Designing Internet Reservation and Management Software Systems for Small Peripheral Hospitality Organizations: The *HotMot* Solution

Bill Anckar and Pirkko Walden

Institute for Advanced Management Systems Research
Åbo Akademi University, Finland

bill.anckar@abo.fi, tel. +358-2-2154081, fax: +358-2-2154809
pirkko.walden@abo.fi, tel. +358-2-2154667, fax: +358-2-2154809

Abstract

The growth of global electronic markets on the Internet has been seen as a golden opportunity for small and medium-sized tourism enterprises to improve their competitive position. However, many obstacles still remain despite the opportunities offered by the new medium. This paper reports on the process of introducing Internet technology in a small hotel located in a peripheral region of Finland. As part of a program funded by the European Union, a www-solution including online reservation services was developed, denoting a reengineering of many business processes. The online reservation system was an inexpensive, customer-friendly solution specially designed for the purposes of small and medium-sized hospitality organisations with little prior IT-knowledge. In the field of online reservation systems, the hotel is a pioneer as it is the first independent hotel in Finland to offer online reservation facilities through a non-customized reservation system.

1. Introduction

A feature of the travel industry is that, as mass tourism has developed, so have the large chains and corporations in the accommodation sector. Hotels and motels have reached a stage of development in which a few major companies have come to dominate the international market, as a result of an expansion largely achieved through franchising (Holloway 1983). However, based on both qualitative and quantitative criteria, it is evident that the vast majority of tourism suppliers around the globe, especially in the accommodation sector, can be classified as small and medium-sized tourism enterprises (SMTEs) (Buhalis 1996, 1999). Due to their scarce resources and deficient marketing and management functions, SMTEs tend to be over-dependent upon tourism intermediaries for promoting and distributing their products, with the intermediaries minimizing the SMTEs' bargaining power within the distribution channel (Buhalis 1996). Hence, they face enormous difficulties competing with their larger counterparts (Buhalis 1999).

The arisal of global electronic markets on the Internet has been seen as a unique opportunity for SMTEs to improve their competitive position. It is becoming increasingly evident that the World Wide Web offers the infrastructure for unprecedented changes in the marketing and distribution of tourism products and services (Buhalis 1999). However, many hindrances still remain despite the opportunities offered by the new medium. A large majority of the small tourist enterprises on our globe lack either the information technological (IT) skills or the financial resources (or both) to take advantage of the opportunities offered by Internet commerce. In peripheral regions, where the IT-revolution has not always been as fast and profound as in the urban centers, the barriers to effective commercial use of the Internet are likely to be even higher.

2. IT in the Travel and Tourism Industry

The travel industry appears exceptionally interesting in terms of the possibilities offered by electronic commerce. Not only is it one of the rare industries where business-to-consumer e-commerce is conducted successfully on the Internet already today, it is also an industry with great traditions in the IT-sector (Standing et al. 1999), with electronic markets arising already in the mid-1970s when it became possible for travel agencies to book flights and hotel rooms online through the so called computerized reservation systems (CRSs), also known as global distribution systems (GDSs).

Information is the lifeblood of the tourism industry (Sheldon 1993), and because of its dependence upon the supply and exchange of information throughout the production and distribution chain, the tourism industry has proved particularly suitable for the adoption of IT, and appears to have a very large potential as a generator of usage of networks and value added services (Bennett and Radburn 1991; Byerley and Ewers 1996). Typically, the tourism products need to be viewed and booked at a distance and the products are natural candidates for multimedia descriptions.

Despite the massive growth in the international expansion of CRSs (Collier 1991), SMTEs still remain under-represented in these systems, effectively endangering their competitiveness and market share (Buhalis 1996). As a result of this limitation of the CRSs, not only the SMTEs at issue are at disadvantage, but also the prospective tourists, whose choice of service providers is more restricted as a result. In addition, the fact that many SMTEs are not connected to CRSs has had a negative effect on the effectiveness of the booking process.

If IT has played an important role in the travel industry earlier, it has now become the travel industry's key partner, as the development of the Internet has empowered even tiny tourism organizations and destinations, giving them representation in the electronic marketplace (Buhalis 1999). According to Buhalis and Main (1998), the Internet is particularly suited to small business, where it enables the business to keep its doors open 24 hours a day, at minimal cost to consumers all over the world. Small and medium-sized hospitality organizations (SMHOs) which are not represented in the electronic marketplace will fail to bridge their distance with consumers and suffer competitive disadvantages (Buhalis and Main 1998).

IT, and especially the Internet has been seen as a tool offering companies in peripheral regions an opportunity to improve their competitive position in relation to firms with more attractive geographical locations in urban centers. This assumption is based on the global character of the Internet, where the boundaries of e-commerce not being defined by geography or national borders. The European Union has shown a special concern for SMEs in peripheral regions, establishing a regional development fund (ERDF) aimed at giving peripheral SMEs better chances to survive in a world of ever-increasing competition.

3. Barriers to Introducing IT in SMHOs

Although the Web has been seen as a golden opportunity for SMTEs to reach customers in a business that is essentially global in character, many barriers still inhibit SMHOs to take full advantage of IT and Internet commerce. Of these obstacles, four stand out as especially important: (i) lacking financial resources; (ii) lacking IT knowledge/experience; (iii) resistance to change; (iv) peripheral location.

3.1. Lacking Financial Resources

First, the development of a sound Internet strategy and a professional Web site usually requires sizable investments. As the small hotel business usually can marshal only limited investment capital from its own cash flow and from external sources, its scope for investments in Internet technology and applications is limited. Few companies, and certainly not small and medium-sized enterprises, have sufficient in-house expertise to launch an e-commerce project without some external help (Schneider and Perry 2000). However, the typical small hotel can simply not afford to employ specialists (Medlik 1980).

Although it can be argued that a Web presence not necessarily involves great costs, minimizing the expenses by cutting down on essential forms of customer service is a highly questionable strategy. The slow growth of business-to-consumer e-commerce has surprised and disappointed many experts as well as companies that have invested heavily in ec-applications. A viable reason for the reluctance of consumers to trade on the Internet lies in the fact that the initial Web services have offered little - if any - added value for the customers in comparison to traditional methods of shopping. Most current sites on the Web can be considered merely a marketing presence or a passive advertisement (Turban et al. 1999). The "e-consumers" (Martin 1999) of today, on the other hand, are seeking and expecting to derive indisputable benefits, e-value, from the marketspace.

According to Mulcahy (1999), the human resource is the foundation of the tourism industry. This is especially true in the accommodation sector, where the quality of the service is the key success factor, the aim being to make the visitor enjoy his stay, achieving repeat visitation. The arisal of electronic markets with self-booking opportunities on the Internet, however, has added a new component to the concept of service quality. Technology not only gives the industry an opportunity to improve the quality of the service it offers (Baines 1998), but it also makes new demands on companies in this regard.

In order to clarify this, the travel process can be divided into three stages: (i) *planning and reservations*, (ii) *the journey,* including the transportation and the stay; and (iii) *the post-travel stage*, including customer feedback and measures to create good and lasting customer relationships. E-commerce solutions may radically alter the service characteristics as far as the phases (i) and (iii) are concerned, whereas the effects on phase (ii) are substantially less significant. Laws (1991) suggests that the twin foci of concern for service managers are (a) the underlying technology of their business and (b) the human interactions required to deliver satisfactory experiences to the client. According to the author, many tourism services are technologically complex, and hence few customers are able to judge the technical quality of the service experience, but instead they do make assessments of the skills and attitudes of the staff. However, as travel service providers, including hotels, are assuming total responsibility for the booking process when introducing self-booking opportunities on the Web (bypassing intermediaries), the opposite becomes true: evaluating the technical quality of the service experience in phase (i) is easy, whereas it remains hard (or impossible) to form an opinion on the skills and attitudes of the staff in phase (ii) prior to the visit.

With the argument presented above, the importance of offering value-adding customer services on the Web is stressed, especially as travelers tend to show little or no brand loyalty (Warren and Ostergren 1990; Robinson & Kearney 1994; Baloglu et al. 1998), but instead require a travel product at the lowest price and of the highest quality – consistent with his own value judgement and preferences" (Buck 1988)

It is a well known fact that speed is crucial in the travel industry, including the accommodation sector - in responding to a guest, travel agent or tour operator inquiring about room availability, etc. (Medlik 1980). Customers benefit from Web online reservation services by gaining immediate gratification of their requests, greater choice, multi-sensory, accurate and up-to-date information and an easy to use interface (Pollock, 1996). This implies that a hotel Web site should offer the customers a wide range of information and services of which online reservations stands out as the most essential one. The instant confirmation benefits offered by the online approach has likely been one of the primary reasons for the explosive growth of business-to-consumer transactions in the travel industry compared to most other e-suitable industry sectors and product categories. If the travel service providers only offered opportunities for e-mail inquiries on price and availability, telephone or "at the counter"-contacts to travel agencies or service providers would still offer the only way to immediate booking confirmation, giving a competitive advantage to these labor-intensive, and hence more expensive service models.

3.2. Lacking IT Knowledge/Experience

Second, SMTEs' illiteracy in IT essentially means that they are unable to take advantage of the opportunities for improving their efficiency and promoting their enterprise. Owners/proprietors of SMHOs tend to lack the expertise in selecting, installing and operating computerized systems as well as marketing and management skills. Therefore, they tend to fear that they will lose part of their control, should they allow external IT experts to undertake these jobs for them (Buhalis and Main 1998). However, this is certainly not the always the case. The owner/manager may have a sympathetic attitude towards technology, seeking IT-enabled changes, but due to his and/or his personnel's limited knowledge he may be unable to develop or use the technological tools he feels the organization would need.

The IT revolution has profound implications for the management of the industry (Buhalis 1999), which means that the hotel manager of the future must be familiar and comfortable with technology, able to see and exploit its potential (Baines 1998). Buhalis and Main (1998) point out that consumer expectations could force the introduction of IT in SMHOs and their satisfaction would increasingly depend on this provision. SMHOs should start to realize that there is an increasing number of computer-literate consumers who are empowered by the Internet and tend to use networks for identifying and purchasing various products. Unless the SMHOs satisfy their needs, they will fail to attract consumers (Buhalis and Main 1998).

In the hotel business, an introduction of IT with a proper Internet commerce program most likely results in great changes as business processes are altered, perhaps even radically. This not only implies organizational challenges, but also great cost by the standards of any SMHO (cp. 3.1.). One problem with making effective use of technology in the hospitality industry is the lack of appropriate training. There is widespread consensus that formal training in the sector falls short of its new requirements for skilled workers within the field of technology (Baines 1998). Given the prevalence of small, family hospitality firms in which the owners often manage many functions, the entrepreneurs tend to look on training more as a cost than as an investment (Mulcahy 1999)

3.3. Resistance to Change

Closely related to the issue of lacking IT knowledge and/or experience, is the barrier arising from a resistance to change at management (and/or worker) level. According to Collier (1991), there are all sorts of reasons why managers (and workers) might resist technological change. They may resent change especially if there is no consultation. They may be anxious about their job, and especially, they

may be frightened of appearing incompetent. However, as has been pointed out by Baines (1998), the staff is much more likely to welcome new working procedures when they have been consulted and are actively involved in their introduction and application.

3.4. Peripheral Location

The barriers to introducing IT are likely to be even higher in *peripheral regions*, where new technologies not always gain a foothold as rapidly and with such an intensity as in urban centers. The barriers may also arise from technological services, for instance Internet cable connections, being more expensive as a result of the limited demand, or a technological infrastructure not being available in peripheral areas because of the great expenses involved. Hence, for many peripheral SMHOs fast Internet connections are not a matter of course, which is an issue that must be taken into consideration when planning their Internet strategies.

In peripheral regions, IT-knowledgeable workers and professional consultants may be hard to find or extremely busy. Consequently, the peripheral companies may not be able to find a system developer for their needs, or workers who can operate the systems.

As a result of all these potential barriers to introducing IT, SMHOs have not been able to derive full advantage from the opportunities offered by the Internet. Where larger hotel chains already two decades ago began installing their own computerized reservations systems to cope with the worldwide demand for immediate confirmation on availability and reservations (Holloway 1983), independent SMHOs still today reach the overseas markets through membership of marketing consortia or representation by a hotel representative agency. The usual Web approach of an SMHO is either to (i) create a simple, informative Web site lacking in functionality, with reservation inquiries and confirmations sent by e-mail; (ii) use an intermediary Web service provider offering online bookings, but an inadequate space for the presentation of rooms and amenities such as swimming pools, saunas, restaurants, fitness centers etc.

4. The VALENTINE Project

The VALENTINE project (Vakka-Suomi Local Effort for NetSuccess through Innovative E-laborations) was funded by the European Union (EU) as a part of a programme aimed at promoting the usage of electronic commerce through the Internet among small and medium-sized companies located in the less favoured regions of the Union. Additional funding was granted by the Finnish Ministry of Education. Within the VALENTINE project, running from May 1999 through June 2000, Internet strategies and Web sites were developed for 8 small companies in the Vakka-Suomi region. For the participating companies, the project offered a low-cost way to get started with e-commerce, especially as the project was followed up by another EU-funded training project, the purpose of which was to teach all the interested businesses in the region how to plan, use and update their Web pages. For most of the project companies, the Web solutions designed were comprehensive, and hence involved a reengineering of some existing business processes.

The VALENTINE project, administered by the Institute for Advanced Management Systems Research at Åbo Akademi University, was carried out by a team of researchers who worked as EC consultants in the project companies. In each company, the objective of the Web team was to (i) *plan a sound Internet strategy*, including tasks such as:
-    assessing the needs of the company and their stakeholders, identifying opportunities and risks

- determining the potential benefits of Web technology to customers, suppliers, retailers and employees
- mapping current business processes and identifying opportunities for IT-enabled change
- determining the organizational capabilities for the suggested changes

(ii) implement the Internet strategy, including tasks such as:
- constructing a site plan (including the detailed site structure as well as the texts)
- building the site, which in most cases included planning the graphical design (this task was outsourced to a professional Web design house)
- assisting the companies in the launch stage (selecting a Web hosting service, purchasing domain names, etc.)

Tourism destinations present an ideal scenario for the development of virtual organizations linked together by information technology. It should be possible for all businesses within a tourist destination to link their Web sites so that a visitor to one site would easily be able to find out about related facilities at other companies' Web sites (Palmer and McCole 2000). Hence, within the VALENTINE project, the aim was to emphasize the needs of tourist enterprises, creating a regional travel network with close co-operation between the local small-size tourist service providers as well as the local tourist authorities. However, as the uniting link, the local travel agency chose to withdraw from the project due to financial distress, the ambitious project of marketing and selling a large selection of package tours on the Internet was postponed, likely to be administered by the local service providers themselves in the near future.

5. Hotel Lannentie

The vast majority of the accommodation establishments worldwide are small or medium-sized, belong to local entrepreneurs, are family run, and predominantly employ members of the host society (Buhalis and Main 1998, Witt et al. 1991). In the small hotel the owner/manager is an entrepreneur who normally combines not only ownership and management but often also the functions of top and operational management in one person. He may turn for outside advice and help on many matters, but the owner/manager tends to be to a great extent his own marketer, buyer, personnel officer as well as the man who organizes and co-ordinates the hotel facilities and services generally, and who represents the hotel to the outside world (Medlik 1980).

These accounts of the typical operational facts in a SMHO could just as well be a description of Hotel Lannentie, a small-size hotel/motel located in Uusikaupunki, Finland. Uusikaupunki is a small archipelago town (17.500 inhabitants) situated approximately 230 km northwest of Helsinki, the capital of Finland. Uusikaupunki is the capital/center of the Vakka-Suomi peripheral region, categorized as a less favoured region of the EU.

Hotel Lannentie, boasting a total of 35 rooms with 75 beds, is owned by Reijo and Maija Virtanen, who also run the company together with an assistant managing director, Mauri Tenhonen. The hotel amenities include a bowling hall, a restaurant, a bar, a nightclub, and a swimming pool with a Finnish sauna as well as a number of small conference rooms.

At the beginning of the VALENTINE project, the use of IT was almost non-existent at Lannentie. Despite the fact that the local commercial school had created a Web site for the hotel in the fall of 1998, it was evident that the Lannentie managers were unaware of the wide range of possibilities offered by Web technology. The Web pages that had been developed by the school were informative and static. Since the launch, they had never been updated. Moreover, despite the fact that the hotel was

connected to the Internet through an ISDN connection, the reception desk was not equipped with a computer, meaning that all reception procedures were handled in a highly traditional manner.

The initiative in introducing Internet technology in the hotel was taken by Mauri Tenhonen, who registered the hotel for participation in the VALENTINE project, convinced of the fact that the hotel would be out of business in just a few years unless immediate steps were taken to introduce customer service on the Web.

All the barriers to introducing IT in SMHOs suggested in the previous chapter could be seen in the Lannentie case. The lack of financial resources was evident, as the fee for participating in the project - a sum of FIM 10.000 (USD 1.500) - nearly caused the hotel to withdraw from the project at a stage when the reservation system had already been planned in detail. Another reason for the hotel management hesitating about the project was that the owner/manager, due to his lack of expertise in selecting, installing and operating computerized systems, initially could not envision the potential visitors deriving any substantial benefits from a Web presence. Moreover, the management feared that the computer-illiterate personnel would not be able to use the systems developed.

6. EC Strategy Formation

In the accommodation business, the product is rarely seen by the customer as purely "a room in which to sleep". Rather, it is a "total leisure experience" a bundle of tangible and intangible goods and services (Holloway 1983; Baloglu et al. 1998). Hotel accommodation and other hotel products are part of a total tourist product, covering the whole travel experience from the time the tourist leaves home to the time he returns (Medlik 1980). Accordingly, the Web site that was created for Lannentie within the VALENTINE project was a comprehensive information and service package emphasizing all the business activities of the hotel. However, at Lannentie, as in most hotels, the provision of sleeping accommodation is the primary source of revenue. Moreover, it constitutes the service activity where customers as well as the personnel can derive the greatest benefits from IT and Internet commerce. Hence, the gretest efforts were put into the IT-applications as far as the *booking process* and other *reception procedures* were concerned. From the application which was developed and implemented, we will here report on the modules concerning the booking process and reception procedures.

In accordance with the line of argument presented in chapter 2, the project researchers endeavored the implementation of a Web *online* reservation system for Lannentie, well aware of the fact that this is a rare service model among SMHOs, where the preferred approach is to offer reservation opportunities by e-mail, meaning that the bookings cannot be verified instantly, but have to be checked and confirmed manually.

The idea of an online reservation system was strongly supported by the assistant managing director Mauri Tenhonen, whereas the owner-manager Reijo Virtanen initially opposed the idea convinced of the fact that such a solution would be technically too complicated for the staff. Moreover, he was concerned about the high costs arising from acquiring an Internet cable connection, which he assumed such a service would require. As a result, he suggested a solution where the potential visitors are offered the opportunity to make online reservations on the Web, whereas the bookings handled by the personnel are made in the traditional manner, i.e. recorded in a physical reservation diary! According to Reijo Virtanen, updating the record of reservations once or twice a week during peak seasons would be quite sufficient! However, the owner/manager Reijo Virtanen came to realize the risks and disadvantages of such an approach, soon showing a keen interests in building a comprehensive system,

including applications for online Web reservations and reception procedures as he eventually came to realize the potential benefits of introducing IT in his business.

In many SMHOs, the booking and reception procedures are still today handled in a highly traditional fashion, i.e. all events are recorded in physical books that are kept at the reception desk. Consequently, all bookings must be made by phone, fax or e-mail and must be manually registered and verified by the hotel clerk. This was the case at Lannentie as well. Although e-mail services had been introduced in 1998, the major part of the bookings were still made by phone or fax, perhaps as a result of the slow processing of e-mail inquiries resulting from the reception desk at Lannentie not being equipped with a computer. In fact, most of the inquiries were processed from the assistant managing director's home computer.

If a hotel is to derive full advantages from an online reservation system, with all the automation of essential information this can bring, the Web system must support the existing procedures and be compatible with possibly existing information systems for booking and reception services. However, as Lannentie had made no use of IT in their business processes up to this point, no previous applications had to be taken into consideration when planning the Web reservation system. Although there are advanced - and rather expensive - hotel management software systems such as *Hotellinx* for which licenses can be purchased, the aim of the research team was to design a complete system from scratch, including applications for Web booking and reception/checkout services, in order to generate a system that is specially designed for the purposes of small, peripheral hospitality organizations, taking the following special demands into consideration: (i) the low IT-knowledge/-experience of the staff; (ii) dial-up Internet-connections (for reasons of availability and cost of direct connections); (iii) limited financial resources for system development, license fees and system modification.

The aim was to develop an application that with minor modifications could be utilized by other firms within the great cluster of small hospitality organizations with similar needs as Lannentie. In order to achieve this goal, the research team in cooperation with the Web design house carefully investigated the needs of some other SMHOs in terms of the functionality of an integrated application for booking and reception services. This investigation indicated that there is a remarkable demand for an application of the suggested type among the Finnish SMHOs, since several preliminary license orders were received based merely on the word of mouth about the product to be developed.

7. System Description

7.1. Checking Availability

A great shortcoming of many, if not most Web travel reservation systems is the apparent lack of user-friendliness resulting from too complex or time demanding search mechanisms. Typically, the functionality of comprehensive Web airline reservation systems has been more or less duplicated even though less complex and user-friendlier services could have been developed. On the Web, where a rapidly growing number of companies today pursue a strategy (outspoken or concealed) to profile their customers, the consumer has to register in order to have access to almost any service. If the user has to fill in a two-page form whenever he wants some information on a subject, the risk for consumer irritation is apparent.

In the travel industry, the *availability* of the flight/hotel is the key issue (once the customer has decided on when and where to go/stay). The results of studies done by Anckar & Walden (1999, 2000) indicate that the self-booking of journeys is a highly time consuming task - irrespective of the

complexity of the journey. And indeed, if checking the availability of a room during a specific time period means (a) having to register for the service, and (b) specifying a great many parameters in a search engine, one of the great consumer benefits associated with e-commerce, namely making price comparisons, is unlikely to be derived.

In the Web online reservation system designed for Lannentie, the number of rooms available in each accommodation category (real-time information) are posted on the Web, allowing the customer to quickly check whether there are rooms of a certain type available during the desired time period[1]. To take advantage of this service, the user does not have to work through the registration procedure. For proceeding with an online reservation (see figure 1), however, one has to be a registered user.

Figure 1. The customer online booking interface

---

[1] The availability menu is identical to the reservation menu presented in figure 1, however lacking the reservation features.

7.2. The Customer Database

The new, unregistered customer can easily obtain a user name and a password by entering his personal particulars in a form, after which the data is saved in the customer database. For the customers, database marketing represents a direct response to their search for convenience (Robinson and Kearney 1994). Technology offers the opportunity to log the relationship between hotel and client – to record particular guests' preferences and to respond to such preferences on subsequent bookings (Baines 1998).

As a result of business-to-business negotiations, Lannentie accommodates many corporate customers during their stay in the region. For Lannentie, these regular business visitors constitute an exceptionally important customer segment as they help the hotel to cope with the slack season with their need for year-round travel. In southern Finland, the seasonality problem reaches great proportions due to the short tourist season (May through August). As these regular corporate customers are granted remarkable discounts on accommodation, a necessary feature of the reservation system designed for Lannentie was to automatically calculate and display the discounted price as these visitors log on and make their bookings on the Web. The hotel staff can easily grant their existing key customers discounts at any time by manually specifying the negotiated rebate (calculated as a percentage of the standard price) in the customer database (see figure 2). The database also includes a blacklist, which makes it impossible for problematic customers (e.g. with unsettled debts) to log on. The blacklist also contains a large number of names that may be suspected to be associated with harassment bookings

Figure 2. Updating a customer's profile.

7.3. Customer Bookings

Any registered customer can easily make his booking on the Web in a 3-step process. The reservation system is a capacity booking system, meaning that the system will not automatically allocate a specific room to the customer. It will only reserve a room in the chosen room category. An important point to be made is that the hotel does not have to be connected to the Internet when a customer reservation is made on the Web. When a booking takes place, all the reservation and customer data is saved in a reservation database on the Web server (see figure 3), and the availability table on the Web site is updated immediately For reasons of security, self-booking Web customers are only allowed to book one room at a time. In case the customer wishes to change or cancel a reservation, he has to contact the hotel.

7.4. Personnel Bookings: The *HotMot* Reservation Module

Whereas the customer bookings require that the Web server is in operation, the reservations made by the staff can take place despite a possible server collapse. This function is made possible by the Delphi hotel management program, HotMot, designed for Lannentie, which includes booking services analogous to the Web reservation services, however with slightly more advanced features (activated availability table for speedy bookings, an unlimited amount of rooms can be booked in one go, bookings can easily be changed or canceled, etc.). The personnel booking interface is presented in figure 3.

Figure 3. The *HotMot* personnel booking interface

Whenever the reservation services of the hotel management program are opened, the system automatically connects to the Internet, and downloads all the new customer reservations made. As a result, the receptionist can see the real-time availability situation, and give telephone or walk-in-customers instant booking confirmations.

After the receptionist has made, changed or canceled a booking, the Web availability table and reservation database is automatically updated by the system. In case the reception computer has not dialed up the Web server in two hours (not during nights), the system automatically connects to the Internet and downloads/uploads all new reservations, after which it hangs up the contact. This feature of the system means that the present availability situation as well as all booking data are saved both on the Web server and on the local hard drive of the reception computer.

Having completed a new booking (or having changed one), the receptionist can send an official reservation confirmation to the customer with one click. In the same way, the confirmation can also be sent by fax (provided that the hotel possesses the needed hardware) or be printed out.

7.5. The *HotMot* Check-in Module

Room Allocation

In most hotels, room allocations of accommodation reserved in advance are made before the arrival of the guest. This is the normal procedure in the Lannentie case as well, although this tends to take place as late as in the morning of the arrival day of the customer.

As was mentioned earlier, the Web system, which is a capacity-based reservation application, will not automatically allocate a specific room to the customer. Instead, the room allocation is managed in the check-in module of the Delphi system, in which the staff can allocate the guest a certain room immediately after the reservation has been made, if he so wishes. This is an important feature in the Lannentie case, as many of the hotel's regular customers tend to have strong preferences for specific rooms, according to Mauri Tenhonen.

The Hotel Register

When guests arrive in hotels, thay are asked to register by providing the receptionist with certain particulars about themselves. These particulars are entered in the *hotel register*. Finnish hospitality organizations are by law obligated to provide the National Statistics Office of Finland with some essential data every month (number of visitors, number of foreign visitors, etc). According to the Lannentie managers, this task has been rather time consuming, as data had to be gathered from physical (non-computerized) sources, e.g. the hotel register, the room status board, as well as visitor cards. One of the most obvious benefits of the hotel management system for the hotel staff was the automation of this data collection process. Moreover, the system allowed the required statistics to be printed out (or sent by e-mail) using the official form of the National Statistics Office. This feature of the system was a good example of IT-enabled process improvements, with the Lannentie owner/manager at this point starting to realize the potential advantages of introducing IT in his business.

The Room Status Board and Invoicing

The *room status board* shows the current and projected status of a room on a particular day, including the current/arriving customer's name and reservation number. Moreover, the room status board is linked to a note pad application, in which short messages that are to be delivered to the customers (or some other information) can be saved. As it is common practice for hotel guests to incur charges for accommodation, food, drink and other services during their stay, to have them entered in their accounts, and to settle their accounts on or after leaving the hotel (Medlik 1980), the room status board is also linked to an invoicing application.

8. Investments

The architecture of the hotel management system that was built for Lannentie is illustrated in figure 4. With the introduction of the system, Lannentie will become a pioneer i Finland, as it is the first independent hotel to boast a non-standardized Web online reservation system. Now, however, other SMHOs have the opportunity to purchase licences for the *HotMot* system for a fee which is nominal in comparison to the license fees of more advanced hotel management systems, which are primarily designed to cover several hotels (i.e. hotel chains).
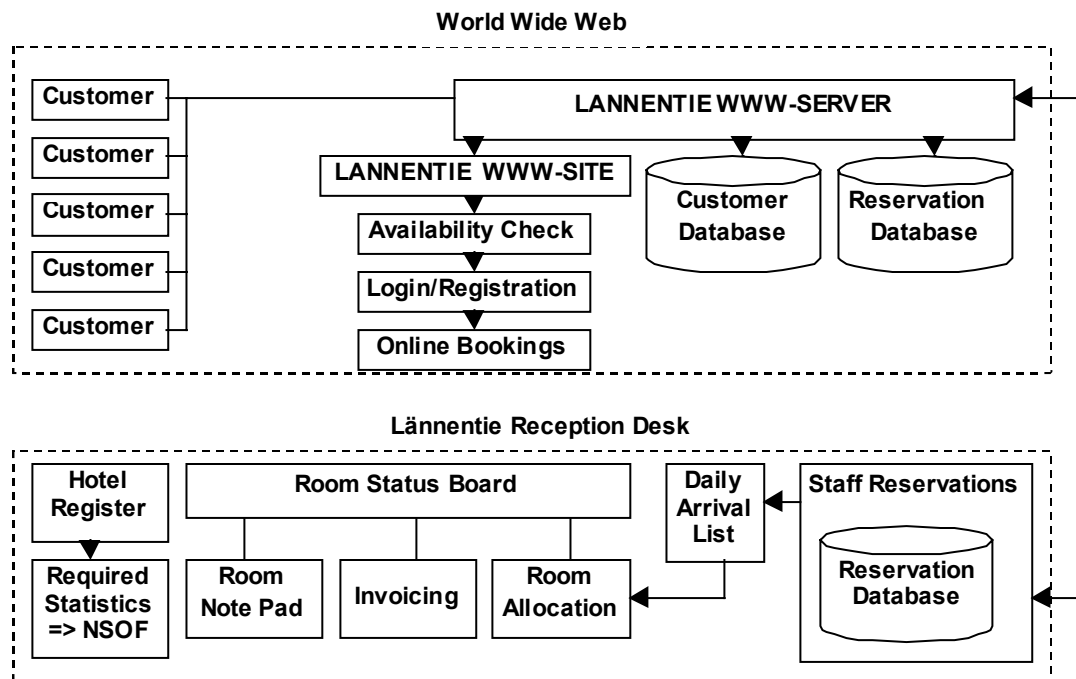

Figure 4. The system architecture

As the system was developed within a EU-funded project, the total investements made by Lannentie were very modest. Lannentie's 'share of the development costs were FIM 10.000 plus some minor hardware costs. The costs of developing the whole system amounted to approximately FIM 70.000 (USD 11.000) (the salaries of the researchers are not included).

The aim of the training program following the VALENTINE project is to guarantee that the personnel is able to use as well as update the system. For the companies involved, the costs of the training program are very modest as the major funding comes from an EU-sponsored program.

9. Conclusions

The electronic markets on the Internet offer several key benefits for SMHOs; (i) opportunities to improve their competitiveness and to compete with their larger counterparts, (ii) to be independent of intermediaries and to promote and distribute their own services, (iii) to give the customer the choice to view and book services at a distance and (iv) the possibility to keep their doors open 24 hours a day, at a minimal cost to consumers all over the world.

Several barriers are seen to hinder SMHOs from taking full advantage of IT and Internet commerce; the lack of (i) in-house IT skills, and (ii) financial resources, (iii) the resistance to change at the management level, and (iv) their location in peripheral regions, where the IT-revolution has not made inroades as in the urban centers. Due to such barriers, an effective use of the Internet is often not realized. As a consequence, the SMHOs have either remained outside the electronic markets emerging on the Web or became over-dependent on intermediaries, which, in turn, has reduced their bargaining power within the distribution channel.

To overcome the barriers, of which we found ample evidence in the Hotel Lannentie organization, SMHOs have to look for smart, non-expensive, systems solutions. Whereas the commercial hotel management software systems available on the market are not designed for the special needs of SMHOs, the *HotMot* solution is a system specially designed for small (peripheral) hospitality organizations taking, among other things, the following special demands into consideration: (i) the low IT-knowledge/-experience of the staff; (ii) dial-up Internet-connections (for reasons of availability and cost of direct connections); (iii) limited financial resources for system development, license fees and system modification.

Introducing Web technology in small organizations with limited in-house IT knowledge is a complex task, involving significant investments by the standards of almost any SMHO. The Lannentie Web solution was planned and implemented within the VALENTINE project, which was funded by the European Union (EU) as a part of a programme aimed at promoting the usage of electronic commerce through the Internet among small and medium-sized companies located in the less favoured regions of the Union. Consequently, the project offered the participating companies a low-cost way to get started with e-commerce without having to cut down on essential forms of Web customer service. It is our belief that (i) the availability of Union or Government grants, and (ii) co-operating with non-profit research organizations such as the Institute for Advanced Management Systems Research can make a difference for small enterprises with similar problems at hand.

References

Anckar, Bill and Walden, Pirkko: "Becoming Your Own Travel Agent: A Web of Potentials and Pitfalls". *Proceedings of the 33rd Hawaii International Conference on System Sciences 2000*, Maui, Hawaii, January 4-7, 2000.

Anckar, Bill and Walden, Pirkko: "A Roundtrip to Toulouse, Please. Self-Booking of Low Complexity Travel Products". *Paper presented at the 11th Euro Working Group on DSS*, June 8-10, 2000, Toulouse.

Baines, Anna: "Technology and Tourism". *Work Study,* Vol. 47, Issue 5, 1998.

Bennett, M and Radburn, M: "Information Technology in Tourism: The Impact on the Industry and Supply of Holidays". Sinclair, M. Thea and Stabler, M.J (ed*.): The Tourism Industry: An International Analysis*, CAB International, Wallingford, UK, 1991.

Baloglu, Seyhmus, Weaver, Pamela and McCleary, Ken W: "Overlapping Product-benefit Segments in the Lodging Industry: A Canonical Correlation Approach". *International Journal of Contemporary Hospitality Management*, Vol. 10, Issue 4, 1998.

Buhalis, Dimitrios: "Enhancing the Competitiveness of Small and Medium-sized Tourism Enterprises". *Electronic Markets*, Vol. 6, No. 1, 1996.

Buck, Maurice: "The Role of Travel Agent and Tour Operator". In Goodall, B. & Ashworth, G (ed.): *Marketing in the Tourism Industry*. Billing & Sons Limited, Worcester, UK, 1988, pp. 67-74

Buhalis, Dimitrios and Main, Hilary: "Information Technology in Peripheral Small and Medium-sized Hospitality Enterprises: Strategic Analysis and Critical Factors". *International Journal of Contemporary Hospitality Management*, Vol. 10, Issue 5, 1998.

Buhalis, Dimitrios: "Information Technology as a Strategic Tool for Sustainable Tourism Development". *The Courier,* No 175, May-June 1999, pp. 55-57.

Byerley, Paul Francis and Ewers, Johannes: "User-driven Applications of Advanced Networks for Electronic Marketing of Tourism products*". Electronic Markets*, Vol. 6, No. 1, 1996.

Collier, David: "Expansion and Development of Central Reservation Systems". In Medlik, Slavoj (ed): *Managing Tourism*. Butterworth-Heinemann, 1991.

Holloway, J. Christopher: *The Business of Tourism*. McDonalds & Evans, Plymouth 1983.

Martin, Chuck*: Net Future*. McGraw-Hill, New York, 1999.

Medlik, Slavoj: *The Business of Hotels*. Heinemann. London, 1980.

Mulcahy, John D: **"**Vocational Work Experience in the Hospitality Industry: Characteristics and Strategies". *Education and Training*, Vol 41, Issue 4, 1999.

Palmer, Adrian and McCole, Patrick: "The Role of Electronic Commerce in Creating Virtual Tourism Destination Marketing Organisations". *International Journal of Contemporary Hospitality Management*, Vol 12, Issue 3, 2000

Pollock, A: "The Role of Electronic Brochures in Selling Travel: Implications for Businesses and Destinations". *Australian Journal of Hospitality Management,* Vol. 3, No. 1, 1996, pp. 25-30.

Robinson, Richard and Kearney, Terrence: "Database Marketing for Competitive Advantage in the Airline Industry". *Journal of Travel & Tourism Marketing*, Vol. 3 (1), 1994, pp. 65-81

Schneider, Gary P. and Perry, James T: *Electronic Commerce*. Course Technology, Cambridge, 2000.

Sheldon, Pauline J: "Destination Information Systems" *Annals of Tourism Research*, Vol. 20, pp. 633-649, 1993

Standing, C, Borbely, S and Vasudavan, T: "A Study of Web Diffusion in Travel Agencies" *Proceedings of the 32nd Hawaii International Conference on System Sciences 1999*"

Turban, Efraim, Lee, Jae, King, David and Chung, H. Michael: *Electronic Commerce. A Managerial Perspective.* Prentice-Hall. USA 1999.

Warren, P. and Ostergren, N.W: "Marketing Your Hotel: Challenges of the '90s". The Cornell HRA Quarterly, Mayn 1990, pp. 56-59.

Witt, Stephen F, Brooke, Michael Z, and Buckley, Peter J: *The Management of International Tourism.* Unwin Hyman, London, 1991.