



SMART HOTEL SPECIFICATION

and

Technical specifications for Hotel GUEST ROOM MANAGEMENT SYSTEM (HGRMS) / (GRMS) / (RMS)

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Smart G4 Hotel Simplified Specs 2020

Introductory to Smart Hotel Systems:

Smart Hotel consist of multiple systems that must work together in unity to achieve best results. The supplied System must be able to provide native one stop equipment solution that can handle all the following hotel needs:

- 1- GRMS
- 2- Façade Lighting
- 3- Public and back office lighting
- 4- Ball rooms and Meeting room systems
- 5- PA, BGM and Music system
- 6- Media and Advertisement systems
- 7- Integrated Fire Marshal controls
- 8- HVAC and BMS
- 9- Energy and General Control
- 10- Elevator Control
- 11- Parking and Special areas Access
- 12- Taxi Paging
- 13- And more

A- GRMS (guest Room Management System) Specification

The Guest room Management system consist of user interface, Room control Devices, and information communication ability.

The GRMS must be able to control Access, Services, Lighting and Dimming, Color control, Motorized shading, glass tenting, HVAC, BGM, Media, Media HUB and sockets, Moods, Occupancy sensing, Service requests, water utilities and more.

*** Description of the Room Management System**

- The system shall be an integrated solution that combines access control with guest room management (lighting control, thermo- regulation control, curtain control, and room services) all in one system.
- The system should make it possible to improve customer service by providing a complete and varied range of functions for monitoring and optimizing services to ensure the highest levels of comfort and safety. (Minimal: MUR, DND, Pick Laundry) with optional additional Services like: (Clean Shoes, Take Back Plates, Re-Fill Minibar, Prepare Bed for sleeping, Maintenance Needed, SOS, please wait++)
- At the same time, it should help to save energy and considerably reduce operating costs.





- On check-in the Room Management system issues the guest a RFID card that gives access to the assigned room until the guest checks out again. The Room Management System registers all room access events centrally in the front office system and can distinguish whether a guest or a member of the service staff or hotel management entered the room.
- The Room Management System shall provide extensive supervisory functions to increase the security of the guest in the room. Unauthorized door opening, and an emergency assistance alarm in the room can be connected to the Room Management System.
- The various Room Management System functions shall be merged with the hotel room data in the front office software and shall be processed in the background. All functions of the Room Management System shall be operated via the front office system and can be evaluated offline later if required
- Each component of the system should be based on the concept of distributed intelligence, giving management the possibility of managing the complex problems of a hotel from one central control station.
- The system must be easily upgradable to add or modify functionality of hardware without removing nor changing any of the hardware installed
- The system main server proposed should consist of a server that will be accessed through separate workstations. The server should host the core of the application with the database and communication engine, while the workstations should run as thin clients.
- The proposed system should open protocol and can be seamlessly integrated to the PMS (property management system) preferred by the operator for minimal functions like: (Room & card#, Check in, check Out date time). Such integration must be enabled using either of RS- 232, RS485, TCPIP, ODBC... etc.

*** System modules be able stable, flexible and can function Both On-line and Off-Line,**

The GRMS must be able to handle at least 999 Rooms/Units in every single building installation.

And must have Flexible wiring topology using standard Data wires. The system must also work without any interruption as advanced BUS-System linking distance of at least 2KM without the need for any network bridges (Neither LAN nor fiber etc.)

*** must be modular and easy to expand,**

for example, can work and expand as to the following General options easily as standard:

Option 1: **Energy saving** Only based on real occupancy sensors and logics (Regardless if Valid card is still inserted in Keycard holder or not)

Option 2: **Service Management** Only (like DND, MUR, pick up Laundry, please wait, Room Occupied/Vacant)





Option 3: Direct Ability to Expand to **VIP Services** unlimited to cover more needs like: (I need extra Pellow, I need Extra Towels, I need in Room Massage, I need a taxi, Call elevator, Collect Back food Plates, Clean my shoes, Refill minibar, I need Doctor, I need Butler, I need Bell Boy, Express check out, Get my car from valet, I need baby Sitter, and Many More)

Option 4: **Access Control** Only

Option 5: Room Convenient **Lighting Control**, bedside control, dimming, moods, color, ++ (Must be able of using Normal switches or Smart wall panels) with full ability to control different light drivers based on: Dali, KNX, 0-10, LED drivers, Actuators and dimmers ++

Option 6: Only Room **HVAC** Air conditioning, Heating, and ventilation (climate Control with or without floor heating or mirror defogging)

Option 7: **Water wastage control** Only (Based on Occupancy) and ability to add water budgeting option

Option 8: **Automated Shades control** like Curtains, Drapes, Shutters, and Glass tenting Control System

Option 9: Added **Comfort controls** that include the control of: Mirror Defoggers, Mirror and Bathroom TV, bathroom Floor Heating, Towel heaters and other.

Option 10: **IPTV & PPV** ability with control and advertisement options and room system control

Option 11: Control AV, TV, **IR Media**, and **Music BGM** etc.

Option 12: **Metering** module

Option 13: **Ability to mix any of the options above 2 or more options or all together** as to be needed in full flexibility and include controls of other systems like Water Heaters, coffee makers, etc.

*** SMART GRMS Behavior and usability Ability:**

- ✓ GRMS must Have ability to control temperature and moods based on occupancy and based on check-In either directly or with delay. (Send **Preset Trigger**)
- ✓ GRMS Must have **Eco** Mode ability and at least 5 presets minimum
- ✓ GRMS must have logical **health** conservation pattern to increase desired temp 1 degree every 1.5 hours to compensate body temperature loss.
- ✓ GRMS must be able to enable or disable Automatic **utilities cut off** once checkout date/time has been reached.
- ✓ GRMS must have the option and ability to control **chillers workload** by presetting temperature at night to a minimum/ maximum regardless of desired Room temperature user setting according to programmed range: (example: after 2:00 AM up to 7:00 am) this must be able to apply or not for different types of rooms accordingly. (Example: Exclude Suites and VIP)
- ✓ GRMS must have integrated **Bell Ding** ability and can also have any third-party bell installed





- ✓ GRMS must be flexible to use and work with any Architectural designed **custom Door panel** of any shape material and color as to be designed by architect for special hotel projects cases. (Example: Wood, Brass, Bronze, Classic, Oval, Square, Circle, Wave, Other)
- ✓ The GRMS intelligence must include FCU/AHU and Heating behavior which must be logical and efficient to provide **energy saving** without damaging the HVAC system (Example: If the balcony or window is open for more than XX Seconds then Turn off HVAC. If Balcony and window are closed for more than XX Sec. Start HVAC on Fan only until Guest change it to cooling as one idea. Or start AC again as was last preset)
- ✓ The GRMS must have additional intelligence to avoid **infiltration** and conserve maximum building energy. For example: (If balcony or window is left open for more than XX Minutes the front desk, Housekeeping and security can get alert to contact guest to close the open hatch as one option)
- ✓ The GRMS must have the Ability to monitor rooms that are not occupied for long time and automatically circulate air into its bathroom by running **exhaust** fan and running HVAC every Xx period and based on system temperature limits.
- ✓ GRMS Must have ability to monitor and to report HVAC **Filters** that require Cleaning at guest this must work both using Logic and worked time even without any differential pressure sensors.
- ✓ GRMS Must have **Security** ability to report **Forgotten Room Door open** by sounding alert buzzer at GRMS Smart door panel. Additionally, if the door stayed Ajar for more than XX Time then the security and housekeeping shall be alerted to act accordingly.
- ✓ GRMS Must have the ability to add Bathroom **panic button** or Pull cord as to be needed
- ✓ GRMS must be able to have the option to send automatically **Guest in Danger Alert** if Room is flagged as occupied yet no system usage nor door was opened for more than XX hours or days. As analyzed and monitored by the system watchdog and SW.
- ✓ GRMS Must be able to send Automated advanced replacement Maintenance Alerts to Engineering to anticipate **light bulb replacements** based on hours usage.

*** SMART GRMS USER INTERFACE ABILITY:**

- GRMS Must have full flexibility to use any of the following **user controls**:
 - a- Normal Switches and Thermostats
 - b- Button Panels and Smart Panels
 - c- Smart Touch Switch panels
 - d- Wall Touch Panels with built in PIR occupancy sensors
 - e- Dynamic Display Touch Panels
 - f- Bio-Hotel Face Recognition Panels Especially for PWD
 - g- Surface touch modules for PWD, VIP and other
 - h- Smart Phone and Tablet
 - i- Alexa Integrated TV Box
- GRMS Must Have selection of **Bedside types** as following:
 - a- Bedside Only Built in wall or Tabletop stand type)





- b- Bedside with integrated Universal Socket and Fast 2A USB Charger
- c- Bedside built in wall with Integrated Speaker
- d- Bedside built in wall Music Player (USB/BT/SD) with integrated Speaker
- GRMS Must Have elegant and matching **Sockets and outlets** like:
 - a- Media Hub for Desk
 - b- Universal Sockets with Charger
 - c- Smart Kitchen outlet
 - d- 5A lighting and dimming Socket
 - e- TV Socket with Media Streaming ability
 - f- Telephone and Data Network outlets

*** Sensors Utilization Ability**

GRMS Must be able to utilize any sensor type and make it behave smart so the room logic can take full action accordingly:

- a- Normal Digital sensors like PIR, Magnetic contacts, Water Flow, Smoke, Gas, Heat and other
- b- Analogue sensors like Water Leak, Flow, Temperature, Humidity, Filters Differential Pressure, etc.
- c- Smart Sensors that include Ultrasonic, people counters, multifunction sensors
- d- Must be able to turn every installed device and system inside the room into occupancy detection and behavior data collection system.

*** Metering Ability**

The smart GRMS must have dual ability to estimate the consumption of Room based on logical monitored usage and on actual added meters.

The **logical** monitored metering must come as standard within the GRMS and should be able to calculate electrical and water consumption based on the following measures:

- a- Light KW based on circuit load X Hours usage
- b- HVAC KW based on FCU/AHU Load X Hour usage per function
- c- Motors and Exhaust KW based on load X Hours usage
- d- Water Consumption usage based on average Flow liters X Hour usage
- e- Other Consumption based on average weekly normal usage Consumption Index as Lumpsum that includes Refrigerator, Automation, and access system, Wi-Fi, TV standby, and other consciously running systems inside the room
- f- Other Guest consumption based on average and guesstimate budgeting only during occupancy of the room like: Charging Mobile, Laptop, Camera, Making Coffee/tea, Ironing, Hair dryer... etc.





The GRMS must also have Room Metering Modules to **exactly meter** and measure consumption collectively or per system and channel per room. It should be able to calculate metering for the following functions as to be required by hotel and room type:

- a- Electrical metering
- b- Water Metering
- c- Gas Consumption metering
- d- BTU Metering

*** Automated Maintenance Alerts Ability**

The GRMS must have the ability to send alerts for backend systems inside the hotel guest room/unit. These alerts can be driven automatically by studying the current of different installed electrical devices.

The metering hardware modules should be able to study such currents to detect any issues in the room systems by checking the maximum consumption threshold of devices like FCU, AHU, Curtain Motor, Refrigerator ..etc. and alerting engineering to perform protective maintenance accordingly.

More ability of the metering hardware is to send alerts for replacement maintenance of light bulbs to engineering.

*** Card Class of Service Variation Ability**

The smart GRMS must have multiple class of service allowing:

Multiple Buildings Coding, Hotel Worker Classification: (Manager, Security, Front desk, Supervisor, Housekeeping, engineering, Etc..) and multiple Guest class and levels like:

- a- Group master key (example: basketball team Coach can enter any of the team rooms, while team player only can open to enter his own assigned room)
- b- VIP Guest, Business Guest, Royal Guest Etc...
- c- Member Guest
- d- Normal Guest

*** Housekeeping Room Readiness Reporting Ability**

The smart GRMS must have the ability to enable the reporting of room status directly to the manager/supervisor from room panel.

The GRMS Wall Panel must have secret way to enable the Housekeeper and hotel service staff to report the following as standard:





- 1- Room is cleaned and ready
- 2- Laundry collected
- 3- Maintenance Needed
- 4- And Several others based on VIP panel functions installed in that hotel. (Example: Room service Plates collected; Mini-Bar re-filled...)

Optional: The GRMS must be able to add housekeeper App to enable direct assignment and reporting of tasks accomplished and findings from staff handheld smartphones

*** Automated Disinfection Ability**

The smart GRMS solution must have ability to provide automated Nano sanitizers, and self-producing disinfectant foggers and scent emitters that can sterilize the space based on timers and or manually when needed by housekeeping after checkout of guest. (Mcube)

*** Moonlighting Alerts Ability**

The smart GRMS must have the ability to monitor activity inside any vacant Guest Room/Unit that is not officially registered as rented in the system. The system Must utilize all sensors available with smart logics to make sure that room/Unit is not misused which is called (Moon lighting),

In Case of misuse by staff or renting out unofficially ...etc... The GRMS must have the ability to send alerts to Manager, security, owner, and other as to be designated. Such alerts must go in form of system alerts and as SMS alerts to the designated hand phones.

The moon lighting should be triggered in case the room is used without being officially registered in the system. Such triggering should happen if any of the following is detected:

- 1- Motion sensor is activated
- 2- Balcony door / window opened
- 3- Light is used
- 4- AC is switched on manually
- 5- Water is used inside the room. Example: Faucet or shower is Opened
- 6- Room Door is opened to exit

Additional Optional Occupancy Moonlighting System ability should be also available to avoid more occupancy inside the designated room by counting the people that entered such room from main or side joining door. This feature can be optionally utilized during Heavy Exhibition seasons and high occupancy demand seasons.

*** Security, safety and Fire marshaling Ability**

The smart GRMS must have security and Safety SW and HW modules to enable the following:

- A- Security module ability:





- Ability to receive Door left open alerts
- Ability to view and print room access logs
- Ability to receive Moonlighting Alerts
- Ability to receive panic call alerts
- Ability to receive help request from front desk and other Hotel desk areas like SPA, Pool, Management ++
- Ability to receive Guest in danger automated alerts
- Ability to receive Other emergency alerts from integrated points like Elevators or monitored Points like emergency exit doors. etc....

B- Safety Module ability:

- Ability to integrate to Fire alarm
- Ability to Park Elevators and shut off escalators in case of fire
- Ability to Allow fire marshal break glass door Release Global button to enable easy evacuation of guests
- Ability to print and report occupied room list for easy fire evacuation
- Ability to lock swimming pool entry, spa, gym access based on Day, Time, and Class of service

*** Integration to BMS and PMS Ability**

The smart GRMS must have the ability to integrate to both Building management and Property management systems through Open Database connectivity option, XML option, RS-232 and RS 485 option, as well as Modbus option. Other abilities like KNX bridging DMX, VRF, VRV Systems are also mandatory for other areas integration.

*** Elevator Floor Access Ability**

The smart GRMS must have the ability to have fully integrated Elevator floor access control to allow only active cards to reach to certain floors in the designated building/buildings. This should be possible using either hotel Card or face recognition.

*** Parking Access Ability**

The smart GRMS must have the ability to Enable/Disable Garage access for Guests based on Front desk check-in preferences. This option should be possible to be enabled or to be disabled accordingly.

*** Multiple Preset Mood Trigger Ability**





The smart GRMS must have the ability to trigger different moods and preset direct or with variable delay from different locations not limited to: Reception/Front Desk, Elevator, Parking.

In Such case different triggers like: Welcome mode preset scene can be triggered when checking in, reactivate last used status when accessing the elevator, and so on as to be required by designer and hotel management.

*** Occupancy Intelligent Detection Ability**

The smart GRMS must have the logical ability to determine the real occupancy in the room regardless of the inserting of a valid original Door card. (Note: Most people take 2 cards and always leave one in Keycard holder slot). The GRMS must have this possibility using logic or using special true occupancy sensors.

Logical Occupancy Detection Method:

Every time the room door is closed the logic scanner should study any occupancy within the room using motion sensors, water flow usage, thermostat usage, light or curtain usage or bedside mode usage ...etc.

If any of these indexes has been detected within the XX time, then the Room is marked as occupied logically and all systems will continue to operate normal.

However, if no occupancy indexes have been detected within the xx time, then the room will go into energy saving step by step as following:

Step 1: Record all room status

Step 2: TV will be shut off

Step 3: Lights will be turned off

Step 4: curtains motors will close shades

Step 5: HVAC will be switched to Eco Mode or standby or any other preset as per designer and Management needs

Then, in case any occupancy index is detected after energy saving mode is detected, then all systems will go back to last room status. Same can also take place as trigger if guest is coming back once he passes his card to elevator floor access reader for example.

True Occupancy Sensors Hardware Method:

The Smart Hotel GRMS must also can add true occupancy sensors like:

- 1- Ultrasonic sensors
- 2- Noise level sensors





- 3- Heartbeat Detectors
- 4- People counters
- 5- And Other third-party Sensors

Such sensors will behave in the same way of the logical occupancy detection and energy saving method but cancelling the 5% error in detecting a quietly sleeping guest partner under the cover. Which could be missed using logical analysis method.

B- Intelligent Façade Lighting Control System Specification

The hotel façade lighting (FLC) is one of the most important features that helps in marketing and attracting attention to the property. Lighting is the 4th dimension and can add prestige to the looks of the property.

The FLC façade lighting control system must be able to control many **different types of light** fixtures to help lighting designer achieve his majestic design goals.

The FLC must be able to control light **intensity, color, shape, direction, speed, and focus** using native devices and bridges.

The FLC system must also have **heavy load** Dimmers and LED element Boosters

The FLC system must have easy wiring topology and unlimited addressability to handle millions of ports and communicate with distance of more than 2KM on its BUS-System.

The FLC system must be able to control different drivers for different lights including:

- ✓ Dali
- ✓ DMX
- ✓ 0-10
- ✓ Leading Edge and Trailing Edge
- ✓ Constant Voltage and Constant Current
- ✓ KNX and Modbus
- ✓ RS-232 and RS485

The FLC should have the following ability built in its system natively:

- ✓ Scenes
- ✓ Ques
- ✓ Show control based on Music or media file ++
- ✓ Timers
- ✓ Schedules





The FLC system must be able to create dynamic lighting scenes based on the lighting designer scenario and schedules needed by Hotel management.

C- Lighting Control System (DRP) Specification

The Lighting Control System (LCS) is an essential part of Hotel daily needs. The system must be able to control Public areas lighting, outlets, lobbies, ball rooms, corridors and Backoffice. etc.

This adds to the beauty of the hotel, emphasizes the decoration, adds moods, helps in energy saving, adds feel of safety and enables engineering to manage and control far away building locations efficiently.

The smart LCS lighting control system must be able to control many **different types of light** fixtures to help lighting designer achieve their majestic design goals.

The LCS system must also have **heavy load** Dimmers and LED element Boosters

The LCS system must have easy wiring topology and unlimited addressability to handle millions of ports and communicate with distance of more than 2KM on its BUS-System.

The LCS system must be able to control different drivers for different lights including:

- ✓ Dali
- ✓ DMX
- ✓ 0-10
- ✓ Leading Edge and Trailing Edge
- ✓ Constant Voltage and Constant Current
- ✓ KNX and Modbus
- ✓ RS-232 and RS485

The LCS should have the following ability built in its system natively:

- ✓ Scenes
- ✓ Ques
- ✓ Show control based on Music or media file or presentation ++
- ✓ Timers
- ✓ Schedules and events
- ✓ Motion triggered and occupancy based
- ✓ Multifunctional occupancy sensors including Lux for daylight harvesting

The LCS system must be able to create dynamic lighting scenes based on the lighting designer scenario for different areas like restaurants, ball rooms, lobbies ...etc. and schedules needed by Hotel management.

The LCS must be expandable and modular to fit any installation needs like behind switches, inside electrical DB DIN, wall mount, or above the ceiling installation.



The LCS must be able to accept Multi Phase and must have elegant control wall dynamic display panels and LCS software with easy GUI.

LCS must have also the option of reporting burnt light bulbs by scanning circuit current using CS24 method.

The LCS must be able to save energy if no occupancy is detected in the allocated spaces and must add to the safety and security by triggering lights at emergency exits and sending alerts to engineering and security stations.

D- Ball Room and Meeting Room Multifunctional Room System Specification

Ballrooms and conference rooms at hotels require several systems that must work in full harmony as a part of the smart hotel system.

The Smart System must provide the following solutions:

- 1- Lighting Control System (to create moods, scenes, show control ++)
- 2- Media Control System (to control presentation contents and Equipment)
- 3- Sound System Control (Distribution, Zoning, volume pressure. etc...)
- 4- Drapes, shades, Motorized Platforms, lifts, screens, and walls
- 5- Other controls of water, foggers, show blasters and other
- 6- Climate control and fresh air control, with energy saving based on real people counting
- 7- LED Displays, Information Display, Advertisement ++
- 8- Multi Projector wide screen control solution
- 9- Split/Combine function Room System ability
- 10- Scent misters, Disinfectors, and Sanitizers
- 11- Optional access control and entry system

The Hotel Function room media control solution must be able to control various systems like: Matrix systems, Projectors, LED large displays, video walls, AV receivers, cameras, filters and other.

It Must also be able to integrate and control Amplifiers, Lighting desks, Microphones, Mixers, speaker zones, volume pressure and airplay. etc....

The Hotel multi-function room system must have ability to control and trigger using relays, contactors, rs-232, rs-485, UDP/IP, Infra-Red (IR), DMX, KNX, DALI, 0-10V, and variable I/O analogue and digital controls. It must also accept feedback from system and sensors.

The Smart system must be able to count people inside the Room space and inject fresh air only based on actual per head occupancy to avoid any wastage in energy.



The smart Multifunctional room system must be able to combine multi rooms to work as one if partition walls removed, or to split the space into multi rooms each function separately and automatically once partitions are closed dividing the space. (Room Partitioning Function)

The solution must have ability to provide automated Nano sanitizers, and self-producing disinfectant foggers and scent emitters that can sterilize the space based on timers and or manually when needed. (Mcube)

E- PA and BGM System with smart Announcement Specification

Smart Hotel System must have Addressable BUS-BASED PA/BGM system with Emergency Evacuation and smart announcement system ability.

The Smart Audio System must have the following abilities:

- 1- At least 1700 addressable Zones
- 2- Ability to have Speaker and Zone Selection from SW/APP or digital smart panels
- 3- Can Play Music from SD Card/USB, and NAS drive on network
- 4- Can Connect Automatically with easy Auto override to any of the following:
 - a. PABX PA Port
 - b. Blue tooth Player
 - c. Wi-Fi Air Play Streamer
 - d. Third Party Systems
- 5- Must have the ability to connect to CD player, Satellite Radio, Web radio player, PC Audio and Other
- 6- Must have the Ability to control Players by IR and by Smart Wall panels and Smart Tablets + PC
- 7- Must have built in ability to announce different Prompts as to be needed:
 - a. Emergency Evacuation with different voice pre-recorded Prompts in case of
 - i. Fire
 - ii. Earthquake
 - iii. Terrorist Threat
 - iv. Other
 - b. Announce Prayers at dynamic timing based on location, date, time and based on the religious division
 - c. Act as Local Hotel Exhibition Gallery and play information about exhibits according to language selected by visitor
 - d. To announce safety rules automatic on active sensor trigger at swimming Pool, Spa, water park, and other
- 8- The system must have the ability to play special music at special dates automatically
- 9- The system must be able to change lighting and moods with music (Show Control) as Option.
- 10- The system must have ability to add KOK function with wired or wireless microphones and air play at certain areas like KTV or other.





F- Media and Advertisement System Specification

The Hotel System must have in room ability to stream video as IPTV with On-TV control of all Guest room systems like Lighting, curtains, climate, and service. The Smart Hotel system must also have an integral Media control and content management with addressable ability to stream videos, advertisement, information bulletin and announcements to different screens in the hotel.

The Smart Media and advertisement system Must be able to control Restaurants Displays, Casino Signages and Panels, as well as general lobby corridor, Ball rooms, wedding halls, discos and building LED Displays both indoor and outdoor.

The system must have ability to display Shuttle schedules, and ETA at hotel waiting terminals as well as inside the shuttle for big resorts solution.

The smart Hotel Media solution must have the ability to combine Multi projectors (at Least 2) to act as wide screen for special displays and meeting room needs.

The Smart Hotel Media system must have the ability to create dynamic walkways and elevator lobbies that has step on sensing ability and change in display.

G- GBMS System Specification

The Smart Hotel system should have advanced global BMS system that acts both automatically and with simple SMS trigger locally and remotely. Without the full need for 24 hours manned station.

The Smart GBMS System must have ability to integrate all the other Hotel systems together in one native system environment.

It must have the ability to control Pool temperature, pumps, filters, chemical additives, and must be able to control SPA and sauna System and boilers.

The Smart GBMS system must be able to control Elevators, escalators, emergency exits, Automatic doors, Fountains, Lighting, BGM, Air conditioning and Heating, fresh air, humidity, and many more.

The smart GBMS system must be able to study occupancy and trigger energy saving scenarios logically, and automatically with control of chillers on off scheduling in smart way.

The Smart GBMS system should be able to log all activities of all smart devices in the whole building

The GBMS must be able to Communicate on BUS system for distance of at least 2KM. and must be able to use multiple wiring topology with device scalability on demand.

The system must be able to handle easily and natively up to 250,000 Door and window contacts, 64000 FCU/AHU, and network over 15 Million smart Devices in one single building





The system must have ability to link to simplified Mimic panels, PC with easy GBMS GUI, Tablets and smart devices

H- Kitchen Exhaust System Specification

The Smart Hotel solution should be able to handle energy wastage due to exhaust system at Kitchens. The Smart Kitchen Exhaust System is the advised solution to avoid unwanted big energy losses.

The Smart Kitchen Exhaust System must be able to work based on logic and change the exhaust fan speed and vary the opening of area dampers and fresh air based on cooker station fumes, humidity, temperature, and other variables.

This Kitchen Exhaust smart controller shall help in saving huge sums on energy bills accordingly.

I- Energy and Water conservation Solution Specification

The Smart Hotel solution should not ignore public toilets, corridors, staircases, staff back office areas, and other places that consumes energy and might have water leakage

The Public toilets should be equipped with occupancy sensors and people counters in/out and to trigger lights and water solenoids open/close, and logically drive fresh air loopers accordingly. This real occupancy system allows reduction of energy wastage, induction of fresh air circulation and decrees of air entrapped, as well as water conservation.

The system should also be able to automatically switch off lights at bright places, Alternate light circuit on/off, and start fans at high circulation once occupancy is detected during Eco mode of HVAC at the passageways with scheduling to save not less than 50% of unwanted consumption.

Irrigation system should be controlled by I/O devices and sensors to give only adequate watering to different plants species without wastage.

I- Taxi Paging Solution Specification

Large Hotels and resorts with multiple buildings require Taxi parking and taxi calling system that will request the needed Number of Cars and direct the Taxis to the accurate building where the guests are waiting for their ride.

The Smart G4 Taxi Request Service solution allows the hotel staff to request taxi/taxis at different guest waiting points. The system will send the number of taxis needed and the location to go to accordingly.

The System consist of calling station that can be tabletop, and can be a smart-Tablet app. While the Remote Display shall be a 7-Segment display option or an outdoor LED display.





End of New Specs 2020





OLD incomplete Specs:

*** Central RMS Server**

This unit will serve the following features:

- a. Communication engine for all the room hardware. Through this communication real-time monitoring and control of all room features can be done.
 - b. Central logging database for long-term storage of records. All events occurring in the field are recorded as they come in chronological order. For ideal scalability and stability, the RMS server system should be based on a SQL database as example.
 - c. Analysis engine for table-based and graphical evaluation of staff and guest's behavior can be added as optional module.
 - d. Reporting tool with predefined reports to analyze staff efficiency and workflows of back of house departments can be added as optional modules.
 - e. The system must present standard open code interfaces to allow third party systems (e.g. Property Management System, VOIP telephone system, interactive TV system, fire alarm, emergency power supplies) to interface to make it easy for other system suppliers).
 - f. Furthermore, Optional additional modules should enable operators and their privileged teams to access server application through their mobile phones to retrieve real time data, and service requests as they happen from every room.
- The system must have ability to install different add-on modules that can control, log, monitor and report the following as example:
 - Room Activity and energy saving
 - Service requests
 - iPad Status (Outside room, Battery full, Low++)
 - System Usage
 - Energy Usage per room: (Notional, Estimated, Fixed)
 - Guest Habits

*** Flexibility and scalability**

The smart hotel GRMS must be modular and flexible to expand as to be needed as following:

- a- Able to use Card Holder separately as a system
- b- Ability to use the doorbell with service and or access separately as system
- c- Ability to use additional light control, ac control, TV control, curtain control etc. modules selectively
- d- Ability to add bedside controllers, iPad controllers ++





1. The Cabling

The in-room cabling will adopt to any needs like star topology or daisy chain or mix in either open or closed loop formats in which all cables can go from the Room Control Unit (Zone Best RCU) to all the other field devices (i.e.

Bell with card reader, card holder, DDP/thermostat, bedside control panel++). Cables material can use simple cat5, cat5e or cat6 without the use for any end of line terminators or balancers.

2. Public area and Back of House Access Control

The access control to the guestrooms and the back of house as well as all other protected areas should be managed by the same online access control system in order to guarantee a seamless logging of staff and guest activities into the same database, as well as the guaranteed use of the same access cards throughout the premise for both the operator and guests. The system must support a minimum of 8 user roles, 128 user groups and freely configurable public areas. Each reader must accept a minimum of 4,000 cards. Card readers must be available for all purposes like indoor, outdoor, gate barriers and other back of house locations that have to be protected by access control. Besides the daily operations with guests, card readers can be configured to grant access to a group of staff members or guests. This function is required for common areas such as conference rooms, SPA area, swimming pool, car park and Hotel doors that may be used by all hotel guests or by a defined user group. The system registers each access and access attempt and is able to archive the data on a long-term basis. Reports are included to provide subsequent evidence of access according to various criteria. The user can produce individual reports via a built-in report generator.

3. Decentralized BUS Structure

- The system must work with or without RCU, the RCU however must be either centrally combined or BUS decentralized in full convenience and flexibility to provide control and efficient room management expandability. Such structure has the task of controlling of room fixtures and devices. It may work either online or offline and it can receive operational data requests from central server as well. The room control unit should be expandable to fit the requirement of different typical rooms, in case the required features differ from one room to the other. Features to be supported by the room S-BUS control units or its extension modules are:
 - a. Outputs for lighting control of switching circuits
 - b. Output for lighting with dimming ability
 - c. Ports for low voltage light switches/Panels
 - d. Inputs for monitoring of several room statuses (window contact, door contact.



- e. Outputs for curtain control
- f. Outputs for FCU fan speed control
- g. Outputs for FCU valve actuator control 0-10V
- h. Temperature port
- i. Output for Boiler control
- j. IR Emitter media Control output
- k. Ports for PIR and other occupancy sensors
- l. Inputs for Water leakage and Safe alarm triggers
- m. Ports to integrate to Zone audio or PA
- The data must be stored in a non-volatile memory in the microprocessor so that it is not necessary to reprogram the peripheral units if power is cut off.
- Each unit shall have its dedicated power supply & independent of the other. Systems using common power supplies for multiple room groupings shall not be acceptable. The room modules should be powered from 12-24 VDC/VAC, to ensure compatibility with a central power supply, an eventual backup battery system, as well as a decentralized power supply options can be needed.
- All the connections between room modules and the room unit board are to be made using plug-in S-Connectors to simplify servicing operations. The room unit should give a potential free contact to open any kind of electric lock or door strike that will be installed on the doors, depending on security requirement of project.

4. Main Room Modules

Devices should be customizable as per customer corporate identity requirements.

a. External indication Panel and Card reader with bell

- The following shall be provided in the external indication panel to be mounted outside the room:
 - Do not disturb status display
 - Make Up my Room status display
 - Door-bell function (Auto Disabled in case of DND is ON)
 - Room Signage Back let (Room number)
- The external indication panel should consist of a contactless online proximity RFID card reader that recognizes the data and is endowed with a buzzer for the acoustic signal of the card acceptance or rejection, as well as a signal LED. Indications must be provided to show whether or not the door can be opened.
- Optionally (can be programmed) If Guest has selected to not be disturbed a service staff card should not be able to open the door. This is to ensure the maximum level of privacy to the guests.



- The card should be read just by passing it near the reader independently of which side of the card is used. Systems with cards that must be inserted in a slot will not be accepted. This is to avoid that the guest does not enter the room while leaving the card in the outdoor reader.
- The RFID access control is an integral part of the RMS and should not be mounted on the door but on the wall next to the door. It is crucial to be endowed with a battery for time clock to ensure that critical systems like (access control) function normally, without affecting the guest experience, even in the case of a power outage.
- This Bell with Service and Access Panel should have integrated Buzzer that alarms in case of Door forgotten open, and it should also have at least 2 Ports to connect up to 2 addressable Zones of security like Magnetic contact of main door and PIR occupancy sensor at the entrance corridor without the need to Pull wires centrally for long distances, saving time and materials.
- This Panel must be BUS enabled, must be smart and must work totally stand alone, online, or as integral part of complete GRMS or whole Hotel/Building Environment.

b. Key Card Holder with service

- The Key Card Holder should be located near the entrance door and shall trigger room welcome scenes and different programmed features based on the daytime presets. The keycard holder shall assist as possible in energy saving capabilities. The key card holder should at the same time be endowed with the room service buttons for “Do not disturb” , “Make up room” and “Pick up Laundry” requests, as well as a “Master Switch”. The room service buttons shall be also used to communicate the automated process of reporting room ready, and other housekeeping workflow. A separate room service panel at the door entrance is to be avoided. If required, the room service features can be duplicated on the bedside panel for guest convenience.
- After opening the door and once the card is placed in the card holder, the guest shall be able to operate all the equipment in the room that is controlled by the system:
 - Power supply to all the equipment will be turned on (power supply to some of the equipment, which is normally off as part of the energy management shall also be turned on)
 - The system shall cool the room to a temperature that was set by the guest or Hotel as Default within a few minutes.
- While leaving the room, once the guest card is extracted, the following shall occur automatically:
 - Power supply to all the power outlets expect to those of fridge and FCU shall be turned off



- All lights shall be turned off gradually except the entrance light, which will remain on for a 20 seconds timeout (length of timeout to be programmable)
- System will automatically regulate the room temperature to the hotel pre- set temperature.
- The grace period during which these functions are performed should be customizable by the hotel operator.
- Key card Holder must also can work independently and separately as a complete Service request system and energy saving with the following abilities:
 - a- Connection to Client special custom outside Door Panel
 - b- LED driver output for 3 indicators: (DND, MUR, Laundry/Please wait)
 - c- Door Bell Dry Input contact
 - d- Magnetic door contact/PIR detector
 - e- Built in Buzzer alert in case door forgotten open/ajar
- The Keycard Holder should have the functionality to report online the following housekeeping room status update:
 - a- Room clean and ready
 - b- Laundry picked up
 - c- Maintenance is needed in room
- This Panel must be BUS enabled, must be smart and must work totally stand alone, online, or as integral part of complete GRMS or whole Hotel/Building Environment.

C. Power Aux

The power aux is a simple module that should supply enough regulated DC power to drive the GRMS. It shall have 2 Relays one as Master cut off Rated 32A that will ensure total main Phase cut off supply to all lighting and HVAC. The Other relay is 5A rated relay mainly reserved for connection of Door chime. The Advanced Power Aux Options allow it to function totally alone thanks to the built-in simple Logic iii, the 12VDC output, and the 3 Dry inputs that can be used separately to connect as following:

- a- Doorbell push
- b- Door Magnetic contact
- c- PIR Motion sensor
- The Aux power MUST ensure the following functionality as standalone or integrated device similarly:
 - 1- If door is open then closed, logic will check if any motion happened in room within 20 minutes (length of timeout to be programmable), in none then it shall energy save automatically
 - 2- If the Aux is in energy saving mode, then detected any motion inside the room or opening of door, then it shall trigger the power on again direct. The power shall remain on until next door open/close take place.



3- In Case of power outage, once power is restored, then energy saving mode shall take place by default, until door is open, or any motion is detected in the room.
(this default can be altered by programming)

- Such Logic iii shall work regardless of availability of Guest card inserted into the Keycard holder or not. (from common practice, it is noticeable that Guests usually request 2 room cards (for Wife and Husband for example), and always leave one card in the key card holder during day outdoor activities)
- This Panel must be BUS enabled, must be smart and must work totally stand alone, online, or as integral part of complete GRMS or whole Hotel/Building Environment.

d. HVAC (Air Condition Control). Room/Lobby Climate control

The temperature control module (thermostat) should include temperature sensor. The sensor should be easy to connect either as integral part of the Module or into the Ducts of the Room. The HVAC module must have the following Abilities:

- 1- Control Cool in Single or Multistage Units for summer
- 2- Control Heat mode for winter
- 3- Control 3Fan speeds as: (Low, Med., High)
- 4- Must have the ability to Work as stand-alone with presets and low/High set-points in case the network is down, as well as work on bus or totally online with whole building environment.
- 5- The HVAC Module must have the Capacity to communicate and average the Temperature collected to several devices on bus like:
 - a. Its own sensor
 - b. The DDP wall Thermostat
 - c. The ceiling 9in1/6in1 multi sensor
 - d. Or the 4T multi-Port Temp Sensor as to be required.
- 6- The Central Software should have the ability to control and command the HVAC module remotely.
- 7- The HVAC Unit Must be BUS Enabled that supply full 2-way communication ability, and must be small in size in such a way that can be located concealed and away from room environment to avoid any relay triggering Noise for better comfort.
- 8- Optionally: the HVAC Module operation can be logically configured to operate in conjunction with HVAC2 Unit and the server based on user access Card as following minimum set point scenarios:
 - i. "welcome temperature",
 - ii. "comfort temperature",
 - iii. "maintenance temperature",
 - iv. "Room vacant temperature".



- 9- The GRMS should have a digital input Add on (4Z) Module for a window contact as well and should be able to stop the fan coil in case of an open window. The fan coil should start again once the window is closed. The grace periods within which the fan coil stops and starts should be adjustable centrally.
- 9- Each GRMS shall be able to control not less than 9 HVAC modules in case of multi-bedroom suites or apartments. The GRMS supplier should provide the fan coil unit controllers (FCC – HVAC2) in order to provide full standalone functionality of the rooms even in case of fault or offline server issues.

e. Bed side Glass Touch panel

- These units shall be Bus enabled and integral part of the GRMS. It should be both Wall mounted, and Table mounted. It must be customizable (with option to customize the design and color, Language, and other prints during ordering). Also, must be able to add client logo and name. The Touch Panel must be LED Backlit with Capacitive Touch areas that shall be provided with the following control functions as example:
 - On/Off Lighting Control
 - Lighting Scenes (Wakeup, Watch TV, Read, Sleep, Wash/Dress)
 - Curtain control (Open, Close, Stop)
 - Room Services (DND, MUR, Laundry Pickup)
- The installation shall be simple through Extractable clamps for 3 x 3 BS box, or easy tabletop base snap on with slide proof rubber at bottom.
- The Bedside Panel must have the automatic ability to Bright up on use, then to dim down when idle to avoid bright room disturbance during night and to help energy save.

f. DDP (Dynamic Display Panel)

- The Dynamic Display Panel must be both Bedside and wall mountable, it must accept menu driven and page driven options. The panel must accept local onsite customization for the following:
 - Changing Displayed Language
 - Add Picture Icons
 - Modify Button Functions
- The DDP panel must have the following abilities to be activated or deactivated as per hotel needs:
 - Lighting
 - Scenes
 - Service



- HVAC
- Music/Media
- Curtains
- Or other Control Needs
- The DDP must have built in thermal couple of thermostats to sense the real room temperature. Operation of the thermostat should be intuitive and user friendly. The thermostat shall have the following buttons:
 - Button (On/Off)
 - Button +/- : Temperature Up/Down
 - Button 1,2,3: Fan speed Low, Medium, High
 - Buttons Auto, Cool, Heat
- It should also have the following capabilities:
 - to work as C/F : Celsius /Fahrenheit
 - Ability to display External temperature.
 - Ability to display Time and Date
 - Ability to be calibrated +8-8 degrees
- Optionally: the DDP operation can be logically configured to operate in conjunction with HVAC2 Unit and the server based on user access Card as following minimum set point scenarios:
 - “welcome temperature”,
 - “comfort temperature”,
 - “maintenance temperature”,
 - “room vacant” temperature.
- The GRMS should have a digital input Add on Module for a window contact as well and should be able to stop the fan coil in case of an open window. The fan coil should start again once the window is closed. The grace periods within which the fan coil stops and starts should be adjustable centrally.
- Each GRMS and DDP shall be able to control not less than 9 thermostats in case of multi-bedroom suites or apartments. The GRMS supplier should provide the fan coil unit controllers (FCC – HVAC2) in order to provide full standalone functionality of the rooms even in case of fault or offline server issues.

g. IR Macro (Infra-red emitter with macro)

The GRMS should have the ability to control TV channels and other in room Media IR devices like DVD, set top boxes, IPTV ++ using advanced macro driven IR technology. The Bus Enabled IR macro must have the following Features minimum:

- 1- Built in Current Sensor (to check if TV is on/Off)
- 2- Auto IR reset Loop adjustment (in case user used remote or changed TV or Media device status By Hand)
- 3- Must Have ability to drive up to 10 Macros in example:
 - a. Watch TV



- b. Watch DVD
 - c. Browse internet
 - d. Hotel Information Channel
 - e. Listen to Music
 - f. IPTV,
 - g. My Laptop on TV
- 4- Must have Broadcast ability, IR delay ability, upgrade ability,
- 5- Must have ability to store up to 250 IR codes that can be learned using IR learner during Setup and presets programming.

c. 4Z (4 Zone Dry Input Module)

The GRMS should have the ability to add bus enabled “4Z” four zone dry input modules as to be needed at different locations to connect to the corresponding room doors, windows, water leak, smoke/heat, gas sensors.. etc. for energy saving, security, panic, etc. Each module must have broadcast and upgrade ability at any time and must work both online and offline.

c. Multi-Functional 9in1 Sensor

the GRMS must have the ability to add occupancy, and other type of sensors including the 9in1 multifunctional sensor as they feel needed. The 9in1 sensor must have the following built in abilities:

- Motion Triggered Actions
- IR Emitting to control Media, Split IR controlled AC, Mirror/Bath TV ++
- Lux (Light Intensity) Sensor to study room darkness level
- 2Z (2 Zone dry inputs) to connect to door, window magnetic contacts, Smoke, Panic, corridor, and toilet PIR motion sensors, or other
- Temperature Sensor
- Logic control to drive multi-level actions with
 - If temperature
 - If motion
 - If lux
 - Other combinations
- IR Receiver that work with GRMS smart Handheld simple room Remote control.
- Each module must have broadcast and upgrade ability at any time and must work both online and offline.

1- Disco





End of Old Specs G4

Competitor Specs 2014

Technical specifications for GUEST ROOM MANAGEMENT SYSTEM (RMS) INTEREL

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1. Description of Work

The system shall provide a seamlessly integrated solution for:

- the advanced energy saving in the guestrooms
- the online access control to the guestrooms
- the online access control to the back of house and public areas of the hotel
- the advanced control of the HVAC according to the room status
- the automation of the guestroom lighting
- the integration to the Property Management System
- the centralized room status monitoring and override control
- the report generation on various room status

All components of the system shall be online, controlled by a central server and monitored by multiple workstation clients.

2. Description of the Room Management System

The system shall be an integrated solution that combines access control with guest room management (lighting control, thermoregulation control, curtain control, and room services) in one system. Solutions requiring separate access controls for guestrooms, back of house areas shall not be acceptable. The system should make it possible to improve customer service by providing a complete and varied range of functions for monitoring and optimizing services to ensure the highest levels of comfort and safety. At the same time, it should help to save energy and considerably reduce operating costs.

On check-in the Room Management system issues the guest a RFID card that gives access to the assigned room until the guest checks out again. The Room Management System registers all room access events centrally in the front office system, and can distinguish whether a guest or a member of the service staff or hotel management entered the room.

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The Room Management System shall provide extensive supervisory functions to increase the security of the guest in the room. Unauthorized door opening, and an emergency assistance alarm in the room can be connected to the Room Management System.

The various Room Management System functions shall be merged with the hotel room data in the front office software and shall be processed in the background. All functions of the Room Management System shall be operated via the front office system and can be evaluated offline at a later time if required

Each component of the system should be based on the concept of distributed intelligence, giving management the possibility of managing the complex problems of a hotel from one central control station.

Parameters should be modifiable and information received concerning any malfunction has to be clearly indicated and stored for future analysis.

The system proposed should consist of a server that will be accessed through separate workstations. The server should host the core of the application with the database and communication engine, while the workstations should run as thin-clients, accessing the server through any standard web browser. The proposed system should be seamlessly integrated to the PMS (property management system) preferred by the operator.

3. Introduction to the RMS

The Room Management System has to use the existing TCP/IP infrastructure to network the room control devices. The system shall be based on MODBUS over IP protocol. Proprietary protocols such as S5, C-bus, Dynet or KNX shall not be acceptable. In order to ensure smooth and harmonious implementation, all front of house and back of house RMS modules (including online access control) have to be supplied by the same vendor. On a field level the devices should be networked through a CAT6 connection, in order to make the most efficient use of the network. The entire system should be designed to carry out the

following functions: **INTEREL Building Automation JLT** · P.O. Box 124021 · Dubai · United Arab Emirates Tel. +971 - 4 - 4479845 · Fax. +971 - 4 - 4479846 · info@interelme.com · www.interelme.com Company is registered & Licensed as a FREEZONE Company under the Rules & Regulations of the DMCCA.



- Online Access control to the guestrooms and all other restricted rooms/areas of the hotel using a contactless proximity RFID card. The system shall support the latest security standards including Mifare Ultralight C/ Mifare Plus S. Access control shall be based on electric door strike to be compatible with any door locks. Proprietary Electronic locks shall not be acceptable.

- Automated guestroom control through an integrated bedside panel that controls lighting and dimming, remote door opening, room services (Do not Disturb, Make-up Room, Laundry Pick-up), emergency call.

- Centralized control should have the capability of monitoring the following room alarms and notifications including:

- Do not disturb
- Make up room
- Emergency – Call for help alarm (SOS)
- Current room safe status and alarms (optional) Flood alarm in the bathroom (optional)
- Door open or closed status
- Window open or closed status

- Disabling certain electrical appliances when the room is empty.

The System shall be able to integrate with various TCP/IP systems including PMS, HITV, IP telephony, CCTV, through TCP socket communication.

In addition the system shall be capable to integrate locally through the RCU with third party systems such as Daikin VRV Air Conditioning units and elevator controllers (for access control in lifts).

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All the information concerning each individual room should be visible by the operator at Reception by means of a graphic representation that illustrates the general conditions and events throughout the hotel.

At Reception, it should be possible to see the following:

- Which rooms currently have a guest inside
- Which rooms are being done up
- Which rooms are ready for new guests
- Which rooms are currently under service or maintenance

The alarms and calls have to generate an acoustic signal to call the attention of the operator. They must be recorded on file in their order of arrival and printed on requests.

When checking in, one or more RFID cards could be encoded for the guest. The code has to be generated in a way to ensure that no two cards can have the same code. The cards should be programmable with minimum 8 different access levels: Client A, B, C (the letter defines the access rights of the guest), Housekeeping, Housekeeping Supervisor, Maintenance, Security, and Management. The energy saving pocket should detect the different levels of cards and therefore control the room in relation to that.

For example, a guest card would have access to all GRMS modules and functionalities, whereas a housekeeping card would have limited access to in-room functionalities such as blocked thermostat set points, or outgoing calls. Moreover, the access control reader should display the room status through its indication panel (i.e. still or intermittent LEDs). At checkout these services and access to the room and other common areas of the premises should be disabled. **INTEREL Building**

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The system should be endowed with a pull cord for disabled bathrooms (and optional for guestrooms) which would trigger a SOS alarm to be displayed on the access control reader as well as at the front office and security software.

The single room unit must continue to function in any case, even if the link to the central server is broken (i.e. server brake-down, network failure, etc.); this ensures that no malfunction can prevent the guests from using their rooms. The stand-alone functionality of all room functions must be guaranteed as a main feature of the system.

It is crucial that the Room Management System be able to register cards for the access of the guests to the rooms, even if the system is offline or in case of a downed RMS server. Each Room Control Unit must support real time offline logging of up to 5000 events

The system should identify the entry of hotel staff that are classified according to authorized time of entry and should give the possibility to dedicate zones for hotel staff competencies. Badge readers shall be installed in the common areas so as to let authorized guests into particular sectors (Gym, Swimming Pool, Health Club areas etc.).

The central unit should record each entry and/or attempt to enter where it is saved on files for later checks.

4. Central RMS Server

This unit which is equipped with redundant hardware will serve the following features.

- a. Communication engine for all the room hardware. Through this communication real-time monitoring and control of all room features will be done.
- b. Central logging database for long-term storage of records. All events occurring in the field are recorded as they come in chronological order. For ideal scalability and stability the RMS server system should be based on a SQL database.

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- c . Analysis engine for table-based and graphical evaluation of staff and guests behavior. Reporting tool with predefined reports to analyze staff efficiency and workflows of back of house departments.
- d.The system must present standard interfaces to allow third party systems (e.g. Property Management System, VOIP telephone system, interactive TV system, fire alarm, emergency power supplies) to interface to it.
- e. The server application does not require to client software to be installed on operator stations. Furthermore, operators and their teams can access server application through their mobile phones to retrieve real time data from every room. The System shall provide a customizable application for android and tablet PC users, both for guest an internal use.

5. The Cabling

The in-room cabling will adopt 3 Bus star topology in which all cables will go from the Room Control Unit (RCU) to all the other field devices (i.e. card reader, card holder, thermostat, bedside control panel). The type of cable to be used is CAT/6. All RCUs will then be connected to the building's structured cabling system to render the system online.

6. Public area and Back of House Access Control

The access control to the guestrooms and the back of house as well as all other protected areas should be managed by the same online access control system in order to guarantee a seamless logging of staff and guest activities into the same database, as well as the guaranteed use of the same access cards throughout the premise for both the operator and guests. The system has to support a minimum of 8 user roles, 128 user groups and 256 freely configurable public areas. Each reader has to accept a minimum of 4,000 cards. Card readers have to be available for all purposes like indoor, outdoor, elevator control, gate **INTEREL Building Automation JLT** · P.O. Box 124021 · Dubai · United Arab Emirates Tel. +971 - 4 - 4479845 · Fax. +971 - 4 - 4479846 · info@interelme.com · www.interelme.com Company is registered & Licensed as a FREEZONE Company under the Rules & Regulations of the DMCCA.



barriers and other back of house locations that have to be protected by access control. Besides the daily operations with guests, card readers can be configured to grant access to a group of staff members or guests. This function is required for common areas such as conference rooms, SPA area, swimming pool, car park and hotel doors that may be used by all hotel guests or by a defined user group. The system registers each access and access attempt and is able to archive the data on a long term basis. Reports are included to provide subsequent evidence of access according to various criteria. The user can produce individual reports via a standard report generator.

7. Main Room Control Unit

To provide an efficient room management an electronic room control unit should be installed in each room. This unit has the task of supervising all room operations. It should remain constantly in contact with the central server from which it receives all its operational data. It is crucial that it be endowed with a backup battery pack to ensure all critical systems (access control, HVAC and lighting systems) function normally, without affecting the guest experience, even in the case of a power outage. The room control unit should be expandable in order to fit the requirement of different typical rooms, in case the required features differ from one room to the other. Room to Server connectivity must be IP based Room Control Units (RCUs) for fast communication with monitoring server. Each Room Control Unit (RCU) shall have a built in TCP/IP Ethernet port(POE) for direct communication with the floor/Edge/Core switch .Systems requiring room to room cabling shall not be acceptable. Features to be supported by the room control unit or its extension modules are:

- a. Outputs for lighting control of switching circuits
- b. Outputs for dimming control (optional)
- c. Inputs for low voltage light switches
- d. Inputs for monitoring of several room statuses (window contact, door contact,

bathroom alarm INTEREL Building Automation JLT · P.O. Box 124021 · Dubai · United Arab Emirates Tel. +971 - 4 - 4479845 · Fax. +971 - 4 - 4479846 · info@interelme.com · www.interelme.com Company is registered & Licensed as a FREEZONE Company under the Rules & Regulations of the DMCCA.



- e. Outputs for curtain control
- f. Outputs for FCU fan speed control
- g. Outputs for FCU valve actuator control
- h. Support RF communication for wireless bedside panels
- i. Ethernet connection (POE) for centralized real time monitoring and reporting of room status

- j. Shall support DMX and DALI lighting protocols

The data must be stored in a non-volatile memory in the microprocessor so that it is not necessary to reprogram the peripheral units if power is cut off..

The room unit should also be equipped with three serial ports that use the **RS485** standard.

Each unit shall have its dedicated power supply & independent of the other.

Systems using common power supplies for multiple room groupings shall not be acceptable. The room modules should be powered from 12-24 VDC/VAC, to ensure compatibility with a central power supply, an eventual backup battery system, as well as a decentralized power supply.

All the connections between room modules and the room unit board are to be made using plug-in connectors to simplify servicing operations. Once all the cables have been connected, the external cover should make all the connectors inaccessible. The connectors should be numbered and printed on the metal housing to simplify cabling operations. The room unit should give a potential free contact to open any kind of electric lock or door strike that will be installed on the doors, depending on security requirement of project.

8. Main Room Modules

All below mentioned field devices visible to the user shall be manufactured from tampered Glass with capacitive touch buttons. Devices shall be customizable as per customer corporate identity requirements. **INTEREL Building Automation JLT** · P.O. Box 124021 · Dubai · United Arab Emirates Tel. +971 - 4 - 4479845 · Fax. +971 - 4 - 4479846 · info@interelme.com · www.interelme.com Company is registered & Licensed as a FREEZONE Company under the Rules & Regulations of the DMCCA.



a. External indication Panel and Card reader

The panel shall be tampered Glass with capacitive touch buttons. The following shall be provided in the external indication panel to be mounted outside the room:

- Do not disturb status display
- Make Up my Room status display
- Room status display (guest in room, staff in room, room empty)
- Cleaning status display (dirty, cleaned, cleaning in process)
- Door-bell function
- Room Signage (Room number)

The external indication panel should consist of a contactless online proximity RFID card reader that recognizes the data and is endowed with a buzzer for the acoustic signal of the card acceptance or rejection, as well as a signal LED. The card readers shall be NFC enabled.

Indications have to be provided through a LED indication stripe to show whether or not the door can be opened and whether the guest is in the room. The operator should be able to set the level of privacy he wants in each single room, defining if the staff can access a room if a guest is there or not, and if he/she has selected to not be disturbed or not. A service staff card should not be able to open the door if the customer is in the room. This is to ensure the maximum level of privacy to the guests.

The card should be read just by passing it near the reader independently of which side of the card is used. Systems with cards that have to be inserted in a slot will not be accepted. This is to avoid that the guest does not enter the room while leaving the card in the outdoor reader.

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The RFID access control is the integral part of the RMS and should not be mounted on the door but on the wall next to the door.

b. Key Card Holder

The card holder shall be tampered Glass with capacitive touch buttons. The Key Card Holder should be located near the entrance door and will be able to detect different users of the room to provide different programmed features based on the type of cards (guest card, staff card, management card). The card holder should not be of infrared or micro switch type, to prevent the use of the room with credit or business cards, or any item other than the original guest card. This will prevent loss of energy saving capabilities. The card holder should have an integrated Mifare RFID reader and accept only the original hotel cards, as well as distinguish between all 8 user groups and their levels of cards. The key card holder should have inbuilt powerful LEDs to show the guest where the card has to be inserted. It is also endowed with the bell chime. The volume and sound of the chime should be configurable from the front desk to suit the requirements of the individual guest. The key card holder should at the same time be endowed with the room service buttons for "Do not disturb" and "Make up room" requests, as well as a "Master Switch". The room service buttons shall be also used to communicate the automated process of housekeeping workflow.

A separate room service panel at the door entrance is to be avoided. If required, the room service features can be duplicated on the bedside panel for guest convenience.

After opening the door and once the card is placed in the card holder, the guest shall be able to operate all the equipment in the room that is controlled by the system:

- Power supply to all the equipment will be turned on (power supply to some of the equipment, which is normally off as part of the energy management shall also be turned on)
- The system shall cool the room to a temperature that was set by the guest before he/she left the room, within a few minutes.

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While leaving the room, once the guest card is extracted, the following shall occur automatically:

- Power supply to all the power outlets expect to those of Mini Bar, Computer/Fax, FCU shall be turned off
- All lights shall be turned off except the entrance light, which will remain on for a 30 seconds timeout (length of timeout to be programmable)
- System will automatically regulate the room temperature to the hotel pre- set temperature.

The grace period during which these functions are performed should be customizable by the hotel operator.

If the guest card is detected in the pocket, the access of the housekeeping cards should automatically be deactivated in order to preserve maximum privacy of the guest. The access rights of each of the 8 card levels to the guest rooms, whether the guests are inside the rooms or not, should be programmable centrally.

Optionally, the system shall offer motion sensors integrated with the wall mounted field devices. Ceiling mounted sensors shall not be acceptable. These motion sensors shall detect not only motion but also the amount of motion for intelligent interaction of lighting and room automation.

c. Air Condition Control

The thermostat shall be tampered Glass with capacitive touch buttons. The temperature control module (thermostat) should include a display to show the temperature measured by the sensor. The sensor should be integrated in the thermostat in order to sense the real room temperature. Operation of the thermostat should be intuitive and user friendly. The thermostat shall have the following touch buttons:

- Button C/F : Celcius /Faranheit
- Button to display External temperature.
- Button (Freely configurable)
- Button + /- : Temperature Up/Down

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- Button 1,2,3: Fan speed Low, Medium, High
- Buttons Auto, Off, ECO

It should be possible to adjust the display brightness of the thermostat, from 0% to 100% in steps of 10%, in order to ensure an undisturbed rest of each individual guest. The brightness of the thermostat should increase by pressing a button and decrease again after a programmable time in order not to disturb the guest during the night.

The operator should have the option of controlling the brightness from the central server, as well as basing it on pre-programmed time frames (e.g. night/day).

The thermostat unit should work with minimum four temperature set points: "welcome temperature", "comfort temperature", "maintenance temperature", "room vacant" temperature. The thermostat unit should have a digital input for a window contact as well and should be able to stop the fan coil in case of an open window. The fan coil should start again once the window is closed. The grace periods within which the fan coil stops and starts should be adjustable centrally. The thermostat shall also be endowed with an ECO button for energy saving settings.

The thermostat shall be fitted with an ECO Comfort icon, which implements an energy saving algorithm on thermoregulation control and lighting dimming, customizable by the operator.

Each room shall be able to control up to 4 thermostats in case of multi-bedroom suites or apartments. The RMS supplier should provide the fan coil unit controllers (FCC) in order to provide full standalone functionality of the rooms even in case of fault. The RMS has to integrate at a server head-end level to the BMS through a standard protocol gateway, in order to pass all relevant variables of the thermoregulation in the single rooms. Preferred protocols are ModBus and Bacnet. Integration to the Building Management System (BMS) at a room level is not

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d. Wall mounted Glass Touch Switches

Where ever mentioned, wall mounted glass touch switches with capacitive touch buttons shall be provided. These units shall be customizable with option to customize the design and color. Backlit Capacitive Touch Buttons shall be provided with the following control functions

- On/Off Lighting Control
- Light Dimming
- Lighting Scenes
- Curtain control
- Room Services (DND, MUR, Laundry Pickup)

Design shall be implemented on a range of 2G, 4G, 6G, 8G, 10G upto 12Gang Glass Switches with a black background and backlit white icons.

The installation shall be simple through Extractable clamps for 3 x 3 BS box.

Switches requiring bigger BS boxes or non- standard installation boxes shall not be acceptable

e. Wireless Bedside control panel

The Bedside control panel shall be designed to allow the guest comfortable and intuitive access to all features of the RMS. The bedside control panel should be controlled by simple touch commands. Membrane buttons or pushbuttons shall not be accepted.

The bedside control panel should be a portable, battery operated wireless device to control the following features:

- Lighting On/Off
- Dimming Up/Down
- Preprogrammed lighting scenes
- Curtain control (optional)

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- Remote door opening
- Emergency alarm
- HVAC Temperature set-point Up/Down
- HVAC Fan-speed Up/Down
- Room Services (DND, MUR, Room service (optional), Laundry pickup)

9. Functional description of RMS operational Software

The server and server application should allow a minimum of 100 contemporary connections from client applications like: reception, housekeeping, maintenance, management, security, engineering, administration, HR, accounting.

a. RMS server hardware and software requirements

The RMS operating software should run on the following system configuration:

- Enterprise server typical hardware configuration (single or multiple Quad core CPU), 8GB RAM, RAID10 hard drive configuration with battery backup RAID controller and redundant power supplies.
- Windows Server 2003 (or higher) as server operating system.
- Windows XP (or higher) as client operating system.
- Microsoft SQL 2005 (or higher) as database engine

b. RMS workstation hardware and software requirements

- Workstation typical hardware configuration (single Dual or Quad core CPU), 4GB RAM, 160GB RAM

• Windows XP or higher **INTEREL Building Automation JLT** · P.O. Box 124021 · Dubai · United Arab Emirates Tel. +971 - 4 - 4479845 · Fax. +971 - 4 - 4479846 · info@interelme.com · www.interelme.com Company is registered & licensed as a FREEZONE Company under the Rules & Regulations of the DMCCA.



c. Workstation software clients

The system software shall be based on the WINDOWS standards for user interface design. Help texts guide the user through the program. The GUI has to be accessible exclusively through standard web-browser from the remote client workstations. Installed RMS software on the reception, housekeeping or any other back of house workstation should not be acceptable. The access to the RMS operating software should be protected by the integrated Windows security inbuilt in the Microsoft Active Directory. An option for SSO (single sign-on should be available). The authorization level of each user defines the features of the RMS operation software that will be accessible. A record of major system entries, indicating the respective user's identification, as well as all activities of each user should be logged in the main RMS database and accessible anytime for verifications.

d. Room Status

A general overview menu provides information on the complete status of all rooms. The information displayed on the room status has to differ depending on the authorization level of the user logged in on the workstation. The features generally available on the room status are:

- a. Active housekeeping requests with time of call and call history
- b. Active Do Not Disturb requests
- c. Rooms with guest presence/staff presence
- d. System health status
- e. Emergency alarms

f. Remote control of HVAC / Lighting

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e. Interface with Property Management System

The Room Management System software shall provide interfaces to commercially available Front Office/Hotel Operating Software (HOS) packages. The relevant data for Room Management System can be transferred from the front office system into the room management system via this interface and processed there. This connection is used, for example, to assign room numbers and guests' names.