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An evaluation of the role of the customer experience centre in ABB's sales process

Applied Research & Consultancy Project

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Preface

After three-and-a-half years of studying International Business and Management Studies at Fontys University of Applied Science, the last step for me was to commence my graduation semester. I had the opportunity to move to England for four months to do my internship at ABB Stonehouse. The experience itself was very exciting, as I have always lived with my parents, and now I would combine moving out with moving to a different country to work there. It turned out that there was not a lot to worry about, my colleagues at ABB were very welcoming, and the project kept me occupied.

The project on which this thesis is based, aims at improving the integration of ABB Stonehouse's Customer Experience Centre, taking into account customer feedback and departmental requirements. The objective was to draft a proposal for ABB for possible new technologies to be implemented, with an inclusion of costing. In order to find answers, interviews were conducted to gain deeper insight into which exact improvements are required or what was still lacking from both an internal as external point of view. Together with my manager and suppliers, I was able to create a proposal for ABB about how to proceed with the CEC.

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First of all, I would like to thank mom and dad, for their support throughout this course, and encouraging and pushing me at times where I lost motivation. They have been a constant factor in my life so far, and I could always turn to them for help. Dad, thank you for the discussions so I could put my education in perspective to the business world, and thank you for being the strict father I sometimes needed you to be in order to push myself. Mom, I would like to thank you for the late night cups of tea and snacks when I was working late on deadlines again. You are the best.

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A thanks to the people who helped me during the data gathering process, both visitors of the CEC, as well as the multiple departments at ABB. You have been of great value to this research and I would like to thank you for your cooperation and relevant comments.

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Glossary and abbreviations

BU	Business unit
CEC	Customer experience centre
CJ	Customer Journey
GDPR	General Data Protection Regulation
LSU	Local Sales Unit
M&A	Measurement & Analytics
Marcoms	Marketing & Communications
PMU	Product Manufacturing Unit
RQ	Research Question
TSS	Technical Sales Support

1. Introduction

1.1. Company and problem background

The researcher has conducted this study for ABB Group, an industrial engineering company founded in 1988 when ASEA and BBC merged. Currently, the company employs approximately 136,000 people and operates in more than 100 countries; its activities in the B2B market include the following: (ABB, 2018) (MarketLine, 2017)

- Products
- Systems
- Software
- Services

The company serves many customers in various markets, like process, food and beverage, energy, and automotive industries. ABB's core values are: (ABB, 2013)

- Responsibility
- Success
- Health and safety
- Sustainable development
- Integrity

In past years, B2B firms have made necessary changes in their marketing program to maintain a loyal and satisfied customer base. The reason for this is that customers demand more than the best price, they are looking for intangible benefits and a good customer experience in the overall buying process as well. ABB has also picked up on this trend, and has established a customer experience centre (CEC) at its site in Stonehouse, Gloucestershire. An exact definition of the purpose of these centres does not exist yet, but Gartner (2018) states it is "a logical set of technologies and business applications that are engineered to provide customer service and support, regardless of the interaction (or engagement) channel" (Gartner., 2018, para. 1). Essentially, these centres display a company's activities, capabilities and products, in order to persuade a customer to engage in business; this is in contrast to the traditional executive briefing centres, which revolve solely around demonstrating products. Many companies have developed such centres over the past few years; amongst others, Fujitsu, General Electrics, Microsoft and Boeing.

The first stage of setting up Stonehouse's CEC has been completed, it contains:

- A curved touch video wall
- Three touch screens

- A touch screen “totem”
- Product pedestals
- A projector and touch screen glass (it was planned to be in the middle of the CEC; however, the original location and content were not suitable for the screen, so a new location needs to be designated)

The problem with the current CEC is that it is not integrated in the customer journey, nor in the marketing and sales process. The cause of this lack of integration was the tight time schedule for the completion of the CEC, which did not leave any time for investigating customer requirements. In order to re-evaluate the current centre, the researcher has conducted interviews to uncover customer journeys and needs, and to improve the integration of the CEC into these.

1.2. Management decision problem and objectives

The main aim of the research is to improve the integration, so the CEC will become a tool that can support both the marketing, as well as the sales team. The gaps between the customer needs and the current content of the room will be investigated as well, in order to identify possible solutions including cost figures. Since there is not enough time and resource to focus on the CEC from within the company, this task has been outsourced to the researcher, who will familiarize herself with the project and eventually formulate a proposal. After completion of the research, the management must ask itself: *“How can we best implement the findings from the research conducted on the Customer Experience Centre?”*

To support the management in its decision-making and to provide background and detail to the problem, the researcher has investigated how the CEC can be improved by uncovering the customer needs and the customer journeys. In order to do so, the researcher has interviewed several visitors and managers, and looked into best practices and other examples of CECs. The ultimate aim was to provide ABB with a proposal which can improve the integration of ABB’s CEC in the marketing strategy and sales process.

The project objective of this research is to integrate the CEC in the customer journey and sales processes, and align it with customer needs. The preconditions for this research are; firstly, an investment budget of approximately £100,000, depending on the attractiveness of the findings in the researcher’s proposal; and secondly, the implementation should be finished before the end of 2018.

1.3. Research problem, objectives and questions

Before management can make an informed decision on the basis of the proposal, it is important that the underlying problem is resolved. At this point, management does not have a clear picture or message of what it wants to communicate through the CEC as a channel, and the CEC is not an integrated part of the sales process yet. In addition to this, the customer needs were not thoroughly investigated either, meaning the CEC is currently mostly based on internal requirements and management decisions. For these reasons, it is appropriate to research customer needs and the customer journey so integration into the buying and sales processes can be enabled. To address the previously stated problem, the following research question is formulated: *“What are the specific needs within the customer journey and how can the CEC be redesigned to cover these needs and enable integration in the marketing/sales strategy?”*

In order to answer this question in detail and narrow down on the research topic, the researcher will answer the following questions:

- *“What is the message ABB wants to communicate through the CEC?”* The answer to this question should clarify what management actually wants to convey through the CEC.
- *“What are the customer needs?”* This question should answer what the customers expect from the CEC and what information they are looking for.
- *“To what extent does the CEC align with customer needs?”* Its answer should clarify the degree to which the customer needs are currently covered by the CEC, and will open up a window of opportunity for improvement.

1.4. Demarcation

The unit of analysis is the CEC within the ABB Stonehouse facility, the research will consider the people who were involved in developing this particular CEC, and build on what has already been implemented in this facility. The primary department involved is marketing & communications; however, the sales and service staff will be interviewed for insights into the customer journey, and the IT staff will be involved to consult about the feasibility of solutions.

1.5. Deliverables

The ultimate deliverable of this research is a concrete proposal for ABB to improve its CEC. The proposal will consist of several opportunities for improvement, drafted on the basis of customer feedback and needs, and the analysis of the customer journey. The proposal should offer clear

solutions for the integration of the CEC as an effective commercial tool. In Appendix B, the project plan is outlined, including projected deliverable dates.

1.6. Definition of terms

Table 1: Definition of terms

Term	Definition
<i>Co-creation</i>	"A consumer who is active in the creation of their experience." (Minkiewicz, Evans, & Bridson, 2014)
<i>Customer experience centre</i>	"A logical set of technologies and business applications that are engineered to provide customer service and support, regardless of the interaction (or engagement) channel" (Gartner., 2018)
<i>Customer experience</i>	"The interactions between a customer and a product, company or organization; the experiences are of a personal nature and revolve around rational, emotional, sensorial, physical, and spiritual factors" (Gentile, Spiller, & Noci, 2007)
<i>Customer journey map</i>	"The bundle of interactions a customer experiences with a company via all accessible media." (The Customer Journey Consultancy, 2015)
<i>Experiential learning</i>	A process consisting of four steps: through a concrete experience, observation and reflection can occur, which forms theory for the learner that will create new opportunities for action (Kolb, 1984)
<i>Interactivity</i>	"The process of two people or things working together and influencing each other." (Oxford Dictionaries, 2018)

2. Theoretical framework

2.1. Customer experience

2.1.1. Defining customer experience

One of the most important factors for the success of the CEC is customer experience, a concept with multiple interpretations; therefore, it is important that the definition of the customer experience is clearly stated. For example, Gentile, Spiller, & Noci (2007) define the concept as “the interactions between a customer and a product, company or organization; the experiences are of a personal nature and revolve around rational, emotional, sensorial, physical, and spiritual factors”. The latter is supported by Verhoef, et al., (2009, p. 32), who also explains that “the customer experience construct is holistic in nature and involves the customer’s cognitive, affective, emotional, social and physical responses to the retailer”. Ghose (2007) states that customer experience is the manner in which the user interprets his or her interactions with a brand, while the Business Dictionary (2018) defines the term as: “The entirety of the interactions a customer has with a company and its products”. Gilmore & Pine (2002) add that customer experience is the improved version of marketing, as consumers do not respond to the messages of marketing anymore, while imposing an experience does trigger interest. In this research, the definition of Gentile, Spiller, & Noci’s (2007) definition will be used, as it covers the concept most completely.

The customer experience depends on several interlinked factors: according to Verhoef, et al. (2009), the customer experience, or the customer experience management strategy, is developed by facilitators. These facilitators are:

- The social setting,
- The provided service,
- The variety of products or services,
- What the costs of the former are,
- The ambience of the location,
- The previous customer experience (which influences the customer expectations of the experience), and lastly,
- The interaction between the customer and the brand.

Berry, Carbone, & Haeckel (2002) adopt a more simplistic view on customer experience, namely that it is created by factors which can be divided into two categories, the actual performance of the product or service, and the natural setting and customers’ affections with the product or service.

One of the main challenges for a company is understanding the customer experience from a customer's perspective. McKinsey (2016) states that customer experience requires the company to 'understand' what its customers exactly want, this can be achieved by observing customers' experiences, and going through the experience as if you were a customer. The second step towards creating customer experience is 'shaping', which means redesigning the process from a customer point of view: improving the most important factor, followed by improving the process leading to that factor. Lastly, the organization should 'perform', or develop customer focus within the organization, to establish value and continuous improvement. Meyer & Schwager's (2007) research showed that gathering customer experience data exists of two main steps; the first being to gather the correct data, the second being that after the collection of data, an appropriate response should follow to act upon the data and solve problems.

2.1.2. The customer journey

The customer journey acts as a guide to show how customers move through their buying process and how they perceive the customer experience (Verhoef, et al., (2009); Nenonen, Rasila, Junnonen, & Kärnä, (2008); Berry, Carbone, & Haeckel, (2002)); furthermore, Neslin, et al., (2006) adopt a similar approach when looking into customer management. The customer journey can be defined as the bundle of interactions a customer has with a company via all accessible media. (The Customer Journey Consultancy, 2015)

The stages of customer journey include the orientation, approach, action, departure, and evaluation (Nenonen, Rasila, Junnonen, & Kärnä, 2008), whilst Zambito (2010) identifies 7 stages in the model: initiative, research, assessment, decision-making, implementation, support and renewal; the latter theory will be used in this research. By mapping a customer journey, one can create a visual structure of the customer's experience (Nenonen, Rasila, Junnonen, & Kärnä, 2008). This process can help ABB to understand its customers' motives and decision-making process for buying products. Apart from solely understanding, the customer journey map might also be used to improve the customer experience. The actions, motivations, questions and potential hurdles faced by customers are analysed in order to understand what the customer is doing. When summarizing the analysis of the customer journey, a plan for continuous improvement can be adopted. (Richardson, 2011)

2.1.3. Co-creation and value creation

An important feature of the customer experience is co-creation; this feature is described as a customer who is active in the creation of their experience (Minkiewicz, Evans, & Bridson, 2014). Co-creation can be a helpful sales tool: when customers feel more involved, they are more likely to buy

your products. The research of Minkiewicz, Evans, & Bridson (2014) about how people co-create their own experience, showed that co-creation is formed through three factors:

- Co-production, where customers physically engage in the experience;
- Engagement, where they will be psychologically involved from both an intellectual as well as an emotional point of view, and;
- Personalization, which is customizing the experience to personal preferences.

These three factors are influenced by preceding visitor experiences. Minkiewicz, Evans & Bridson's (2014) research refers to the co-creation of an experience, with value being the consequence, whereas other research (Payne, Storbacka, & Frow (2006); Prahalad & Ramaswamy, 2004) refers to the co-creation of value.

Grönroos & Voima (2012) address the concept of co-creation as two spheres, facilitating value: the "provider sphere" and the "customer sphere". When these spheres overlap another, value is being co-created by both parties. It is important to mention that the customer is the supervisory factor in the joint sphere of value creation, but the provider can influence customer decisions. Furthermore, Grönroos and Voima (2012) argue that the creation of value can happen through direct or indirect interactions. During direct interactions, the customer actively participates in the company's processes, while indirect interactions consume the outcomes of these processes.

In her book, Simon (2010) argues that there are three key ingredients to co-creation and participation: the promise of an attractive experience, the availability of tools with high ease of use and understanding, and a bargain between the facilitator and the participant. The experience of co-creation must offer the customers, or participants, self-fulfilment; they should have a feeling that they have contributed something to the experience, and achieved a goal or triggered interest. This overlaps with Maslow's (1943) hierarchy of needs, which explains the different levels of human needs: "physiological, safety, belonging and love, esteem and self-actualization needs" (Maslow, 1943). Each need should be satisfied in order for an individual to be able to move on to fulfilling the next need. The self-fulfilment (or self-actualization) need is the highest need which can be achieved, so it is argued that co-creation unfolds the highest desire of human needs.

2.2. Technology in customer experience

As technology solutions will also be considered in the recommendations of this research, it is important to gather underlying literature on how technology is interwoven in customer experience.

In the research field of customer experience, technology is a relevant factor: Minkiewicz, Evans, & Bridson (2014) point this out in their research, as screens and sounds create realistic

situations, even to the extent where people think they escape reality. Adding to the previous statement, technology can also provide a customized experience, as visitors are enabled to make selective decisions through screens about which information they would like to receive. This offers them the chance to customize their experience to the topics of their interest. Verhoef, et al. (2009) argue that technology is becoming more and more integrated in business, so it is an essential part to incorporate technology into the analysis of customer experience, both in the online environment, as well as in the traditional environment. An example of technology in a CEC is ASML’s facility: in its CEC, information about ASML’s history and recent product innovations in virtual reality (VR) are displayed; in addition, an interactive area is installed where visitors can attend a workshop in the “Maker Space”. (Tinker Imagineers, 2016)

2.3. Experiential learning

In addition to the aspects influencing customer experience, research about learning through experience is included in this literature review. The Learning Cycle has been thoroughly researched by Kolb (1984), who indicated that experiential learning is a process consisting of four process steps:

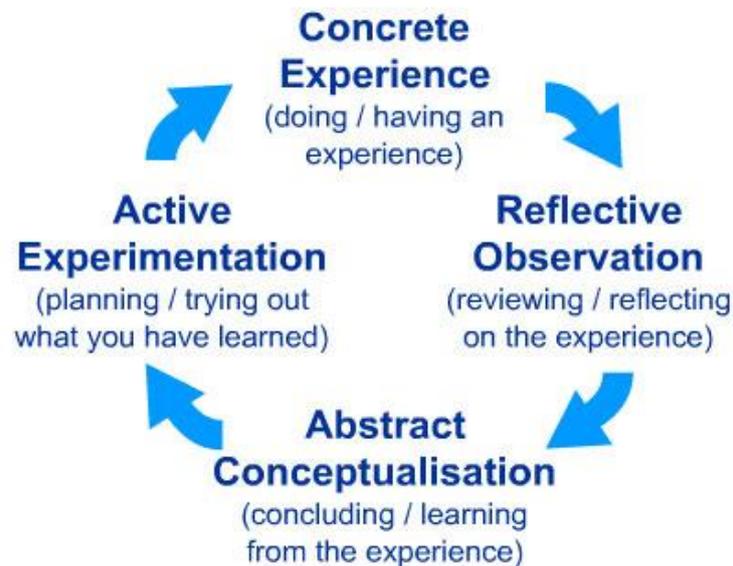


Figure 1: Kolb's Learning cycle (McLeod, 2017)

When people go through this process, they learn about your products in different ways, making them more likely to buy products. Similar models have been developed by Lewin (1946) in the field of action research, and Dewey (1938) in the field of education. Kolb’s (1984) theory also includes different learning styles, which differ between individuals:

- Diverging, entailing approaching situations from multiple points of view;
- Assimilating, which involves absorbing and organizing large amounts of information;

- Converging, which focuses on efficiently finding solutions;
- Accommodating, meaning learning through gut instinct.

As with many other models, Kolb's model can also be applied to settings other than those strictly involved with the education of students. For example, in a museum setting, which compares to the settings of CECs, as they both display information. In his research, Ansbacher (1998) explained how Dewey's (1938) experiential and education theory can be applied in museums. He mentions several shortcomings in museums' didactic efforts; for example, the fairly traditional approach of telling visitors what can be observed, instead of letting the visitors experience this by themselves. Dewey (1938) describes the former as "learning from without", and the latter "learning from within". The most relevant principles to be translated in museums are the interactivity and continuity of the exhibits. These two principles combined provide a framework about how to plan experiential learning in museums, but can also aid in creating the experience in ABB's CEC: it can implement more interactivity in the centre, and attempt to change an experience every time a visitor visits, therefore continuously improving the CEC.

A more controversial form of experiential learning, is the Body Worlds exhibition, created by Gunther von Hagens. This exhibition teaches its visitors about human anatomy, not in the form of books and models, but in a far more realistic way, where actual bodies are displayed. According to Moore & Brown (2007), the visualization of the bodies creates a sense of reality for visitors, so linking this back to the CEC, visualization of how products work can be important. Visitors can experience the products in an artificial or real-life setting, creating an environment of experiential learning. (Body Worlds, 2018)

As one of the key factors of experiential learning is interactivity, the focus in this section will be on how other environments were made interactive to increase customer engagement and adopt experiential learning.

One of the examples is the Centraal Museum in Utrecht, in the Netherlands. This museum has transformed itself from a traditional art museum, to an interactive environment where visitors can become a part of the exhibition. A workshop area was installed, allowing people to experiment with the theme of current exhibitions through creation, to learn more about the underlying message of the exhibition and develop a better appreciation of the artist. This approach encourages visitors to learn more about the art and it invokes interaction, so they will also reflect on what is learned, instead of only absorbing information. (Centraal Museum, 2014)

Another example of interactivity includes technology. This approach is applied in the Dallas Museum of Art, where a digital platform is installed to engage visitors in exploring the museum. Visitors are rewarded with badges if they engage in certain activities, provoking further exploration of the museum for other badges; additionally, these badges also offer certain discounts or rare rewards. (Stein & Wyman, 2013)

At Museon in The Hague, in the Netherlands, a smart World War II exhibition was hosted. A study conducted by Marshall, et al. (2016) investigated how smart replicas of artefacts are adopted in a museum setting, displaying both the traditional factual information, as well as narratives of each artefact replica, so the information was described from multiple angles. The visitors reacted predominantly positively, pointing out that the stories gave a personal touch to the exhibition; however, fewer visitors used the smart technology if there were no employees to emphasize the presence of the technology. (Marshall, et al., 2016)

In another study, the benefits of using virtual reality (VR) for learning purposes is discussed. Research showed that VR provides great benefits in field training, as real safety hazards can be excluded; additionally, situations which cannot be physically reached can be reenacted using VR. (Freina & Ott, 2015)

Learning from the above appliances to create interactive environments, it appears that there is a versatile window of opportunities available for implementation to improve the CEC.

2.4. Analytical model

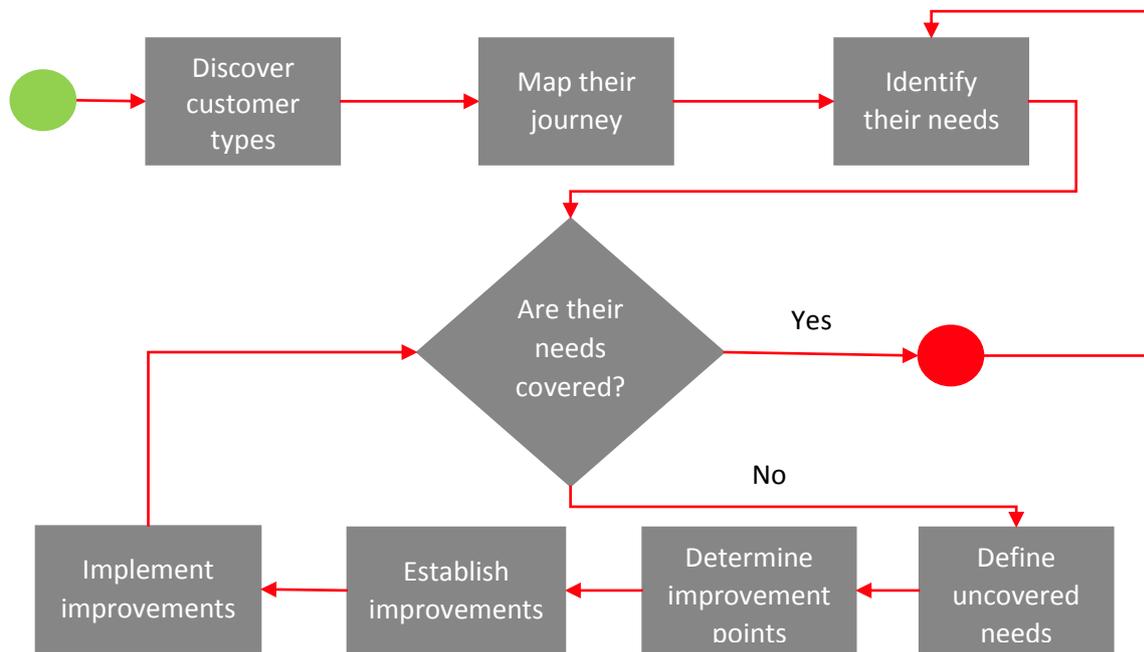


Figure 2: Analytical model (Author's conceptualization)

The analytical model describes how the process of integrating a CEC into the commercial processes works. The first important step is to determine the different customer types ABB serves. After identifying these groups, their customer journeys should be identified and mapped, and the needs of each customer group should be identified. Then, the question follows whether their needs are covered: if so, the process of improving the first set of needs comes to an end and new needs must be discovered. If the needs are not covered, these needs must be defined, after which improvement points must be determined, ways to improve the CEC must be established, and the improvements should be implemented. After this, the question whether all needs are covered must be asked again, and the process repeats itself. By creating loops in the process, continuous improvement is established, so the CEC can keep improving.

3. Research plan

3.1. Research objective and research questions

ABB is planning on setting up more CECs globally, and the Stonehouse facility acts as a prototype and benchmark for these facilities. At the moment, customer needs are yet to be taken into account in the design and content of the CEC, so these will be investigated to determine what information the customers are looking for.

The general objective of the research was to of an exploratory nature, as the researcher attempted to discover what the customer requirements were with regards to the CEC, by investigating improvement points and feedback from a customer perspective, and defining the current customer journey and how the CEC could fit in. After data gathering, the findings were analysed, and possible solutions were presented to ABB's management.

The following research- and sub-questions were used as a structure for the research and were funnelled down to create a logical order of addressing the problem. By answering these questions, the defined problem statement was addressed: *“What are the specific needs within the customer journey and how can the CEC be redesigned to cover these needs and enable integration in the marketing/sales strategy?”* Some of the questions could be answered by solely using desk research, whereas others required field research to collect the appropriate data. This research contained three main research questions, which could be broken down into several sub-questions; these served to highlight all aspects of the main research questions. In table 2, the sub-questions of each research question can be found.

Table 2: Research questions

Main research question	Sub-questions
<i>What is the message ABB wants to communicate through the CEC?</i>	<ul style="list-style-type: none">- What is the main message ABB attempts to carry out through the CEC?- In what way is this already realized?
<i>What are the customer needs?</i>	<ul style="list-style-type: none">- What are the principle customer groups?- What is their customer journey and at which point does the CEC fit in?- What are the needs of each customer group?
<i>To what extent does the CEC align with customer needs?</i>	<ul style="list-style-type: none">- Which customer needs are already covered by the CEC?- Which needs are yet to be translated in the CEC?

3.2. Research approach

After getting familiar with the research project, the researcher decided to adopt an interpretivist view when carrying out this research, where reality is seen as being interpreted differently by each individual and is created by individuals interacting with the world (Gray, 2014, p. 23). The decision for this paradigm was made because the researcher assumed that each person creates his or her own reality, so they will also respond differently to a phenomenon. As the researcher attempted to provide ABB with a fresh view on how to approach the improvement of the CEC, this view probably differed from what other involved ABB staff had in mind.

In research, two main approaches exist: deductive and inductive research. In this case, the research was conducted using an inductive approach. The researcher gathers and analyses data, after which he or she will attempt to discover patterns in this data and form a theory. From this theory, the researcher could establish recommendations for the firm in the form of a proposal.

As this form of reasoning attempts to build new theory, conducting a literature review is not a necessary step in the research; however, in this case, a review will help in creating background for the research, in identifying best practices, and in informing the reader on several aspects of customer experience creation. It is important to note, though, that this literature was not used for theory testing and hypothesis testing, it was merely used to provide a background to the problem. (Gray, 2014)

The inductive approach in this research started with exploring customer and visitor opinions of the CEC, after which the data was analysed to understand what aspects of the CEC had to be improved. Thus technically, a theory was designed about the gap between customer needs and the current CEC.

3.3. Research strategy and design

The thesis is based on qualitative research, as the researcher focused on in-depth information, rather than the generalizability of data. The research needed detailed and rich information about experiences of visitors to the CEC, and what feedback they provided and why.

The advantage of using a qualitative approach is that very rich data can be collected, so the context of the data remains intact. Qualitative research is also a suitable research strategy for phenomena which need a deep understanding. The disadvantages of qualitative research are that sometimes, generalizing the results to a population is not completely possible, due to the very specific and subjective tone. Also, all details are included in qualitative research, yet researchers do not usually differentiate between frequent and non-frequent occurrences, which means that non-frequent data could be regarded as equally important, compared to frequent data. (Atieno, 2009) (Carr, 1994)

The research design which was implemented in this research was a grounded theory design, since the ultimate goal of the research was to find out how the CEC could be improved, or, following Glaser & Strauss' (1967) words, "to generate or discover a theory". The advantage of using a grounded theory is that it will provide rich data to the research, as well as due to its exploratory nature, assumptions are less likely to be made. Disadvantages of using the grounded theory include possible problems with data management, since it gathers large amounts of data, so logging data must be approached carefully. Another disadvantage includes the potentially limited generalizability, especially in this research, as only data will be gathered from ABB Stonehouse's CEC, so results might differ at other CECs. (Hussein, Hirst, Salyers, & Osuji, 2014)

Table 3: Research questions approach

Question	Strategy/design
<i>Question 1a: What is the main message ABB attempts to carry out through the CEC?</i>	<ul style="list-style-type: none"> - Field research: Open-ended interviews - Desk research: Internal documentation
<i>Question 1b: In what way is this already realized?</i>	<ul style="list-style-type: none"> - Field research: Open-ended interviews and observations of the room
<i>Question 2a: What are the principle customer groups?</i>	<ul style="list-style-type: none"> - Field research: Semi-structured interviews sales department
<i>Question 2b: What is their customer journey and at which point does the CEC fit in?</i>	<ul style="list-style-type: none"> - Field research: Semi-structured interviews with the sales department - Desk research: Websites and articles on customer journey mapping
<i>Question 2c: What are the needs of each customer group?</i>	<ul style="list-style-type: none"> - Field research: Semi-structured interviews and online/offline questionnaires
<i>Question 3a: Which customer needs are already covered by the CEC?</i>	<ul style="list-style-type: none"> - Compare results
<i>Question 3b: Which needs are yet to be translated in the CEC?</i>	<ul style="list-style-type: none"> - Compare results

3.4. Population and sample

3.4.1. Population

When conducting field research during this research, data was gathered from multiple customer types. The theoretical population would be all visitors of the ABB CECs, as all these elements of the population could provide feedback data for the research. Due to geographical limitations, and the prerequisite of investigating Stonehouse's CEC, it was not possible for the researcher to access all of these elements; therefore, a study population was drafted. This study population included all visitors of the Stonehouse CEC, the CEC which the researcher did have access to.

3.4.2. Sample and sampling method

To narrow down the population of the research to the actual samples which were selected, a theoretical, or non-probability, sampling technique was used. When selecting subjects from the population, a convenience sampling method was applied, this sampling method selected “respondents who are conveniently available” (Kwanjai, 2017, slide 20). The reason for choosing convenience sampling, was that the researcher did not have access to the full population; additionally, the ABB Stonehouse CEC did not welcome visitors each day, so the researcher could only gather data from visitors who were conveniently available. This was the reason why feedback from non-customer visitors was also taken into consideration, this group is referred to as ‘others’ in the research, and consists solely of suppliers. (Admin, 2017)

Table 4: Profile of respondents

Description of respondent type	No. of sample units
<i>Internal customers</i>	9 (all face-to-face)
<i>Direct customers</i>	4 (3 face-to-face, 1 questionnaire)
<i>Channel partners</i>	3 (questionnaires only – see limitations)
<i>Others</i>	3 (1 face-to-face, 2 questionnaires)

3.5. The research instruments

The most prominent research instrument was the researcher herself, due to the qualitative nature of the study. The role of the researcher in this case was etic: the researcher took an objective stance, from an outside view (Simon, 2016). The validity and reliability of the researcher was established by debriefing the results of the interviews, to make sure the researcher correctly understood and interpreted the statements made by the interviewees.

For gathering data, three different instruments were used, these were:

- Interviews, to collect detailed data about the visitors’ experiences in the CEC. These interviews were guided by an interview protocol which consisted of semi-structured questions. The choice for semi-structured questions was made because specific factors of the experience had to be explored, but participants also had to be able to give personal inputs. The motivation letter and interview protocol can be found in Appendix C and D respectively.
- Offline and online survey distribution, the survey was used for visitors who either visited when the researcher was not available for an interview, or visitors who visited the CEC

shortly before the researcher started data gathering. The survey consisted of 6 questions revolving around the CEC, these questionnaires were spread online to previous visitors, and reception staff at ABB handed them out to people who had been shown around the CEC. The motivation letter and questionnaire can be found in Appendix E and Appendix F respectively.

- The last tool which was used was a guideline for defining the customer journeys, these interviews were semi-structured, so further information was asked for whenever answers need additional information. The interview protocol can be found in Appendix G.

3.6. Validity and reliability

To ensure the trustworthiness of the research, several safeguards for validity and reliability were adopted, these are elaborated on underneath.

With regards to sample reliability, the convenience sampling method, used to sample the customer population, is one of the least reliable forms of sampling. The reason for this is the high probability of sampling bias, damaging the external validity. The combination of field research about the CEC's position in commercial processes and customer needs, and desk research about best practices does offer results with improved generalizability. (Sedgwick, 2013)

The reliability of the data analysis was ensured through saturation, where the interviewer will gather and analyse data until no new points are discovered; furthermore, saturation ensures content validity, as saturation implies that what is intended to measure is actually measured. The saturation approach required the researcher to continuously analyse and code data after it is collected. (Fusch & Ness, 2015)

Most importantly, the researcher herself has to be able to validly and reliably interpret the data and ask objective interview questions, without asking directing questions which could steer interviewees in one direction or another. The ability to correctly interpret data is also a critical skill; therefore, the interviewees were debriefed to ensure the researcher understood and interpreted their answers correctly.

4. Results

4.1. What is the message ABB wants to communicate through the CEC?

Originally, the idea for the centre was to create a facility which would tell a story by raising awareness for issues in water management. This story would focus on possible threats and risks which ABB has minimized or resolved through their involvement. One of these case studies is the flood barrier system in Venice, Italy, which aids to protect Venice from the often occurring flooding, through advanced automation systems which control the flood barrier systems to activate when high water approaches (ABB, 2018). Another proposal to raise awareness was sketching a similar scenario to the 1930's Dust Bowl, the severe American dust storms, and emphasizing that accurate measurement and use of analytics could prevent such occurrences. These examples both attempt to put ABB's activities into context and show where and how its products can add value.

Along the development of the centre, this story-telling approach shifted to displaying ABB's activities, products and expertise. The current set-up of the CEC is based on this approach.

When creating the initial concept of the CEC, there were several objectives put in place about what message to communicate within the room:

- To create an engaging and informative space that clearly demonstrates ABB's expertise, innovation and range in the provision of measurement and analytical solutions
- To educate and inform, allowing the room to be used for a range of different audiences
- To encourage visitors to interact with the products, both on a functional and applicatory level
- To demonstrate and promote ABB's manufacturing and service capabilities both at Stonehouse and at a global level
- To feature a mixture of product-level, application-level and business-level displays
- To create a range of presentation techniques and tools providing an informative and entertaining overview of ABB's measurement offering and expertise (ABB, 2017)

Also regarded as important for the concept were ABB's value pairs, which guide the company and its employees from strategy to day-to-day operations. The pairs include:

- Safety & Integrity,
- Innovation & Speed,
- Collaboration & Trust,
- Customer focus & Quality, and

- Ownership & Performance (ABB, 2018)

During the process of creating the CEC, the inclusion of the value pairs was slightly neglected, as some were complicated to translate, whereas ideas for representing others were discarded. The second to last prerequisite is the implementation of five themes of easy, trusted, reliable, efficient and evolving, to explain the reason why the customer should choose ABB.

Finally, the centre had to align with the Marketing & Communications strategy, this involves a further integration of service, the incorporation of the new water campaign and product launches for electromagnetic flow and continuous water analysis, the core message of the Marketing & Communications strategy is outlined in Table 5.

Table 5: Marketing & Communications strategy (ABB, 2018)

Measure more...	
<i>...accurately</i>	...to achieve improved performance
<i>...frequently</i>	...to get a better idea of what's happening in your process
<i>...reliably</i>	...to help prevent unexpected downtime
<i>...safely</i>	...to comply with legislation and minimise the risk of penalties
<i>...cost effectively</i>	...to help cut wastage
<i>...thoroughly</i>	...to give you valuable data on your process
<i>...smartly</i>	...to help you identify room for improvement

4.2. What are the customer needs?

After discussing with the salespeople, a distinction was made between three main customer groups, each having different customer journeys and needs. The core customer groups are:

- Direct customers
- Internal customers
- Channel partners

In the following subchapters, the three sub-questions about the different customer groups, their customer journey, and what their needs are, will be answered. The customer journeys are based on the figure underneath.



Figure 3: The Buyer Experience (Goal Centric Management, Inc., 2010)

4.2.1. Direct customer

The direct customers are ABB’s end users. The customer journey of the direct customers will usually start with the identification of a need, rather than a want. The trigger events for these needs are investment decisions, renewals, and regulatory changes, the latter being the most profound trigger. The reason for this is when; for example, emission regulations change, a need for measurement products is created, forcing companies to purchase adequate measurement equipment. This was explained during an internal interview:

From notes: Customers have needs for the product, not so much wants (You must measure, you do not necessarily want to measure) – Service Centre Manager

After the need for a new product is identified, potential suppliers will be identified. The customer will look at multiple companies and their credibility, and at different measurement techniques. Then the customers will send their technical requirements and a request for quotation to the possible suppliers, upon which they will receive a quotation. The technical department will evaluate these quotations for the best opportunity, and a decision will be made. The technical department will usually not be overruled by the commercial department in the decision-making process; however, the less complicated the requests are, the more influence the commercial department has on the decision.

After the buying decision is made, the implementation process starts, including important factors such as the on-time delivery of the product, on budget and technically complete. ABB’s support with implementation and installation is proportionate to the complexity of the project, and is regarded as a true strength of ABB. The company will provide spares lists, sales follow-ups, and maintenance to the customer. If new regulatory changes are implemented, the customer will find him- or herself in the renewal stage of the buying process, which will restart their customer journey at the initiate phase to search for new products.

During the interviews in the CEC, the needs and desires of the direct customers were discussed. The interviewees pointed out that they would like more products on display, and other remarks included seeing the products in an applied setting, through simulations or water rigs for example:

From notes: Like actual running product on display with real measurement or alternatively simulated (flow represented by LED lights) – Direct customer

With regards to the general impression of the room, it was deemed as very amenable from a visual perspective, but a mention was made about adding a history of ABB to the room, to show their journey towards excellence.

The content of the video wall was described positively and the presented information was regarded as very rich and detailed. Some remarks were given about technical issues: malfunctioning touchscreens, non-working videos, or documents which could not load:

From notes: Problems with the technology and loading videos and presentation to the screen (visitor assumed the videos didn't work, list of videos is not clear enough) – Direct customer

4.2.2. Channel partners

The second customer group are channel partners. ABB attempts to sell as many products as possible through this group as it has several advantages:

- They can add value to a sale which ABB cannot; for example, a different service package, including services which ABB does not offer.
- They can offer a complete package sale. If customers request a complete package, and ABB can only supply 80% of the products, the channel partner can source the remaining 20% from other partners on the supplier side.
- Some customers prefer to buy from local companies, as they are perceived as more familiar.
- The speed of response in the UK is faster when using channel partners: if a customer requests information, the channel partner would be able to provide a reply sooner than ABB itself.

The channel partners as a customer group is quite peculiar, as they are both customers and salespeople. The challenging part of selling through channel partners is that these companies also sell competitors' products, meaning ABB should be in a favourable position compared to the competition.

The channel partner's customer journey starts whenever a customer request is received. The channel partner will then investigate which suppliers can offer suitable solutions for the received request. The different customer requests will be assessed based on the technical and commercial requirements, after which a decision will be made. The decision criteria will be based on which company offers the best fitting solution, the pricing and the customer agreement on the pricing. Implementation is not a true part of the customer journey, as ABB sells through the channel partners. The channel partners do have interest in the in-time, on budget delivery of the products, in accordance with the specifications. ABB must make sure this is achieved to remain a credible partner. In the support stage, the channel partner will be provided with spares lists and sales follow ups. When investigating support along the whole customer journey, ABB also provides a sales toolkit, and pricing tools or price consultancy to support the channel partners. The renewal phase is entered as soon as a customer places a new product request. This will in turn initiate the first phase of the buying journey again.

Defining the needs of the channel partners was quite difficult, as only three visits were documented. The visitors all filled in questionnaires, rather than being interviewed; however, the limited amount of data does correspond with that of other customer groups: the channel partners were interested in seeing more interactivity in the room:

From questionnaires: *More videos or interactive applications with some products.* –
Channel partner

Additional comments showed that the channel partners had positive thoughts about the usability, as well as that there was a sufficient degree of information in the room.

4.2.3. Internal customers

The last group of customers, the internal customers, are Local Sales Units (LSUs) from different ABB entities and countries. These LSUs are seen as internal customers in this research, because they are part of ABB Group, yet remain a different 'business'. Since each ABB product manufacturing unit (PMU) is a separate company, they are obliged to purchase ABB Stonehouse's products if they are interested. It is very important to market these products to the internal buyers as well, to drive sales within the group as well.

The internal customer's customer journey commences as soon as the LSU receives an end user request demanding a product which its PMU cannot supply. The LSU must then contact a different

PMU to fulfil its customer's need. A selection of appropriate technologies will be made, and the factory and TSS team will give technical advice about the product, after which the PMU and LSU will confirm a price. In return, this price must be confirmed by the customer. As soon as the customer has approved, the product will be ordered against a specific price, delivery time and conform to the right product specifications. The criteria on which the internal buyer bases its decision mostly revolve around support: commission support, factory warranty, lifecycle support and the discount structures of the factory. It is very important for ABB Stonehouse that the other LSU's are convinced that they should promote and push ABB Stonehouse's products to their customers.

During the interview with the internal customers, the respondents referred to the observation of the products in an applied setting, or receiving live data from measurements made elsewhere:

From notes: Do product demos. I.e. small running water plants. Clear pipes with coloured water running through to show the flow of water. – Internal customer

From notes: Love to see e.g. a live feed from controllers/recorders. – Internal customer

Also, another mention of a 'history' setting was made with regards to the product wall: to dedicate a part of it to old ABB products, to show the evolution of the products.

From notes: Suggests to dedicate part of product wall to old products → show where ABB comes from. – Internal customer

Again, the video wall was observed as very complete with regards to content, one respondent even said not to change anything, because it was "perfect". The general impression of the room was very positive, but some people requested a better overview of which information could be found where, to make it easier to orientate themselves.

When discussing the interactive screens, more background information about ABB Ability was requested, and a reduction of the volume of the factory tours; however, the tours itself were regarded as impressive.

4.2.4. Other visitors

This last group of 'other' visitors comprises solely of suppliers. Despite this group not qualifying as a customer, the feedback of these visitors was still taken into account, as they can still provide an insight into visitor expectations. The 'other' visitors did not show interest in the product side of the CEC, but were more interested in the other information, like the factory tours. The tool

was described as “fantastic”; however, mentions were made about the volume. Other remarks included the video wall and using the drill down menus:

From notes: *Not clear that content changes in the bottom of the screen when videos are selected, seems like nothing happens.* – Others

Apart from these remarks, the visitors mentioned the room was intuitive, easy to understand, and very informative.

4.3. To what extent does the CEC align with customer needs?

4.3.1. Customer journey

During the interviews with the sales and service centre managers, it emerged that currently the CEC is an isolated touchpoint in the customer experience; the centre still needs to be integrated into the sales and marketing processes. Currently, visitors just walk in whilst waiting for appointments, or get a quick tour through the centre during a meeting, and occasionally, the room is used when training or meetings are organized at the Stonehouse facility; however, the CEC is not an integrated component of the customer journey nor of the sales process yet.

The ideal point where the CEC should play a role in the customer journey is at the research stage. In this stage, the customer can be introduced to ABB’s activities. Apart from having to be a set touchpoint in the customer journeys, the CEC should also be more integrated in the sales process. Ultimately, the room is one of ABB’s sales tools to promote products and increase sales, just like marketing campaigns and event stands. The effectiveness of these tools are measured through Salesforce, a CRM platform (Salesforce.com, Inc., 2018), where ABB enters leads and can connect them with the appropriate salesmen to fulfil their needs. Since the CEC is a potential set touchpoint in the customer journey, and a potential sales tool in the sales process, the effectiveness of the CEC should also be measured. When keeping track of visitor activity, it is also easier to follow them up to increase engagement and add a more personalized touch to the buyer experience.

4.3.2. Customer needs

The findings of customer needs have been analysed through using coding to identify themes and patterns in the data (for the coding table, see Appendix K). Through this way of analysing data, it became apparent that there are four general themes contributing to the experience of visitors. These four themes are:

- Interactivity, this concentrated on the product wall. Visitors want to discover how products are used, and visualize them in situ. The two customer groups mentioning this theme were

the direct customer, and the internal customer. The 'others' group did not mention it, apart from one individual. The reason for this is probably because actual customers of ABB are interested in how the product works, because they must use it or be able to resell it, whereas suppliers do not need a broad knowledge of the product.

- Information, this was a key component of the room, to help visitors visualize what ABB is doing and what is happening in the industry, but also to provide information about the products. The visitors require sufficient information to; for example, understand where the products are applied or how they are working.
- Usability. This need revolves around the ease of use of the systems and how well the screens work when interacting with them. If the technology is too complex to understand, or the technology does not work, it causes dissatisfaction, or at least a feeling of disappointment for the user.
- Aesthetics, many positive comments were made about the look of the room. Whilst this is rather a desire than a need, it would probably invoke negative comments about the environment within the room if the room looked messy or unfinished.

In order to define weak points of the CEC, the current state of the centre must be compared to visitor needs. It appears that the product wall does not comply with visitor expectations and needs; the area lacks the necessary product information. Information is an important part of the buying experience, as customers make their decision after determining to which extent the products comply with their technical and commercial requirements. Other missing information which was highlighted was more background information behind ABB Ability and the carbon capture plant at Imperial College London, and a history of ABB's development as a company.

The interactivity need particularly concerns the product wall, since visitors were interested in seeing how products work within a process, either through demonstrations or simulations. Interactivity is a key component of creating a good customer experience: it is critical to enable the visitors of the CEC to get hands-on experience with the product, as it increases their satisfaction and contributes to the co-creation of their experience. It will also show a visualization of how the product works and how it fits within the process, which is currently missing in the room.

With regards to the usability, several comments were made about the video wall. Issues were identified about touchscreens which did not work properly, and problems with loading video's or presentations. The latter could also be subject to a remark that another interviewee made:

From notes: *"Not clear that content changes in the bottom of the screen when videos are selected, seems like nothing happens."* (Other visitors)

Either way, as people expect technology to work when using it, it does not particularly satisfy if it works, it will only cause dissatisfaction and irritation when it does not. This means that the technology in the room should be simple to use, and an attempt should be made to eliminate technical issues as much as possible.

The last need is the aesthetics, the remarks about this point were very positive. This factor; however, is just like the usability of technology, a factor which causes more dissatisfaction when not fulfilled, than satisfaction when it is fulfilled. For example, people were in awe when looking at the general overview of the room, but became slightly agitated when the volume of a screen was too loud.

5. Conclusions and recommendations

This research revolved around discovering the bottlenecks which ABB's CEC was facing, preventing the integration of the facility into the commercial processes, as well as the customer journey. The problem was approached by firstly gathering desk data about best practices in different aspects of the customer experience concept. In addition to this, field data was collected through interviews and questionnaires, to define how visitors perceive the CEC. The results were matched against customer needs, identifying which gaps need to be filled to ensure integration.

5.1. Strategic conclusions and recommendations

ABB has made a significant investment when creating the CEC, so it is key that ABB can also reap the benefits from this investment, such as improved customer satisfaction or improved sales and margins. Unfortunately, the centre is currently not producing effective returns, since the CEC is not an active part of the commercial processes yet. To investigate how ABB can benefit from integrating the sales and marketing channel, it is important to define where the CEC can add value to the customer, and how the CEC can be used to promote ABB to the customers.

After discussing the customer journey for each customer segment, to see where the CEC would fit in and be most value-adding, the research discovered that the room is a standalone touchpoint: it has not been fully integrated in the different customer journeys. To enable this integration, it is essential to identify the stages where the CEC can have most influence on the buying decision, and where the CEC can provide the information which the customer needs.

After looking at the decision-making criteria at each stage in the customer journeys, the most suitable and value-adding position within the journeys would be the research and assessment stages. In these stages of the journey the customer is still looking at other alternatives, meaning he or she will also assess any competition on their product offering and value proposition. It is therefore important that ABB can differentiate itself from competition, and take a favourable position by providing customers with a better buying experience compared to competitors if they only use traditional sales tools.

From desk and field research it appeared that the customers assess each opportunity based on several criteria, such as the credibility or trustworthiness of the companies, the different solutions or measurement techniques they offer, and the level of sales support they get from the sales team, like advice or information supply. Through the CEC, the customer can receive product advice and important information in a more applied setting, which will presumably influence the aforementioned favourable position.

As well as integration of the CEC within the customer journey it is also important to assure its integration into the commercial processes like marketing and sales. The marketing department must incorporate the CEC in its promotional activities, to raise awareness for the centre, and inform (potential) customers of its existence. It is important that the promotion occurs both online, as well as offline, to allow visitors to get involved with ABB in both ways.

Integration into the sales strategy encompasses two prerequisites, the first one being a change in ABB's mind-set. It is key for the CEC to become a standard part of the company's sales efforts. The centre should function as an addition to the standard sales tools already available, such as whitepapers or case studies which are available to send to customers. The CEC can add an extra dimension to the information supply and the sales advice and support, as it is not just a document showing information, or a simple product brochure, but it can potentially be much more than that. The room can be used to discuss the problem which the customer is facing in detail, highlighting different aspects of the problem in a detailed, interactive and visualized manner. It can provide insights into how ABB can help through showcasing its expertise and experience. Providing help to customers by using the CEC as a medium, can convey the sales team's message better as well, as there is a real-life and on the spot solution to support the advice which the salespeople give. The change in mind-set would involve encouraging the salespeople to actively use the centre, which requires them to know how to use the centre to its full potential. This brings us to the following prerequisite: training.

In order to ensure that the sales staff can knowledgeably promote ABB through the CEC, it is necessary that they receive appropriate training about how the centre can be used. This will ensure that they have in-depth knowledge about the room's content and can use its contents to their full potential. Training can be organized on an annual base for updates, and whenever content or information is added to the room, an additional, shorter training course can be organized to teach the salespeople about the functions of the new content, and how they can incorporate it into their selling strategy.

In addition to the previous recommendations, a sales toolbox should be provided to the sales team to standardize procedures about frequently occurring customer problems. This sales toolbox can include:

- An overview of the different buyer personas,
- Promotional documents and other material (e.g. videos) about the CEC,
- ABB success stories about how other companies have been helped,
- Scripts for addressing frequently occurring customer measurement problems, and how the available media in the CEC can help to address these problems.

The change in mind-set, implementation of sales training, and creation of the sales toolboxes will make the salespeople more comfortable with using the CEC to sell ABB's products to the customers, rather than selling by using the traditional sales tools they are provided with. Hopefully, when these changes are implemented, the room will be used more frequently for customer visits and sales meetings, compared to how it is used now.

5.2. Operational conclusions and recommendations

In addition to the recommendations for integration, the customer needs for information in the CEC will be addressed too, in the form of operational conclusions and recommendations. Four themes have emerged from the interview data, which determine the customer experience. These themes are interactivity, information, usability and aesthetics. The visitor feedback was analysed to determine the needs of each customer group, after which these needs were compared to the current state of the CEC. This determined the following improvement areas:

- The product wall: direct customers, internal customers and channel partners remarked that there is a lack of product information, and hands-on experience with the products.
- The video wall: even though the experiences using the video wall differ significantly, some good and some bad, it is important that the technology and usability issues plaguing the video wall should be eliminated.
- ABB's background: the direct and internal customers have pointed out that a background of ABB and its journey towards its current level of excellence would be a good addition to the CEC. This would partially cover the need for information.

Several ideas have been created for the improvement areas, more details can be found in Appendix M, and Table 6 underneath.

After the identification of the need for more interactivity and information, the product wall is currently not covering customer needs; however, this can be changed by Microsoft HoloLens, a mixed reality device, which overlays holograms on reality. This device is an ideal medium to give more in-depth information about the products. The idea is to create a holographic island with a water plant on it, and to create several hotspots where a product will pop up from the island, with several information displays around it. See the image underneath for a mock-up of such an island.

The aforementioned glass screen could also be used to communicate product information and create interactivity. The screen would, in this case, be positioned in front of the product wall, so customers can select a product. This will open up a new page, showing a product CAD-drawing and additional product information.

Lastly, customers identified that a live feed would be useful to understand the products. A live feed would unfortunately not be very interesting, because the measures on the products are usually constant. An interesting alternative would be a mimicked feed, where users can adjust measures and see how this influences the profitability and operation of the plant. Additional information about where the product sits in the plant, what data it displays, or how it works, could also be integrated in the tool.

The other improvement area is the story of ABB’s evolution, which will be laid out in a roadmap of ABB’s history. This timeline can be shaped by using several ‘themes’ for different events; for example, corporate history, mergers & acquisitions, product launches, or Research & Development milestones. Whenever an event on the timeline is selected, a new page will open, displaying some written information about the event, including photos and videos if available.

The final operational recommendation is to simplify the usability of the video wall, mainly through changing the display of the content. The two improvements which could help users navigate more easily around the screens are to attach labels to each hotspot, as well as creating video thumbnails for each video.

Table 6: Comparison improvement areas

Recommendation	Nature	Supplier	Price	Timeframe
<i>Microsoft HoloLens</i>	Long-term	Kazendi	Hardware: £4,527 per unit Software: £25k	2 weeks
		Fracture Reality	Hardware: £4,527 per unit Software: £25k-£30k	5-6 weeks
<i>Glass touch-screen</i>	Long-term	Inurface media	Hardware: £2k Software: £8k	-
		Armitage	Software platform development: £20k-£100k Variable cost: £2k per product	6-10 weeks
<i>Simulated recorder feed</i>	Medium-term	Armitage	Old branding: £5k New branding: £5.5k-£6k	-
<i>History</i>	Medium-term	Inurface media	Hardware: £8k Software: £4k Excludes SLA and installation	-
		RMG	Hardware & software: £2.846 Experience building: £26,012.30 Installation, configuration, testing & services: £3,234	2 weeks
		Armitage	Software & content: £10k-£15k	4-8 weeks
<i>Video wall</i>	Short-term	Promultis	Labour costs: £2,100	3.5 day
		Inurface media	Investigation: £2,995 Development work: 1 day £895 3 days £2,617.88 5 days £4,027.50	2 weeks

5.3. Effects of the improvements

To ensure the effectiveness of the aforementioned operational and strategic improvements, a mechanism for tracking activity in the room should be implemented. The suggestion is to create a tool for enabling document downloading through QR codes, this can be hosted on the video wall, which already has a lot of PDF-documents on display. Each QR code can open a default email when scanned, after which the visitor can fill in his or her email address, and send the documentation to this email address.

Alongside this, a database for the collection of the download data should be set up, e.g. an Excel file. By doing so, tracking of the data can be ensured; however, it is essential that the personal data (in this case email addresses) is deleted, as this can no longer be stored anymore without the consent of the visitor. The reason for this is General Data Protection Regulation (GDPR), which is replacing the 1998 Data Protection Act. This new regulation will be applied in Europe from the 25th of May, 2018, and will include new regulations and best practices about areas such as opt-in rules, email marketing and the processing of personal data, and should be taken into account when deciding how to collect, store and use the gathered data.

In the long term, ABB can analyse and reflect on the collected data from the QR code scanning on the video wall, and act upon the conclusions. Within the gathered data, certain patterns may emerge about what the visitors are, or are not, interested in. Based on these patterns, changes can potentially be made to attune the CEC to the distinguished interests.

5.4. Final remarks and future recommendations

With regards to the final remarks of the study, the researcher emphasizes the fact that there is no perfect version of the CEC and that new customer needs will arise as old ones are resolved. Therefore, there is an ongoing opportunity for improvement of the CEC, and it is important that attention is continually paid to the needs of the new customer.

Lastly, the researcher would like to suggest that ABB keeps looking for alternative methods to measure the effectiveness of the centre, as there are many more possibilities for investigating visitor activity and opinions, such as through installing a feedback point somewhere within the room, or sign-up points for newsletters. Solutions like these can track different kinds of data to look at the activity within the room from a different angle, potentially uncovering new interests.

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Critical reflection

Reflection on project and learning

My internship at ABB Stonehouse was a very interesting time for me, as it was the first time I was living away from home, so a move to the United Kingdom was quite a big change. From a working perspective, the internship has been of great value to me because I felt very involved in the organization compared to my previous internship, where my assignment was very standalone. This made me feel very at ease around the office and my colleagues. Another thing I have experienced as positive, was my time management during the internship: I scheduled very tight deadlines for the project, so in case there would be any problems, I could still move around a little in my project planning. With regards to delivering the final draft, there was a backlog of one week, this was mostly caused by the process of data gathering. I needed to gather my data from relevant site visitors; however, the amount of visitors was quite limited. This was also the main reason choosing convenience sampling as sampling method. To collect more data, I turned to the receptionists (who are situated opposite the CEC) to call me whenever a visitor would go into the centre so I could ask them for feedback. Also, if I was not able to go to the CEC for a certain reason, they would hand out feedback forms to the visitors.

The part of the project which did not went that well has to do with my operational recommendations: when contacting suppliers for hardware, software, and content, I explained a very short and plain concept of the idea which I had in mind, which was far from detailed enough. Along the way of finding suppliers, I tried to specify my requirements for the improvement more and more, but found difficulties in determining the level of detail necessary to obtain realistic cost figures and timelines for the solutions; only little by little I was able to get the required quotations. I learned that in order to communicate your ideas to others, you should have a predefined scope in mind, including minor details which you might think of as obvious, but can change a lot, design-wise. Creating a defined scope for ideas will also prevent misunderstandings and shortens the communication process.

I have also learned to become more assertive, with regards to awaiting replies from people. At first, I was quite hesitant to chase people if I did not hear from them, because I would feel as 'the intern' bothering others with a busier agenda. After a while though, I realized I should just call if I would not get a reply in time, and in case I did not have a phone number, I would send reminders until I received a reply. This proactive attitude has been absolutely necessary in order to finalize my recommendations in time.

Altogether, this internship was of most value to me from a personal development perspective. I have become more independent and handle situations in a more proactive manner. It has also become easier for me to speak up for myself and get things done.

Future ambitions

Ever since I started the IBMS bachelor, I was determined to start working after I would graduate; however, as the years were passing, I became more and more motivated to reach my full potential and attempting to maximize my grades. This shift in motivation was defined during my fourth semester, and confirmed during fifth semester when I was doing my first internship. In the beginning of this academic year I was still convinced that I would find a job after graduation; given the reason why I chose to follow the regular classes instead of the Academic Orientation minor. By the end of 2017, I did get committed to start a master degree, the only question was whether this was possible without a premaster. At Maastricht University, this was the case, but I had to comply with other requirements. That is why I will spend my fall and winter on a statistics course, as I think this will really benefit me during my master; furthermore, I will also spend my time studying for a GMAT test, which is one of the requirements. After both the GMAT test and the statistics course is completed, I will enrol for the International Business master at Maastricht University, specializing in Strategy and Innovation. Starting in February 2019, this master programme will take one year. After that year, I hope to find a job in a highly international environment, as I have aspirations to expand my borders and relocate for a job, preferably to the Americas, the Scandinavian region, or Asia-Pacific.

Evaluation forms



COMPANY MENTOR

1 st EVALUATION GRADUATION PROJECT: Plan of Approach	
Student:	Jeanne Verheyden
Company:	ABB Limited – Measurement and Analytics
Company Mentor:	Kim Thwaites
Date:	04/04/18

Plan of approach:	Excellent	Good	Average	Poor	Cannot say
The problem background and context of the problem situation are clearly formulated and the problem definition is succinctly summarized.		Y			
The objectives and deliverables are clear, realistic and feasible and in line with the expectation of the company.		Y			
Research questions and research design are appropriate		Y			
Plan is well written, to the point and concise, lay-out and design are well cared for.		Y			
Overall Evaluation Plan of Approach:		Y			
REMARKS: Jeanne has been very proactive in defining and checking that her objectives and deliverables meet the company's needs.					

Evaluation Professional Behavior:

	Excellent	Good	Average	Poor	Cannot say
Knowledge & Understanding: The student demonstrates a solid theoretical background; is able to choose adequate theoretical models and tools.		Y			
Research skills/critical thinking: The student is able to ask the relevant research questions and to design a research.		Y			
The student is able to come up with informed judgments; keeps a focus on the core issues, reviews the situation from different angles.		Y			
Communication: The student can speak and write business English proficiently.		Y			
The student is able to professionally participate in meetings and presents ideas and results in a professional way.		Y			
Creativity/problem solving: The student demonstrates originality and inventiveness in his approach and puts forward his own solutions to the problem.		Y			
The student identifies creative but plausible solutions and takes financial and organizational consequences into account.		Y			
Project management/pro-activity: The student is able to organize his work in a planned and well-structured manner and is always well-prepared.	Y				
The student takes initiative, is pro-active and works independently, reacts adequately to feedback.	Y				
Organizational sensitivity/collaboration: The student has an adequate overview of the problem for the organization, is sufficiently critical towards the organization.		Y			
The student understands the formal and informal culture of the company, asks support and input from others.		Y			
Learning skills: The student is able to set personal learning objectives and can be self-critical. Asks for feedback and is willing to learn.		Y			
Overall score:		Y			
REMARKS:					
Jeanne always asks questions to make sure that her research and planning is in line with the company's objectives. If there are any gaps in the research she has carried out for the project she has asked advice on how to overcome them					

1st EVALUATION GRADUATION PROJECT: Plan of Approach	
Student:	Jeanne Verheyden
Company:	ABB Limited – Measurement and Analytics
Name supervisor:	Lindsey Reid
Date:	26/03/2018

Plan of approach:	Excellent	Good	Average	Poor	Cannot say
The problem background and context of the problem situation are clearly formulated and the problem definition is succinctly summarized.		X			
The objectives and deliverables are clear, realistic and feasible and in line with the expectation of the company.		X			
Research questions and research design are appropriate		X			
Plan is well written, to the point and concise, lay-out and design are well cared for.		X			
Overall Evaluation Plan of Approach:		X			

REMARKS:

Jeanne faced a fait accompli. The project she had been assigned “Customer Experience Centre” was already in operation. Little thinking or research had been done as to its role/place/which customers in the customer journey experience, what objectives were set for the centre and little research pre-development. Therefore in order to measure the effectiveness of the centre and work out what improvement were necessary, Jeanne had to rescope the project in consultation with her manager. Jeanne needs to continue to challenge assumptions and to be critical in her approach to this project. She needs to make sure she steers/take initiative and continues to push herself.

Evaluation Professional Behavior:

	Excellent	Good	Average	Poor	Cannot say
Knowledge & Understanding: The student demonstrates a solid theoretical background; is able to choose adequate theoretical models and tools.		X			
Research skills/critical thinking: The student is able to ask the relevant research questions and to design a research.		X			
The student is able to come up with informed judgments; keeps a focus on the core issues, reviews the situation from different angles.			X		
Communication: The student can speak and write business English proficiently.	X				
The student is able to professionally participate in meetings and presents ideas and results in a professional way.	X				
Creativity/problem solving: The student demonstrates originality and inventiveness in his approach and puts forward his own solutions to the problem.			X		
The student identifies creative but plausible solutions and takes financial and organizational consequences into account.			X		
Project management/pro-activity: The student is able to organize his work in a planned and well-structured manner and is always well-prepared.	X				
The student takes initiative, is pro-active and works independently, reacts adequately to feedback.			X		
Organizational sensitivity/collaboration: The student has an adequate overview of the problem for the organization, is sufficiently critical towards the organization.	X				
The student understands the formal and informal culture of the company, asks support and input from others.	X				
Learning skills: The student is able to set personal learning objectives and can be self-critical. Asks for feedback and is willing to learn.	X				
Overall score:		X			
REMARKS:					
<p>Jeanne is a very capable and conscientious student. She really commits to a project and works hard to make all deadlines. The project had to be re-scoped and while Jeanne responded well and adapted to the change I would want her to be proactive in seeing the gaps in the projects logic herself and taking more initiative to shape the project herself. She totally understands the need to do this but I am sure will grow in confidence as the thesis internship continues.</p>					

FINAL EVALUATION GRADUATION PROJECT	
Student:	Jeanne Verheyden
Company:	ABB Limited – Measurement and Analytics
Company Mentor:	Kim Thwaites (form filled in by Frenk Withoos, Managing Director Industrial Automation – Measurement and Analytics, Northern Europe)
Date:	25/05/2018

EVALUATION END RESULT	Excellent	Good	Average	Poor	Cannot say
The problem background, the problem definition, objectives and deliverables are clear, realistic and feasible.		X			
Research design is appropriate, the research was properly executed and the conclusions are relevant and in line with the research results		X			
Recommendation and solutions are effective and feasible and in line with the expectations of the company.	X				
Thesis is well written, to the point and concise, lay-out and design are well cared for.	X				
Overall Evaluation End result:	X				
REMARKS:					
Overall good plan that will be implemented over the next budgeting period					

Evaluation Professional Behavior:

	Excellent	Good	Average	Poor	Cannot say
Knowledge & Understanding: The student demonstrates a solid theoretical background; is able to choose adequate theoretical models and tools.	X				
Research skills/critical thinking: The student is able to ask the relevant research questions and to design a research.		X			
The student is able to come up with informed judgments; keeps a focus on the core issues, reviews the situation from different angles.	X				
Communication: The student can speak and write business English proficiently.	X				
The student is able to professionally participate in meetings and presents ideas and results in a professional way.	X				
Creativity/problem solving: The student demonstrates originality and inventiveness in his approach and puts forward his own solutions to the problem.		X			
The student identifies creative but plausible solutions and takes financial and organizational consequences into account.	X				
Project management/pro-activity: The student is able to organize his work in a planned and well-structured manner and is always well-prepared.	X				
The student takes initiative, is pro-active and works independently, reacts adequately to feedback.	X				
Organizational sensitivity/collaboration: The student has an adequate overview of the problem for the organization, is sufficiently critical towards the organization.		X			
The student understands the formal and informal culture of the company, asks support and input from others.	X				
Learning skills: The student is able to set personal learning objectives and can be self-critical. Asks for feedback and is willing to learn.		X			
Overall score:	X				
REMARKS: Jeanne fitted well in the team, good cooperation across the board, both internal and external sources.					

FINAL EVALUATION GRADUATION PROJECT	
Student:	Jeanne Verheyden
Company:	ABB Limited – Measurement and Analytics
IBMS supervisor:	Lindsey Reid
Date:	22/05/2018

	Excellent	Good	Average	Bare Pass	Fail
OVERALL ASSESSMENT OF STUDENT PROJECT MANAGEMENT PERFORMANCE (code: 2263IP8PRO):		X			
FILL IN MARK 1-10!		7.5			
REMARKS/SPECIAL CIRCUMSTANCES					
<p>Jeanne has shown a good ability to work independently. She was able to communicate well with her company supervisor and myself and keep up with deadlines. She is very professional in her attitude and works incredibly hard. She has adjusted well to working in another culture and shows empathy in dealing with people. Although she can occasionally get frustrated and distracted away from the key issues, she is able with guidance to address these and processes feedback very well.</p>					

Evaluation Professional Behavior:

	Excellent	Good	Average	Poor	Cannot say
Knowledge & Understanding: The student demonstrates a solid theoretical background; is able to choose adequate theoretical models and tools.	X				
Research skills/critical thinking: The student is able to ask the relevant research questions and to design a research.		X			
Research skills/critical thinking The student is able to come up with informed judgments; keeps a focus on the core issues, reviews the situation from different angles.		X			
Communication: The student can speak and write business English proficiently.	X				
Communication: The student is able to professionally participate in meetings and presents ideas and results in a professional way.	X				
Creativity/problem solving: The student demonstrates originality and inventiveness in his approach and puts forward his own solutions to the problem.		X			
Creativity/problem solving The student identifies creative but plausible solutions and takes financial and organizational consequences into account.		X			
Project management/pro-activity: The student is able to organize his work in a planned and well-structured manner and is always well-prepared.	X				
Project management/pro-activity The student takes initiative, is pro-active and works independently, reacts adequately to feedback.		X			
Organizational sensitivity/collaboration: The student has an adequate overview of the problem for the organization, is sufficiently critical towards the organization.	X				
Organizational sensitivity/collaboration: The student understands the formal and informal culture of the company, asks support and input from others.	X				
Learning skills: The student is able to set personal learning objectives and can be self-critical. Asks for feedback and is willing to learn.	X				
Overall score:		X			

REMARKS:

Jeanne is a very responsive and conscientious student. She has put serious effort into understanding the business of the company. She pays attention to detail and is very solutions orientated. Her approach can sometimes be hesitant and sometimes she doubts her own instincts but she has grown in confidence and demonstrated an ability to overcome an unclear brief in the beginning and make the thesis more theoretically sound.

Logbook

Friday January 12th

Fontys University of Applied Sciences, Eindhoven

On this day, Ms. Reid and I had a meeting at the Study landscape in the R3 building to discuss my research proposal for ABB. The proposal was approved by Ms. Reid, and no further comments were given for improvement. Another point which was discussed in the meeting was approximate dates for feedback sessions during the internship, as these were yet to be determined, Ms. Reid and I agreed that I should hand in the project plan as soon as possible, as this would leave me with more time to finish the rest of the thesis. Additional things which we discussed were the location of my internship and how the logistics for the move were arranged.

Monday February 19th

ABB office, Stonehouse

Today during the call, my internship supervisor Kim Thwaites, and Ms. Reid were introduced to each other, and Ms. Reid briefed Kim about the Fontys requirements of the internship. After this introduction, the research plan and introductory chapters of the thesis were discussed. From this discussion we concluded that my plan should be more directed into the customer needs, mapping the customer journey and determining where the CEC would fit in. The first research plan was already too focused on problem-solving, whereas the research itself should focus on customer journeys and needs, and the recommendations part of the thesis was reserved for problem-solving on the basis of the outcomes of the research.

Thursday, February 22nd

ABB office, Stonehouse

Yesterday, I sent Ms. Reid the updated research plan, where most changes were adapted in chapter 1, chapter 2 remained mainly untouched. Ms. Reid gave her go advice to proceed with the project, so the data collection can be started.

Tuesday, February 27th

ABB office, Stonehouse

An email was sent to Ms. Reid, to discuss some issues with data collection, as there are not enough visits planned during my time here to conduct sufficient interviews. I have given thought to drafting a questionnaire to send to previous visitors as well, to collect their feedback, as there have been several visits just before I arrived at ABB, and during my first weeks, when I was working on my project plan.

Ms. Reid agreed with me and also suggested phone interviews as a follow up.

Monday, March 12th

ABB office, Stonehouse

Ms. Reid and I planned a meeting to catch up about the data gathering and how all was working out at the office. During the meeting, I gave a summary of what I have done so far and which patterns I was starting to see in the data. We decided that I should continue data gathering, and agreed that I could start thinking about how the CEC can be more integrated into the sales process.

Wednesday, March 21st

ABB office, Stonehouse

Ms. Reid and I had a call today about a partial draft I had created about the findings and analysis of the research. The reason for this call is that I ran into some difficulties when writing the fourth chapter: it was quite hard for me to present the results in the format of the report writing guidelines. Ms. Reid advised me to ignore the guidelines whenever necessary. We have also discussed what I had done so far, which was heading into the right direction. We agreed upon me sending over the finalized draft of chapter 4 as soon as it was finished, and we would discuss it after the Easter break.

Friday, April 20th

ABB office, Stonehouse

Today, Ms. Reid and I had a call to catch up about my progress at ABB. We discussed the progress of my recommendations, and agreed that I would send a draft of chapter 4 and 5 next week, as my recommendations are not as detailed as I would like them to be. Also, we scheduled May 14th to hand in my final draft thesis, and discuss what is left to happen.

Tuesday, May 8th

ABB office, Stonehouse

Today, Ms. Reid and I discussed the draft of my thesis. We reviewed chapter 1 to 5 for improvement points, and looked into some possible differences in lay-out. This might work better for parts of the content of the report. The final draft, including the improvements discussed today will be handed in on Monday, May 14th.

Wednesday, May 16th

ABB office, Stonehouse

Ms. Reid and I had a discussion about the feedback that was given on Monday the 14th, and discussed some changes to be made to the strategic aspects of the recommendations and how to improve integration of these into the marketing and sales strategy. The improvements will be discussed next week on Tuesday the 22nd.

Thursday, May 17th

ABB office, Stonehouse

A writing plan was composed during the previous evening, to ensure that the content of the strategic recommendations would be appropriate, this was sent over to Ms. Reid today, to see if the changes are appropriate, and confirmed upon by Ms. Reid.

Tuesday, May 22nd

ABB office, Stonehouse

Today Ms. Reid and I had a final call about the project. Ms. Reid mentioned she didn't have any more feedback, apart from doing another spelling check of the document. In these final days, the focus will be on adding the finishing touches to the document, and creating a compilation of the relevant documents for ABB.

Appendix A: Current state CEC



Figure 4: entrance (ABB, 2018)



Figure 5: Video wall (side view) (ABB, 2018)

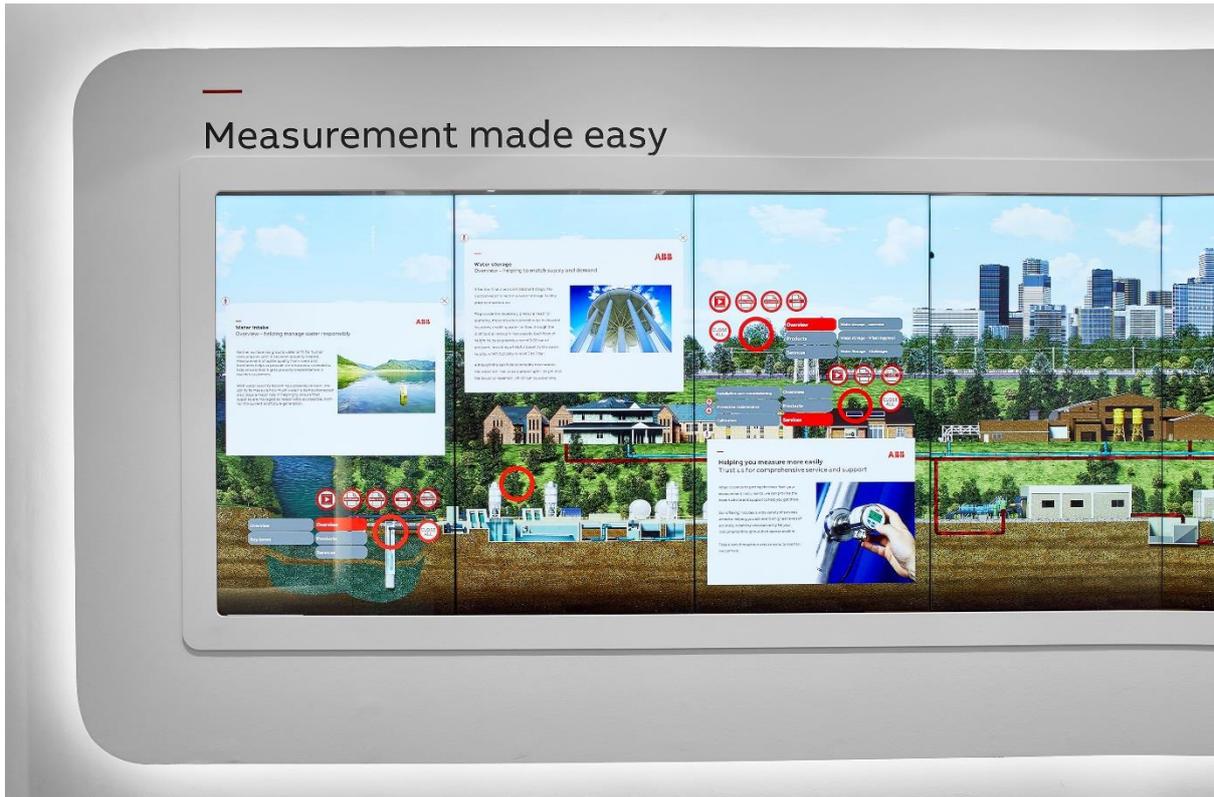


Figure 6: Video wall (detailed) (ABB, 2018)



Figure 7: Video wall (front view) (ABB, 2018)



Figure 8: Video wall (meeting) (ABB, 2018)



Figure 9: CEC product wall and interactive screens (ABB, 2018)



Figure 10: CEC (back view) (ABB, 2018)



Figure 11: Interactive screens (ABB, 2018)



Figure 12: Interactive screens (detailed) (ABB, 2018)



Figure 13: Product wall (ABB, 2018)



Figure 14: Glass projector screen (currently not in room) (ABB, 2017)

Appendix B: Project organization and planning

Table 7: Project planning

Week no.	Activity
Week 1 29 Jan to 4 Feb	<ul style="list-style-type: none"> - Drafting plan - Discuss planning
Week 2 5 Feb to 11 Feb	<ul style="list-style-type: none"> - Draft TF, RD, RM - Schedule IV/BSS - Send in Introduction + project plan: End of the week - Gather customer feedback on Tuesday
Week 3 12 Feb to 18 Feb	<ul style="list-style-type: none"> - 1st meeting (project plan) - <i>(Review and improve feedback to Project Plan)</i> - Start data collection - Interview requirements (departments) - Technologies (internet) - Log data: e.g. transcripts, file of interesting technologies (links, brochures)
Week 4 19 Feb to 25 Feb	<ul style="list-style-type: none"> - Technologies (internet) - Brainstorm sessions - Log data: e.g. transcripts
Week 5 26 Feb to 4 Mar	<ul style="list-style-type: none"> - Brainstorm sessions - Log data: e.g. transcripts
Week 6 5 Mar to 11 Mar	<ul style="list-style-type: none"> - <i>Data analysis: Form coding table</i> - <i>Cost figures</i>
Week 7 12 Mar to 18 Mar	<ul style="list-style-type: none"> - <i>Data analysis</i> - <i>Cost figures</i>
Week 8 19 Mar to 25 Mar	<ul style="list-style-type: none"> - 2nd meeting (preferably) - <i>(Review and improve feedback to Results and analysis)</i> - <i>Data analysis</i> - <i>Cost figures</i>
Week 9 26 Mar to 1 Apr	<ul style="list-style-type: none"> - <i>Problem solving</i> - <i>Cost figures</i> - <i>2nd meeting (rather not)</i>
Week 10 2 Apr to 8 Apr	<ul style="list-style-type: none"> - <i>Problem solving</i> - <i>Cost figures</i>
Week 11 9 Apr to 15 Apr	<ul style="list-style-type: none"> - 3rd meeting (end of the week) - <i>(Review and improve feedback Problem solving)</i> - <i>Problem solving</i>
Week 12 16 Apr to 22 Apr	<ul style="list-style-type: none"> - Focus on thesis writing - Draft company report
Week 13 23 Apr to 29 Apr	<ul style="list-style-type: none"> - Focus on thesis writing - Draft company report
Week 14 30 Apr to 6 May	<ul style="list-style-type: none"> - Hand in draft thesis (end of the week/weekend) - Critical reflection - Prepare company presentation
Week 15 7 May to 13 May	<ul style="list-style-type: none"> - 4th + final meeting (beginning week) - <i>(Review and improve feedback to Draft report)</i> - Critical reflection - Company presentation

Week 16 <i>14 May to 20 May</i>	<ul style="list-style-type: none">- Finalize report- Company presentation
Week 17 <i>21 May to 27 May</i>	<ul style="list-style-type: none">- Submission 28th of May, 2018

Appendix C: Motivation letter – Interview

Dear participant,

My name is Jeanne Verheyden and I am in the graduation phase of the bachelor International Business and Management Studies at Fontys University of Applied Sciences in Eindhoven. As a part of the graduation process, students should combine an internship with writing a thesis, to learn how to conduct research in the business world.

The research which I will conduct revolves around improving ABB's Customer Experience Centre, and will involve gathering data from multiple sources to define critical improvement points and find suitable opportunities for problem-solving.

To gather the necessary data, I would like to receive your valuable feedback and thoughts on the customer experience centre as it is now, so I hope you can spare a few minutes to answer some questions, and aid me in completing this research. You will remain anonymous, as I do not require name or age, I would only like to note your relation to ABB.

I would also like to ask you if you consent with the possibility of being quoted, as part of the presentation of results. This will be done in order to provide background to certain findings. If you do not consent with the above, please let me know.

Participating in this interview is completely voluntary, so do not hesitate to decline if you do not feel comfortable to participate or if you feel obligated to do so.

If you have any remaining remarks or questions after the completion of the interview, please feel free to contact me via mail or phone, you can find the contact details underneath.

Thank you for your time and cooperation,

Sincerely,

Jeanne Verheyden
Measurement & Analytics
Marketing & Communications Intern

ABB Limited
Oldends Lane, Stonehouse
Gloucestershire, GL10 3TA, UK
E-mail: jeanne.verheyden@gb.abb.com
Mobile phone: +31 (0) 6 2332 7384

Appendix D: Interview protocol – External interview

Occupation	
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Questions regarding: Expectations

- What expectations did you have when coming here?
- Were there any specific questions you hoped to be answered by visiting the CEC?

Questions regarding: Experience of the room

- Is all the information you sought for to be found in the CEC?
- Were there any questions left unanswered?
- Was there any important information missing from your point of view?
- Is there any information in the CEC which could be better presented?

Feedback:

- Are there any remarks/improvement points you have for CEC improvement?
- How do you prefer to receive information? Through which channel? E.g. Audio, written text.

Appendix E: Motivation letter – Questionnaire

Dear participant,

My name is Jeanne Verheyden and I am in the graduation phase of the bachelor International Business and Management Studies at Fontys University of Applied Sciences in Eindhoven. As a part of the graduation process, students should combine an internship with writing a thesis, to learn how to conduct research in the business world.

The research which I will conduct revolves around improving ABB's Customer Experience Centre, and will involve gathering data from multiple sources to define critical improvement points and find suitable opportunities for problem-solving.

To gather the necessary data, I would like to receive your valuable feedback and thoughts on the customer experience centre as it is now, so I hope you can spare a few minutes to answer some questions, and aid me in completing this research. You will remain anonymous, as I do not require name or age, I would only like to note your profession. The data from this questionnaire will only be looked into by the assessors from Fontys University and ABB.

Filling in this questionnaire is completely voluntary, so do not hesitate to decline if you do not feel comfortable to participate or if you feel obligated to do so. If you do decide to fill it in, the completed questionnaire may be returned via e-mail to: jeanne.verheyden@gb.abb.com.

If you have any remaining remarks or questions after the completion of the questionnaire, please feel free to contact me via mail or phone, you can find the contact details underneath.

Thank you for your time and cooperation,

Sincerely,

Jeanne Verheyden
Measurement & Analytics
Marketing & Communications Intern

ABB Limited
Oldends Lane, Stonehouse
Gloucestershire, GL10 3TA, UK
E-mail: jeanne.verheyden@gb.abb.com
Mobile phone: +31 (0) 6 2332 7384

Appendix F: Questionnaire

Feedback form – Visit ABB Stonehouse Customer Experience Centre

Relation to ABB – Select applicable option

Customer – Channel partner – ABB employee – Other

1) What did you think of the aesthetics of the room?

2) Did you experience the technologies in the room as easy to use, or did you have any difficulties?

3) Do you think the information on display is complete/sufficient? Is there any information missing or would you like to see additional information about some aspects in the room?

4) Is there any information in the room of which you think could be presented in a better way? E.g. different format or channel

5) Are there any improvement points for the Customer Experience Centre?

6) Do you have any additional remarks and/or feedback?

Appendix G: Interview protocol – Customer journey interview



Figure 15: The buyer experience (Goal Centric Management, Inc., 2010)

Description of stages:

- 1) Initiative: Trigger events – beginning to search for a solution, sometimes called need discovery
- 2) Research: Investigate potential solutions
- 3) Assess: Determine which companies can move to the supplier stage
- 4) Decision: Decide which company to buy from/do business with
- 5) Implement: From packaging and shipping to installation and roll-out
- 6) Support: Repairs, sales follow-ups, any contact after the purchase (but can be embedded throughout the whole journey, e.g. pricing from back office)
- 7) Renewal: repurchasing of a products

Questions:

- 1) What do the customers want to achieve at each stage?
- 2) What information are (potential) customers looking for in each stage, what questions do they have?
- 3) What are the important touchpoints/contact points between the customers and ABB in each stage?
- 4) What are ABB's weaknesses in the stages? E.g. frequent problems with delivery, reactions to support requests.
- 5) Who are involved in the decision-making stages?
- 6) Who/what is influencing the decision-making process?
- 7) What are important decision criteria for purchase? To what extent does ABB 'comply'?
- 8) Are there any improvement points for ABB to provide a better buying experience?

Differences

- 1) What are the most important differences in the customer journeys? (internal buying, channel partners, new customers, retained customers)
- 2) What type of information are each of these customers looking for?
- 3) What are the differences in decision-making criteria?
- 4) Do they get different service packages?

Appendix H: Raw data – Interviews

Internal customer – 22-2-2018

Work more with light and sound in product area, make it more engaging

Would like a map/guide where to go in the room – plan where you are, what to expect and where you can find what

Overarching theme is missing

Physical test for measuring/controlling water would be good

Love to see e.g. a live feed from controllers/recorders

Would like pushing buttons, and something would happen, more physical interaction

Internal customer – 02-03-2018

Really nice design

Interesting to see which products are applied where

Pity that the products are on demo mode, and not showing actual measures

Nice to see actual products, but they are quite static

Really liked factory tours and ABB Ability

Direct customer – 06-03-2018

Very intuitive system and easy to use

Factory tours give a good idea what other plants do and look like

Impressive, good, excellent

Product wall is interesting but like to see in which stage the products fit in (relate to video wall) and what they exactly do in that stage

Like actual running product on display with real measurement or alternatively simulated (flow represented by LED lights).

Direct customer – 08-03-2018

Content and design is very nice

Interesting to see the manufacturing and calibration process

Problems with technology and loading the videos and presentations to the screen.

The touch screen wall did not work properly, quite disappointing, take a look at improving technology

Direct customer – 09-03-2018

Interesting, informative, good-looking, interactive

The video wall encouraged to get more details about the products through the drill-down menu

Glitches and content errors: video walls were sometimes slow, visitor assumed the videos did not work (display changes aren't visual enough)

Had to be pointed out that 9-screens were interactive and could use them

Didn't use the interactive screens, too busy around them

Pushing actual buttons would encourage more interaction (e.g. product wall)

Other – 13-03-2018

Cool, modern, interactive

Video wall: circles make it very clear where to click.

Factory tours are a fantastic tool, when thinking about ABB in general the offer is very broad, so what is produced in Stonehouse is such a small part of the complete portfolio, these factory tours put everything in perspective.

Would like labels on the hotspot so you know what you are clicking on

One of the hotspots is hidden behind a tree

Not clear something changes in the bottom of the screen when playing videos, create pop up

Volume on the factory screen is too loud and the map isn't very clear

Comment: Great if someone guides you and explains it, otherwise it might be harder to understand/operate

Internal customer – 14-3-2018

Video wall: really impressive, just a bit too bright during day/dark during night

Product wall: It would be good to have little tags on products to show why it stands out, some information and how/where it works

Suggests to dedicate part of product wall to old products → show where ABB comes from

Maybe add a coat rack, so people can put jackets and bags away, freely roam the room.

Make it more psychological: let them settle down, find out the room by themselves, and only approach visitors when they have questions → create their own experience

More hospitality (food, drinks) would be improvement

ABB ability screen is very interesting

Content is good, now the experience

Internal customer – 15-03-2018

Product wall: do product demos. I.e. small running water plants. Clear pipes with coloured water running through to show the flow of water.

Augmented reality or virtual reality implementation for interactivity: pull products up, expand them, open them up, and see inside. Already have CADs available on Creo and WindChill

Imagine what customers want to see, what knowledge they have, make everything accessible for business people, not engineers.

More information on the products: see what they are, where they are used, how they are operated and what the connectivity is → are they wireless/hard-wired? Where is the data stored, how do I extract data?

ABB ability screen: would like more information:

“What is Imperial College London?”

“What is ABB Ability?”

“What is the relation between ABB and ICL? How do they work together?”

“What is done at the carbon capture plant?”

Video wall is perfect

Internal customer – 20-03-2018

5 short interviews

Product wall: if you don't know the products, you won't understand what they do and where they are placed. Do they sit in a water tank? Are they attached to pipes? Like to see how the products work, make it a bit more alive.

Connect products to measurements in the factory through a cloud service, so actual measurements can be seen

Build a remote control room so visitors can play with the data

Create a small water rig or tank so you can see how the products are placed in a functioning environment

AquaMaster 4 is configurable through your phone, enable visitors to do this so they can see how it works, what it does and that it is actually possible.

Factory tours: Adjust the volume on this screen, couldn't find a regulator. Comment about the rooms in the factory being very empty, seems unrealistic that there aren't a lot of people working

Create a web version of the video wall so it could potentially be used at tradeshows.

Appendix I: Raw data – Questionnaires

Feedback form – Visit ABB Stonehouse Customer Experience Centre

Relation to ABB – Select applicable option	Customer – Channel partner – ABB employee – Other
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1) What did you think of the aesthetics of the room?
Excellent, very pleasing and good lighting

2) Did you experience the technologies in the room as easy to use, or did you have any difficulties?
Very intuitive system and easy to use & understand

3) Do you think the information on display is complete/sufficient? Is there any information missing or would you like to see additional information about some aspects in the room?
For me, it gave sufficient insight into the activities & products of ABB

4) Is there any information in the room of which you think could be presented in a better way? E.g. different format or channel
No

5) Are there any improvement points for the Customer Experience Centre?
No

6) Do you have any additional remarks and/or feedback?
Well done to all!

Feedback form – Visit ABB Stonehouse Customer Experience Centre

Relation to ABB – Select applicable option

Customer – Channel partner – ABB employee – **Other**

1) What did you think of the aesthetics of the room?

Bright & well-lit

2) Did you experience the technologies in the room as easy to use, or did you have any difficulties?

Yes, clear & precise

3) Do you think the information on display is complete/sufficient? Is there any information missing or would you like to see additional information about some aspects in the room?

Excellent, very informative

4) Is there any information in the room of which you think could be presented in a better way? E.g. different format or channel

Not for us

5) Are there any improvement points for the Customer Experience Centre?

Not that I would know

6) Do you have any additional remarks and/or feedback?

No

Feedback form – Visit ABB Stonehouse Customer Experience Centre

Relation to ABB – Select applicable option

Customer – Channel partner – ABB employee – Other

1) What did you think of the aesthetics of the room?

Aesthetics is quite fine. However, some older pictures (history of ABB) could add more appeal and would be interesting for the visitors, this would give ABB's journey towards their excellence

2) Did you experience the technologies in the room as easy to use, or did you have any difficulties?

Absolutely great

3) Do you think the information on display is complete/sufficient? Is there any information missing or would you like to see additional information about some aspects in the room?

This is perfect & complete

4) Is there any information in the room of which you think could be presented in a better way? E.g. different format or channel

Fine

5) Are there any improvement points for the Customer Experience Centre?

A live demonstration of products (maybe simulation) could have more value to the visitors. However, this set up would need additional investment, I guess.

6) Do you have any additional remarks and/or feedback?

More product samples on display would be useful for visitors to look at the variety of ABB products

Feedback form – Visit ABB Stonehouse Customer Experience Centre

Relation to ABB – Select applicable option

Customer – **Channel partner** – ABB employee – Other

1) What did you think of the aesthetics of the room?

The centre is very good, lots of information about products and applications, good quality of display and probably very expensive

2) Did you experience the technologies in the room as easy to use, or did you have any difficulties?

I didn't have any difficulties, it's easy for all to use the technologies, because all are up to date.

3) Do you think the information on display is complete/sufficient? Is there any information missing or would you like to see additional information about some aspects in the room?

The centre is perfect, very handy and logical

4) Is there any information in the room of which you think could be presented in a better way? E.g. different format or channel

No, I haven't, but I will think about this.

5) Are there any improvement points for the Customer Experience Centre?

No, there aren't at the moment

6) Do you have any additional remarks and/or feedback?

No, I haven't.

Feedback form – Visit ABB Stonehouse Customer Experience Centre

Relation to ABB – Select applicable option

Customer – **Channel partner** – ABB employee – Other

1) What did you think of the aesthetics of the room?

This is a very good room, with much information and details

2) Did you experience the technologies in the room as easy to use, or did you have any difficulties?

I don't have any difficulties, all technologies are easy to me.

3) Do you think the information on display is complete/sufficient? Is there any information missing or would you like to see additional information about some aspects in the room?

Sufficient

4) Is there any information in the room of which you think could be presented in a better way? E.g. different format or channel

Yes, more videos or interactive applications with some products

5) Are there any improvement points for the Customer Experience Centre?

No

6) Do you have any additional remarks and/or feedback?

No

Feedback form – Visit ABB Stonehouse Customer Experience Centre

Relation to ABB – Select applicable option

Customer – **Channel partner** – ABB employee – Other

1) What did you think of the aesthetics of the room?

Very good. Excellent room and very smooth

2) Did you experience the technologies in the room as easy to use, or did you have any difficulties?

Very intuitive, easy to understand

3) Do you think the information on display is complete/sufficient? Is there any information missing or would you like to see additional information about some aspects in the room?

Sufficient

4) Is there any information in the room of which you think could be presented in a better way? E.g. different format or channel

Yes, more videos or interactive applications with some products.

5) Are there any improvement points for the Customer Experience Centre?

No

6) Do you have any additional remarks and/or feedback?

No

Appendix J: Raw data – Customer journey maps

Direct customers

Initiative:

- Trigger events: Investment decision
- 360° renewal
- ABB reaching out
- Regulatory changes

Usually starts with regulatory changes: the customers have a needs for the product, not so much a want (you must measure, you do not necessarily want to measure)

Research:

Information will be gathered about suppliers: the ones with the best technical and commercial solutions

Look at:

- Credibility
- Different measuring techniques

W-O-M is very important throughout the journey, ABB's reputation of ensured and consistent quality is definite

Assess:

Is based on technical and commercial points-of-view

Set technical requirements → request a quotation → engage the supplier and supply chain → receive supplier quotation/specifications → technical department evaluates for the best opportunity

Decision:

Usually, the technical department will not be overruled by the commercial department, but the less complicated the requests are, the more influence the commercial department has.

Soft criteria are important; for example, whether the buyer has had a positive experience with a salesperson, or the previous experiences with ABB are important in the decision whether or not to deal with ABB again.

Implement:

Need for help with the implementation of the products is proportionate to the complicatedness of the product

3 important factors for implementation

- In time
- On budget

- Technically complete

Support:

Proportionate to the complicatedness

ABB provides:

- Spares list
- Maintenance
- Sales-follow ups

Important to customers, almost like a courtesy

Renewal

Cradle to cradle, start back at initiate

Internal customers

Initiative:

Receive a request from a customer for ABB products outside the LSU portfolio, ABB Stonehouse must be contacted for these products.

Research:

Search for PMUs which do produce and sell the desired products.

Assess:

Criticise which PMU has the best support offering, and the price which is asked by the PMU and TSS guys

Decision:

Supplied information by the PMU is sent to the customer, if the customer agrees upon the price, the product will be ordered

Implementation:

The product is ordered against

- Delivery times
- Price
- Product specifications

Support:

Criteria:

- Commission support
- Factory warranties
- Life-cycle support
- Discount structures

Renewal:

Moving back to initiate – new customer requests coming in you cannot fulfil, look for other PMUs

Buying process: Local sales unit buys from product manufacturing unit → Product manufacturing unit trains local sales unit in product details (Technical Sales Support team)

Buying criteria: Which PMU gives the best support: customer has a need → selection of technologies is made → factory and TSS give technical advice → price conformation → price confirmed by customer → product is ordered against in time delivery, price, correct specifications → invoice 30 days later

Channel partners:

Initiative:

Getting an incoming customer request

Research:

Go through suppliers which offer solutions which comply with the request

Assess:

Assess whether technical and commercial requirements set by end customer are covered.

Decision:

In case of non-standard pricing: consult ABB

Information criteria:

- Who offers best support,
- Product set-up
- Pricing
- Agreement of the customer

Implement:

No true implementation at channel partners, product is bought through them

Factors of end customers

- In time
- On budget
- Conform specs

Support:

- Look for price list
- Maintenance
- Sales-follow ups
- Pricing tools (to help determining standard prices, otherwise ABB consult)

Renewal:

Back at initiative, new product request coming in

Function as customers and salespeople (5 in UK: Instrumentation Alliance Partners)

Sales team is similar to ABBs, and are completely self-supportive of information. ABB provides a pricing tool and Business Online, so have a high degree of autonomy.

In case of non-standard pricing: ABB is consulted

Information supply:

- Offered support
- Service
- Product set-up

In theory pareto:

- ABB: 20% of the customers creating 80% of revenues (key accounts)
- Channel partners: 80% of the customers creating 20% of the revenues

In reality this does not apply, e.g. one channel partner has close connections with BP, which is a big customer

ABB attempts to sell as much as possible through channel partners, because channel partners can add value to a sale which ABB cannot, such as:

- Different service packages: services or parts of services which ABB does not offer
- Complete package: ABB has a huge portfolio, but not complete. Say a customer wants to buy a whole package, ABB can provide 80% of these products, and the channel partner supplies the other 20% with competitor products)
- Local: customers like to deal with local companies, as they are easier to get a hold of and feel less distant/more familiar
- Speed of response: ABB is slow, if a customer requests information for tomorrow, the customer is likely to receive a reply from the channel partner on the same day

Appendix K: Coding tables

Table 8: Coding table – Direct customer

Direct customer	Need	Where in the CEC	Quote
	<i>Interactivity</i>	Products 	Like actual running product on display with real measurement or alternatively simulated (flow represented by LED lights).
		Products 	A live demonstration (maybe simulation) could add more value, but this set up would need additional investments, I guess.
	<i>Information</i>	Products 	More product samples on display would be useful for visitors to look at the variety of products.
		General 	Older pictures (history of ABB) could add more appeal and would be interesting for the videos, this would give ABB's journey toward their excellence.
		Product wall / video wall 	Product wall is interesting but would like to see in which stage the products fit in/relate to the video wall and what they exactly do in that stage
		Video wall 	The video wall encouraged to get more details about the product through the drill-down menu
		Interactive screens – factory tour 	Interesting to see the manufacturing and calibration process
		General 	Keywords: Interesting, informative, good-looking, impressive, wow-factor, excellent
	<i>Usability</i>	Video wall 	Very intuitive system and easy to use
		Video wall 	Problems with the technology and loading videos and presentation to the screen (visitor assumed the videos didn't work, list of videos is not clear enough)
		Video wall 	Glitches and content errors on the video wall: sometimes the

		wall was slow (visitor assumed the videos didn't work, list of videos is not clear enough)
Video wall		Had to be pointed out that the 9 screens were interactive and that I was allowed to touch/use them

Table 9: Coding table – Channel partner

Channel partner	Need	Where in the CEC	Quote
	Interactivity	Products 	More videos or interactive applications with some products
	Usability	General 	Very intuitive, easy to understand.
	Information	General 	The centre is very good, lots of information about products and applications.

Table 10: Coding table – Internal customer

Internal customer	Need	Where in the CEC	Quote
	Interactivity	General 	Would like pushing buttons, so something would happen, get more physical interaction
		General 	Content is good, now the experience.
		Products 	A physical test for measuring and controlling water would be good.
		Products 	Love to see e.g. a live feed from controllers/recorders
		Products 	Pity that the products are on demo mode, and not showing actual measures.
		Products 	Do product demos, i.e. small running water plants. Clear pipes with coloured water running through could show the flow of water.
	Information	Products 	Tag with information on the products: why it stands out,

			some information and how/where it works.
	Products		Imagine what customers want to see, what knowledge they have, make everything accessible for business people, not engineers.
	Products		Suggestion to dedicate part of product wall to old products → show where ABB comes from
	Interactive screens		More information on ABB Ability, what is Imperial College London, What is ABB Ability, what is their relation, etc.
	Video wall		The video wall is perfect
	Interactive screens		Really liked factory tours and ABB Ability
<i>Aesthetics</i>	General		Looks really good
	General		Maybe add a coat rack, so people can put jackets and bags away, freely roam the room.
	Video wall		Really impressive, just a bit too bright during the day/dark during the night.
	Products		Work more with light and sound in the product area, make it more engaging.
<i>Usability</i>	General		Would like a map/guide where to go in the room – a plan where you are, what to expect and where you can find what
	Interactive screens – factory tours		Adjust volume on the screen, couldn't find a regulator.

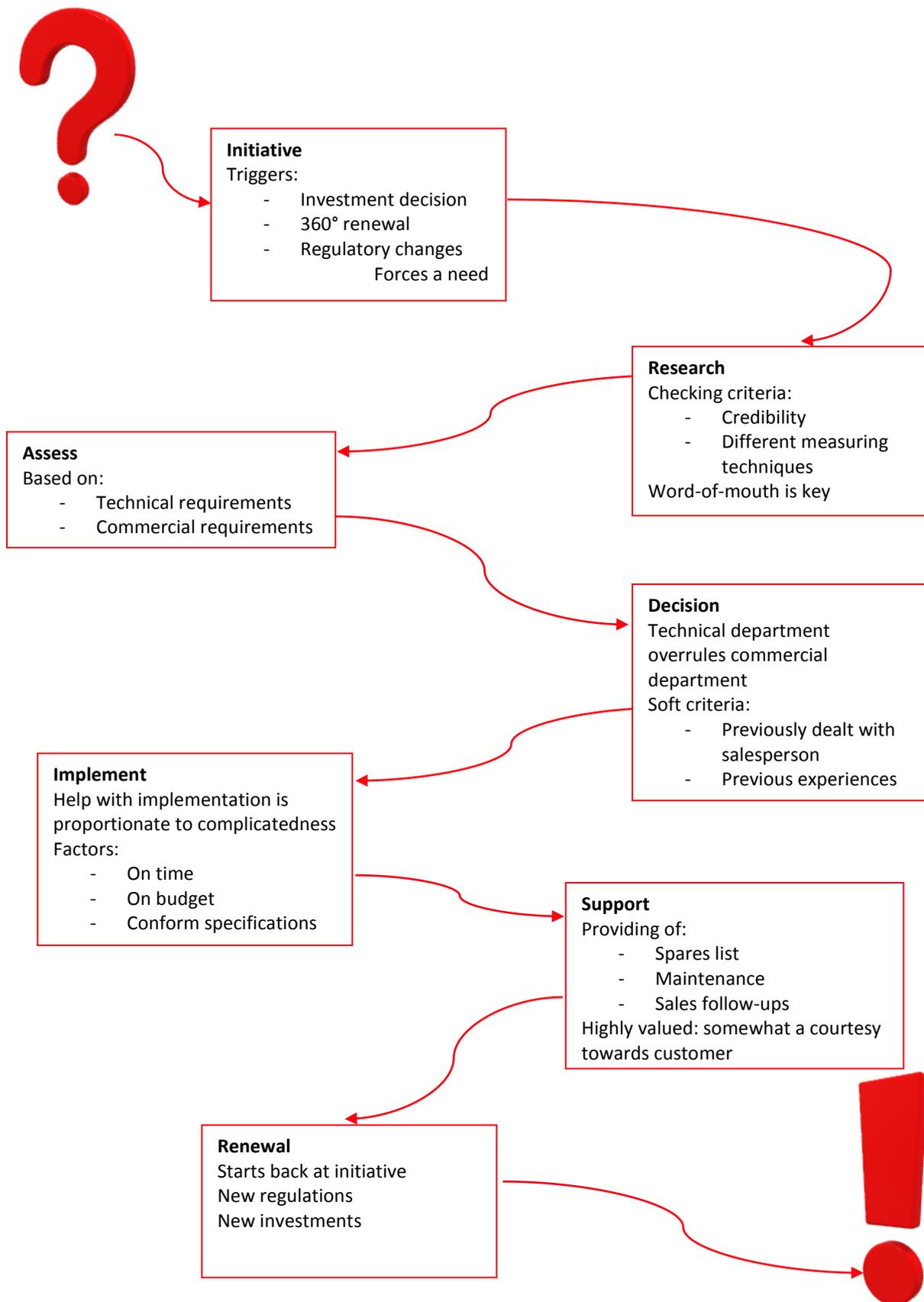
Table 11: Coding table - Others

<i>Other</i>	<i>Need</i>	<i>Where in the CEC</i>	<i>Quote</i>
	<i>Information</i>	Interactive screens – factory tours 	Factory tours are a fantastic tool. When thinking about ABB, the offer is very broad, what is produced in Stonehouse is a small part of the complete portfolio. The tours put everything in perspective.

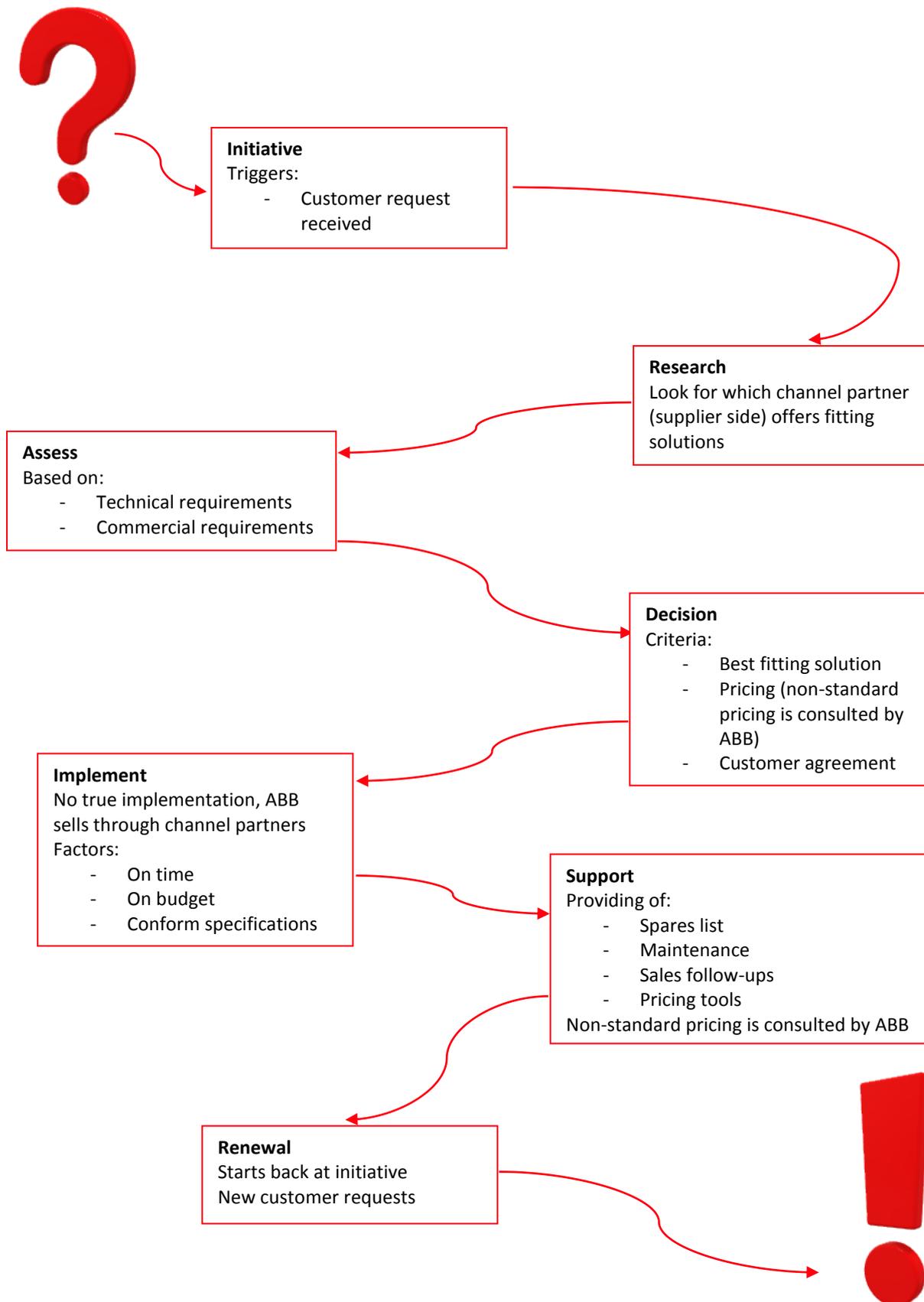
	Video wall		Would like labels on hotspots so you know what you are clicking on.
<i>Aesthetics</i>	General		Excellent, very pleasing and good lighting
	General		For me, it gave sufficient insight into the activities & products of ABB
	Interactive screens – factory tour		Volume on the factory tours screen is too loud and the map isn't very clear
<i>Usability</i>	Video wall		Not clear that content changes in the bottom of the screen when videos are selected, seems like nothing happens.
	Video wall		Very intuitive system and easy to use & understand
	Video wall		The circles make it very clear where to click.

Appendix L: Customer journey maps

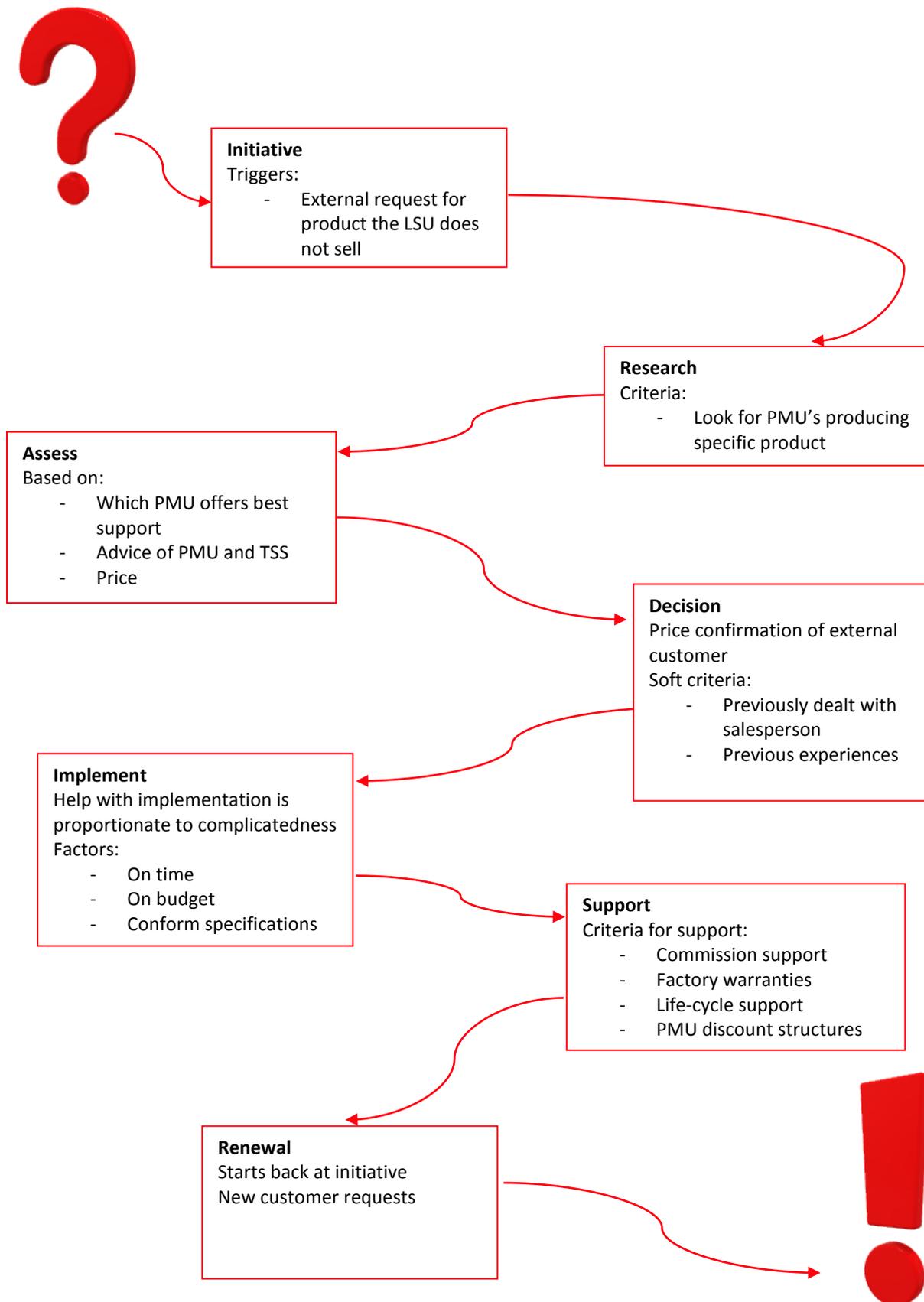
CJM – Direct customer



CJM – Channel partner



CJM – Internal customer



Appendix M: Details recommendations

Microsoft HoloLens

Concept 1

The concept is to create a large water rig-hologram, with ABB product attached to this rig. Each product is technically a 'hotspot', so visitors can tap the product, which will then come forth. Information (written, videos about how it works, pictures, maybe voiceovers explaining the product. etc.) about the product is displayed.



Figure 16: HoloLens – Concept 1

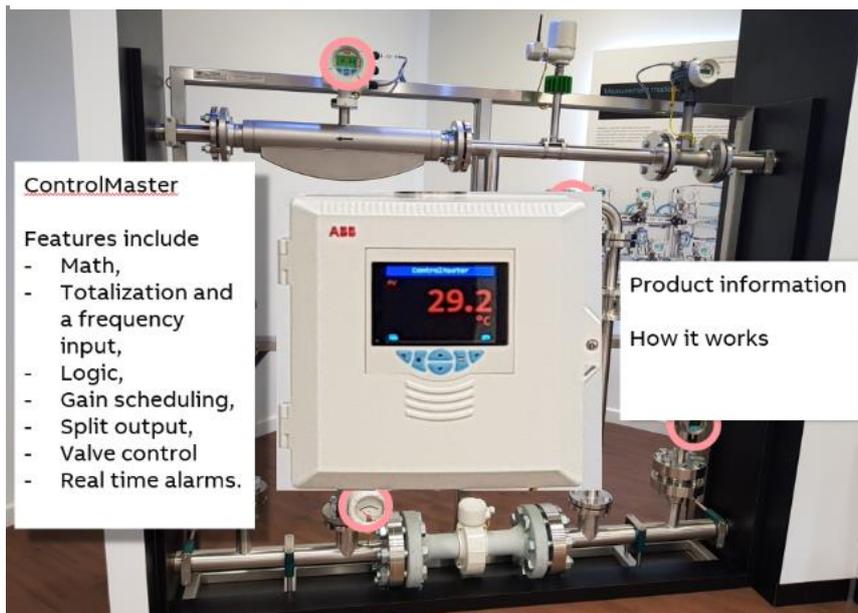


Figure 17: HoloLens – Concept 1 (detailed)

Concept 2

A floating island of a water treatment plant can be created. On this island, several hotspots can be created which represents a product, and when selected, information can pop up in information displays about the product.



Figure 18: HoloLens concept 2 (Fracture Reality, 2018)

How it works	When the glasses are put on, the user can interact with what he or she sees through the glasses. Different apps are available on the device, but own apps can also be imported on the device, enabling ABB to present relevant information in the CEC, instead of the default apps.
How it's interactive	The visitors can interact with the products as if they were real life situated
ABB benefits	Unique technology to implement in the CEC, the majority of visitors probably has not used such a device before. Has more purposes than only for the CEC (training, trade shows)
Customer benefits	Chance to interact with products in a virtual setting Unique experience
Costs	<p>Hardware:</p> <ul style="list-style-type: none"> - Commercial edition: £ 4,529.00 per piece <p>Kazendi: Bespoke solution</p> <ul style="list-style-type: none"> - £ 25,000.00 for 2 week development. For application development, features will be prioritized on importance, and if the 'low priority' features cannot be incorporated in the application after 2 weeks, extra time has to be bought, if we want to. - 2 HoloLens included <p>Inurface Media:</p> <ul style="list-style-type: none"> - Hardware: £ 12,000.00 (2 installed commercial suite HoloLens) - Software: £ 63,000.00 (application development) <p>Fracture Reality:</p> <ul style="list-style-type: none"> - Software: £ 25,000 - £ 30,000 <hr/> <p>Armitage estimates:</p> <ul style="list-style-type: none"> - Platform development: Ranging from £ 20,000 to £ 100,000

	- Variable costs per product: £ 2,000
Future proofing	If the HoloLens will be used for other purposes in the future (e.g. training), new applications must be developed at additional costs. If Kazendi's HoloMeeting were to be used, this would not be the case.
Demos?	18-4-2018: Kazendi: presented HoloMeeting, but bespoke apps are possible too. 23-4-2018: Fracture reality: presented some bespoke apps, looks very good
Timeline?	Kazendi: 2 weeks for development of requirements, based on priority level Fracture reality: 5-6 weeks

Must do:

- Have a set holographic rig, would it be able to pinpoint that in one location in the CEC, so users cannot move/enlarge it?
- Have approx. 10 product holograms attached to this rig
- Have a close-button next to each hologram to shut the information screen down
- Automatic shutdown of information screens after +- 2-3 minutes
- When a product is tapped, an information screen will pop up above the product, with informational text about the products.

Should do:

- Play videos/give vocal explanations about the products

Could do

- Create effect of water 'flowing' through the pipes
- Show measurements on the products' displays

Live feed

The recommendation of implementing a live feed combines the product wall with the interactive screens. The idea is to create a live connection between the manufacturing facility and the CEC through using the RVG200 recorder. The product is placed in the plant's water treatment plant, and the measurements will be directly connected to the CEC, where they will be displayed on one of the interactive screens.

An alternative for this solution is creating a simulation of a live feed, as an actual one would unfortunately not be very interesting, since the measures on the products are usually constant. This idea would be a mimicked feed, where users can adjust measures and see how this influences the profitability and operation of the plant. Additional information about where the product sits in the plant, what data it displays, or how it works, could also be integrated in the tool. See the images underneath for a similar, existing tool.

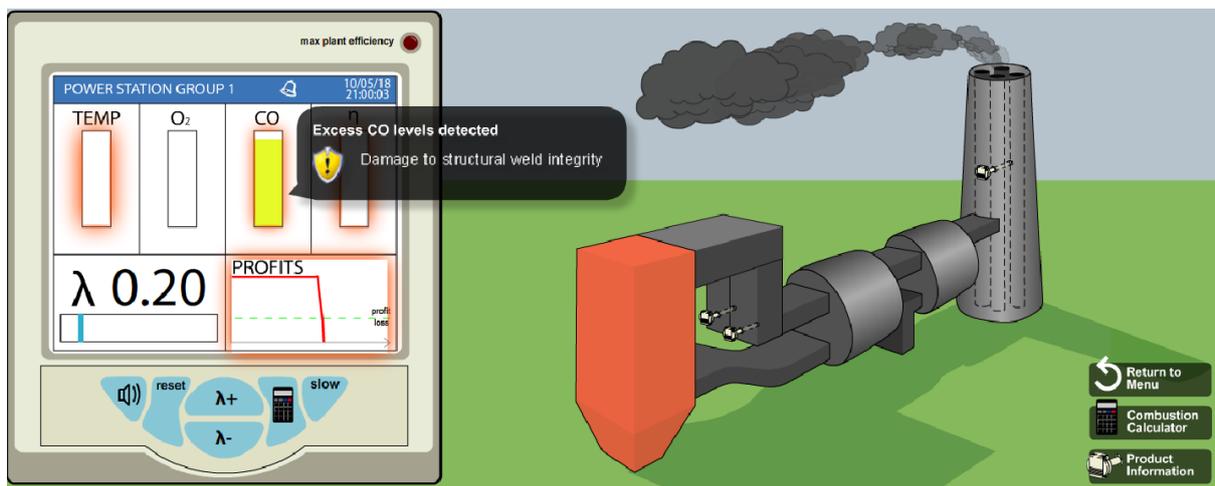


Figure 19: Combustion tool 1

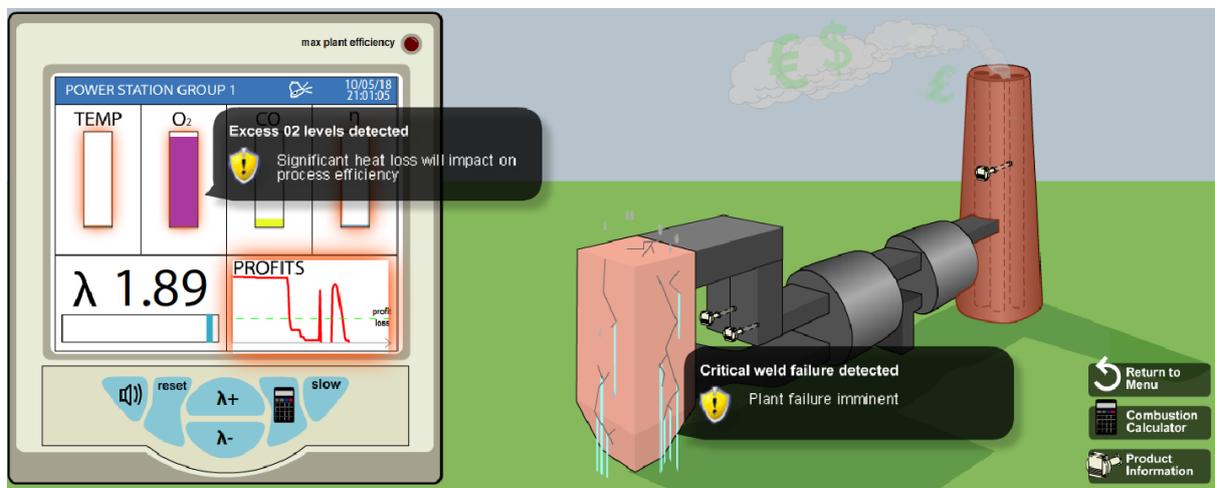


Figure 20: Combustion tool 2

The idea	Create connection between plant and CEC, show live feeds of plant measurement
How it works	The recorder is placed in the renewed water treatment plant, and will be connected to one of the 3 screens. The feeds of the product can be connected to the screen by using an Ethernet IP. The user of the screen can see on the screen where the product is situated in the plant (a photo) and operate the recorder from the screen.
How it's interactive	Customers can use one of the interactive screen to 'operate' a recorder, and learn about how the product works and what it does
ABB benefits	Opportunity to show more about how the product works, and showcasing its abilities. Also, it is a good opportunity to show the abilities for remotely monitoring your controllers.
Customer benefits	The visitors can get a better visualization how the products work, are positioned, what they do and what their abilities are.
Costs	Armitage Old branding: £ 5,000 New branding: £ 5,500
Demos?	Briefing by Martin Binney about the possibilities
Timeline?	The RVG200 will launch end of April, but the solution can only be implemented in the CEC after the water treatment plant is replaced, content development is yet to be discussed

Parameter screen: product wall

Place the glass screen in the middle of the room, in front of the product wall. The screen will either be horizontally suspended from ceiling and project from the ceiling, or horizontally situated on a pedestal, and project from the floor, using short-throw lens. The products will still be visible through the screen, and via the touch screen, visitors can pick a product from the list on the screen, which could display a 3D/CAD drawing of the product e.g. on the left-hand side of the screen, and additional information on the right hand.

How it works: The screen will shut to an ABB screensaver whenever not being used for e.g. 2 minutes. Whenever the screen is touched by a visitor, the initial menu will start up (at this point, only M&A for Water & Wastewater), so this will give an overview of the product lines (Continuous water analysis, Electromagnetic flow meters, Recorders & controllers). Additionally, the menu will have a 'back' button, to go back to the initial menu. The lay-out of the screen is very simple, to ensure the screen will remain see-through. If a product is selected, a new screen shows up, having a 3D image of the product on the left hand side of the screen, whereas the right is divided into product information about what the product is/does and which problems it solves.

Must have:

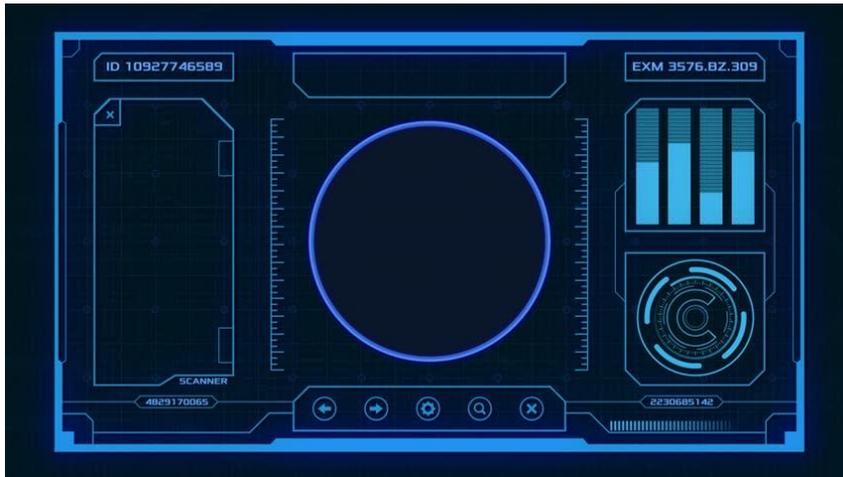
- Menus where the visitors can pick from which product line/which product they want to pick.
- Less=more content: The more see-through bits, the better the glass screen will look like. Only outlines of text boxes, will be used, there will be no fill in the text boxes
- 'Back to menu/product lines' boxes to navigate along the content
- Product menu: At least a 3D like image, not necessarily to move around/explode, product information on right hand side (in short: what the product does, video included if available)

Should have:

- Opportunity to interact with the product on the left hand side of the screen: at least rotation/3D working visual. Possibly opportunity to explode (Could have?)

Could have:

- Moving iconographic background of the different product lines: Recorders and controllers – use e.g. seismographic meter, Electromagnetic flowmeters – use flow of water, Continuous water analysis: use up and down moving bar chart with arrow following the bars
- Product videos (if available)



← Design similar to this
 E.g. divide screen into two parts: left side is dedicated to CAD drawing, and customer can interact with drawing, whereas the right is dedicated to product information.

Figure 21: Outline glass screen design

The idea	Product interface on the parameter screen
How it's interactive	<ul style="list-style-type: none"> - Visitors can personalize their information supply - Can see the product from different angles
ABB benefits	It will benefit the product wall, as more information is on display and the
Customer benefits	The users can benefit from receiving more information on the product wall, also can they look at 3D CAD models of the products, (possibly adding the possibility to explode them, to see the insides)
Costs	<p>Short throw lens:</p> <ul style="list-style-type: none"> - £ 1,747.00 <p>Costs of reinstalling the projector (either in ceiling or on floor) and finishing</p> <p>Inurface media:</p> <ul style="list-style-type: none"> - Short throw lens: £ 1,747.00 - Hardware cost: £ 2,000.00 (new see-through projection film, mapping, lens configuration) - Software cost: £ 8,000.00 (If the existing assets can be used) - Total cost: £ 11,747.00 <p>Armitage estimates:</p> <ul style="list-style-type: none"> - Platform development: £20,000 to £100,000 - Costs per product: £2,000
Timeline?	6-10 weeks for platform development

ABB History

The parameter screen could be used to display ABB's history. Located in front of the empty wall (right-hand side of the CEC entrance), the wall can show a timeline of ABB's history. The timeline could distinguish between e.g. general history, product launches, mergers & acquisitions, or R&D milestones.

The exterior of the timeline in mind is, instead of horizontally oriented, more 3D designed, as a road which disappears in the distance (see examples underneath). Each event in the timeline can be selected, which opens up an information display of the event (e.g. video's, text or pictures).

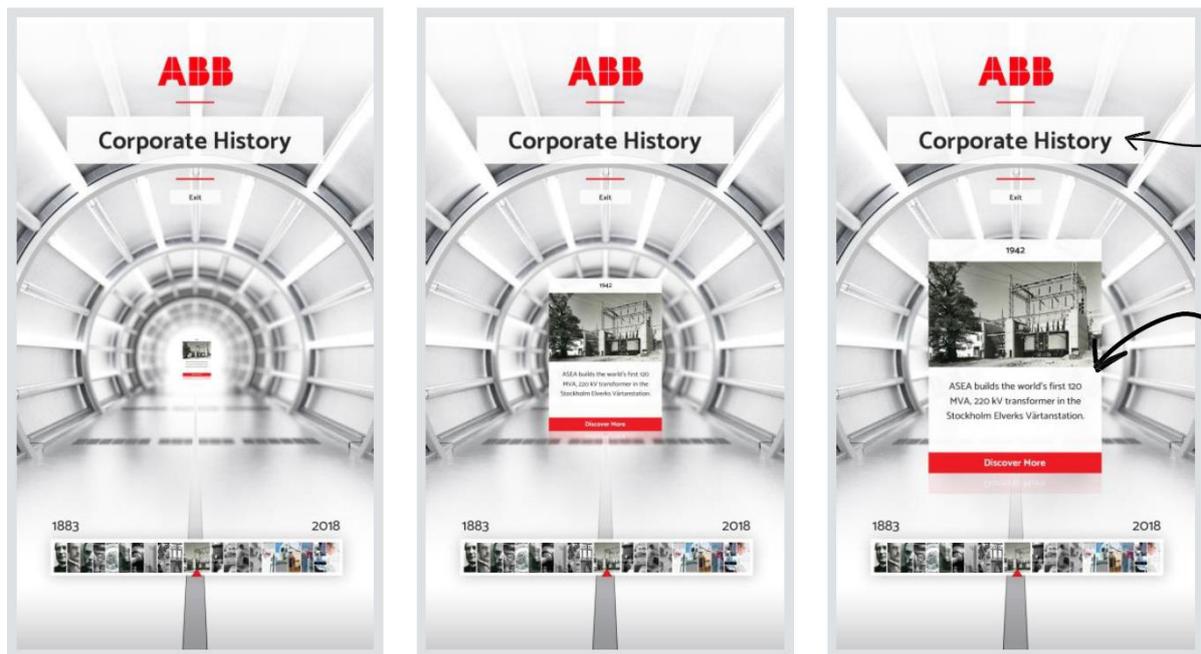


Figure 22: ABB History (RMG, 2018)

Must do:

- Display an interactive timeline, be able to swipe back and forth/left-to-right
- Whenever an event is selected, something should pop up with information about that specific event.
- Have a corporate timeline (<http://new.abb.com/about/abb-in-brief/history>)
- Close button to return to timeline, return to the event you have selected, not beginning of timeline again
- Automatic shutdown after 2 minutes

Should do:

- Add videos/pictures to the information.

Could do:

- Additional timelines to be developed (e.g. product launches/R&D milestones)

The idea	History screen
How it works	A timeline represents ABB's evolution, the user can scroll from left to right on a screen, and select a certain point in time to get more information, through video's, text or pictures.
How it's interactive	If one of the events is selected,
ABB benefits	Showcase values of trusted and evolving
Customer benefits	Familiarity with the company, know the background behind its growth
Costs	<p>Inurface media (Cloud network based solution, solution is designed so ABB/Armitage can update it)</p> <ul style="list-style-type: none"> - Hardware: £8,000.00 - Software: £4,000.00 to £7,000.00 - Installation and SLA on top <p>AVM Solutions (Cloud based, ABB can update)</p> <ul style="list-style-type: none"> - Hardware: £2,846 - Experience build & creative: £26,012.30 - Installation, configuration, testing & services: £3,234 - Total: £32,092.30 <p>- Annual ongoing cost (Year 2 onwards): £4,715.30</p> <p>Armitage</p> <ul style="list-style-type: none"> - Software/content: £10,000 - £15,000 (minimum)
Future proofing	Instead of using an empty wall to stick historical events to, the history will be digitally displayed, so you will not 'run out of wall' after adding more events. On the other hand, updates of the content are necessary whenever new events occur.
Timeline?	<p>AVM Solutions: 2 weeks</p> <p>Armitage 4-8 weeks incl. testing and implementation</p>

Video wall display changes

Usability is the struggle with regards to the video wall. The suggested improvements would be to create thumbnails of the videos, instead of letting only the titles appear in the bottom of the screen, this will make the change of the display more obvious. See the image underneath for an example.

Another improvement is placing labels on each hotspot, to inform the visitors what each hotspot represents. See images underneath for an example.

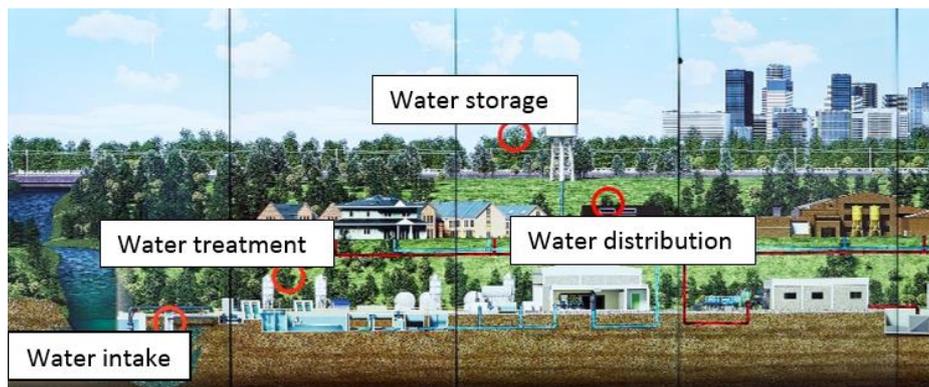


Figure 23: Video wall – Labelling hotspots

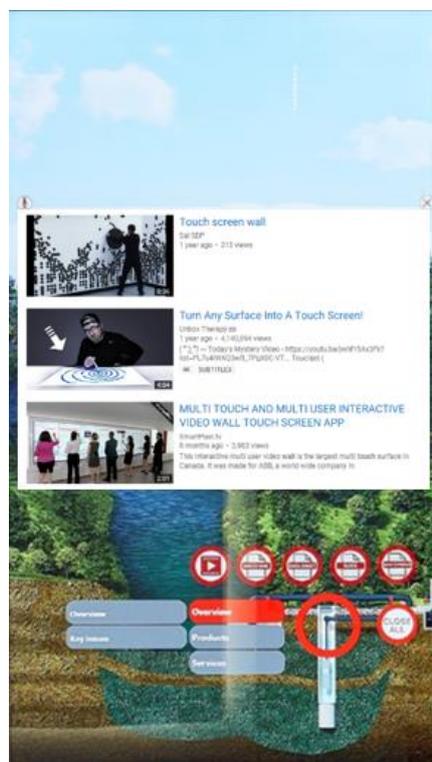


Figure 24: Video wall - Video thumbnails

How it's interactive	Content changes will improve the usability, so smoothen the interactivity
ABB benefits	Create an improved user experience
Customer benefits	Smoother experience, faster working screens
Costs	<p>Inurface media Costs content changes:</p> <ul style="list-style-type: none"> - Investigation: £2,995.00 (In case Inurface media cannot do it, refund of £1,000.00) - Development work (£2,000.00 credit) <ul style="list-style-type: none"> 1 day: £895,00 3 days: £2,617.88 5 days: £4,027.50 <p>Promultis</p> <ul style="list-style-type: none"> - Costs: £ 2,100.00 (Labour)
Future proofing	Tasking Inurface media to do it will allow other developers to understand the software better, ABB would not have to rely on Promultis to make software changes (labelling, etc.),
Timeline?	<p>Inurface media Approx. 2 weeks including investigation, can be done remotely</p> <p>Promultis</p> <ul style="list-style-type: none"> - 0.5 day: labelling - 2.5 days: video thumbnails - 0.5 day: testing <p>Can be done remotely</p>

Labels

Must do:

- Create a more simple user interface
- The labels must be clearly visible and readable, and not be mistaken with the wrong hotspot

Should do:

- Include the label in the hotspot: the user can either tap the hotspot or the label to open the hotspot menu

Video thumbnails

Must do:

- Move from a video 'name' list to creating YouTube-like thumbnails of the videos
- When tapped, the thumbnail must open the video and start playing.
- Close button on video to return to the thumbnails

Could do:

- Option to open next-in-line video
- Create thumbnails for the PDF documents as well