered on time	11	6	2
Quality	7	7	8
Right process is followed	19	10	6
Safety	1	9	3
Profitability of contractor	12	19	17
Satisfies need of shareholders	5	12	19
Satisfies need of stakeholders	3	3	18
Fit for purpose	8	4	15
Project specific political or social factors	10	2	1

6.4 | Value management

Values can be calculated by means of the cost-benefit analysis (CBA). For the process industry, the expected profit is usually calculated using scenarios. With infrastructure projects such a profit is usually not the case but social cost-benefit analysis (SCBA) is used instead. The goal of the SCBA is to compare project alternatives according to the impact these projects have on welfare of society, so the social costs and benefits (Kwast, 2013). The SCBA gives answers to the following questions:

- What are the costs and social benefits of the project alternatives?
- Who bears the costs and who enjoys the benefits?

The SCBA is an analysis for projects whereby all the social relevant effects of a project are schematically described. Three types of effects are generally distinguished (Kwast, 2013):

- Direct effects: the project directly engages on, for instance travel time savings;
- Indirect effects: are effects for actors other than where the project is primarily aimed at, for instance rising real estate prices when accessibility improves;
- External effects: negatively affecting stakeholders, for instance extra air pollution from additional traffic.

Value Engineering is a systematic, multidisciplinary approach to optimise (or improve) the value of a system throughout the lifespan. Value Engineering seeks to maximise the value for the client.

ProRail uses eight stages when it comes to value engineering (Van Geffen, 2005). ProRail is a Dutch government task organisation dedicated to maintaining and extending the national railway network infrastructure (not the metro or tram), to allocating rail capacity, and traffic control.

These stages are:
1. Preparatory phase. Setting the goals and scope.
2. Informative phase: Gathering and analysing information.
3. Function analysis phase Analysing the design or problem and allocating cost to functions.
4. Creative phase: Generating ideas from a functional perspective while focusing on the functions with the highest potential value.
5. Evaluation phase: Prioritising ideas with predefined criteria. Selection process of best ideas with potential value increase.
6. Developmental phase: Further development of the selected ideas and elaboration of consequences for implementation of solution.
7. Presentation phase: Presenting the results to all relevant stakeholders.
8. Report and Implementation: Report, handover and start of the implementation process.

All of these phases are necessary, but two steps are the core of the method: function analysis and creative phase. The essence of function analysis is to determine the functions, without thinking of solutions, because these may hamper the thinking process. An opportunity framing workshop can be used in the creative phase. Every organisation involved in the project can organise this workshop: the client/sponsor, the project delivery organisation, the contractor and suppliers. An opportunity framing workshop facilitates the process of finding opportunities and finding a way to realise them. The workshop should facilitate creativity, and ideas are welcome. For this a safe atmosphere is needed. An option to speed up the generation of ideas while the input of the participants is anonymous is an electronic boardroom. The participants communicate via computers, without mentioning who the input generates. Key players need to be involved. It can be beneficial to interview the key players beforehand by the facilitator and to get a feeling what project success means to these parties.

Van Geffen presents the example of a tunnel at a train station to increase transfer capacity, connect both sides in the future, upgrade bicycle parking and preserve the original station roof. The Value Engineering study goals were to reflect on the functionality and assumptions, as well as to improve value compared to the proposed design. The teams used among others brainstorming techniques and they worked in three separate groups to create alternatives. The three best alternatives have been evaluated. The chosen alternative was cheaper (23%) than the proposed design, and had some functional benefits, such as fewer temporary measures for commercial activities and maximising the width of the tunnel, as well as acceleration of the design process.

6.5 | Opportunity framing, a continuous process

Opportunity framing should start at the very beginning of a project. The 'Green Carpet' that was discussed in Paragraph 6.1 is an example of 'front-end development' (see Chapter 7). In this front-end phase, the scope of the project is created. The idea is that in the early stages it is easier to influence the scope than during later stages, see Figure 1.3. In the design and preparation phase (with land acquisition, and important legal procedures) this ability diminishes, while the

investment costs rise. During construction it is even more difficult to change the scope unless the client/sponsor accepts a major financial impact, as well as substantial delay.

Isn't this classic Figure 1.3 too simple? First it is not always that costly to change the scope in the later stages, and also it does not concern the operational phase, for instance when choosing for more adaptive solutions. This scheme (Figure 1.3) focuses on the scope of the project. However opportunities can also be intangible. These are easier to implement during later stages.

An example of opportunity framing during the construction phase is NEAT (German: Neue Eisenbahn-Alpentransversale), the New Railway Link through the Alps. At the heart of NEAT are two 'base' tunnels, the Lötschberg (34.6 km), and the St. Gotthard (57 km). Because the tunnels go through the base of the mountain and do not need to climb, the line can be much straighter than in the current tunnels where they are forced into curves and switchbacks in order to gain the height and reach the entrance. Because the line is almost flat, freight trains can be twice as heavy and go faster than those which have to climb to today's tunnels (www.swissworld.org). During the feasibility phase (front-end development) the Swiss decided to go for these base tunnels. The NEAT is expected to take 90% of the goods in transit through Switzerland. Amid much fanfare, the Lötschberg base tunnel was finally opened on December 9, 2007. The longer Gotthard base tunnel is set to open in 2016. After completion, the Gotthard Base Tunnel will be the longest tunnel in the world. At the preparation, the focus of the client/sponsor and the project organisation was increasingly more on the technological marvel of NEAT (on the base level of realising infrastructure in Figure 6.3 that will be discussed later on). But after some debate about the necessity of the project in the mid-1990s, the responsible politicians and civil servants became increasingly aware of the environmental importance and they reshaped its purpose. To express this thinking, the slogan 'the biggest environmental project in Switzerland' had been developed and used ever since (Schalcher et al., 2008).

At the Gotthard Base Tunnel the 'system' was able to 'adapt' its mission during realisation after 'the front-end' phase. The NEAT system was the network of parties, as previously mentioned politicians and civil servants, but also NGOs, like the Alpine Initiative that initiated a referendum in 1994 about the protection of the mountains. At that time there were fierce discussions about the necessity of two tunnels and also about the cost NEAT would involve. The new approach

Figure 6.3: NEAT, New Railway Link through the Alps

referring to the benefits for the environment helped the politicians and client/sponsor in favour of NEAT to retain the original scope.

Another interesting example is the Betuweroute, a rail freight line in the Netherlands. Debate emerged in the mid-90s whether in the future trains would operate with a stack of two containers instead of the usual single container. This could be the case if the Betuweroute turned out to be very successful and 'double stack' will be needed. Because the Betuweroute has five tunnels, it would be very costly if the diameter of tunnels that are only fit for a single container had to be increased to facilitate double stack after delivery. Finally, the decision has been made to prepare the tunnels for double stack. To this end the tunnels have been constructed with a larger diameter to make double stack possible. And what about the viaducts? The viaducts are only built for a train with a single container, but a physical provision has been made to make it easy to jack the viaduct at a later stage. Interestingly, the decision for double stack was taken in a relatively late stage of the design process. This case is also special, because these costly precautions to anticipate on uncertain future developments are not frequently taken in infrastructure projects.

'The secret of success is to be ready when your opportunity comes' said Benjamin Disraeli. And these opportunities can come during the whole lifespan of the project.

While creating the scope at the front-end stage and during design and realisation, it is important that the organisations embrace opportunities during the planning and realisation of the project. But can opportunity framing also be used during operation? This should be welcomed, because the operation phase is the longest period by far, see Figure 6.4.
The operational phase can take decades or even longer. A new chemical plant can have a planned

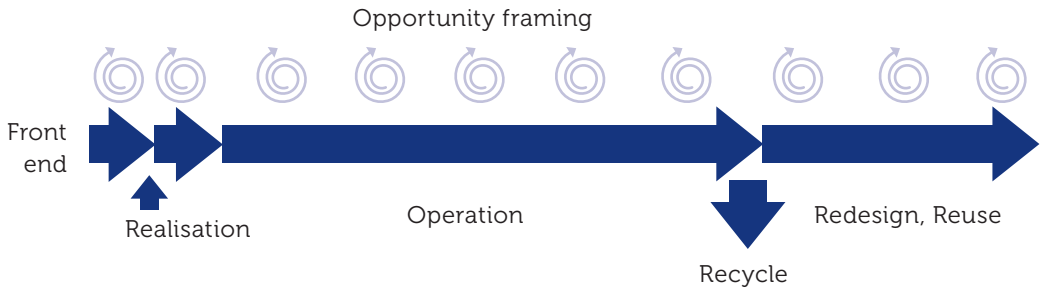

Figure 6.4: Continuous opportunity framing during the project lifecycle

operation phase of 30 years, the storm surge barrier at the Eastern Scheldt was constructed for 200 years and the Egyptian pyramids were built 4500 years ago. At the pyramids the functionality shifted from a tomb for an Egyptian pharaoh to what we might call an archaeological treasure and a tourist attraction that generates income to the Egyptians nowadays.

An interesting case for adaptive management is the Dutch 'Room for the River' project. Because of climate change, extremely high river discharges will occur more frequently in the future and

for this reason it was decided to ensure that the rivers could discharge the forecasted greater volumes of water without flooding. The Government approved the 'Room for the River' plan in 2007.

This plan has three objectives:
1. By 2015 the branches of the Rhine will cope with a discharge capacity of 16,000 cubic metres of water per second without flooding.
2. The measures implemented to increase safety will also improve the overall environmental quality of the river region.
3. The extra room the rivers will need in the coming decades to cope with higher discharges due to the forecast climate changes will remain permanently available.

These objectives combine (1.) the need for water safety with (2.) environmental quality in a dual objective in a way (3.) to cope with future developments.

The Room for the River embraces a more flexible approach than the traditional flood defences, by giving the river more room at 30 locations to accommodate higher water levels, essentially allowing the river to flood safely. One example is the 'Overdiepse Polder' where 16 farms have been designated as flood zones to protect 140,000 residents of Den Bosch. As the New York Times put it '*By displacing farmers, residents in that city can breathe a little easier*'. Other examples to increase adaptation are floating buildings (Dixon, 2014).

Room for the River confirms that it is possible to anticipate on current and future opportunities that are currently unknown. Systems are adaptive when they are able to respond to changes in requirements or conditions. It means that these systems have the ability to learn and evolve. The system will be adaptive when the complexity of a system exceeds a critical limit, and will produce unexpected variety and novelty through spontaneous, unpredictable self-organisation (Brukx and Wackers, 2001, Flood, 2009). This was also the case with NEAT. The 'Alpine Initiative' was not expected beforehand, but had an important influence on the approval of NEAT.

Finally, an example of redesign and reuse are old buildings that are given a new function. Interesting are old harbour buildings near waterfronts that are now used as trendy apartments (after some modifications), and by giving the area a major revalorisation as was the case in the cities of Hamburg, London and currently Rio Janeiro. It is not necessarily big projects, as the renovated old station building of Elva in Estonia shows that serves as a leisure and travel centre now.

6.6 | People are key

As was seen in the case of premature convergence, sufficient interaction is necessary. Constructive interaction can help projects to accept new, and often external, changes. These changes might potentially improve the project outputs, reduce costs or speed up the project delivery, and are a crucial help to obtain project approval (Hertogh et al., 2008). Interaction starts with the notion that projects need to be realised in a context with all kinds of stakeholders and that this context will change. One needs to be realise that problems are ambiguous and goals are related to parties. It means that goals are not fixed, in fact they change as the context changes in contrary to the fixed goal assumption of traditional project management. Management focuses on satisfying needs through interaction in stakeholders' network, and also on the flexibility to have the ability

to act (preferably by anticipation) in the face of changing circumstances or specific outcomes of management strategies: adaptive management. Agility is one way in the process industry.

Two main strategies of interaction are suited for opportunity framing:
1. Alignment of stakeholders (interests, vision, objectives).
2. (Re)definition of the problem and change of scope.

The alignment strategy takes the specific needs and perceptions of parties as its starting point. These needs and perceptions cannot (fully) be known in advance; only through interaction insight in the needs and perceptions of others and, that is interesting often, of ourselves can be gathered. In the process of continuous interaction and collaboration, issues will become interconnected and things will often be seen in a new perspective and therefore views need to be reformulated. Through this interaction, needs and perceptions evolve. Research (Hertogh, Westerveld, 2010) demonstrated that using a strategy of cooperation has a greater chance of success than an 'internal' approach that may lead to 'premature convergence' (see Paragraph 6.2). The intention is that through the process of alignment, solutions with a wider range of support can emerge. In this sense the process reduces ambiguity – and, by the same means, complexity – by aligning the interpretations and perceptions of stakeholders. On the other hand, it can increase complexity if scope is added through this interaction.

Parties should also bear in mind the potential pitfalls of strategies of interaction. The most important pitfall is that pure and unique focus on alignment may seriously limit project progress and may lead to over-expensive solutions emerging, because difficult decisions are avoided and because they are not confronted.

To enable effective adaption during the operational stage at 'Room for the River', intensive stakeholder collaboration (interaction) during the early stages of the programme was initiated. This provided a robust basis and flexibility to adapt (Rijke et al., 2014). The client/sponsor chose to allocate the responsibility for the delivery of the designs to local and regional government levels, so that these government levels became responsible for customising solutions to their own context and dealing with local stakeholders. Because these organisations are typically more connected with the regional context than the programme management office, which was operating on a national level, this enhanced the ability of the programme to adapt to the context of individual projects. On the other hand at the programme level there was a clear vision and planning framework of the programme design, which ensured a stable basis (i.e. robustness) for the programme management processes. This combination of clear programme vision and customising solutions gave the programme the flexibility to adapt to changes. It can be concluded that the combination of programme governance and coordination allowed for programme adaptation, which has resulted in continuous alignment of the management of programme to the context of the programme as a whole and the contexts of the individual projects. On a national level the effectiveness of measures like 'Room for the River' is monitored continuously (Van Rhee, 2012) in respect to predictions of the future.

The second strategy was presented in the example of the A2 'Green Carpet' in Maastricht in Paragraph 6.1. As mentioned earlier, from an infrastructure project it became a city development project.

6.7 | Fit for purpose

Projects must be conceived, managed and operated as an integrated whole, with the prime purpose being the user, social and economic benefits derived from a new or improved factory, building or transport link, rather than the completion of a physical project as a final stage in itself. Where the success of the outputs depends on operational interfaces as well as physical construction, these must be managed from the outset and integrated into the programme management of the whole project (Hertogh et al., 2008). This is presented in Figure 6.5.

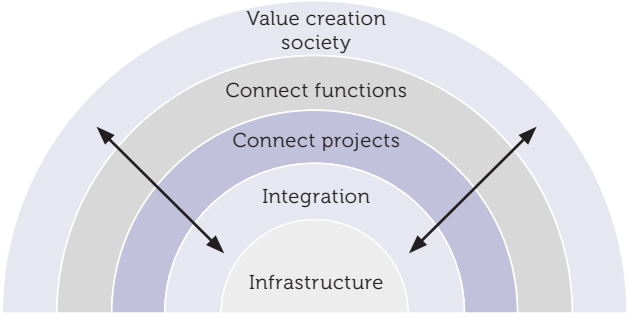

Figure 6.5: Value creation by the area specific approach of the province of Friesland

It depends on the ambition and the characteristics of the project, how far the project organisation can go in broadening the scope – see the orange arrows. By broadening the scope, the project is more likely to succeed, but on the other hand the management will be more challenging, which might jeopardise the project success. Somewhere there is an optimum.

An interesting example is the development of a fit-for-purpose, area-specific approach taken by the Dutch province of Friesland to link infrastructure and area development. Up to 2020 the province of Friesland will be realising infrastructure projects worth € 1.5 billion based on a so-called 'area-specific approach'. The aim of this approach is not only to improve the network of infrastructure projects, but also to give the area a 'plus'. This 'plus' can take many forms. It could mean extra nature, a higher bridge for pleasure boating or improving liveability in a declining area.

More conceptually, in realising an infrastructure project, the following levels are distinguished by the province to create value (see Figure 6.5):

1. The physical construction of the infrastructure that needs to be executed according to requirements of finance, time and scope.
2. Integration in the environment, such as a diversion of the route, noise screens.
3. Connection with other projects, such as the use of sand from a dredging project for a new highway project.
4. Connection with other functions, such as power supply (solar cells), recreation, land development.
5. Value creation for society, such as creating an attractive business environment (employment) and keeping areas in the countryside vital; in general focus on economic and social sustainable growth of the whole province.

To realise added value, cooperation between the provincial authority and partners in the region begins at an early stage in the process. These are the parties that can exert real influence on the scope of the projects and the process. Interesting is that the area-specific approach is a customised approach. On the one hand the province has learnt from previous projects in realising the 'plus', on the other hand the province experienced that every project is unique and requires a specific approach and solutions at specific levels. Some projects incorporate all of the five levels presented in Figure 6.5. All the examples we discussed in this chapter come with specific challenges, solutions and results. These are summarised in Table 6.4 to illustrate the 'fit-for-purpose' character.

Table 6.4: Examples of opportunity framing

Programme/ Project (discussed in paragraph)	Challenge	Result
1. 'Green Carpet' A2 Maastricht (6.1)	From infrastructure and liveability to broader perspective on city development: living and working space, environment.	Add scope: green zone, houses, real estate.
2. West Coast Mainline (6.2)	The belief in an unproven technology turned out to be over-optimistic, because not feasible.	Severe problems that were solved after the choice for an alternative solution for signalling.
3. Train station (Netherlands) (6.4)	To reflect on the functionality and assumptions, as well as to improve value compared to the proposed design.	Low costs (23%), some functional benefits, maximising the width of the tunnel, and speeding up the design process.
4. NEAT (including Gotthard and Lötschberg Base Tunnels) (6.5)	Biggest environmental project of Switzerland.	The NEAT project was approved.
5. Room for the River (Dutch Water Authority) (6.5, 6.6)	Combination of water safety and environmental quality in an adaptive manner.	A variety of adaptive solutions, such as retention areas and floating homes.
6. Betuweroute (Dutch cargo railway) (6.5)	From single to double stack to increase future proofing.	Larger diameter of tunnels and a provision in the viaducts to jack up.
7. Programme Friesland (6.7)	From infrastructure to added value for the area.	Add scope dependent on project: recreation, environment, nature, liveability, economic growth, etc.

6.8 | The Wind Farm

Crucial at the opportunity framing stage is the alignment of stakeholders. Interesting is that over 100 agricultural entrepreneurs together with the energy company Esenca will be the owner-operators of the park. With the main stakeholders the scope of the project will be decided, as well as what success will look like and what the various value drivers are. At the wind farm 80 wind turbines will be erected. Because modern wind turbines produce far more electricity, all 50 existing wind turbines can be dismantled.

Success criteria at the wind farm can be distinguished as hard factors and soft factors. Hard factors are the electricity produced (11 MW in total), safety, delivery on time and within budget. Soft factors are the appreciation of stakeholders, team members, contractors, etc. One interesting detail is the possibility given to local residents to participate at a financial level. A reason for dissatisfaction could be noise pollution and visual hindrance. After defining the success criteria, the following step is to determine a method of measurement for the identified success criteria, during and also at the end of the project. The most important criterion of the wind farm project is related to safety, where no accidents should happen during any of the project phases.

A value driver acts as a lever to reach the pre-mentioned project success. Examples of value drivers are the involvement of main stakeholders during the lifecycle, reduction of capital expenditure (CAPEX) and revenue growth. Main threats are the opposition of stakeholders, delay in obtaining permits, very optimistic calculations for the generation of electricity and an underestimation of maintenance costs