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THE INTRODUCTION OF THE INTELLECTUAL PROPERTY CONCEPT IN THE HOTEL INDUSTRY OF UKRAINE

Introduction. An integrated approach to the implementation of information technology in the hospitality industry: includes the automation of business - processes inside the hotel, and the information about the hotel activity is accumulated and stored in a database on one or more server machines; involves the development of the internal information system to automate business processes via the Internet, which connects the hotel internal information system with its external partners; combining the internal and Internet systems in common business environment, which integrates all internal hotel services and provides response to any request from the outside through the methods of electronic data interchange.

Materials and methods. Analysis of modern scientific works of Ukrainian and foreign areas: automated systems of monitoring and control, security, energy and resource saving, providing comfort.

Results. Complex use of innovative technology provides significant energy savings, safety and comfort level of the hotel, automation maintenance of room stock, reducing labor costs, calculated payback period is 3-5 years.

Conclusions. Significant increase in comfort, residence prestige and guaranteed high quality of services has a positive effect on the enterprise image, increasing the flow of regular customers by guaranteeing a high level of competitiveness, profitability and market success of hotel complex.

Keywords: hotel, intelligens, systems, management.

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ВВЕДЕННЯ ПОНЯТТЯ ІНТЕЛЕКТУАЛЬНОЇ ВЛАСНОСТІ В ГОТЕЛЬНІЙ ІНДУСТРІЇ УКРАЇНИ

Вступ. Комплексний підхід до реалізації інформаційних технологій в індустрії гостинності: включає в себе автоматизацію бізнес - процесів усередині готелю; розробку внутрішньої інформаційної системи для автоматизації бізнес- процесів через Інтернет; об'єднання внутрішніх і Інтернет-систем в загальному бізнес-середовищі.

Матеріали і методи. Аналіз сучасних наукових робіт українських і зарубіжних областях: автоматизованих систем контролю та управління, безпеки, енерго- та ресурсозбереження, забезпечування комфорту.

Результати. Комплексне використання інноваційних технологій забезпечує значну економію енергії, безпеку і рівень комфорту готелю, обслуговування автоматизації номерного фонду, зниження трудовитрат, розрахунковий термін окупності становить 3-5 років.

Висновки. Значне збільшення комфорту, проживання, престижу та гарантована висока якість послуг має позитивний вплив на імідж підприємства, збільшуючи потік постійних клієнтів, гарантуючи високий рівень конкурентоспроможності, рентабельності та ринкового успіху готельного комплексу.

Ключові слова: готель, інтелект, системи, управління.

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ВВЕДЕНИЕ ПОНЯТИЯ ИНТЕЛЛЕКТУАЛЬНОЙ СОБСТВЕННОСТИ В ГОСТИНИЧНОЙ ИНДУСТРИИ УКРАИНЫ

Введение. Комплексный подход к реализации информационных технологий в индустрии гостеприимства: включает в себя автоматизацию бизнес - процессов внутри гостиницы; разработку внутренней информационной системы для автоматизации бизнес - процессов через Интернет; объединение внутренних и Интернет-систем в общем бизнес-среде.

Материалы и методы. Анализ современных научных работ украинских и зарубежных областях: автоматизированных систем контроля и управления, безопасности, энерго- и ресурсосбережения, обеспечение комфорта.

Результаты. Комплексное использование инновационных технологий обеспечивает значительную экономию энергии, безопасность и уровень комфорта отеля, обслуживание автоматизации номерного фонда, снижение трудозатрат, расчетный срок окупаемости составляет 3-5 лет.

Выводы. Значительное увеличение комфорта, проживание, престижа и гарантированное высокое качество услуг имеет положительное влияние на имидж предприятия, увеличивая поток постоянных клиентов, гарантируя высокий уровень конкурентоспособности, рентабельности и рыночного успеха гостиничного комплекса.

Ключевые слова: гостиница, интеллект, системы, управления.

Introduction. Hotel and tourism industry is one of the most dynamic areas of the service sector. In recent years, taking into account the positive impact of

Euro 2012 final in Ukraine, the number of accommodation facilities has increased significantly, new types and forms of hotel services have appeared, quality of hotel services has improved. However, significant problems accumulated in the field over the past decade - morally and physically outdated material and technical resources, great energy consumption, the discrepancy between the price and service quality, low workload and low profitability determine the introduction of new technologies that would update existing hotels, differentiate offer in the accommodation services market, provide a highly professional organization of the hospitality industry in accordance with international and European standards of quality, efficiency and environmental safety.

Market success of a single hotel facilities depends on many factors, among them a prominent place belongs to comfort and hotel security, defined by the building technical equipment level, the competent organization of internal infrastructure and technology services.

The concept of intellectual property or "smart hotel" is a totally new approach to complex engineering systems, security systems, rooms equipment, administrative – production premises and welfare rooms, defining a new level of hotel services. Analysis of scientific literature and the best practices of hotel facilities shows that the overall increase in the number of companies that provide accommodation services are not always accompanied by increased quality of guest service and effective innovations. Nowadays more than 3.1 thousand accommodation facilities represent Ukrainian hospitality market. The Autonomous Republic of Crimea, Kyiv, Odessa region, and others are the best provided with temporary accommodation services.

Table 1

Dynamics of accommodation facilities in Ukraine in 2000 - 2012 years *

	Number of collective accommodation facilities			Bedspace, thous.			The number of placed, thous.		
	in total	including		in total	including		in total	including	
		Hotels and similar accommodation facilities	specialized accommodation facilities		hotels and similar accommodation facilities	specialized accommodation facilities		Hotels and similar accommodation facilities	specialized accommodation facilities
2000		1308			102.9			3287.4	
2005		1232			106.0			3938.2	
2010		1731			186.6			4047.8	
2011	5882	3162	2720	567,3	154,2	413,1	7426,9	4656,8	2770,1
2012	6042	3145	2897	583,6	163,4	420,2	7893,1	4983,8	2909,3

* calculated according to the State Statistics Committee

The largest number of certified means of accommodation is located in the Autonomous Republic of Crimea (including Sevastopol) - 496, of which 5 * - 2, 4 * - 4 * 3 – 29, 2 * - 7, 1 * -3; not categorized - 451. Odessa region occupies the second place - 294, of which 5 * - 2, 4* - 9, 3* -11, 2 * -5, 1* - 6; without category - 261. Third place belongs to Lviv region - 233, of which 5 * - 1, 4 * -11, 3 * - 31, 2 * - 10, 1 * - 5; without category - 175.

It should be noted that at the end of 2011, only 94 hotels functioned in Ukraine that already had existing the Certificate of Compliance (1-5*), including: 5 * - 3, 4 * - 13, 3 * - 66, 2 * - 8; 1* - 4.

Domestic and foreign experts in hospitality services (Baylyk S., Boyko M., R. Braymer, Kabushkyn M., Krul G., Lukyanov L., Munin G., Nechayuk L., Malska M., Melnychenko S., Rohlev H., Sokol T., Putsenteylo P., J. Walker, etc.) define modern automation and information technologies as one of the key elements of the hotel services quality improvement and the most effective means of competition.

An integrated approach to the implementation of information technology in the hospitality industry consists of three stages. The first stage includes the automation of business - processes inside the hotel, and the information about the hotel activity is accumulated and stored in a database on one or more server machines. Client-server technology of information systems provides access to databases from any workstation in accordance with the access right. The second stage involves the development of the internal information system to automate business processes via the Internet, which connects the hotel internal information system with its external partners (tour operators, customers). Third stage is combining the internal and Internet systems in common business environment, which integrates all internal hotel services and provides response to any request from the outside through the methods of electronic data interchange, electronic commerce. [7]

So, service automation capabilities are integrated and cover all processes of functioning and relationships with hotel guests. This concept of hotel management is called "intellectual property management" or "smart hotel".

In 1970 the Intelligent Buildings Institute in Washington formulated the concept of "smart home", after which new developments could be used in business and hotel management, the system was called "Smart Hotel". [4, 11]

The system "Smart Hotel" is characterized by the direct management of all integrated engineering - technical systems and technological operations based on global computer network, as follows:

- building energy-saving systems (water, heat, electricity);

- environment and climate system of the building;
- system utilities (water, heat, flooding, leaking, malfunction of equipment, etc.); lighting (parking lot, interior, landscape and facade);
- security systems (security, fire safety, surveillance, warning, evacuation, and access to technical and welfare rooms, etc.);
- alerting service (video / audio, TV, access to external communications, the Internet);
- hotel management system, sales, reservation, hotel accounting activities;
- system of multifunctional equipment of hotel rooms;
- system of automated preparation of the conference hall for holding presentations, etc.

In Fig. 1. "The intelligent solution for hotel" picture overall scheme of hotel management.

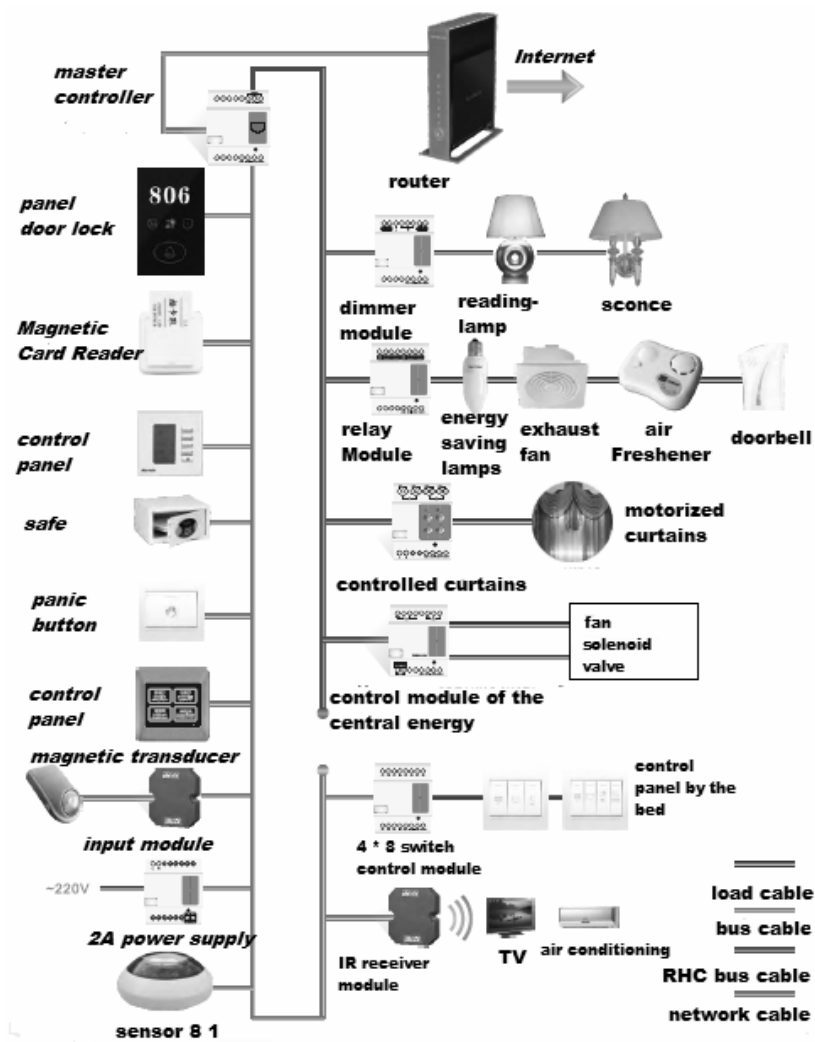


Fig. 1 Intelligent Solution for Hotel [7]

Hotel management system of engineering and technical communications provides not only energy consumption minimizing, but also environmental sustainability of the building, comfort and convenience for guests, performance of individual requests for lighting, heating, temperature, ventilation, etc. To do this, landings, corridors and administrative - industrial premises are equipped with measuring cells that allow you to turn on the lights, cooling or heating if required. In the corridors at night time lighting may be turned off automatically and the heating and ventilation is switched over into saving mode.

For hotel rooms sensors 8 1, 5 in 1, logic modules, control relay and power - counters are used that using information supplied from the control panel, perform a number of intellectual tasks: morning curtains can open up automatically, lights

are muted when natural light is sufficient. In bright sun blinds can be closed back so as not to heat the room. When you open the window air conditioner automatically turns off.

Continuous monitoring of energy consumption and electrical loads can save at least the same compared to transition to energy-saving lamps

The light control system switches the light on and off, and allows you to:

- gradually adjust the lighting (time-out timer is programmed at the time from 3 to 60 seconds);

- Adjust the brightness of the bulbs according to the time of day;

- Play pre-programmed lighting scenarios for different occasions;

- Turn on and off light for motion sensor;

- Manage landscape lighting in the surrounding area;

- Perform guard duty, simulating the presence of hosts in the house.

In addition to lighting, the system "smart hotel" can also provide air conditioning, heating and ventilation in optimal mode. With programmable thermostats heating in any room hotel can be set on schedule. You can specify four different temperatures per day, that reduces the cost of heating in practice. Programmable thermostats save energy Heating in each room is regulated independently by the thermostat. Therefore, the power consumption per hour will be different in each room.

Also, besides premises heating, the system "smart hotel" can provide sidewalks heating, outside rainwater installation. Cable heating systems using sensors for temperature and humidity monitor weather changes and turn on the heating of the surfaces when necessary.

With the control panel, relay, climate controller and sensor the desired temperature can be provided: mode "warm" in winter, "cold" in summer, "auto" in off-season time. All modes are optimized for maximum energy efficiency, embedded sensors continuously report the temperature and mode of operation

to the control station, which is a significant saving for the hotel - rooms that are not maintained, are in stop position.

The intelligent control system of engineering - technical communication also includes technical security module, in particular the anti-flooding system that identifies water leak, blocks water and notifies appropriate personnel; the system gas anti-leakage identifies gas leak, blocks gas, informs the relevant services. The system gas anti-leakage is used in the kitchen; the anti-freezing system prevents icing, icicles and snow masses of water courses, entrances (stairs, etc.), terraces. The anti-freezing system makes life safe and smooth.

Intelligent information system of hotels security according to the concept "Smart Hotel" includes subsystems of access control and intelligent video surveillance. The access control system is the main instrument for the protection of any object. Their functionality and accuracy of application plays a key role in security analysis of object and access it. In crowded areas access control systems are vital as they provide a high level of monitoring in all rooms, the ability to create different levels of access and unlimited plans, that is each post can only observe its territory. A significant advantage of intelligent security systems is their independence from subjective factors, reflection on the plan events in the system in real time operation and status sensors, door and a quick response to danger, that is to block the door, the perimeter, card, reduce access in real time.

For intelligent video surveillance system specialized software and equipment is developed that can not only watch but also understand what is happening. It can perform set actions, namely: to determine the movement of people in a restricted area, determine the crowd (the crowd - a set of people that formed in a given time), determine the pursuit, counting people who were at the hotel for a while, watch correct parking and traffic direction, identify dangerous objects in a strategic area and time of their stay, determine the disappearance of the object, observe the indicated object.

No security service can monitor everything that happens on the protected object. This factor is a major health risk in the facility. Therefore, the video surveillance system is integrated with security system and aggregates actions that can be performed by the system in violation of the rules, in particular informs security service that monitors, turns on an emergency siren, blocks the room where the unauthorized event was held, the development of performing other actions is also possible.

For hotel room stock solutions are built on the principles of energy efficiency and intuitive control, different logic of intelligent ID identification is carried out according to the card to identify the owner or staff. An intelligent way to manage living space with wall panels, using the IR signal, remotely and collecting service information is also provided.

Upon entering the hotel room the multifunction module is mounted with the following features: room lighting, call in the room, as well as recall for staff (do not bother, clean the room, room service, laundry, wash or do the ironing, departure recall).

To manage a hotel room multi-touch panels are used, which provide light and climate control, operate music, curtains, TV and built-in detectors. For status indication of hotel rooms and their management specialized built-in wall (or a central control panel) programmable multi-touch panels are used. Radio channel can be used to communicate with the controlled device.

Desktop touch panels. To indicate room state and for its management different size desktop touch panels with active screen are used that allow to make the necessary commands.

Portable wireless panels are similar to a desktop panels, but without reference to a particular place. Mobile handheld device control with a touch screen or a remote control can use a radio signal or infrared signal.

Methods of control. Through the Internet all controlled objects in the room are connected to a common computer and their status is displayed on the Web server. Management homeowner is remote.

Automatic control rooms and apartments - "Smart Hotel" can automatically manage your living space without the inhabitants' interference with programmed algorithms. Also, the system automatically performs an emergency power outage, blocking water, screw valves of heating system and more.

Multiroom system. Interface of multiroom entertainment system is speakers and televisions in every room. All the audio and video signals are placed in the rack, out of sight in a special room.

Each guest can access music from radio, CD, Internet at any time using wall touch or buttons panels. In the multiroom system the integration of media server - a single repository for all media files, that replace all available hotel media outlets is also possible. For demanding customers there is possibility to run room "scenarios" - cinema, romance and etc.

Media Server supports data management by remote controls, touch panels, and through iPhone, iPod, iPad.

The central point of control and monitoring in the hotel management system is a manager workstation. It allows you to monitor the status of all subsystems and building devices to configure their parameters.

Manager workstations (OWS) use standard PC hardware platform and Microsoft Windows. Support for manager workstation involves a single graphical interface for all applications of building management system, a clear program structure and navigation between software components. It ensures ease of system operation and search of information, organizes and facilitates the staff work, cut down labor costs.

Ukrainian market with installation technology "Smart Hotel service" is not saturated. At the end of 2012 only fourteen competitive firms fill this niche, and only five of them purposefully develop solutions for hospitality businesses, they

are INTELCITY, Hi -tech-house, MimiSystems, ViP Technology. These companies provide full range of services with the flexibility and scope of the problem, they are individually engaged in selling equipment for intellectual property, guarantee services and systems service support, companies technologies comply with the world standards.

Table 2 summarizes the data on service providers of intellectual property technology implementation with generalized characteristic.

Table 2

Market analysis of technology "Smart Hotel" companies-installers

Name of the company	Specialisation on systems "Smart Hotel"	High flexibility and solution scales	Sales of "smart equipment»	Required consumer education	Compliance with technology international standards	Full service
1	2	3	4	5	6	7
ABB	+		+		+	
Berker			+		+	
Inteldome		+	+	+	+	
INTELCITY	+	+	+	+	+	+
Hi-tech-house		+	+	+	+	+
MimiSystems	+	+	+	+	+	+
SMART-LIFE	+	+		+	+	+
Siemens		+	+		+	
ViP Technology	+	+	+	+	+	+
АвіСат	+		+		+	
Атлас				+	+	
ІНКОН			+			+
Мертен	+	+	+		+	+

In Ukraine "INTELCITY" company has been one of the leading installers of integrated automation of residential and office buildings since 2003. Company activity involves design, implementation and maintenance of complex automation systems of residential (Smart hotel) and public (dispatching) buildings; design,

installation, setting into operation and maintenance of telecommunication systems, SCS, electricity networks, as well as guarantee service and systems service support.

Company «MimiSystems» was founded in 2004 and since then it has specialized in developing intelligent electronic systems and software. The company offers its services in the field of hotel intellectual property management systems. The main task is to create unique solutions in the field of engineering systems, which are not inferior to western technologies, while the cost of which would be acceptable to consumers.

Company «SMART-LIFE» carries out projects on automation of real property items as well as provides guarantee and maintenance service, specialized consulting services. Control, operation and interaction of domestic and industrial systems (climate, lighting, security, home theater, "multiroom" audio-video systems) is meant under automation.

The company "VIP Technology» was created by a group of professionals at the end of 2005. Although the company is young, it is growing rapidly, guided in its work by the most advanced technologies in the field of comprehensive services, wholesale and retail trade of world famous manufacturers, design and installation of audio-video, "multiroom" and "smart hotel " systems.

Implementation of building intelligent management system is in the early stages of Ukrainian hospitality market entry. According to our data, today smart building management technology has been implemented at 7 hotels, 6 of them are located in Kiev: Fairmont Grand Hotel Kyiv 5 *, Premier Palace Hotel 5 *, InterContinental Kiev 5 *, Hyatt Regency Kiev 5 *, Radisson Blu Hotel 4 *, IQ Hotel 2.5* and 1- in Donetsk - Donbass Palace 5 *.

Hotel Fairmont Grand Hotel Kyiv 5 * is a leader in intelligent management implementing among Kyiv hotels. The hotel has the latest fully automated control systems: security, energy conservation, multi-room system and the only smart room, implemented in Ukraine.

The special thing about intelligent management in Hotel Hyatt Regency Kiev 5 * is using touch panels in hotel room mini bars, which automatically keep track of products.

For hotel management Premier Palace Hotel 5 *, InterContinental Kiev 5 *, Donbas Palace 5 * use intelligent security systems, such as access control to an object and some of its facilities, the possibility to block the door, the perimeter, card, reduce access in real time; integration with video surveillance system, etc.

The energy saving system in Radisson Blu Hotel 4 * is characterized by lighting management of the landing platforms, corridors and areas, being exploited little, equipped with sensors to minimize energy consumption, turn on the lights, cooling or heating only if someone needs. In the corridors lighting may be turned off automatically and the heating and ventilation is switched over into saving mode at night time.

«IQ Hotel" reflects the modern approach to hotel technology. In this hotel the smart home system, climate control is implemented, in hotel rooms electronic locks and blackout windows electronic system are used.

Conclusions. Complex use of innovative technology "Smart Hotel" provides significant energy savings, safety and comfort level_of the hotel, automation maintenance of room stock, reducing labor costs. Even with the high initial cost of technology implementing (about 100-300USD for 1 sq. m.) calculated payback period is 3-5 years. Significant increase in comfort, residence prestige and guaranteed high quality of services has a positive effect on the enterprise image, increasing the flow of regular customers by guaranteeing a high level of competitiveness, profitability and market success of hotel complex.

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