Service-Dominant Logic

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1 Introduction

Some of the basic ideas of the Service Dominant Logic are not radically new, but if you think about the consequences of the service based logic described by Stephen L. Vargo and Robert F. Lusch (2004), it will be seen as a fundamental shift of marketing thought. The dominant model for economics is based on the exchange of goods. These goods are seen mostly as tangible output of factories, and services are only classified as a special representation of these goods. With the increasing importance of provided services for the economies it has been considered that there is a shift towards a “service economy”, but the general marketing logic is still focusing on the old ideas of tangible outputs which are not appropriate any more. It is time to see the economies in a new perspective; services have to be recognized as the main factor of exchange. But the paradigm of a service-centered logic implies also a range of further changes in the thought of marketing. One of the most important aspect is the fact, that companies and organizations have to realize that there cannot be anymore a strict distinction between producers and customers. From this point of view, consumers are always involved into the creation of value. This new idea of the co-creation of value, which is actually widely used by new web sites (often called “Web 2.0”), will have to become a main marketing strategy. In the end it will lead to a model of complete inseparability of “consumers” and “producers”.

We have to shift our focus towards the idea that the basic concept of economies is the exchange of services. In this paper we will present the ideas of the Service Dominant Logic and we will give an example for the usage in eTourism. We will show the meaning of these new ideas in the context of tourism for having a house.

2 Diving into a new way of thinking

The first ideas of marketing focused on the exchange of tangible goods and commodities. It was based on the concept of the swap of ownership (cf. Smith 1904 cit. in Vargo/Lusch 2004: 1). Later with the shift to the industrial era, there raised the idea of customer-centered marketing, which places the consumer in the middle of all considerations of creating value. That was a great innovation, but the first basic concepts, with their roots in the nineteenth century, were still strongly integrated. By the emergence of services in the 1980s service marketing was developed as a new sub discipline and there were opinions which said, that marketing thought will be become fragmented into several fields. (cf. Vargo/Lusch 2004: 1). These ideas were still founded on the dominant role of the good dominant logic. With the end of the Twentieth Century the requests for a fundamental change in the marketing thought become stronger and stronger. “[T]he typical service research article documented ways in which services were different from goods...It is time for a change. Service research is not a niche field characterized by arcane points of difference with the dominant goods management field.” (cf. Rust 1998:107 cit. in Vargo/Lusch 2004:1).

That illustrates the development of marketing thought in the last century. From the beginning of a restricted goods-centered model over a customer-centered one to a more and more service-based logic. It is today anymore adequate to see services as a special representation of
a good, we have to realize that services are the general case of exchange and goods are only a particular method of a service trade (cf. Vargo/Lusch 2006:43). In that logic goods were only seen as an enabling device for service provision. An example in tourism would be the offering of a house. From a goods-centered view the house would be the primary unit of exchange, but from a service-centered view the house is only seen as the enabling factor for a various range of possible services. Services are outcome of specialized skills or knowledge, which means that there is a big importance of knowledge and that this knowledge is the real factor which creates value. Only with applied skills it is possible to use any kind of resource. Skills have to be used for providing a house, only with the tangible good house nothing can be done. It is also quite interesting to think about these resources. Is it possible to see resources only as tangible natural ones? No, of course not; Resources have to be defined with a broader approach, also intangible functions of human cleverness and experience have to be realized as resources. We also have to distinguish between two types of resources: “Constantin and Lusch (1994) define operand resources as resources on which an operation or act is performed to produce an effect, and they compare operand resources with operant resources, which are employed to act on operand resources (and other operant resources).” (cf. Constantin/Lusch 1994 cit. in Vargo/Lusch 2004:2). Operant resources are the business processes of the companies, the technologies which they use, and they are the foundation to multiply the value of natural goods (operand resources). In the new service-dominant logic operant resources are the dominant ones, so service-dominant logic can also be perceived as operant resources centered logic. In our house example, the operand resource would be the tangible things inside the house and the house itself. The operant resources would be the skills for promoting the house, the techniques for offering services like a cleaning-service.

As already mentioned, traditional marketing over weights the impact of operand resources, it is focusing on the distribution of goods to maximize economic profit. There is the idea of inventorial goods which can be stored until there is enough demand for it. In contrary the service-dominant logic means that companies have to largely focus on their operant resources to increase their standing against competitors. In the long run intangible things like experience and human ingenuity enables the functionality to increase profit. It is also clear that in highly competitive markets an individual enterprise can only make value propositions. The service-centered marketing implies a continuously improvement process of the operant resources. A special kind of these operant resources are the relationships to potential customers, which are simultaneous a key factor for financial success in the modern world. By a consequent realization of these new ideas, value will be only created in cooperation with the customers and in the end it will lead to a fusion of producers and consumers. An example in eTourism would be web platforms where the users can provide comments and ratings for houses. By doing so a customer left his traditional role of only consuming goods (we would prefer to say consuming services), and is now a service provider. The provided information and ratings are often seen more relevant for potential customers than information of the original supplier. Even the production process of tangible goods does not end at the factory. A lot of profit can be generated afterwards by selling additional services, so tangible products can be seen as an enabling factor for building relationships. Therefore it is important to create general conditions were it is possible to learn from customers and recognize their individual wishes and needs. But only recognition is not enough. There must be the possibility of collaboration to fulfill these needs and wishes. Thus the service-dominant view implies the ideas of customer- and market driven marketing.
To be successful in the long run implies also to identify or, if they do not already exist, develop core competences, which can be seen as a part of the operant resources. Core competences are not easy for competitors to imitate, and therefore they are building a foundation for competitive advantage. These “bundles of skills and technologies” (cf. Hamel/Prahalad 1994:202 cit. in Vargo/Lusch 2004:2) should build the basis for a range of services to fulfill customer’s expectations. With a service-centered view network partners and also the relationship to the consumers have to be a part of the core competences.

3 The key attributes of Service-Dominant Logic

The following eight foundational premises were identified by Vargo and Lusch (2004:6)

1. The application of specialized skills and knowledge is the fundamental unit of exchange.
2. Indirect exchange masks the fundamental unit of exchange.
3. Goods are distribution mechanisms for service provision.
4. Knowledge is the fundamental source of competitive advantage.
5. All economies are service economies.
6. The customer is always a coproducer.
7. The enterprise can only make value propositions.
8. A service-centered view is customer oriented and relational.

The following table shows the differences between the traditional goods-centered and the emerging service-centered dominant logic:

<table>
<thead>
<tr>
<th></th>
<th>goods-centered view</th>
<th>service-centered view</th>
</tr>
</thead>
<tbody>
<tr>
<td>primary unit of exchange</td>
<td>tangible products</td>
<td>specialized competences (knowledge and skills)</td>
</tr>
<tr>
<td>role of goods</td>
<td>end products</td>
<td>goods enable service provision</td>
</tr>
<tr>
<td>role of customer</td>
<td>recipient of goods</td>
<td>co-producer of services</td>
</tr>
<tr>
<td>determination and meaning of value</td>
<td>determined by producers, embedded in products</td>
<td>determined by customers through “value in use”</td>
</tr>
<tr>
<td>source of economic growth</td>
<td>producing, owning, controlling goods</td>
<td>application and exchange of knowledge and skills</td>
</tr>
</tbody>
</table>

Table 1 - Differences between the traditional goods-centered and the emerging service-centered dominant logic (based on Vargo/Lusch, 2004:7, Table 2)

We will now take a closer look one some of these foundational premises (FP), starting with the application of specialized skills and knowledge is the fundamental unit of exchange.
History shows an unequally distribution of physical and mental skills in a population, this means, not everybody has necessarily the optimal skills to survive. Due to this inequality mankind develop strategies like specialization and exchange to cover the deficits of its individuals and achieve scale effects.

If a man, named “Builder”, has the ability to build a house, but not the ability to go hunting and get some food, he will not survive. If another man, named “Hunter”, has the ability to get food, but not build a house, he can survive, but he won’t live very comfortable. An exchange of skills will enable both, “Builder” and “Hunter”, to get into a better position and increase their living standard.

Adam Smith, a pioneer of political economy, picked up the division of work and largely applied it on his economic work “An Inquiry into the Nature and Causes of the Wealth of Nations”. Smith recognized the difference of human skills, but he only focused on a subset, the “productive” factors, which generate a surplus of tangible, exportable output (goods) and therefore increase the wealth of the nation. “Smith work had critical implications for how economists, and later marketers, would view exchange.” (cf. Vargo/Lusch 2004:6)

Of course there were other economists in the past whose claim, that the focus should not remain only on tangible, exportable goods, like manufactured products. “Smith was aware of the schoolmen’s and early economic scholars’ view that ‘The Value of all Wares arises from their use’ (Barbon 1903, p. 21) and that ‘nothing has a price among men except pleasure, and only satisfactions are purchased’ (Galiani qtd. in Dixon 1990, p. 304)” (cf. Vargo/Lusch, 2004:6). In our example, the value of a house for the customer doesn’t (primary) depend on its location or its building stock, rather then the service which this house enables.

In the beginning of exchange, it was a very simple procedure. There was a one-to-one trading of specialized skills, like the example “Builder” vs. “Hunter”. Over time, exchange moved to the indirect exchange of skills, which we have nowadays, the exchange of money. As result of this change, “the inherent focus on the costumer as a direct trading partner largely disappeared” (cf. Vargo/Lusch 2004:8). In service-centered dominat logic, the focus on the customer returned. The house is only the enabling good, the real service is the interaction of the customer and supplier. In our example, this could be the moving in of customer to the house, which could be done with a champagne reception and the possibility to let adapt the house by professional or just with a simple key-handout.

Specialization lead to more and more simplified processes, by splitting an existing process into many smaller processes. This is called microspecialization. Let us go back to the example early given with the Builder to get a clear view, what microspecialization is. In the beginning of specialization, a Builder could build the whole house; nowadays we have a person for each of these processes, like felling trees, making planks, tailoring the planks to the required size, et cetera. This development of dividing work into smaller and smaller pieces, where nobody has an overview about the whole process, caused some serious problems. The working people lost the focus on their work (nobody could build a house on his own anymore, nobody feels responsible for the end result) and also on the customer (only a few of marketing personnel is still interacting with customer, while the most employees lost the contact completely).
“These people don’t work for the customer, respectively the skills of their trading partner, they work just for money and therefore the nature of exchange became masked.” (cf. Vargo/Lusch 2004:8)

To correct these problems, various management techniques were developed, which should reestablish the focus of workers and organization on customers and quality. Vargo and Lusch (2004:8) also state, that „Money, goods, organizations, and vertical marketing systems are only the exchange vehicles“.

In our example microspecialisation doesn’t matter, the customer doesn’t care who is “really” performing the services (e.g. cleaning the house), if the quality of service is satisfying and if no extra work has to be done, to find the service provider, which matches the personal requirements. These possible problems could easily be solved by the supplier of the house, if he interacts with the customer and serve as central service point (act as intermediary).

Exchange can also be seen as a transfer of knowledge and skills and depending how the transfer is done, the following transfer types can be identified:

![Figure 1 – The transfer of knowledge and skills](image)

We have already mentioned one possibility to exchange knowledge, the direct transfer. In our example with the “Builder” and the “Hunter”, there was a direct exchange of skill. The transfer type “education and training” is also well known, it is the way how we acquire knowledge at school.

The third transfer type “embedded in objects” may not be seen at the first glance, but is also very common to us. It doesn’t mean e.g. a school book, where we can gather knowledge. No, it means products which offer you the possibility to do something, what normally requires skills that you don’t have. A common example for this transfer type is a washing machine. Without the knowledge or skills to wash by hands, an external service from a supplier like a laundry service will be consumed, but with a washing machine at home, it is no longer necessary to consume this service, because now the knowledge/skills is available to the individual.

What we now can see is that a product offers us a service and therefore may replace an existing service like the laundry service. Vargo and Lusch (2004:9) state that „the matter, embodied with knowledge is an ‘appliance’ for the performance of services; it replaces direct service“. From a service-centered view the reservation of a house isn’t directly seen as service, but as an enabling factor for a various range of possible services.

Often additional use to the direct service provision is generated by the good, meeting higher-order needs. Not only the function of a good is essential, sometimes the fact of owning this
good generates additional benefits for the owner, i.e. an expensive sport car extends its use of transporting people and gets a status symbol which provides good feelings for the owner.

Vargo and Lusch (2004) stated, that „goods are platforms or appliances that assist in providing benefits; therefore, consistent with Gutman, goods are best viewed as distribution mechanisms for services, or the provision of satisfaction of higher-order needs“.

We have already mentioned specialization and exchange generate scale effects. Now we will have a look on knowledge, the foundation of competitive advantage and economic growth. Vargo and Lusch (2004: 9-10) collected a lot of information about knowledge from various authors to present different views. We summarized this information and build up our own model to show an overview about the structure of knowledge in dominant logic.

![Figure 2 - Structure of knowledge in dominant logic](image)

The prescriptive knowledge is a necessary requirement to be able to produce any tangible or intangible good respectively service. The competitive knowledge creates the competitive advantage. Social skills means things like learning in society, e.g. what do the customer really want (this can be done through reading blogs, make it possible to give feedback, etc).

Identifying the wishes of the customer and serve him the services in way that fulfill his requirements and ensure his satisfaction is the new kind of marketing, instead of just simply presenting a non-customer adapted product/service. In our example, it would be great if the supplier uses the information from the rating system to adapted his service and therefore be able to gain more customer satisfaction. In our modern time the ratings of service are often more important than well-designed advertising, so there is the possibility to finance the service improvements via advertizing-savings.

Traditionally service is defined as intangible good and the most of our daily business is an exchange of money vs. goods, which doesn’t seem to be a service, but in fact, all economies are service economies. Nowadays this fact is getting more obvious, because of the increasing trend of microspecialization, but none the less even the exchange in our example “Builder vs. Hunter” is a service economy. This was also recognized by Vargo and Lusch (2004:9) and they state this idea as follows: “Services are not just now becoming important, but just now they are becoming more apparent in the economy as specialization increases and as less of what is exchanged fits the dominant manufactured output classification system of economic
activity. Services and the operant resources they represent have always characterized the essence of economic activity. “

According to the already mentioned statement, that the value of a good rises from its use, we cannot apply that the valued-added marketing concept of early marketing scholar is adequate any longer. It’s more likely, that “the enterprise can only make value propositions that strive to be better or more compelling than those of competitors“ (cf. Vargo/Lusch 2004:6). As we can see, the consumer defines the value of a matter (good or service) and only consumes it, if it meets the requirements of the consumer and price is not higher than the value, the consumer will gain from the matter.

Now we take a look at the attributes of the service-centered view. A good statement to this topic is the following discussion of the customer-interaction process:

“[It] begins with the interactive definition of the individual customers’ problem, the development of a customized solution, and delivery of that customized solution to the customer. The solution may consist of a tangible product, an intangible service, or some combination of both. It is not the mix of the solution (be it product or service) that is important, but that the organization interacts with each customer to define the specific need and then develops a solution to meet the need.” (cf. Davis and Manrodt 1996: 6 cit. in Vargo/Lusch 2004:6)

This statement shows very good, how the good-dominant logic mismatch the requirements of the actual economic system, which provides service provision for the customer and creates value in cocreation with the customer, instead of just producing a good and try to make it more palatable with marketing (e.g. advertising). There is a relational exchange, so that we can state that a service-centered view is customer oriented and relational.

4 Misapprehension of Service-Dominant Logic

Service-dominant logic cannot be seen as a subsequent outcome of the transition from an industrial society to a services society. Service-dominant logic means “that service is the foundation for all units of exchange: the function of goods is to enable service” (cf. Vargo/Lusch 2006:45), and in consequence there has always been an exchange of services in all eras, even in the agricultural era. It was only the development of the goods-dominant logic that has introduced the idea of the exchange of tangible products. But service-dominant logic does not mean that goods are not important anymore, they play still an important role in service provision. In the same manner the service-centered view do not mean that operand resources, which are mostly tangible ones, are not important anymore. That won’t be true if it is thought about the rising prices for commodities and the more and more shortage of some essential raw materials by the incredible economic development of countries like India or China. Service-dominant logic emphasis that just by usage of operant resources, like skills and technologies, to process operand resources the real benefits arise. The key factors are seen as intangible knowledge and expertise, but often it is impossible to create value without tangible goods so that they still play an important role in the new theory of marketing. In our tourism example it would be impossible to offer house related services without a house. But as already mentioned, the house is only seen as an enabling good. It would be a great mistake
to deny the influences of the goods, but they are in a service-centered view not anymore the middle of all considerations.

Service-dominant logic implies customer relation through the definition that value is co-created with the customer. It is a foundation of this new logic that benefits arises by the collaboration of multiple parties to fulfill the needs of the consumers. But this means not that the service-centered view is a restatement of the customer orientation. Consumer orientation is just a modification of the goods-dominant logic that should solve the problems which arise by a strict focus only at the manufactured output, without taking the needs of the customers into consideration. But the focus of the goods-dominant still lies on the tangible output of production and it is only an “add-on” to also look at the desires of the customer needs. In contrary service-dominant logic is built on the foundation of the co-creation of value, so that the consumer orientation becomes redundant; it is already integrated.

It is not correct to identify service-dominant logic as an outcome of the excellent customer responsiveness to so-called “service” companies (cf. Vargo/Lusch 2006:47). The traditional goods-dominant view is strongly integrated in management and academic thought, so that even organizations or companies which are mainly classified as service organizations like public transport companies, financial organizations or even hospitals see themselves from a good-dominant view and often miss consumer needs by denying the idea of co-creation of value. This is also an outcome of the idea of a strict distinction between goods and services, which is actually a part of education. In this thought services are seen as a special sort of goods, with the absence of some attributes like “tangibility, separability of production and consumption, standardizability, and inventoriability” (cf. Vargo/Lusch 2006:47). But we have to accept that it is not the tangibility which is bought, like the example of the sports car has shown. Sometimes tangible goods are only bought because of the intangible services that they provide, like the visualization of skills. And in consequence often the tangibility and inventoriability have to be seen as disadvantages – they are a limitation of marketing possibilities.

5 Discussion

Especially the foundational premise 6 of Vargo and Lusch “The Customer Is Always a Coproducer” shouldn’t be denied by modern organizations and companies. The co-creation includes also the paradigm of sharing internal information with the customers, which is today often seen as impossible. Many managers indentify their data as a competitive advantage, as a key factor for generating profit. In some cases this will be the correct point of view, an example would be the recipe for Coca Cola. But there are examples where an offensive sharing of data is the correct way. Such an example is the history of Goldcorp, a Canadian goldmine (cf. Tapscott/Williams 2007:7). In 1999 Goldcorp was in struggle, their geologists were not able to find gold anymore at their old mine and it seems that it must to be closed. A shutdown of their mine would have been equal to the end of Goldcorp. At this difficult time their CEO started a new project to escape the situation. He ordered his geologists to open all their archives and all their geological data they have accumulated in the history of the company and to make it accessible over the internet. Then he started a challenge donated with 575 000 US Dollar to get the best strategy for finding gold in the area of the Goldcorp-mine.
Many geologists from all over the world started to analyze the provided data and noted their ideas on the Goldcorp website. But there was also participation not only from professional geologist, but also from people of other fields like students or mathematicians. By the end Goldcorp was able to find substantial amounts of gold within an extremely decreased exploration time, and of course, saved a lot of money. Today Goldcorp calls themselves as “one of the world's largest gold mining companies” (goldcorp.com, 21.11.2008). This example shows that the co-creation of value can provide huge innovations for organizations, if it is done in the correct way. An example in tourism would be web platforms where guests can upload pictures und insert comments for a house or hotel. These possibilities can be dangerous for bad service-providers, but it can be also seen as a co-creation of advertising. Excellent service providers will receive excellent comments, which can be seen as a cheap way of promotion.

Service-dominant Logic implies that organizations and companies should focus on their core competences. In his book “The Nature of the Firm” Ronald H. Coase argued that, transaction costs always arise when different organizations are working together (cf. Coase 1937 cit. in Tapscott/Williams 2007:55). There are costs for searching an adequate supplier including to check if his products fits the needs. Costs will also arise for the negotiation of prices and service agreements, for the coordination of the different suppliers and for transportation. These costs have leaded to companies where each service is delivered by its own; an example is Henry Ford’s famous factory in River Rouge which has produced complete cars and suppliers have only delivered raw materials. The transaction costs still exist, but through the rise of the internet it is more and more possible to decrease these costs. Today it is very easy to find an adequate supplier of services and check his reputation; it is even easier to coordinate different suppliers through modern communication techniques than it has been at the beginning of the twentieth century. The idea of focusing on the core competences can be realized today much easier, but transaction costs still exists, so that it is often not possible to outsource everything which is not recognized as a core competence. A consequent usage of service-dominant logic will automatically increase focusing on core competences, but from our view it is often hard to calculate which services should be outsourced and which services can be better provided by the organization itself.

While service-dominant Logic implies that goods only enable service provision, others think that “services may be replaced by products” (cf. Hollander 1979:43 cit. in Vargo/Lusch 2004:9). In this context a comparison of “barber shaves to razors and laundry services to washing machines” is mentioned. From a myopic view this will be correct, but it is still the service which a customer wants. He wants clean clothes and not a washing machine. The machine is just a comfortable service provider. Some producers of washing machines have recognized this circumstance and offers their devices for a monthly fee, so that the customer do not have to buy the “service-provider” (in this case the washing machine) himself. Another example for offering services instead of selling a tangible product is mentioned in Vargo and Lusch (2004:13). Heating engineers in France have realized that the customers want defined temperatures in their rooms instead of buying energy and technical equipment, and so they developed an offering where the buyers have to pay agreed costs for the heating or cooling service, instead of buying the equipment. The acceptance of the demand for service provision rather than the demand for tangible goods, will allow creating a lot of innovative marketing ideas.
Through the increasing degree of specialization, many people will lost their ability for engaging in self-service like “do-it-yourself activity”, so that they become more and more addicted to the marketplace to buy services. This fact should be taken into the considerations of modern marketing. It could be a successful way to supply enabling services, which allows also specialized persons to participate in do-it-yourself activities. For an increasing success of such services a modern way of promotion has to be implemented; there is especially in the case of promotion a need for a shift towards a two-way communication. Also the advertising services have to implement a co-creation of value; a more dialogue based version to attract customer’s attention.

We think it is better to implement the ideas of the service-dominant logic into management thought, instead of adapting the goods-dominant logic to modern needs. A modification of an incorrect model still leads to an incorrect model. Adjustments like the customer orientation will be the incorrect way to face modern challenges.

6 Conclusion

The most economic and marketing models inherited their focus on the production of tangible, exportable output (goods) from the goods-dominated logic, which was largely developed during the nineteenth century, a time when it was necessary to have physical products for exchange (i.e. exchange with colonized regions). These models are still very present nowadays, but more and more people recognize the necessity for a shift in thought, away from the good dominated logic and forward to the service-centered dominant logic. The time changes and interpreting the unit of exchange as static and discrete tangible good is no longer adequate. The true nature of exchange comes visible again and instead of exchanging goods, an exchange of skills and knowledge is performed.

We agree with the statement from Vargo and Lusch (2004:15) that “the emerging service-centered dominant logic of marketing will have a substantial role in marketing thought. It has the potential to replace the traditional goods-centered paradigm.”

7 Services in eTourism

In this part of the paper we will present two possible instances of descriptions of service instances in XML and a XML-schema for them. As a part of this seminar we developed ideas for possible descriptions of eTourism-services, in our case for having a house for a number of persons for some days with certain facilities. For this case we also participated on a wiki-based construction of a service ontology. The idea of the wiki-based construction was a cooperative way of thinking, which enables the integration of different point of views. Our ideas were that every service will have some generic attributes and in addition also some domain specific ones. From our point of view there is always a supplier of a service and at least one consumer. It could happen, that one service is provided by more than one supplier, but then we are calling it a bundled-service, which can be separated into elementary services. We think that every service includes two perspectives: a customer’s point of view and a
supplier’s point of view. Based on these ideas we have developed the following XML-schema.

7.1 XML-schema

The basic concept of the schema is that tangible things are modeled as enabling goods, which can be used for service provision. In our example we modeled a house with several facilities and attributes. As already mentioned a service can consist of several elementary services, and every service has a specific supplier and consumer. By a consequent usage of the service-centered logic there would be cases where supplier and consumer is the same person. Through this model a service instance belongs only to one customer and is adapted to his special needs, so that every service is unique. Supplier and customer have different points of view, which are modeled by the complex types “CustomerInterfaceType” and “SupplierInterfaceType”. With the SupplierInterfaceType it is possible to model the details of the offering, and with the CustomerInterfaceType it is possible to recognize the needs of the consumers. With the complex type “Agreement” a contract between the supplier and the customer can be modeled.

Figure 3 – extract of the XML-schema
Code of the XML-schema:

```xml
<?xml version="1.0" encoding="utf-8" ?>
<xs:schema elementFormDefault="qualified"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:element name="Service">
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="1" maxOccurs="unbounded" name="elementary_service"
          type="ElementaryServiceType" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
  <xs:complexType name="ElementaryServiceType">
    <xs:element minOccurs="1" maxOccurs="1" name="CustomerInterface"
      type="CustomerInterfaceType" />
    <xs:element name="SupplierInterface" type="SupplierInterfaceType" />
    <xs:element name="ServiceEnablingGood" type="EnablingGoodType" />
    <xs:complexType>
      <xs:sequence>
        <xs:element name="AgreedTime" type="CalType" />
      </xs:sequence>
    </xs:complexType>
    <xs:element>
      <xs:complexType name="EnablingGoodType">
        <xs:all>
          <xs:element name="House">
            <xs:complexType>
              <xs:sequence>
                <xs:element maxOccurs="unbounded" name="Room">
                  <xs:complexType>
                    <xs:sequence>
                      <xs:element name="RoomNr" type="xs:positiveInteger" />
                      <xs:element name="RoomName" type="xs:string" />
                      <xs:element name="Beds" type="xs:nonNegativeInteger" />
                      <xs:element name="Equipment" type="EquipType" />
                    </xs:sequence>
                    <xs:attribute name="Style" use="required">
                      <xs:simpleType>
                        <xs:restriction base="xs:string">
                          <xs:enumeration value="modern" />  
                          <xs:enumeration value="classic" /> 
                          <xs:enumeration value="rustic" />  
                          <xs:enumeration value="luxury" />  
                        </xs:restriction>
                      </xs:simpleType>
                    </xs:attribute>
                  </xs:complexType>
                </xs:element>
                <xs:element maxOccurs="unbounded" name="Calendar" type="CalType" />
                <xs:element name="Attributes" type="AttributeType" />
                <xs:element name="Owner" type="ContactDetailsType" />
                <xs:element minOccurs="0" maxOccurs="1" name="Rating" type="RatingType" />
              </xs:all>
            </xs:complexType>
          </xs:element>
        </xs:all>
      </xs:complexType>
    </xs:element>
  </xs:complexType>
  <xs:complexType name="SupplierInterfaceType">
    <xs:sequence>
      <xs:element name="Participant_data" type="ContactDetailsType" />
      <xs:element maxOccurs="unbounded" name="Available" type="CalType" />
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```
<xs:complexType name="CustomerInterfaceType">
  <xs:sequence>
    <xs:element name="Participant_data" type="ContactDetailsType"/>
    <xs:element name="requirements">
      <xs:all>
        <xs:element name="region" type="xs:string"/>
        <xs:element name="Persons" type="xs:nonNegativeInteger"/>
        <xs:complexType>
          <xs:simpleContent>
            <xs:extension base="xs:nonNegativeInteger">
              <xs:attribute name="currency" type="xs:string"/>
            </xs:extension>
          </xs:simpleContent>
        </xs:complexType>
        <xs:element name="PossibleStartDate" type="xs:date"/>
        <xs:element name="LastEndDate" type="xs:date"/>
        <xs:element name="duration" type="xs:nonNegativeInteger"/>
        <xs:element minOccurs="0" name="WantedAttributes" type="AttributeType"/>
        <xs:element name="WantedEquipment" type="EquipType"/>
      </xs:all>
    </xs:element>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="EquipType">
  <xs:all>
    <xs:complexType>
      <xs:simpleContent>
        <xs:extension base="xs:boolean"/>
      </xs:simpleContent>
    </xs:complexType>
    <xs:element name="Jaquuzzi" type="xs:boolean"/>
    <xs:element name="Kitchen" type="xs:boolean"/>
    <xs:element name="TV" type="xs:nonNegativeInteger"/>
    <xs:element name="Heating" type="xs:boolean"/>
    <xs:element name="Cooling" type="xs:boolean"/>
  </xs:all>
</xs:complexType>
<xs:complexType name="CalType">
  <xs:sequence>
    <xs:element name="ID" type="xs:integer"/>
    <xs:element name="available" type="xs:boolean"/>
    <xs:element name="from" type="xs:date"/>
    <xs:element name="till" type="xs:date"/>
    <xs:element name="CostsPerDay">
      <xs:complexType>
        <xs:simpleContent>
          <xs:extension base="xs:positiveInteger">
            <xs:attribute name="currency" type="xs:string" use="required"/>
          </xs:extension>
        </xs:simpleContent>
      </xs:complexType>
    </xs:element>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="AttributeType">
  <xs:sequence>
    <xs:element name="Address" type="xs:string"/>
    <xs:element name="IsPartOfGroup" type="xs:ID"/>
    <xs:element name="ParkingSlots" type="xs:positiveInteger"/>
    <xs:element name="hasGarden" type="xs:boolean"/>
    <xs:element name="hasPool" type="xs:boolean"/>
  </xs:sequence>
</xs:complexType>
</xs:complexType>
</xs:complexType>
7.2 Example 1

```xml
<?xml version="1.0" encoding="utf-8"?>
<Service xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:noNamespaceSchemaLocation="HouseServices.xsd">
  <elementary_service Name="HouseRental">
    <CustomerInterface>
      <Participant_data>
        <Name>Jürgen Bauer</Name>
        <Address>Eduard Paar Gasse 6</Address>
        <Zip>1010</Zip>
        <City>Wien</City>
        <Telephone>+43676123456</Telephone>
        <Fax>+4312134345</Fax>
        <E-Mail>bauer.juergen@yxcv.at</E-Mail>
      </Participant_data>
      <requirements>
        <region>Waldviertel</region>
        <Persons>25</Persons>
        <MaximumCosts>100</MaximumCosts>
        <PossibleStartDate>2009-05-06</PossibleStartDate>
        <LastEndDate>2009-05-20</LastEndDate>
        <duration>5</duration>
        <WantedAttributes>
          <Address>Zwettl</Address>
          <IsPartOfGroup>AA</IsPartOfGroup>
          <ParkingSlots>10</ParkingSlots>
          <hasGarden>true</hasGarden>
          <hasPool>false</hasPool>
        </WantedAttributes>
        <WantedEquipment>
          <toilet>1</toilet>
          <Jaquuzzi>true</Jaquuzzi>
          <Kitchen>1</Kitchen>
          <TV>10</TV>
          <Heating>true</Heating>
          <Cooling>false</Cooling>
        </WantedEquipment>
      </requirements>
    </CustomerInterface>
  </elementary_service>
</Service>
```
<CustomerInterface>

<SupplierInterface>

<Participant_data>
  <Name>Wald4tlTravel</Name>
  <Address>Waldweg 1</Address>
  <Zip>3000</Zip>
  <City>Horn</City>
  <Telephone>+4319879797</Telephone>
  <Fax>+43232343423</Fax>
  <E-Mail>office@w4.com</E-Mail>
  <Website>www.waldviertel-yxcv.com</Website>
</Participant_data>

<Available>
  <ID>8631</ID>
  <available>true</available>
  <from>2009-01-02</from>
  <till>2009-05-06</till>
  <CostsPerDay currency="EUR">1000</CostsPerDay>
</Available>

</SupplierInterface>

<ServiceEnablingGood>
  <House>
    <Room Style="classic">
      <RoomNr>101</RoomNr>
      <RoomName>Birnbaumblick</RoomName>
      <Beds>2</Beds>
      <Equipment>
        <toilet>true</toilet>
        <Jaquzzi>false</Jaquzzi>
        <Kitchen>0</Kitchen>
        <TV>1</TV>
        <Heating>true</Heating>
        <Cooling>false</Cooling>
      </Equipment>
    </Room>
    <Room Style="classic">
      <RoomNr>102</RoomNr>
      <RoomName>Waldblick</RoomName>
      <Beds>2</Beds>
      <Equipment>
        <toilet>true</toilet>
        <Jaquzzi>false</Jaquzzi>
        <Kitchen>0</Kitchen>
        <TV>1</TV>
        <Heating>true</Heating>
        <Cooling>false</Cooling>
      </Equipment>
    </Room>
    <Room Style="rustic">
      <RoomNr>103</RoomNr>
      <RoomName>Rosenblick</RoomName>
      <Beds>4</Beds>
      <Equipment>
        <toilet>true</toilet>
        <Jaquzzi>false</Jaquzzi>
        <Kitchen>1</Kitchen>
        <TV>1</TV>
        <Heating>true</Heating>
        <Cooling>false</Cooling>
      </Equipment>
    </Room>
    <Room Style="classic">
      <RoomNr>104</RoomNr>
      <RoomName>Seeblick</RoomName>
      <Beds>4</Beds>
      <Equipment>
        <toilet>true</toilet>
        <Jaquzzi>false</Jaquzzi>
        <Kitchen>0</Kitchen>
      </Equipment>
    </Room>
  </House>
</ServiceEnablingGood>
</CustomerInterface>
<tv>1</tv>
<heating>true</heating>
<cooling>false</cooling>
</equipment>
</room>

<room style="rustic">
<roomnr>105</roomnr>
<roomname>Birnbaumblick</roomname>
<beds>4</beds>
<equipment>
<toilet>true</toilet>
<jaquuzzi>false</jaquuzzi>
<kitchen>0</kitchen>
<tv>1</tv>
<heating>true</heating>
<cooling>false</cooling>
</equipment>
</room>

<room style="classic">
<roomnr>200</roomnr>
<roomname>Gemeinschaftsraum</roomname>
<beds>0</beds>
<equipment>
<toilet>false</toilet>
<jaquuzzi>false</jaquuzzi>
<kitchen>1</kitchen>
<tv>1</tv>
<heating>true</heating>
<cooling>false</cooling>
</equipment>
</room>

<calendar>
<id>3079</id>
<available>true</available>
<from>2008-12-21</from>
<till>2009-01-01</till>
<costsperday currency="EUR">1100</costsperday>
</calendar>

<calendar>
<id>3079</id>
<available>true</available>
<from>2009-01-01</from>
<till>2009-05-30</till>
<costsperday currency="EUR">1000</costsperday>
</calendar>

<attributes>
<address>string</address>
<ispartofgroup>AAAAB</ispartofgroup>
<parkingslots>15</parkingslots>
<hasgarden>true</hasgarden>
<haspool>false</haspool>
<additioninfo>Big Hall</additioninfo>
</attributes>

<owner>
<name>Familie Winter</name>
<address>Rosenweg 15</address>
<zip>3100</zip>
<city>St. Pölten</city>
<telephone>+43724856551</telephone>
<fax>+4372484554</fax>
<email>winter@asdf.at</email>
<website>www.winter-yxcv.at</website>
</owner>
</house>
</serviceenablinggood>
<agreement>
<agreedtime>
<id>6209</id>
<available>false</available>
7.3 Example 2

<?xml version="1.0" encoding="utf-8"?>
<Service xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:noNamespaceSchemaLocation="HouseServices.xsd">
  <elementary_service Name="RentAHouse">
    <CustomerInterface>
      <Participant_data>
        <Name>Patrick Größ</Name>
        <Address>Maximilianstr. 76</Address>
        <Zip>8063</Zip>
        <City>Innsbruck</City>
        <Telephone>+436641231234</Telephone>
        <Fax>+431111</Fax>
        <E-Mail>patrick.groess@holidays.at</E-Mail>
      </Participant_data>
      <requirements>
        <region>Gran Canaria</region>
        <Persons>6</Persons>
        <MaximumCosts>7200</MaximumCosts>
        <PossibleStartDate>2008-02-01</PossibleStartDate>
        <LastEndDate>2008-02-28</LastEndDate>
        <duration>10</duration>
        <WantedAttributes>
          <Address>Playa del Ingles</Address>
          <IsPartOfGroup>Ritz</IsPartOfGroup>
          <ParkingSlots>3</ParkingSlots>
          <hasGarden>false</hasGarden>
          <hasPool>true</hasPool>
          <AdditionInfo>Want a house at the beach!</AdditionInfo>
        </WantedAttributes>
        <WantedEquipment>
          <toilet>true</toilet>
          <Jaquuzzi>true</Jaquuzzi>
          <Kitchen>false</Kitchen>
          <TV>3</TV>
          <Heating>false</Heating>
          <Cooling>true</Cooling>
        </WantedEquipment>
      </requirements>
    </CustomerInterface>
    <SupplierInterface>
      <Participant_data>
        <Name>TravelTech</Name>
        <Address>Schottenring 3</Address>
        <Zip>1020</Zip>
        <City>Wien</City>
        <Telephone>+431564565</Telephone>
        <Fax>+4315645651</Fax>
        <E-Mail>office@traveltech.at</E-Mail>
      </Participant_data>
      <Available>
        <ID>1</ID>
        <from>2008-01-15</from>
        <till>1998-01-31</till>
        <CostsPerDay currency="EUR">80</CostsPerDay>
      </Available>
      <Available>
        <ID>2</ID>
        <from>2009-01-02</from>
        <till>2009-01-07</till>
        <CostsPerDay currency="string">1000</CostsPerDay>
      </Available>
    </SupplierInterface>
  </elementary_service>
</Service>
<Available>true</Available>

<from>2008-02-01</from>
<to>1998-03-15</to>

<CostsPerDay currency="EUR">100</CostsPerDay>

</Available>

</SupplierInterface>
</ServiceEnablingGood>

<House ID="GoldenStar Home">

  <Room Style="luxury">
    <RoomNr>01</RoomNr>
    <RoomName>Sleeping Room #1</RoomName>
    <Beds>2</Beds>
    <Equipment>
      <toilet>true</toilet>
      <Jaquuzzi>true</Jaquuzzi>
      <Kitchen>false</Kitchen>
      <TV>2</TV>
    </Equipment>
    <Heating>false</Heating>
    <Cooling>true</Cooling>
  </Room>

  <Room Style="luxury">
    <RoomNr>02</RoomNr>
    <RoomName>Sleeping Room #2</RoomName>
    <Beds>2</Beds>
    <Equipment>
      <toilet>true</toilet>
      <Jaquuzzi>true</Jaquuzzi>
      <Kitchen>false</Kitchen>
      <TV>2</TV>
    </Equipment>
    <Heating>false</Heating>
    <Cooling>true</Cooling>
  </Room>

  <Room Style="luxury">
    <RoomNr>03</RoomNr>
    <RoomName>Sleeping Room #3</RoomName>
    <Beds>2</Beds>
    <Equipment>
      <toilet>true</toilet>
      <Jaquuzzi>true</Jaquuzzi>
      <Kitchen>false</Kitchen>
      <TV>2</TV>
    </Equipment>
    <Heating>false</Heating>
    <Cooling>true</Cooling>
  </Room>

  <Room Style="modern">
    <RoomNr>04</RoomNr>
    <RoomName>Kitchen</RoomName>
    <Beds>0</Beds>
    <Equipment>
      <toilet>false</toilet>
      <Jaquuzzi>false</Jaquuzzi>
      <Kitchen>true</Kitchen>
      <TV>1</TV>
    </Equipment>
    <Heating>false</Heating>
    <Cooling>true</Cooling>
  </Room>

  <Room Style="modern">
    <RoomNr>05</RoomNr>
    <RoomName>Bathroom</RoomName>
    <Beds>0</Beds>
    <Equipment>
      <toilet>true</toilet>
      <Jaquuzzi>true</Jaquuzzi>
      <Kitchen>false</Kitchen>
      <TV>0</TV>
    </Equipment>
  </Room>

</House>
<Heating>false</Heating>
</Equipment>
</Room>
<Calendar>
<ID>1428</ID>
<available>0</available>
<from>2008-01-01</from>
<till>2008-07-01</till>
</Calendar>

<CostsPerDay currency="EUR">100</CostsPerDay>

<Attributes>
<Address>Playa del Ingles</Address>
<IsPartOfGroup>GoldenStar</IsPartOfGroup>
<ParkingSlots>3</ParkingSlots>
<hasGarden>false</hasGarden>
<hasPool>true</hasPool>
<AdditionInfo>Has it's own beach</AdditionInfo>
</Attributes>

<Owner>
<Name>GoldenStar GmbH</Name>
<Address>Mogan 1</Address>
<Zip>2491</Zip>
<City>Puerto de Mogan</City>
<Telephone>+485165465</Telephone>
<Fax>+4851654651</Fax>
<E-Mail>goldenstar@grancan.com</E-Mail>
</Owner>
</ServiceEnablingGood>

<Agreement>
<AgreedTime>
<ID>6140</ID>
<available>false</available>
<from>2008-02-15</from>
<till>2008-02-25</till>
</AgreedTime>
</Agreement>
</elementary_service>
</Service>
8 References

