Managing aesthetic expectations during integrated contracting

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Managing Aesthetic Expectations
during integrated contracting

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How to describe my graduation process. It has been wonderful and terrible at times. I have learned a lot. If I had to put a quote on it: ‘rough seas make skillful sailors’; must I be skillful.

Ed, can I call him Ed, I hope so. If I had to give Ed a euro for every time he mentioned consistency, we would have had to had stopped the graduation process months ago. I recall him saying: ‘You’re a creative mind’, what he meant to say was: ‘Shit, someone with ideas, but little structure’. We didn’t always communicate in the same language, but we never stopped trying, and trying, and trying. Thank u for the patience.

After the thesis was more or less consistent, Michel was called in to help with the final adjustments. Luckily it was rather smooth sailing from this point on. With solid advice the ship was guided into the harbor. I believe I still have one meeting credit. A coffee and some torte perhaps?

Back to the start of the project, ‘We have a project regarding a new process which has difficulties and ... you can do something about it’: said Marcel. ‘What can I do about it?’: ‘Don’t know exactly, but we’ll help you’. In this situation a ‘creative mind’ can have its advantages, although keeping it in check can be difficult. Luckily Marcel has plenty experience as project manager. Thank u for managing me.

After accepting the assignment I was happy to be informed that my place at ABT came with not one, but two mentors. During the project Maarten has been the life line for advice on IC, quick consultation, and general wisdom. Without his advice I would probable still be reinventing the wheel. Thank u for the advice.

Finally, there is the home team. Thank u for the advice: Femke, Laurence, Jasper, and the numerous people who made time to tell me what I didn’t know. Thank u for listening to my whining: Frank, Bart, Vanessa, Floris. Finally, shout out to my parents, who started helping me graduate some 26 years ago. Unconditional love and support goes a long way.

I won’t forget,

Ad
Abstract

Purpose
The aim of this thesis is to design a method or tool to help manage aesthetic expectations during Integrated Contracting (IC) more effectively.

Design/methodology/approach
This thesis follows the logic of the regulative cycle. The problem is mapped and the process is analyzed, subsequently a design is made. During both phases contact with industry experts was maintained, as there is little theoretical information directly related to the topic. Finally, the method is trialed in two cases.

Findings
Aesthetics expectations management during IC faces three main problems, standardization is undesirable, incomplete information with regard to the clients expectations, and subjectivity involved in valuation of aesthetics. These problems are aggravated by the relative inexperience of project managers and architects when it comes to IC.

Research limitations/implications
This thesis is meant to open discussion, not to provide a definitive answer. Meaning that to time constraints the method presented has not been sufficiently tested for validity and reliability. The proposed method requires further development by industry experts.

Practical applications
The method which is designed aims to improve the current situation by standardizing the presentation of information on a meta level with regard to the actual information on the client’s expectations and using visual information to close the information gap.

Originally/value
The topic in this context has not been studied before. The combination of management and architectural aspects of the building process in this thesis can offer experts with less experience in either of the fields a means to reflect how these two disciplines can work together to manage aesthetic expectations.

Keywords
Architecture & Aesthetics, Management Control, Integrated contracts, Communication, Information management
Management summary

The subject of the thesis is the integrated contracting (IC) process used during construction projects. The IC process is mainly used in civil construction projects, however now the process is also being used in the residential and institutional (RI) market. The difference between these markets is that in the RI market high value is placed on aesthetics. ABT, a consultancy firm active in the construction sector, has noticed projects based on IC have problems meeting the aesthetic expectations of their clients.

The main cause of the problem is the division of the design into two phases. In phase one the project is defined, but the design is not finished. The project is then sent to the market and service providers tender for the project. After the project has been won the design is finished by the service provider, however the client has little influence with regard to how the design is finished, as long as it adheres to the original project description. This means the design can deviate from the initial expectations of the client and this often leads to dissatisfied clients.

The goal of this thesis is to design a method which will allow the management of aesthetic expectations during IC. During IC the tool to manage expectations during IC is a value specification. A value specification is a contract which describes the project.

Theoretical framework

To analyze how the value specification can help with the management of expectations during IC, a communication model as described by Anumba and Evbuomwan (1999) has been combined with information from a literature review. It is argued that to effectively manage expectations, these expectations they need to be coded and stored as criteria in the value specification. This leads to research questions related to: What information should be documented and How should this information be documented. The framework is depicted in figure a.
The primary design goal is to: ‘Design a method or tool to help manage the expectations of clients regarding design and its aesthetics in Integrated Contracting processes more effectively’. The method which has been designed is named: Expectations Management Method for Aesthetics (EMMA).

One of the findings from the interviews which have been performed is that standardization in the RI-sector is undesirable. This has led to the choice to design EMMA as: a set of rules for the documentation and presentation of information with regard to the clients expectations. This is important as it will allow the participants during the IC process to discuss and compare their expectations with the expectation of the client more effectively.

The operation on a meta level also allows the incorporation of different tools from TC to describe the expectations of the client (plans, sketches, models, etc.). The method should provide a basis by which tools can be linked to other sources of information to describe expectations more explicitly.

To link various sources of information together, categories of information are created which range from expectations which provide insight into the mindset of the client to criteria which can be used to control a service provider. Attached to these categories are recommendations for the documentation of information in that category.

**Trial of Expectations Management Method for Aesthetics (EMMA)**

Two cases have been performed to test EMMA. The description of the cases according to EMMA rules led to a large number of assumptions with regard to the expectations of the client where made.
by the researcher. Assumptions which a designer or consultant must also make in order to create an understanding of the design assignment. The goal of EMMA is to present a template to structure and link this information and show where more information might be required.

One of the most important aspects of the trial was the description of aesthetic qualities using dichotomies. A cross case comparison with regard to the quality criteria shows differences in manageability when using visual and textual information. A main difference between the two cases is that the use of abstract images, which increase manageability with regard to aesthetics.

The trial also shows that tools which are used in TC can be used to set requirements for the design, which is logical as these tools where originally created for this purpose. However, they should be linked to information in multiple categories to better communicate the shared mindset on which they are based.

**Conclusion**

EMMA is an attempt to structure and present information in such a way that task related uncertainty is reduced. This should have the following effects: an increased understand of his/her own expectations by the client, an increased understanding of the client’s expectations by the service provider, and criteria which are sufficiently unambiguous to allow a project manager the control the design process.

A note has to be made with regard to the human factor in this process. The unique character of projects and the importance a client places on aesthetics means the process of determining what information and the coding of the information in the values specification, needs to be evaluated to assess whether this information presents the expectations and criteria in a manner which allows for effective management of the process. The consultant must anticipate when the combination visual and textual information is sufficient to be used as criteria for the design.

EMMA provides a first step toward a combined method which can be used to manage the clients expectations in IC more effectively. The method has been discussed with two ABT experts who stated: “it can be a valuable method to manage the expectations of the client during IC” and “the use of dichotomies and images to set aesthetic criteria can be helpful in current projects”. This is not enough to validate EMMA, but discussing the method provides a basis for the discussion of management of expectations during IC.
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1. Introduction

There is a trend toward increasing client value in the construction industry. Client value is a weighing of benefits and expenses with regard to a product or service (Thomson, Austin, Devine-Wright, & Mills, 2003). Clients are demanding higher value, because they find themselves paying large sums of money for defective works which do meet their quality standard (Juran & Gryna, 1993). Value is a broad term used to describe something which has worth or importance (Vickers, 2013). To disregard unsatisfied clients is unwise, as value management literature states that profit is a result of continuous conformance to what a client values (Leung & Liu, 2003).

One of the answers of the industry to the clients request for more value are Integrated Contracts (ICs). Integrated contracts are a relatively new form of contracting. Whereas Traditional Contracts (TCs) involved only construction based on a finished design described in a contract, IC uses contracts to distribute tasks with regard to design, construction, and operation of the building to a service provider. The objective is to increase value, decrease effort and reduce cost for the client (Favié, Sijbers, Abdalla, & Maas, 2010). Figure 1 and 2 show the traditional and IC contracting processes respectively.

A major difference between IC and TC is the moment of finished building design. In IC the design is not finished when it “enters the market”, whereas in TC the design is finished when it “enters the market”. This means in TC the knowledge of the service provider, which concerns mostly logistic aspects, is not incorporated into the design. A service provider is a collaboration between a contractor and sub-contractors formed during the second phase of IC.

This allocation of elements of the design means the client transfers the liability for those elements to a service provider. For example, if the client states the building should perform to an energy efficiency label, and it does not, the service provider can be litigated. This transfer of liability allows
the client to focus on his core competences. In this way IC aims to alleviate the client of risk and effort needed to complete a construction process (Takim, Esa, & Hamid, 2013). However, this division of the design across two phases during IC also has drawbacks.

The setup of the IC process makes it more difficult to manage the clients expectations regarding the design. Because the client has little influence on the design after the contract has been signed, or faces high costs to make changes to the design. The result may be clients frustrated with the design after completion; particularly when aesthetics are involved (CROW, 2005). Aesthetics concerns principles associate with the appreciation of beauty, especially in arts. Aesthetic elements of architectural design are concepts such as, color, form, expression etc. These elements of the design are subjective and the criteria which should guide the design often ambiguous, which makes them difficult to manage.

The increase in uncertainty regarding design and aesthetics gives rise to the need to manage expectations to prevent this frustration, as this lowers the client’s overall value evaluation and causes client dissatisfaction. In IC the expectations of the client can be managed by carefully formulating criteria for the design and documenting these in the value specification. The value specification is a document which contains criteria which need to be incorporated into the design in order to create a match between the expectations of the client and the finished building. Therefor this thesis focuses on the value specification to decrease uncertainty for the client and effectively manage expectations with regard to aesthetics during the IC process.

1.1 Company profile & problem context

This thesis is carried out for ABT. ABT is a multi-disciplinary consultancy firm providing consultancy for clients during construction projects. ABT has approximately 200 employees. These employees are active in the specializations structural engineering, architectural engineering, construction management, civil engineering and installation technology.

The thesis will focus on the Residential and Institutional sector (RI-sector). RI-sector collective noun for buildings in which to work, offer commercial services, healthcare or recreation. These projects are characterized by complexity, a large scale, and a unique set of criteria. Examples of projects in which ABT collaborated can be found in Figure 1-3.
Clients of ABT in the RI-sector are governments, semi-government or commercial entities. These clients are characterized by their professionalism and large amounts of resources. The construction of a building in the RI-sector effects a lot of stakeholders. The amount of resources involved in the construction also means there is not one designated person in charge. This is usually a task force, which is accountable to top management.

ABT works with clients using the IC approach, but ABT experiences problems with the management of the clients expectations with regard to aesthetics during IC. As the process is new in the RI-sector they request a better understanding of the problem and a possible solution.

1.2 Problem definition

During the intake and orientation process a problem statement was defined using the method as described in problem solving in organizations by J. van Aken, Berends, and Van der Bij (2012). First, a problem mess was identified and consequently a cause and effect diagram was used to identify the core of the problem. A cause and effect diagram gives the researcher freedom to relate causes and effects (Ishikawa & Loftus, 1990), which was necessary as the assignment description is broad. To construct the cause and effect diagram two focused discussions with two mentors assigned by ABT where performed. The diagram can be found in Appendix A.

As consultant for clients during IC projects ABT faces the mentioned problem concerning customers’ frustration with the mismatch between expectations and final design for new projects developed using IC. IC’s market share is growing which may present a problem as it would result in dissatisfied clients which also affects the level of satisfaction with regard to ABT’s service. This might reduce the demand for ABT services overtime, unless ABT can develop capabilities to better deal with this issue. Specifically, ABT would like to gain more insight into the problem and how it can be solved.

The main cause of the problem are the characteristics of IC. Starting with the novelty of the process which leads to relative inexperience both with industry experts and clients. The client is not well informed on the characteristics of an IC project and project managers do not have the experience or tools to effectively manage the client’s expectations. Note that the manager who needs to control the design process can be a project manager, but for aesthetics this can also be an architect. Furthermore, because the design is not finished the expectations of the client, the manager, and the designer can diverge. This problem is enhanced by: the lack of contact between the client and the designer, the characteristics of the RI-sector which make it difficult to standardize processes or parts of the design, and the subjectivity regarding aesthetics of the design. This leads to the following problem definition:

*ABT is unable to effectively manage client expectations with regard to aesthetics during IC in the RI-SECTOR.*
This problem can lead to deviation of the final design from the expectations of the client. In turn this leads to dissatisfied clients when ABT is contracted to manage this process. ABT desires a method or tool that can help them manage the aesthetics aspects of the IC process (outcome) more effectively.

1.3 Research goal

The goal of this research stems from the request by ABT to design a method or tool. A method is a particular procedure to accomplish a goal. A tool is a device to carry out a particular process. As the actors in a construction process and the buildup of the process itself vary between projects, the method which ABT desires should be usable by other organizations and under varying project conditions.

Design a method or tool to help manage the expectations of clients regarding design and its aesthetics during Integrated Contracting processes more effectively.

The method or tool should allow ABT to manage expectation using an IC-value specification. An IC-value specification is a contract which contains the conditions which must be fulfilled by the service provider. This can be done by communicating expectations as unambiguously as possible, which allows to the service provider insight into the client’s mindset and allows project managers to safeguard these expectations throughout the IC process. This should lead to a better match between the client’s expectations and the design, and consequently to satisfied customers for ABT.

1.4 Main research question and sub-questions

The main research questions stems from the goal set by ABT.

How can the clients expectations with regard to aesthetics be managed more effectively during IC in the RI-sector?

Currently there is only one publication which addresses IC in the RI-sector. The lack of literature on the process in this specific context means the first step is collecting general information on the process. This leads to the following research question.

RQ 1: What are the main difficulties when managing the clients expectations with regard to aesthetics in IC?

The following research questions are related to the request by ABT for the design of a method or tool. To align expectations during IC, project managers make use of a value specification. Therefore, the content of the value specification and the way the information is presented are the main topics of this thesis. This leads to the following research questions.
RQ 2: What information should the value specification contain to manage the clients expectations in IC more effectively?

RQ 3: How can the information in the value specification be presented in the most optimal way to communicate a shared mindset and set criteria which can be used manage expectations more effectively?

1.5 Set up of problem-solving project

This thesis follows the logic of the regulative cycle (Van Strien, 1997). The research model can be found in Appendix B.

During the intake period the (1) problem mess and (2) problem definition have been determined. Validation the business problem and generating general knowledge in a real life context means an empirical analysis must be performed (Hennink, Hutter, & Bailey, 2010). The (3) analysis and diagnosis of the problem and IC process is described in Appendix C to H. Appendix C contains a description of the method used to validate the business problem and analysis the process. The interview guide can be found in Appendix D. Appendix E and F contain the results of the validation of the business problem and the analysis of the IC process. Appendix G contains a description of the tools used to communicate expectations during construction processes. Finally the notes form the interviews are presented in Appendix H.

The next step in regulative cycle is (4) plan of action. During this step a solution is designed following the design process as described by J. van Aken et al. (2012). First, the validated problem statement and definition from the first phase are used as basis for the design. Second, theoretical information is used to develop specifications to which the design must adhere. To validate the applicability of the theoretical information empirical evidence is gathered to validate the design propositions grounded in literature and gain more understanding of how the problem can be solved. Third, the process of sketching, outlining and detailing the design are discussed by presenting various stages in the design process. This process should lead to a solution for ABT’s problem. Finally after the design is finished two cases are used to explain and explore the functioning of the design.

So, to underpin the design of the method or tool this thesis is uses theoretical and empirical input. The theoretical input is used to define design proposition which can be used during the design. The empirical evidence is used to validate findings and ground the information from theory in the context of IC in the RI-sector. The evidence is collected using a qualitative approach. Qualitative research attempts to understand reality by examining it in a holistic way (Corbin & Strauss, 2008). It also flexible and allows for in-depth examination of phenomena, this is necessary because management of aesthetic expectations has not been studied in relation to the context of IC in the RI-sector.
1.6 Scientific relevance & deliverables

Currently there has been little research on expectations management during IC in the RI-sector. The specific context of the thesis means research from other fields needs to be assess for validity and applicability.

The main gap lies in the absence of reflection regarding aesthetics in expectations and project management literature. Currently IC is mainly used in the civil construction sector, which is concerned with the construction of infrastructure. These projects do not have the same requirements with regard to aesthetics, this results in a lack of experience and literature on managing the clients expectations with regard to aesthetics during IC.

This thesis aims to combine aspects of contracting and expectations management literature to assess what problems arise during IC and how they may be solved. Subsequently, the findings are related to aesthetics to provide a solution to the problem of ABT and open the discussion on managing aesthetic expectations during IC in the RI-sector. Specifically the research will develop a method/tool that ABT can use to manage client expectations regarding design/aesthetics.

1.7 Document setup

The document is set up as follows. Frist, the theoretical background is presented. In this chapter integrated contracting, expectations management, and aesthetic value are defined. The chapter concludes with a conceptual framework, which is used to design a method/tool. Second, the design of the method/tool is described. This is done by defining design specifications, which are used during the sketching and outlining of the design. The chapter concludes with a detailed description of the design, i.e. method/tool. Third, the method/tool is trial in two cases. The chapter concludes with a reflection on these cases. Finally, the conclusion of the thesis is presented by discussing the findings, theoretical implications, and limitations. The chapter concludes with the closing thoughts of the researchers.
2. Theoretical background

The literature review covers the main topics as described in the main research questions: integrated contracting, expectations management, and aesthetics. The objective is to define the terms and describe their characteristics. This information is then linked to the problem statement and the design goal to provide insight into the functioning of the tool or method which is to be design. During the design a second literature review is performed to provide recommendations for the design.

The search strategy is based on the keyword strategy and the snowballing technique. The keywords used during the search are, Integrated contracting, Project management, Expectations management, Value management, Aesthetics, and architecture. The fit for purpose criterion was used for the selection of literature, as this thesis aims to explore new ways of solving the problem of ABT. To assess validity the keywords and information distilled from the literature study have been discussed with industry experts at ABT.

2.1 Integrated contracting

Integrated contracts are a collective noun for building processes where construction and a variable amount of the design are performed by a service provider. In this section findings from literature are presented to describe the characteristics of ICs. During the review four advantages and four disadvantages have been uncovered, they are presented below.

The first advantage is the single point of responsibility. The service provider in phase two of IC acts as one party, all tough it consist if a multitude of smaller parties. This means that if there is something wrong, liability is much easier and clearer for the client (Favié et al., 2010).

Second, is the better alignment of design and construction. A service provider designs and constructs the project, this means the design can be optimized with regard to resources needed for the actual construction (Beard, Loulakis, & Wundram, 2001).

Third, is more certainty for the client with regard to time and costs. When the contract is set up a delivery time and price are set. Research also shows that projects have less change of delays, which might be due to a smaller chance of ‘meerwerk’ (Gransberg, Koch, & Molenaar, 2006). ‘Meerwerk’ is a change in the design at a time when the price has been set. The changes in the design can result in extra costs, which are to be paid by the client in traditional project, but since the service provider is responsible for design this applies less to IC, which results in less chance of going over budget with regard to TC (Levy, 2006).

Fourth, are possible savings with regard to time and costs. Time savings are attributed to the ability of the service provider to execute design and construction in parallel, and because the communication during design happens internally (Masterman, 2003). Cost savings are attributed to the alignment of design and contracting, and the application of value management to find an optimal value for money (Levy, 2006).
There are also disadvantages to ICs, first is that setting up the value specification requires time and expertise (CROW, 2005). If the value specification does not describe the expectations of the client adequately there is a large chance the finished product will deviate from these expectations. Practice shows it is difficult for clients to define all aspects they attribute value to, before the design is made (Chritamara, Ogunlana, & Bach, 2002).

Second is that even when great care is taken in setting up the value specification there is still a chance that the finished building does not meet the expectations of the client. The value specification only creates boundaries for the solution, the multitude of possible solution sand the possibility of misinterpretation of the specification mean it is possible for the finished building to not meet the expectations of the client, which leads to dissatisfaction (Thomson et al., 2003).

Third is that new insights often lead to higher costs. Once the design start the client often discovers aspects he want to be included in the design. In traditional contract these are incorporated into the design because of the close contact between the architect and client. In ICs expectations which are not stated in the value specification often lead to higher costs or delays.

Fourth are the high transaction costs. Not only does the client needs to make a lot of effort in the preparation. The service provider also have to make large investments, without knowing if they will win the tender. This often results in a compensation for service providers even if they do not win the tender (Gransberg et al., 2006).

This thesis aims to provide more insight into the management of expectations and thus especially the first two disadvantages are covered in this research.

### 2.2 Expectations management

In the construction industry project success has remained an ambiguous term, it means different things to different people (Chan & Chan, 2004). If a project is to be successful, from the client’s perspective, it must meet his or her expectations. Therefore it need to be assessed what the key performance criteria of a project are to a client. Consequently these criteria, or expectations, must be managed throughout the project.

The importance of managing expectation is underlined as it is closely linked to the client’s evaluation of a service or product. There are two sides to the evaluation of a product, expectations and perceptions. Expectations are qualities which are desired before the product is finished, perceptions are an evaluation of how the qualities are reflected in the product (Pitt & Jeantrout, 1994). Disconfirmation theory states that the valuation of a service or good is linked to the performance of the product, reflected upon the initial expectation the client had toward this product (Oliver, 1980). Pitt and Jeantrout (1994) define service value as: ‘a gap between the clients expectations of a service and the customers perceptions of the service received’. For this thesis the expectations of a client are central and they can be divided into three groups, fuzzy, implicit, and unrealistic (Ojasalo, 2001).
Fuzzy expectations occur when a client does not have a clear understanding of the outcome they desire. An improvement of a current situation is wanted, but the client does not know what kind of improvement they want (Ojasalo, 2001). The expectations can be made less fuzzy by focusing the expectations. This process occurs when the service provider and the client interact. As the interaction matures the client becomes aware of the type of solution which is desired, allowing the service provider to match it more closely.

Implicit expectations are aspects of a service which clients have grown accustomed to and therefore do not state explicitly (Calonius, 1987). Often these kind of expectations are linked to the duration of a service. Long-term service agreements make that a client will expect a certain treatment, which can generate a bond and provide long term satisfaction. A short term agreement generates short term satisfaction, which dissipates faster.

Unrealistic expectations are expectations which are highly unlikely to be met by the service provider or the client themselves (Grönroos, 1990). Often these type of expectations require the project to be at an advanced stage or completed to be found out. Transforming unrealistic expectations into realistic ones thus means the design has to be finished to a certain degree.

This thesis focusses primarily on communication of fuzzy expectations, the tool/method which is to be designed should help an expert to focus and communicate fuzzy expectations. This important as expectations as clients are often complex and the client does not know what they expect of the building. During the IC process this is especially important as contact between the client and the service provider is detrimental to the benefits related to IC.

2.3 Aesthetic value

When thinking of a building it is impossible to neglect aesthetics. The appreciation or critique of its beauty is the realm of aesthetics and whether or not a client appraises the looks of a building has a large effect on their valuation of the building and consequently the parties involved in its design and construction (Pérez-Gómez, 2008) (Quinn, 1990).

Aesthetic value is linked to the emotions which an object provokes in an observant. Emotions are subjective and it is important to realize that recipients decode or interpret stimuli selectively. In works of art aesthetic stimuli possess great diversity, however the amount of stimuli which are processed relies on the recipient and is related to their level of expertise.

The stimuli which are perceived evoke two types of emotions, subtle feelings and coarse emotions (Grönroos, 1990). Subtle feelings are simple and pure pleasures. They are elicited by harmonious combinations of colors, lines, and sounds. Coarse emotions happen when memories or associations are linked to the perception of aesthetic stimuli. As Kant puts it: ‘our imagination allows us to interpret aesthetic stimuli and construct our own meaning’ (Kant, 1911).

The combination of being selective about what we perceive and then giving it a meaning of our own, makes aesthetic value or expectations very difficult to predict and manage. As the evaluation of
aesthetic elements of the design is important aspect of the final evolution of ABTs’ services, this are one of the main topics during the design of the tool/method.

2.4 Conceptual framework

To assess how the tool/method which is to be designed can help manage expectations a framework is presented below. The framework is based on the communication model as described by Anumba and Evbuomwan (1999). The communication model is used to represent the use of the value specification to communicate the expectations of the client to a service provider. Subsequently the problem statements and the research questions are related to this model. The context of the thesis means the sender is a client and advisors in phase one, the receiver is a service provider in phase two, and the medium is a value specification. The gray box in Figure 2-1 depicts this model.

Figure 2-1. Framework relation of RQs to design of method

The IC process starts with expectations of the client toward the building which is to be designed and constructed. To effectively manage these expectations they need to be coded and stored as criteria in the value specification. As the process progresses the client will also reflect and adjust his or her expectations. This is depicted by the feedback loop in the framework between ‘documented
information on expectations’ and ‘clients expectations’. This process will allow the setting of more explicit criteria which can be used to manage the design process more effectively.

During the process it is also important that the consultant assesses the importance of aesthetics in relation to other benefits, such as benefits with regard to cost or time, which occur when the design is finished to a lesser degree (Favié et al., 2010). A client needs to make a choice with regard to the value of aesthetics as this determines the amount of information and the type of information which needs to be documented in the value specification. What information should be documented is linked to the cause and effect diagram: ‘Client is not well informed on IC process’, ‘designer does not understand client expectations’, and ‘Manager cannot control the design process’; and to RQ 2.

Decoding means the service provider has to ‘make sense’ of the information in the value specification. Once the information is decoded by the service provider it will be transformed into a design. The decoding of the information is linked to the cause and effect diagram: ‘designer does not understand client expectations’; and to RQ 3.

2.5 Summary

The integration and linking of information regarding contracting, value management, and aesthetics to a communications model has yielded a framework which explains how the tool/method can help to manage expectations more effectively. The framework also shows how the design is linked to the research questions and the cause and effect diagram. The framework will be used in the next chapter during the design.
This chapter describes the design of the method/tool for ABT. First the design method is described. Second, the design specifications are defined. Third, the process of sketching and outlining the design is described. Finally, the design is presented in detail.

3.1 Design Method

The design process starts with the problem definition from the previous phase. The second step in the design process as described by J. van Aken et al. (2012), is the development of specifications. To provide support for the design the development of specifications is based on the design science methodology. This methodology focuses on the development of general knowledge to underpin the design of a solution (J. E. van Aken & Romme, 2009).

To provide knowledge for the design this thesis makes use of construction principles and design propositions. Construction principles (CPs) are a set of proposition to optimize processes which are grounded in organization science (Romme & Endenburg, 2006). The literature used for the design is discussed for relevance per topic in the recommendations from literature section. Design propositions (DPs) are guidelines for the optimization of a process which are grounded in construction principles and related to the context of the design. These design propositions are based on CIMO-logic: a Context (C), in which an Intervention (I) takes place and through specified Mechanisms (M), a certain Outcome is achieve (O). The section will conclude with a description of the design goals and restrictions (Denyer, Tranfield, & Van Aken, 2008).

The DPs are than used as a template and guideline for qualitative research. Specifically to engage in in-depth interviews which provide data which can be used during the design of the method/tool. The interviews are unstructured, only the design propositions are presented to the informant, as the researcher is looking for information which is not known to him and which can be used in the design (Corbin & Morse, 2003). The informant selection is performed by two gate keepers at ABT. The selection criteria where: Field of expertise, knowledge with regard to IC, disposition toward IC. The interview guide can be found in chapter 0.

The DPs and recommendations from the interviews will be used to design a method or tool to help manage the expectations more effectively during IC. The design will be elaborated upon by summarizing the most important elements of the design process and by describing different versions of the design and discussing the respective changes which have been made. The design will then be trialed in the next chapter.

A summary of the data which is used underpin the design can found in Table 1.
Table 1. Research method design phase

<table>
<thead>
<tr>
<th>Data collected to</th>
<th>Collection methods</th>
<th>Resources</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide theoretical underpinning CP</td>
<td>Literature review</td>
<td>Organizational literature</td>
<td>Fit for purpose criterion</td>
</tr>
<tr>
<td>Grounding of CPs to set DPs</td>
<td>Semi-structured interviews</td>
<td>4 Architects, 4 Project managers, 4 Students</td>
<td>Linking data to CTs and problem statement, using CIMO logic (Denyer, 2008)</td>
</tr>
<tr>
<td>Create design</td>
<td>Focused discussions</td>
<td>4 focused discussions</td>
<td>Reflecting design on design propositions</td>
</tr>
<tr>
<td>Validate design</td>
<td>Case study, focused discussion</td>
<td>2 Cases, 2 focused discussions</td>
<td>Evaluation of CIMO DPs</td>
</tr>
</tbody>
</table>

3.2 Design Specifications

Here the design space for the tool/method will be defined by creating design specifications. First the reviewed literature is discussed. The information distilled from the literature is then organized according to CIMO-logic to form design propositions.

3.2.1 Literature used for design

Expectations management: Uncertainty when designing

In the absence of literature with regard to managing aesthetic expectations in IC I focus on literature regarding the difficulty designers face when the information with regard to their task is incomplete or ambiguous. The stream of literature which is concerned is design literature, which focuses on the information designers require to create a design. Specifically, literature with regard to design under uncertainty can help uncover problems designers face and provide recommendations as to what information should be provided to help them create a design which meets the expectations of the client. This literature can be used to ground CPs which can be used during the design of the method or tool.

As stated in the previous chapter the division of the IC processes into two phases increases uncertainty for client’s as s/he is unsure of what the final design will look like’. It also increases uncertainty for the designer, as he does not have complete or ambiguous information with regard to the expectations of the client. The characteristics of IC when used in the RI-sector sector increases the uncertainty as the expectations of a client with regard to these project are often complex and designs are characterized by their uniqueness.

There are three types of uncertainty a designer faces (Daalhuizen, Badke-Schaub, & Batill, 2009). First is uncertainty attributed to the individual, which stems from the lack of knowledge on a certain topic. Second is uncertainty attributed to the social context, this stems from the need to make a
design in collaboration with others and the lack of information exchange within the design team. Third is uncertainty attributed to the task, which stems from a lack of understanding, or the complexity, of a design task. For this thesis uncertainty with regard to the task is the most important as the value specification is meant to communicate the task to the service provider and allow project managers to manage the expectations of the client during IC.

To cope with the task related uncertainty a designer can make use of his/her skills, rules, and their knowledge (Beheshti, 1993). Skills are used in routine situations when a pre-set response can be made. As the skills of a designer are not influenced by the value specification they are not considered during this thesis. Knowledge is used when the designer has to analyze a situation and develop an understanding to create a design (van der Voordt & Wegen, 2005). Knowledge can be increased by presenting the designer with unambiguous information with regard to the clients expectations and setting clear criteria to judge the design.

Rules are used when a designer recognizes elements of a problem. They allow the designer to make shortcuts in the design process. A rule is an explicit governing principle within a system. An example would be a shared syntax or format to present the information. Rules for the documentation and presentation of the information can decrease uncertainty with regard to the task and make the design process more manageable. Explicitly stating the expectations and criteria for the design is an important step in making the design process more manageable. Thus the method or tool should set rules for the syntax and formats used during the management of aesthetics during the IC process.

CP 1: Task related uncertainty can be reduced by increasing the knowledge of the designer.

CP 2: Task related uncertainty can be reduced by setting rules.

During the design process the information needs to cross information boundaries. There are three types of boundaries, the syntactic boundary, the semantic boundary and the pragmatic boundary. This thesis focuses on the syntactic boundary, which is related to the transfer of information. During IC the value specification is used to cross the syntactic boundary. Carlile (2004) makes three recommendations with regard to certain aspects which need to be taken into account when crossing the syntactic boundary. First, models or objects should be used for the representation of information. Second, a shared syntax or language should be established by defining the terms used in the system. Third, a shared format should be provided for the presentation of the information with regard to the clients expectations and the criteria.

CP 1.1: Increase the knowledge of the designer by presenting the designer with models or objects which explain the task.
CP 2.1: Provide rules for the coding and decoding of the information by establishing a shared syntax or language
CP 2.2: Provide rules for the coding and decoding of information by providing a format for the
Information needed to manage expectations: The values of the client

The goal of the study of values management literature is to ground CTs which can be used to communicate the expectations of the client, this goal is related to CP 1. Literature related to values management is considered (Dumond, 2000; Miles, 1962; Thiry, 2001; Thomson et al., 2003; Woodruff, 1997). This literature stream focuses on the values of client which can be used to categorize information to allow it to be managed more effectively.

The information in the value specification is used for two aspects of expectations management: presenting information regarding the expectations of the client to the service provider and setting criteria which can be used by project managers to manage the expectations of the client. One of the reasons this is difficult is that expectations with regard to aesthetics are often subjective and ambiguous. During the IC process the stakeholders in the first phase ‘make sense’ of a situation and create a shared mindset with regard to the desired result (Thiry, 2002). However, as the communication process between the service provider and the client is hampered by the set-up of IC the expectations need to be uncovered during the first phase and communicated to the service provider through the value specification. To create a design which matches the expectations of the client a service provider needs information with regard to the shared mindset created by the client and his consultants. Values based terms can be used to categorize information with regard to the clients expectations to communicate it more effectively.

Using values to describe the clients expectations

To decrease uncertainty with regard to the client’s expectations it is argued that the values of the client should be communicated. Keeney (1994) argues that the clients expectations are connected to their values and they can thus help to provide insight into the expectations of the client.

CP 1.2: Increase the knowledge of the designer by explicitly communicating the values of the client.

Values are the frame by which individuals make judgments. Values are subjective and held internally, however when individuals collaborate to reach a common goal a shared values system can emerge. A values system is a shared perception of value by a group of people who aim to reach a common goal. Note that there is a difference between values and value, value is a judgment related to a product or service based on the values of that person or group. For a values system to emerge values need to be expressed, shared, and discussed (Vickers, 2013). To assess how values can be used to communicate the expectations of the client three views related to value and values from different fields are described and related to IC.
First, the philosophical framework is articulated by Dent (1995):

... value can be described by discussing three connected issues: first, on what sort of property or characteristic ‘having value’ or ‘being of value’ is; second, on whether having value is an objective or subjective matter, whether value reposes in the object or is a matter of how we feel towards it; third, on trying to say what things have value.

As aesthetics are subjective one of the difficulties lies in making these subjective values more objective so they can be used to set criteria for a design. This can be done by expressing what has value, for example an entry can have value for the client. The next step is explaining what characteristics of an entry have value, for example the amount of light in the entry. Thus uncertainty with regard to values can be decreased by creating a structure which links values to characteristics which are valued. Characteristics which are valued will be referred to as qualities.

**CP 1.2.1: Communicate values by creating a structure which shows what characteristics are valued, i.e. stating what has quality.**

Second, a framework described by Holbrook (1999) considered is. The framework is based on the assessment of value as an preference experience between concepts within a dichotomy. A dichotomy is a division of a concept into perceived opposites, such as dark and light or open and closed. The framework uses a dichotomy to stimulate conflict, subsequently the conflict is resolved by letting the client choose a range within the dichotomy.

**CP 1.2.2: Communicate values by using dichotomies**

Third, a framework is presented which relates values to qualities of the build environment. The build environment is a cultural, spatial, and material product of human labor that combines physical elements in forms for working, living, and playing. Thomson et al. (2003) propose a definition of value for qualities of the build environment based on the three tenets of western architecture established by the Roman architect and engineer Vitruvius. The tenets are commodity, firmness and delight. Table 2 shows these tenants and their translation into modern terms: build quality, use, and aesthetics.

**Table 2. Vitruvian principles related to Qualities of the build environment**

<table>
<thead>
<tr>
<th>Vitruvian principle</th>
<th>Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firmness</td>
<td>Build quality</td>
</tr>
<tr>
<td>Commodity</td>
<td>Use</td>
</tr>
<tr>
<td>Delight</td>
<td>Aesthetics</td>
</tr>
</tbody>
</table>
CP 1.2.3: Communicate values by using qualities of the build environment to specify what type of quality is desired.

Presentation and organization of expectations and criteria

Literature related to the presentation and organization of information is used to assessed to ground CPs which can be used to assess how the expectations and criteria for the design should be presented to be able to effectively manage expectations during IC. This stream includes among others information management and communication literature. In particular the focus is on visual representation of information. There is also a part on organization of information, as this can help to increase understanding of the information.

The communication process researched during this thesis consists of a sender, a receiver, and a medium through which the information is transferred (Anumba & Evbuomwan, 1999). For IC in the RI-SECTOR the sender is a client and consultants in phase 1, the receiver is a service provider in phase 2 and the medium is a value specification. During this communication process the information is coded and decoded several times. To optimize this process the presentation and organization of the information must be managed.

Presentation is a form based classification of communication. There are three modes of communication within the form presentation: verbal, written (including drawings, pictures etc.), and signs (everything else, for example body language). As the topic of this thesis is communication of information through the value specification only the written form of communication is considered, i.e. textual and visual. This section focuses on how textual and visual information can be combined to increase comprehension and recall of the information.

Multiple studies conclude that pictures can increase comprehension (Levie & Lentz, 1982). Comprehension is the interpreting of pictures or words and understanding their collective meaning. Although scholars agree that pictures increase comprehension, Carney and Levin (2002) note that the relation is complex. It is suggested that pictures increase comprehension by providing a context for organizing the information in a text. Also, images can be effective substitutes for text when the information is primarily visual, as is the case with aesthetics.

CP 1.1.1: Rule for coding and decoding: Accompany text with images to increase comprehension.

Once information is understood it must be recalled if it is to be used. Recall is the retrieving of individual elements of pictures or words from memory. Recall can be assessed in two ways, free recall and cued recall. Free recall means people have to repeat what they read without cues, i.e. stimuli which are linked to the information. Cued recall means a stimulus related to the information is presented to the person. Many studies report that both free and cued recall are higher when
pictures accompany text. Scholars call this the ‘pictorial superiority effect’. It is speculated that this is due to greater brain activity when pictures are included with text (Houts, Doak, Doak, & Loscalzo, 2006).

CP 1.1.2: Rule for coding and decoding: Accompany text with images to increase recall.

Organization of visual and textual information can be used to create a structure which links pieces of the information together to create an oversight of a task. Organization is the applying of a structure according to rules. When the information with regard to aesthetics is unorganized this can increase uncertainty for the client as the receiver of the information is allowed more freedom to interpret this information (Mumford, Scott, Gaddis, & Strange, 2002). While this might be good to stimulate creativity, the increase in uncertainty can lead to the design not meeting the client’s expectations. Well organized information allows less freedom of interpretation and should thus in information which is more manageable.

The most logical first step is organizing the information according to dependence. Dependence means that a piece of information is required for the following piece of information to make sense. This seems intuitive, however the dependence structure needs to be made explicit in the form of figures or models to increase comprehension. The information can also be organized according to the recommendation uncovered during the research of value to communicate expectations presented in the previous section.

To maximize comprehension and recall several guidelines have been distilled from literature, the first two stem from research by Carney and Levin (2002), the third and fourth stem from research by Houts et al. (2006). First, The visual information should overlap as much as possible with the textual information. Benefits occur when text and pictures provide supporting, or congruent, information. Second, the visual information should be chosen with regard to the desired functions they are to play. Functions which have been identified are: representation (to make the text more concrete), organizational (to make the text more coherent), interpretational (to make the text more comprehensible), or transformational (to make the text more memorable). Third, pictures should be created collaboratively to account for differences in interpretations between different disciplines with the construction sector. Fourth, it is suggested that the viewer should be guided in processing the visual information. This can be achieved by using magnifications, arrows, and bright, contrasting colors. The inclusion of captions can also help when processing visual information.

CP 2.2.1: Overlap visual and textual information
CP 2.2.2: Choose information with regard to function
CP 2.2.3: Involve different disciplines when creating visuals
CP 2.2.4: Guide the viewer through the information
3.2.2 Design propositions

The design proposition are based on the CP-framework as presented in Appendix J. The information in the framework is organized according to CIMO logic. This leads to the following design propositions.

<table>
<thead>
<tr>
<th>Design proposition 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(C)</strong> When using the value specification to align the expectations of the client and the service provider.</td>
</tr>
<tr>
<td>Communicating the values of the client,</td>
</tr>
<tr>
<td>Using dichotomies to communicate the expectation of the client,</td>
</tr>
<tr>
<td><strong>(I)</strong> Explicitly stating the type of quality related to the build environment which is desired,</td>
</tr>
<tr>
<td>Combining textual and visual information, increases comprehension and recall, which provides the designer with knowledge regarding the expectations the client has with regard to the to-be finished building.</td>
</tr>
<tr>
<td><strong>(M)</strong> This should reducing task related uncertainty and lead to a design which matches the expectations of the client more closely</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Design proposition 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(C)</strong> When using the value specification to align the expectations of the client and the service provider.</td>
</tr>
<tr>
<td>Overlapping visual and textual information</td>
</tr>
<tr>
<td>Choosing information according to functionality</td>
</tr>
<tr>
<td><strong>(I)</strong> Creating pictures collaboratively</td>
</tr>
<tr>
<td>Guide viewer through information</td>
</tr>
<tr>
<td>Rules for syntax or language</td>
</tr>
<tr>
<td><strong>(M)</strong> sets rules for the presentation of information, which increases rule based knowledge</td>
</tr>
<tr>
<td><strong>(O)</strong> This should reducing task related uncertainty and lead to a design which matches the expectations of the client more closely</td>
</tr>
</tbody>
</table>

3.3 Sketching and Outlining Design

The sketching and outlining of the design is based on the design propositions and the results from the interviews. The results from the interviews is described Appendix K, the notes form the interviews can be found in Appendix L. The design process is explained by describing five version of the design in Appendix M. What follows is a summary of the most important findings.
The primary design goal is to: ‘Design a method or tool to help manage the expectations of clients regarding design and its aesthetics in Integrated Contracting processes more effectively’. The restrictions for the design stem from the cause and effect diagram as presented in Appendix A, especially the following problems are important during the design: no contact between client and service provider, design not finished, difficulties with standardization. But first the design needs a name:

Expectations Management Method for Aesthetics (EMMA).

As standardization on what information must be gathered troublesome, standardization should occur on a meta level. This has led to the choice to design EMMA as: *a set of rules for the documentation and presentation of information with regard to the clients expectations*. This is important as it will allow the participants during the IC process to discuss and compare their expectations with the expectation of the client more effectively.

The operation on a meta level also allows the incorporation of different tools from TC to describe the expectations of the client (plans, sketches, models, etc.). The method should provide a basis by which tools can be linked to other sources of information to describe expectations more explicitly.

To link various sources of information together, categories of information are created which range from expectations which provide insight into the mindset of the client to criteria which can be used to control a service provider. Attached to these categories are recommendations for the documentation of information in that category.

### 3.4 Detailing EMMA

Figure 3-1 shows the final (fifth) version of the overall EMMA structure which is based on systems engineering as described at the end of Appendix G. Once it is filled out the overall structure (Figure 3-1) will show the connections between pieces of information regarding the mindset of the client and criteria for the design. The overall structure will present terms, i.e. keywords, which are linked to pieces of information regarding expectations. The information in the overall structure is divided into two groups, mindset and criteria. These groups are divided into four categories: values, concepts, qualities, and requirements. In this section the four categories are discussed and the type of information belonging in the categories is described. Also examples of terms which can be used in the overall structure are presented.
The first category is values, values are important personal beliefs that people hold with regard to their goals and themselves (Kelly, 2007). Values are the most vague manner of representing the clients expectations.

The second category is concepts, concepts are abstract ideas or notions. The concepts in the structure are linked to the values of the client. They allow a division of the value into ideas which can be used to express the value.

The aim of describing a term of value is to provide information which can be used to cross a semantic border. A semantic boundary means there is a problem while translating a message.

The researcher argues that values and concepts should be expressed in the syntax or vocabulary used in the industry of the client, as this will increase understanding of the design. During the interviews an architect stated: “Clients do not know what they want. It is the task of the architect to show them what is possible”. The researcher argues that this can be true with regard to the design of a building, but an organization should have a clear vision of their values and the concepts which propagate these values.

Two examples of values are presented in the form of two slogans. Slogans often provide insight into the values of a brand or organization. If the building is to be coherent with the values of the organization these can be used as a basis for the design. The slogans in the example are used by 3M, a leading technology company, and Calvin Klein, a fashion brand. The concepts related to these values divided the value and allow more depth in the description.

<table>
<thead>
<tr>
<th>Examples of values</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3M</td>
<td>Innovation</td>
</tr>
<tr>
<td>Calvin Klein</td>
<td>Between love and madness lies obsession</td>
</tr>
</tbody>
</table>
Between the second and third category a transition takes place from a description of the mindset, to qualities of the build environment. During the transition alternatives are considered and design decisions are made. Whereas information with regard to the mindset has a more descriptive character, the transition has a more explanatory character. The description of the transition is based on an article presented by Tyree and Akerman (2005). The article describes a format to decrease ambiguity in the design of architecture of information systems. This format has been adapted to allow for the description of the transition from concepts to qualities and can be found in Appendix N. It is argued that explicitly stating the decision, assumption, constraints, alternatives, and arguments involved in the design, allows other designers insight into these design decisions. The information should allow the designers to continue the design in a more coherent manner.

The third category is qualities, qualities are distinct characteristics of a building which are valued by the client. Qualities are criteria related to the build environment. These qualities are related to the three tenets by Vitruvius: Build Quality, Use, and Aesthetics. The description of a quality can be used as criteria to manage the design during IC. Often concepts find their expression through all three tenets as can be seen in the example.

<table>
<thead>
<tr>
<th>Examples of concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>3M</td>
</tr>
<tr>
<td>Calvin Klein</td>
</tr>
</tbody>
</table>

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The documentation of the qualities is closely linked to the management of the clients expectations as the qualities are used as criteria to judge the design. To further decrease ambiguity both visual and textual information should be used and presented in the form of a dichotomy. Dichotomies can be used to specify aesthetic qualities while providing the service provider a range wherein the design is to be finished.

The use of dichotomies will now be explained using tones. A dichotomy within tones can for example be dark and light. The amount of freedom the designer has, is determined by the amount of detail or information stored in the dichotomy. Figure 3-2 shows a textual and visual representation of a dichotomy within the Aesthetic quality, tone. Figure 3-3 shows the use of a dichotomy with regard to the aesthetic quality openness.

<table>
<thead>
<tr>
<th>Examples of Qualities</th>
</tr>
</thead>
<tbody>
<tr>
<td>3M</td>
</tr>
<tr>
<td>Aesthetics</td>
</tr>
<tr>
<td>Use</td>
</tr>
<tr>
<td>Build</td>
</tr>
<tr>
<td>Calvin Klein</td>
</tr>
<tr>
<td>Aesthetics</td>
</tr>
<tr>
<td>Use</td>
</tr>
<tr>
<td>Build</td>
</tr>
</tbody>
</table>

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22
The fourth category is requirements, requirements allow a client to prescribe parts of a design to the service provider. To set requirements tools from TC can be used, such as plans, details, renders, models, etc. By linking pieces of information documented in other categories of EMMA to requirements it becomes more clear what the design decisions have been based on and how the design can be finished while adhering to the expectations of the client.

3.1 Summary

Based on the information from chapter one and two, EMMA has been designed as a set of rules which operate on a meta level with regard to the information describing the expectations. These rules guide the categorization and presentation of information. The most important aspects of EMMA are the overall structure which shows how pieces of information are connected and use of dichotomies to present visual information with regard to the expectations of the client.
4. Trial of Expectations Management Method for Aesthetics

The objective of the trial is to explain and test how EMMA can be used to structure, document, and present information which can be used to manage expectations with regard to aesthetics.

4.1 Case 1: Expectations management and EMMA

The first case tests how EMMA can be used to structure information. The case regards a building for the Harbor master building in the center of Zwolle. The case was selected because of the high architectural prestige and small scale of the project. The case came with a value specification and a separate document which described the expectations with regard to aesthetics.

A translation of the original assignment description in the value specification is displayed below. The original text can be found in Appendix N. In the text terms related to aesthetics where marked by the researcher. These interpretations are opportunities for the expectations of a service provider and the client to diverge. In the following paragraphs the information in the text is categorized and described according to EMMA rules.

Introduction Harbor master case

The harbor master building is an important visual point and it should contribute to an hospitable entrance to the city. This means high demands will be made of the aesthetic design. The assignment consists of a design of a building in a historic location with toilets, an office for the harbor master.

The harbor master building is a clear landmark at the entrance of the city. The building forms an ensemble together with the mouth of the Great Aa, the reduced wharf, the cycling and walking bridge and the wall of the Maagjesbolwerk.

The design is inspired by harbor master buildings, with is reflected in a sober and goal oriented design, with an honest use of materials tailored to the overall concept. In addition to the all-sided character of the building, the possible devices are to be designed coherently and not as later additions to the building. Here one can think of: pins on the drainpipe, not matching blinds and applying flammable or breakable material. Also installation should be designed coherently. The vent for the municipal sewer system, can be added as emphatic element to be architectural design.

The aim of the visual representation of information in the overall structure is increasing comprehension and recall by providing a visual summary. This is done by relating terms in the original assignment description to one of the categories in the EMMA structure (Figure 4-1). The terms in the highlighted path are used to demonstrate how information linked to these terms can be documented and presented. The results are discussed per category in the EMMA structure.
The value ‘presentation of Zwolle’ is an interpretation of the original assignment description by the researcher. This lead to the description of the value in Figure 4-2.

The same aim applies for the documentation of a concept. In this case the documentation format has been filled out for ‘harbor’.
The transition document serves an explanatory purpose and provides insight into the relation between concept and qualities of the build environment (Figure 4-4).

The aim of the documentation of an aesthetic quality is to formalize the quality to allow its management throughout the IC process. The example in Figure 4-5 shows the documentation of the quality ‘sober’. The quality is depicted in three different ways using the dichotomy: sober / extravagant. The images used to depicted extravagance in the first two dichotomies where selected with regard to shapes. Two different depictions are used to illustrate that the client does not value straight angled over organic architecture. Subsequently the third dichotomy shows sober expressed in terms of color and shape.
The debate over whether the images show what the researcher means is not the aim of the description. The aim is to show information included in the value specification can be misleading if it is not properly documented or described both textually and visually. This means an extra description of the images in the dichotomy might be necessary. The description can be expanded to hold more information, however at a certain point information overload will occur. Information overload occurs when the amount of information input in a system exceeds its processing capacity (Edmunds & Morris, 2000).

<table>
<thead>
<tr>
<th>Documentation Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality</td>
</tr>
<tr>
<td>Description</td>
</tr>
<tr>
<td>Notes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sober</th>
<th>Extravagant</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Image" /> <img src="image2" alt="Image" /> <img src="image3" alt="Image" /> <img src="image4" alt="Image" /></td>
<td><img src="image5" alt="Image" /> <img src="image6" alt="Image" /> <img src="image7" alt="Image" /> <img src="image8" alt="Image" /></td>
</tr>
<tr>
<td><img src="image9" alt="Image" /> <img src="image10" alt="Image" /> <img src="image11" alt="Image" /> <img src="image12" alt="Image" /></td>
<td><img src="image13" alt="Image" /> <img src="image14" alt="Image" /> <img src="image15" alt="Image" /> <img src="image16" alt="Image" /></td>
</tr>
</tbody>
</table>

Figure 4-5. Documentation aesthetic quality Harbor master case

Requirements provide a client with the opportunity to prescribe parts of a design. The requirement documented in this example is that of an integrally designed sewage outlet. The break form the highlighted path in Figure 4-1 is because for explanatory purposes this requirement can be linked to a plan more easily. The plan depicted in Figure 4-6 was included in the value specification. The green area highlights the sewage element in the design, linking the plan to other information provides more insight into how a design decision was made.
4.2 Case 2: Dichotomies to describe aesthetic qualities

The second case is used to provide an example of how aesthetic criteria can be set up using dichotomies. The case selected is de Oversteek in Nimway. In the value specification for de Oversteek an uncompleted design was included. Service providers were are asked to finish and construct the design.

One of the main concerns during the tender procedure was the curve in the pillars of the bridge. The first image in Figure 4-7 shows the design for the bridge, the second shows the end result. It was assumed that the design would be finished by welding plates to a framework and the client and the advisors were worried that the curve not run smooth. Therefore a requirement was set that a certain deviation could not be more than 1mm.

Figure 4-7. Quality with regard to a curve in the design, case de Oversteek
The researcher argues that the problem with a specification as the one described above, is that it already assumes a solution. This means while design team could be focusing on designing the solution in a way which used their knowledge to the fullest, they need to adhere to a requirement which steers them to a particular solution, i.e. welding plates. Furthermore, a requirement such as this leaves a lot of opportunity for the solution to diverge from the expectations of the client.

To define quality based on the expectations of the client an example of a quality criterion is given in Figure 4-9. Figure 4-8 shows an example of what the overall structure could have looked like, however this information was not included in the case.

![Figure 4-8. SEM structure, case de Oversteek](image)

Figure 4-9 depicts how the aesthetic quality can be specified by decomposing it into two elements and their respective dichotomies ‘smoothness’ and ‘interruption. The less ambiguous the images used for the depiction of the quality the better they can be used to manage expectations. The images used in the dichotomy can be used to assert control on a service provider.
4.3 Reflection cases

The two cases described above illustrate the diversity in descriptions which can be expected when describing expectations with regard to a construction assignment.

During the process of structuring information according to the EMMA rules a lot of assumptions with regard to the expectations of the client where made by the researcher. Assumptions which a designer or consultant must also make in order to create an understanding of the design assignment. The goal of EMMA is to present a template to structure and link this information and show where more information might be required.

In the Harbor master case it was shown that a narrative can be used as template for the overall EMMA tree structure. A narrative is a story or account which can be true or fictitious. This more
story telling manner of communicating the expectations of the client is used to provide insight into the shared mindset created during the first phase of IC. The narrative can be seen as a mission statement for the design, the story the building needs to convey. Due to the lack of formalization of a narrative it is hard to use this type of information to manage expectations. However, as more categories in the EMMA structure are filled out, elements or concepts in the narrative will be explained in more detail and formalized as much as possible.

The description of values and concepts primarily serve a descriptive role. Values and concepts can be used to decrease divergence of expectations on a semantic level or to provide more depth to the underlying values. Consequently the transition serves a more explanatory purpose as it allows the description of information with regard to assumptions, constraints, alternatives and arguments, which have played a part in the translation of expectations into a design.

One of the most important aspects of the trial was the description of aesthetic qualities using dichotomies. A cross case comparison with regard to the quality criteria shows differences in manageability when using visual and textual information. In the Harbor master case the information serves a more descriptive purpose. In the Oversteek case the quality description forms the basis for a criterion which can be used to control a service provider. A main difference between the two description is that the images in the Oversteek case are more focused at capturing the essence of what is judged. This has resulted in the use of more abstract images in the Oversteek case. A description of quality such as in the Harbor master case means more ambiguity and a more directive function as opposed to the description in the Oversteek case.

Finally, the trial shows that tools which are used in TC can be used to set requirements for the design, which is logical as these tools where originally created for this purpose. However, they should be linked to information in multiple categories to better communicate the shared mindset on which they are based. By allowing the service provider multiple descriptions or connections between descriptions he can compare whether his interpretation of the requirement is consistent with the expectations of the client.

4.1 Summary

The first trial is used to test how EMMA can be used to structure information with regard to expectations. The trial shows how tools from TC can be linked to other sources of information to allow a service provide to compare whether his expectations are in line with the client’s. The second trial is used to test how dichotomies can be used to described aesthetic qualities. Comparing the two cases shows how aesthetic criteria can be set up more effectively to increase manageability.
5. Conclusion

The final chapter is structured as follows. First, a discussion of the findings is presented. Second, the theoretical implications are discussed. Third, limitations and recommendations for further research are described. Finally, the closing thoughts of the researcher are presented.

5.1 Discussion

The setup of IC presents the participants of the IC process with a variety of problems, especially when subjective expectations and an unique project are concerned. The setup of IC leads to incomplete information with regard to the clients expectations, this can lead to assumptions made by the service provider which are not in line with the client’s. EMMA is an attempt to structure and present information in such a way that task related uncertainty is reduced. This should have the following effects: an increased understand of his/her own expectations by the client, an increased understanding of the client’s expectations by the service provider, and criteria which are sufficiently unambiguous to allow a project manager the control the design process.

To accomplish this EMMA is designed as a set of rules for the documentation and presentation of information, but it does not answer RQ 2: what or how much information is needed to manage expectations effectively? A criterion such as information saturation, i.e. continuing a process until no new information surfaces (Wengraf, 2001), can be applied. However, the advisors must be aware of information overload and the fact that including more information will decrease the benefits associated with IC. Furthermore, increasing control on the design process can constrain it and lead to less creative outcomes (Edmunds & Morris, 2000).

A note has to be made with regard to the human factor in this process. The unique character of projects and the importance a client places on aesthetics means the process of determining what information and the coding of the information in the values specification, needs to be evaluated to assess whether this information presents the expectations and criteria in a manner which allows for effective management of the process. The consultant must anticipate when the combination visual and textual information is sufficient to be used as criteria for the design.

EMMA provides a first step toward a combined method which can be used to manage the clients expectations in IC more effectively. The method has been discussed with two ABT experts who stated: “it can be a valuable method to manage the expectations of the client during IC” and “the use of dichotomies and images to set aesthetic criteria can be helpful in current projects”. This is not enough to validate EMMA, but discussing the method provides a basis for the discussion of management of expectations during IC.

5.2 Theoretical implications

The main contribution to theory is that the phenomenon, aesthetic expectations management under conditions imposed by the use of IC, has not been studied before. Thus the combination of
management oriented topics, such as contracting and expectations management literature, with aesthetics and architectural literature is the primary contribution.

Literature on integrated contracting focuses on how the benefits and drawbacks of IC and approaches it from a project management perspective. This has led little attention with regard to aesthetics. However, aesthetics is one of the most important factors when the building is evaluated. Furthermore, the results of the problem and process analysis performed using semi structured interviews coincided with the only report on the difficulties when performing IC in the RI-sector which was found, which provides further underpinning of their results (Cremers, Kuypers, & Mooiman, 2006).

Expectations management literature is focused on the psychological aspects of valuation of a product or service. The stream of literature is based on the uncovering, weighing, and assessment of criteria which are important for a client. In this thesis a method is introduced to describe these criteria with regard to aesthetics.

The contribution architectural or aesthetic literature mainly stems from the two cases which were performed. These cases show how a combination of textual and visual information can increase comprehension and manageability. Contribution here is on a more practical level, as time constraints did not allow a more philosophical review of the results.

5.3 Limitations & further research

The novelty of IC in the RI-sector means the thesis is aimed at providing a basis to discuss how management of expectation during IC can be improved, not a definitive answer. Therefore the results of this research must be interpreted with care.

To increase validity and reliability during the design the process was guided by steps in the scientific method, however design process is per definition dependent on personal factors such as creativity or the ability to extract information from sources. To address this personal factor the design is described in detail, explicitly describing where the design proposition stem. This is done to allow focused critique by peers is one of the most important way of improving the method, considering the early stage of development of EMMA and the lack of empirical assessment.

The state of development has also led to non-conclusive answers with regard to RQ 2 and RQ 3. The conclusion of thesis with regard to the RQs ‘What information should be documented’ and ‘How this information should be presented’ depends on the characteristics of the project and the client. Standardization could occur with regard to a certain type of building, for example a standardized list for hospitals. There are also elements of design which reoccur in every building, but determining what these are lies outside of the scope of this research.

It is argued that the best way to develop and research the method further is by using it in the field and describing the cases in which it has been used. The differences in personal characteristics of professionals using the method and the difference between cases will make it difficult to assess the actual increase in client value. However, descriptive accounts of the advisors setting up the value
specification and a descriptive account of the translation of the value specification by the service provider can provide insight into how a value specification can be used to manage expectations. The data can also be used to determine which elements of design occur during most projects, allowing for a certain degree of standardization.

Further research can also point out in which other ways EMMA can be used. For example the method can be used to write architectural contests, to document and communicate expectations during TC, or as a design tool which architects can use.

5.4 Closing thoughts

When two people communicate there will always be a certain amount of ambiguity. The best we can do is to describe what we mean as good as possible. The communication problem is increased by the characteristics of IC, as the design is not finished and contact between the client and service provider is hampered. It seems unlikely that IC has preference with regard to TC, when a unique building with high aesthetic expectations is considered. However, how important is the factor ego, compared to other benefits connected to IC? Should the valuation of something subjective as aesthetics determine what type of contracting is used? Especially when public funds are involved.

New tools or methods must be used to manage the task a service provider is to complete. This thesis presents EMMA as a basis for discussion about how expectations can be managed better during IC projects. EMMA focuses on the descriptive and explanatory side of expectations, however new, perhaps more democratic, tools are needed to determine when a project is considered successful. #crowdsourcing.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABT</td>
<td>Multi-disciplinary consultancy firm in the construction sector</td>
</tr>
<tr>
<td>Advisor</td>
<td>Professionals which help the client in the first phase of IC</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>Concerned with art or beauty</td>
</tr>
<tr>
<td>Architectural prestige</td>
<td>The amount of value which is put on architectural qualities of the design</td>
</tr>
<tr>
<td>Bidding process</td>
<td>Service providers make tenders on an assignment</td>
</tr>
<tr>
<td>Communication</td>
<td>Exchange of information</td>
</tr>
<tr>
<td>Client value</td>
<td>The amount of value a client perceives in relation to something</td>
</tr>
<tr>
<td>Clients</td>
<td>Customers</td>
</tr>
<tr>
<td>Construction principle (CP)</td>
<td>Recommendation grounded in organizational literature</td>
</tr>
<tr>
<td>Construction process</td>
<td>Process from initiation, to design, to completion, and possibly maintenance</td>
</tr>
<tr>
<td>Discipline</td>
<td>Proposition for improvement of process in context grounded in CPs</td>
</tr>
<tr>
<td>Design proposition (DP)</td>
<td>Proposition for improvement of process in context grounded in CPs</td>
</tr>
<tr>
<td>Design tasks</td>
<td>Work pages of design activities</td>
</tr>
<tr>
<td>Design</td>
<td>Planning activity which shows how something is to be made</td>
</tr>
<tr>
<td>Integrated contracts (IC)</td>
<td>Type of contract based on UAVgc</td>
</tr>
<tr>
<td>Method</td>
<td>Procedure of doing something in accordance with a plan</td>
</tr>
<tr>
<td>Non-residential construction</td>
<td>Buildings in which to work, offer commercial services, healthcare or recreation</td>
</tr>
<tr>
<td>Phase one</td>
<td>Part of IC process, the project is defined and part of the design is finished</td>
</tr>
<tr>
<td>Phase two</td>
<td>Part of IC process, the design is finished and constructed</td>
</tr>
<tr>
<td>Quality</td>
<td>Distinctive characteristics attributed to something</td>
</tr>
<tr>
<td>Residential and Institutional (RI)</td>
<td>Construction sector focusing on residential and institutional buildings</td>
</tr>
<tr>
<td>Service provider</td>
<td>Combination of contractors and subcontractors which complete phase 2 of IC</td>
</tr>
<tr>
<td>Solution-free</td>
<td>Describing criteria for a solution without prescribing a specific solution</td>
</tr>
<tr>
<td>Tender</td>
<td>A value proposition from the service provider</td>
</tr>
<tr>
<td>Tool</td>
<td>Something which helps when trying to accomplish a goal</td>
</tr>
<tr>
<td>Traditional contracts (TC)</td>
<td>Type of contract based on UAV</td>
</tr>
<tr>
<td>UAVgc</td>
<td>Standard rules at the basis of IC</td>
</tr>
<tr>
<td>Value</td>
<td>Qualities of a service or product, weighed over the expenses</td>
</tr>
<tr>
<td>Values</td>
<td>Beliefs a person or group of persons hold with regard to their goals</td>
</tr>
<tr>
<td>Value specification</td>
<td>Contract which contains the assignment for a service provider</td>
</tr>
</tbody>
</table>
References


Kant, I. (1911). Kant's critique of aesthetic judgement.


Appendix A. Cause and effect diagram

<table>
<thead>
<tr>
<th>Cause</th>
<th>Problem</th>
<th>Effect</th>
<th>Result</th>
<th>Problem ABT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance of aesthetics in architectural design</td>
<td>Subjectivity of aesthetic expectations</td>
<td>Designer does not understand client expectations</td>
<td>Design does not meet clients expectations</td>
<td>Client dissatisfied with ABT’s performance with regard to management of expectations during IC</td>
</tr>
<tr>
<td>Choice for IC</td>
<td>Design not finished in IC</td>
<td>Manager cannot control the design process</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Characteristics of B&amp;U</td>
<td>Inexperience with IC</td>
<td>Clients is not well informed on IC process</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Difficulties with standardization</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 0-1. Cause and effect diagram expectations management during IC in the RI-sector
Appendix B. Research design

Figure 0-2. Research design
Appendix C. Method used to validate the business problem

To obtain valid and reliable results a multi method approach is used. The method consists of, semi-structured interviews, focused discussions, company documents, and a literature review (Table 3).

Data collection for Validation of the business problems and the analysis of the IC process focusses around 8 semi-structured interview. The guide can be found in next section in this Appendix. Informant selection was performed by two gate-keepers at ABT. The informants where selected with regard to: field of profession (architect vs project manager), experience using ICs, disposition toward IC. To provide information which could be used to set up the interviews company documents were reviewed and focused discussions where performed with the mentors assigned by ABT were performed.

Table 3. Research method problem definition and process analysis

<table>
<thead>
<tr>
<th>Data collected to</th>
<th>Collection methods</th>
<th>Resources</th>
<th>Data analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validate the business problem</td>
<td>Semi-structured interviews, Focused discussions, Company documents</td>
<td>8 interviews, 2 focused discussions, Value specifications, Instruction manuals, project documentation, etc.</td>
<td>Linking data to problems in cause and effect diagram (Aken, 2012) and validating findings with ABT experts</td>
</tr>
<tr>
<td>Analysis of process</td>
<td>Semi-structured interviews, Company documents</td>
<td>8 interviews (same interviews as above), Instruction manuals, project documentation</td>
<td>Linking data to process diagram (Gerards, 1998)</td>
</tr>
<tr>
<td>Analysis of tools</td>
<td>Theory, Company documents</td>
<td>Literature, Project documentation, tenders, value specifications</td>
<td>Creating list of tools and linking information form literature</td>
</tr>
<tr>
<td>Solution generation</td>
<td>Focused discussions</td>
<td>2 focused discussions</td>
<td>Overlay of cause and effect with process diagram</td>
</tr>
<tr>
<td>Selection of solution direction</td>
<td>Focused discussions</td>
<td>2 focused discussions</td>
<td>Rating solutions on 5 point Likert scale</td>
</tr>
</tbody>
</table>
Appendix D. Interview guide: Validation and analysis of business problem

Introductie Interviewer
Mijn naam is Ad Franssen. Ik ben afstudierder TBK, maar heb hiervoor mijn bachelor bouwkunde afgemaakt. Dit heeft geleid tot een opdracht bij ABT om te onderzoeken hoe UAVgc in de RI-sector kan worden toegepast.

Introductie Onderzoek
Het doel van dit interview is het onderzoeken van het process omtrent geïntegreerde contracten. Het toepassen van de UAVgc in de RI-sector loop achter bij het gebruik in de GWW. Om dit proces in betere banen te leiden heeft ABT een afstudeer opdracht uitgeschreven. Op dit moment ben ik bezig de problemen en mogelijke oplossingen omtrent de UAVgc in kaart te brengen.

Interview vragen

Introductie informant
- Wat is uw achtergrond?
- Welke methodes worden gebruikt om de waarden/wensen van cliënten (op esthetisch gebied) te achterhalen?
- Wat is uw ervaring met UAVgc (2005)?

Vragen over cause and effect
- Wat is uw ervaring met klanten en hun kennisniveau omtrent UAVgc?
- Hoe ervaart u een ontwerp maken op basis van een vraag specificatie?
- Hoe omschrijft u de verwachtingen van een klant oplossingsvrij?
- Hoeveel ervaring heeft u met UAVgc?
- Wat is uw mening met betrekking tot standaridizatie in de RI-sector?

Vragen over proces
- Kunt u het UAVgc process beschrijven vanuit de klant?
- Kunt u het UAVgc process beschrijven vanuit de expert?
- Waar zitten moeilijkheden in het UAVgc process?
- Hoe kunnen deze moeilijkheden worden opgelost?
Appendix E. Results validation of business problems

The first step in the empirical phase is to validate the business problem and assess whether it is a real problem, perception problem, or a target problem (J. van Aken et al., 2012). The problems described stem from the cause and effect diagram: (1) Client is not well informed, (2) No contact between client and service provider, (3) Design not finished in IC, (4) Inexperience with IC, (5) subjectivity and aesthetics. Results from the interviews are discussed per problem. Each topic is discussed and linked to quotes form the interviews in Appendix 6.7.

Contact between client and service provider

Three architects remarked that to create a good design and manage the expectations of the client effectively close interaction between the client and the architect is needed (1, 7, 8, 12). It was noted that as the complexity of the task increased, the need to involve the client increased (13).

Three project managers noted that the criteria set during phase one of IC often allowed room for discussion. This resulted in problems when managing the clients expectations based only on the information value specification, because contact between service provider and client is hampered during IC (17, 21, 27).

Design not finished or ‘Solution-free specifying’

The design not being finished, or Solution-free specification (Oplossingsvrij specificeren), means describing the expectations of the client in such a way that it does not bind to a specific solution. Solution free specification is the main source of uncertainty during the management of aesthetic expectations during IC (9, 14). Architects noted they have difficulties managing the clients expectations without finishing a design. The main concern which was raised was: “to what level should the design be finished to guarantee quality” (2).

Two project managers noted that the criteria set with regard to aesthetics either did not allow the service provider any freedom or gave the service provider to much freedom to effectively manage the clients expectations (19).

Inexperience with IC

One architect noted that the differences in the setup of different IC projects was caused by inexperience (4). It was also noted that tools from TC where mainly used during IC (5, 16). Tools used during IC can be found in Appendix 6.6.

Two project managers noted that contracts are used to manage expectations, which are a project managers field of expertise, however the description of aesthetics was traditionally the architects field of expertise (26, 29). Currently technical descriptions are used which stem from the GWW sector (22, 39). The GWW sector is related to civil construction such as, roads, bridges, etc. As aesthetics are less important in this sector compared to the RI-sector sector, the tools from GWW are not adequately adjusted for the management of expectations with regard to aesthetics.
The client discusses the choice for a contract type with a project manager \(^{(30)}\). Project managers stated that IC is a new contracting form and the government is stimulating its use \(^{(11, 31)}\). This makes it a fashionable or innovative choice for policy makers, however they often do not understand the characteristics of IC \(^{(18, 24)}\).

**Problems with standardization**

Both architects and project managers stated that standardization is not possible or counterproductive when dealing with aesthetics in RI-sector projects \(^{(3, 15, 23)}\). The complexity and diversity of the design tasks means many aspects of the design cannot be predicted beforehand \(^{(10, 12)}\). It was stated that if a standardized format was used it would need to be too general to allow in-depth examination of the clients expectations \(^{(6, 47)}\).

**Subjectivity and aesthetics**

There are three types of qualities related to architecture, build quality, aesthetic quality, and use quality (Thomson et al., 2003). The main problems during IC were caused by aesthetic criteria, as the description of aesthetic criteria in a solution-free way caused difficulties \(^{(32, 20)}\). This can also be related to the relative success of IC in the civil construction sector, as aesthetics are less important \(^{(28)}\). Furthermore, the subjectivity involved in the judgment of aesthetics caused problems when these could not be discussed \(^{(48, 49)}\).
Appendix F. Results analysis of IC process

It needs to be noted that a description of the process is difficult because the process is tailored to
the needs of the client (3, 15, 23). Therefore the analysis only provides a general overview of the process.
The description of the process mainly stems from focused discussions with the mentors at ABT. As
they are working as project managers, architects have been asked to provide some information on
their view of the process during the interviews. The process is depicted in Figure 0-3, the empirical
evidence and underpinning is described below.

Two architects explained that, in cases aiming at high architectural prestige a value specification
is divided into two parts, one which described the aesthetic and functional qualities of the design and
one which defined the build quality (33, 37). Architectural prestige is the amount of value which is put
on the valuation of the design by other people. In cases where architectural prestige was low, such as
a data center, the aesthetic criteria where described in the same document as build quality (25, 40).
Finally, it was checked the design or description was sufficiently solution free. If not the design
would be stripped of details.

![Diagram](image_url)

Figure 0-3. Process analysis IC
Appendix G. Tools used to manage expectations during construction processes

Here a short description of the results with regard to the tools for expectations management in IC is provided. The tools are described in more detail in Appendix 6.5.

Two architects stated that tools used to decrease uncertainty with regard aesthetic expectations stem from TC (34, 41). A plan of a design was often completed and then stripped of details to allow the service provider the opportunity to implement knowledge (35, 38). Tools used during the description of expectations include, Plans, Drawings, Models, Details, and Text (36, 42).

One project managers stated that they are not experienced in describing aesthetic expectations and that traditionally the description of the design is the task of the architect (43, 45). During the interviews systems engineering (SE) was presented as a tool used during IC to provide a visual overview and structure information (44, 46). Project managers use the tool to divide a construction project into work packages.

**Plans:** Plans are visual 2d representations of a design. They are used to communicate the location of elements of a design.

![Figure 0-4. Plan Salk institute, design Louis Kahn](image)

**Models:** Models are 3d representations of spaces used to communicate the atmosphere or mood of these spaces.
Drawings: Drawings are 2d representations of spaces used to communicate atmosphere or space.

Details: Plans are visual 2d representations of a design. They are used to communicate the location of elements of a design. Other than plans they are used at a smaller scale.
Figure 0-6. Detail

**Text**: Text often accompanies the previous tools used during IC to provide extra explanation. In assignment descriptions where management of expectations is not very important often only a textual description is given as it provides the designer with a lot of freedom to design a solution.

**Systems engineering**: Is a tool to structure information into manageable work packages. It is used to provide insight into the links between different work packages. It is also used to control a service provider or contractor.

The structure used in SE is explained best with the help of an illustration (Figure 0-7). On the left side is the complete system, for this example a tree. To the right are the criteria which need to be fulfilled to complete the system. If the structure is read from right to left it shows which tasks need to be completed to finish the entire system. It was suggested that the tool could be used to structure information with regard to the expectations of the client.
Figure 0-7. Systems engineering tree structure
Appendix H. Notes interviews: problem definition and process analysis

<table>
<thead>
<tr>
<th>#</th>
<th>Notes phase 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Het is belangrijk dat een klant in het process wordt meegenomen</td>
</tr>
<tr>
<td>2</td>
<td>Hoe ver moet je gaan met een ontwerp voor kwaliteit gewaarborgd is</td>
</tr>
<tr>
<td>3</td>
<td>De karakteristieken van projecten in de RI-sector verschillen enorm</td>
</tr>
<tr>
<td>4</td>
<td>Er zijn veel verschillen tussen afzonderlijke UAVgc project, omdat de markt zoekende is</td>
</tr>
<tr>
<td>5</td>
<td>We gebruiken nog steeds dezelfde middelen als tijden TC</td>
</tr>
<tr>
<td>6</td>
<td>Standaard formulieren leveren slechte informatie</td>
</tr>
<tr>
<td>7</td>
<td>De gesprekken tussen klant en architect zijn onmisbaar om tot een goed ontwerp te komen</td>
</tr>
<tr>
<td>8</td>
<td>Het contact tussen architect en klant vormt verwachtingen t.o.v. het ontwerp</td>
</tr>
<tr>
<td>9</td>
<td>Het oplossing vrijheid specificeren is een van de grote uitdagingen tijdens UAVgc</td>
</tr>
<tr>
<td>10</td>
<td>Een vragenlijst voor een ziekenhuis verschil zoveel van die voor een school</td>
</tr>
<tr>
<td>11</td>
<td>De overheid vindt UAVgc innovatie, dus het wordt gesubsidieerd</td>
</tr>
<tr>
<td>12</td>
<td>Door omgang met de klant wordt duidelijk waar het zwaartepunt van het ontwerp moet liggen</td>
</tr>
<tr>
<td>13</td>
<td>Hoe ingewikkeld de opdracht hoe meer tijd nodig is met de klant</td>
</tr>
<tr>
<td>14</td>
<td>Ruimten oplossingsvrij omschrijven leidt tot problemen</td>
</tr>
<tr>
<td>15</td>
<td>Alleen de fundering al is voor elk project uniek</td>
</tr>
<tr>
<td>16</td>
<td>Om het ontwerp door te geven worden veelal dezelfde tools gebruikt als 10 jaar geleden</td>
</tr>
<tr>
<td>17</td>
<td>Door het gebrek aan contact ontstaan problemen met een ontwerp gebaseerd op een VS</td>
</tr>
<tr>
<td>18</td>
<td>UAVgc wordt vaak gekozen vanwege de innovatieve uitstraling</td>
</tr>
<tr>
<td>19</td>
<td>Het is moeilijk in te schatten wanneer een aannemer te veel of te weinig oplossing vrijheid heeft</td>
</tr>
<tr>
<td>20</td>
<td>Vooral bij vormgeving gaat het mis</td>
</tr>
<tr>
<td>21</td>
<td>Een van de grootste problemen is de onzekerheid mbt omschrijvingen in de VS</td>
</tr>
<tr>
<td>22</td>
<td>De tools die gebruikt worden komen vaak van UAVgc in de GWW</td>
</tr>
<tr>
<td>23</td>
<td>Het is niet mogelijk een standaard ontwerp te leveren in de RI-sector</td>
</tr>
<tr>
<td>24</td>
<td>Vaak begrijp de klant het UAVgc proces niet</td>
</tr>
<tr>
<td>25</td>
<td>Als geen hoge eisen aan het ontwerp worden gesteld kunnen deze in de VS omschreven worden</td>
</tr>
<tr>
<td>26</td>
<td>Wij zijn niet gewend om esthetica te managen</td>
</tr>
<tr>
<td>27</td>
<td>Omdat klanten de VS niet kunnen uitleggen gaat het mis tijdens de vertaling naar een ontwerp</td>
</tr>
<tr>
<td>28</td>
<td>UAVgc is makkelijker toepasbaar in de GWW omdat uiterlijk niet zo belangrijk is</td>
</tr>
<tr>
<td>29</td>
<td>Het omschrijven van esthetica is hoofdzakelijk de taak van de architect</td>
</tr>
<tr>
<td>30</td>
<td>Een project manager overleg met de klant over de contractvorm</td>
</tr>
<tr>
<td>31</td>
<td>De keuze voor UAVgc komt vaak vanuit advies van de overheid</td>
</tr>
<tr>
<td>32</td>
<td>Beeldende aspecten zijn moeilijk oplossingsvrij te omschrijven</td>
</tr>
<tr>
<td>33</td>
<td>Vaak wordt bij de VS een apart document geleverd voor het ontwerp</td>
</tr>
<tr>
<td>34</td>
<td>Om verwachten te achterhalen worden technieken van TC gebruikt</td>
</tr>
<tr>
<td>35</td>
<td>Vaak wordt een ontwerp uitgekleed om het oplossingsvrij te maken</td>
</tr>
<tr>
<td>36</td>
<td>We gebruiken plattegronden, tekeningen, maquettes</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>37</td>
<td>De esthetica wordt vaak in een bijlage omschreven</td>
</tr>
<tr>
<td>38</td>
<td>De details worden vaak gewoon weg gelaten voor oplossingsvrijheid</td>
</tr>
<tr>
<td>39</td>
<td>De omschrijving zijn vaak geleend uit de GWW</td>
</tr>
<tr>
<td>40</td>
<td>Als het ontwerp niet belangrijk is, dan kan dit in de VS omschreven worden</td>
</tr>
<tr>
<td>41</td>
<td>We gebruiken dezelfde methoden als tijden TC</td>
</tr>
<tr>
<td>42</td>
<td>De klant wordt soms gevraagd om een tekst te schrijven of tekeningen te maken</td>
</tr>
<tr>
<td>43</td>
<td>Het opstellen van criteria voor het ontwerp is niet de taak van de PM</td>
</tr>
<tr>
<td>44</td>
<td>SE is een nieuwe tool die tijdens UAVgc gebruikt wordt</td>
</tr>
<tr>
<td>45</td>
<td>We zijn niet gewend om criteria voor het ontwerp op te stellen</td>
</tr>
<tr>
<td>46</td>
<td>SE is een methode die we gebruiken om informatie te structureren</td>
</tr>
<tr>
<td>47</td>
<td>Een gestandaardiseerd format zou leiden tot oppervlakkige informatie</td>
</tr>
<tr>
<td>48</td>
<td>Bij de beoordeling van een gebouw speelt subjectiviteit een rol</td>
</tr>
<tr>
<td>49</td>
<td>Subjectiviteit maakt het moeilijk om in te schatten wat iemand van het ontwerp vindt</td>
</tr>
</tbody>
</table>
Appendix I. Interview guide design phase

**Intro**

A.1 Introductie Interviewer

Mijn naam is Ad Franssen. Ik ben afstudeerder TBK, maar heb hiervoor mijn bachelor bouwkunde afgemaakt. Dit heeft geleid tot een opdracht bij ABT om te onderzoeken hoe UAVgc in de RI-sector kan worden toegepast.

A.2 Introductie Onderzoek

Het doel van dit interview is het onderzoeken van een methode om de verwachting van de klant te communiceren en criteria op te stellen voor een ontwerp.

**Interview vragen**

Introductie informant

- Wat is uw achtergrond?
- Welke methodes worden gebruikt om de waarden/wensen van cliënten (op esthetisch gebied) te achterhalen?
- Wat is uw ervaring met UAVgc (2005)?

Vragen over design propositions

Introduceer de design propositions en laat informanten beschrijven wat ze belangrijk vinden en hoe de propositions kunnen worden gebruikt om een tool/methode voor ABT te ontwerpen.
Appendix J. CP- framework

Combining the CPs from the literature discussed above with the RQs and the Cause and Effect (C-E) diagram, a framework can be developed which can help to set DPs (Figure 0-8).

The CPs related to the increase in knowledge are linked to the research question, ‘what information should the value specification contain’. The combination of visual and textual information should increase comprehension and recall. Furthermore, literature has provided insight into tools which can be used to communicate the expectations and criteria. The CPs related to rules for presentation are linked to the research question, ‘set rules for presentation’.

Including the CPs in the design for the tool or method should lead to a decrease in task related uncertainty, which is linked to the C-E diagram ‘designer does not understand expectations of the client’. Consequently reducing task related uncertainty means the design task also becomes more manageable for project managers. The process of setting up the value specification should also increase the knowledge of the client with regard to the design and the IC process, as close interaction between the consultant and the client is required.
Increase knowledge (RQ 1, what information)

Set rules for presentation (RQ 2, presentation)

Reduce task related uncertainty (C-E, increase understanding, increase manageability of design)

Figure 0-8. CP-framework, relation of CPs to RQs and Cause and Effect diagram
Appendix K. Results interviews

What follow is a short summary of results of the interviews with regard to the design propositions.

The use of values to communicate expectations was perceived to be logical and reflection of values of the organization in the design is essential for a high quality design (50, 57). It was noted during an interview that value could be mistaken for monetary value and the term should thus be well defined (51).

The quality fields are often reflected upon during the process, but the definition or meaning of quality differs between informants (53, 56, 56). The informants agreed that stating what type of quality was meant could decrease ambiguity with regard to the criteria set in relation to that quality (54, 60). Finally it was noted that a value should be expressed through all quality tenets if possible (58).

Dichotomies are currently used during construction projects to provide more insight into expectations or criteria, often an image of the desired vs the undesired is shown (52, 62), but no informant stated they are currently used to communicate a range for a possible solution. Three architects stated that dichotomies are a good tool to set a range for a solution (55, 59, 64). Two architects noted that when dichotomies were used in combination with images to set aesthetics criteria, the images should be carefully selected and more than one images should be used (67, 70).

The combination of visual and textual information was perceived as essential for the communication of expectations (66, 71). Architects stated that when only a value specification was used to communicate expectation and the document was set up by a project manager this was mainly textual information, which is very open to interpretation when aesthetics are concerned (68, 69).

The rules for presentation where not discussed in detail with the informants after two interviews, as the time for the interviews was limited. This was done as the rules were perceived as logical for experts and the design for the tool/method needs to show whether they have been applied (61, 72).
### Appendix L. Notes interviews: design phase

<table>
<thead>
<tr>
<th>#</th>
<th>Notes validation phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>Waarden kunnen gebruikt worden als basis voor een ontwerp</td>
</tr>
<tr>
<td>51</td>
<td>Kijk uit met gebruik van waarde, dat staat voor veel mensen gelijk aan geld</td>
</tr>
<tr>
<td>52</td>
<td>We gebruiken tegenstellingen op kwaliteit duidelijk te maken</td>
</tr>
<tr>
<td>53</td>
<td>Kwaliteit betekend voor mij het geheel</td>
</tr>
<tr>
<td>54</td>
<td>Het kan helpen als wordt aangegeven wat kwaliteit betekend</td>
</tr>
<tr>
<td>55</td>
<td>Met tegenstellingen kun je goed een bereik aangeven</td>
</tr>
<tr>
<td>56</td>
<td>Kwaliteit is hoe lang een gebouw mee gaat</td>
</tr>
<tr>
<td>57</td>
<td>Normen en waarden van een organisatie moeten geïntegreerd worden in het ontwerp</td>
</tr>
<tr>
<td>58</td>
<td>Een waarde moet door alle vormen van kwaliteit worden uitgedrukt</td>
</tr>
<tr>
<td>59</td>
<td>Gradaties binnen een tegenstelling kunnen duidelijkheid geven over de wensen van de klant</td>
</tr>
<tr>
<td>60</td>
<td>Kwaliteit zou vanuit de klant beter moeten worden gedefinieerd</td>
</tr>
<tr>
<td>61</td>
<td>Je kunt weinig zeggen over de regels op zich, zien er logisch uit</td>
</tr>
<tr>
<td>62</td>
<td>Platjes met tegenstellingen werken heel goed om iets duidelijk te maken</td>
</tr>
<tr>
<td>63</td>
<td>Je moet uitkijken met beelden, ze kunnen heel letterlijk worden opgevat</td>
</tr>
<tr>
<td>64</td>
<td>Met tegenstellingen kun je oplossingsvrij specificeren</td>
</tr>
<tr>
<td>65</td>
<td>Kwaliteit is een breed begrip</td>
</tr>
<tr>
<td>66</td>
<td>Je kunt esthetica niet uitdrukken zonder beeld</td>
</tr>
<tr>
<td>67</td>
<td>Hoe gedetailleerder de plaatjes hoe moeilijker het wordt aan te geven wat je bedoelt</td>
</tr>
<tr>
<td>68</td>
<td>Als alleen een vraagspecificatie door een PM wordt opgesteld is dit vaak alleen geschreven</td>
</tr>
<tr>
<td>69</td>
<td>Een geschreven vraagspecificatie is erg open voor interpretatie</td>
</tr>
<tr>
<td>70</td>
<td>Foto's zijn vaak onduidelijk, omdat er te veel informatie in staat</td>
</tr>
<tr>
<td>71</td>
<td>Beelden hebben bijschriften nodig, anders zijn ze onduidelijk</td>
</tr>
<tr>
<td>72</td>
<td>Je kunt hier pas wat over zeggen als de methode klaar is</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>#</th>
<th>Notes design phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>73</td>
<td>Vaak wordt een ontwerp op verschillende schaal niveaus gepresenteerd</td>
</tr>
<tr>
<td>74</td>
<td>Volgorde is gerelateerd aan schaal</td>
</tr>
<tr>
<td>75</td>
<td>Schaal op zich zegt in principe niets over het gebouw</td>
</tr>
<tr>
<td>76</td>
<td>Detail is een schaal niveau</td>
</tr>
<tr>
<td>77</td>
<td>Als je maar een beeld geeft dan gaan ze dat misschien kopiëren</td>
</tr>
</tbody>
</table>
Appendix M. Steps in design process

There are five phases in the development of EMMA depicted in Figure 0-9 to Figure 0-14. The major changes in the design will be discussed per version.

Version 1

The first version of EMMA shows an attempt to connect visual and textual information (Figure 0-9). One of the most important aspects of the design is that ambiguity should decrease as a result one move to the right in the overall structure.

During the interviews two architects noted that a value specification was often categorized according to scale (73, 74), therefore selecting a subject according to ‘scale’ became the first category in the structure. To allow management of aesthetics and communicate the expectations of the client a visual aesthetic ‘characteristic’ needed to be attached to the ‘scale’. Finally, to allow the client to prescribe aspects of a design the ‘detail’ category was added. The accompanying documentation format allows for a description of these categories with regard to a subject, in the case of the example the façade (gevel). The first version was aimed at describing aesthetic characteristics and combing them with textual information in a solution-free manner.

Version 2

The second version shows the inclusion of values as a basis for the description of the clients expectations (Figure 0-10). It adds a subject, value, references and demands to the design.

‘Scale’ has been replaced by ‘subject’ to allow for a more accurate description of the building part which is addressed (75). The character which is expected is underpinned by documenting an underlying ‘value’. Consequently ‘references’ are added to provide more insight. The ‘demands’ take the place of details to allow for inclusion of plans, this was done as an expert stated that details are associated with elaboration of a plan, the category should allow for a broad amount of information (76).

Version 3

The third version is a Dutch translation of the design which was used in a booklet which was send to informants with which the method or tool was discussed (Figure 0-11). Included in the third version was SE, this was done to structure and link pieces of information to each other (Figure 0-11, Figure 0-12). Where in the previous version a description per category in the structure was given, now the different categories in the EMMA structure are linked to each other more explicitly.

Version 4

Figure 0-13 shows the fourth version of EMMA. The first two slides remain unchanged, but Figure 0-14 shows the inclusion of dichotomies to present the service provider more insight and a
range wherein the designed solution must lie (Figure 0-13, Figure 0-14). Also the EMMA structure is divided into a yellow part, the expectations, and a blue part, qualities of the build environment.

**Version 5**

Changes with regard to version four include the replacing of ‘Characteristics’ with ‘concepts’ to allow more room for different types of information. ‘Qualities’ in category three have replaced the vaguely defined ‘design decisions’ and link the category more closely to the build environment. The fifth version is described in detail in chapter 3.4 .
EMMA version 1

A: Gevel

VM is een organisatie met een hoge band met hun klanten. Om deze reden moet de gevel een open en vriendelijke afdamming hebben. Tevens wil het bedrijf een duurzaam uitstraling.

Aannemen
- Afmetingen ervan moeten aansluiten op de markt. Wat is er niet meer dan een flik-flokkel groen op wat zich in het binnenoppervlak en een helder gekleurd groen.

Bepalingen
- Van malen, afzoen

Afzetmateriaal
- Lezen van hideous uitstekende, gerecycled stof voor doorvloei. Gerecycled materiaal voor duurzaamheid.

Argument
- Las een gevoel van middenprofiel, een openheid, en een helder gevoel voor het milieu en het duurzaamheid.

Stijl
- Eerste verticaal in de grond grof, voor een harmonieuze samenwerking van de gevel en groen.

Conclusie
- 2 utt maximaliseren voor hun maximale

Veldkaart
- Beheersmateriaal voor de positie en de grootte.

Beknoptheid

Figure 0-9. First version EMMA
EMMA version 2

<table>
<thead>
<tr>
<th>Subject</th>
<th>Value</th>
<th>Character</th>
<th>References</th>
<th>Demands</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Image of a subject]</td>
<td>[Image of a value]</td>
<td>[Image of a character]</td>
<td>[Image of references]</td>
<td>[Image of demands]</td>
</tr>
</tbody>
</table>

The first step is the selection of a subject. This subject can be any thing, may be depicted in base of wall, roof, city by itself.

The second step is the measuring of the values of the customer with regard to the subject. This step is an assessment of the type of service or product based on the subject or value. The subject is then known as the individual value, for example, when the subject is price between houses and space is equal. Every aspect is measured with the value of a house has been done by a set of specific factors on the question asked on the determination form. This is then synthesized with all the other values to offer an interpretation of the market. Therefore, it is important to get the values of the consumer who does the overarching requirements.

The value of the customer can be expressed by certain philosophies or metaphors. The next step is to select which characteristics the design shall have. Characterizations can be based on epistemology, semantics, or properties, such as, philanthropy, collaboration, form, form, and function. The descriptions of the designs shall open to interpretation, but give some direction that just making values.

Once the appropriate characteristics have been determined, the analysis for each case. This is done to better define the range the customer has with regard to the building. This building can be categorized in the particular environment. Now, when designing is decided as to its community. Finally, when the culture has been categorized, a culture has a common space associated with these needs. These images will make the entire model in the consumer.

The image is often the most beautiful but is still able to give a sense of appearance, thus allowing the designer to create his own interpretation.

The final step in the concrete demand the customer has with regard to the building. In every project there are several characteristics which the design needs to incorporate in order to satisfy the customer.

---

**Figure 0-10. Second version EMMA**

<table>
<thead>
<tr>
<th>Subject</th>
<th>A.1 Facade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary values</td>
<td>Is it, Empty, None?</td>
</tr>
</tbody>
</table>

- This can provide useful explanations for earned and lost space that can maximize energy gain and green buildings.
- This building is a green building, a green design policy by providing energy efficiency and sustainable materials.
- The building is designed to be energy efficient and sustainable.
- The building is designed to be energy efficient.

**References**

- Assumptions: A green building will make the customer feel at home. A green facade portrays the environment friendly policy. An open facade allows the building to be unmarked.
- Constraints: Good facade in terms of energy, passive facade in terms of environmental impact.
- Alternatives: Green facade, passive facade, open facade.
- Arguments: Good facade, passive facade, green facade.
- Implications: The building is designed to be energy efficient and sustainable.
- Value: What does the building add to the community? How does it impact the environment?
- Reliability: How does the building add to the community? Is it part of a city, a city in itself?
- Control: How does the building add to the community? How does it impact the community? What are the costs and benefits?
Abstract

De werken zijn van deze pagina's voor een tweede keer voor de museumfotografie van de basis met bestaande objecten ingeslagen. De kunstenaar van de hoed die de werken in de miniatuur in de miniatuur te brengen. De hoed en de miniatuur zijn een maatstaf voor de werkzaamheden. De regeling van de miniatuur van de miniatuur in de miniatuur is zo'n beeld dat de werken in de miniatuur in de miniatuur te brengen.

De volgende pagina's moeten een tweede keer voor de museumfotografie van de basis voor de werken in de miniatuur. De regeling van de miniatuur van de miniatuur is zo'n beeld dat de werken in de miniatuur in de miniatuur te brengen.

Onderwerp

Waarden

Karakter

Referenties

EMMA version 3

Onderwerp

Beschrijf de waarden van de opdrachtgever.

Chloë maakt een ontwerpen voor de beheerder die een client aan het tekstontwerp geeft, inclusief service en self-service. Volledige uitvoering van de opdrachtgever.

Wasin een ontwerpen voor het wordt bepaald door de waarden van een persoon, alvorens de waarden gaat en geïntegreerd worden. Dit wordt bepaald voor de waarden wordt opgenomen. Deze verklaringen zijn gebaseerd op het schilddag van de waarden van zijn overtuigingen of personen die ideeën en concepten. Door deze waarden te geven en een vijfde op de stappen van het ontwerp. Deze door waarden op duidelijke en overtuigende wijzen in de wereld is hij door waarden te geven en een vijfde op de stappen van het ontwerp.

Vertaal de waarden in karaktereigenschappen.

Kenmerken als de karaktereigenschappen en eigenschappen die de karaktereigenschappen van het karakter. Deze verklaringen zijn gebaseerd op het schilddag van de waarden van zijn overtuigingen of personen die ideeën en concepten. Door deze waarden te geven en een vijfde op de stappen van het ontwerp. Deze door waarden op duidelijke en overtuigende wijzen in de wereld is hij door waarden te geven en een vijfde op de stappen van het ontwerp.

Referenties

Eisen

En een enkele regeling van de miniatuur, een maatstaf voor de werkzaamheden. De regeling van de miniatuur van de miniatuur is zo'n beeld dat de werken in de miniatuur in de miniatuur te brengen.

Wasin een ontwerpen voor het wordt bepaald door de waarden van een persoon, alvorens de waarden gaat en geïntegreerd worden. Dit wordt bepaald voor de waarden wordt opgenomen. Deze verklaringen zijn gebaseerd op het schilddag van de waarden van zijn overtuigingen of personen die ideeën en concepten. Door deze waarden te geven en een vijfde op de stappen van het ontwerp. Deze door waarden op duidelijke en overtuigende wijzen in de wereld is hij door waarden te geven en een vijfde op de stappen van het ontwerp.

Eisen

Van een enkele regeling van de miniatuur, een maatstaf voor de werkzaamheden. De regeling van de miniatuur van de miniatuur is zo'n beeld dat de werken in de miniatuur in de miniatuur te brengen.

Van een enkele regeling van de miniatuur, een maatstaf voor de werkzaamheden. De regeling van de miniatuur van de miniatuur is zo'n beeld dat de werken in de miniatuur in de miniatuur te brengen.

Van een enkele regeling van de miniatuur, een maatstaf voor de werkzaamheden. De regeling van de miniatuur van de miniatuur is zo'n beeld dat de werken in de miniatuur in de miniatuur te brengen.

Van een enkele regeling van de miniatuur, een maatstaf voor de werkzaamheden. De regeling van de miniatuur van de miniatuur is zo'n beeld dat de werken in de miniatuur in de miniatuur te brengen.

Van een enkele regeling van de miniatuur, een maatstaf voor de werkzaamheden. De regeling van de miniatuur van de miniatuur is zo'n beeld dat de werken in de miniatuur in de miniatuur te brengen.
Figure 0-12. Third stage EMMA (2)
EMMA version 4

Figure 0-13. Fourth version EMMA (1)
Figure 0-14. Fourth version EMMA (2)
Appendix N. Documenting expectations and criteria

These descriptions are a part of the description in the value specification of the Havenmeester project in Zwolle.

Introduction Harbor master case

Text in value specification: Harbor master case, Zwolle.

Inleiding

De havenmeestervoorziening vormt een belangrijk visueel punt en moet bijdragen aan een gastvrije entree van de binnenstad. Aan de vormgeving ervan zullen dan ook hoge eisen worden gesteld. De opgave bestaat uit het ontwerp van een gebouw met een toiletvoorziening, haven- en marktmeesterkantoor, tegen de achtergrond van de historische stad met een herkenbare uitstraling.

Uitstraling en architectuur

De havenmeestervoorziening vormt een duidelijk herkenningspunt aan de entree van de binnenstad. Het gebouw vormt samen met de monding van de Grote Aa, de verlaagde kade, de fiets- en wandelbrug en de toegang tot de parkeergarage, en in het verlengde daarvan en de wand van het Maagjesbolwerk, een ruimtelijk ensemble.

De vormgeving is ondergeschikt, sober en doelmatig, geïnspireerd op havenmeester- en brugwachter gebouwtjes met een eerlijk materiaalgebruik die is afgestemd op het totaalconcept. De architectuur en het materiaalgebruik zijn niet vandaalgevoelig.

Documenting values

Table 4. Format for documenting values

<table>
<thead>
<tr>
<th>Value description format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept</td>
</tr>
<tr>
<td>Description</td>
</tr>
<tr>
<td>Importance</td>
</tr>
</tbody>
</table>

Documenting concepts

Table 5. Format for documenting concepts

<table>
<thead>
<tr>
<th>Concept description format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept</td>
</tr>
<tr>
<td>Description</td>
</tr>
<tr>
<td>Importance</td>
</tr>
</tbody>
</table>

Documenting transition

Table 6. Format for documenting transitions

<table>
<thead>
<tr>
<th>Transition description format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issue</td>
</tr>
<tr>
<td>Decision</td>
</tr>
<tr>
<td>Assumptions</td>
</tr>
<tr>
<td>Constraints</td>
</tr>
<tr>
<td>Alternatives</td>
</tr>
<tr>
<td>Argument</td>
</tr>
<tr>
<td>Implications</td>
</tr>
<tr>
<td>Involved</td>
</tr>
<tr>
<td>Notes</td>
</tr>
</tbody>
</table>

Documenting aesthetic quality

Note that an aesthetic quality also needs visual information. Therefore the description format displayed below is only suggestive. For a better example see Figure 4-5.
Table 7. Format for documenting qualities

<table>
<thead>
<tr>
<th>Quality Description</th>
<th></th>
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<td>Quality</td>
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<td>Description</td>
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<td>Importance</td>
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</tbody>
</table>

Documenting requirements

Example of a requirement in the form of a plan.

![Floor plan of a building with annotations]

Figure 0-15. Case Harbor master, plan