SYSTEM INTERACTIVE HOTEL TV

TV INN

2009

CONTENTS

Main features

1.1 TVInn® Interactive Hotel Television System's Structure

Interactive system "TV Inn" is a hardware-software multimedia solution, designed for hotels, sanatorium-and-spa and recreation complexes to support the main feature of the industry – meeting the highest requirements to stability of the system, full redundancy of the system and comfortable operation. *(Picture 1)*.

The solution structure is shown in the scheme:
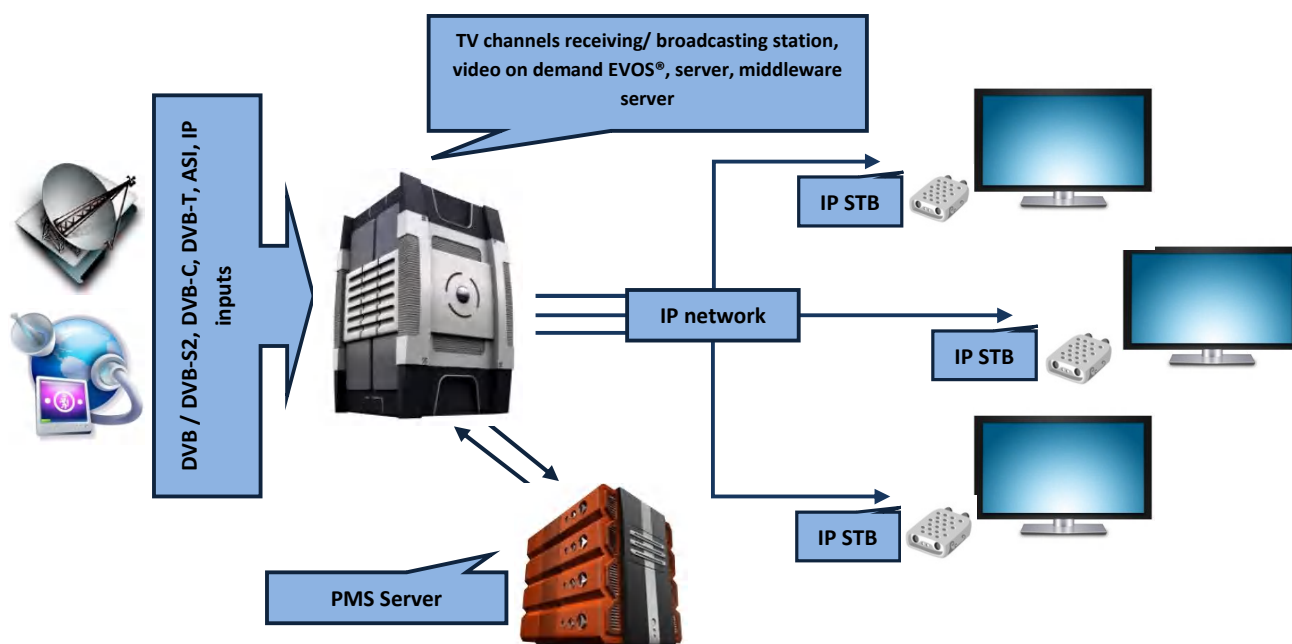
(Picture 1)

1.2 TV Channels Broadcast Receiving Head-End

TV channels broadcast receiving head-end which is the part of TVInn® solution is a functional and reliable device which meets the up-to-date requirements. Its technical characteristics are:

Signal receiving systems' specification:

IP input	Interface	: 10/100/1000 Base-T Ethernet and SFP interface
	Maximum data rate	: Up to 850 MBit/s
	Data format	: UDP Multicast/Unicast, RTP
	Transport stream	: SPTS and MPTS
ASI input	Connector	: BNC female, 75Ω
	Number of inputs per module	: 3
	Maximum bit-rate per port	: up to 213.7Mbit/s
	Management	: 10/100/1000 Base-T Ethernet
DVB-S/QPSK input	Connector	: F female, 75Ω
	Number of inputs per module	: 4
	Symbol rate	: 1-45 MSym/s
	FEC	: 1/2, 2/3, 3/4, 5/6, 7/8
	Input level	: -25 to -80 dBm
	Frequency range	: 950-2150 MHz
	LNB voltage	: 0/13/18 Volt
	Maximum LNB supply current	: 500 mA
	LNB signaling	: LNB voltage + 22kHz continuous tone
	Management	: 10/100/1000 Base-T Ethernet: 10/100/1000 Base-T Ethernet

DVB-T/COFDM input	Connector	: F female, 75Ω
	Number of inputs per module	: 4 demodulators (one connector)
	Input level	: -20 to -65 dBm
	Frequency range	: 49 – 861 MHz (center frequency)
	Channel bandwidth	: 7 and 8 MHz (6 MHz optional)
	Guard interval	: 1/4, 1/8, 1/16, 1/32
	Carrier mode	: 2k, 8k
	Hierarchy stream	: High and low priority
	Hierarchy mode	: All
	Carrier modulation	: QPSK, 16QAM, 64QAM
	FEC rate	: 1/2. 2/3, 3/4, 5/6, 7/8
	FEC	: Reed Solomon & Viterbi
		Fully compliand with ETS 300 744 and
		NorDig 2 specifications
	Spectrum	: Non-inverted and inverted
	Management	: 10/100/1000 Base-T Ethernet
DVB-C/QAM input	Connector	: F female, 75Ω
	Number of inputs per module	: 4 demodulators (one connector)
	Frequency range	: 51 – 858 MHz (center frequency)
	Channel bandwidth	: 7 and 8 MHz (6 MHz optional)
	QAM Mode	: 4, 16, 32, 64, 128, 256 QAM
	Symbol rate	: 0.87-6.9 Mbaud
	FEC	: ITU-T J83 annex A, B and C
		And ETS 300 429
	Spectrum	: Non-inverted and inverted
	Management	: 10/100/1000 Base-T Ethernet

Descrambling Specifications

DVB Descrambling	Interface	: DVB Common Interface
	CA System Support*	: BetaCrypt, Conax, Cryptoworks, Irdeto,
	Number of services per CAM	Mediaguard, Viaccess, NDS Viasat,
		(Nagra in progress)
		: 4 (requires multi service CAM)
AES Descrambling	Interface	: Virtual smartcard
	CA System Support*	: Latens

Scrambling Specifications

DVB Scrambling	Scrambling algorithm	: DVB-CA (up to 450Mbits per scrambler)
	Number of services per scrambler card	: 64
	Video format	: Transport stream, MPEG-2 SD/HD
	Interface towards CA System	and MPEG-4 SD/HD.
	Redundancy	: Simulcrypt interface
		: Support redundancy on ECM generators
AES Scrambling	Scrambling algorithm	: AES (up to 450Mbits per scrambler)
	Number of services per scrambler card	: 64
	Video format	: Transport stream, MPEG-2 SD/HD
		and MPEG-4 SD/HD.
		: Simulcrypt interface
	Interface towards CA System	: Support redundancy on ECM generators
	Redundancy	

Processing Specifications

PSI/SI	Function	: Full regeneration based on input and
	Pass-through of scrambled services	operations performed on the signal.
	PSI/SI handling	: Yes, on TS level.
	Tables Supported	: Automatically regenerated.
		: PAT, PMT, CAT, SDT, NIT
Multiplexing	Supported on	: ASI output (standard) and IP output (option)
	Video format	: Transport stream, MPEG-2 SD/HD
		and MPEG-4 SD/HD.

Output Specifications

IP Output	Interface	: 10/100/1000 Base-T Ethernet output
	Maximum data rate	and SFP interface
	Maximum number of services	: Up to 850 MBit/s *
	Data format	: 250
	Video format	: UDP Multicast/Unicast, RTP
	PCR Regeneration	: Transport stream, MPEG-2 SD/HD
	Multiplexing	and MPEG-4 SD/HD
		: Yes, According to EN50083_9
		: Yes (Option)
ASI Output	Connectors	: 4 BNC female, 75Ω
	Number of outputs per module	: 4 Different Transport Streams
	Maximum bit-rate per port	: up to 213.7Mbit/s
	Transport stream output	: SPTS and MPTS
	Number of services per card	: 250 (sum of all 4 ports)
	Output format	: Constant bit-rate
	PCR Regeneration	: Yes, According to EN50083_9
	Multiplexing	: Yes, per port

Video and audio Monitoring

Video Output	Connector	: BNC female, 75Ohm
	Output format	: PAL and SECAM
	Decoding	: MPEG-2 MP@ML (max. bit rate 15Mbits/s)
	VBI Insertion	
	Subtitling	: Teletext (WST/EBU), WSS, VPS, VITS
		: DVB and EBU
Audio Output	Number of stereo outputs per video	: 1
	Connector	: Mini-XLR or D-SUB (depends on module)
	Decoding of the following formats is supported	: MPEG-1 layers 1 and 2 (Musicam)

Environmental Specifications

Conditions	Operational Temperature	: 0.C to +40 .C
	Operational Humidity	: 0% to 95% (non-condensing)
	Storage Temperature	: -20.C to +70 .C
	Storage Humidity	: 5% to 95% (non-condensing)
Powere	Power	: Input voltage 110V/240V, 47-63 Hz
	Power supply rating	: 300W each
	Fuse	: T250V 5A
	Number of power supplies	: 1 or optionally 2
	Control	: Power supplies are monitored from
	Interface	GUI and via diodes on chassis
		: Hot-swappable, mounted on opposite
		side of input/output modules.
Fans	Cooling	: Integrated fans (airflow front-to-back)
	Number of fans	: 4
	Control	: Fans are monitored from GUI and via
	Interface	diodes on chassis
		: Hot-swappable, mounted on opposite
Physical	Dimensions	: 19" x 4RU
	Mounting options	: Telco – cabling in front
		Broadcast style – cabling in back

1.3 EVOS® Video on Demand Server

EVOS® Video on demand server from UCT Company is a streamer designed for writing and transmitting a big number of simultaneous streams. It supports all the international standards and is compatible with the majority of IP STB existing on the market, and with the equipment made by leading server equipment manufacturers. Combining several **EVOS®** streamers one can serve an unlimited number of simultaneous users. Having a possibility to modify the products' hardware and software we are able to change them in accordance with the customer's demands.

Specification Video on Demand Server EVOS®	
Memory	500 Gb
Hard Drive	2x250 Gb SATA
Interface	2 x 1000 Base-T
Dimensions	44x483x700mm
Weight	16 kg
Dining	100B-240B AC, 50/60 G
Power	500 V
Format video	o MPEG-2 TS, MPEG-4 (H264) o CBR & VBR o SD & HD
Output format	Multicast and unicast
Output Minutes	MPEG-TS (up UDP)
Options	Record, play, pause, stop (regardless of video format)
Play	Fast-forward and rewind video streams
Encoding Flow	Standard Ipsec
Management	Web interface

1.4 Middleware TVInn® Software

Middleware is intermediate software for interactive hotel television system management and other IPTV complexes management. This is a main component of the solution because it defines the set of services available to customers. Middleware plays the role of a coordinator in the process of interaction between almost all the components of the complex.

Subsystem's core manages all the external components of the complexes, maintains subscribers and services database, carries out authentication and authorization of subscribers' units, and interacts with the hotel property maintenance system (PMS).

The "Main menu" (User interface) is the face of the entire complex, the interface seen by users on the screen and used for offering services.

Middleware software of TVInn® interactive hotel television is an in-house design of UCT Company. This product meets all the requirements for availability, full redundancy and comfortable operation.

1.5   User Equipment

STB Amino AmiNET 130H, included in TVInn® solution is an IP set-top-box with AVC&HD (High Definition) support, designed to be used in public accommodations. STB Amino AmiNET 130H is equipped with HDMI port with supported resolution 720p and 1080i and graphic resolution 720x1280, analog AV sockets. Low bit rate codec like H.264 are supported, allowing to use HD content.

Compatibility with different TV interfaces (TVI) allows using STB for connection and TV management. This gives a possibility to hide the equipment, to control a TV receiver with the help of STB, browser or network. TVI interface supports different protocols, like Philips Smartport, LG/Zenith MPI, Panasonic/Sony MATE and others.

STB is designed to be mounted in hidden places. Its thin black case can be mounted out of the user's view that makes impossible the unauthorized access. To save both the interior design and to control the equipment it is possible to install IR Extender. *(Picture 2), (Picture 3)*

STB Amino AmiNET 130H – Main functions:

• High performance integrated silicon architecture, 300 MIPs
with dedicated codec support
• Flexible AV options
    • HDMI with HDCP up to 720p and 1080i
    • Composite, S-Video, Component, RGB and SCART
    • Dolby 5.1 multi-channel audio (optical S/P-DIF) and
    analogue stereo
    • 4:3 and 16:9 video stream aspect ratios
• MPEG 1, 2 & 4 (AVC) H.264
• Second, fast Ethernet port for guest Internet connection with
QoS functionality
• TVI support for leading hospitality TVs
• Video Protocols
    • Multicast IPTV (IGMP control)
    • VoD (RTSP control)
• USB 2.0 master
• IR remote control (combines TV and STB functions)
• Discreet, robust chassis with integral fixings
• Optional remote IR Extender
• Cost effective management and maintenance
    • Key-protected, scalable multicast software upgrade
    • Remote management via network

• Macrovision copy protection

STB Amino AmiNET 130H - Detailed Specification

Outputs	HDMI, Composite, S video, Component Video, Scart, SD/HD PAL or NTSCM, Optical S/P-DIF, USB 2.0, TVI port, Ethernet 10/100 Base T
Codecs	MPEG1, 2 & 4 AVC
Inputs	Ethernet 10/100 Base T
Size	190 x 134 x 36mm
Construction	Zintec pressing, black, painted
Power	5.2V, 3A, 8W typical usage
Safety Approvals	SSafety certification to EN60950, and ELSVD. CE, CB and CSA Safety approval

(Picture 2)

(Picture 3)

2. IMPLEMENTATION OF TVINN® INTERACTIVE HOTEL TELEVISION SYSTEM

Design work

Includes project preparation of the interactive hotel television system, agreeing with the hotel management the list of TV channels, number and format of films for "Video on Demand" service, the analysis of the hotel network structure, agreeing on interface customization in accordance with the hotel's corporate style, agreeing on integration parameters with PMS system, preparation and getting an approval for the equipment configuration, preparation of a commercial offer taking into account all the agreed parameters.

Design and building of Hotel network for the Interactive Television

If there is no LAN yet mounted in the hotel, the project is to be prepared and LAN is to be built according to all the parameters necessary for IP TV broadcasting.

Testing and/or Updating of Hotel network for the Interactive Television

If the hotel has its LAN, then testing is to be made and LAN is to be updated if necessary, according to all the parameters necessary for IP TV broadcasting.

Main Station's (Head End) Equipment Mounting

Mounting and setting of the main broadcast receiving apparatus and EVOS video on demand streamserver. Installation of Middleware software, integration with PMS system. Setting and testing of received signals, testing of video on demand broadcasting.

Installing User Equipment

Mounting, connecting, setting, installing of user equipment software, remote controllers coding (TV receivers coding if needed).

Interactive Hotel Television System Testing

Testing the quality of broadcasting on user equipment.

Personnel Training

Providing all the information, training stuff to use the interactive television system.

3. CONTROLS

Setting up Amino Remote Console

Initial setting (remote **console** programming) is made by specialists of the "Ukrainian Computer Technologies".

This chapter will tell you how to prepare Amino remote console for exploitation.

Setting Batteries

Remote controller works with two batteries AAA, MN2400, and UM-4 or LR03 type. We recommend you to use alkaline batteries for long *(Picture 4)*.

Open the cover slightly pushing the cover and move it up:

Put in the batteries, keeping the right polarity:

Put the cover back into the case by putting two ledges on the top of the cap into the case and snap the cover:

"Snap"

(Picture 4)

CONTROLS

Amino Remote Controller

Remote controller keys *(Picture 5)*:

STB, TV On/Off	Choosing TV channels and text
Choosing the controller's work	
Return to previous channel	Choosing of one/two-digit channel number
Sound off	TV inputs switching
Sound *	TV channels switching
Service menu** TV / STB	System navigation keys
Hot navigational keys:	Video playback control
🔴 - "Return"	
🟢 - "Help" (help about system)	Quick switching to the main page
🟡 - "Change language"	
🔵 - "Guest balance"	
Refresh the page	Web-pages navigation

(Picture 5)

*- Keys let us regulate volume both in "TV" and "STB" modes.

**- Service menu entrance, used only to setup STB and TV.

1. STARTING

After initial setting and battery setting the remote controller is ready for work.

Turning On / Off

To turn on /turn of STB: press the button «TV/STB on/off» on Amino remote controller. The red LED on the front panel indicates that power is on. In most of the cases the attachment needs 15-30 seconds to load.

STB Control

To control STB attachment press the «STB» button on the remote controller. The «STB» button will be highlighted for 1 second to indicate chosen mode. When you press any functional key on the remote controller the «STB» button will be highlighted to indicate that the command is sent in «STB» mode.

TV Control

To control your TV press the «TV» button on the remote controller. «TV» button will be highlighted for 1 second to indicate chosen mode. When you press any functional key on the remote controller the «TV» button will be highlighted to indicate that the command is sent in «TV» mode.

Greeting Page

Thereafter the greeting page of the interactive hotel television system TVInn® will be displayed. Let's examine functional capabilities of the greeting page by example of *Picture 6*.

2. Picture 6

3. - This page can be fully adapted to the hotel's corporate style.

4. - The guest receives a personal greeting based on the data he filled in during check in.

5. - The native language of the guest should be loaded as default.

6. - Pages navigation is carried out with the «System navigation keys».

7. - The «OK» key from «System navigation keys» block serves as «Enter».

8. - The guest can change the default system language with «System navigation keys».

9. - By using keys from «Hot navigation keys» block the guest can get a help about how to control the system with « - help», and check the state of his or her account with « - state of the account/guest balance».

10. SERVICE CONTROLLING

After pressing «Enter» on the «Greeting page» of TVInn® interactive hotel television system *(Picture 6)*, the guest proceeds to «Main menu» of services control. «Main menu» is divided into four main groups of services:

- ✓ **Multimedia**

- ✓ **Guest's info**

- ✓ **Services**

- ✓ **Entertainment**

The main groups of services are taken out to a special block located in the upper part of the centre of the screen *Picture 7*.

The central part of the screen displays the contents of every group of services. Four services are displayed on each page *Picture 7*.

The hotel's logo is displayed in the left upper corner of the screen, in the right upper corner there is a logo of the developer and/or the integrator. *Picture 7*.

The clock and date are displayed in the right lower corner of the screen *Picture 7*.

In the lower central part of the screen there are hot navigation keys of the interactive hotel television system, taken out to a special block *Picture 7*.

Picture 7

- One can switch to a group of with «System navigation keys».

- Choosing a service in every group of services and switching to the next page in one group is done with «System navigation keys».

- The date, time and time format is set automatically during the system installation, DST change is made automatically.

- «Hot» keys give the guest a possibility to return to the previous page « - back», get help about how to use the system « - help», quickly switch the language of the system« - switch language», and check his or her state of the account « - guest balance».

- All mentioned functions are applied in all the sections of the interactive hotel television system TVInn®.

5. SERVICE CONTROLLING

5.1   Using Multimedia Services

A group of **Multimedia services** *(Picture 7)* in the base version includes the following services:

✓ TV channels

✓ VoD Movies

✓ Adult movies

✓ Internet

TV Channels Viewing

Choosing the *TV channels* option in **Multimedia** services group, one can see a list of available TV channels in the central part of the screen *(Picture 8)*.

(Picture 8)

- One page contains 16 channels *(Picture 8)*

- A TV channel can be chosen with «System navigation keys»

- All the channels match their sequence numbers, which gives a possibility to use keys «Choose TV channels and enter» instead of «System navigation keys»

After choosing and switching to the TV channel one shall see the control panel with the name and the language of the channel (if available) and the "hot" key « 🔴 - back» shall be displayed on the screen, allowing to cancel viewing and return to the list of TV channels *(Picture 9)*.

(Picture 9)

Video on Demand (Movies) Viewing

After choosing **Video on Demand /**_Movies_ option in **Multimedia** group of services in the central part of the screen the list of the available films shall be displayed _(Picture 10)_. This service is payable.

(Picture 10)

- 8 films from the catalogue are displayed on every page _(Picture 10)_

- Films are chosen with «System navigation keys»

- To go to the next page press «System navigation keys»

While choosing a film the guest can watch the detailed information about the film: its description, information about the producer, actors, genre and cost of viewing *(Picture 11)*. Meanwhile the preview is being demonstrated. After the film preview is over (2-5 minutes recommended) the film cover and "BUY" button are displayed instead of the preview window.

(Picture 11)

Before withdrawing the payment for viewing of the film from the guest's account the page will be displayed demanding to confirm the payment. Then the film can be watched *(Picture 12)*.

(Picture 12)

- After paying the film can be viewed during the next 24 hours from the moment of payment.

- When watching the film one can use «Video playback control» buttons like: stop, pause, play, rewinding.

5. SERVICE CONTROLLING

5.2.   Using Information Services

A group of **Guest's info** services *(Picture 13)*, in its base version includes following services:

- ✓ Alarm clock

- ✓ Weather forecast

- ✓ Current bill

- ✓ Your messages

(Picture 13)

- To switch from one main service group to another press «System navigation keys»

- To choose a service in each service group and to switch to the next page within the same service group «System navigation keys» are used

Alarm Clock Setting

After choosing _Alarm clock_ in the group of **Guest's Info**, the guest gets a possibility to set the alarm clock _(Picture 14)_. This service is free of charge.

(Picture 14)

- TVInn® Interactive hotel television system uses 24h time format

- The alarm clock is set with «System navigation keys»

- After the alarm clock is set, the TV receiver will automatically switch to the «sleep mode»

- Don't turn the TV receiver off to hear the alarm signal at the right time

Weather Forecast

Choosing _Weather forecast_ option in the group of services **Guest's Info**, the guest gets a possibility to get acquainted with the weather forecast _(Picture 15)_. This service is free of charge.

- TVInn® interactive hotel television system shows weather forecast in two languages: Russian and English

- TVInn® interactive hotel television system information shows temperature in degrees Celsius (°C)

- To return to the previous menu use « 🔴 - back» or «System navigation keys»

- Information is provided from outer sources, meteorological internet-services

Checking the Current Bill

Choosing a _Current bill_ option in the group of services **Guest's info**, the guest gets a possibility to check the state of his or her account _(Picture 16)_. This service is free of charge.
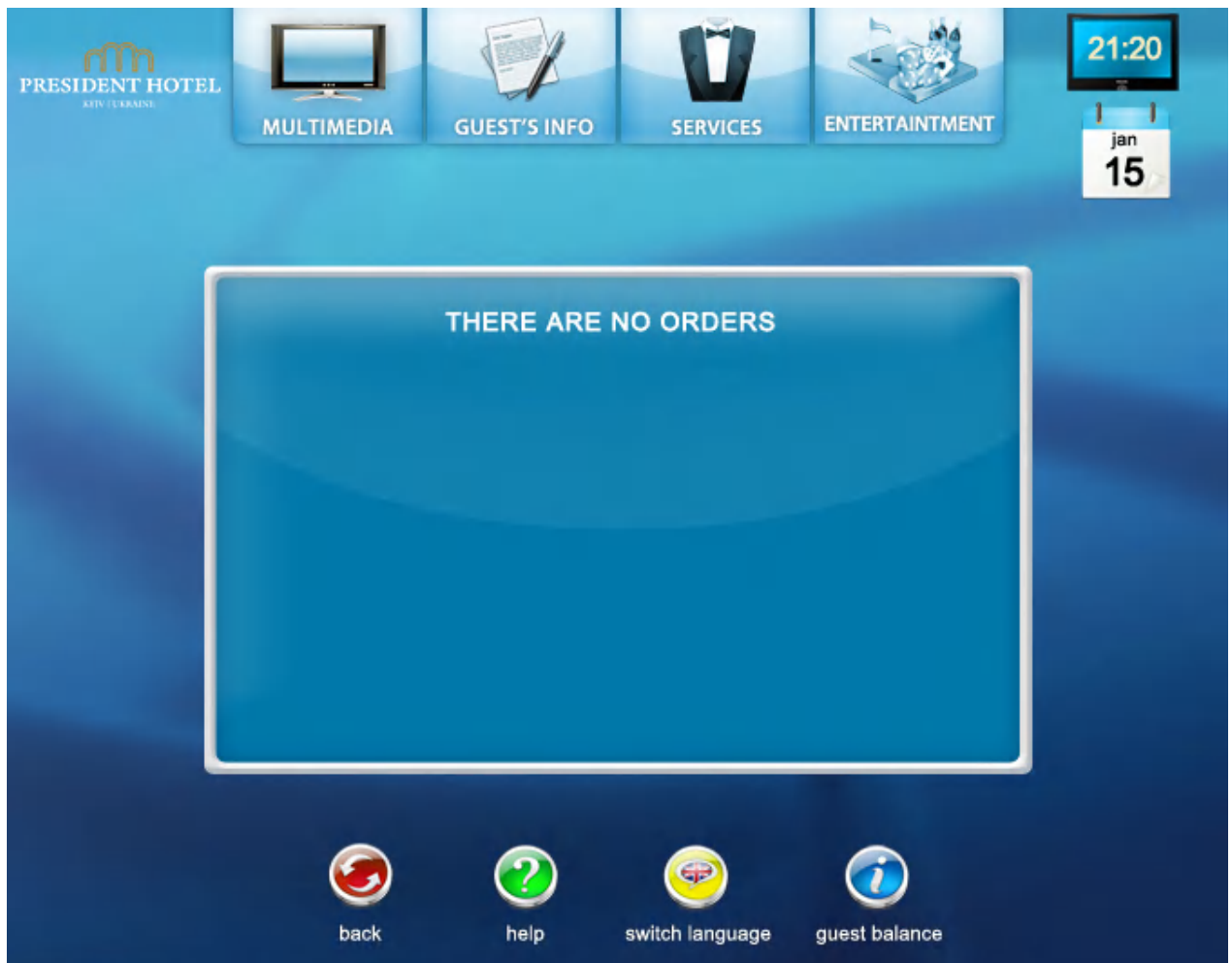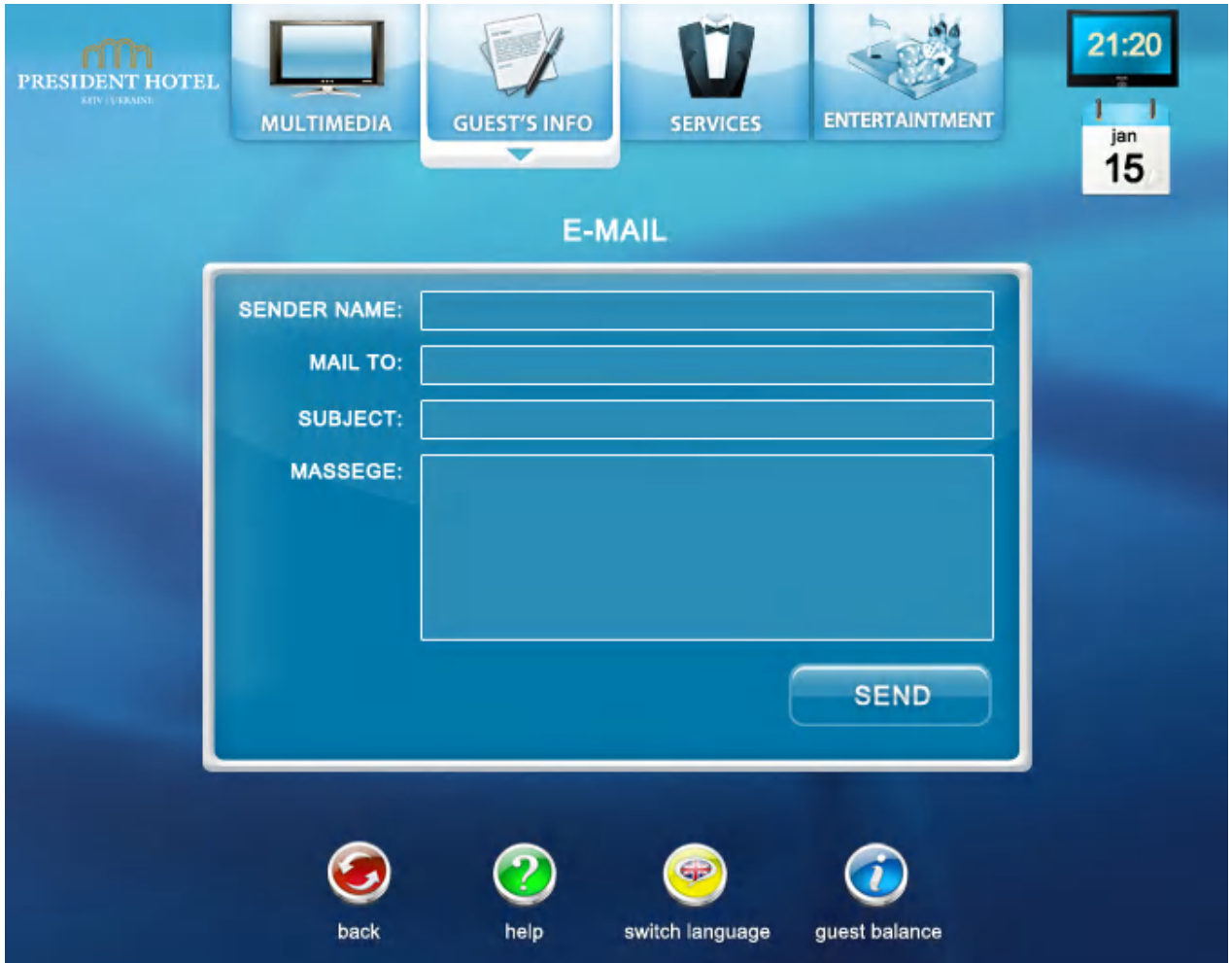

(Picture 16)

- Current bill shows data entered at the hotel's Property management system (PMS)

- TVInn® interactive hotel television system is integrated with different hotel property management systems

- Bill details are configured according to the hotel's wishes

- The service is controlled with «System navigation keys» or with a hot key « 🔵 - guest balance»

- To return to the previous page use « 🔴 - back» or «System navigation keys»

Sending Messages (e-mail)

Choosing *Your messages* option in **Guest's Info** group, the guest gets a possibility to send e-mail messages *(Picture 17)*. This service is free of charge.

(Picture 17)

- Messages can be written using wireless keyboard (optional)

- Messages are sent from hotel's server

5. SERVICE CONTROLLING

5.3. Using Services

A group of services **"Services"** is formed according to the hotel's demands, and the structure and their functional capabilities are saved in the same parameters like for other pages. As an example see*(Picture18)*:

(Picture 18)

A special feature of the group **Services** and **Entertainment** is a possibility to work in two modes:

✓ **Informing**

Providing maximum information of different hotel services and how to order them *(Picture 19)*

✓ **Automated selling of hotel services**

Selling hotel services on TV screen, forming of the order, adding service costs to the guest's account is made thanks to the integration of TVInn® interactive hotel television system with hotel's Property Management System (PMS).

(Picture 19)

5. CONTACT INFORMATION

UCT Company always tries to satisfy the client's needs at the highest possible level. Following this principle we've designed our product in the special way to have a possibility to react quickly to satisfy your demands by improving TVInn® interactive hotel television.

Being aware of the specific character of the hospitability industry enterprises, our developers are ready to improve the system according to the changes that take place in your hotel. For you we are always glad to

 - add new services;

- alternate design;

- make other necessary changes.

Based on quality requirements as to the services offered by hotels, television system among them, the powerful support service minimizes malfunctions and in case of their appearance responds immediately.

Contact information:

As for upgrade and service backup do not hesitate to contact us at:

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