EIB in the Context of Building Management Systems (BMS)

Market feedback shows to us at EIBA that the “**Planer**” and **System Integrators** are very much aware of the advantages of having an EIB system “below” the automation level: a unified and open multi-vendor environment makes for much faster and smoother setting-into-operation of these applications – and with even cheaper nodes!

Stronger integration of the HVAC domain together with the introduction of EIB.net will further improve this position. In the world of competing systems in contrast, there are only series of proprietary BMS solutions, which are often difficult to integrate even when they use products based on a US networking technology.

We believe at EIBA that there are elements for our EIB partners, i.e. contractors, planners and system integrators, which will help in presentations and discussions to show the advantages for everybody to “specify the EIB system “below” the automation level”. For completeness, we have listed a couple of issues relevant for BMS people in somewhat more detail below.

1. Smooth planning and operation at field level

On the installation and field level, EIB ensures smooth Planning, and Commissioning across various application domains. This is proved since many years and in dozens and dozens of installations each day.

This represents a tremendous advantage, irrespective of the automation or management systems used!

2. Tools

The above is made possible by the availability of a single standard tool for the design and configuration of EIB systems: the EIB Tool Software (ETS) Project Edition.

ETS is designed with the low-skilled contractor or installer in mind: the user has to deal with recognizable items such as “products”. All products have interfaces via which they can be linked to form distribute applications on an EIB network.

Each manufacturer can provide his own library of “product” building blocks, which any user may import.

ETS spans all building automation disciplines and is vendor-independent. It is in fact part of the EIB standard. Close to 10.000 ETS licences are in use by an estimated 30.000 trained professionals.

3. Interworking & Certification

A comprehensive set of Interworking standards define general-purpose variable types and application-specific object types. The first ensure run-time interworking. Together with the ETS product libraries, the standardized objects cater for tool compatibility and standardized management of device resources.

EIB Certification guarantees that all products carrying the EIB logo conform to the Interworking requirements. This is the system foundation on which the advantages mentioned in section 1. are built!

4. Media and transparency

- EIB is currently available on the field level media Twisted Pair and Powerline.

By the end of this year, these media will be complemented by the **EIB Radio Frequency** medium, currently under development by Bosch-Telecom. Infrared is under consideration.

Standardized media couplers allow transparent connection between various media in a single installation. Optimized routing features will be supported by upcoming releases of ETS.

5. Operational interfacing to BMS

Hundreds of EIB installations spanning the range from 5.000 to 50.000 or more devices are in operation today. The field level interworks smoothly with various automation and management level solution from many different providers.

6. Open interfacing to automation standards

As part of its automation-level EIB.net standard, EIBA has published a set of interface objects which map EIB to BACnet.

In March 1998, the EIB Association was the first and only bus system so far to have submitted an object specification which corresponds to the CEN TC247 proposed standard for HVAC objects.

7. EIB on automation level (BMS)

- Ample addressing space is provided for: EIB can address 64k devices and allows 32k shared variables to be defined independently on each network.

  Depending on the implementation, each device may individually support up to 256 shared variables and 256 interface objects. (An object may have 256 properties, each of which can be an array of values.)

- With up to 32k EEPROM and multiple application threads, recent EIB system implementations allow powerful applications for control or scheduling.

- As mentioned above, EIB Interface Objects provide management clients (e.g. tools such as ETS, but also PC-based environments for visualisation and control, embedded controllers etc.) with an abstract interface to a device's resources.

  Recently, several new objects have been defined to cover applications such as **Hot Water Heating** (e.g. Control of the Boiler's Forward Flow Temperature), **Event Scheduling** and **Security Alarms**.

  In accordance with EIBA's working rules, these definitions are driven by domain experts from industrial partners.

- Published in 1997, the EIB.net specification defines the EIB protocol on ISO-IEC 802-2 media, which includes **TP Ethernet**. (The extension of EIB frames to 256 data bytes will also be adopted on EIB field level media, without a breach in compatibility.)

  Rather than re-inventing the wheel, EIB.net is based on established international standards for which a multitude of

standard components are commercially available. It allows EIB-based building automation to use existing building and LAN networks.

EIB.net is currently being extended with **IP (Internet Protocol)** addressing and routing features.

- One potentially interesting platform for the development of embedded solutions for EIB on automation level is certainly **Microsoft's Windows CE** operating system. Various initiatives are underway, e.g. as regards driver development.
- EIBA puts great value on open tool connectivity. Several developments aim at smooth data exchange with standard tools e.g. for ***Facility Management***, such as **Aperture** and the tools from **Nemetschek**.

8. Standard device management

A particular interworking feature of EIB components is often neglected and deserves special mention: all EIB implementations correspond to a standard device model and support a common subset of management features.

This allows remote management (application download, parameter settings, group addressing, diagnostics upload, etc.) of each EIB device across the EIB network.

The EIB Interface Object Model is actually a natural extension and refinement of this; at the object level, standard system and network management objects have been defined.

9. For engineers and developers: components and solutions

Also at the level of implementations and system components, EIB presents a multi-vendor environment.

A whole spectrum of building blocks is available via neutral distribution channels, ranging from fully integrated Bus Coupling Units (BCU) over semi-integrated Bus Interface Modules (BIM), to chip sets and even source code.

Transceivers may be obtained and a UART has been announced for EIB TP.

We trust that everyone will find some helpful keywords and facts in the information above. However we at EIBA welcome any further question or suggestion in this context.

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