COBA FAQ

1 What is COBA?

COBA is a 'building operating system'. The operating system takes care of tasks that are common to the whole facility and all building management systems:

> 1. communication towards local network, trend collection, alarm handling, event logs, user rights
> 2. modeling of spaces, devices, systems and users
> 3. standard interface for applications to systems and devices

On top of COBA operating system, it is easy to create user-friendly applications that benefit facility users, owners, maintenance personnel, guards and other service providers. COBA hides the proprietary features of devices and systems, and offers a standard interface to spaces and systems of a facility. Applications include e.g.

- control server for facility maintenance
- control server of security systems
- user interface of fire alarm systems
- operation and maintenance manual of the facility
- consumption measurement and benchmarking services
- alarm reception and redirection to nearest duty officer
- information system for facility management ('reporting facility')
- optimization application (comfortable vs cost-efficient), including fair cost allocation

COBA enables true system integration. COBA will become de facto standard of building operating systems on a global scale.

2 What needs does COBA respond to?

According to a common misconception, it is enough to use a standard protocol in the field bus (control network), to create a freely competed market where devices and systems are compatible with each other and thus easily interchangeable. Yes, it is true that usage of a common field bus reduces the amount of cabling, enables joint use of field devices, makes the system flexible to changes and enables logical dependencies between different systems. But, openness on field bus level is not enough to create a freely competed market. The reason is that different manufacturers apply the standard protocol in various proprietary ways.

Today, systems on control server level understand devices of one or few manufacturers. Even when using a common field bus, the solution usually includes several control servers that are built separately. Same tasks are done separately to each control server: drawing the facility layouts, creating the saving mechanisms for alarm and history trends, creating the user roles and user rights, and arranging possibility for remote usage. Same work is done manually several times, and same multiple amount of work is repeated in system maintenance, system changes and updates.

True openness and successful system integration require a standard also to control server level. COBA responds exactly to this need.

COBA hides the specifics and proprietary features of the devices attached to the field bus by standardizing the 'operating system' on control server level. Devices, which include a COBA driver, are compatible with applications implemented on top of COBA (e.g. user interface). Multiple applications are

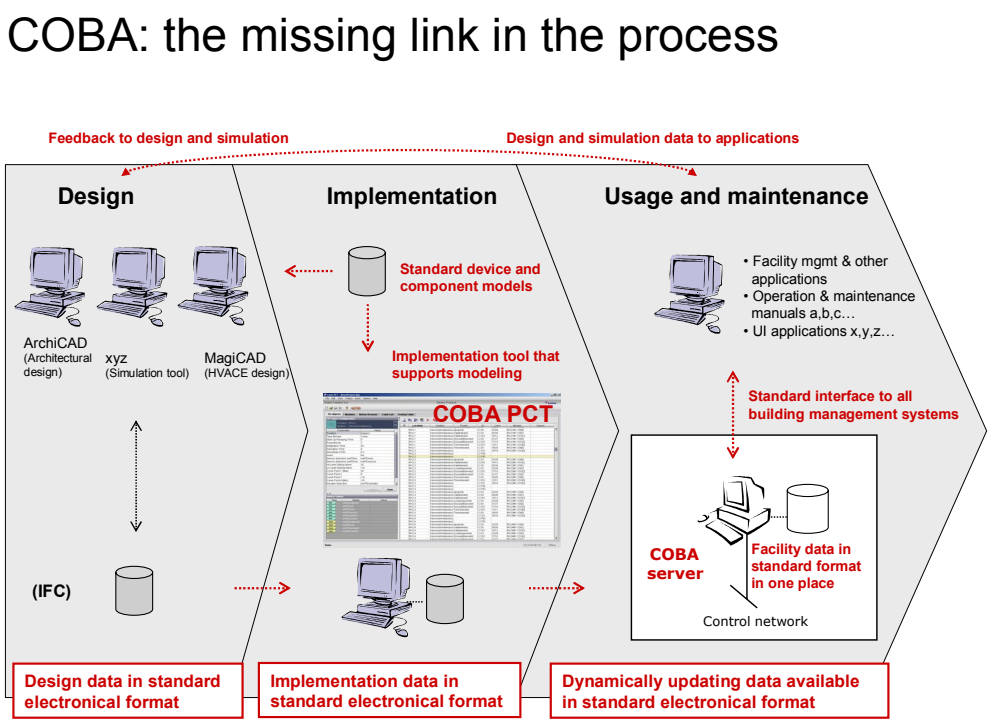
not needed, nor do the devices or applications need to include common functions offered by COBA 'operating system'. Devices can be interchanged without having to modify or change the applications. Structured, standard-format information enables automatically configured, very smart applications. Applications are easy to add and update to existing systems. Also the operating system itself can be updated dynamically through the network, using OSGi mechanisms.

Because systems and their control servers are today mainly proprietary solutions, also their maintenance requires special expertise and equipment. For example, in a typical office building it is quite normal that each of the many systems utilized – from the heating controls to the fire alarms – is operated and maintained by a different company. If there are ten separate automated systems installed, the chances are that there are ten different companies maintaining them. This is essentially inefficient and often overly expensive for the building owner. With COBA, any competent maintenance company can access and maintain the various systems, and the building manager can thus select the most cost-effective service available.

SIGNIFICANCE OF COBA FOR FACILITY OWNERS AND USERS

1. Facility data in standard format: from design to implementation, usage and maintenance

The modeling in COBA is based on IFC model (Industry Foundation Classes). When IFC compatible tools have been used in a project, such as ArchiCAD (architectural design) or MagiCAD (HVACE design), all information related to the building and its systems is received automatically to COBA server. When information is presented in standard electric format, the amount of manual work and probability of mistakes are reduced significantly. Also the documentation related to the building and its systems is always up-to-date. IFC compatible tools are not, however, a prerequisite for using COBA. The design can also be done using traditional methods and tools. Even then the work is done only once in implementation and maintenance of systems.



2. Standard access to automation systems and devices

From viewpoint of users, COBA creates standard access to building management systems and building functionality. Transparency to building management systems enables users to follow and to control the function of the systems through easy user interfaces. The users can influence the conditions of the

spaces, and select e.g. whether comfortability or cost-efficiency is prioritized. Also the designers can access the systems through open interfaces and advise in its usage if needed.

3. Wide supply of smart applications and services

COBA enables drastic increase in supply of applications and services. A corresponding situation was seen in 1990's, when Internet as we know it today was born because of HTTP/HTML-standards. New easy-to-use applications and services were easy to create, and free competition enabled almost exponential growth. COBA enables similar development for buildings. New applications and services can easily be created on top of COBA, when applications do not have to know the technical details of different systems. Structured, standard-format information enables automatically configured, very smart applications. The applications are easy to maintain, and they are optimally integrated automatically.

SIGNIFICANCE OF COBA FOR DEVICE AND SYSTEM MANUFACTURERS

True openness and successful system integration require an open standard on control server level. When COBA driver is available for a device attached to the control network (field bus), applications, services and users can access the device through a standard interface, without having to know the specifics of that device / system. Systems and their devices can utilize the common functions of COBA operating system, without having to implement same functions for multiple times in devices or systems themselves. The information produced by devices and systems can be utilized through COBA in structured format. COBA also enables collection of life cycle data from devices and systems, thus enabling efficient provision of maintenance services.

SIGNIFICANCE OF COBA FOR APPLICATION DEVELOPERS AND SERVICE PROVIDERS

Application providers benefit from the standard interface to building management systems and devices. Separate tailoring to systems of different providers is not needed, because devices and systems are 'hidden' behind COBA. Efficient supply of services becomes easy, and service business becomes transparent and measurable. Structured, standard-format information enables automatically configured, very smart applications. "Smart" buildings can become extremely smart, when tasks requiring complex optimization and learning buildings are enabled.

3 What does COBA include?

The building, its technical systems and user roles are modeled according to COBA conceptual model. The conceptual model also defines the devices included in technical systems and sphere of influence of the systems.

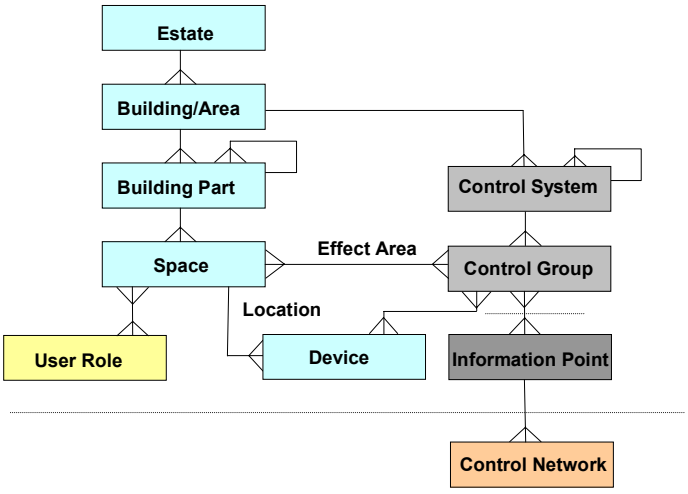


Figure 1. COBA conceptual model

Examples of conceptual model:

	Example 1	Example 2	Example 3
Estate:	Whole facility	Whole facility	Whole facility
Building/Area:	Building 1	Building 2	Building 3
Building Part:	Floor 5	Office space 1	Apartment 1
Space:	Lobby area	Office room 302	Kitchen apartment 1
User Role:	Maintenance person	Guard	Inhabitant
Device:	A lamp	Fan	Temperature sensor
Control System:	Lights of general spaces	Ventilation device	Room control
Control Group:	Controlled group of lights	Cooling battery	Heating radiator
Information Point:	ON/OFF control	Stairless control	Temperature measurement
Control Network:	LON network	LON network	LON network

The definitions related to buildings and spaces are based on definitions made in IFC model. IFC is a standard way of exchanging information between applications.

Control Group is an entity including one or several Information Points. An effect area can be defined for Control Groups, and physical devices can be attached to them. Control Group is a layer that is independent from device manufacturers. Information Points of different manufacturers can be attached to Control Group.

Control System is a logical entity, which can include one or several Control Groups.

After Information Point adaptation is done for devices attached to the control network, all COBA applications can access the devices, and common functions of COBA operating system can be utilized. Such functions include e.g. trend collection, alarm handling and user right management. Information Point defines a uniform way to read information from automation devices and write values to them, irrespective of the manufacturer of the device and the used field bus. Information Point defines names, structure, value ranges, units and real status for required read / write variables. Manufacturers provide adaptation for their own devices or systems, to comply with the interface defined in Information Point.

Information Points are divided into the following groups:

- Indication (DI)
- Control (DO)
- Measurement (AI)
- Stairless control (AO)
- Cumulative measurement (DIC)
- PID controller (PID)
- ON/OFF control
- Time schedule control

With these definitions, information read from and written to automation network and systems can be described in a uniform way. All applications requiring a piece of information, e.g. reporting, can ask for it in standard format and get the reply in standard format.

4 Where to get more info about COBA?

www.coba-group.com

Risto Linturi, +358 50 511 4332, risto@linturi.fi
Tuomas Koskenranta, +358 50 352 8333, tuomas.koskenranta@lonix.com