Intelligent Building Solutions

ESS Software – a short description

IBS (**I**ntelligent **B**uilding **S**olutions) provides complete solutions for the intelligent building automation. We are a technology company which designs and manufactures its own products, due to this fact we are not relying on other vendors products and therefore we are in the position to deliver custom solutions in order to meet efficiently and rapidly a customer requirements. Our product range includes inter-connected electronic hardware components for controlling, inspecting and monitoring the automated devices within a building such as lighting, heating, air-conditioning, doors and locks, video surveillance, different sensors and detectors like movement, smoke and other electrical and electronic devices.

ESS (**E**nvironmental **S**ettings **S**oftware) is a software for the control, administration, monitoring and graphical preparation of all components of a **CIB-tech** system (**C**omplete **I**ntegration **B**us **tech**nology) for home and building automation. ESS works on any regular PC. ESS is provided free of charge to the customers of IBS, eventually some costs in case of asking for configuration support and other support issues may occur.
The demand of IBS is to seamlessly integrate automated building systems into the PC environment of today standard private networks and the internet by providing the end user with tools functioning in well know mode same like he is used to run regular software programs from his computer environment. The ESS client is designed like in a touch screen layout in order to integrate well into a wall-mounted home control panel as well.

The next version of ESS, ESS3, will additionally run in a browser-based mode and will provide the functionality of cloud-computing if required. Basically this means the possibility for the end-user to have a personal area on a ESS-server located in the internet in order to keep configuration, data and histories there. This way one can optionally renounce on his own local running server at home, the user will just connect to the remote located server by using his client software and can handle his automated home as usual without the need to have his own server running.

ESS is composed of some mandatory server modules plus some additional ones which are only required depending on the use case. Furthermore some useful graphical administration tools for setup, reading low level settings and administration of the components existing in a CIB-tech network are available. The probably most prominent module from the customer point of view is the ESS Client, a graphical interface for the handling of all functions in an automated building, read more later in this document.

In order to save configuration, settings, history, etc. a PostgreSQL database is required, PostgreSQL is available free of charge.

The whole communication of ESS is TCP/IP protocol based, in addition any network-ready computer is adequate. The communication between ESS Server and the bunch of CIB-tech components is happening via a so called CAN-PC interface (CIF 20 SU) on USB, alternatively bluetooth or serial interface. Once the ESS server is connected to the automated building network it's possible to do all required configuration jobs via remote maintenance over the LAN or internet. There is no need of having someone on site from this point on.

ESS Server:

Via the interfaces to the CIB-tech system, the software receives data from the compound, values of sensors, states of the controlling equipments, audio and video streams, which are delivered to the client on request and also can be saved to the database when required. Via the same interfaces the software sends signals received from the client software.

Furthermore, the server is in the position to execute scripts and understand certain commands in order to pass them over to the right address, this way different kind of time- or event-sensitive scenarios can run in order to react on temporary occurring or pre-defined actions.

By applying of such scripts it's possible to handle simple or complex scenarios, sequences of actions based on antecedent actions, measured values or time scales.

A simple scenario would be e.g. starting a video recording for the next 10 minutes because of a detected signal by a movement sensor in a certain room. A somehow more complex one could be like switching on several pre-defined light sources, set temperature of the heating or cooling system to 20 degrees Celsius and open the shutters only if an user with a certain RFID card authenticates at the access point and enters the house.

Since the ESS system is always aware of all states and information of it's controlling components and their end devices the possibility of automation are limitless.

ESS Server Module:
- ESS Main Server
  - sends commands to the controlling units, receives status messages and information from every single unit or sensor
  - is communication interface between ESS Client and CIB-tech hardware
  - Linux, MacOS and Windows operating system support

- ESS XML Server
  - User administration, rights assignment
  - provides history of all CIB-tech components for graphical display by the client
  - Linux, MacOS and Windows operating system support

- Video Server
  - consists of several modules for video surveillance as video capturing, (for eventual later replay) video streaming (live images) and video replay (of captured streams)
  - Linux, MacOS and Windows operating system support (some exceptions re. MacOS)

ESS Konfigurationsmodule (all have Linux, MacOS and Windows support):
- ESS Database Admin
  - graphical interface for setup and configuration of CIB-tech system

- ESS Client Admin
  - Creating and modifying of graphical backgrounds for ESS client. One can create floor plans, place existing controlling items, create forms, etc...

- ESS User Admin
  - User administration, login rights, access control, access settings based on time schedules, etc.

- ESS Browser
  - low level configuration of controlling equipments
  - to be used on in case of emergency and only by skilled personal

ESS Scripts:

Beside some pre-defined scripts there is the possibility to create yourself or by IBS on customer request any desired scripts in order to fit any kind of scenarios.
Scripts are written in Python or C/C++, shortly a visual editor for an easy expose of scenarios in order to create, edit and modify the same.

ESS Client:

The most important module from the end user point of view is the ESS client, a graphical interface for the operation of all functions within an automated building. The ESS client is configurable as desired, the user can place and organize the end devices arbitrarily on the user interface. The possibility of having an unlimited number of so called forms (self-defined areas) gives one the freedom to organize a high amount of devices clearly arranged by device type, floor plans, building levels or even single rooms. The same end device can naturally be part of more than one form, e.g. can a video camera picture be placed on a floor plan but also as part of several video captures on a dedicated Video form. The interface of the ESS client is designed so that it perfectly fits a touch screen layout for some central control panel mounted on the wall.

The user can communicate with it's controlling components (end devices) and scripts remotely by simply connecting with a client to the server. The login requires user name and password while based on the assigned rights for these credentials one can control, modify or even don't see certain devices. The interface provides a dynamic visualisation of the devices which means that a status who changed will instantly be displayed and also changes will immediatelly be passed over to the system.
Via client interface is also possible to follow back the history of single components or have a look to a former recorded video stream at a specific pint in time from the past.

Because of its modular architecture and the possibility to construct the interface of the client as desired it also runs on low-processor hardware, available for Windows, Linux, Windows, MacOS, Mobile (PDA / SmartPhone) or iPhone.
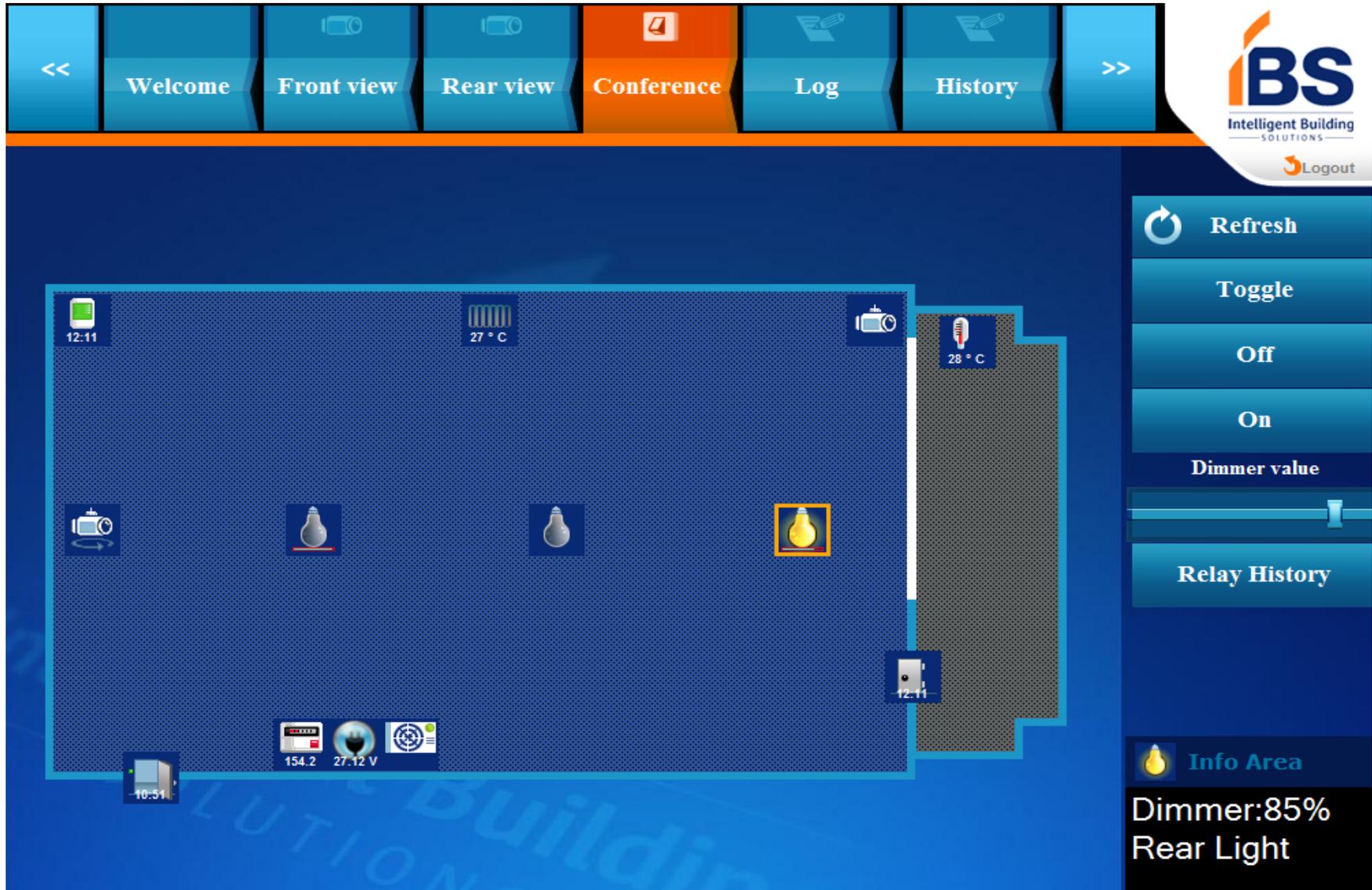
Example of a graphical interface, represents the floor plan of a room, pay attention to the additional forms in the upper area