

MASTER

Supporting the decision for a customer experience management solution
a method proposal for an early stage analysis of the organization-hybris fit

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Eindhoven, March 2015

Supporting the Decision for a
Customer Experience
Management solution:

*A method proposal for an early stage analysis
of the organization-hybris fit.*

by

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Abstract

Business solutions support organizations in their ability to manage processes. One particular area of processes is customer engagement. Organizations aim at managing the relationship with customers and do so with Customer Relationship Management (CRM). To answer customer needs and to follow the trend of self-empowered customers in an environment of personalized goods, a need for Customer Experience Management arises. In Customer Experience Management (CXM), organizations aim at delivering tailored experiences to the individual customer. Significant differences exist between CRM and CXM. Due to the proactive nature of CXM, data on customers is gathered and used in a different manner and with different goals. To support organizations in delivering these experiences, a business solution for Experience Management is beneficial. For business solution vendors as SAP, it is important to offer organizations a complete portfolio of business solutions. For implementers of business solutions as Accenture, it is important to be aware of the value of a vendor's portfolio.

As such, in the case of Accenture, SAP and Customer Experience Management, it is important for Accenture to identify the value of SAP's capabilities to offer Customer Experience Management. The Experience Management trend could be fulfilled by a recently acquired solution: the hybris Commerce Suite. To identify the value of this solution and to uncover potential strategic leverage, the following research question guides this research: *How can Accenture be supported in the decision to further investigate hybris as a suitable Customer Experience Management solution in the light of an organization's stakeholders?* The research follows a design science methodology and uses both literature and interviews with Accenture experts to assure sufficient rigor from which an artefact, in the form of a method, is designed.

The executed research is founded on a meta-analysis of two topics. The first topic identifies the criteria that depict sufficient performance of a Customer Experience Management solution, while the second uncovers the capabilities of the hybris Commerce Suite. The findings of this meta-analysis form the fundament of the method proposal that supports the decision making process for hybris as a Experience Management solution.

In the first part of the meta-analysis, a goal model is constructed to model what a CXM strategy aims for. Its initial goal, to manage the customer journey, is supported by three key goals: Providing Insights, Orchestrating the Organization and Managing Contextual Experiences. These first two key goals contribute to creating an environment in which the last key goal flourishes: by collecting relevant information that allows to make informed decisions, and by forming an organizational structure that supports knowledge exchange and a customer-centric view, relevant and consistent experiences of high quality can be delivered to the customer. Conceptual Experiences are relevant when they address the correct of any of the five phases of the customer journey; Discovery, Attraction, Purchase, Use or Advocacy. Experiences are consistent when they project an organization's image at every engagement, assuring a recognizable and high quality experience, regardless of the actual phase of the

journey. By translating these goals into key goals for a supporting solution, key goals that act as functional goals of a CXM solution are identified.

As sufficient performance is defined as a solution's ability to support the requirements of stakeholders in achieving their goals (Neely et al, 2002), a total of nineteen stakeholder roles with a valid interest in the solution are identified and subsequently mapped. With both the stakeholders and the goals of a Customer Experience Management solution revealed, scenarios in which stakeholders achieve these goals are documented in fully dressed use cases (Cockburn, 1999). These use cases describe the normal way of achieving a goal, and also include possible detours and problems. Sixty-three possible functional requirements are extracted. These are requirements that the stakeholders have, and that the solution must support when the goals of Customer Experience Management are pursued. The requirements are grouped under Customer Experience Management aspects derived from the goals: Insights, Orchestration, Designing the experience, Delivering the experience and The experience.

In the second part of the meta-analysis, both the strategy and the architecture of hybris are investigated. Hybris is positioned as the customer portal for all engagement activities within the spectrum of business solutions of the SAP portfolio. The means by which it aims to achieve this are documented in a feature model. Hybris is a software product line with a large variety of features. Each feature can achieve something and is thus a capability. The sum of these capabilities depicts hybris' ability to deliver sufficient performance. Individual features, subfeatures and their hierarchical relations are identified and mapped in the model. Every feature is described in detail to document the capabilities of hybris in one of six identified areas labeled from A to F. The areas categorize capabilities for content management (B), commerce activities (C), channel management (D) and order management (E). These capabilities are founded on a flexible platform (A) that has supporting capabilities for integration with SAP or other back-end systems (F).

The results of the meta-analysis form the knowledge base to design a method. When combined, it delineates the requirements that are supported by hybris. Moreover, it forms an overview of requirement – feature matches. The results are represented in binary form. A stakeholder requirement is either supported by hybris, or is not supported by hybris. The latter group receives a thorough investigation that delivers a documentation of either the lack of support, or the ambiguity of the support by introducing background information or an alternative feature to support the requirement. The description of a sequence of steps that allows a user to extract the requirements for a case-specific situation, in turn, describes a method that reviews hybris' performance in a uniform and comprehensible manner. It prescribes how a user of the method must inform a client-organization, how the requirements must be mapped, how hybris' performance must be analysed, how the preconditions must be analysed and finally delineates the contents of a concluding report. Moreover, the method delivers questions and background information on both hybris capabilities and stakeholder requirements to facilitate the user of the method. These steps can be executed from the perspective of a skilled, but not necessarily Experience Management familiar expert, in order

to deliver support for the decision to further investigate hybris as a suitable Customer Experience Management solution.

The proposed method is validated, in turn, by a case study held with Accenture experts. The goal of this case study is to demonstrate how well the results of the method are in line with reality and give a truthful representation of the hybris-organization fit. This is done by performing two investigations on company X that has adopted hybris. In the first investigation, the proposed method is used to map the requirements and to draft a report, thus executing the method. Second, an opinion-driven investigation is used to extract the attitude of company X towards the capabilities of hybris and the effect of hybris within the organization. The analysis of both investigations allows to review hybris' ability to support the requirements, and whether successfully supporting the requirements also positively influenced the organization. The results show that the investigations do not match a 100 per cent. A number of type II errors are identified and as company X had no requirements for several aspects of Customer Experience Management, not all elicited requirements were validated.

The research, overall, successfully followed the design-science research guidelines and achieved its main goal. Several limitations can be identified regarding the use of pre-elicited requirements, as the method of collection and their nature might exclude significant and relevant requirements an organization has. Future work that aims to include these or to expand the requirements in any other way is therefore recommended. Moreover, not only the delivered artifact, but also the rigorous research and design deliver insights that are helpful for Accenture as it proposes a situation in which in-house qualities of different expertise are combined to leverage competitive advantage in the field of Customer Experience Management.

Preface

This Thesis is the final report that concludes six years of Technical University. It simultaneously concludes six years as a student and rings the bell to start a new phase in my life. But, partially thanks to this thesis and the accompanying internship at Accenture, I am more than ready to do so.

First of all, I would like to thank Accenture for providing me with the means and the opportunity to perform my Master's Thesis in a large international organization. Within the highly motivational environment of the Zuidas in Amsterdam, I have had the chance to be introduced to a lot of interesting topics. I have been able to create a vast network with numerous possibilities for contacts with ambitious people. This has resulted in great admiration for the enthusiasm and skills of Accenture employees, in particular those I have interviewed along my research. I am glad that I have been able to have taste of a career after university in such an inspiring organization. I would like to express my gratitude to Linda Chen, who has allowed me to discover this environment on my own, even when it distracted me from my graduation work, and would like to thank her for her support along the way.

Second, I want to thank my supervisors from the Eindhoven University of Technology. Claudia Chituc and Rik Eshuis have provided valuable input and feedback, and have guided me throughout the different phases of my Master's Thesis up until the graduation.

Finally, the support I have had from friends and family helped me to finish this report. My friends who provided undesired but highly necessary distraction from time to time. And of course my mother who, at many occasions, assured me that it was all right to take my time and always stressed that she was sure I would turn out just fine.

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1 Introduction

Organizations manage the relationship with their customers. The goal is to extract knowledge and to create more value for the customers. (Boulding et al, 2005) The organization-customer relationship is handled and governed by Customer Relationship Management (CRM). The main purpose of CRM, however, is not to create more value for the customer but to create better financial performance for the organization. It is the strategic process of selecting and serving the most profitable customers. (Kumar & Reinartz, 2012)

Rather than serving customers based with a mass-produced product, a trend that focuses on a customized or even personalized product emerges. Mass personalization allows organizations to create what the individual customer desires and to serve the market of one profitably. (Kumar, 2007) Organizations can differentiate on the customer experience level and deliver unique and personal experiences. (Sirotkin & McCabe, 2011; Palmer, 2010) Customer Experience Management (CXM) aims at identifying and understanding individual customer values in order to contextualize these into a tailored experience. (Meyer & Schwager, 2007; SDL, 2014; Sirotkin & McCabe, 2011)

The adoption and implementation of CRM or CXM requires organizations to invest in new processes and supporting business solutions. SAP is a worldwide operating business solution vendor that offers the SAP Business Suite (Appendix A). This business suite is a portfolio of different modules. The most important and prominent one is SAP Enterprise Resource Planning (ERP). ERP offers a variety of functionalities to help an organization become more flexible, efficient and effective. It provides a unified view of functions and processes, and reports on activities and transactions of an organization (Lewandowski et al, 2013; Makkar, 2012) CRM is an additional module that focuses on the organization-customer relationship. The module offers marketing, sales and service functionalities to help customer-facing departments. In 2013, SAP announced it had acquired hybris, an independent e-commerce solution to succeed the in-house SAP e-commerce solution. (Das, 2013)

Implementing business solutions in large organizations is a difficult and extensive process. Accenture, commissioner of this research, helps organizations in deciding upon and implementing business solutions like ERP, CRM and e-commerce. Accenture is a world wide operating firm, with a focus on management consulting, technology and outsourcing services (Appendix A). Accenture has a partnership with both SAP and hybris. Both organizations cooperate with- and allow Accenture to implement their solutions for client organizations. Accenture implements and leverages SAP products in all possible areas to help organization perform better. (Accenture, 2014) To help organizations with business solutions, it is important to fully comprehend the solutions, hence the interest in the newly arisen situation. For Accenture to deliver a competitive advantage, both for Accenture itself and a client-organization, it needs to identify the value that hybris has for SAP.

SAP has positioned hybris as successor of its e-commerce solution. This solution was discontinued because it was behind on its competition. Its use was limited and highly

dependent on SAP CRM, and therefore not interesting without the SAP CRM install base (Sheldon, 2013). Effectively, hybris provides organizations with an online marketplace. Moreover, hybris allows organizations to deliver a uniform and consistent experience across all channels. It offers a platform to serve businesses (B2B) and consumers (B2C) in both offline brick-and-mortar stores and in online environments.

Hybris thus provides omni-commerce, serving customers in the best way possible through any desired channels. It overcomes the complexity of data to manage that occurs from combining these channels, including an answer to fulfill the customer's expectations. (Das, 2013; Henschen, 2013) There is a prospect of a deep integration of SAP ERP and CRM with hybris and an end goal to connect demand- and supply chains to provide a new business model for client organizations. The idea is that mastering this process- and data complexity is essential to create and manage the customer experience (Clark, 2013). Hybris exceeds the possibilities of only an e-commerce solution by providing a solution that manages the customer engagement.

The prospect that hybris possesses the essentials to deliver Customer Experience Management implies that SAP has acquired more than a simple e-commerce solution. The questions that arise are whether hybris can fulfill the role of a CXM module within the SAP business suite, and in what ways Accenture can implement and leverage this solution to realize competitive advantage for its client organizations. Therefore, the goal of this research is to provide Accenture with a method that supports the decision to further investigate hybris as a suitable customer experience management solution for a client organization, in the light of the criteria of the client's stakeholders.

This research in the series Master Theses Innovation Management addresses essential topics that are part of the Innovation Management Master's program. The operational processes of innovation are covered by modeling new concepts, including their effect on users and support in the decision of an innovation. This research aims to support the selection of a high-opportunity project in an early stage and to prevent poor investments. Moreover, it supports the transition into a new and innovative strategy for organizations. In this particular case, the acquisition of technology by SAP is investigated for its effect on Accenture client organizations. Overall, this research investigates the possibilities to increase the innovative strength of organizations, which is important for its competitive position, but also for society.

This research delivers a method that helps Accenture to decide on the appropriateness of hybris as the suitable solution for a client organization, in an early stage. The method enables any Accenture employee to deliver a report on the initial fit that is found between hybris' performance and mapped functional requirements of an organization's stakeholders. Furthermore, the method will help Accenture and their client organizations to understand the concepts that are introduced in the decision making process of a Customer Experience Management solution.

2 Methodology

2.1 Introduction

To clearly define the purpose of this research, a sharp delineation in an unambiguous form helped to determine the scope, the limitations, and the precise meaning of the words and terms that are significant to this research (Blumberg et al, 2005). Moreover, to provide information to guide business decisions, the research contains a systematic and objective process of gathering, recording and analyzing data. Sreejesh, Mohapatra and Anusree (2014) describe three forms of business research design: exploratory, descriptive and causal. Blumberg et al. (2005) adds the predictive kind that, if there is a plausible explanation, predicts when and in what situations an event occurs. Such research is rooted in theory as much as the other research designs. The decisions made in this research are discussed in the research design paragraph.

2.2 Research Questions

This research was performed with the goal to support Accenture in the decision to further investigate hybris as a suitable Customer Experience Management solution for a client organization (...). This goal is a result of the possible strategic and competitive advantage that is uncovered and can be leveraged by Accenture when it is familiar with the business solutions it implements for client organizations.

Accenture specialists, whether they are a consultant or an integrator, are able to make the decision to implement a specific solution for a specific problem at a specific organization. This process, however, can be supported by introducing a comparable, standardized, uniform and consistent report that investigates the performance of a solution against the requirements of an organization. Thus, support is realized with a report that analyzes the fit between a solution's capabilities and the stakeholder's requirements for that solution. Such a report is not leading in the decision, but acts as an independent claim that can be used to support the decision. The main research question is therefore:

How can Accenture be supported in the decision to further investigate hybris as a suitable Customer Experience Management solution in the light of an organization's stakeholders?

To answer this question, it must be divided in three parts or sub research questions. The first question needs to identify when a Customer Experience Management solution delivers sufficient performance. The goal of the research is to deliver support for any organization that adopts a CXM solution. This sub research question therefore needs to answer when such a solution generally performs sufficiently. To define performance, the definition by Neely, Adams and Kennerley (2002) is used. This definition describes a solution's performance as the ability to satisfy its users: the stakeholders. Stakeholders have goals, and they are satisfied when the solution can support them in achieving their goals. Sufficient performance is thus defined as the solution's ability to support stakeholder requirements.

When does a Customer Experience Management solution deliver sufficient performance?

-What is Customer Experience Management?

-What are the goals of a Customer Experience Management solution?

- Who are the stakeholders?
- What are their requirements?

The second part needs to gather information about hybris. If the decision to further investigate hybris depends on hybris' ability to deliver sufficient performance as a Customer Experience Management solution, there is a need to identify the goals and capabilities of hybris. Hybris is a software product line with a large variety of features. Each feature can achieve something and is thus a capability. The second sub research questions therefore aims as answering:

What are the capabilities of hybris?

- What are hybris' goals?
- What are the features of hybris?

The last part of this research must reveal how Accenture is supported with the previously answered questions and designs a way to actually support Accenture. This is done by investigating whether the stakeholder requirements that define sufficient performance match with the capabilities that hybris has. Once these matches are known, a design must be made to map a specific organization's requirements in order to create tailored support. The general requirements must be filtered for those applicable for the organization under investigation. The third sub research question therefore aims at answering:

When does hybris deliver sufficient performance as a Customer Experience Management solution?

- Is hybris able to support the stakeholder's requirements?
- How is organization-specific support designed?

2.3 Research Design

This research is an applied research that investigates applications and uses theories, knowledge and principles to answer the main research question. (Sreejesh et al., 2014) It has an emphasis on problem solving and is conducted to reveal answers to a specific question that is related to an action, performance or policy need. (Blumberg et al, 2005) In more detail, this research aims developing a method that answers a business need and does so by using applicable knowledge. To guard these processes, a design-science research is an appropriate framework to follow for this research. Design Science in Information Systems research aims at building and justifying theories and artifacts that are relevant to their environment but are also rigorously defined by a knowledge base of frameworks, constructs and data analysis techniques. It is therefore appropriate to follow a Design Science design for this research, and to aim at fulfilling the Design-Science Research guidelines that are proposed by Hevner et al (2004) and are depicted in Appendix K.

The process that I followed is described in detail. This allows other researchers to repeat the research. To estimate the validity and reliability of the data, the description of the research process elaborates on the sources of data and the means by which they are obtained. The procedural design is planned thoroughly to yield results with as little influence of personal

bias in the selection and recording of the data, and as objective as possible. (Blumberg et al, 2005)

2.3.1 Interviews

The approach I used to collect data to answer the research questions is described in this paragraph. The mode of data collection was a combination of gathered secondary data from the literature review, new literature sources and semi-structured interviews with experts from Accenture.

In general, depth interviews permit a researcher to interact and explore an issue. Interviews can be performed unstructured, semi-structured and standardized open-ended (Sreejesh et al, 2014). An unstructured interview resembles a natural conversation where an interviewer brings up various topics of interest. A semi-structured interview allows for flexibility and an interviewee is encouraged to provide details for relevant responses, but an interviewer ensures that the interview is limited to the essential topics. The standardized open-ended variant contains a set of sequential ordered, carefully worded, open-ended questions. The unstructured interview generates less systematic data, and the standardized interview limits the use of substitute questioning and unforeseen deviations. The most appropriate method of data gathering for this research was therefore the use of semi-structured interviews. An interviewee can be encouraged to provide details for relevant responses. The consequence was that I, however, must be aware to not deviate too far from the basic checklist. (Sreejesh et al, 2014)

A total of seven Accenture expert interviews were planned. Experts were chosen based on their expertise on a specific topic of relevance and availability. The following topics of expertise were used: Customer Experience Management strategy, Customer Experience Management solution architecture, Customer Relationship Management, Oracle CX, IBM Experience Suite, hybris strategy and hybris solution architecture. Based on the research questions, nine sets of questions were created. These questions range from a general introduction to a domain specific topic. Appendix B shows the matrix of experts and the topics that I used to combine experts with questions. The semi-structured interviews were guided by the questions found in appendix C.

2.3.2 When does a Customer Experience Management solution deliver sufficient performance?

To answer when a Customer Experience Management solution delivers sufficient performance, I performed a literature review to investigate the concept of Customer Experience Management. Deeper knowledge was gained and extracted from interviews with Expert 1 and 2. Expert 1 is an expert on Customer Experience Management strategy, and Expert 2 is an expert on Customer Experience Management solution architecture. I used these interviews and the experts' expertise to construct a class diagram to depict the data flows of Customer Experience Management. Subsequently, a goal model that represents the initial and key goals of Experience Management was constructed to identify what it is that this strategy aims to achieve. With support from Expert 2, this was translated into a goal model for a solution that supports Experience Management. The origin of this research is SAP that has acquired hybris. For the purpose of context and successful solutions, I investigated the

competition of hybris by interviewing experts and documenting SAP, Oracle and IBM solutions that offer and operate in the Customer Experience paradigm.

Every expert throughout the interview sessions was asked to provide input on stakeholders in order to create an overview of all stakeholder roles that exist in an organization that adopts a business solution. This allowed me to construct an onion model for the general stakeholder roles that are present in the case of a Customer Experience Management solution. An onion model represents stakeholders that have a valid interest in the solution, and how close they stand to the solution. This ranges from using the solution up to deciding upon the legislation that affects the solution.

With both the stakeholders and the goals of a Customer Experience Management solution documented, and the help of Expert 2, I was able to document the scenarios in which stakeholders achieve the goals. The identified goals were translated into functional goals and the scenarios in which stakeholders take steps to achieve these goals were documented with fully dressed use cases. (Cockburn, 1999) Fully dressed use cases describe the normal way of achieving a goal, but also possible detours and problems. These allowed me to extract the requirements that the stakeholders have for a solution that must support them when they perform activities to achieve the goals Customer Experience Management.

2.3.3 What are the capabilities of hybris

Hybris was investigated by interviewing two different experts. The first is a hybris strategy expert to identify the goals of hybris. This allowed me to position hybris in a larger contextual spectrum of business solutions from the SAP portfolio. This functioned as a foundation to augment more detailed knowledge that was collected by interviewing the second expert, a hybris solution architecture expert. This expert was able to identify more technical details and reveal the software product line characteristics of hybris. With (recommended) support from hybris' own knowledge center, I was able to identify individual features, subfeatures and their hierarchical relations were revealed and mapped in a feature model. Every feature has been described in detail to document the capabilities of hybris.

2.3.4 When does hybris deliver sufficient performance as a Customer Experience Management solution?

The last sub research question was answered by combining the previously collected and documented insights. First, I combined the requirements that stakeholders have and linked them to the hybris features that support these requirements. This formed an overview of requirement – feature matches. The results were represented in a binary form, all requirements that were unambiguously supported were matched to a corresponding feature. Requirements that were not directly supported were marked as unsupported. The latter group received a thorough investigation that resulted in a documentation of either the lack of support, or the ambiguity of the support by introducing background information or an alternative feature to support the requirement.

To translate the general case requirements to the requirements for the organization under investigation, I designed a method that uses the documented requirements as a checklist. Subsequently, I was able to create a case-specific documentation of requirements and to

answer hybris' capability to support the specific case, with the use of the documented stakeholder requirement – hybris capabilities match. The method was written to prescribe a sequence of steps that aims at delivering support for the decision to further investigate hybris as a suitable Customer Experience Management solution.

2.3.5 Validation

The proposed method is founded in theory and information extracted from practical cases. It, however, does not necessarily represents the reality. To investigate how well the results of the method represent the real world, I performed a case study validation. The validation was performed in a workshop with a team of Accenture experts. This team was led by Expert 7 and had implemented one or more hybris solutions in the past. To compare the method results to a real world scenario, two investigations were performed on company X that had adopted hybris. As I was unable to approach company X, the group of Accenture experts provided knowledge on their behalf. In the first investigation, I executed the proposed method by mapping requirements and drafting the report. This report included results regarding the capability of hybris to support the requirements of company X. The second investigation was an opinion-driven session where I questioned the experts to represent the attitude of company X towards the capabilities of hybris and the effect that hybris had within the organization. This allowed me to extract a representation of whether hybris was able to successfully support the requirements, and whether successfully supporting the requirements also positively influenced the organization. Hence, I compared the results of the method to a real world scenario and gained insights in the truthfulness of the outcome of the method.

2.4 Structure of the report

This research is a meta-analysis. A method is designed by extracting stakeholder requirements for a Customer Experience Management solution and investigating hybris' capabilities. This document therefore follows a similar structure. Chapter three gives a brief literature review that introduces Customer Experience Management and a literature gap. Chapter four is the actual meta-analysis with the qualitative interviews as mode of data collection. This chapter is split up in two parts, in line with the first two research questions. Part 1 is about a Customer Experience Management solution and the stakeholder requirements. Part 2 is about hybris. Each part concludes with the required information for Chapter five, in which a method is proposed. Chapter five depicts the process and design of the method. This method was reviewed and validated during a workshop session. Both this process and the result are described in chapter six. Finally, chapter seven discusses the research, concludes on the questions and reflects on the research process.

3 Literature Review

3.1 Introduction

This chapter gives an introduction into the topics that will be discussed in this research. Although the introduction has briefly introduced all relevant aspects and topics, additional literature will provide a body of knowledge to support the interviews as mode of data collection in the following chapters. The literature functions as a preparation and justification for the execution of the meta-analysis and the design of the method in this report. This chapter introduces Customer Relationship Management and the disruptive trends that introduce the importance of the experience. The experience, in turn introduces Customer Experience Management. This chapter pronounces the differences between both strategies and concludes with the literature gap.

3.2 Customer Relationship Management

The concept of Customer Relationship Management is described as the strategic process in which an organization selects the customer it can serve most profitably. It accordingly shapes interactions with these customers to optimize the value of these customers for the organization. (Kumar & Reinartz, 2012)

CRM's goal is to maximize profitability, revenue and customer satisfaction. It facilitates customer-driven innovation as a key source of strategic advantage. (Kumar, 2007) In perspective, CRM seeks to gather intelligence to select and serve profitable clients and to serve them effective and efficiently with this knowledge. Relationship management is a reactive process in which a customer engages with the organization, and of this engagement all data is collected and stored in order for it to be retrieved for customer facing groups in a second encounter. Customer Relationship Management delivers a 360-degree customer view for customer facing departments of an organization. Most likely these groups are Marketing, Sales and Service. They benefit from having intelligence on the customer they target and come in contact with.

3.3 Mass customization and personalization

Customer Relationship Management aims at investing in the most profitable relationships. It does so by increasing the value for the customer. The creation of value, as described before, is the collaborative process between the firm and customer to co-create value by accepting value propositions.

In technology management, service-oriented thinking is a fast growing paradigm. Business applications will focus more on this service aspect (Bardhan et al, 2010) and move from mass production towards mass customization. There are four recent technological advances that enable a leap in mass customization: flexible manufacturing, nanotechnology, smart sensing and cloud computing. (Tien, 2011)

These advances affect existing entry barriers as resources become more freely available. An answer to these changes, that simultaneously benefits from them, is to differentiate on the customer experience level and aim at mass personalization. (Sirotkin & McCabe, 2011) Collecting big data and translating it into useful insights allow organizations to understand

customer values, to contextualize them and to design an experience that targets these values. These are the principles for success. The product a customer gets is the experience created in partnership with the company. Current customization is targeted at satisfying the known consumer needs, the technological advances allow tailoring the experience for the individual consumer.

3.4 An experience: the concept

Organizations engage with customers. They serve them by allowing customers to purchase products, use these products and provide service that comes with the product. These are forms of direct contact with customers. Indirect contact is among others represented by word-of-mouth recommendations, criticism, advertising, news reports and reviews. The internal and subjective response that a customer has to these forms of contact is the customer experience. (Meyer & Schwager, 2007) This notion is a managerial useful construct that can be manipulated and managed. Customer Experience Management thus is a strategy that aims at managing the experience of a customer in his engagement with an organization.

3.5 Managing an experience: the concept

Customer Experience Management is a strategy and practice that manages customer experiences online and offline. It does so to acquire, retain and turn customers into satisfied, loyal brand advocates and ambassadors. (SDL, 2014) It originates from the markets with high levels of emotional involvement by consumers, but now is disseminating to relatively mass-market and low involvement contexts. The goal of CXM is to satisfy customers. Creating value for the customer in order to satisfy them by stimulating a positive attitude towards the service or product. It forms a positive attitude towards the experience.

CXM is an important integrator of service quality, relationships and brands. According to Palmer (2010) these form the base of a customer experience. It is then about using customer knowledge to sequence the right cues to the right persons at the right time, and to adjust these over time.

The difference between Customer Experience Management en Customer Relationship management lays in the notion of pro-active and re-active actions. Although both systems benefit from a complete view and knowledge of an organization's client, it is the use of this knowledge that differs. Table 1 below shows the differences between Experience – and Relationship Management (Meyer & Schwager, 2007). It depicts the reactive nature of Relationship Management that focuses on data of transactions to optimize them: selecting the most valuable customers and serving them the most profitable products (Kumar & Reinartz, 2012). Customer Experience Management, although benefitting from CRM data, overrules local optimums, efficiency and effectiveness by striving for a complete offering of what the customer desires. It analyzes the attitude of the customer towards the organization and aims at matching expectations and experiences across departments to deliver a personalized experience and to profitably serve the individual.

	Customer Experience Management	Customer Relationship Management
What does it collect?	<i>What does a customer know</i>	<i>What does a customer think</i>
When does it collect?	<i>During the interaction – At the touch point</i>	<i>After a record of customer interaction</i>
How does it collect?	<i>Monitoring interactions</i>	<i>Monitoring POS data</i>
Who uses it?	<i>Business – senior management. Strategy for fulfillable expectations and better experiences with products and services <High level></i>	<i>Customer Facing departments - to drive more efficient and effective execution <Low level></i>
Future performance	<i>Reveals new opportunities. Fills gaps between expectations and experiences</i>	<i>Drives local optimum. Not perfect offering, but compensate bad product with good one.</i>

Table 1: Differences between CXM and CRM. Adapted from Meyer & Schwager (2007)

3.6 Customer Experience Management

Originally only two touch points existed: the point-of-sale and the point-of-delivery. Today, due to the digital revolution and the rise of empowered, informed and expectation-full customers, there are numerous touch points before, during and after the consumption. These all have to be managed to deliver a positive experience. According to Accenture (2014) the digital disruption is giving rise to a more integrated organization that is centered on customer experience, and there is a need for a platform to manage the multi-channel challenge. Customer experience drives satisfaction and profitability (Accenture, 2013). If an organization is able to identify opportunities, bring products to market quickly or offer the right product to the right customer at the right, significant revenue may occur (Oracle, 2013).

To address the entire customer journey and to deliver a consistent experience, it is beneficial to have supporting information technology. Customers need to get the correct information at the right time, and therefore the organization needs the right knowledge and the right tools (Meyer & Schwager, 2007)

Appendix D depicts a collection of literature combined into a summary of all important and relevant aspects of Customer Experience Management from an organization's perspective. It addresses supporting aspects and a complete customer journey. It introduces the following aspects: Insights, Orchestration, Awareness, Attraction, Purchase & Sales, Use, Delivery & Cultivation and Advocacy. This simultaneously introduces a preliminary terminology that will be used in the next chapters.

3.7 Literature gap and conclusion

This chapter has briefly introduced the concept of CRM and CXM, and the occurring shift in the landscape of traditional CRM solutions. Where CRM gathers intelligence, it does not aim for a unified customer view or the delivery of a consistent experience. Traditional CRM solutions are therefore not sufficient to deliver Customer Experience Management. To identify and include unique requirements for Customer Experience Management, additional

research is required. The following chapters will therefore build upon this introduction into Customer Experience Management and will use interviews with Accenture experts on different topics to reveal what features and requirements are relevant in a Customer Experience Management solution decision scenario.

This chapter, moreover, has introduced a lexicon of terminology that will be used in the next chapters of this research. As the mode of data collection is interviews and different experts might use different terminology, a clearly defined terminology will aid to create a comprehensible and consistent report.

4 CXM solution and hybris: a Meta-analysis

This chapter consists of two parts that form the meta-analysis of this research. The data for this chapter was collected by interviews. The interviews are carried out with Accenture expert in their relative field of experience, and are combined with the body of knowledge introduced in the chapter 3. Together, the data collected and the models and insights formed in this chapter form a solid foundation for the proposed method in chapter five. The first part of the meta-analysis continues where the literature review ended. It consists of a recap of Customer Experience Management and converges towards the form, goal and needs of a CXM business solution. From the identified goals the focus shifts towards the identification of valid stakeholders for these goals. More precise, it focuses on the criteria that these stakeholders have towards new business solutions and the elicitation of requirements for a Customer Experience Management solution. The second part discusses the topic of hybris. This particular business solution is reviewed as a part of the SAP portfolio, and is decomposed into individual features to reveal its capabilities as a foundation to analyze the ability to support requirements in a later stage of this research.

4.1 PART 1: Customer Experience Management solution

4.1.1 Introduction

Customer Experience Management is the key concept of this part. It was introduced in the literature review, and will be explored in more detail by additional insights delivered by the Accenture experts on Customer Experience Management strategy and –architecture. After providing a detailed representation of Experience Management from an organization’s perspective, a representation of the concept is provided in the form of a class diagram. Once the concept is completely understood, its goals and more importantly, the goals of a solution that supports an organization with Customer Experience Management are identified and modeled in the form of goal models. All terminology from Accenture experts and literature is mapped and finally forms a concluding feature model with unified terminology that will be used throughout the research. Additionally, to provide context to the solution SAP, Oracle and IBM solutions are discussed in the last paragraph of this part.

4.1.2 Customer Experience Management: an elaboration on the concept

Customer Experience Management focuses on the customer and his perceived experience. According to Expert 1 this starts by carefully choosing what image the organization wants to project. Expert 1 pronounces the importance of a well-chosen image that is relevant and can be fulfilled. This image must be delivered any time a customer engages with the organization: at any time via any channel. This is the notion of omni-channel. The experience must be effortless, seamless but also recognizable and true. A customer receives the same experience and attention every time it engages with the organization. To achieve this, a uniform customer view must be adopted and diffused throughout all departments of the organization in order to project a consistent outer view

IT is able to serve as a helpful enabler and solution for the change and the overall goal of a more customer centered approach. A well functioning IT solution: a Customer Experience Management solution, could be beneficiary as it supports different departments in

streamlining their information exchange, supports the new business processes and overall helps in achieving an uniform view.

Organizations have to address the entire customer journey. This includes multiple touch points and different actions the customer takes: before, during and after the consumption. Expert 1 has confirmed and reinforced the business aspects of Customer Experience Management as depicted by the literature study and the summary in appendix D. From the gathered and combined information an overview of Customer Experience Management from an organization's point of view is represented in the class diagram of Figure 1. This diagram shows how an organization is centered around offering an experience. The organization simultaneously creates the needed work environment and collects the necessary knowledge, in order to create the capabilities that deliver the correct experience to the customer.

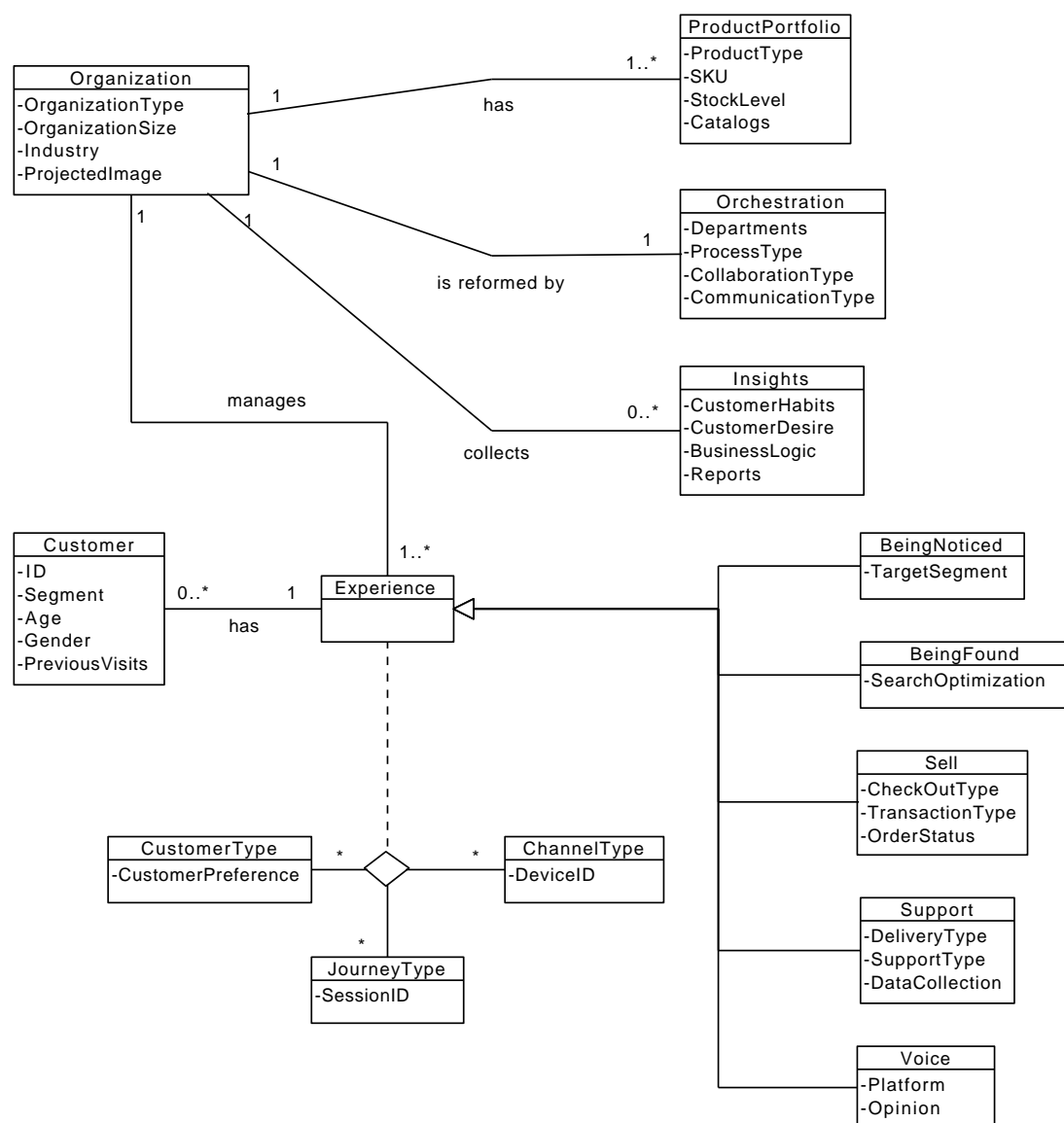


Figure 1: Class diagram of Customer Experience Management

Contrary to Customer Relationship Management, where a similar flow of data can be perceived, Customer Experience Management actively collects insights on the behavior and

attitude of customers. The insights, combined with an organization in which knowledge exchange and collaboration form a nurturing environment, are actively used to create an experience for the customer. Where traditional Customer Relationship Management collects data that links a customer and his attributes to a transaction to identify potential matches and to sell more products, Customer Experience Management leverages data to proactively match a customer and his attributes to an experience to positively influence his attitude. The class diagram demonstrates that a Customer has an experience. It also depicts that the experience depends on the combination of his preferences, his session and his channel and that the contextual experience delivered is a phase in the customer journey.

4.1.3 Customer Experience Management: a solution

Customer Experience Management is a strategy that aims at attracting, serving, and retaining customers. It does so by focusing on the experience of the customer in his journey. By assuring every experience in the journey is relevant and consistent, the customer's attitude is positively influenced. To elaborate on a Customer Experience Management solution, the goals of the strategy must be discovered. Extracted from the interviews, the initial goal is to *Manage the customer journey*, as the customer journey consists of a set of correctly sequenced experiences for an individual customer.

The key goals of Customer Experience Management are for an organization to deliver a consistent and relevant experience at every interaction. To realize this, the first sub goal is to have a set of contextual experiences. A contextual experience is an interaction that is appropriate to a given context. The context is defined by the customer, his characteristics and by the phase of the customer journey. To project a chosen image and guarantee quality, the organization must aim for the second sub goal of aligned departments and a unified view of the customer. This achieves that all departments deliver the same experience to the customer. A contextual experience is only relevant when delivered at the right point in the customer journey. Therefore, the final sub goal is to collect insights to form business logic to deliver the right content at the right time. Figure 2 represents the initial goal, sub goals and their interrelations.

The goal model of Customer Experience Management discovered the goals to manage the customer journey. To support an organization, a Customer Experience Management solution has to realize these goals. This requires an adapted model from the perspective of a solution as modeled in Figure 3. This model has the initial goal to *support the customer journey*. To support the customer journey, the three sub goals of Figure 2 are identified as key goals. They have, however, been renamed to match the terminology of appendix D. The three sub goals are to *Manage the Conceptual Experiences*, to *Orchestrate the Organization* and to *Provide Insights*. They are the essential capabilities that a solution needs to possess to successfully deploy and effectuate Customer Experience Management for an organization.

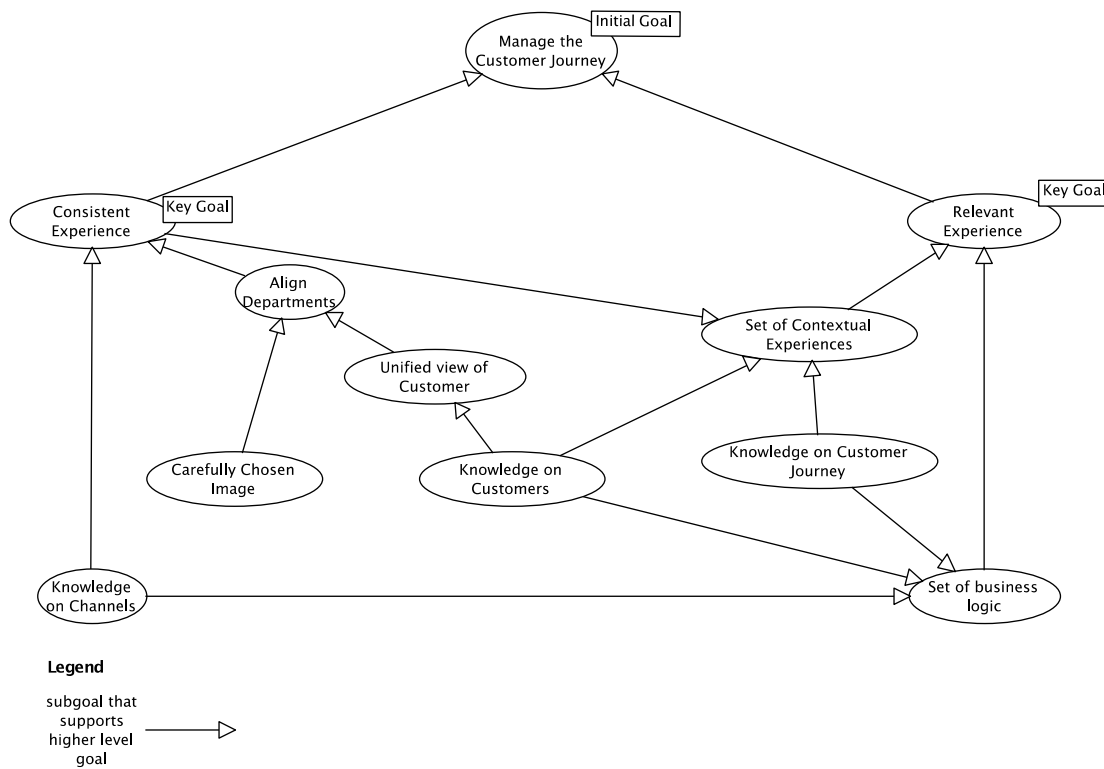


Figure 2: Goal Model of Customer Experience Management

To *Provide Insights*, the customers are analyzed. Expert 2 introduces the need for analytics. It combines knowledge on channels, knowledge on customers, and knowledge on the customer journey to form a solid base of intelligence. Insights are collected, stored and analyzed to form relevant and useful insights and business logic to make correct decisions in the further process. To create an organizational environment that allows Customer Experience Management to flourish, Expert 1 identified the need to project a uniform image of the organization. Expert 2, complements *Orchestrate the Organization* with the business process management and the facilitation of interdepartmental collaboration and exchange of knowledge. The first two goals are a foundation for success of the third goal. This third goal is an umbrella that includes the activities that manage the actual journey. *Manage the Contextual Experience* according to Expert 2 includes the goals to create the experience, and to engage with the customer. As shown in Figure 3, the first has sub goals to create and design experiences. The latter has sub goals to apply business logic, to manage channels and to deploy a contextual experience. The last goal is to execute the experience. It aims at managing all contextual experiences in the customer journey.

4.1.4 Customer Experience Management: placement and competition overview

This research aims to support the decision to further investigate hybris as a Customer Experience Management solution. Although the detailed investigation of alternative solutions is out of scope, a brief introduction is given into the competitors of hybris. Three large players in the business solution market: SAP, Oracle and IBM are discussed. The introduction into SAP deserves special attention, as hybris is part of the SAP offering. Therefore, SAP's latest CRM offering is discussed. Both Oracle and IBM have solutions that converge towards Experience Management, therefore Oracle CX and IBM Customer Experience Suite are discussed.

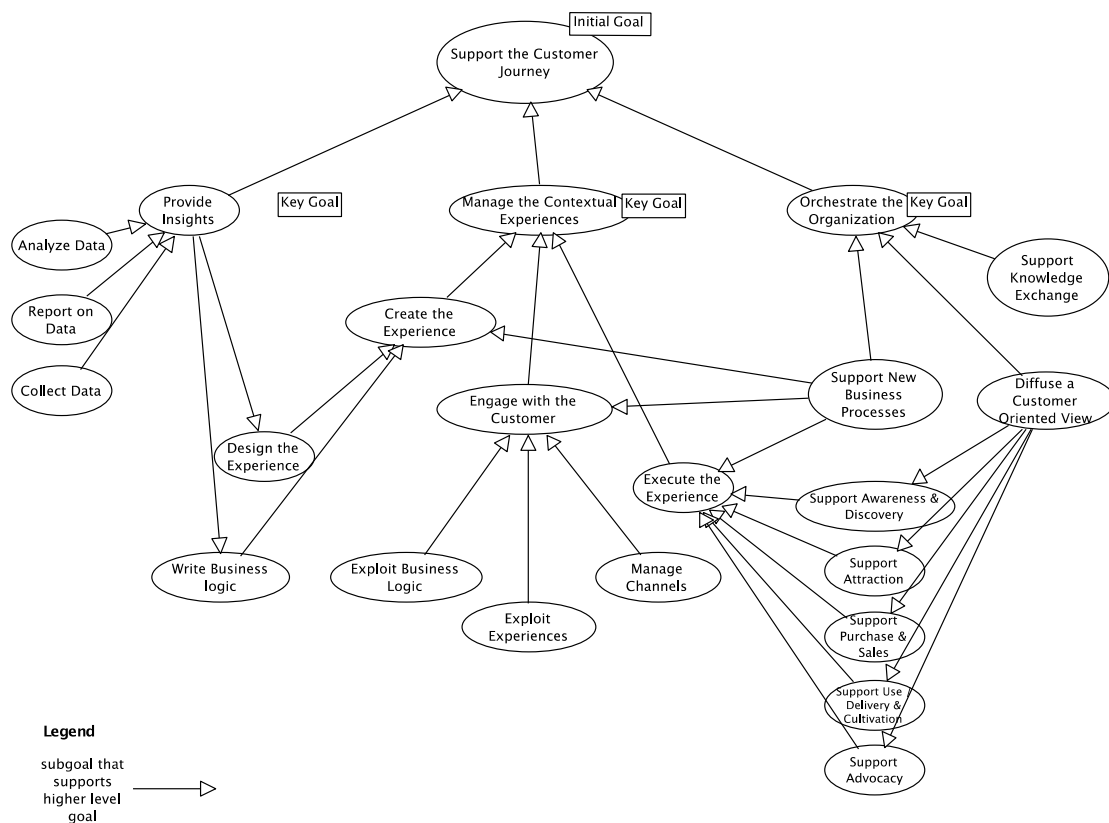


Figure 3: Goal model of a Customer Experience Management solution

SAP CRM

SAP's Customer Relationship Management Module consists of several subparts. The largest three are CRM Marketing, CRM Sales and CRM Service. SAP CRM provides customer-facing departments with tools that collect and display customer information to obtain a 360-customer view. According to Expert 3, SAP has developed its functionalities in-house, which guarantees interoperability and integration with SAP ECC, the ERP. An organization that adopts CRM can choose any combination of solutions required for its customer management from the SAP CRM offering. The offering of SAP is moving towards cloud solutions. Cloud for Customer (C4C) is a cloud solution for the Sales and Service parts of CRM. These new modules come in an on-demand and pay-per-use form. According to Expert 3, this implies less flexibility in terms of modification. Organizations, however, seem to be willing to change their business processes as the standard and supported SAP business processes are optimized and more simple. This makes the system implementations less complex and lowers implementation time and costs. Expert 3 pronounces that business is leading for IT solutions, but adapting and adopting the business processes that Cloud CRM solutions support within the modification boundaries imply simpler business processes within an organization. This allows an organization to optimize its processes and benefit from best practices business processes that lead to lower cost.

Oracle CX

Oracle offers Oracle CX: Customer Experience solutions. Expert 5 describes the offering as an umbrella under which Oracle has collected and assembled a number of customer management solutions. Contrary to SAP CRM, Oracle has not developed its applications in-

house. The main strategy is one in which Oracle acquires solutions to complement its total offer and to merge these applications under the larger umbrella. Oracle CX is comprised of application like Customer Relationship Management, e-commerce and social media.

CX, according to Expert 5, thus is a total solution for the customer experience. An adopting organization chooses the appropriate applications from the total portfolio of applications and solutions. The concept is the customer experience, and to manage any facet of it. This is realized with any combination of application that is right for an organization, depending on its wishes and requirements.

IBM Customer Experience Suite

IBM offers several solutions that comprise the customer experience management theme. The Customer Experience Suite offers solutions that help to manage and optimize the experience a customer has during his customer journey. IBM offers the means that address the following five topics for adopting organizations. (IBM, 2010)

IBM addresses the customer experience more directly than the competition. The Experience Suite unveils five areas on which IBM focuses. It allows users to create, target, socialize, integrate and optimize. (IBM, 2010) Create – offers design tools for the creation of graphical content as pictures, text and websites. It manages the created content and offers the means to deliver the content across channels. Target – allows organizations to create campaigns with dynamic content and offers that are based on individual user actions and preference. Socialize –helps to be better reachable via different channels. It supports engagement and interaction with organization to empower customers to share ideas and opinions. Integrate – facilitates the reuse of assets for different channels. Mobile, websites, third party websites, social, kiosks and email are included and are linked to back-office applications. Optimize –provides experience management software analytics that are used to refine the experience. In addition, data on multichannel buying behavior and social media content creates a view of the journey. It empowers an organization to deliver a personalized, relevant and seamless experience across channels. (Cappemini, 2014)

4.1.5 Introduction into stakeholders

The previous paragraphs have focused on Customer Experience Management and a Customer Experience Management solution. Now that the goals for a solution have been identified in Figure 3 this paragraph discusses the stakeholders that are involved and have valid interests in that solution. The stakeholder roles are collected and gathered from expert interviews. Identifying stakeholders is a preparation for the elicitation of their requirements in the next paragraph. Stakeholders with a valid interest are identified and categorized according to their relative relation with the solution. This is modeled with an onion model. Such a model has three layers that represent the relation a stakeholder role has with the Customer Experience Management solution. First the stakeholders are identified and their functional role is elaborated upon. A second onion model depicts the relationships between the different stakeholders in the model.

4.1.6 Onion Model

The onion model in Figure 4 shows the stakeholders identified in a typical system. They revolve around the Customer Experience Management solution. These are the stakeholder roles that exist in a typical organization that adopts a Customer Experience Management solution. Within an organization, different stakeholders are affected by the decision for a solution. The stakeholders surrounding a Customer Experience Management solution can be categorized in three groups. Those that come in direct contact with the solution are those who use and experience it. This is 'The System'. The second group is the one containing those who have to keep the solution functioning, decide on its capabilities and on its initial purchase. This group is called the 'Containing System'. The last group is the group that stands furthest away from the solution. This group is the 'Wider Environment' and represents sponsors, politics and regulators. They do not necessarily come in contact with the solution but have an interest in the effect the tool may cause. (Alexander et al, 2009) The stakeholder roles presented in Figure 4 are discussed below.

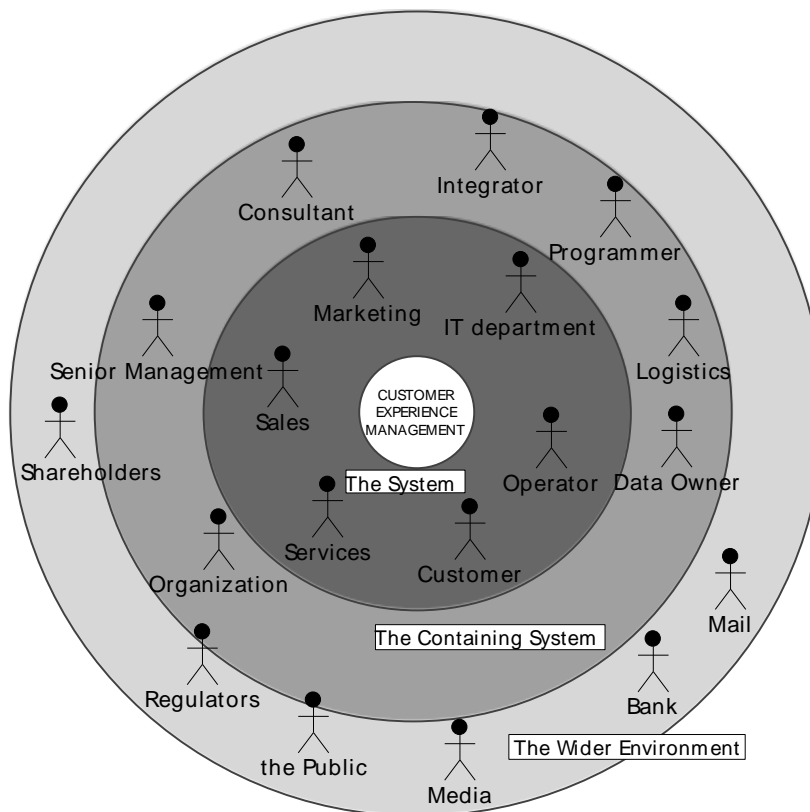


Figure 4: Onion model of a typical organization that adopts a CXM business solution

The System

Customer

In Customer Experience Management, the organization revolves around the customer and his journey. The customer passively provides insights to the organization by engaging with the organization. There is also a form of active participation, by answering questions to the organization. A customer's goal is to pass all phases of the customer journey. The customer prefers a scenario in which his journey satisfies his wishes, and one in which he is supported in every phase. –Expert 1 and 3

Operator

An operator controls the Customer Experience Management solution. He is not the only stakeholder who is able to control the system, but is a role that arises when use of the solution cannot directly be related to one department. Mostly, this role arises from supporting tasks like retrieving or extracting information. The operator prefers an environment that is easy to manage, and preferably supports all the functions required by parties. – Expert 3

IT Department

The IT department is responsible for the maintenance of the software solution. The IT department should be familiar with the tool, and preferably the tool should be easy to adapt and to fix. In addition, efforts and costs to keep the system running should be as low as possible. – Expert 2

Marketing

Marketing is a department within the organization that targets customers. Their activities include to start and effectuate a campaign, to segment the market and to start loyalty programs. Marketing, as a user, prefers a solution that supports the features it requires in an unambiguous way. – Expert 3

Sales

Sales is a department within the organization that is responsible for sales. Their activities include to sell a product, to adapt contracts, to be able to make quotes and to have insights in accounts and contacts. Preferably, when a customer engages with them, they are fully aware of the customer and his history. A solution that supports these features in an unambiguous way is preferred. – Expert 3

Service

Service is the department within the organization that is responsible for resolving issues and providing service. Their activities require access to the client base, client history, service contracts and knowledge on the installed base. Moreover, a personalized experience all over the journey can be regarded a Service-goal. A solution that supports these requirements in an unambiguous way is preferred. – Expert 3

The containing system

Senior Management

The stakeholder role of senior management is fulfilled by the leaders of the organization. For a successful Customer Experience Management strategy, they must support the change within the organization. Individual departments with individual needs might otherwise prefer to aim for their individual needs, while Customer Experience Management requires a customer-centered organization. Leadership and support are required. – Expert 1

Shareholders

The shareholders of an organization are the owners of assets. Influential shareholders own significant parts of the organization and they require justification for decisions. Moreover, any shareholder's needs to be satisfied. Most likely this is achieved by assuring sufficient dividend. – Expert 1 and 3

Organization

The organization is the functioning system of a firm. It consists of different departments and is run by senior management. A customer has the notion of interacting with an organization. It is therefore the organization that must project an image. Within the organization, the departments must be aligned to realize a customer centric view. – Expert 1

Consultant

A consultant is the stakeholder that supports an organization in the decision for a solution. The organization is his client. His tasks are to analyze the business processes to decide upon the best solution. According to the goal, characteristics and possibilities a best solution is presented. To deliver the best support, the consultant must be familiar with the solutions and understand the organization – Expert 3 and 5

Integrator

An integrator can also be a consultant. The integrator installs the actual solution. The installation might include the customization of specific features and solutions. The training of personnel might also be part of the tasks. His goal is to deliver a solution that functions. – Expert 3 and 5

Programmer

The programmer creates and adapts existing software to personalized and context-appropriate solutions. He writes code to customize the of-the-shelf solution to, for example, be able to process uncommon industry specific standards. – Expert 3

Logistics

The logistics role is included as, for several crucial aspects of Customer Experience Management, real time information is needed. This includes information on prices, stock levels and whereabouts of products. Logistics, as a department of the organization needs to cooperate and deliver the needed information. – Expert 3

CRM Data Owner

The CRM Data Owner is the party (person or solution) that collects and has access to data stored in CRM solutions. For several crucial aspects of Customer Experience Management, information on customers, customer history and more customer related data is beneficial. The Customer Experience Management solution requires access to CRM data and preferably supports to adjust it real time when a change occurs. –Expert 2

The wider environment

Regulators

Regulators are stakeholders that decide on legislation that an organization must meet. Regulators, for example, might restrain the use of customer data and limit the possibilities of use, gathering and storing of privacy sensitive data.

The Public

The public is a group of stakeholders that individually are not that powerful, but as a collective can act as a very influential role. For example, regarding privacy issues or the service level. They influence individual customers and regulators. The public may be both positive or negative and is a group that must be monitored carefully.

Media

Similar to the public, the media (including social media) provides the means to the public to share and voice an opinion with a large reach. The consequences of one opinion are far greater than without this empowerment. This group must be monitored carefully.

Bank

The bank fulfills the role of a third party in a transaction between the organization and the customer. This stakeholder must be willing to cooperate and provide instant insight in transactions.

Mail

The mail fulfills the role of a third party in a transaction between the organization and the customer. This stakeholder, similarly to the bank, must be willing to cooperate and provide instant insight in mailings.

4.1.7 Stakeholder relations

In the adapted model in Figure 5 the stakeholders are again represented, but now their relations are included. These relations represent the influences different stakeholder groups have on other groups. This provides insight in who is responsible and who has power over others in the decision and adoption of a Customer Experience Management solution. As displayed in the model, four central stakeholder groups can be identified that have a diverging or converging role. These groups are the Organization, Senior Management, the Operator and the Customer. These roles are elaborated upon below.

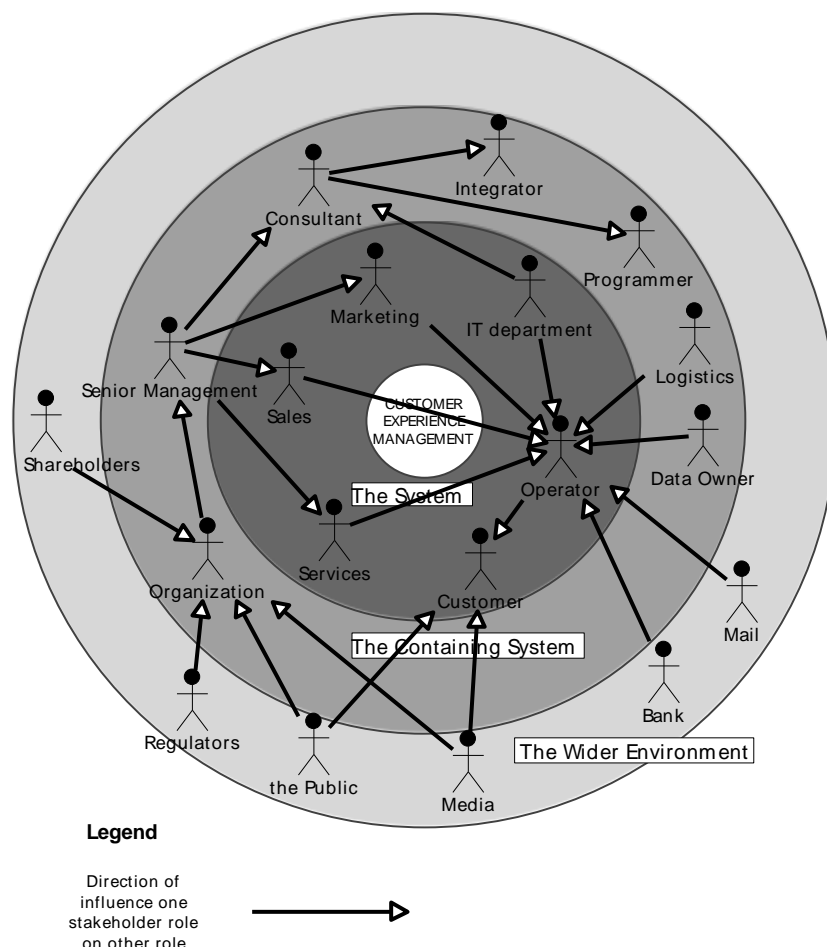


Figure 5: Stakeholder relations

The organization

The organization is affected by the regulations and opinions of the outer world. Regulators, the public, the media and the shareholders all influence the actions of an organization. It limits or forces an organization into actions to satisfy these oppressing stakeholders. To take a proactive role, the organization must remain aware and carefully monitor the stakeholders in order to keep them satisfied.

Senior Management

The executive force of the organization is the Senior Management. This stakeholder group is affected by the organization, as the organization transfers the influence of the outer world. The Senior Management leads the organization as they set a course for the entire organization and manage the departments that form the organization. It also decides upon major affairs as budget and procurement. They form the leading role of an organization and manage it.

The operator

The operator controls the experience. Although individual departments can use the solution, for clarity, the operator is the entity that actually controls the solutions. The operator operates in line with commands from any department to control the tool and to engage with the customer. He requires support from the supporting activities to input into the solution. He operates the solution and thus manages the customer experience by combining all knowledge on the customer and supporting all customer activities.

The Customer

The customer depicts the individual stakeholder that engages with the organization. He is the stakeholders that has an experience and whose journey is managed. He is thus influenced by the journey he receives from the organization. An entire Customer Experience Management strategy revolves around satisfying this individual stakeholder. The customer is also influenced by the opinion of other customers via the public and the media that might affect him not to engage with the organization.

4.1.8 Stakeholder criteria

Before an organization acquires a solution, it has to decide on what the business solution must deliver. Especially, in the case of “off the shelf software” product lines, the most appropriate solution must be chosen. Off the shelf implies that the software is not tailor made for an organization. The organization obtains a standard package that can be customized and adapted. The organization requires the solution to satisfy certain criteria. Preferably, however, the solution satisfies the criteria as good as possible with as little customization and adaptation. To identify the performance (Neely et al, 2002), the solution’s ability to satisfy criteria must be evaluated.

This paragraph continues with the identified stakeholders from the previous paragraph and identifies the criteria each stakeholder has. These identified criteria can be translated into functional requirements. The criteria of stakeholders can be elicited by describing the scenarios in which they use the solution. This is done with use cases. The goals of each scenario are extracted from Figure 3. A total of five use cases on the strategic level, and an additional seven use cases on the use case level depict scenarios in which these goals are achieved.

The goal of each scenario is to achieve a sub goal of Figure 3. This reveals the functional requirements that a stakeholder has for the solution in that scenario. When all sub goals are covered, all stakeholders and their interactions with the solution cover a range of possible functional requirements for a Customer Experience Management solution. The functional goals found in Figure 3 are 'Provide Insights' and 'Orchestrate the Organization'. Furthermore, to model the functional goal 'Manage the Contextual Experiences', more detailed use cases are introduced based on the corresponding sub goals. These are 'Create the Experience', 'Engage with the Customer' and 'Execute the Experience'. This allows to distinguish between designing an experience, delivering an experience, and the different steps of the customer journey. Table 2 below represents the goals of each scenario related to its goal in figure 3 and more characteristics.

Scenario / Use Case	Goal in Figure 3	Goal of scenario	Use Case level	
1	Support the Customer journey	Support Customer Experience Management		
2	Provide insights	Provide insights	B2C & B2B	Strategic
3	Orchestrate the organization	Orchestrate the organization	B2C & B2B	Strategic
4	Create the experience	Create the experiences	B2C & B2B	Strategic
5	Engage with the customer	Engage with the customer	B2C & B2B	Strategic
6	Execute the experience	Execute the experience	B2C & B2B	Strategic
7.1	Support awareness & discovery	Being noticed	B2C & B2B	Use case
7.2	Support attraction	Being found	B2C & B2B	Use case
7.3	Support purchase & sales	Sell a product	B2C	Use case
7.4	Support use/delivery & cultivation	Providing support	B2C	Use case
7.5	Support advocacy	Giving the customer a voice	B2C & B2B	Use case
8.1	Support purchase & sales	Sell a product	B2B	Use case
8.2	Support use/delivery & cultivation	Providing support	B2B	Use case

Table 2: Overview of Use case characteristics

4.1.9 Scenarios

According to Cockburn (2001), a use case documents a scenario with a functional goal. The functional goals have been introduced in the previous paragraph. Each scenario follows the same procedure. The primary stakeholders roles involved are introduced, followed by the normal scenario or procedure to achieve the functional goal. The scenario is described in steps. The steps must be triggered by a precondition and finished by a guarantee, thus something starts the scenario, and something is achieved when the scenario is finished. The stakeholders involved are graphically modeled and linked to the steps in which they have an interest. The stakeholders and their requirement are documented, as are additional

stakeholders that have an interest, but not in a specific step. This reveals the functional requirements per functional goal and per stakeholder group.

The first use case presented is an overview of a Customer Experience Management solution as a system. It is merely a graphical UML representation in which all following use cases are represented. This use case is found in Figure 6. The following use cases, use case 2 up to 6 are fully dressed, black box, system use cases at the strategic level for the elicitation of system requirements. These models are accompanied by a graphical UML use case representation. The use cases aim at giving a higher level representation of the requirements that the stakeholders of the system have. The use cases are bundled in Appendix E: each use case is numbered and named. The fully dressed cases supersede the graphical representation. Use case 7.1 and further are also fully dressed, black box, system use cases but are at the use goal level. This lower level represents more specific requirements that follow from more specific but highly relevant scenarios. Where the strategic level use cases represent supporting systems for a Customer Experience Management solution, the use goal level scenarios represent the actual execution of the different stages of Customer Experience Management: the phases of the customer journey. Use case 7.1 up to 7.5 elaborate on Business to Consumer scenarios, and 8.1 and 8.2 elaborate on the Business to Business equivalent if they differ from their B2C equivalent. These use cases only have a fully dressed use case representation that can also be found in Appendix E.

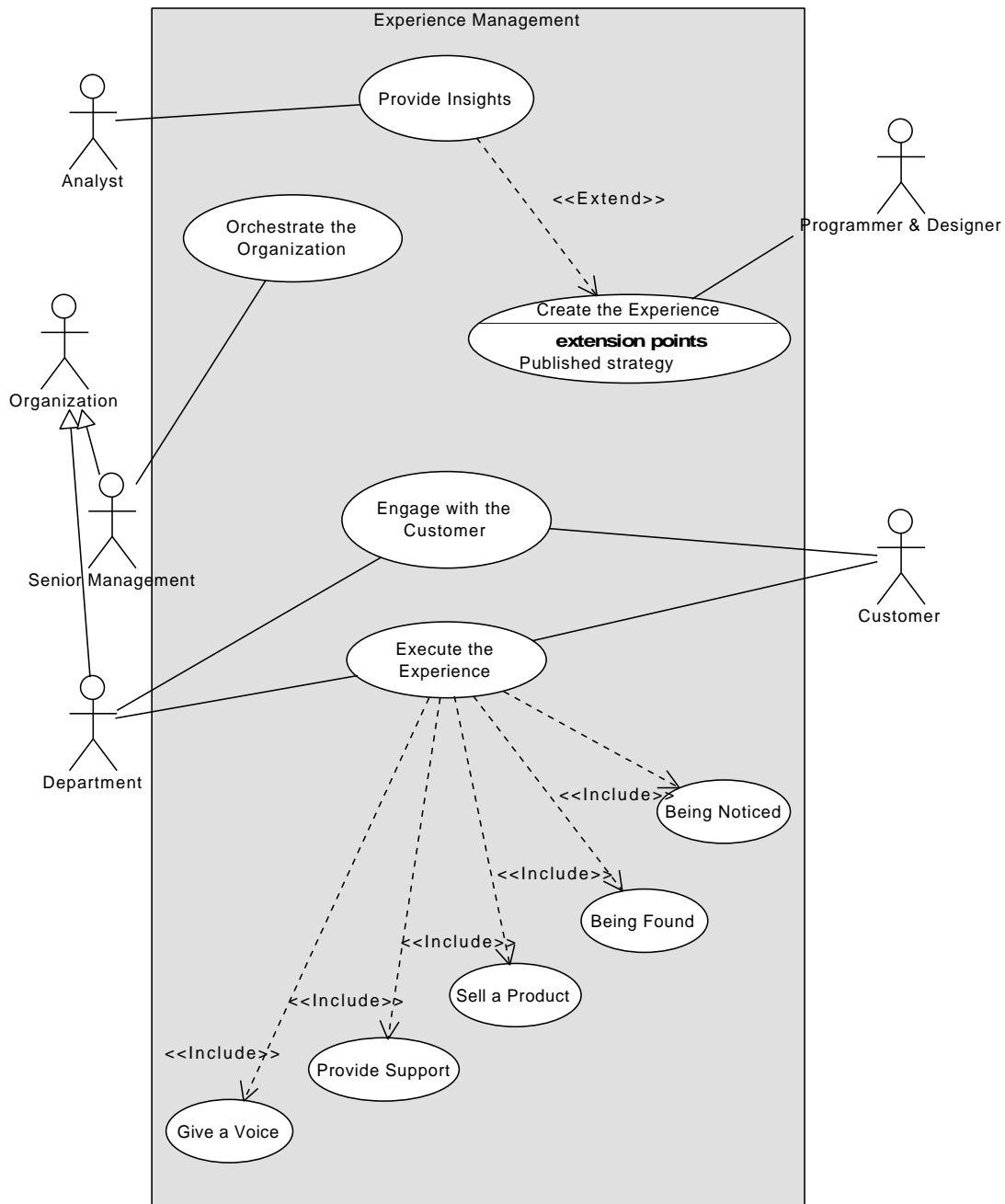


Figure 6: Use case: Customer Experience Management

4.1.10 Requirements

The use cases of the previous chapters have revealed requirements. These requirements are collected and documented in Table 3. The table is categorized according to the five strategic scenario goals : Use case 2 up to 6. These represent the five aspects of Customer Experience Management. The five aspects are: 1. requirements for insights, 2. requirements for orchestration, 3. requirements to design the experience, 4. requirements to deliver the experience and finally 5. requirements for the execution of the experience itself. Appendix F shows an explanation of each requirement. To the second category, three requirements that follow from expert 1 have been added as requirement I, II and III.

Support: Insights	Support: Orchestration	Designing the experience	Delivering the experience	The experience
1. Access to internal data	11. Access to customer database	17. Design function	26. Customer data: attributes	33. Catalogs
2. Access to external data	12. Change / adapt data	18. Write code: design website	27. Customer data: segments	34. Product information adaptable
3. Support of data formats	13. Collaboration: users	19. Write code: design content	28. Real time segmentation	35. Visibility
4. Exchange of data	14. Collaboration: departments	20. Write code: design for channels	29. Customer recognition	36. Search function internal
5. Exchange of knowledge	15. Communication: users	21. Write code: business logic	30. Customer log in	37. Search function external
6. Analytics	16. Communication: departments	22. Business logic: channel	31. Channel management	38. Check out
7. Report function		23. Business logic: customer	32. Business logic application	39. Stock Check
8. Database of raw data		24. Business logic: customer journey		40. Transaction
9. Database of knowledge		25. Content import		41. Order Management
10. Database of customers				42. Track payment
				43. Track order
				44. Logistics plugin
				45. Contact Customer
	I. Internal process management			46. Business logic: alternative product
	II. External process management			47. Business logic: alternative delivery
	III. Task management			48. Real time availability
				49. Real time alternative
				50. Real time order update
				51. Social platform
				52. Social media monitoring
				53. Social media participation.
				54. Custom catalog
				55. Custom quote
				56. Contract check
				57. Credit check
				58. Self-service support
				59. Self-service – manage orders
				60. Self-service – report on orders

Table 3: Functional requirements elicited from the use case

4.2 PART 2: hybris

4.2.1 Introduction

The previous part of the meta-analysis focused on Customer Experience Management and stakeholder requirements. This part focuses on a single Customer Experience Management solution: hybris. Again, expert interviews have been performed to identify and elaborate on this topic. First, hybris is described in the context of its goals and product within a larger product line of SAP. After that, the hybris Commerce Suite: the tool itself, is described in detail. The most prominent and influential features are discussed. This is summarized and modeled in a hybris feature model.

4.2.2 hybris: the concept

Within the SAP business suite, a commerce module existed that allowed users to create an online market place. This solution was the in-house developed Web Content Experience Manager. This solution was discontinued and has been replaced by an externally developed solution. Developed by an independent stock listed organization, hybris according to Expert 3, 6 and 7 is market leader and will continue being an independent solution that can be integrated with any existing back end system. Not only SAP but also integration with competitor systems as Oracle's and IBM's ERP systems are supported. Nonetheless, the integration with SAP's ERP will be developed in more detail and will become very narrow in the future. According to Expert 3, hybris' goal is to be the portal to the customer. Hybris is where the customer facing departments that use CRM, actually reach out to connect and engage with the client. This includes commerce and e-commerce like WCEM, but embodies the entire client interface within the SAP CRM module.

A bigger picture of how hybris will function for SAP in the future is given in Figure 7. As Expert 3 has identified, Expert 6 clarifies how SAP will allow an organization to manage its customer engagement and commerce activities with hybris. The Sales, Marketing and Service applications remain in SAP CRM. These silos are of importance as they function as a back-end and are still the module where activities are processed. In addition, the data that is collected in these silos provide both the commerce and engagement part with intelligence on customers. Hybris will function as a platform for all engagement that arises from any of these silos, via any channel for any purpose, to be effectuated in a consistent and relevant fashion. Hybris realizes a vision in which the customer that engages with an organization receives a uniform and consistent experience.

The silos can interact with the back end ERP system. This system connects the different organizational functions and supports the integration of information across business functions. (Famuyide, 2013). In an SAP only situation, SAP ECC is the ERP system that provides knowledge on stock levels, costs, availability and more. Hybris, CRM and ERP in turn have to reside on actual hardware. This infrastructure is currently likely to be on-premise, but as SAP CRM and Cloud ERP solutions arise, the infrastructure can migrate to off site locations. (Lenart, 2011; Saeed et al, 2012) The graphical representation of the future layout of the client engagement as intended by SAP, according to Expert 6, is shown in Figure 7. The parts that are fulfilled by hybris are highlighted in blue. SAP CRM, SAP ERP and the infrastructure are highlighted respectively in yellow, red and green.

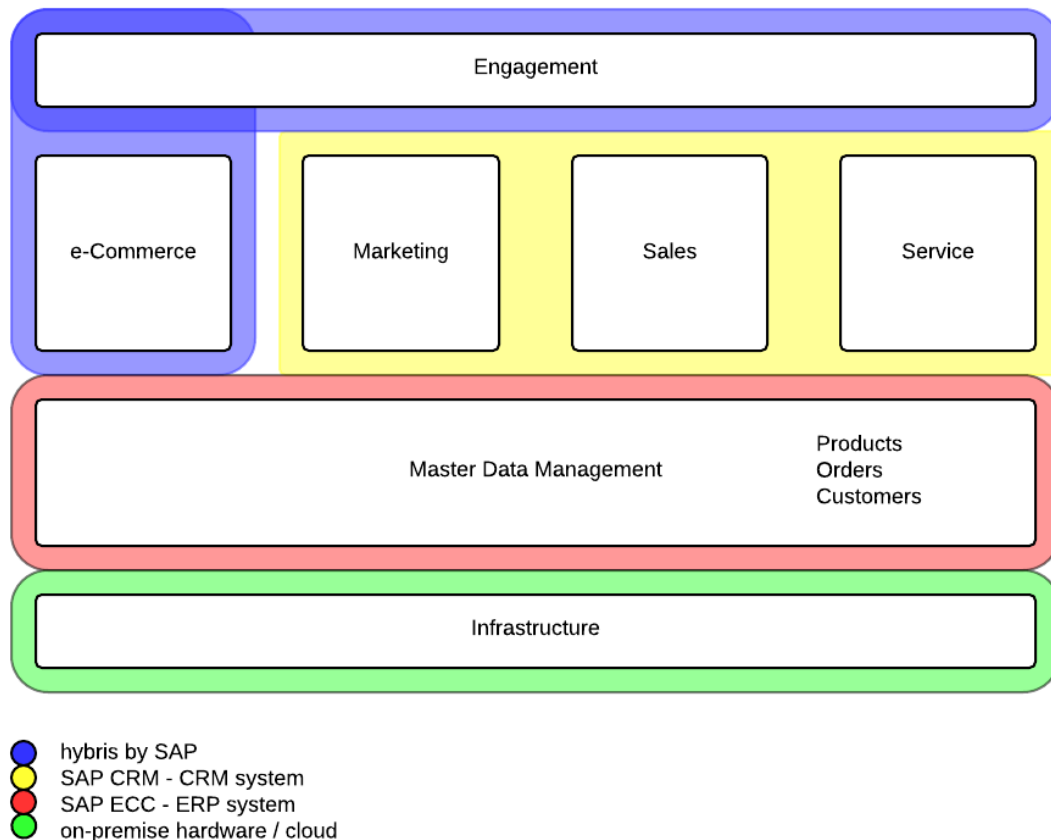


Figure 7: future lay out of customer engagement as planned by SAP

4.2.3 the hybris Commerce Suite: the features

Hybris is the organization that offers the hybris Commerce Suite. Expert 7 explains that hybris is a solution with a foundation based on excellent product management. Currently, the latest version of the hybris Commerce Suite is version 5.4.0.0 that has been released on The 5th of December of 2014. The Commerce Suite is divided into individual packages or areas. These areas consist of bundles of assembled functionalities that have a focus on a specific part of business functionality. The different areas are Platform, Content, Commerce, Channel and Orders. Expert 7 explains that the Platform is the core architecture on which all other packages run.

Each area, that focuses on a specific business functionality, is comprised of different extensions. A hybris Commerce Suite installation consists of the hybris Platform plus any hybris packages. Moreover, it includes any extensions that an organization wishes to implement. Additional hybris software and third-party software can be added to extend functionality. All areas are briefly depicted below. As the variety of features and functionalities is wide, Expert 7 suggested the use of hybris' own knowledge center. This center provides detailed information about the Commerce Suite and all individual features. The most prominent features have been reported in Appendix G. They form the base for the feature model of hybris in Figure 8. The last feature discussed is not an area similar to the other five. It is, however, a part of the hybris Commerce Suite that is of relevance for other features of the Commerce Suite. The hybris-SAP integration is therefore the last feature that is discussed.

Platform

The platform is the hybris program itself. It represents the main functionalities and interface that the organization experiences. The platform functionalities represent how an organization interacts with hybris as a solution, rather than the functionalities of hybris that address the customer. The platform forms the core architecture on which the other packages run. The platform can function independently, but the other areas need the platform to function. Hybris' architecture is a flexible and modular one. This nature allows users and developers to expand the commerce suite's features and functionalities. In technical terms, the commerce suite runs in a Java Virtual Machine. This is located on either a Servlet Container or a J2EE-compliant application server that is connected to an external database. (Janik, 2014)

Content

The content area represents the features that hybris offers to manage data. Structured information, text, web content and more are managed. It offers content management and functions as a central repository for other areas. The functionalities include reporting, task management, digital asset management and importing of data. (Katrynska, 2014a)

Commerce

This area focuses on commerce, and allows managing business logic and processes for these activities. It sets rules for different channels and dictates which content is shown at what occasions. The commerce suite manages multiple sales and communications channels. The benefit is that an organization uses a single platform to manage all channels. Managing a multichannel experience that is global and personalized to customers, suppliers and partners allows an organization to be able to engage, reciprocally, via any desired medium and in a consistent manner. (Kukucz, 2014a)

Channels

The Channel area manages the layout, visualizations and interactions of the different channels that are used and exploited by an organization. It manages in what context a customer experiences the content and commerce. (Bargiela, 2014a) The commerce suite is able to manage multiple channels from a single source of product information, which enables a consistent experience.

Orders

The hybris Commerce Suite allows to manage the selling-buying relationship. An order holds information on products, contacts, payment, promotions, fulfillment status and more. The Order area focuses on all activities related to the handling process, including making new orders, modifying orders and revoking orders. (Cermak, 2014a)

Hybris-SAP integration

Hybris and SAP provide the hybris-SAP Solution integration. This solution integrates hybris and three different SAP solutions: SAP ERP, CAR and CEI. SAP ERP functions as a system of record for master data and order fulfillment: the back end. SAP CAR is a customer activity repository that provides online information to customers in their order history. SAP CEI, finally, is customer engagement intelligence that contains knowledge on which customers to target and how to engage with them. (Paepke, 2014a)

4.2.4 The hybris Commerce Suite: a feature model

From the gathered knowledge on the hybris concept and the description of the Commerce suite, the following feature model is constructed. Figure 8 represents the features and their hierarchical relations.

4.3 Conclusion

In the first part of this chapter, expert interviews have expanded the body of knowledge on Customer Experience Management and have helped identifying goals for a Customer Experience Management strategy and a supporting Customer Experience Management solution. This identification has in turn allowed the documentation of scenarios. These are use cases in which stakeholders achieve these goals. As these use cases describe the steps that stakeholders take to achieve a goal and how they use a Customer Experience Management solution, all possible general requirements stakeholders can have regarding such a solution are extracted. The second part of this chapter focused on hybris, a particular Customer Experience Management solution. Expert interviews revealed how SAP positions hybris within its business solution offering. Moreover, the interviews revealed the software architecture of hybris in terms of features and functionalities. These features have been modeled and documented and depict the capabilities of hybris.

In the following chapter, both the stakeholder requirements and hybris' features are combined to investigate how well hybris, as a Customer Experience Management solution, is able to support the possible requirements stakeholders may have for such a solution. This is the first step in the design of a method that supports the decision to continue the investigation of hybris based on hybris' ability to satisfy the requirements of an organization.

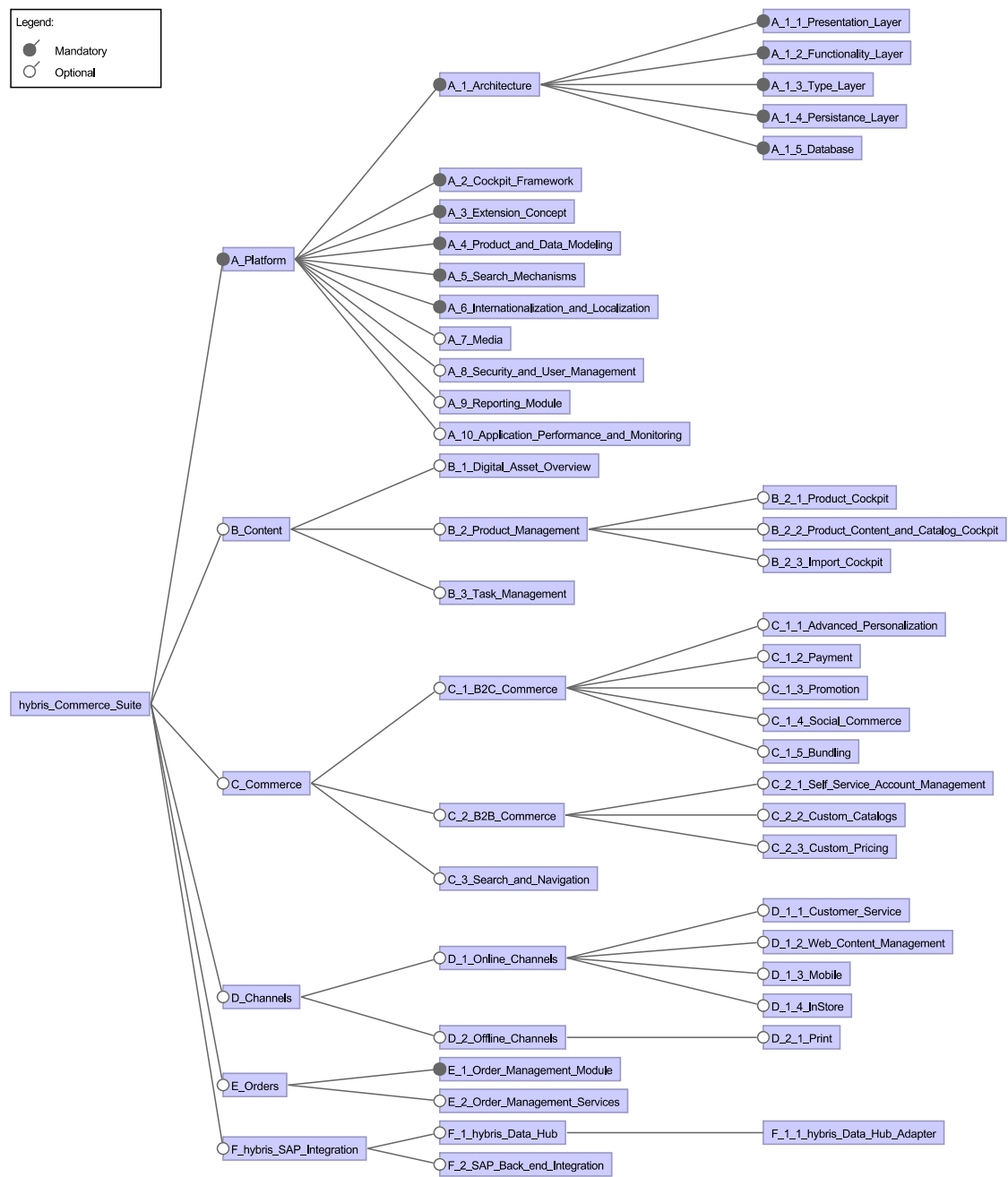


Figure 8: hybris feature model

5 The Organization - hybris fit: A method proposal

5.1 Introduction

The meta-analysis of chapter four has identified, gathered and modeled individual concepts and requirements. This chapter aims at combining the revealed information and models by extracting hybris' capabilities to satisfy the stakeholder criteria into a method that supports Accenture in the decision to further investigate hybris as a suitable Customer Experience Management solution for a client organization, in the light of the criteria of the client's stakeholders.

This chapter consists of two parts. The first part combines the previously obtained insights and delivers Table 4. This table models hybris' capabilities to satisfy the stakeholder criteria. It links the elicited requirements to hybris features and forms the foundation for the proposed method.

The second part describes a sequence of steps that must be executed and provides cues and supporting material to facilitate this execution. These steps form the method that results in support. First, it introduces an approach with a supporting questionnaire to map requirements. This is followed by a procedure to translate this into performance for a specific organization and concludes with a description of the goals and contents for a report. This sequence of steps altogether form a method that supports any Accenture employee to review hybris as a suitable Customer Experience Management solution for a client organization, in a uniform and comprehensible manner.

5.2 hybris' ability to support stakeholder requirements

In this paragraph, the elicited functional requirements, depicted in Table 3, are compared to the features of hybris depicted in Figure 8. For each requirement, support from hybris features is investigated. If hybris supports the requirement, the feature(s) that fulfills that requirement is presented. Additionally a description of the support is given. The paragraph concludes with a table of stakeholder requirements linked to hybris features.

Hybris' features and performance are analyzed for every requirement elicited. This analysis provides insight in whether hybris can support what the stakeholders require. When the relationship between the criteria and hybris' ability to meet them is identified, it can be used to design the method. Hybris either *meets* or *not meets* a criterion. The sum of these binary solutions represents the overall ability of hybris to meet the organization's requirements. It provides insight in aspects of Customer Experience Management where requirements are not met. It is likely that there are situations in which hybris is able to meet a criteria under certain conditions. These contextual situations might arise from the need of supporting functionalities and characteristics of the organization. These conditions are included to provide a broader scope and to support the decision-making process.

Appendix H contains a list of all the requirements that are shown in Table 3. Each requirement is followed by an explanation regarding any found or lacking feature to support that requirement. All sixty-three requirements are discussed in the appendix. The result of this analysis is represented in Table 4. This table represents each requirement with either a hybris

feature that corresponds with the feature from Figure 8 or is not supported by any feature. It is possible that a requirement is supported by a combination of features, therefore the first three columns describe the features that are able to fulfill the requirement. The support column describes a feature that helps in achieving the requirements, but does not completely fulfill the requirement as described. Finally, the alternative column describes an alternative. This alternative is either a feature from a third party solution for which integration possibilities exists, or a feature that achieves the goal from which the requirement originates in an alternative manner.

Requirement	Feature	Support	Alternative
1 Access to internal data	A.1.5		
2 Access to external data	F.2		
3 Support of data formats	B.1 B.2.3 F.2		
4 Exchange of data	Not supported	A.2	
5 Exchange of knowledge	Not supported		Req. 13 & 15
6 Analytics	Not supported	F.2	SAP CEI & Adobe Analytics Integration
7 Report function	A.9	A.2	
8 Database of raw data	A.1.5		
9 Database of knowledge	A.1.5		
10 Database of customers	A.1.5 F.2	A.1.4	
11 Access to customer database	A.1.5 F.2		
12 Change / Adapt data	A.1.5 F.2		
13 Collaboration: users	B.3		
14 Collaboration: departments	B.3		
15 Communication: users	Not supported	B.3	
16 Communication: departments	Not supported	B.3	
17 Design functions	Not supported		
18 Write code: design website	D.1.2		
19 Write code: design content	Not supported	B.2.3 & B.2.2	
20 Write code: design for channels	D.1.2		
21 Write code: business logic	A.1.2		
22 Business logic: channel	D.1		
23 Business logic: customer	C.1.1		
24 Business logic: customer journey	Not supported		C.3 & C.1.1
25 Content import	B.2.3 B.2.2		
Requirement	Feature	Support	Alternative

Requirement	Feature	Support	Alternative
26 Customer data: attributes	A.1.4		
27 Customer data: segments	A.4 C.1.1		
28 Real time segmentation	C.1.1		
29 Customer recognition	Not supported		C.1
30 Customer log in	C.1		
31 Channel management	D.		
32 Business logic application	A.1.2		
33 Catalogs	B.2.2		
34 Product information adaptable	B.2.1	A.4	
35 Visibility	D.1.2		
36 Search function internal	A.5 C.3		
37 Search function external	C.3		
38 Check out	C.1		
39 Stock Check	C.1 F.2		
40 Transaction	C.1.2		
41 Order Management	E.1		
42 Track payment	C.1.2 E.1		
43 Track order	E.1		
44 Logistics plugin	E.1 F.2		
45 Contact Customer	D.1.1		
46 Business logic: alternative product	E.2		
47 Business logic: alternative delivery	E.2		
48 Real time availability	B.2 E.2 F.2		
49 Real time alternative	B.2 E.2 F.2	SAP CEI	
50 Real time order update	E.2		
Requirement	Feature	Support	Alternative

	Requirement	Feature	Support	Alternative
51	Social platform	C.1.4		
52	Social media monitoring	Not supported	C.1.1 & F.2	SAP CRM SOCIAL
53	Social media participation.	Not supported	C.1.1 & F.2	SAP CRM SOCIAL
54	Custom catalog	C.2.2		
55	Custom quote	C.2.3	C.1.5	
56	Contract check	C.2.3		
57	Credit check	C.2		
58	Self-service support	C.2.1		
59	Self-service – manage orders	C.2.1	E.2	
60	Self-service – report on orders	C.2.1		
I	Internal process management	B.3	F.2	
II	External process management	hybris Commerce Suite		
III	Task management	B.3		
	Requirement	Feature	Support	Alternative

Table 4: Elicited requirements linked to supporting features

5.3 Method

The goal of this method is to support Accenture in the decision to further investigate hybris as a suitable Customer Experience Management solution for a client organization, in the light of the criteria of the client's stakeholders. It delivers a sequence of steps that allows any Accenture employee to review hybris in a uniform and comprehensible manner. The method therefore guides in mapping the requirements of a client organization and in the assessment of how well hybris supports these requirements. With this assessment it is possible to conclude with a report that relates the initial fit between hybris' performance and the mapped functional requirements, from which a recommendation to continue or discontinue further investigation can be deducted.

This method presents a sequence of steps that allow for a uniform and consistent review of hybris' capabilities against a client organization's stakeholder's requirements. This enables any Accenture employee to use this method and to deliver comparable and usable output that supports the decision to further investigate hybris. Furthermore, this method originates from strict Customer Experience Management requirements. The focus is therefore different than that of solution analyses that originate from Relationship Management or E-commerce. By mapping a client organization's requirements on all aspects of the Customer Experience Management spectrum, it overcomes individual solution analyses boundaries and treats the entire customer journey.

The proposed method consists of several steps that need to be taken and lead up to a final concluding report. There are five initial steps in the method. Together, they collect the relevant information from a client organization and check these against the known capabilities of hybris. This allows for an organization-specific concluding report that can direct Accenture towards the strong and weak areas of hybris performance for that particular client organization. This functions as support for the decision to further investigate hybris as a suitable alternative. The five initial steps are to *Inform the organization*, to *map the requirements*, to *analyze hybris' performance*, to *analyze the preconditions*, and to *deliver the report*. The steps are shown in Figure 9 and discussed in more detail below.

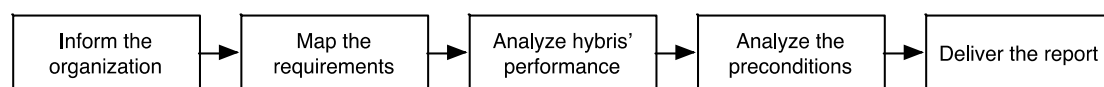


Figure 9: Steps for the method

Inform the organization

The method supports Accenture in the evaluation of (multiple) Customer Experience Management solutions for a client organization. A client organization initiates this process and is therefore likely to have knowledge on Customer Experience Management and corresponding requirements. It is, however, beneficial to educate and inform the client organization about Customer Experience Management. The method creates an environment in which all parties can use and understand similar terminology. As a consequence, this improves the communication and the results of the evaluation.

Map the requirements

Based on the sixty-three requirements that have been elicited in the meta-analysis, requirements from the five aspects of Customer Experience Management can be evaluated for an organization. A client organization is requested to answer whether they have or do not have a requirement. This is facilitated by a questionnaire that is presented in paragraph 5.4. This questionnaire has questions formulated such that they provide binary answers, which is beneficial for the mapping process. For the purpose of consistency and terminology, additional information and a detailed description of each requirement is given in appendix I.

Analyze hybris' performance

The binary answers from the previous step provide input for an analysis. The capabilities of hybris that have been assessed and documented in the meta-analysis provide the features that are needed for each requirement. These have been reported in Table 4. The mapped requirements of an organization are linked to the capabilities of hybris. For each requirement follows a (set of) feature(s) that directly supports the requirement, an additionally required feature, or an alternative if the requirement cannot be fulfilled. This is the first part of data on which the report is founded.

Analyze the preconditions

In the previous step, the mapped requirements have been linked to the capabilities of hybris. The outcome of this step originates from Table 4. This implies that for the requirements that are supported, a feature is returned. This also implies that a requirement can be supported under preconditions. The requirements with preconditions must be reported as they influence the decision on the further investigation of hybris. The decision maker of Accenture and the organization must be aware of the consequences of these preconditions.

Deliver the report

The final step is to draft a report with results. This report is delivered to an Accenture employee responsible for the decision to continue the investigation of hybris, and can additionally be delivered to the client organization. First, the possible requirements are mapped. For each mapped requirement, a link with hybris is given. This link can be positive or negative in terms of support by hybris. The requirements are categorized according to the five aspects of Customer Experience Management, and the report is able to represent how well hybris performs per phase. This represents the initial fit between hybris' performance and the mapped functional requirements: how well does hybris perform in regard to an organization's requirements. This concludes how well hybris performs to the requirements overall and per phase, which supports the decision to continue or discontinue the further investigation of hybris. An elaboration of the goals and contents of the report is given in paragraph 5.6.

5.4 Map the requirements: questions

The questions presented to an organization are whether they perceive the need, and agree with the requirement; i.e. stakeholders of that organization have that specific requirement. Mapping the organization's requirements according to the previously elicited general Customer Experience Management requirements functions as a checklist. A positive answer depicts the situation in which the client organization recognizes the requirement. A negative answer depicts the situation in which the client organization does not recognize the requirement. If the question is answered positively, the following step is to retrieve the

performance of hybris. If hybris supports the requirements, the capability is returned in the form of a feature. The questions are formulated such that they provide binary answers, and that a positive answer implies recognition of that requirement. All questions therefore have a similar form. An example of a question is given below:

1. *“Does your organization require direct access to internal data?”*

If this question is presented to an organization and answered with yes, the analysis of the performance returns the features found in Table 4.

Map Requirement:

If 1 = yes, return Check Feature

Else Stop

Analyze performance

If 1 = supported, return Feature X

Else return consequence 1

In this example, the method returns feature A.1.5, as this is the feature of hybris that supports the requirement for direct access to internal data. The complete list of formulated questions is depicted in appendix I. Appendix H provides additional information and background for each requirement.

5.5 Analyze the preconditions: consequences

The meta-analysis concludes that hybris cannot fulfill every requirement. Some requirements are completely unsupported while others demand support from third party features. These issues are consequences that arise from requirements that are not directly answered by hybris. These consequences must be identified and discussed in the report. All possible consequences are presented in appendix J. Again, an example of a question is given:

2. *“Does your organization require direct access to external data?”*

This requirement is not directly supported by the hybris Commerce Suite and therefore, the method must return consequence 2:

Analyze performance

If 2 = supported, return Feature X

Else return consequence 2

Consequence 2, extracted from Table 4 implies that hybris depends on a third party solution to successfully support that requirement. In this case, the third party solution is either SAP ERP or any other back-end system. Hybris, according to feature F.1 and F.2, communicates with these external databases if they are present. Lack of an SAP ERP back end implies loss of performance.

Such a condition must be reported as it influences the decision to further investigate hybris. The decision maker of Accenture and the organization must be aware of the consequences of these preconditions. The preconditions and consequences are therefore an essential part of the report. A complete and more detailed list of the consequences is presented in appendix J.

5.6 Deliver the report: contents

The contents of a report that can be delivered to the decision maker of Accenture and the organization are a brief representation of the performance of hybris according to the requirements of the client organization. The capability of hybris to successfully support mapped requirements is identified.

As each requirement originates from a specific use case scenario. Grouping of requirements can be done accordingly, with the five aspects of Customer Experience Management found in Table 3. The aspects are Insights, Orchestration, Designing the experience, Delivering the experience, and The experience itself. The report will focus rather on performance per aspect than overall performance and performance per individual requirement.

This method thus identifies attention points for Accenture and a client organization when investigating hybris. An organization is informed on the performance on five different aspects. Additionally, more specified consequences are provided regarding lacking performance that follows from the organization's specific requirements. This allows decision makers to gain insight in the performance of hybris in their specific organizational situation and pinpoints areas that need further attention.

5.7 Conclusion

This chapter has translated the findings from the meta-analysis into a usable sequence of steps that form the proposed method. This method helps Accenture decision makers and client organizations to understand the concepts and terminology that are introduced in the decision making process of a Customer Experience Management. The method evaluates hybris' performance against the identified requirements, which identifies performance and preconditions per aspect of Customer Experience Management. The overview of performance per area and per requirements enables the evaluation of the impact of specific requirements on the appropriateness of hybris as an alternative. Finally, this method overall introduces a common terminology for Accenture and the client organization, Business and IT, and engineers and managers in further conversation about hybris, Customer Experience Management and Customer Experience Management solutions. The next chapter presents a validation for the designed method. In a case study, the method, is executed on an organization and compared to the expert opinion on that organization's performance.

6 Validation

6.1 Introduction

A method has been proposed in chapter 5. This method is based on data and models extracted and created in the meta-analysis of this research. The method is thus both based on theoretical data and practical experts insights, but does not necessarily function correctly in a real world situation. This validation chapter aims at providing insights in how well the method performs in the real world. To do so, firstly the goals of this validation are described. This is followed by a methodology on how this method was tested against the reality. This methodology eventually leads to the actual validation that results in insights about the how well the results of the method are in line with reality and give a truthful prediction of the hybris-organization fit.

6.2 Goal

The method proposed in chapter 5 delivers a report that depicts how well hybris supports certain requirements an organization has. It supports the decision to further investigate hybris as a suitable Customer Experience Management solution for a client organization. The method itself, now, must be evaluated on the extent to which it correctly represents the reality. The goal of this validation is to investigate if the method is able to correctly predict the hybris-organization fit. It therefore must investigate if the method is able to correctly predict hybris' ability to support the requirements, and it must investigate whether mapping the elicited requirements sufficiently covers critical Customer Experience Management requirements.

This provides information on the internal processes of the method and its outcome. It informs Accenture decision makers and client organizations on the likeliness of a faulty outcome. A faulty outcome might be the conclusion to not continue to evaluate hybris while in reality a potential fit existed, or being a conclusion that hybris is evaluated while the method could have predicted that further investigation should be stopped. Moreover, the method should correctly predict that the requirements an organization has are supported by hybris, or correctly predict that the requirements an organization has are not supported by hybris. The faults that might occur are thus that the method predicts that the requirements are supported while they are not supported, a type I error. Or that the method predicts that the requirements are not supported while they are supported, a type II error.

Overall, the goal is to predict whether a hybris feature is able to support a requirement. The assumption is that by supporting the whole set of functional requirements, hybris could be a suitable Customer Experience Management solution for an organization. A wrongful outcome therefore not only depends on a correct relation of requirements and support, but also on a correct relation between the whole set of requirements and being a suitable solution. If the requirements elicited do not relate to hybris being a suitable alternative for an organization, wrongful assumptions could have been made in earlier stages of the development of the method. As the method is founded on these relations, they might not correctly predict hybris performance. This implies that hybris is, or is not a suitable alternative for an organization but the requirements retrieved and used in the method are not the right predictors.

6.3 Methodology

To perform the validation, the proposed method must be compared to the real world. From Accenture's projects where the hybris Commerce Suite has been implemented, client company X is investigated. No project in which a deployment could be followed from initialization up until an up and running system is available. Although such a validation would be beneficial, the validation was performed post-deployment. Expert 7, the hybris architecture expert, was asked to gather a team of Accenture –hybris- experts familiar with company X. Expert 7 has provided input for part 2 of the meta-analysis. The questions in this validation were therefore constructed such that the input of the experts regarded the objective performance of hybris and that no preliminary conclusions from this report were revealed that could influence this session. This ensured the prevention of biased results. In the chosen post-deployment validation scenario, the group of Accenture –hybris- experts was asked to provide input. The validation assessed a single case where Accenture had implemented the hybris Commerce suite in an organization. To validate the proposed method, first the method was executed and second the real world performance was investigated. This, subsequently, allowed to compare both outcomes and validate the method. The methodology for the validation is described in more detail below and represented in Figure 10.

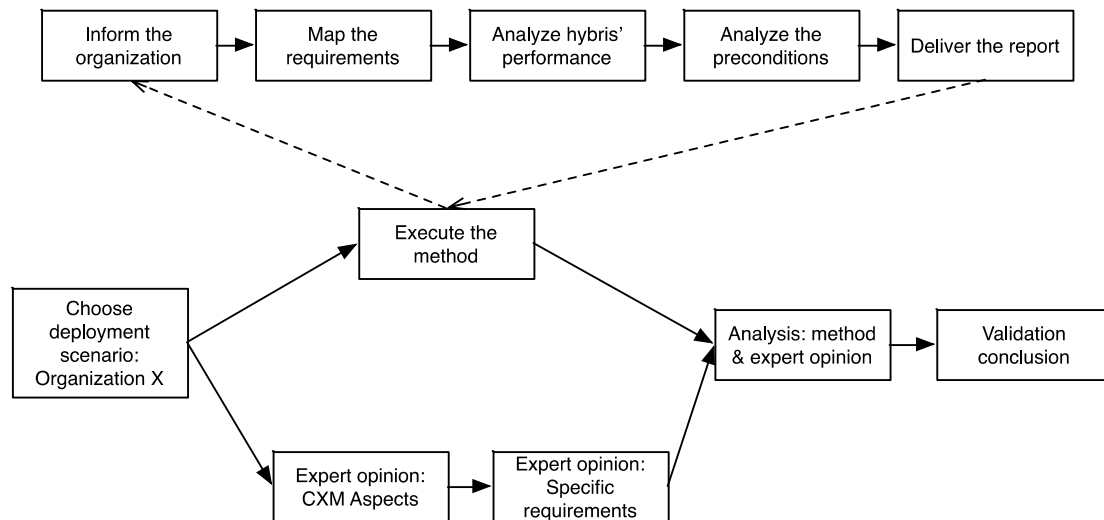


Figure 10: Methodology for the validation

Execute the method

In the first part, the proposed method is executed. This implies that the sequence of steps presented in the method is executed. The group of Accenture experts was informed and to the best of their knowledge, they provided binary responses to the sixty-three requirements. This permitted the analysis of hybris' performance and the analysis of preconditions in the case of company X. This part was concluded with a report as described in chapter 5, in which the performance of hybris per aspect of Customer Experience Management was presented to support the decision.

Expert opinion

In the second part, the group of Accenture experts was asked to evaluate the performance of hybris for the chosen deployment scenario. Within the five aspects, the experts were asked to evaluate whether hybris fulfills the needs of company X. Subsequently, deeper insights on

specific requirements within aspects was obtained. If an aspect was not sufficiently supported according to the experts, the requirements that were not fulfilled could be identified.

Analysis

With both an executed method and the opinion of Accenture experts on the same real case of the implementation of hybris, an analysis was performed to compare the outcomes. Common and different conclusions on the performance of hybris were identified and a comparison of a real world situation with the method was made.

Validation Conclusion

Based on the analysis of hybris in Company X, conclusions can be drawn on the subjects introduced in paragraph 6.1. These include faulty outcomes as Type 1 and Type 2 errors, but also the inclusion of wrongful assumptions in earlier stages of the report that lead to incorrect outcomes.

6.4 Validation

The validation was performed according to the methodology. The first part revealed how well hybris would support the organization's requirements according to the method, the second part revealed the performance per aspect as described by the experts' opinion.

Method

The first part of the validation session focused on the five aspects of Customer Experience Management. It focused on the requirements that according to the method are not met, rather than all specific requirements. This was necessary in order to perform the validation within a limited timeframe. The characteristics of Company X are briefly presented below. (the requirements' numbers corresponding to table 1 are presented within the parentheses)

- Company X did **not** require hybris to deliver insights. It did, however, require a report function (7)
- Company X did require hybris to orchestrate the organization. (11-16, I-III)
- Company X did require hybris to design the experience. It did, however, **not** require hybris to design for different channels. (17-19, 21-25)
- Company X did require hybris to deliver the experience. It did, however, **not** require hybris to support channel management. (26-30, 32)
- Company X required hybris to deliver **some** of the requirements grouped under the experience itself. The organization required e-commerce functionalities, including (custom) catalogs, search, check-out, order management and self-service. It did not require real-time stock levels, alternative products and social media. (33-38, 41-45, 54-60)
- Company X has a SAP back-end system.

According to the method, the following mapped requirements are not supported by hybris: 15, 16, 19, 24 and 29. The corresponding consequences therefore must be presented in the report. Per aspect, the method would therefore report the following:

In line with the requirements mapped for Company X and the five aspects

- Insights: Successfully supported by hybris.

- Orchestration: Partially supported by hybris. Hybris is unable to support direct communication between users. An external solution must be integrated to fulfill this requirement.
- Designing the experience: Partially supported by hybris. Hybris is unable to support design content. An external solution must be integrated to fulfill this requirement. Import functionalities are supported.
- Delivering the experience: Partially supported by hybris. Hybris is unable to identify the actual stage of the customer journey, nor is it able to identify anonymous visitors. Hybris is able to adapt content based on a single session profile.
- The experience: Successfully supported by hybris.

Expert opinion

The second part of the validation session focused on the actual performance of each aspect experienced by Company X. It was based on the opinion of the experts. The performance is divided over the five aspects. The performance of hybris experienced by Company X is briefly presented below.

- Company X does **not** require nor uses collect or extract insights, thus hybris does not contribute to it.
- Company X does **not** require nor uses hybris to improve customer-facing activities and processes.
- Company X **successfully** uses hybris as a single source of consistent and readily available data for different departments.
- Company X **successfully** uses hybris to design and import digital content.
- Company X does **not** require nor uses hybris to create content for different devices.
- Company X does **not** require nor uses hybris to require hybris to support channel management.
- Company X **successfully** uses hybris to deliver personalized content to customers.
- Company X **successfully** uses hybris to meet the requirements mapped for *the experience*

Analysis

An analysis is performed to compare the executed method and the opinion of Accenture experts on one real world case. Table 5 below shows the functional requirements from the meta-analysis. It has been adapted to show the results of the validation session. Three types of requirements can be distinguished. The first is a requirement in **red letters**. These requirements have not been validated, because company X did not recognize the requirements and no effect from hybris was experienced. The second type is a requirement in black letters. These are the requirements that were recognized by company X. All of these requirements were supported according to the method, and the validation sessions supported that a positive effect was experienced. A requirement marked in **green** is the final

Support: Insights	Support: Orchestration	Designing the experience	Delivering the experience	The experience
1. Access to internal data	11. Access to customer database	17. Design function	26. Customer data: attributes	33. Catalogs
2. Access to external data	12. Change / adapt data	18. Write code: design website	27. Customer data: segments	34. Product information adaptable
3. Support of data formats	13. Collaboration: users	19. Write code: design content	28. Real time segmentation	35. Visibility
4. Exchange of data	14. Collaboration: departments	20. Write code: design for channels	29. Customer recognition	36. Search function internal
5. Exchange of knowledge	15. Communication: users	21. Write code: business logic	30. Customer log in	37. Search function external
6. Analytics	16. Communication: departments	22. Business logic: channel	31. Channel management	38. Check out
7. Report function		23. Business logic: customer	32. Business logic application	39. Stock Check
8. Database of raw data		24. Business logic: customer journey		40. Transaction
9. Database of knowledge		25. Content import		41. Order Management
10. Database of customers				42. Track payment
				43. Track order
				44. Logistics plugin
				45. Contact Customer
	I. Internal process management			46. Business logic: alternative product
	II. External process management			47. Business logic: alternative delivery
	III. Task management			48. Real time availability
				49. Real time alternative
				50. Real time order update
				51. Social platform
				52. Social media monitoring
				53. Social media participation.
				54. Custom catalog
				55. Custom quote
				56. Contract check
				57. Credit check
				58. Self-service support
				59. Self-service – manage orders
				60. Self-service – report on orders

Table 5: Adapted Table 3 with validation results

type. These requirements were recognized by company X but according to the method, are subject to preconditions and consequences. The validation session, however, does not reflect that these consequences are experienced by the organization. Finally, no type has been assigned to requirements that were supported according to the method, but not supported for company X, as these did not occur.

The validation session reveals five false negatives, or type II errors. Moreover, all requirements that returned a consequence are not experienced as a consequence in the validation session. None of the consequences has the (installed) SAP back end-intergration as precondition. A possible explanation for these errors therefore might be that the consequences are rather strict and must not be taken as a definitive negative verdict. They rather function as an informing role on a requirement that might need additional reconsideration.

In addition, the validation session reveals that twenty-one requirements have not been validated. For a large part, these are requirements of the Insights aspect. This group of unvalidated requirement also consists of requirements that would have returned a consequence.

Per Customer Experience Management aspect, this validation can conclude that.

- Insights is not validated
- Orchestration is supported. Consequence 15 and 16 can be overcome
- Designing the experience is supported. A design function lacks, import might compensate.
- Delivering the experience is supported. Anonymous visitors can be tracked
- The experience is mostly supported – partially invalidated
 - Multichannel support is not validated
 - Social media support is not validated

6.5 Conclusion

The goal of this validation session was to investigate if the proposed method is able to correctly predict the hybris-organization fit. In line with the described methodology, a case study was held. Both the method's ability to correctly predict whether hybris supports the requirements, and whether the mapped requirements sufficiently cover critical Customer Experience Management requirements were investigated.

The analysis shows that a number of type II errors occurs. This implies that hybris is able to fulfill a requirement while the method concludes that hybris does not fulfill that requirement. Additionally, the case study did not validate all. Despite these findings, the results of the proposed method can be used to extract insights into hybris' capabilities for the different aspects of Customer Experience Management, as the relation between the requirements and being a suitable alternative proves to be legitimate. An important conclusion remains, however, that a consequence that is returned is not necessarily experienced by an organization that will implement it. It is therefore of importance that users of the method are aware of these validation results.

7 Conclusion

7.1 Introduction

This chapter concludes the previous chapters and answers the research questions described in chapter two. The main research question: *“How can Accenture be supported in the decision to further investigate hybris as a suitable Customer Experience Management solution in the light of an organization’s stakeholders?”* answers how the decision maker concerned with the decision to further investigate hybris (...) can be supported. The corresponding sub questions have been answered throughout the research. This chapter provides a discussion on these findings and reflects on the research itself. Moreover, it provides limitations and suggests future work.

7.2 Discussion

Customer Experience Management is a strategy that has arisen from different technological advances. Rather than passively gathering intelligence to create profitable value propositions as Customer Relationship Management does, Customer Experience Management actively monitors interactions and reveals new opportunities. Moreover, it fills the gaps between expectations and experiences by managing these experiences.

Customer Experience Management aims at managing the customer journey by delivering a consistent and relevant experience at every engagement. It achieves this by aligning departments, collecting customer insights and creating a set of contextual experiences. In the consistent terminology these three aspects are named Orchestration, Insights and Contextual Experiences. Although the data flows of CXM resemble CRM, the difference is found in the active components that drive the organization-customer engagement which are not represented in flows of data. Support for the processes of Customer Experience Management is achieved by supporting the three aspects.

As a Customer Experience Management solution achieves sufficient performance for an organization when it supports the requirements of its stakeholders (Neely et al, 2002) the requirements of these stakeholders play a vital role in the support for the decision for a solution. The functional goals of Customer Experience Management combined with the scenarios in which nineteen stakeholder groups achieve these goals, identify a total of sixty-three possible functional requirements. *A Customer Experience Management solution thus provides sufficient performance when the requirements, categorized according to the three aspects Orchestration, Insights and Conceptual Experiences, are supported.* For the purpose of a complete representation of the use scenarios, the Conceptual Experiences aspect is split up in three new aspects: Designing the experience, Delivering the experience, and The experience.

The possible requirements for a solution are matched to the capabilities of a potential solution, which in this research is hybris. The hybris Commerce Suite is a business solution within SAP’s business solution portfolio. SAP aspires hybris as the customer portal for all engagement activities of an organization. A combination of multiple SAP business solutions is capable of delivering a complete and coherent solution to engage with customers. In more detail, the features that empower hybris to be positioned as the customer portal are

categorized in six areas. *The capabilities of hybris are depicted by these areas.* They state capabilities for content management, commerce activities, channel management and order management. These capabilities are founded on a flexible platform that has supporting capabilities for integration with SAP or other back-end systems.

The bodies of knowledge on Customer Experience Management solution requirements and hybris Commerce Suite capabilities, when combined, delineate the requirements that can be supported to achieve performance. The description of a sequence of steps that translates all requirements into a case-specific situation, finally, forms a method that reviews hybris' performance in a uniform and comprehensible manner. *This method reveals when hybris delivers sufficient performance as a Customer Experience Management solution.*

The results of an executed method do not predict the hybris-organization fit a 100 percent correctly. The validation session reveals the occurrence of a number of type II errors. This implies that a requirement returns unsupported by the method, but is perceived as supported by the organization. If a user of the method is aware of the occurrence of these false negatives, they may act as points of extra interest and the predicted fit between hybris and an organization reflects the fit perceived by an organization.

7.3 Reflection

The goal of this research was to deliver support for the decision to further investigate hybris. The research aimed to deliver support for this decision by designing a method that delivered insights into how well hybris's capabilities are able to support organization-specific requirements. Moreover, a design-science research approach was used to deliver a relevant artifact based on existing foundations and methodologies. Relevancy was achieved by delivering an artifact that Accenture decision makers can consult to motivate a decision, and rigor was assured by following a methodology in which the use of literature and data-collection was prescribed and used as a foundation for the design of this artifact.

As described in the discussion, the research has resulted in a method that does propose a method that delivers support in a prescribed and thus standardized, uniform and consistent report. It allows any Accenture employee to follow the proposed sequence of steps that lead to the report on the hybris- client organization fit and thus form support for the decision that follows.

The main goal of the research has thus been achieved. Moreover, the goal was achieved in line with the design-science research guidelines proposed by Hevner et al. (2004). The guidelines have been depicted in Appendix K. The design produces a viable artifact (1) that is a technology-based solution to a relevant business problem (2). The research relied upon and followed a rigorous methodology (5) that utilized the available means to search and create an effective artifact (6) of which its utility was demonstrated in a case study validation (3). Finally, differentiating between CRM and CXM solutions and extracting requirements from unique Customer Experience Management scenarios allowed to fill the identified literature gap and provide a contribution in the area of the artifact (4) that is effectively presented to both technology- and management-oriented audiences (7).

7.4 Limitations

The previous paragraph demonstrates that the research goal is achieved, and that the design-science research guidelines were successfully followed. Nonetheless, due to the scope of - and to decisions along the research some limitations can be identified.

The elicitation of requirements

The method is based on requirements that have been elicited with the help of experts. This implies that not every organization or situation has been reviewed for requirements. General scenarios have been analyzed with great care, but a missing particular requirement that has a high priority for a certain organization can not be ruled out. Likewise, the lack of non-functional requirements may create a situation in which an organization is not represented correctly, as critical non-functional requirements may exist. This can result in a false positive fit, as a significant requirement may be not be taken into consideration.

Use cases

The best use cases are retrieved from scenarios that are identified by extensively interviewing and observing stakeholders that use the system for which the use case is built. By extracting data and scenarios from experts that are not directly in contact with the system, but with the persons that are in contact with the system, the researcher is placed further from the source. Although efforts are made to represent the users themselves, indirect contact might influence the use cases. As a result of such a biased use case, some functional goals might be oversimplified or overcomplicated, with a respective requirement that is too easily or too difficultly supported by hybris.

Interview Setting

The position of the researcher within Accenture, an intern, introduced a wide network and numerous possibilities for contacts with skilled experts. The difference in rank and relative low priority of the researcher's issue, however, led interviews to take place in rather informal settings. Although the important and relevant issues have been discussed and answered, at times it proved difficult and undesirable to use preparation that included a large set of paperwork. Likewise, the setting often left no room for recordings of sufficient quality for playback. It is, however, unlikely that critical aspects of the interviews were lost in the transcription.

Interview IBM expert

The vast network did not provide a local expert for the Customer Experience Suite from IBM. Despite efforts to leverage the international nature of Accenture and the discovery of an expert abroad, no contact could be made with this expert. The IBM Experience Suite part is therefore based on available scarce literature which influences the completeness of the IBM Experience Suite paragraph.

Validation

The validation session was conducted with a group of Accenture experts. It was based on a case in which hybris had already been implemented without the intent to use hybris as a Customer Experience Management solution. The result was that company X simply did not require several aspects of Customer Experience Management. The validation session therefore could not validate all individual requirements that were elicited. In addition, the

validation session was executed in a short timeframe that required to focus on larger aspects rather than specific requirements. This results in a validation that validates the method and its result, but not every individual relation between a stakeholder requirement and a hybris feature. However unlikely, an unvalidated relation might be crucial for the result of the method, resulting in a missed error.

7.5 Recommendations and future work

Finally, based on the performed research, its findings and limitations, this paragraph introduces several recommendations for future work by researchers and by Accenture.

Method

The proposed method offers a set of basic steps that reveal the basic needs of a client organization, and how well hybris is able to support these needs. The needs are pre-analyzed and extracted from general Customer Experience Management use case scenarios. Unfortunately they may not enclose every possible requirement of an organization that wishes to implement Customer Experience Management.

Future work might include a more complete set of functional requirements, and even include non-functional requirements to represent the stakeholder criteria. Although, beyond the goal of this thesis, a method that includes and evaluates multiple Experience Management solutions would allow a best choice among the tools, rather than the evaluation of a single solution. Finally, best results are achieved if a client organization's criteria are not mapped but properly elicited. Although such a method would be less concrete and more time consuming, the result of it would be a more accurate set of requirements to evaluate against the features and performance of hybris (and other tools).

Accenture

From a Customer Experience Management perspective, the three areas that have been identified: *Orchestration*, *Insights* and *Conceptual Experiences*, can clearly be distinguished from an organizational perspective. If combined with the future lay out of customer engagement and hybris' ability to meet stakeholder requirements, it becomes clear that the hybris Commerce Suite as an e-commerce tool, excels in the *Conceptual Experiences* area of Customer Experience Management. In turn, *Orchestration* and *Insights* are important but are supporting aspects of Customer Experience Management. *Insights* feeds extracted relevant knowledge into the system and forms a foundation on which strategies and business logic can be created. *Orchestration* aims for the creation of an organizational environment in which an Experience Management strategy and solution flourish. The combination of hybris for Conceptual Experiences, SAP CRM for Insights, and SAP ERP and Accenture knowledge on strategy, workshops and employee training for Orchestration would create the engagement as in SAP's future lay out of customer engagement. This scenario exploits the entire spectrum Customer Experience Management to the fullest. If Accenture manages to combine different areas and offer a one-stop-shop for Customer Experience Management, they are able to leverage a unique combination of knowledge of products and organizations to realize competitive advantage for their client organizations.

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Appendices

Appendix A

About Accenture

Accenture is a global management consulting, technology services and outsourcing company, with approximately 281,000 people serving clients in more than 120 countries. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world's most successful companies, Accenture collaborates with clients to help them become high-performance businesses and governments. The company generated net revenues of US\$28.6 billion for the fiscal year ended Aug. 31, 2013. Its home page is www.accenture.com.

About SAP

As market leader in enterprise application software, SAP (NYSE: SAP) helps companies of all sizes and industries run better. From back office to boardroom, warehouse to storefront, desktop to mobile device – SAP empowers people and organizations to work together more efficiently and use business insight more effectively to stay ahead of the competition. SAP applications and services enable more than 253,500 customers to operate profitably, adapt continuously, and grow sustainably. For more information, visit www.sap.com.

About hybris

hybris helps businesses on every continent sell more goods, services and digital content through every touchpoint, channel and device. hybris delivers "OmniCommerce™": state-of-the-art master data management and unified commerce processes that give a business a single view of its customers, products and orders, and its customers a single view of the business. hybris' omni-channel software is built on a single platform, based on open standards, that is agile to support limitless innovation, efficient to drive the best TCO, and scalable and extensible to be the last commerce platform companies will ever need. Both principal industry analyst firms rank hybris as a "leader" and list its commerce

Appendix B

	PSEUDO	1. Introduction	2. Customer Experience Management Strategy	3. Customer Experience Management Goals	4. Stakeholders	5. Requirements	6. Hybris Goals	7. SAP CRM Goals	8. Oracle CX goals	9. IBM CES goals
Customer Experience Management strategy	Expert 1	X	X	X	X	X				
Customer Experience Management architecture	Expert 2	X	X	X	X	X				
(SAP) Customer Relationship Management	Expert 3	X			X	X		X		
Oracle ATG	Expert 4	X			X				X	
IBM Customer Experience Suite	Expert 5	X			X					X
hybris strategy	Expert 6	X			X		X			
hybris architecture	Expert 7	X			X		X			

Appendix C

1. Introduction

Who are you?

How long have you been working at Accenture?

What is your function?

What is your affiliation with the subject?

2. Customer Experience Management Strategy

How would you describe Customer Experience Management?

Since when is it being used?

In what form was it first used?

Does it come from a specific direction – background – industry – strategy?

For what is Customer Experience Management mostly used?

Which types of organizations use it? Does it work for them? Background – industry – strategy?

What do you think is the main – or greatest- goal of Customer Experience Management?

Do you think these goals are met? Does CXM deliver?

3. Customer Experience Management Goals

What is the main goal for Customer Experience Management?

What is needed to achieve this main goal?

Are these subgoals essential? Can they be replaced by each other?

Are these subgoals dependent on each other?

Are there things essential needed to realize the Subgoals

What do you think is essential for a CXM solution to support CXM?

4. Stakeholders

Who comes in direct contact with Customer Experience Management?

Who experiences the effect of Customer Experience Management?

Who becomes better from Customer Experience Management?

Who is part of the group that 'operates' Customer Experience Management?

Who makes the decision for Customer Experience Management?

Can you identify anyone that has problems with Customer Experience Management?

5. Requirements

What do the stakeholders want from a Customer Experience Management solution?

Functional requirements: How will the stakeholders use the tool?

How are the Subgoals achieved in a happy day scenario?

Could you describe bottlenecks, what could go wrong, variations?

What are the essential steps?

6. Solution Goals – CRM/hybris/CX/EMSuite

How would you describe *Solution* in one sentence?

Since when is it being used?

Which types of organizations use it? Background – industry – strategy?

What do you think is the main goal of *Solution*?

What is used to achieve this main goal?

Can these subgoals be translated into the most prominent features?

Are these subgoals essential? Can they be replaced by each other?

Are these subgoals dependent on each other?

Are there things essentials needed to realize the Subgoal

Appendix D

Processes for Customer Experience Management

To manage a successful customer experience; the entire journey must be included. The customer journey consists of several steps in the pre-purchase, the purchase and post-purchase stage.

1 Insights

Organizations need to gain insights in the customer experiences that are needed at each point. Therefore touch points and their effectiveness must be evaluated (SDL, 2014) An organization needs not only to identify the goals of a customer that purchases a product, but also the goals of the use of each channel to understand how information is processed. (Puccinelli et al, 2009) An analysis of multiple channels including social, digital, direct, in-store, mobile, and call center is needed as customers expect to have a consistent experience, no matter what interaction channel they choose. (Oracle, 2013)

2 Orchestration

Within the organization, different silos exist. These silos all have a different view of the customer and thus deliver a different experience. The customer, however, must receive the same experience from all silos he encounters. A single view of the customer experience is the goal of the orchestration. (SDL, 2014) This is the creation and diffusion of the customer experience view within the organization (Rae, 2012)

3 Contextual experiences

The customers will encounter the service or product in numerous ways. It is important to deliver a consistent experience. But equally important is to deliver the right content at the right time in the journey, through the right channel (SDL, 2014). As in a brick-and-mortar store, the atmospherics must be appropriate to the situation. The context must suit the situation, and the information must be relevant: creating relevant experiences. (Puccinelli et al, 2009) With the information discovered in the insights-phase, it is possible to embed a fundamental value proposition in offerings' every feature. (Meyer & Schwager, 2007)

4 Awareness and Discovery

By using internal analytics, existing clients can be analyzed and described. This allows to understand the buying process and to recognize the relevant stages to involve the customer. Creating awareness of the product and providing the correct contextual experience at that point in the journey. (SDL, 2014) This allows the customer to form an attitude towards the product (Puccinelli, 2009).

5 Attraction

Once awareness is created, the next step is attraction. The customer is aware of, and has formed an attitude towards the product. The construct of memory is important; once a customer remembers the product, he must be able to easily retrieve it at a later stage of the journey to visit and encounter the product through any means he prefers. (SDL, 2014; Puccinelli et al, 2009)

6 Purchase and Sales

The encounter has taken place, facilitated by a channel chosen by the customer. It is important that the encounter is linked to the purchase and that the customer will not experience the product elsewhere. This is facilitated by assuring easy retrieval and the possibility of switching between channels while continuing the journey. (SDL, 2014) If a customer puts a product in her shopping cart using his smart phone, it should be there when the session is resumed on a PC. (Oracle, 2013)

7 Use, Delivery and Cultivation

In the post-purchase phase the customer uses the product. During this phase, again different channels are used to gather and share information. Support for product use and organization awareness of use and satisfaction are important. The customer experience must still be guided and customer needs must be facilitated through desired channels. (SDL, 2014)

8 Advocacy

Finally, a satisfied customer will share the experience. This implies that a positive experience is advocated to other customers. This becomes a new channel that creates awareness. Assuring that new customers are able to relive the experience through all channels with the correct contextual experiences will benefit the organization as a new customer is satisfied: the circular customer journey. (SDL, 2014)

Appendix E

2 Provide Insights

Functional goal: “Provide Insights”

Goal in context: The operator collects data and turns it into useable knowledge for business purposes

Scope: The organization

Level: Strategic

Stakeholders and Interests:

The operator – to have access to relevant data and to publish it into usable form

Analyst – to extract insights from raw data and to publish it into usable form

Marketing – to develop and adapt a successful strategy

Customers – to share information with organization for value-added services

Customer group – to limit the collection and misuse of customer data

Regulators – to limit the collection and misuse of customer data: protect customers

Preconditions: A CXM strategy is adopted

Minimal guarantees: Raw data is analyzed and published

Success guarantees: Raw data is translated into successful strategy via insights

Trigger: New raw data is available

Main success scenario:

1. Operator retrieves new internal raw data
2. Operator delivers intelligence to analyst
3. Analyst extracts valuable insights
4. Analyst publishes latest insights
5. Marketing uses insights to develop a strategy
6. Marketing publishes strategy and benchmarks

Extensions:

1a. Operator cannot access new data

1a1. Operator demands access to data owner

3a. Analyst retracts no valuable insights

3a1. Analyst does not publish new insights

5a. Marketing finds current strategy and benchmarks adequate

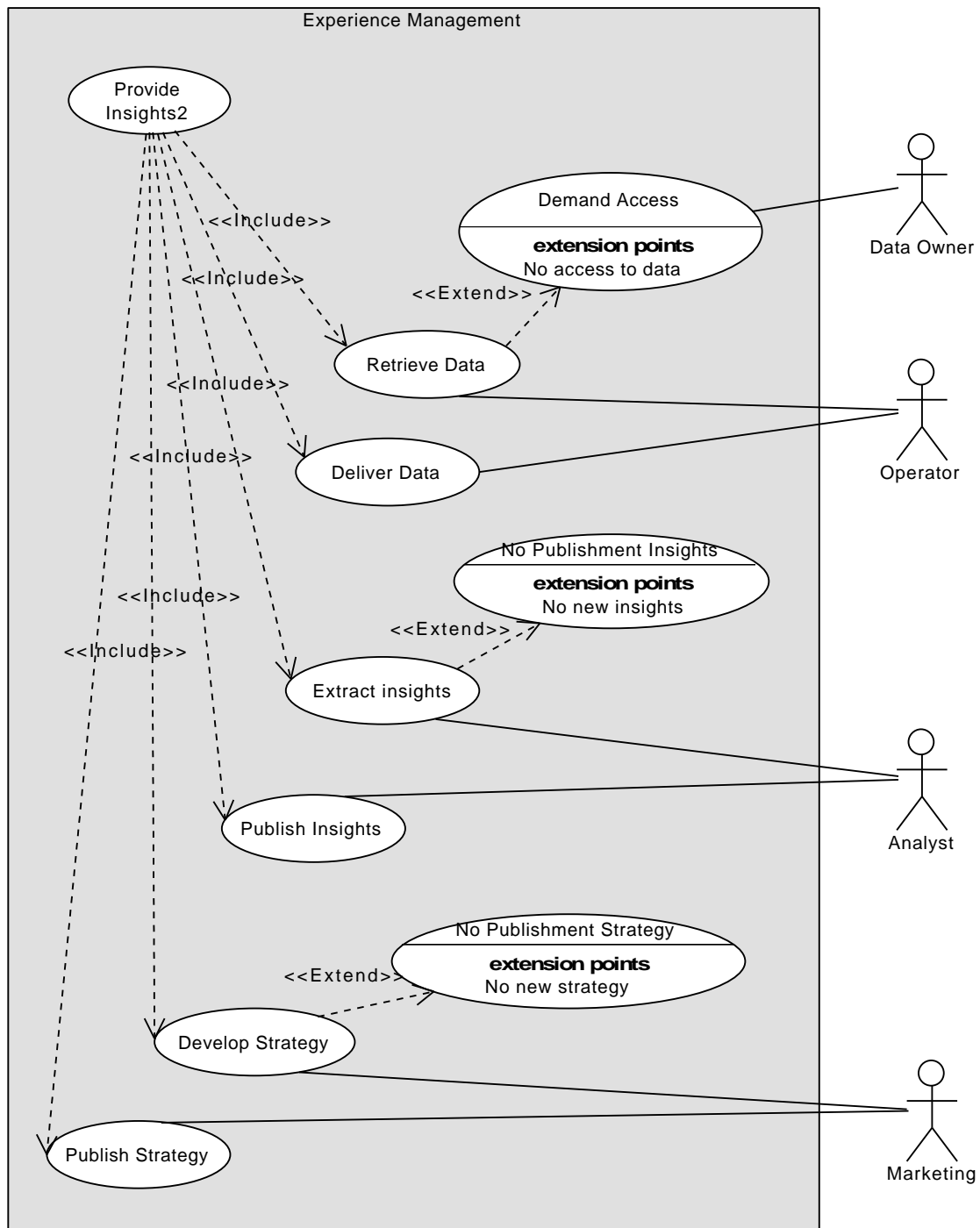
5a1. Marketing does not publish (new) strategy or benchmarks

Variations:

1'. Operator retrieves new external raw data

5'. Marketing uses insights to adapt and refine the strategy

UML use case 2: Provide Insights



3 Orchestrate the Organization

Functional goal: “Orchestrate the Organization”

Goal in context: The organization diffuses a customer centric view and adopts supporting business processes across departments

Scope: The marketplace: organization - customer

Level: Strategic

Stakeholders and Interests:

The operator – to facilitate the flows of work and knowledge across the organization

Organization – to realize a unified customer view across departments

Departments; Sales, Service & Marketing – To have instant access to relevant information about the customer en to be able to collaborate in real time with internal experts.

Customer – to engage with the organization: consistent and high quality interaction

Preconditions: A CXM strategy is adopted

Minimal guarantees: Individual departments have the means to exchange knowledge

Success guarantees: Individual departments collaborate and exchange knowledge, which facilitates a customer centric view throughout the organization

Trigger: The introduction of knowledge exchange, communication facilities and management support for a customer centric view

Main success scenario:

1. Customer engages with organization
2. Department X checks prior knowledge of customer in database, real time
3. Department X serves customer based on retrieved knowledge
4. Department X stores engagement and solution in database

Extensions:

2a. Knowledge on customer is incomplete

2a1. Department X collaborates with department Y for best solution

3a. Department X can not serve customer (with sufficient quality)

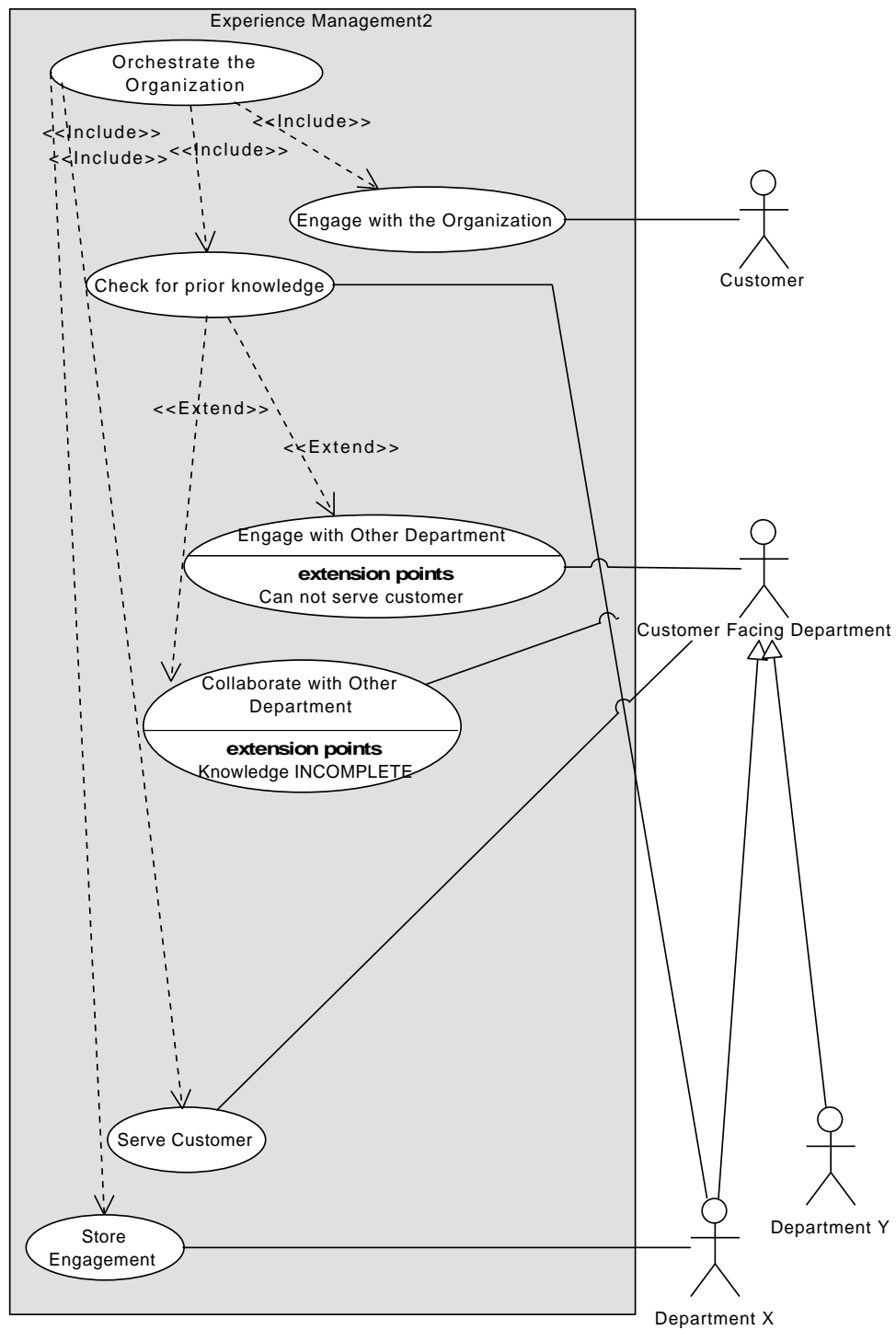
3a1. Department X engages department Y to serve customer

3a2. Department Y serves customer

3b1. Department X collaborates with department Y for best solution

Variations:

UML use case 3: Orchestrate the Organization



4 Create the Experiences

Functional goal: “Create the Experience”

Goal in context: The designer and programmer form and create an actual ‘script’ or experience that a customer can ‘live’ or experience - Create the outer shell of the experience, and write the rules to assess applicability

Scope: Design and/or program department

Level: User goal

Stakeholders and Interests:

Marketing – the effectuation of their strategy in the different contextual experiences

Designer – *Designing the execution of an experience in terms of lay-out and feeling*

Programmer – *writing code that effectuates the design; writing code that effectuates business logic*

Preconditions: A strategy has been developed and published

Minimal guarantees: The organization has a means to engage with a customer

Success guarantees: A set of contextual experiences according the strategy are designed and realized, and are deployable

Trigger: A strategy that describes an image, a channel and a goal of interaction

Main success scenario:

1. Marketing publishes a strategy with a vision
2. Designer translates the vision into a contextual experience
3. Programmer realizes the contextual experience into a deployable product
4. Programmer realizes applicable business logic
5. Programmer stores the product

Extensions:

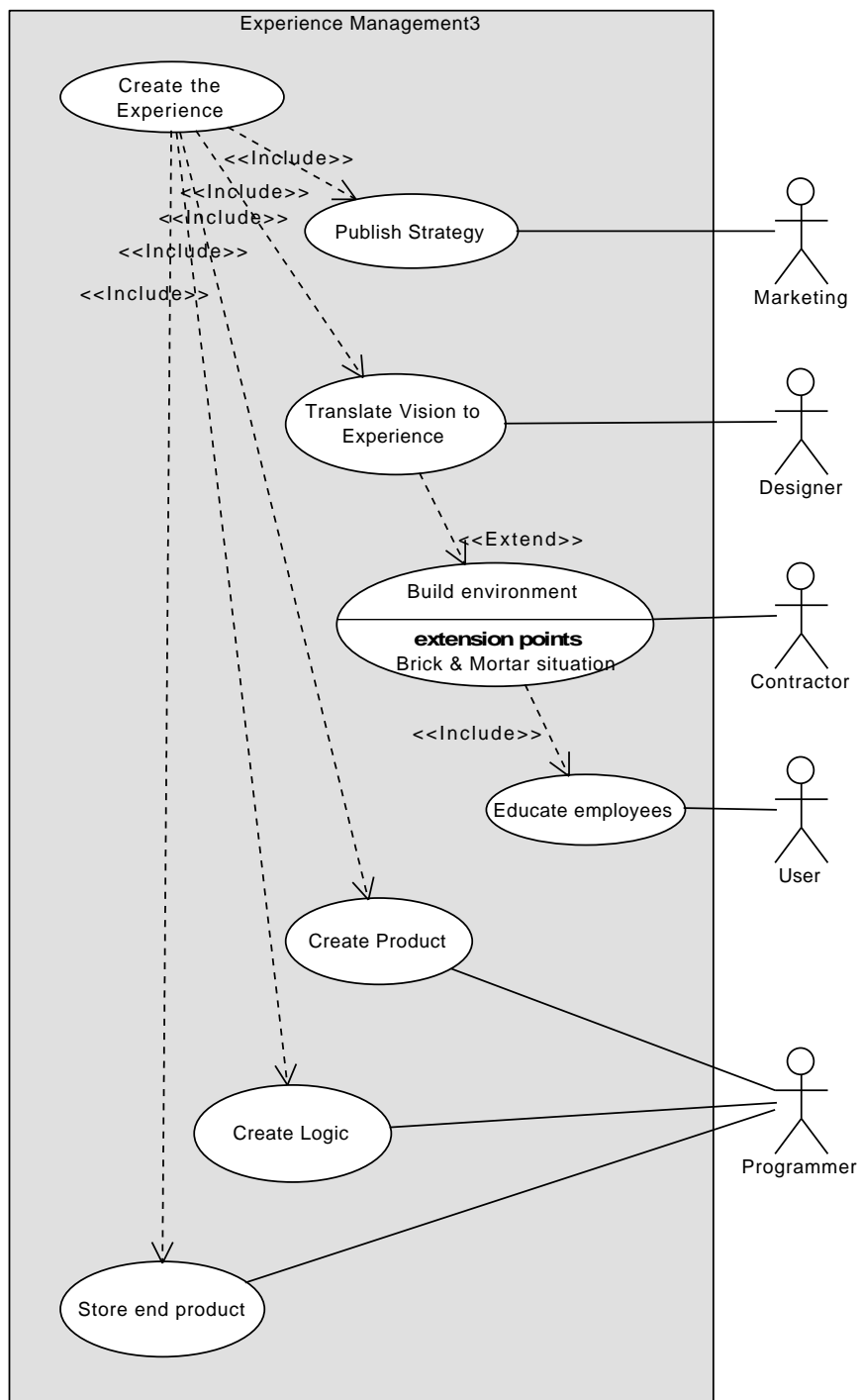
3a. Experience is in store / offline

3a1. Design is realized by contractor

3a2. Design is explained to employees

Variations:

UML use case 4: Create the Experience



5 Engage with the Customer

Functional goal: “Engage with the Customer”

Goal in context: The organization is able to engage with the customer and to deliver the message it wants to deliver

Scope: The marketplace: organization – customer

Level: User goal

Stakeholders and interests:

Customer – to interact with the organization

Organization – to serve the customer, deliver a consistent and relevant experience

Preconditions: The organization has created experiences

Minimal guarantees: A customer can engage with the organization

Success guarantees: A customer can engage with the organization, in any way he wishes, and receives the experience that is appropriate to his situation

Trigger: The customer engages with the organization

Main success scenario:

1. Customer engages with the organization
2. Organization checks customer
3. Organization checks channel
4. Organization checks motive for engagement
5. Organization applies business logic
6. Organization delivers contextual experience

Extensions:

3a. Channel not supported

3a1. Ask customer for preference for experience

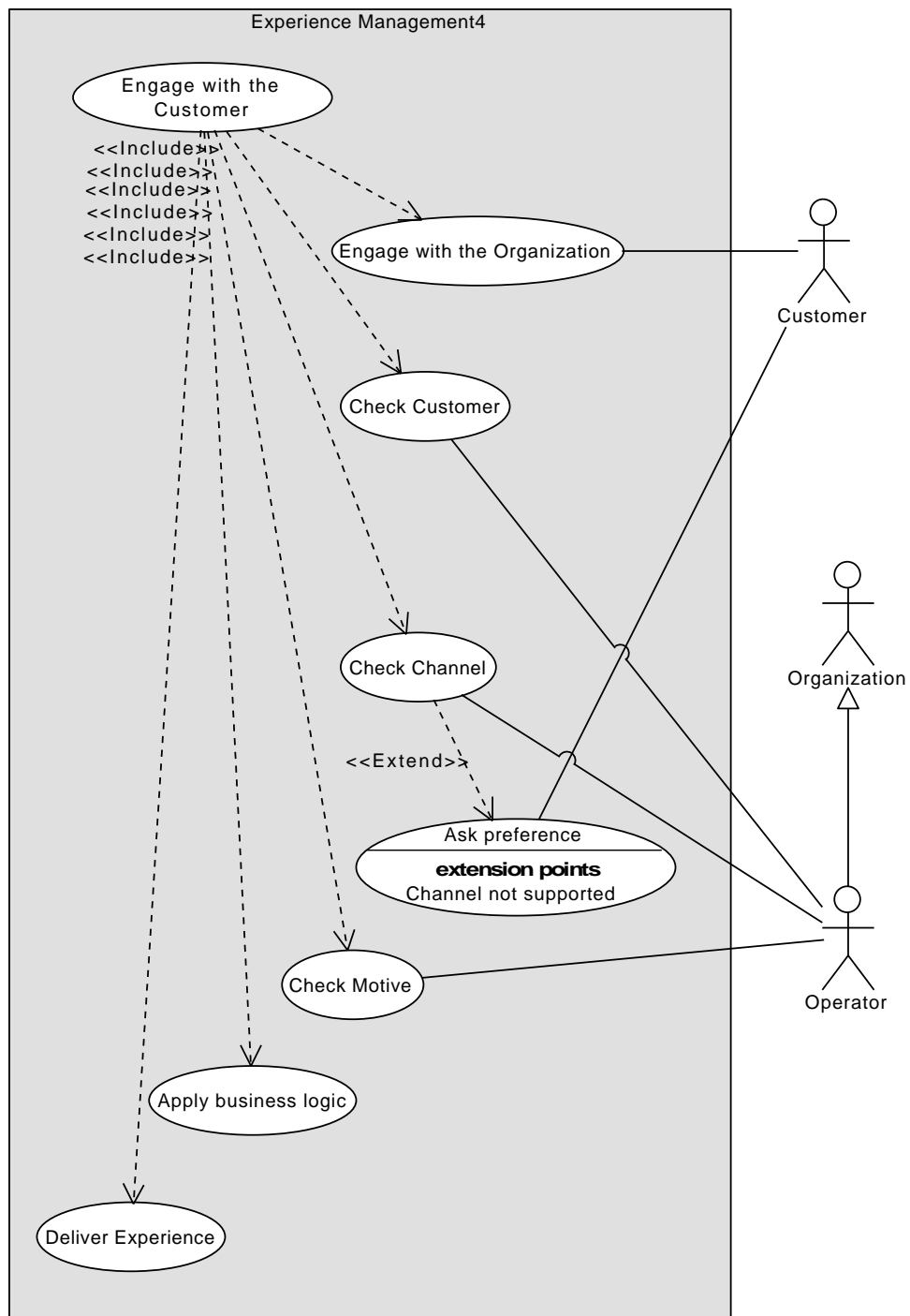
3a1. Deliver most appropriate experience

Variations:

2'. without prior knowledge on customer

4'. without knowledge on motive

UML use case 5: Engage with the Customer



6 Execute the Experience

Functional goal: “Execute the Experience”

Goal in context: Support the experience in line with the customer journey

Scope: Marketplace: organization – customer

Level: Strategic

Stakeholders and interests:

Customer – to be served during the journey

Organization – to serve the customer correctly at every step of his journey

Marketing – proper knowledge and communication means

Sales – proper knowledge and communication means

Services – proper knowledge and communication means

Preconditions: The organization has a product, the customer is a potential buyer

Minimal guarantees: The organization attempts to guide the customer

Success guarantees: The organization serves and guides the customer from the beginning until the end of his journey

Trigger: Customer performs search; Organization has product to sell

Main Success Scenario:

1. Organization creates awareness for its product
2. Customer notices product
3. Customer retrieves organization and product
4. Organization informs customer
5. Customer purchases product
6. Organization facilitates transaction
7. Organization delivers product
8. Customer uses product
9. Organization supports product use
10. Organization facilitates voice
11. Customer voices his opinion

Extensions:

2a. Customer does not notice product

2a1. Customer does not engage

3a. Customer does not retrieve organization

3a1. Customer engages with other party

3b. Customer does not retrieve product

3b1. Customer abandons his journey

4a. Organization misinforms customer

4a1. Customer bases decisions on wrongful information

4a2. Customer expectations do not meet product/organization performance

5a. Customer does not buy product

5a1. Customer abandons journey

6a. Organization does not support customer transaction preference

6a1a. Customer continues journey, negative experience

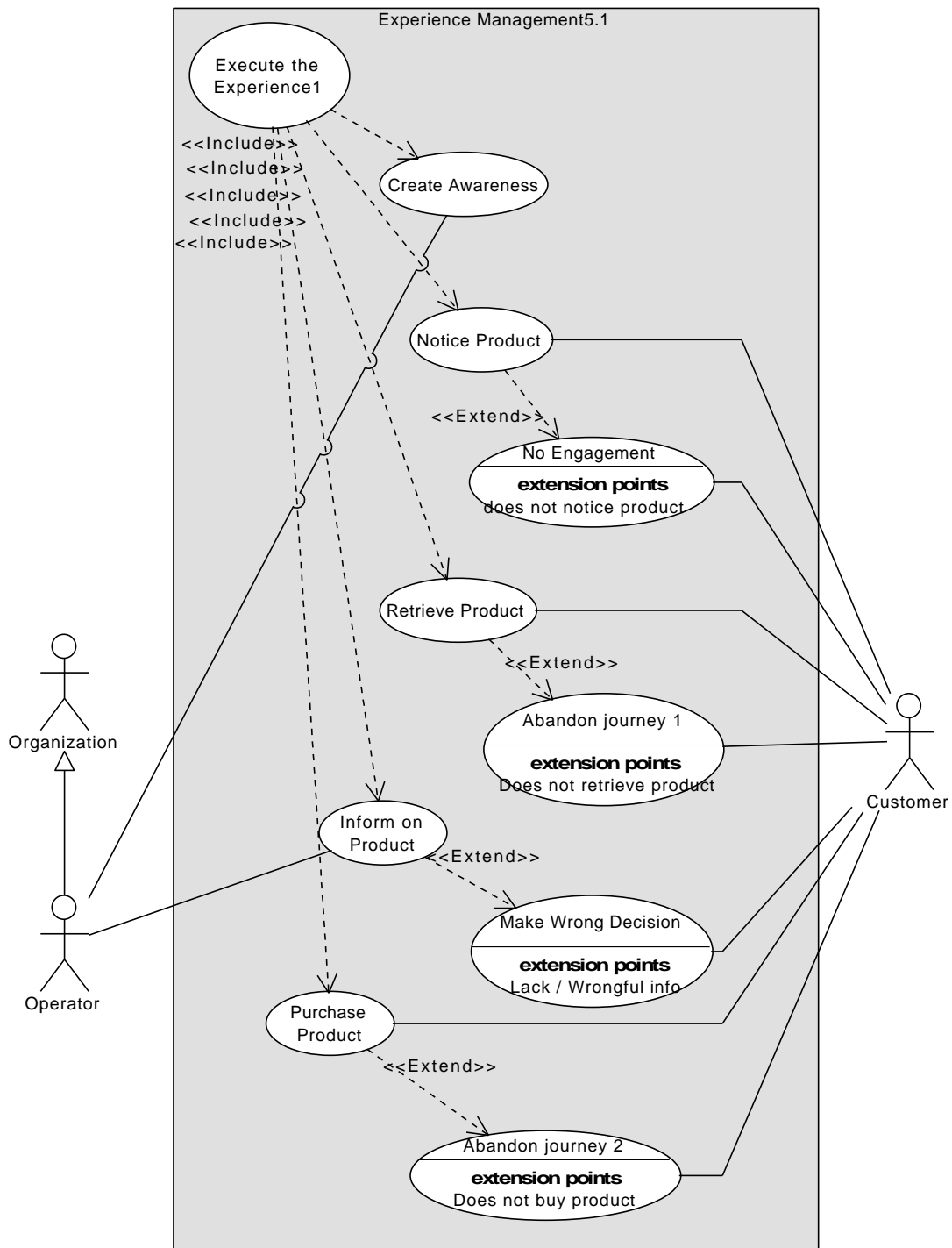
6a1b. Customer abandons journey

7a. Organization does not support customer delivery preference

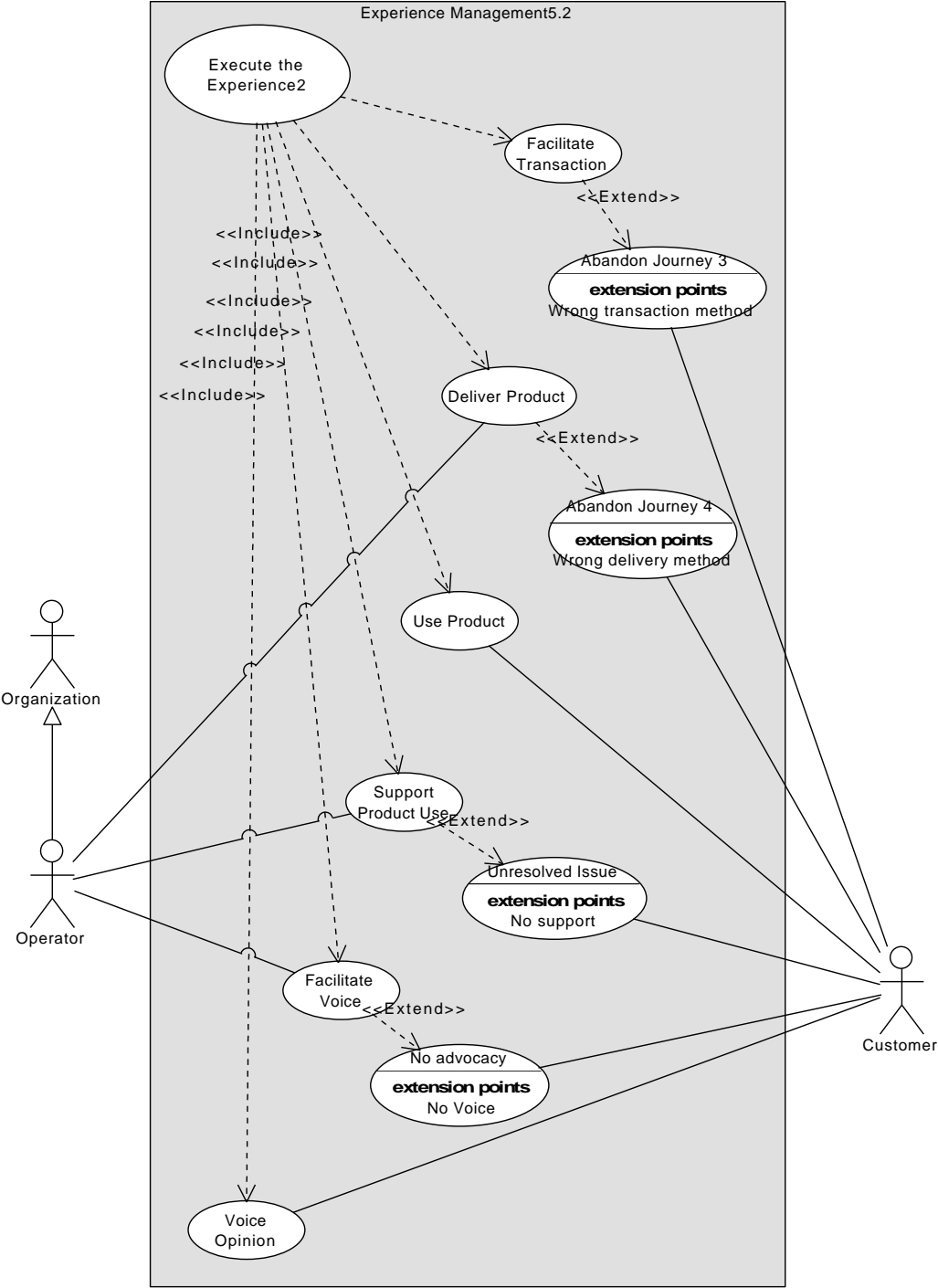
- 7a1a. Customer continues journey, negative experience
- 7a1b. Customer abandons journey
- 9a. Organization does not support product
 - 9a1a. Customer issue remains unresolved
 - 9a2a. Customer has negative experience
 - 9a1b. Customer is unaware of full potential of product
- 10a. Organization does not facilitates voice
 - 10a1a. Customer does not voice his positive experience to new customers
 - 10a1b. Customer voices negative experience
 - 10a2b. Organization can not respond to negative experience
- 11a. Customer does not voice his opinion
 - 11a1. Customer ends journey

Variations:

UML use case 6: Execute the Experience PART 1



UML use case 6: Execute the Experience 2



7 The customer journey: B2C

7.1 Awareness and Discovery

Functional goal: “Being noticed”

Goal in context: Support the experience in line with the customer journey;
create awareness and support the customer in his preliminary product research

Scope: Marketplace: organization – customer

Level: Use Case

Stakeholders and interests:

Customer – to become aware about a product and perform preliminary research

Organization – to create awareness about the product, organization and services

Preconditions: Organization has a product, customer becomes aware

Minimal guarantees: The customer knows a product exists

Success guarantees: The customer is guided in his preliminary research and
retrieves information about the product and links product to organization

Trigger: Customer wants to know more about a product

Main Success Scenario:

1. Organization engages with the market
2. Organization provides information about its product
3. Customer engages with the organization
4. Customer learns about the product and organization

Extensions:

2a. Organization provides insufficient information about its product

2a1. Customer does not engage with the organization for this product

3a. Customer engages with other organization

3a1. Customer does not engage with the organization for this product

Variations:

7.2 Attraction

Functional goal: “Being found”

Goal in context: Support the experience in line with the customer journey;
make sure the customer retrieves the organization and experiences the product

Scope: Marketplace: organization – customer

Level: Use Case

Stakeholders and interests:

Customer – to become familiar with a product and try it

Organization – to assure that the customer finds the product and organization, and to facilitate trial and relevant information

Preconditions: Organization provides information, customer researches

Minimal guarantees: The customer gains information on the product

Success guarantees: The customer remembers the organization and gains
information, tries and tests the product

Trigger: Customer evaluates a potential product

Main Success Scenario:

1. Customer performs research
2. Organization has high visibility – is easy to reach
3. Customer engages with the organization
4. Organization provides relevant information
5. Customer retrieves information from organization

Extensions:

2a. Organization is not visible – not easy to reach

2a1. Customer does not engage with the organization for his research

3a. Customer engages with other organization

3a1. Customer does not engage with the organization for his research

4a. Organization does not provide relevant information

4a1. Customer does not retrieve relevant information from organization

4a2. Customer has negative experience with organization

4a3. Customer engages with other organization

Variations:

4'. Customer tests the product at the organization

7.3 Purchase & Sales

Functional goal: “Sell a product”

Goal in context: Support the experience in line with the customer journey; facilitating the purchase and transaction of a product

Scope: Marketplace: organization – customer

Level: Use Case

Stakeholders and interests:

Customer – to buy a product the way he wants

Organization – to sell the product the way the customer wants

Preconditions: Organization sells product and offers checkout

Minimal guarantees: Transaction took place

Success guarantees: The customer was served how he wished, the organization facilitated every step of the transaction, organization made a profit and

Trigger: Customer wants to buy product

Main Success Scenario:

1. Organization offers product
2. Customer finds product
3. Customer requests product
4. Organizations checks availability
5. Organization facilitates check out
6. Customer pays for product
7. Organization provides information on order status
8. Organization stores data

Extensions:

2a. Customer does not find product

2a1. Customer does not engage with the organization for this product

4a. Product no longer available

4a1. Organization informs customer

4a2. Customer does not engage with the organization for this product

4b1. Organization offers customer alternative

4b2a. Customer accepts alternative

4b2b. Customer does not engage with the organization for this product

5a. Organization does not facilitate check out customer wishes

5a. Customer does not engage with the organization for this product

6a. Customer does not pay for product

6a. Organization does not sell to customer

7a. Organization does not provide information on order status

7a. Customer is disappointed in experience

Variations:

4'. Organization checks availability before offering product

5'. Organization provides customer with alternative

7.4 Use / Delivery & Cultivation

Functional goal: “Providing support”

Goal in context: Support the experience in line with the customer journey;
provide support for the purchased product

Scope: Marketplace: organization – customer

Level: Use Case

Stakeholders and interests:

Customer – to obtain and use the product the best way possible

Organization – to provide a good after sales experience, fulfilling the wishes of the customer,
providing pro-active support and re-active support

Preconditions: Organization is aware that customer has bought product

Minimal guarantees: Organization knows customer bought product

Success guarantees: The customer is supported in the use of his product and
issues are resolved simply

Trigger: Customer has bought product

Main Success Scenario:

1. Organization offers product support
2. Customer needs customer support
3. Organization knows customer and product
4. Organization provides tailored support

Extensions:

1a. Organization does not offer product support

2a1. Customer can not engage with the organization for support

2a2. Customer is disappointed, has negative experience

3a. Organization does not know customer and product

3a1. Organization depends on customer information

3a2. Organization can not provide tailored support

3a3. Customer is disappointed, has negative experience

Variations:

2' Customer does not need customer support – but appreciates proactive support

7.5 Advocacy

Functional goal: “Giving the customer a voice”

Goal in context: Support the experience in line with the customer journey; provide the customer with means to voice his opinion on the product, organization or experience

Scope: World

Level: Use Case

Stakeholders and interests:

Customer – to share the experience with the organization

Organization – to allow the customer to voice his opinion, to react on this opinion or allow this opinion to influence other potential customers

Preconditions: Organization provides platform for advocacy

Minimal guarantees: Customer shares opinion

Success guarantees: The customer expresses feelings about the product, organization and experience and influences others

Trigger: Customer has finished journey

Main Success Scenario:

1. Organization offers platform for advocacy
2. Customer expresses positive feelings about the product
3. New customers are influenced by existing customer

Extensions:

- 1a. Organization does not offer platform for advocacy
 - 2a. Customer uses word-of-mouth or external social media
 - 2b. Customer does not voice opinion
- 2a. Customer expresses negative feelings about the product
 - 2a1. Organization tries to resolve the issue
 - 2a2. New customers are influenced by organization’s support

Variations:

8 The customer journey: B2B

8.1 Purchase & Sales

Functional goal: “Sell a product”

Goal in context: Support the experience in line with the customer journey; facilitating the purchase and transaction of a product

Scope: Marketplace: organization – customer

Level: Use Case

Stakeholders and interests:

Customer – to buy a product the way he wants

Organization – to sell the product the way the customer wants

Preconditions: Organization sells product and offers checkout

Minimal guarantees: Transaction took place

Success guarantees: The customer was served how he wished, the organization facilitated every step of the transaction, organization made a profit and

Trigger: Customer wants to buy product

Main Success Scenario:

1. Organization offers custom catalog
2. Customer retrieves product
3. Customer request quote
4. Organization checks availability
5. Organization checks contracts
6. Organization offers quote
7. Customer accepts quote
8. Organization checks credit
9. Organization provides information on order status
10. Organization stores data

Extensions:

- 1a. Customer does not offer custom catalog product
 - 2a1. Customer gets irrelevant content
- 4a. Product no longer available
 - 4a1. Organization informs customer
 - 4a2. Customer does not engage with the organization for this product
 - 4b1. Organization offers customer alternative
 - 4b2a. Customer accepts alternative
 - 4b2b. Customer does not engage with the organization for this product
- 5a. Organization does not check contracts
 - 5a1. Organization does not provide accurate price quote
 - 5a2. Customer abandons journey
- 7a. Customer does accept quote
 - 7a. Organization does not sell to customer
- 8a. Organization does not check for credit
 - 8a1. Organization charges loyal customer without benefits
 - 8a2. Customer is disappointed in his journey
- 9a. Organization does not provide information on order status

9a. Customer is disappointed in experience

Variations:

4'. Organization checks availability before offering product

5'. Organization proactively incorporates contract prices

8'. Organization has customer account with expense balance

8.2 Use / Delivery & Cultivation

Functional goal: “Providing support”

Goal in context: Support the experience in line with the customer journey;
provide support for the purchased product

Scope: Marketplace: organization – customer

Level: Use Case

Stakeholders and interests:

Customer – to obtain and use the product the best way possible

Organization – to provide a good after sales experience, fulfilling the wishes of the customer,
providing pro-active support and re-active support

Preconditions: Organization is aware that customer has bought product

Minimal guarantees: Organization knows customer bought product

Success guarantees: The customer is supported in the use of his product and
issues are resolved simply

Trigger: Customer has bought product

Main Success Scenario:

1. Organization offers self-service support
2. Customer needs customer support
3. Organization knows customer and product
4. Customer can arrange own service
5. Organization provides tailored support

Extensions:

- 1a. Organization does not offer self-service support
 - 2a1. Customer depends on availability for support
 - 2a2. Customer is disappointed, has negative experience – lacks trust
- 3a. Organization does not know customer and product
 - 3a1. Organization depends on customer information
 - 3a2. Organization can not provide tailored support
 - 3a3. Customer is disappointed, has negative experience

Variations:

- 2' Customer does not need customer support – but appreciates proactive support

Appendix F

Explanation of the requirement discovered from the use cases cha

1. Direct access to internal data.

The solution should have direct access to data. This allows users to examine raw data that is collected by the tool itself, direct from the source and instantly.

2. Direct access to external data.

The solution should have direct access to external data. This allows users to examine raw data that is collected and stored in external sources that the organization uses. The solutions must be able to extract and display this data instantly.

3. Support of (a variety of) data formats

No limitation for different data formats should exist, as this would limit the integration possibilities and harden the process of retrieving and using external data.

4. Exchange of data

The solution must support the exchange of data, whether it is raw data or processed and analyzed material. Users must be able to transfer data from one another easily.

5. Exchange of knowledge

The solution must support the exchange of knowledge, whether it are used methodologies (which can be regarded data) or explicit knowledge. But also the diffusion of tacit knowledge should be facilitated by allowing users to exchange experiences, opinions and know-how (which can be regarded Collaboration and Communication between users)

6. Analytics

Users must have the means to extract useful insights from raw data. This results in statistical functionalities that help analyze the different sources and figures retrieved from both internal and external data. These analyses translate raw figures into comparable and useful measurements of the performance of different processes.

7. Report function

Among others, the retrieved results from the analytics must be published and reported. The measurements must be reported in a form that can be used by other users.

8. Database of raw data

The solution must have a database where raw, unprocessed data can be stored and accessed by users.

9. Database of knowledge

The solution must have a database for knowledge. Explicit knowledge that users have gathered can be stored and accessed by other users.

10. Database of customers

The solution must have (access to) a database where all customers of the organization are stored. This allows users to have access to the customers and their characteristics for different purposes as high level segmentation or individual customer information.

11. Real-time access to databases

Users must have real-time access to databases. Not only must they be able to access it, but results must be retrieved instantaneously without the interference of a third party (user or solution).

12. Change / Adapt data and records

Users must be able to change and adapt the data and records in the databases if needed. If data is examined and used, changes or updates must be realized without the interference of a third party (and in real-time in order for other users to access up-to-date data)

13. Collaboration between users

Users must be able to collaborate easily. This implies that users must be able to assign tasks to, ask for help or ask for feedback from other users without the interference of a third party.

14. Collaboration between departments

On a high level, departments must be able to assign tasks to, ask for help or ask for feedback from other departments.

15. Communication between users

Users must be able to communicate with other users. The solution must support access and communication between users.

16. Communication between departments

Departments must be able to communicate. Contact between departments, on a high level, must be supported.

17. Design function

The solution must offer a design function to display how a contextual experience must look and feel in its final form.

18. Write code: design website

The solution must have a functionality for designing a website. Users have the possibility to create a website with the solution.

19. Write code: design content

The solution must have a functionality to design content. Users have the possibility to design content; graphical images, flyers, posters, backgrounds etc. with the solution.

20. Write code: design for different channels

The solution must be able to design for different channels, that require a different programming language. Users must not be limited and should be able (and be helped) with delivering products for any channel.

21. Write code: business logic

The solution must have a functionality that writes business logic. Users must be able to set and determine rules for what website and content is displayed.

22. Business logic: channel

The solution must have of provide a functionality to create business logic to display the correct content depending on the channel

23. Business logic: customer

The solution must have a functionality to create business logic to display the correct content depending on the customer or customer segment.

24: Business logic: customer journey

The solution must provide a functionality to create business logic to display the correct content depending on the step in customer journey.

25: Content import

The solution must have a functionality that imports content, graphical images, flyers, posters, backgrounds etc. created with external solutions without limitation of supported formats.

26: Customer Data: attributes

The solution, and in particular the database of customers, must be able to assign attributes to customers. These are the characteristics of individual customers, which can be regarded as attributes of the class Customer.

27: Customer Data: segments

The solution, and in particular the database of customers, must be able to recognize, assign and manage segments. Thus grouping customers based on chosen attributes.

28: Real-time segmentation

The solution must be able to segment, not only on known preferences, demographics etc., but also on based on the current interaction/session. The solution thus analyzes a customer real-time and provides a user with a segment.

29: Customer Recognition

The solution must recognize customers that engage with the solution. By linking a customer with known preferences, not only the current interaction/session but more data can be used to serve the customer

30: Customer account

The solution must provide the customer with a possibility to log in. This log in function allows users to know which customer they are engaging with and to use all relevant data for a better experience. This implies the support of a Customer account in which the customer is able to store preferences and characteristics.

31: Channel management

The solution must have a form of channel management. It should manage and exploit all channels without the interference of third parties or solutions.

32: Business logic application

The solution must exploit the written rules of business logic and apply them to all customers when

33: Catalogs

The solution must provide users with the range of different products in catalogs. Products must be assigned to catalogs based on different attributes.

34: Product Information Adaptable

Users must be able to change products in the product database, and more precisely, the product database must have attributes that can be assigned to products.

35: Visibility

The solution has means to create high visibility. E.g. search optimization where the sites receive a higher ranking in relevant search queries from search engines.

36: Search function internal

The solution must have a search functionality that is able to guide a customer through the website. This search functionality must deliver relevant results. The search function must allow customers to search for products, product ranges etc. in line with the attributes and catalogs, and return relevant products.

37: Search function external

The solution must have a functionality that redirects customers to the correct subpage of the website regarding the search query used in an external search engine.

38: Checkout

The solution must allow customers to check out their products. This implies storing products in a basket and informing the organization that it wants to purchase items.

39: Stock Check

The solution must be able to check whether stock is available in real time. A customer's basket is checked for stock levels in warehouses. Depending on the organization this implies real time integration with stock monitoring solutions.

40: Transaction

The customer must be able to pay for his products, thus the solution must integrate and facilitate the exchange of money via bank or other means.

41: Order Management

The solution must provide the possibility to manage an order. According to the preferences of a customer, a user must be able to orchestrate the process. This implies managing the steps from transaction up to delivery, with freedom of choice and being able to change preferences along the way.

42: Track payment

The solution must be able to keep track of the payment. If a transaction is not finished instantaneously, fraud detection and being able to easily retrieve the status of a payment up until money is effectively transferred must be supported by the solution.

43: Track Order

The solution must be able to track an order that has been made. In line with order management, the solution must be able to easily retrieve the status of an order up until the effective delivery of the product.

44: Logistics plugin

The solution must support input from other sources on the logistics processes of the organization. This is needed to better predict the possibilities and timespan of different order-options. In addition, in real-time, it provides the means to track an order in the internal handling process.

45. Contact Customer

The database of customers supported by the solution is extended by a possibility to contact and target individual and groups of customers for e.g. attraction or proactive and reactive support purposes.

46: Business logic: Alternative product

The solution must be able to provide users or customers with an alternative product, if due to internal processes or parameters (e.g. stock level) the original product can not be delivered with sufficient quality (e.g. high lead time).

47: Business logic: Alternative delivery

The solution must be able to provide users or customers with an alternative solution for delivery, if due to internal processes or parameters (e.g. stock level) the original delivery does not provide sufficient quality (e.g. high lead time) or that an alternative gives significantly higher quality (e.g. direct availability in nearby store).

48: Real time availability

The solution must be able to check stocks before the check-out: deliver the available stock as a characteristic of the product in real time.

49: Real time alternative

The solution must be able to deliver an alternative for product or delivery in real time. When a product will underperform in terms of quality, in real time an alternative is displayed before checkout.

50: Real time order update

The solution informs users and customers on an update in their order status in real time.

51: Social platform

The solution must support an internal platform of sharing opinions and reviews.

52: Social media monitoring

The solution must support users in effectively analyzing relevant (external) social media messages and trends to respond accurately and timely.

53: Social media participation

The solution must support users in effectively being present on social media in both campaigns but also in individual responses to trends and messages identified in monitoring.

54: Custom catalogs

The solution must support the creation and display of custom catalogs to customers that are logged in.

55. Custom quote

The solution must support custom quotes for complex combinations of products or in line with contractual agreements. The solution supports users and customers by displaying the correct price

56: Contract check

The solution must have access to individual contracts and check for agreements on quality, quantity, price etc. to display the correct information.

57: Credit check

The solution must support a customers' 'spending space'. It should support users and customers by checking for unpaid orders and running order when granting a new order.

58: Self-service support

Customers with an account should be supported in checking for support and engaging for support with the organization via their account. Self-service by the solution should, among others, display order history, product support and changing personal settings.

59: Self-service – manage orders

Customers with an account should be supported in managing their orders. The solution must provide the possibility to keep track of orders, and to manipulate them according to the possibilities of the process: eg. changing delivery moment or address.

60: Self-service – report on orders

Customers with an account should be supported in reporting on their orders. The solutions must provide an environment in which orders and the corresponding status and invoices are retrieved and can be extracted easily. The user or customer is then able to print, attach or archive the relevant paperwork.

I. Internal process management

The solution must support the change, adaptation and management of internal processes. Internal processes are regarded processes where no customers are involved. The solution must thus support the management of cross-departmental processes and workflows with any goal.

II. External process management

The solution must support the change, adaptation and management of external processes. External processes are regarded processes where customers are involved. The solution must thus support the management of processes and workflows of customer facing activities.

III. Task management

The solution must support the assignment of tasks to different users. Without departmental or personal boundaries, any user can be asked or demanded to participate in a workflow.

Appendix G

Area A Platform

Architecture

The Commerce suite is build from different layers, that each have a different function and data abstraction level: these are the presentation layer, the functionality and type layer, the persistence layer and finally and external database.

The presentation layer is the layer that includes cockpits and web services. Objects are presented in a way that end-users can interact with them. Products can be added to a cart or product descriptions can be edited. The functionalities in this layer are founded in the functionality layer for functionality and in the type layer for storage of objects. (Späing, 2014a)

The functionality layer provides Application Programmer's Interface (API) for objects that are presented in the presentation layer. This layer consists of the so-called ServiceLayer Framework and relies on models. The ServiceLayer is an extra layer of services between the end-user and the persistence layer. These different services are divided into subcomponents to provide a clean separation of business- and persistence logic. Its goal is to provide consistency, adaptability and flexibility when data from the persistence layer is prepared for the presentation layer. The models consist of attributes that can be set and recalled when necessary. It describes the rules for the presentation layer. (Zechiel, 2014a)

The type layer describes business object models. Business objects and fields, respectively types and attributes, are created in this layer. The models in the functionality layer are based on these types. The types define the product data that the objects carry. In addition, it specifies any existing relations. Types are templates for objects. The type layer stores the objects for any layers that use objects.

The platform, or persistence layer functions as a gate from the database to the type layer. It deals with abstractions from the database, caching and clustering.

Finally, a third party database that is not an actual layer of the hybris Commerce Suite functions as the component that holds all the data and assures it is persistent. (Späing, 2014a)

Cockpit Framework

The hybris Cockpit Framework is a framework used to build cockpits. In the presentation layer, cockpits are back office applications to manage content. End-users can easily perform their specific task as components can be configured and a graphical user interface can be built. This supports high-level business use cases for the end-user. (Gornicki, 2014a)

Extension Concept

Due to the nature of the hybris platform that is flexible and modular, new functionalities can be added through extensions. Hybris offers a set of extensions, and organizations can develop their own extensions. These extensions can contain business logic, type definitions, web applications or hybris Management Consoles. This allows users to link all the functionalities to cover a certain field of use. (Gornicki, 2013a; Zechiel, 2014b)

Product and Data Modeling

The type layer in hybris uses a model-based approach. Therefore products and data need to be modeled. Hybris allows to use a type and a classification approach. Products are classified and relations are modeled. Of these products, the attributes are defined. In this way, an object is created. A type consists of attributes that manage and store data for the object. This type is a blueprint of an item,

similar to the relation between a class and an object in Java. and product data is made persistent. In the end, a hierarchy as provided in Figure 11 is created that maps and stores all objects. (Latka, 2014; Zechiel, 2014c)

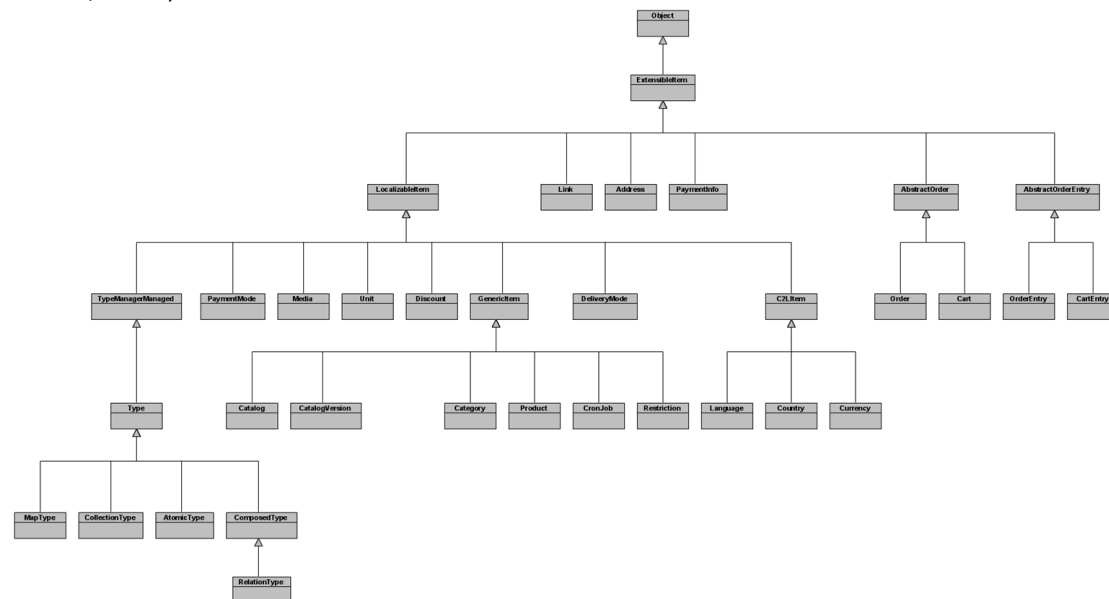


Figure 11: Diagram of type hierarchy

Search Mechanisms, Internationalization, Media and User management

The way hybris is structured allows for efficient adjustments within the Commerce Suite. Search functions profit from the Product and Data modeling, as do Internationalization and Localization functionalities. The search function within the created hierarchy easily retrieves information and related content (Gontarz, 2013). Flexible models can contain attributes location-dependent attributes that help internationalization. (Gornicki, 2013b) Moreover, a wide variety of media files are supported, in order to not limit the product and data modeling in assigning attributes. Finally, the commerce suite offers to set user rights and security protocols that limit users to the information they can obtain. The commerce suite, with this functionality, remains the single source of knowledge and regulates the information that is displayed per user. (Gornicki, 2014b) The application performance and monitoring, allows to monitor a deployed hybris Commerce Suite. Network traffic, database and other areas of the installation can be observed and fine-tuned for better performance and results. (Sawyer, 2013) subsequently, statistical trends that are observed in (online) business can be revealed and reported in personalized reports in individual users' dashboards. The reporting module offers widgets that display chosen parameters and thus report on specific aspects of a business to extract valuable insights of the performance of hybris. (Kukucz, 2014c)

Area B Content

Digital Asset Overview

Hybris categorizes and manages the digital assets created in Product and Data modeling. Three categories of digital assets exist: A digital asset with textual content, a media asset with images and a media asset with multimedia. The assets in this form are all forms of digital information that add value to an item that is managed in the system. In Figure 12, an example is given for a product. All assets of this product that are digital are kept and assigned to the particular model of the product. In the example they are marked in blue.

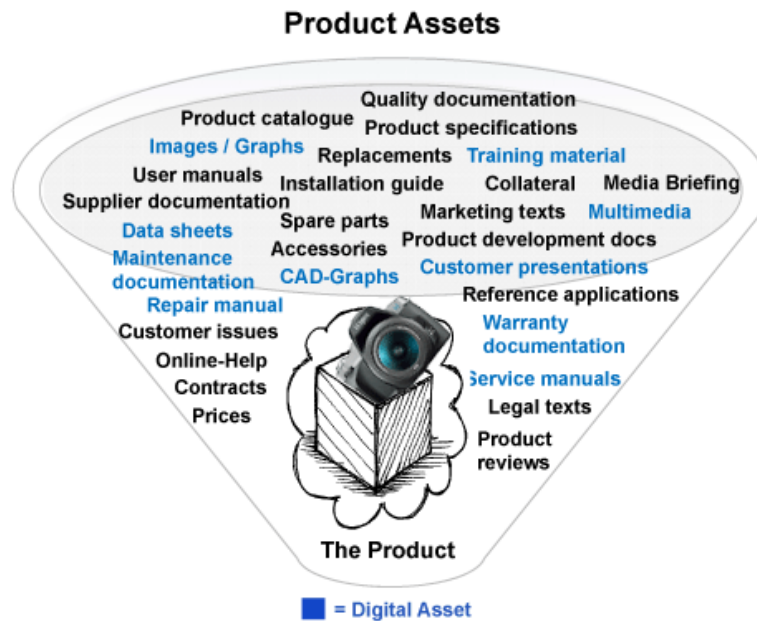


Figure 12: Assets of a product: digital and non-digital

The benefit of these digital product assets is that in a multichannel environment, they can easily be retrieved and correctly displayed. This facilitates the management of digital assets and product data in a centralized and consistent manner. As the asset that is presented in the form of media in the presentation layer depends on the channel in which it is presented, a variety of different formats, sizes and versions need to exist. The asset overview allows to store all different digital assets to assure that the correct one can be delivered according to the correct strategy, format and purpose. (Münch, 2013)

Product Management

Hybris offers a product cockpit module. In this cockpit, an organization has the functionalities to hold, structure and manage products and product information. This is delivered in a collaborative environment. The cockpit is an end-user presentation layer functionality that allows users to create and update all information regarding products and catalogs. (Zechiel, 2014d)

In the Product Content and Catalog module, organizations are able to import information from different sources, to bundle them in a ready to use form in the hybris catalog. The catalog is then the source for the different output channels. Figure 13 graphically represents the product catalog. Additional modules, as the Import Cockpit, reduce the complexity of importing a variety of data assets in order to ensure accurate content. (Moser, 2013a)

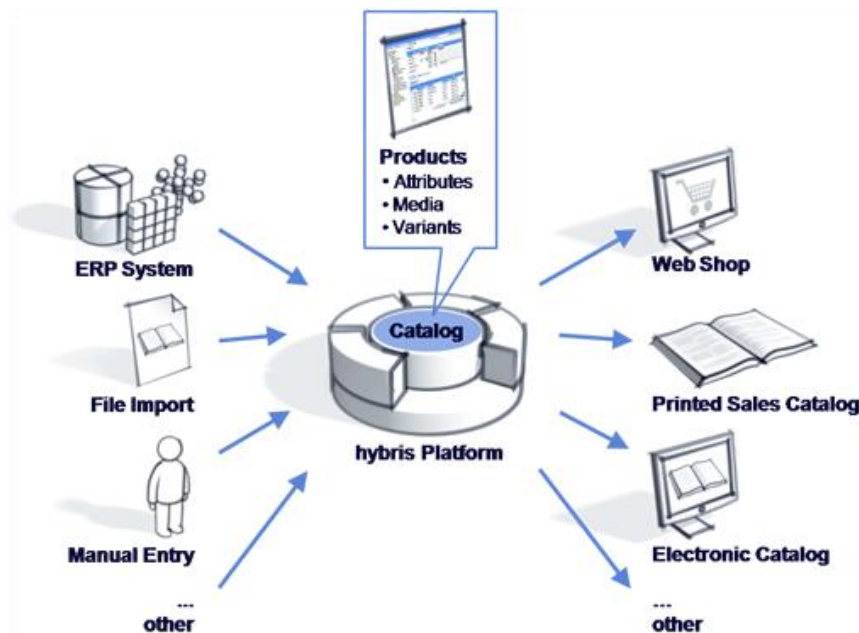


Figure 13: products are managed in the hybris Catalog module

Task Management

The Commerce Suite offers a Workflow and Collaboration module that defines and manages the series of tasks within an organization that produces the final outcome. This module supports complex processes and helps to trigger existing or designed workflows. The organization is able to create, extend, start, delete and terminate workflows. Different departments or individuals within an organization can be added to a workflow. They are notified and asked to perform the part of their task when needed. This supports the information flow within the organization and allows interdepartmental collaboration as specialist can be asked to perform a single task within the workflow to produce the final outcome in an efficient manner. (Bargiela, 2013a)

Area C Commerce

B2C Commerce

The hybris Commerce Suite allows consumers to find, learn and purchase products. Hybris manages and adopts additional channels and delivers a consistent experience across all channels. This allows customers to interact with the organization at every touch point: online, via phone, mobile device and in the store. Moreover, at each touch point the customer receives a relevant and productive interaction. Customers can shop, order and return via any channel and still receive a consistent image of the organization they are interacting with. Through Omni Commerce connect, customers are able to continue their experience while switching from channel as shopping carts are saved for the next visit. Hybris offers the following modules to achieve this: Advanced Personalization, Payment, Vouchers and Promotions, Social Commerce, and Bundling. (Kukucz, 2014a)

Advanced Personalization

This module allows an organization to set up rules to segment customers. According to criteria customers are grouped. These groups can then be subject to different actions by displaying different information. Behavioral targeting is used to determine a customer's online history and behavior. This is used to display targeted content. Customer Oriented Personalization occurs when data that hybris has stored, but also offline data from external sources is used to create customer profiles. Figure 14 demonstrates how several input factors form the basis for segmentation and according to targeting rules, deliver a preset version of the website or promotions. Segmentation can be based on the products that are viewed, the searches that are performed, date of birth, gender and region. As reports

are made, analytics provide intelligence on existing customers that can be useful for future segmentation and the evaluation of segments over time. (Gontarz, 2014a)

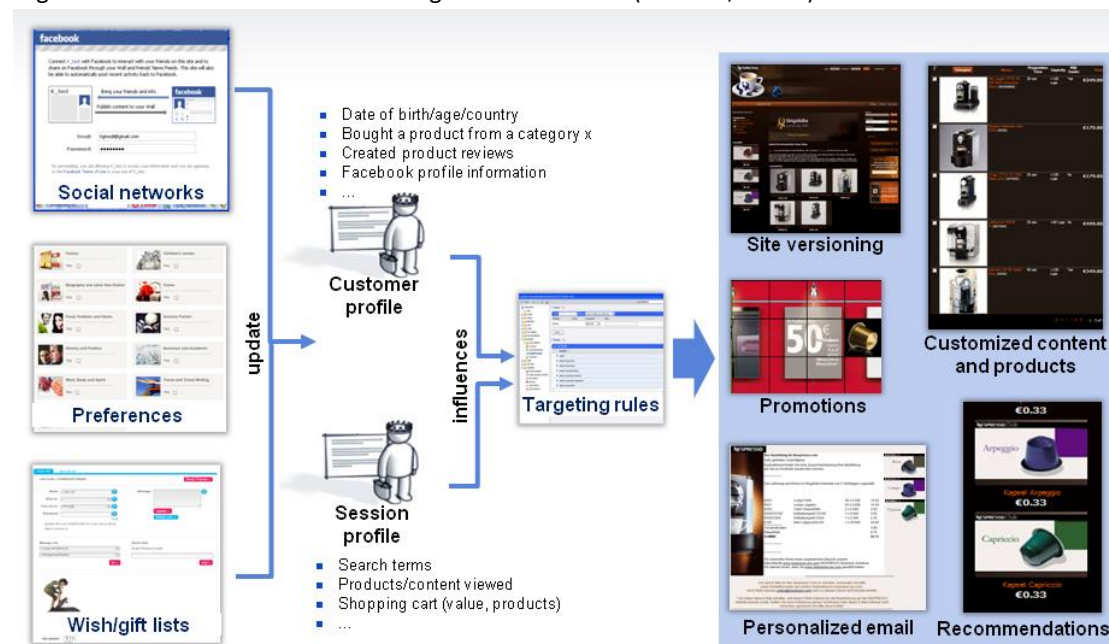


Figure 14: Segmentation, targeting rules and display.

Payment, Voucher, Promotion, Social Commerce and Bundling

To continue the seamless and effortless experience, integration with different payment methods is facilitated in order for the customer to pay in every way possible (Gontarz, 2014b). Vouchers and promotions can be created and distributed. They can then be presented to customers in specific segments or individuals after specific events. (Späing, 2014c) Finally, social commerce allows customers to create wish lists and to write reviews. This not only facilitates personalization but also provides input to collect intelligence on customers and segments. (Bargiela, 2014) Through bundling, hybris allows organizations to offer bundles of products to customers. This includes variable pricing in bundles or the offering of both on- and offline goods in a single transaction. For example, a telco that offers packages of minutes and packages of texts, but also provide discounts when combined. Business rules can be applied in the bundling package in order to facilitate consistency, even when complicated combinations and situation exist. (Kukucz, 2014b)

B2B Commerce

In a Business to Business setting, organizations need to manage a variety of suppliers, distributors, partners and stores. Hybris, as in B2C commerce, offers a single platform to manage these relations. Multiple channels, business models and markets can be managed with the B2B module. In addition, the B2B Commerce solution allows customers to manage their accounts and to place orders in a self-service area. Customers have the possibility to assign rights to their employees regarding purchasing limits, approval rules and workflows. Moreover, an organization can introduce custom catalogs, custom pricing and credit management for every customer. (Bargiela, 2013b;

Search

Hybris offers an advanced search functionality that enables an organization to provide customers with a search functions that can direct them to a specific location or provide information related to the query. It provides category based product navigation that uses the relations of the products the search query retrieves to provide the customer with relevant content. Specific landing pages allow external searches to be redirected to a relevant page based on the query and customer. (Späing, 2014d)

Area D Channels

Online channels

Customer use different online media to engage with an organization. Hybris supports different channels by providing the following different modules: Customer Service, Web Content Management System, Mobile, and InStore.

Customer Service

When a customer service is contacted by phone, the customer service module allows customer-facing departments to have the means to create, amend, cancel or return orders. In addition, the organization is able to retrieve the client's information and history to be able to provide relevant services. The entire order life cycle can be managed when a customer contacts the organization in order to be able to best serve them. (Bargiela, 2014d)

Web Content Management System & Mobile

The Web Content Management System integrates with the existing product content management and other digital assets. It allows organization to manage content across channels. As different channels are supported: regular websites, Internet applications and mobile devices, websites can be managed provide consistent content. By supporting mobile, the cross channel customer is supported in mobile Internet, mobile barcodes and SMS services. (Bargiela, 2014b) Figure 15 demonstrates how different channels, among which the mobile channel, are used at different moments of the customer journey. This multichannel virtuous cycle is supported by hybris. Customers can search for a store via mobile, can check and compare prices via mobile, redeem online coupons via mobile and buy mobile. Hybris offers organizations the possibility to be present at each step of the journey via every channel, including the mobile channel. (Bargiela, 2014b; Späing, 2014b)

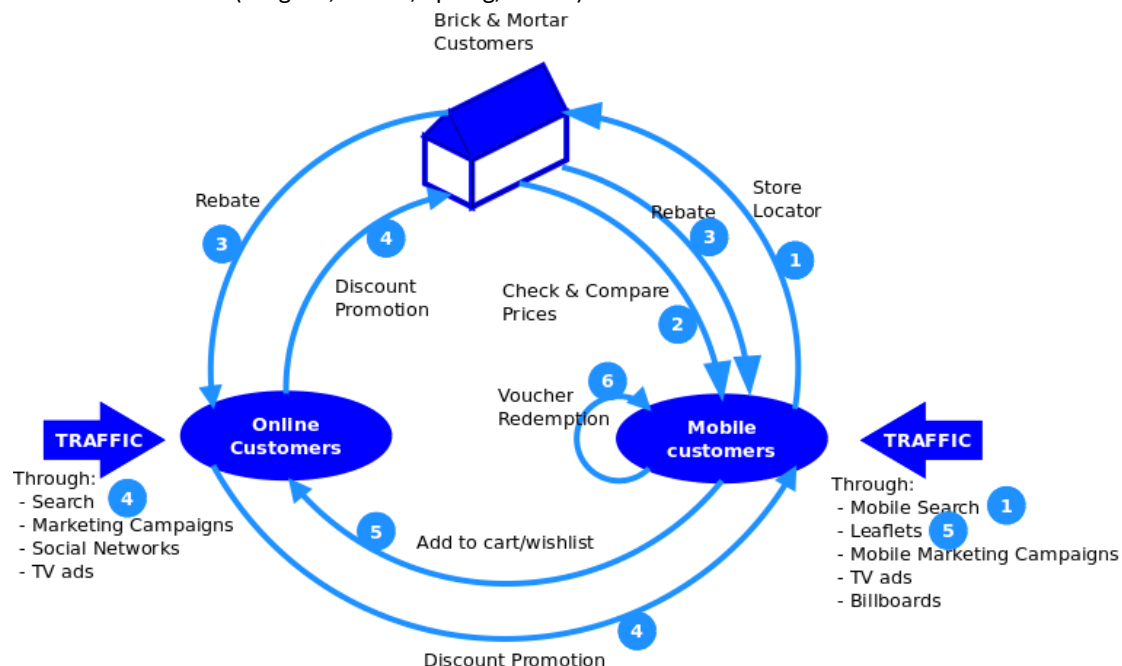


Figure 15: The multichannel virtuous cycle supported by hybris.

InStore

To help customers that visit the organization offline, hybris supports an InStore module that enables the organization to provide information on products and their availability using mobile devices in store. The customer can instantly be redirected to the best location to obtain a specific product, whether that is in the same store, a store nearby or online. The customer journey is guided by providing relevant and consistent information to the customer. (Katrynska, 2014b)

Offline channels

To assure the consistent experience, hybris offers a print module that enables the use of the same product content management for online and offline purposes. This allows offline catalogs, leaflets and promotional material to reflect and be consistent with the online information. (Bargiela, 2014d)

Area E Orders

Order Management Module

The hybris order management module processes, controls and routes orders. These orders can be placed via any channel but are managed in a single hub. All distribution channels can integrate into a single-source product information in this distributed order management. Customer can place orders via any channel, being a brick and mortar store or a mobile channel. These orders are managed through the single 'integration server'. Both customers and customer service agents are able to retrieve all orders and understand where an order was created and see the order history, irrespective of the channel the order was placed. In addition, the integration server provides a single place where financial systems, fraud services and other services that guarantee the coverage of the complete ordering process can integrate with the order process, but also a single place for back end systems like ERP and CRM. Figure 16 below shows the integration possibilities for hybris' order server, or the integration server. (Moser, 2013b)

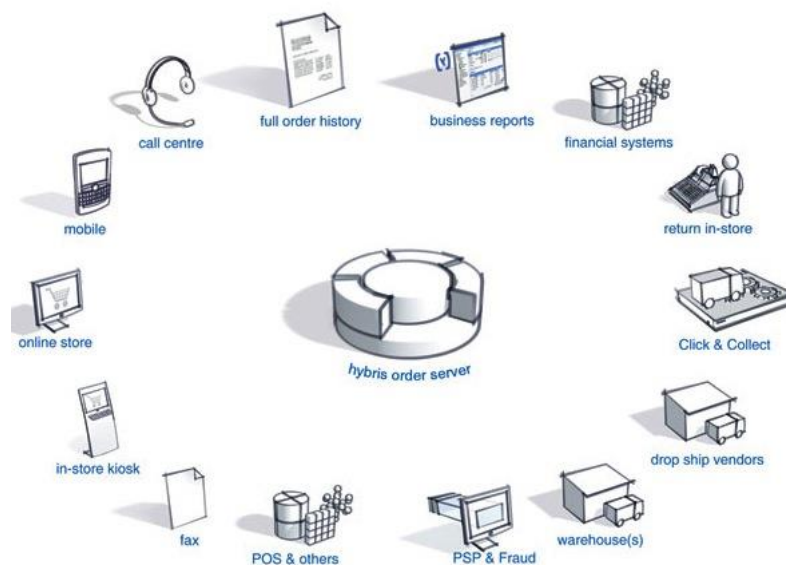


Figure 16: The integration server as a centralized hub for order management.

The Order Management Services for OmniCommerce is the specific cockpit for the order management module. It facilitates an easy overview for operators. It integrates workflows single views of different reports as real-time inventory and order status. This helps the operators and customers by being able to provide the right information at the right time. In addition, it empowers customers to both place an order and to manage the delivery as well. As shown in Figure 17, customers can buy from anywhere and pick up from anywhere.

These omni-channel purchases are supported as the order management services have knowledge on location, distance and stock availability. This allows to offer the customer a best solution, but also the possibility to choose a time and location for the service or product to be delivered.

This is supported by linking information on stock availability and location to the customer's location. Based on this, relevant information can be presented to the clients. The use of automated workflows enables a seamless process when an order enters a specific location. Employees of the organization fulfill their tasks and the final product is delivered as the customer desires. (Wall, 2014)

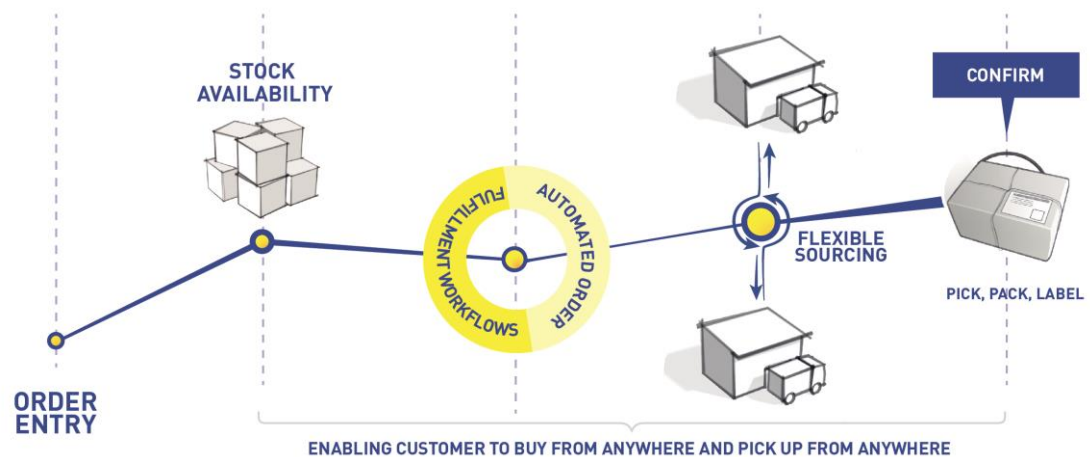


Figure 17: hybris OMS manages orders from order to delivery

Area F SAP-hybris integration

SAP CEI, or Customer Engagement Intelligence, is an SAP solution that provides access to all customer-related information. It provides a platform that is able to analyze and manipulate data to, for example, decompose revenue and margins, and segment and target groups. With a hybris integration, it provides deeper analytics to gain insights on customers and their behavior. (Paepke, 2014a)

An additional extension that is part of the SAP CEI integration is the SAP Product Recommendation Intelligence. This feature extends hybris' possibilities by leveraging product recommendations from SAP to personalize a customer's shopping experience. Hybris, in this scenario the WCMS (feature 4.1.2), benefits from SAP developed functionalities that generate product recommendations based on customer profiles. (De la Barre, 2014)

6.2.6.1 Hybris Data Hub

The hybris Data Hub (Figure 18) allows hybris to feed data that originated from any source into any hybris subsystem. The data hub allows third party systems to provide data in any raw format. This is fed to the data hub that analyzes and corrects for errors before feeding it into any hybris system. It provides flexible data loading capabilities from platform independent environments. To enter this data into a hybris system, the system needs to Data Hub Adapter must be added to the platform, as this adapter provides a communication point for hybris and the data hub. (Cermak, 2014b)

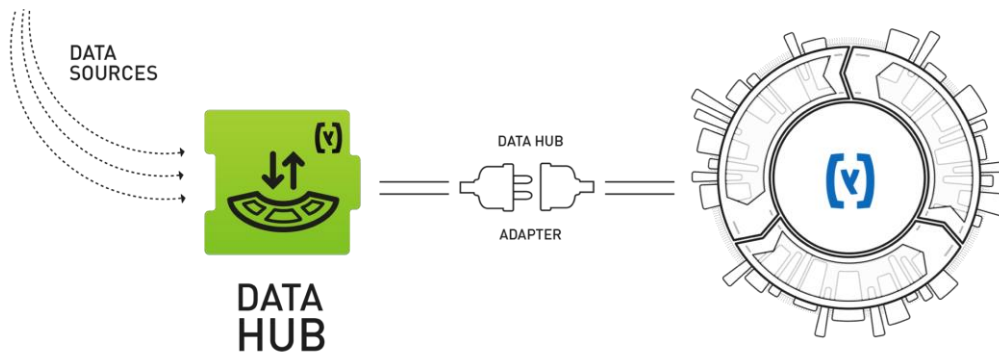


Figure 18: hybris Data Hub

6.2.6.2 SAP Back-End integration

More directly than via the hybris data hub is the solution for the integration with SAP's own ERP. The master data an organization has available and uses in its back end SAP ERP system can be reused in hybris. The standard order fulfillment set up in SAP can integrate with the online catalogs and stores using the commerce suite. This includes data on customers, contact persons, consumers, product and stocks, prices, discounts and bonus buys. (Detzler, 2014) SAP ERP back end integrates with the hybris Commerce Suite front end and reuses master data that is already available. In this integration scenario, SAP ERP remains the system of record for core product data and order fulfillment. There are two mutually exclusive forms of integration, loosely coupled and tightly coupled, which implies that business processes reside respectively in hybris or in SAP. (Paepke, 2014b)

The difference between the Data hub and back-end integration is a result of SAP ownership, collaboration and integration. SAP ERP System has a direct link via master data management that allows for highly and tightly coupled processes in the back and front end. SAP CAR and SAP CEI profit from an http connection for integration. Other integration scenarios take place via hybris Datahub. It offers possibilities for other ERP systems and thus provides hybris with a powerful and flexible integration functionality. The different integration scenario's are shown in Figure 19. The difference between the two solutions is that the data hub allows to import any format of data into hybris, whereas the SAP Back-end integration allows to integrate and run processes cross platform.

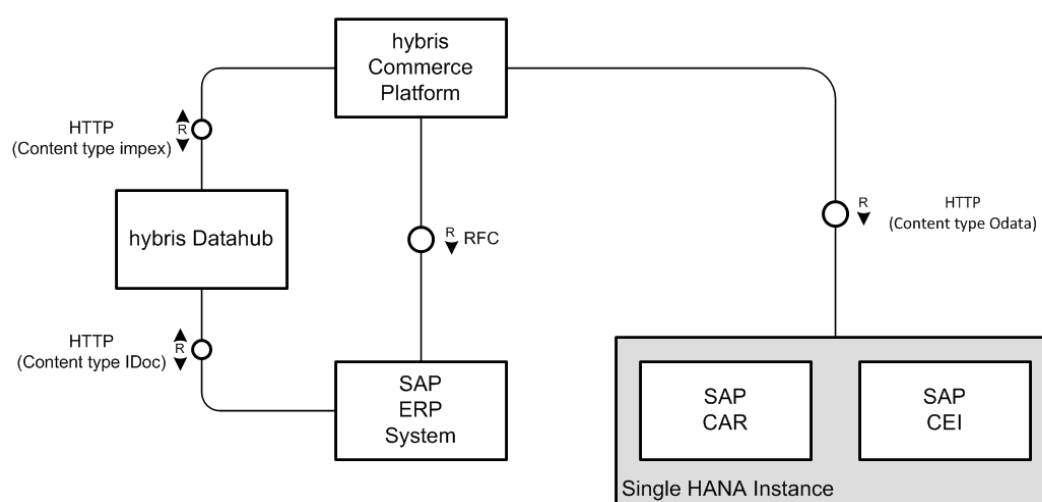


Figure 19: A typical system of data flow with different integration solutions

Appendix H

1. Access to internal data

Hybris does not have an internal database. It runs completely on an external database as described in the Architecture. This external database, however, holds hybris internal data and is directly accessible through the different layers of the Commerce Suite's architecture. Hybris stores the data it collects in its own (external) database which feeds the Commerce Suite as it is part of the core architecture. Via a personalized presentation layer, raw data is accessible by a user. Feature A.1.5

2. Access to external data

Hybris has the capability to import data from external sources. Raw, third party, data can be imported via the data hub. A user is able to access this data for any purpose as long as the module in which the data is accessed uses a Data Hub Adapter. Feature F.1

3. Support of data formats

The data hub supports the import of any format of data into usable information, as raw data to extract useful insights. The Import Cockpit, In addition, allows to import all formats of media to display and to store in the digital asset overview that stores it. On different levels, hybris supports all different formats retrieved and used for different purposes. External data: Feature 6.1, Media: Feature: Feature B.1, Import of Media: Feature B.2.3

4. Exchange of data

Hybris does not support the exchange of data. Hybris can feed specific -static- sources of data to personalized Cockpits. Users, in turn, can adapt the input of their cockpit to show different data sources. An actual transfer or exchange of data from one user to another with hybris is, however, not supported. Rather, data must be stored and a user must be redirected to the data.

5. Exchange of knowledge

Hybris does not support the exchange of knowledge. Hybris can feed specific sources of data to personalized Cockpits. Users can, however, not (easily) adapt a cockpit. The exchange of knowledge must be realized via the collaboration and communication of users, especially for tacit knowledge. Indirect support: Feature A.2.

6. Analytics

Hybris does not support internal analytical functionalities to translate raw figures into the performance of different processes. Hybris Application Performance and Monitoring is able to collect and monitor all performance of the hybris installation itself. Also, hybris advanced personalization is able to apply real time segmentation based on a session profile. Actual analytical functions to extract useful insights from raw data, however, are unsupported without an external integration. With the SAP-back end integration, hybris can plug in to SAP CEI that has analytical and segmentation capabilities. (feature F.2) Additionally, a hybris – adobe analytics integration is available.

7. Report function

Hybris supports the display of statistics and reports with the reporting module. Reports can be real-time via widgets in personalized Cockpits. Both graphical and textual representations can be fed into a personalized cockpit in order for the designated user to interpret a report. Feature: A.9

8. Database of raw data

Hybris supports a database in its architecture that does not distinguish for format. Raw data can be stored. Feature A.1.5.

9. Database of knowledge

Hybris supports a database in its architecture that does not distinguish for format. (Explicit) knowledge can be stored. Feature A.1.5.

10. Database of customers

Hybris supports a database in its architecture that does not distinguish for format. (Explicit) knowledge can be stored. Feature A.1.5. Data can be stored in the form of objects with attributes which supports storing customers with characteristics for different purposes. Feature A.1.4. Finally, the SAP back-end integration allows hybris to integrate with all CRM documentation stored in an SAP ERP back end and to access this external database of customers. Feature A.2

11. Access to customer database

An internal database with customers stored in feature A.1.5 is accessible for any user with the rights to access this data or to be displayed in a personalized Cockpit. Real time access via the SAP back-end integration is also feasible as this integration profits from a direct connection. Feature F.2.

12. Change / Adapt data

An internal database with customers stored in feature A.1.5 is adaptable for any user with the rights to access this data or to be displayed in a personalized Cockpit. Real time access via the SAP back-end integration is also feasible as this integration profits from a direct connection. Again, users with sufficient rights and a correct integration allow to update customer records in SAP ERP from hybris. Feature F.2.

13. Collaboration: users

Hybris supports users by designing workflows and assigning tasks to other users. Tasks can then be presented in a personalized cockpit. This Task management allows users to collaborate and to realize an end product with help of other users. Feature B.3.

14. Collaboration: departments

Hybris supports users by designing workflows and assigning tasks to other users. Workflows are not limited to departments and can include users of any expertise. Tasks can then be presented in a personalized cockpit. This Task management allows users to collaborate and to realize an end product by supporting interdepartmental collaboration. Feature B.3.

15. Communication: users

Hybris does not specifically supports communication between departments. Communication, both digital and non-digital need external support systems. Hybris, with the support for collaboration, however, simplifies the context of communication.

16. Communication: departments

Hybris does not specifically supports communication between departments. Communication, both digital and non-digital need external support systems. Hybris, with the support for collaboration, however, simplifies the context of communication.

17. Design functions

Hybris does not offer specific support or guidance for the exploration and design of contextual experiences.

18. Write code: design website

Hybris supports the management and creation of websites with its Web Content Management Systems. This module has a back end that allows users to choose from templates or to create web content with a cmscockpit. Feature D.1.2.

19. Write code: design content

To design content, hybris does not provide graphical design software. It does, however, support the import of any format of content. This can be stored in product content management and assigned to products to be used in the right context e.g. for images, posters or backgrounds. Feature B.2.3 and feature B.2.2.

20. Write code: design for channels

The hybris WCEM is designed and optimized to support and manage web content for different channels. It provides users with multi-channel support to re-use content in different channels but also supports channel-specific content. All channels can be maintained from the WCMS cockpit. Feature D.1.2.

21. Write code: business logic

Hybris combines business logic with content in its functionality layer. A Java API exist to write this business logic that describe rules on what content to show in which context. Feature A.1.2.

22. Business logic: channel

Hybris supports business logic for channels by managing them and delivering the right content by identifying the device that approaches a channel. Feature D.1

23. Business logic: customer

Hybris supports the segmentation of customers and delivering relevant content to these identified customers. Business logic for the purpose of customers is created and applied based on existing knowledge in the database and campaigns, but also based on a specific session. The used targeting rules or business logic then show the relevant content. Feature C.1.1.

24. Business logic: customer journey

Hybris is able to redirect customers to a specific sub site or product page based on external search queries. Feature C.3. In addition, hybris recommends relevant pages based on a customer account. Feature C.1.1. Hybris can not determine the exact moment of the customer journey for an individual customer, but manages every step and supports easy retrieval and recommendations that are likely to fit the journey.

25. Content import

Content import of any format of content is supported by the import cockpit. This can be stored in product content management and assigned to products to be used in the right context e.g. for images, posters or backgrounds. Feature B.2.3 and feature B.2.2.

26. Customer data: attributes

Data can be stored in the form of objects with attributes which supports storing customers with characteristics for different purposes. Feature A.1.4.

27. Customer data: segments

Hybris can store and model data as objects. This implies objects can have attributes and data can be categorized or segmented based on these attributes. This fulfills the needs to assign and manage

segments for customers. Feature A.4. The advanced personalization module groups customers according to rules. Feature C.1.1.

28. Real time segmentation

The advanced personalization feature of hybris allows users to use business logic to combine information of an existing customer profile and a current session profile to deliver a personalized experience. This happens real-time and segments customers to decide on the correct and relevant content. Feature C.1.1.

29. Customer recognition

Hybris recognizes current sessions and customer behavior to deliver context-based content. It recognizes behavior. In addition, customers can create accounts and when logged in, a customer profile is used to extract more relevant attributes. A customer can be recognized when logged in, and a customer's behavior can be used for relevant content (feature C.1) but hybris can not recognize customers that engage with the customer without their identification.

30. Customer log in

The B2C Commerce module allows customers to create profiles, store wish lists and connect accounts to facebook or other social media. Feature C.1.

31. Channel management

All channels are managed and supported with the Channels module of the hybris Commerce Suite. Experiences for different channels can be designed and managed, thus allowing users to exploit all channels and support all devices customers may use. Feature D.

32. Business logic application

Business logic is written in different modules but eventually applied in the functionality layer of hybris' architecture. This layer combines the content of the type layer to present the correct content in the presentation layer. Thus, business logic application occurs in the hybris functionality layer. Feature A.1.2.

33. Catalogs

Products can be stored as object with attributes. (feature A.4) this facilitates categorization for catalogs. These catalogs can be created based on any of these attributes by users to display for customers. Users can combine different sources of products and bundle them into catalogs. Feature B.2.2.

34. Product information adaptable

Hybris can store and model data as objects. This implies that products are stored as objects and can have attributes. Feature A.4. Users with the correct rights are able to model and adapt this data for products as product management is a core feature of hybris. Data from different sources can be used to create products to adapt the information for these products, even depending on the channel or customer. Feature B.2.1.

35. Visibility

Hybris' Web Content Management Module allows to add significant keywords to products. Moreover, editorial content is easily added and metatags and attributes describe products, which contributes to higher search engine rankings. Also, hybris creates numerous keyword rich landing pages that index URLs, used by search engines, can access for high visibility. Feature D.1.2.

36. Search function internal

The hybris search function is optimized to deliver relevant content, with regard to the customer. Customers can search for attributes and supported by spelling check and long keywords functionalities, receive better results. In addition, due to the nature of the objects hybris stores, relations between products can be displayed and used to show relevant products. Feature A.5 and feature C.3.

37. Search function external

Hybris can redirect customers to specific landing pages based on their profile or search query in a search engine. Hybris creates numerous keyword rich landing pages that index URLs, used by search engines, can access. Thus, customers engage by directly landing on a relevant page. Feature C.3.

38. Check out

Hybris supports checkout in the order process. Customers can create an account, create a wish list, fill a cart and finally check out that cart. Feature C.1

39. Stock Check

With the hybris SAP integration, SAP ERP functions as the back end for stock levels and other input for products. Stock check is therefore supported by hybris in the buying process. Feature F.2 and feature C.1.

40. Transaction

Hybris supports payment by integrating it in the order process. It supports the integration of different payment methods in order to support the customers with his first choice. Feature C.1.2.

41. Order Management

The hybris Order Management Module allows users to manage the entire order process. This implies managing channels, payment, delivery in a way that is adaptable if changes are required or requested. Feature E.1.

42. Track payment

The hybris commerce module includes fraud detection to prevent malicious orders. Furthermore, the entire order process can be monitored and tracked with the hybris order management module. Feature C.1.2 and feature E.1.

43. Track order

The entire order process can be monitored and tracked with the hybris order management module. It provides real time reports on order status. Feature E.1.

44. Logistics plugin

The back end integration with SAP allows for real time information on the logistic processes that take place to deliver an order. This information is linked to the hybris order management to track internal handling process. Feature E.1 and feature F.2.

45. Contact Customer

Hybris supports setting up campaigns, including targeting different segments of customers by e-mail. The means for direct contact with a customer are not supported, but the customer service module of hybris supports the contact with customers. Feature D.1.1.

46. Business logic: alternative product

Hybris supports the management of an order. It can monitor stock levels and preferences. Additionally, business logic can be written to recommend an alternative product. Order management services support these functionalities. Feature E.2.

47. Business logic: alternative delivery

Hybris supports the management of an order. It can monitor stock levels and preferences. On addition, it monitors location, distance to recommend an alternative delivery. Order management services support these functionalities. Feature E.2.

48. Real time availability

Product management and Order management services provide the possibility to assign availability as an attribute of a product. Feature B.2 and feature E.2. The SAP Back-End integration can provide input for real time stock levels. Feature F.2.

49. Real time alternative

Product management and Order management services provide the possibility to assign availability or lead time as an attribute of a product. Feature B.2 and feature E.2. The SAP Back-End integration can provide input for recommendations, as SAP CEI offers SAP Product Recommendation Intelligence to offer an alternative recommendation when required. Feature F.2.

50. Real time order update

Hybris' order management module and order management services allow to track an order in real time, including keeping a customer up to date by allowing access to their specific order. Feature E.2.

51. Social platform

Hybris Social Commerce provides users and customers with the possibility to review products. This creates a social platform with ratings and customer interactions for products and services. Feature C.1.4.

52. Social media monitoring

Hybris does not support social media monitoring. It allows the integration of social media to personalize accounts but does not have a module that actively surveys social media. An SAP integration does provide SAP CRM tools that include social media monitoring possibilities. Feature C.1.1 and feature F.2.

53. Social media participation.

Hybris does not support social media monitoring. It allows the integration of social media to personalize accounts but does not have a module that actively surveys social media. An SAP integration does provide SAP CRM tools that include social media monitoring possibilities. Feature C.1.1 and feature F.2.

54. Custom catalog

Hybris provides the means to display customize product lists and catalogs for specific organizations and customers (in a b2b setting) to display relevant products. Feature C.2.2.

55. Custom quote

Hybris supports complex pricing models in b2b situations. Whether managed in hybris or in an ERP system, contractual agreements can be integrated in price quotes. Additionally, the hybris bundle feature supports complex pricing for combinations or bundles of products. Feature C.2.3 and feature C.1.5.

56. Contract check

Hybris B2B Commerce module supports the integration of individual contracts for products and pricing. Whether managed in hybris or in an ERP system, contractual agreements can be integrated in price quotes. Feature C.2.3.

57. Credit check

Hybris B2B Commerce module supports assigning credit to a customer. This gives a b2b customer a pre-approved spending limit for orders. Feature C.2.

58. Self-service support

B2B Customers are able to manage their own accounts. This includes reviewing orders, setting up workflows and managing cost centers and budgets Feature C.2.1.

59. Self-service – manage orders

B2B Customers are able to manage their own accounts. This includes reviewing orders, setting up workflows and managing cost centers and budgets. The Order Management Services, additionally, provide the possibilities to manipulate orders. Feature C.2.1 and feature E.2.

60. Self-service – report on orders

B2B Customers are able to manage their own accounts. This includes reviewing orders, setting up workflows and managing cost centers and budgets. An order history and corresponding invoices can be managed. Feature C.2.1.

I. Internal process management

Hybris provides the means to support external processes. It allows designing workflows and assigning tasks. Best practices are likely to have a template and can be used by users. If business processes are stored and managed in a back-end, especially in SAP ERP, the SAP back-end integration supports copying business processes. In addition, business processes can be tightly coupled. This implies that master data is reused and business processes can reside in either hybris or in SAP ERP, and can be triggered from both. Feature B.3 and feature F.2.

II. External process management

External, customer facing, processes are the key of hybris portfolio. Internal processes are optimized to support external processes. Hybris aims at providing a single source to manage all customer engagement and therefore the hybris commerce suite is a solution that manages the external processes in which customers engage with (users of) the organization. Feature: hybris Commerce Suite.

III. Task management

Hybris supports designing workflows and assigning tasks to any users in an organization. Any users can be asked to collaborate in a workflow to achieve a common goal. Each user can be assigned a individual task that is part of a workflow and once finished triggers a following user to continue with his task to proceed in the larger workflow. Hybris intentionally supports interdepartmental collaboration in with this module to achieve support complex processes across organizational departments, to keep the customer at the center. Feature B.3.

Appendix I

Questionnaire for the method

List of questions to present to the client-organization. Where 'your organization' is stated, the question can also apply to 'you' or 'the user'

Insights

The following questions address the needs of your organization to support processes.

1. Does your organization require direct access to internal data?
2. Does your organization require direct access to external data?
3. Is there a need to support (a variety of) data formats?
4. Does your organization require support for the exchange of data?
5. Does your organization require support for the exchange of knowledge?
6. Does your organization require analytics?
7. Does your organization require a report function?
8. Does your organization require a database of raw data?
9. Does your organization require a database of knowledge?
10. Does your organization require a database of customers?

Orchestration

The following questions address the needs of the users in the organization

11. Do users require real-time access to databases?
 12. Do users need to change and adapt data records?
 13. Is there a need to support collaboration between users?
 14. Is there a need to support collaboration between departments?
 15. Is there a need to support communication between users?
 16. Is there a need to support communication between departments?
-
- I. Does your organization require internal process management?
 - II. Does your organization require external process management?
 - III. Does your organization require task management?

Design

The following questions address the needs of the users in the organization

17. Do users need a design function?
18. Do users need a platform to design websites?
19. Do users need a platform to design content?
20. Do users need to design for different channels?
21. Do users need to design business logic?
22. Do users need a platform to apply business logic for channels?
23. Do users need a platform to apply business logic for customers?
24. Do users need a platform to apply business logic for customer journey?
25. Do users need content import?

Deliver

The following questions address the needs of your organization to support processes.

26. Is there a need to assign attributes to customer data?
27. Is there a need to segment customers?
28. Is there a need for real-time segmentation?
29. Is there a need for customer recognition?
30. Is there a need to support the creation and use of customer profiles/accounts?
31. Is there a need for channel management?
32. Is there a need for a platform to apply business logic?

The experience

The following questions address the needs of the organization to serve customers.

33. Is there a need to support catalogs?
34. Is there a need for adaptable product information?
35. Does your organization require a platform to manage visibility?
36. Is there a need to support for an internal search?
37. Is there a need to support for an external search?
38. Is there a need to support checkout?
39. Is there a need to support stock check?
40. Is there a need to support for a transaction?
41. Does your organization require order management?
42. Is there a need to track payments?
43. Is there a need to track orders?
44. Is there a need for a logistics plugin?
45. Is there a need to contact customers?
46. Is there a need for business logic: alternative products?
47. Is there a need for business logic: alternative delivery?
48. Is there a need to display real time availability
49. Is there a need to display real time alternatives?
50. Is there a need to support real time order updates?
51. Is there a need to support a (local) social platform?
52. Is there a need to support social media monitoring?
53. Is there a need to support social media participation?
54. Is there a need for custom catalogs?
55. Is there a need to support custom quotes?
56. Is there a need for contract checks?
57. Is there a need for credit checks?
58. Is there a need to support self-service support?
59. Is there a need to support self-service to manage orders?
60. Is there a need to support self-service to report on orders?

Appendix J

List of consequences that follow from preconditions

Consequence 2

Requirements that are fulfilled by feature F.2: the SAP Back-End integration requires the client-organization to run SAP ERP as back end system. If this is not the case, feature F.1: the hybris data hub can be used as an alternative. This alternative, however, does not provide real time information and does not allow for tightly coupled business processes. Hybris supports running business processes within the Commerce Suite, but the organization then is faced with double data and processes in both the original source and in the Commerce Suite. If the organization runs SAP, the full potential of coupled data and processes by the hybris-SAP Back-End integration can be leveraged.

Consequence 3

Requirements that are fulfilled by feature F.2: the SAP Back-End integration requires the client-organization to run SAP ERP as back end system. If this is not the case, feature F.1: the hybris data hub can be used as an alternative. This alternative, however, does not provide real time information and does not allow for tightly coupled business processes. Hybris supports running business processes within the Commerce Suite, but the organization then is faced with double data and processes in both the original source and in the Commerce Suite. If the organization runs SAP, the full potential of coupled data and processes by the hybris-SAP Back-End integration can be leveraged.

Consequence 4

The requirement to exchange data is unsupported by hybris, as hybris does not have a feature that enables the peer-to-peer exchange of data. Hybris cockpits can, however, be adapted to display different sources of data. Feature A.2 thus helps in the exchange of data, but for full support to send and receive data in a peer-to-peer context, an external solution is required.

Consequence 5

The requirement to exchange knowledge is not directly supported by hybris. There is no feature that enables the peer-to-peer exchange of (tacit) knowledge. Collaboration features of feature B.3 help users collaborate and leverage individual knowledge and know-how in workflows but the exchange of knowledge itself is not supported.

Consequence 6

Requirement for an analytical function to extract insights is not supported by hybris. Facts, figures and information from the use of channels and sites managed by hybris can be reported by hybris feature A.9. But analyzing external data to extract insights for strategies is only supported by integration possibilities. The SAP back-end integration allows SAP CEI to leverage analytical and segmentation capabilities for hybris, as can a hybris – adobe analytics integration. One of these additional features thus needs to be implemented

Consequence 15

The requirement to support communication between users is not supported. Hybris feature B.3 allows to assign tasks but does not facilitate means of communication between users. An external solution must be integrated to fulfill this requirement.

Consequence 16

The requirement to support communication that focuses on interdepartmental communication is not supported. Hybris feature B.3 allows to assign tasks that cross departmental boundaries, but does not facilitate means of communication between users or departments. An external solution must be integrated to fulfill this requirement.

Consequence 19

The requirement to design content is not supported by hybris. There are no graphical design features to create and design content. Additional external solutions are required to create these. Hybris subsequently does support the import of this externally created and designed content by feature B.2.2 and B.2.3.

Consequence 24

Hybris supports user profiles, session profiles and search query landing pages with feature C.1.1, C.3 and D.1.2. Determining a customer's exact step in the customer journey is however not a direct feature that hybris supports.

Consequence 29

The recognition of anonymous customers is not supported by hybris. The goal of recognizing a customer is to provide relevant content. Hybris supports the delivery of contextual experiences based on a session profile but can not benefit from the full capabilities and strategic sources if a customer is anonymous. Without log in, a customer remains anonymous.

Consequence 52

Hybris lacks the capability to monitor social media itself. SAP CRM Social, however, is able to fulfill this requirement and monitor social media for trends, products, hashtags, etc. Hybris integrates the SAP functionalities with the SAP back-end integration. Therefore feature F.2 is required.

Consequence 53

Hybris lacks the capability to participate with social media itself. SAP CRM Social, however, is able to fulfill this requirement and participate and actively react to social media trends and messages directed to an organization. Hybris integrates the SAP functionalities with the SAP back-end integration. Therefore feature F.2 is required.

Appendix K

Guidelines for Design Science in Information Systems Research (Hevner et al, 2004)

Table 1. Design-Science Research Guidelines	
Guideline	Description
Guideline 1: Design as an Artifact	Design-science research must produce a viable artifact in the form of a construct, a model, a method, or an instantiation.
Guideline 2: Problem Relevance	The objective of design-science research is to develop technology-based solutions to important and relevant business problems.
Guideline 3: Design Evaluation	The utility, quality, and efficacy of a design artifact must be rigorously demonstrated via well-executed evaluation methods.
Guideline 4: Research Contributions	Effective design-science research must provide clear and verifiable contributions in the areas of the design artifact, design foundations, and/or design methodologies.
Guideline 5: Research Rigor	Design-science research relies upon the application of rigorous methods in both the construction and evaluation of the design artifact.
Guideline 6: Design as a Search Process	The search for an effective artifact requires utilizing available means to reach desired ends while satisfying laws in the problem environment.
Guideline 7: Communication of Research	Design-science research must be presented effectively both to technology-oriented as well as management-oriented audiences.