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BUSINESS ARCHITECTURE OF AN E-COMMERCE COMPANY

Kamelia Shoylekova

Angel Kanchev University of Ruse

Abstract: *The development of organization architecture proceeds in two main stages: design and implementation. Organization architecture design is an object of investigation firstly to business architecture and software architecture. The paper describes the business architecture design of an e-commerce company*

Keywords: *e-commerce company, business architecture, business model, services, business processes, software architecture.*

INTRODUCTION

Business modelling is a fast growing discipline that is focused on analyzing the business with the purpose of obtaining different ideas about particular enterprise. These concepts are created using models describing the processes and services implemented in a Trading Company (TC). Combination of all models describing different views of a change in the organization from one (current) state to another (desired) state is a subject of business architecture study.

1. SPECIFYING THE BASIC ELEMENTS OF BUSINESS ARCHITECTURE OF AN E-COMMERCE COMPANY

Ever since its foundation, the Company "X" is dealing with Trading (TC). Over the early years of its establishment, the TC offered its goods at a store, but as home computers and internet became more common, the TC's managers decided that it is time to expand the business by creating an online shop for trading the stock online. The main goal of the innovation launched by the Management Board is to improve the company's marketing presentation and its competitive power through activities expansion and transformation into an e-commerce company (ECC). In that context, the managers defined the company's mission as it follows: *to make customers feel comfortable by providing them access to the high-quality products which we offer in various geographical regions.*

Figure 1 displays the basic elements of TC's business architecture and their interrelationships. The elements are same for TC and ECC.

In order to realize the intended innovations, the company needs a business plan for implementing the changes. The plan must be structured in a way that will enable the company to achieve its goals.

When designing the ECC's business architecture it is necessary to draw out a strategy or strategies for reaching the set up goals. The strategy described herein helps the achievement of the following target: to reach an 80% customer satisfaction index for the leading products of the ECC. It can be realized with the help of the below listed domain specific strategies:

- Training employees for customer service including the usage of product promotion techniques;
- Special offers to customers who show interest in the company's products;
- Solving 80% of customers' problems during a phone call, or face-to-face conversation with a company's employee. It may concern the following situations: (1) The

customer has not understood anything about a reference product. (2) Upon the receipt of a product, the customer notices a mismatch between the information on the internet site or the information given by an employee, and the information attached to the product. (3) There is a problem with the product delivery.

- Special offers to regular customers.

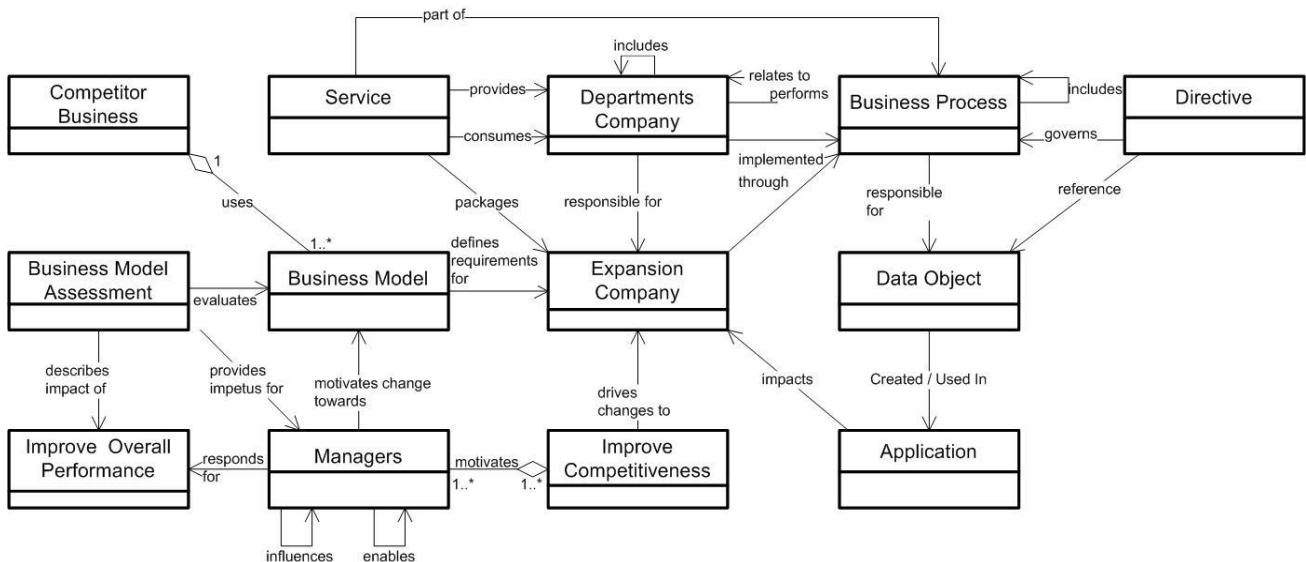


Fig. 1 Basic elements of business structure for TC, ECC and their interrelations

Whether the built up strategy shall have the expected effect is not always easy to be predicted and ascertained in the beginning of its application. That is why the key performance indicators are welcome to help on. When applying the above mentioned strategies, the key performance indicators are the number of records compiled in the incident management system and the percentage of situations marked as “solved” in the end of the phone call. It is aimed to get process indices approximate to the percentages envisaged within the strategy statements.

It should be mentioned that in the process of designing the business architecture the architects have to consider a number of environmental factors, which may be significant for its functioning, but are out of control. These factors start to press the organization at a certain moment of time and sometimes even stop its further development. Therefore, the ECC needs a specific “driver” for driving it ahead.

The paper focuses on the situation when the term “driver” refers to the company’s managers. Managers are very important for the innovations in the company. A successful manager should possess a deep knowledge about:

- goods and/or services that are offered;
- customers’ necessities;
- real problems on the market.

A manager should be able to make a realistic assessment of their company that should be adequate to the needs of the organization with regard to work and employees’ achievements.

Figure 2 shows the business model of the enterprise. It is seen that customers are divided into three groups: regular, new and potential customers. Practically, a customer of any group can belong to another group of customers. To avoid further confusion the focus is placed on a situation when a customer makes an order to the company for the first time. In that moment he/she enters the group of new customers. Within a short period the same

customer makes several other orders, in result of which he/she is added for the time being to the group of regular customers. It is a situation when a customer enters two different groups, i.e. new customers and regular customers.

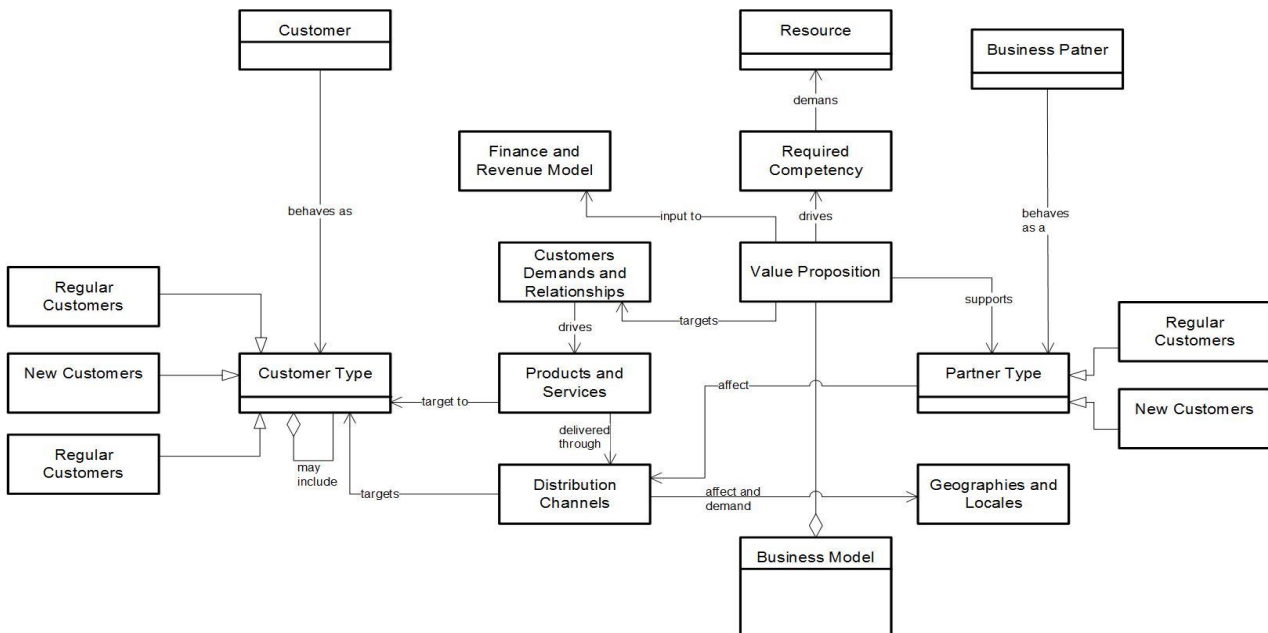


Fig. 2 Business model of the e-commerce company

2. DESIGNING THE BUSINESS PROCESSES AND SERVICES OF THE BUSINESS ARCHITECTURE FOR THE E-COMMERCE COMPANY

The next step of designing the layer of processes and the layer of services is recommended to be built up in parallel for the business architecture and the software architecture.

When designing the business architecture's layers of processes and services for the ECC, the architects create several diagrams, which are used by the software developers. These diagrams are known as Use Case Diagram, Class Diagram and Sequence Diagram [3], [4].

The teams of architects developing the business architecture and the software architecture have to deal with the task of expanding the enterprise activities. Considering the previous way of trading goods at a store, the activities of an organization of that type can be expanded with an online shop. The first two models (Figure 3 and Figure 4) describe the situation perfectly. Figure 3 describes the actors of a real system that can be built for an organization that trades its goods initially at a store, and afterwards expands its activities with the help of an online shop. Simultaneously with the development of the online shop, the company decides that it would be good to provide an option to its customers for payment with credit and/or debit cards. The decision is made and prompted by the customers to a certain extent in a moment when it is ascertained that the strategy for achieving the goal of 80% satisfaction index for the ECC's leading products worked on successfully. The change in the ECC is provoked by the numerous customers' questions whether they could make the payment with credit and/or debit cards. Figure 4 is created on the ground of Figure 3. Figure 4 describes the use case for each actor represented in the context diagram.

Customers play a significant part in the designing processes of the ECC multi-layer-business architecture. Figure 5 shows the model of use case orders to the web-based online shop.

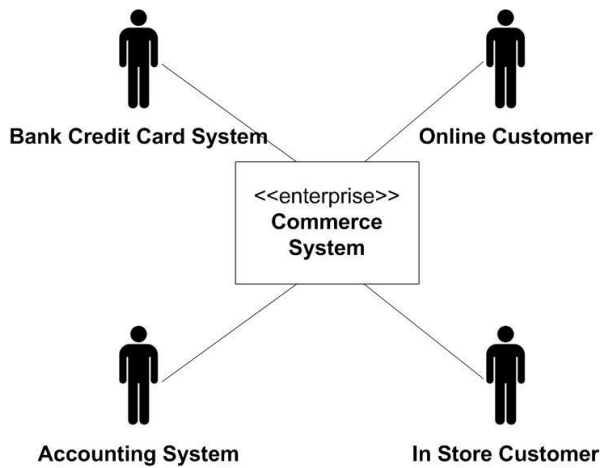


Fig. 3 Context diagram of the TC

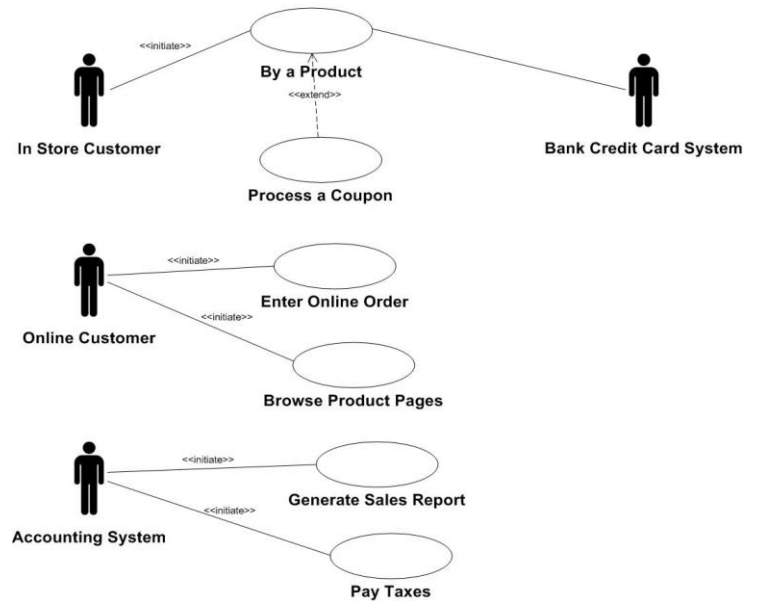


Fig. 4 Use case diagram of the e-commerce system

Business architects have to consider the following scenarios optional for e-commerce businesses:

Scenario 1: A customer looks through the catalogue and adds the desired products in the basket. On the point of paying he/she enters his/her delivery information and credit card data, followed by payment confirmation. The system verifies the card authorization, confirms the purchase and sends a confirmation message by e-mail.

Scenario 2: In case that the credit card authorization fails.

Scenario 3: A regular customer is not required to enter delivery information and credit card data.

Scenarios are diverse but their resemblance lies in the event that the customer has the same target, i.e. to buy a product. The customer does not always manage to do it but the target remains. This target is the key to the use cases – a set of scenarios interconnected by a common user target. In fact, the description of scenarios represents a series of steps, which clarify the interaction between the customer and the system.

Underlying scenario for an ECC successful performance:

1. Customer looks through the catalogue and chooses the products he/she wants to buy.

2. Customer goes to purchase confirmation.

3. Customer fills in delivery information (address, express or standard delivery, shipping company's name). If he/she is a regular customer,

a. the system displays the current information for delivery, price and payment.

b. the customer may accept the default settings or define new ones.

In such an event, the system passes directly to step 6 of the underlying successful performance scenario.

4. The system displays complete information about costs including delivery charges.

5. Customer fills in his/her personal data.

6. The system authorizes the purchase. In case of credit card authorization failure, a customer re-fills his/her credit card data or nullifies the purchase.

In such an event, the alternative is: (1) In case that the system fails to authorize the credit card purchase, the customer must nullify the purchase. (2) If the system authorizes the credit card purchase, the system goes directly to step 7 of the underlying successful performance scenario.

7. The system confirms the purchase instantly.
8. The system sends a confirmation message to the customer by e-mail.

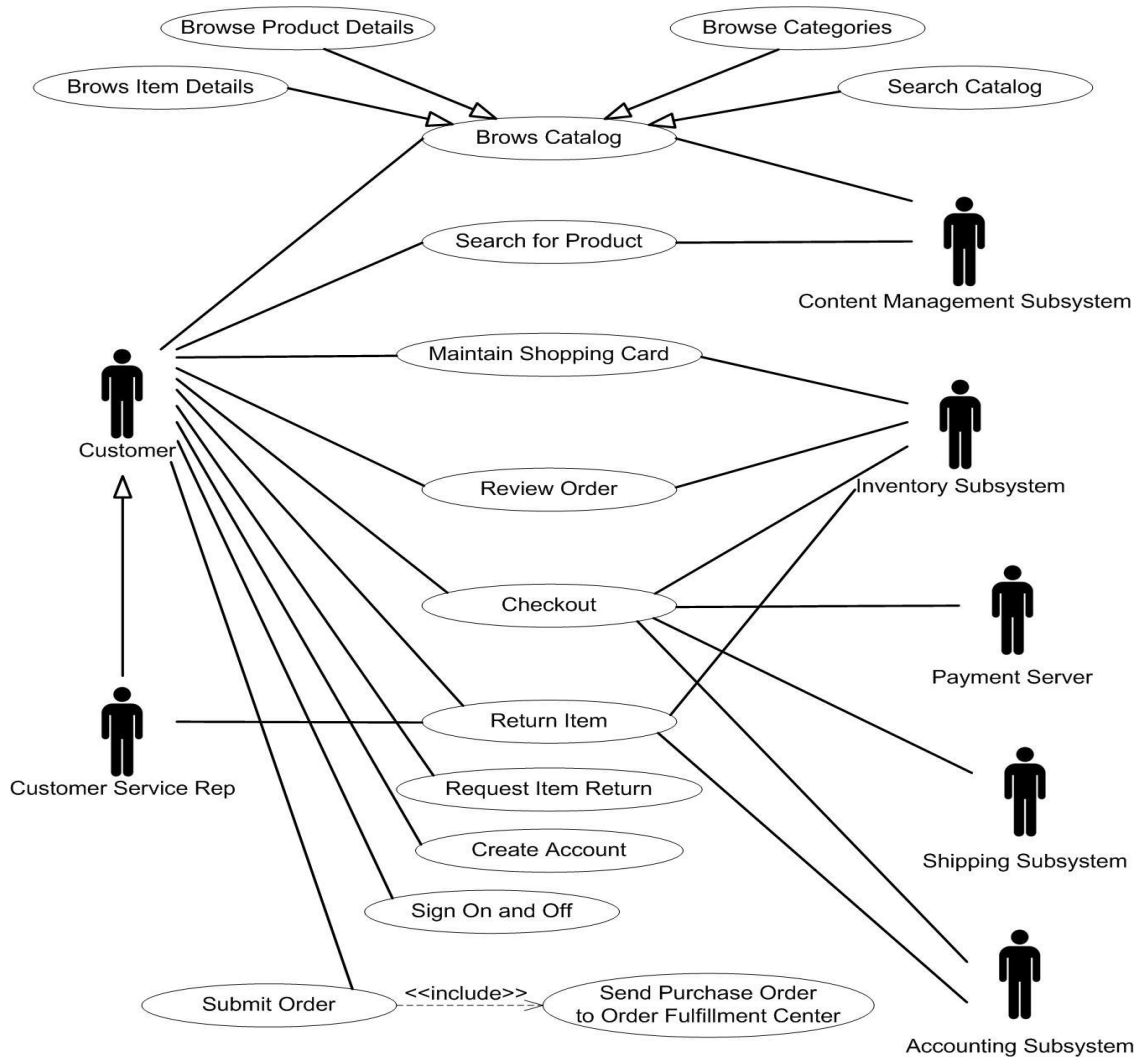


Fig. 5 Use case model for orders to the web-based online shop

Another significant point for the ECC performance is the process of delivery tracking. The latter is designed with the help of the sequence diagram (Figure 6). The sequence diagram is applied for examining the behavior of several objects within a single use case (identification in the system) and it points out the co-operation of objects.

On building the ECC business architecture it is necessary to design services' semantic model for describing the enterprise activities and the relationships between primitive artifacts in a concrete organization (Figure 7). Referring to Figure 7 it is important to define the role types of the target group (i.e. people to which a service is directed). For instance, a service can be a message initiator, a mediator or a message receiver. It is not out of the ordinary for services to role exchange. In some cases a service may represent functionality, in other it may need the functionality offered by other services [1], [2].

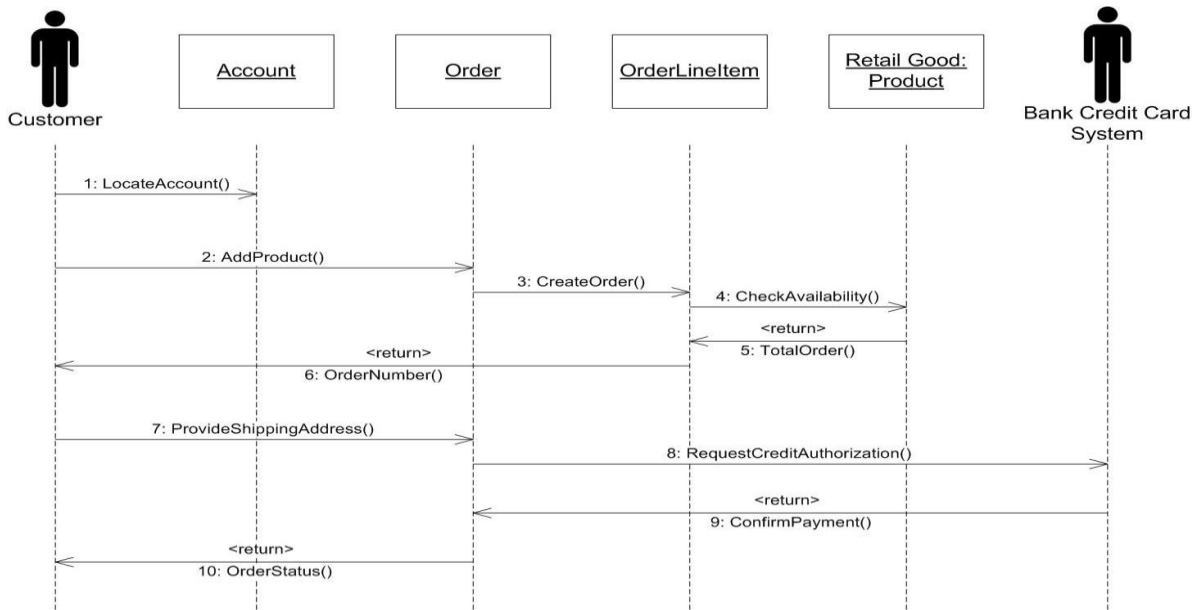


Fig. 6 Sequence diagram for use case orders to the web-based online shop

Within a message exchange medium in the process of interaction, the services can assume two basic roles, i.e. supplier or consumer (user). A service may take more than once one or another role. The supplier bears the responsibility for the entire performance of the service delivery regarding efficiency, quality and integrity, while a customer is chosen to “purchase” the service. Consumer-supplier agreement is available to fix the general service levels, as well as the terms and conditions for service delivery.

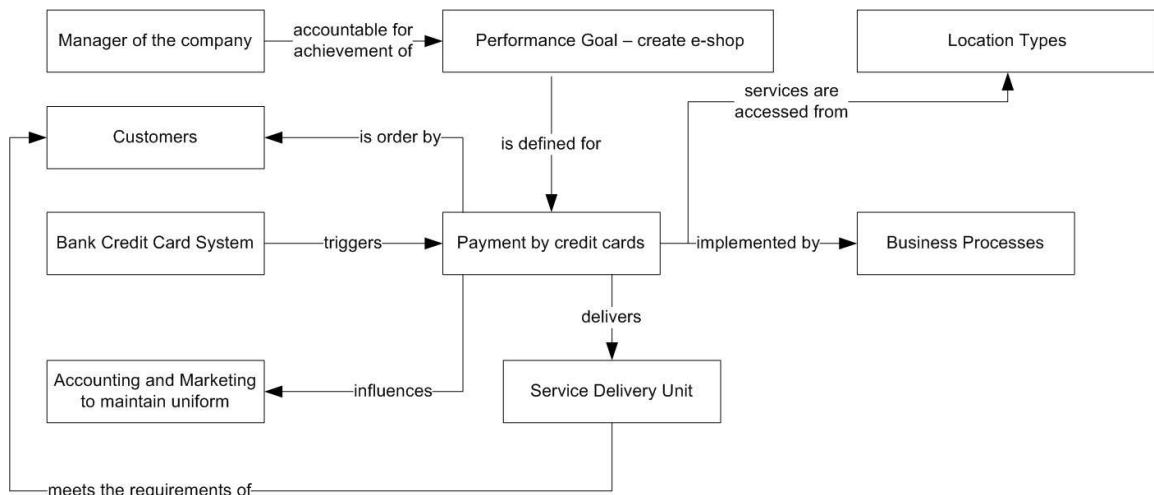


Fig. 7 Semantic model of ECC services

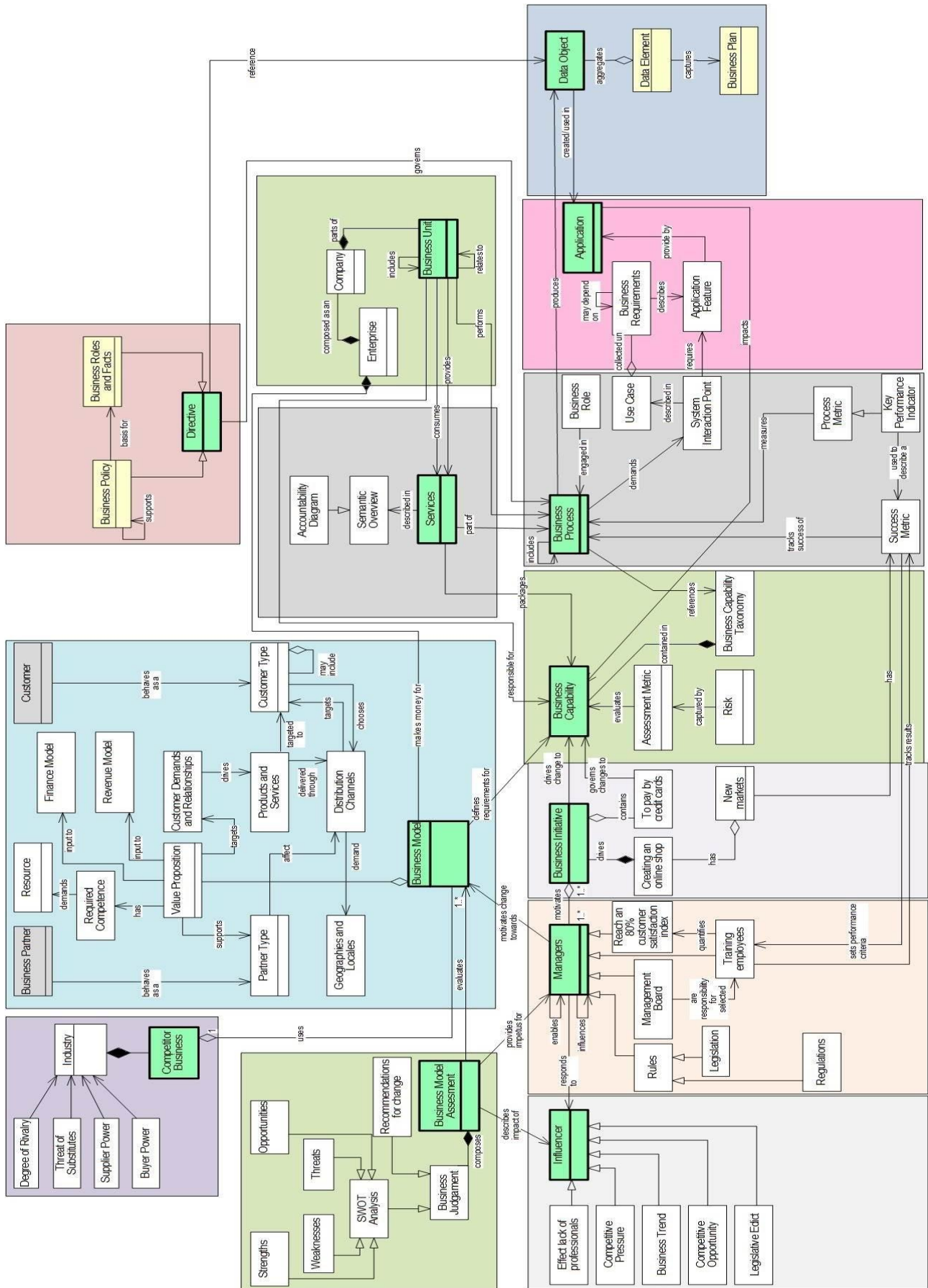


Fig. 8 Components building the ECC business architecture

3. DESIGNING A REFERENCE MODEL OF ECC'S BUSINESS ARCHITECTURE

The above Fig. 8 represents the designed reference model of the ECC's business architecture showing the interrelationships of the elements. Each component with its building elements is in a distinguishing color.

Business competitors participate in the design of ECC's business architecture as a basic component, because of the fact that enterprises have a great number of competitors. Their impact must be foreseen and taken into consideration for the organization business model design.

Another basic component that may provoke interest is the business model. If the building block of the business model is examined in details, it can be seen that company's expenditures are not envisaged. Despite being an essential building element, they participate inexplicitly in the business model design. Company's expenditures are considered in the basic component of the business model, i.e. in the product pricing.

The business model evaluation is an important basic component. The assessment made by the presented paper is based on an analysis of the company's strengths and weaknesses. The business model assessment provides the company with a clear vision of its advantages and disadvantages. The main goal of the ECC is to reduce the number of its disadvantages that can be realized with the examination of the SWOT analysis results. The compiled SWOT analysis shows that there are disadvantages, which do not depend on the company's business directly. A disadvantage of that kind is the existence of a possibility for increasing prices from the suppliers' side, which affects the product costs instantly.

CONCLUSION

The business model presented herein describes the basic components, which participate in the ECC's business architecture design, whereas the business processes and services design is performed for each organization. The main goal of the created model is to show the strategy for the organization development and to reduce the enterprise risks. One of the business architecture advantages is that many of its models can be used for designing the software architecture of the concrete company, which lessens the probability of inaccuracy and faults, as the details have been analyzed and discussed.

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БИЗНЕС АРХИТЕКТУРА НА ФИРМА ЗА ЕЛЕКТРОННА ТЪРГОВИЯ

Камелия Шойлекова

Русенски университет „Ангел Кънчев”

Резюме: Изграждането на архитектурата на организацията преминава през два основни етапа: проектиране и реализиране. Проектирането на архитектурата на организацията е обект на изследване първо на бизнес архитектурата, а след това и на софтуерната архитектура. В настоящия доклад е описан етапът на проектиране на бизнес архитектурата на конкретна фирма.

Ключови думи: фирма за електронна търговия, бизнес архитектура, бизнес модел, услуги, бизнес процеси.

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