

Identifying Required Data for a Successful Dynamic Packaging System

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Abstract. Dynamic Packaging Systems are becoming one the main information systems in tourism industry. Considering the huge growth in electronic commerce, taking advantage of electronic content on the Internet seems to be very helpful. In this paper we try to identify various data needed to construct system's knowledgebase in order to provide proper data infrastructure for the system to offer more suitable tour packages to customers.

Keywords: Electronic Commerce, Dynamic Packaging System, Tourism Lifecycle, Tourism Product

1. What is a Dynamic Packaging System (DPS)?

Dynamic Packaging is a term that is used in various contexts. Several definitions can be found in the literature. Ref. [1] adds that Dynamic Packaging should provide a single, fully priced package (hiding the price of individual components) within 5-15 seconds. Fitzgerald [2] identifies that one important requirement for Dynamic Packaging solution is the existence of an infrastructure to integrate data in an automated way, allowing querying in a uniform way across multiple heterogeneous systems containing tourism related information." Ref. [1] point out that it is not because there is only one payment transaction for all vacation components that it is a dynamically packaged reservation. The key point of differentiation between dynamic and traditional vacation packages is the ability for the travel consumer to dynamically access data stored into several, separate inventory management systems.

A dynamic packaging system is composed of set of components which generally allows consumers or travel agents to customize trips by bundling trip components. Customers can specify a set of preferences for a vacation, for example, a 5-day stay on Madeira Island, then the dynamic packaging system dynamically produces a collection of plans (series of travel elements such as air fares, hotel rates, car rental companies, and leisure activities) satisfying aforementioned preferences plus some more available options to be chosen by customer. The package that is created is handled seamlessly as one transaction and requires only one payment from the consumer, hiding the pricing of individual components[3].

Cardoso suggests a general architecture for a dynamic packaging system that has four main components: integration of e-Tourism information sources, semantic mediator generation, dynamic packaging process generation, and dynamic packaging final products [4]. Integration of e-tourism information sources is about collecting data from various tourism data sources and integrating them within one large data warehouse. These data are required for producing packages dynamically. Furthermore we may need some type of semantic mappings if collected data are not homogeneous. E-tourism ontology could help the semantic

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mediation process so as to understand different concepts that are being used by tourism data source. The objective of the third phase is to construct a set of processes that are able to compose valid dynamic packaging solutions for customers using three subcomponents Abstract semantic Web process, Dynamic Packaging Web Process Generator, Concrete Dynamic Packaging Web Process. At the end (fourth phase), the domain of packages is narrowed based on customer preferences and system rankings. Then customer may decide about the package that suits his/her requirement better.

2. The Product of Tourism Industry

In a first look, the concept of tourism product deceptively appears simple. Therefore many assume that the goods you buy when you are on a trip, away from home, are considered tourism products. In general, any useful thing that can be offered and be purchased by the people and provide them with their needs could be known as a product. In tourism, places and services are the most and sensed products. There are few models that try to identify tourism product [5]. Some authors suggest tourism products consist of a number of components or layers. One model suggests that tourism products consist of two parts: a 'tangible' good or service, and its symbolic value. Another model suggests there is core component (such as an airline flight) and peripherals components (such as reservations and baggage handling). A slightly more complex model posits three levels: a 'formal' commodity the customer is seeking (usually conceived as specific benefit the visitor is seeking, such as a relaxing weekend), a 'core' commodity actually being sold (such as a room at a resort and access to a golf course), as an enhanced commodity that consists of the core commodity plus value-added features (such as ambience or free drinks)). An even more complex model suggests tourism products consist of attractions, facilities, access, images and price.

Because of the lack of an exact definition for tourism product which everyone agrees about, Smith tried to provide a generic definition using different views of authors. The 'tourism experience' is the generic product that you will find in every tourism activity. He believes that the process to produce that product is started given the primary resources like places and services and it will continue until the consumption of the services by customers [6].

Tourism experience appears as an image of events that bring about throughout the period of a travel. This image is stored in customer memory as a reflection of tourism experience. Some researchers believe that the factors affecting the shape of the images are much complex that the ones affecting the actual services. Besides this, experience shows that the influence of the place of travel on the mental image is much more important than other factors [7]. Middleton has shown that the tourism product is composed of tangible and intangible factors that are conceived by customer as an experience. The factors that are actually dominating the decision of customer are [8]:

- Destination attractions and environment (natural, built, cultural and social attractions)
- Destination facilities and services (accommodation units, restaurant-bars-cafes, transport at the destination, sports/interest activity, other facilities, retail outlets and other services)
- Accessibility of the destination (infrastructure, equipment, operational factors and government regulations)
- Price to the customer ('the sum of what it costs for travel, accommodation and participation in selected range of facilities and services')

Note that, the above mentioned items are not affecting the image of tourism experience at once, but they do shape the image eventually and in different stages through travel period.

3. Tourism Product Life Cycle

A generic life cycle for tourism product may have three steps each of which can have underlying steps specifically related to goal of this paper. The first step is *development* of a tourism product. Most of the time tour packages are designed based on common requests of customers. Market research is could help before offering a new package to gain an understanding of number of potential customers, costs, facilities and other influencing items. Providing a good knowledge of market, we could then design our plan for the package which is composed by 'what', 'where' and 'when' elements. The *development* step has two important events in itself:

1. The customer demand shows up and he is going to search for respectful travel services
2. Generating a domain of suitable packages for the customer

First event is about the period that potential customer is going to become a real customer. The desire to make a travel and use facilities when enjoying interesting activities make him a looking man who tries to find a good package which can cover his preferences. Following the first event, packaging system starts making chains of events and activities to create a number of tour packages and form a domain of choices for the customer to decide about the most suitable package.

After *development*, the tourism product comes through *purchase* step in its life cycle. This stage is where customer makes his decision about the most suitable tour package. At first, customer faces few alternatives that somehow satisfy his initial preferences. The best offering considering how much it is going to suite his needs will be chosen and purchased then. The most important thing we should take care of from this stage until end of the life cycle is the validity of the purchased package. If any changes happen to the package, customer should be informed as soon as possible. Remember that customer pays for a package that seems to be perfect considering his preferences and any change of plan could invalidate customer's decision. Therefore the act of informing customers of those changes and asking for their decision based on new conditions is so important. The important events during this stage are:

1. Purchase of the chosen package by the customer
2. The customer standby until the package plan starts

It is clear that customer pays for the finalized package and as usual there is some waiting between the time of purchase and the actual start time of the package plan. The standby period gains much importance because the initial image of tourism product that is recently created in customer mind can be easily ruined by unpredicted and unwanted changes in service rightness and goodness. The last step that tourism product is going to face is *consumption*. This stage is the actual realization of tour plan. All the activities at the predefined times will be executed. Tour managers have to make sure that the customers get access to the expected service level. The flow through *consumption* stage is absolutely in agreement with tour plan which may be different from one tour to another. At the end, customer views are surveyed and results may be used for future tour *developments*. Actual events in this step are:

1. The consumption of package by customer
2. Spreading tourism experience (as tourism product) by customer

Enjoying the package plan is something that customer seeks. He tried to design his preferred package in development stage and he is going to see its actual realization in the period of consumption. After he finished using the product, publishing the experience throughout the world occurs. It is common that people advice their family and friends to use or not to use a specific package that is being managed by specific company just because they felt good or bad when passing travel period with that company.

4. Suitability of a Tourism Product

Simply, a customer gets satisfied if he gets access to the right service/product with expected quality. Therefore the suitability is about the rightness of the service/product and the goodness of its quality as it is claimed. Because of the nature of tourism industry, evaluating the rightness of the product and goodness of its quality is not possible unless you have consumed it. Thus everyone can only rely on the offerings and claimed SLAs of tourism products by service providers.

We believe that both concepts of rightness and goodness are relative and they may change within the timeline of tourism product life cycle. To mention an example for the rightness of a service think of someone who wants to go from Germany to The Netherlands a week later. He prefers to fly but there is no empty seat at the time of booking and therefore he must use railways. Two days later, someone else cancels a flight from Germany to The Netherlands and therefore an empty seat becomes available. If the first man be informed about that seat, he will absolutely cancels his railway booking and buys the empty seat. On the other hand, the goodness of the quality of service may change too. Consider our previous passenger who was looking for a flight. He has to book an economy class seat unless there is an empty business class one as opposed to his

desire. Consider an hour later a business class seat is cancelled. Now the man can change his seat and pay to use the business class one.

As you have seen rightness and goodness are changeable considering policies and rules of purchased services or products. In other words you can cancel your railway booking based on some specific rules, i.e. with %10 off or you can change your seat not later than an hour before fly time. Thus the possibility of changing your service in order to obtain a better one considering its rightness and goodness is always limited by provider regulations and SLAs. Moreover someone may lose a quality for a better service or vice versa, consider someone chose to travel with an old bus because he fears sailing with a ship even with luxury rooms.

What is important about a dynamic packaging is the dynamicity aspect of a tour package which has not gained enough attention in the research or application domain. This is about the flexibility of a package to change during its life cycle and the capability which we could use for our goal regarding the badness or goodness of reflections of tourism experience as an image in customer`s memory. Informing customer with proper information and suggesting him new offers and replacements during package life cycle give us the ability to shape the image in a way that could attract future customers and increase market shares. Offering new services needs a huge amount of knowledge about provided tourism services and other influencing information which is going to be discussed in following sections.

To conclude the suitability of tourism product, remember the mental image that is taking influence from tourism experience. Indeed, the actual badness or goodness of that image is going to be the judgment logic of a customer which will affect future potential customers. Therefore trying to direct the image formation process toward its goodness and avoiding it from being affected by consequences of unwanted situations is something we should take advantage during tourism product life cycle.

5. Identifying Required Information

We believe today world economic conditions are very unstable and changes in service qualities and quantities are going to be an every-minute event. Looking at the increasing rate of this phenomenon, one should design a solution to handle unpredicted changes in services so as to decrease bad consequences on customers. As mentioned before, this paper tries to take a very first step toward a proper solution by identifying required information throughout the tourism product life cycle in order to make a good experience for the customer after he or she used the tour package.

Cardoso has mentioned that In order to create a suitable individual package, regarding that one can value this soonest after the trip, can only be achieved if the system could create a clear picture of the product in the customers mind by the time he is trying to chose the package [3]. Although Cardoso`s view seems good, it does not consider relative meaning of goodness and rightness of the package. Therefore his effort to identify required information to produce a suitable package is limited to the very beginning of development step of tourism product life cycle and not to improve packages that have been already created and/or sold during rest of the life cycle. Our aim is to identify data that is going to support the whole life cycle in order to generate a good image in customer`s mind.

Dynamic packaging applications need to access tourism data sources to query information about flights, car rentals, hotels, and leisure activities. Data sources can be accessed using the Internet as a communication medium. The sources can contain hypertext markup language (HTML) pages present in Web sites, databases, or specific formatted files, such as extensible markup language (XML), resource description framework (RDF), or flat files [4]. Considering the life cycle of a tourism product, various data or information is going to be needed in different stages which generally place in four groups: *Service Description*, *Service Comments*, *Customer Profile* and *World Events*. Each group has different data types and they can be found in variety of formats considering technologies being used to represent them.

Service Description. All the information that a service provider announces/publishes about a specific service is considered as service description. The description consists of any required data to identify and understand the quantity and quality of the service, without which the system is not able to make preliminary decisions about the rightness and goodness of the service. Traditionally service descriptions are provided in printed brochures or electronic document formats. Today, considering the increasing demand to appear in

electronic markets, this information may be spread within websites, blogs and advertising emails sent to people. For example consider this description about rooms in Queen Kapiolani hotel: "All rooms have the comforts of home, such as: a refrigerator, air-conditioning, cable TV, pay-per-view movies, telephone with voicemail, and daily maid service. If you're in a room with a kitchenette, you'll appreciate the two-burner cook-top, microwave and all the utensils you need to prepare your own island-style meal. Most rooms have private lanais/patios with views of the Pacific Ocean, Diamond Head or Honolulu's city lights".¹

Service Comments. Relying only on the claimed descriptions of service providers is not wise. Especially in tourism industry, as there is no chance to evaluate services before consumption, one should pay enough attention when deciding to chose a service. The information that is going to help us for refining results of searches based on service descriptions are service comments. This information used to be appeared in informal discussions when family members sit together and also in public places. The electronic society has enabled people to post their views and opinion much easier. By doing a simple search on the web, we can see the growing rate of people registering on popular social networking websites like Facebook, MySpace and YouTube to populate their experiences to everybody in the world [10]. Skytrax is an organization that has provided the infrastructure to rate various airlines in the world and gather customers review about their experience with those airlines².

Customer Profile. Customer profile is not a simple term and it could be composed of initial preferences that are fed to packaging system plus much more information like customer past experiences published within social networks. Although personal information about people on the web is protected based on policy agreements, there are certain methods to collect people tendencies like music, sports, books and hobbies they are interested in.

World Events. The events that take place in the world are very important considering their impacts on the validity and quality level of tour program. For example if you have planned a trip which is going to pass a city in Japan and that city faces a heavy earthquake only few days before you arrive there, then you have think about changing your program and find another way to reach destination.

We believe these information groups could provide us with enough knowledge required for enormous number of decisions that are going to be made during the period that the image is getting formed in customer memory.

6. Conclusion

Information communication and technology has provided the proper infrastructure to do thing better and quicker. Dynamic packaging system is a new opportunity to provide customers with tour plans that are packaged according to their preferences dynamically. What makes these tour plans dynamic is their ability to be designed in real-time based on internal knowledgebase that is provided by three different group of tourism related information: service description, service comments and customers profile. We believe that paying enough attention to whole lifecycle of tourism product is the key to provide customer with a good experience of travel. The lifecycle of tourism product introduced and the important steps regarding available chances to improve customer`s memory discussed.

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