COBA
Connected Open Building Automation

19.11.2001, COBA Group

COBA Tutorial

– an Introduction to COBA Technical White Paper

COBA Group

COBA is a standardization effort initiated by 15 companies in the construction, building automation, telecommunications, and information technology areas to develop an OSGi-, Java- and Linux-based open software architecture for a 'building operating system'.

COBA Group members include (as in October 2001) the following companies: ABB, Air-Ix, Elisa Communications, FCS Partners, Public Works Department in City of Helsinki, Hewlett Packard, Lonix, NCC Finland, Nokia, SOL, Securitas, Senate Properties, Solid Information Technology and YIT Huber. Lonix is coordinating the project.

The first COBA pilot projects have already been designed and started, and the Technical White Paper is published in connection with this tutorial. The first commercial release of the software will be ready in summer 2002.

COBA description

COBA vision

In 2005, COBA will be an open standard for easy and secure access to building functionality on a global scale. It will be as relevant to make sure that there is a COBA access in my building, as it is today to ask whether there is an Internet access in my PC. Accessing the building functionality via a browser over the Internet and via mobile terminals will be widely used.

In 2005, the building automation market structure has evolved from vertical into horizontal. Monopolistic mammoths no longer control the whole value chain. Instead, focused companies form a new, horizontal market that is open to competition and capable of delivering 'best of breed' solutions and services on each layer. COBA has created new horizontal business opportunities through smart and integrated facility solutions and services.

Main benefits

COBA architecture will provide an open standard for easy and secure access to building functionality, i.e. to building data and connected devices, via a browser over the Internet and via mobile terminals. Standard access creates new business by enabling applications and services to access the building functionality. Applications do not need to know anything about the technology used inside the building.

The architecture is designed to overcome the problems created by non-uniformity and incompatibility typical of current systems. Today, individual systems are controlled separately and communicate with various devices in different ways. The interoperability provided by COBA will enable sensors and actuators in any building to be connected to the Internet and mobile devices through a set of open, standard technologies. Open interfaces at every level of system enable open competition throughout the life cycle of buildings and systems. As the result, life-cycle costs will be remarkably lower.

Ready-made models for the building automation functions, processes and their relationships make system design easy. Standardized user roles simplify both implementation and usage. The solution can also be tailored to any need, and can be easily used via any browser, including mobile.

COBA will be also serving the needs of building users, owners and service providers. A secure standard interface opens up the opportunity of directly connecting a building to a variety of service providers. The best service offer can be automatically selected in real-time, so saving time and money. Companies networked with the architecture will form a new, networked market open to competition and capable of delivering 'best of breed' services and solutions.

Scope of COBA

COBA technical white paper defines what COBA control system is and the role of COBA server in the COBA control system. The technical white paper specifies an architecture and a framework for the COBA server. The following figures illustrate the relationship of the COBA server with other layers of the system hierarchy. COBA server is the access point to functionality in each building, hence creating a common framework to all user interfaces and network management tools.

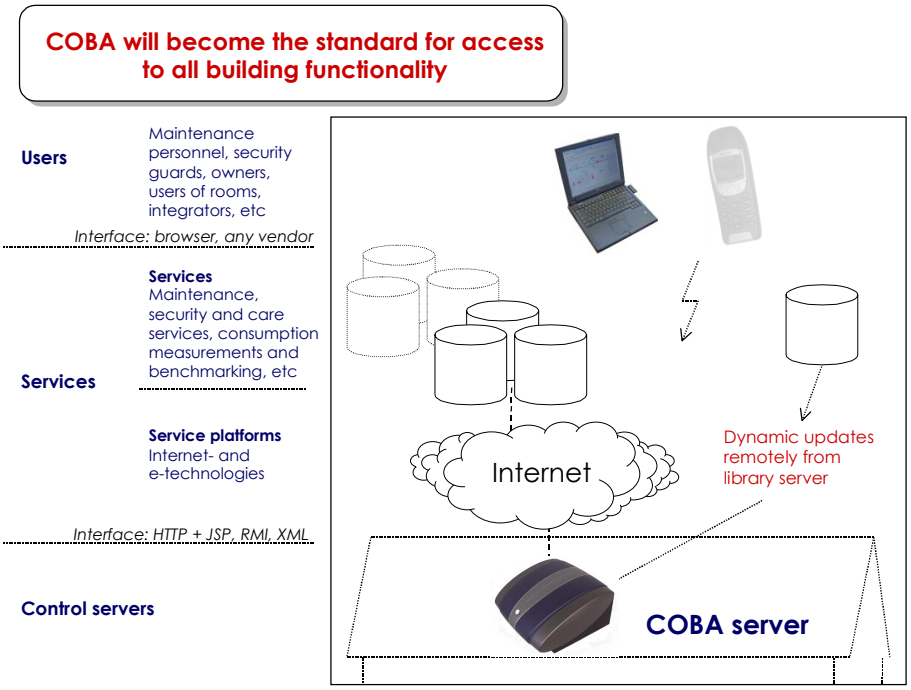

Figure 1. COBA server opens up the access to building functionality for users and service providers in a secure way

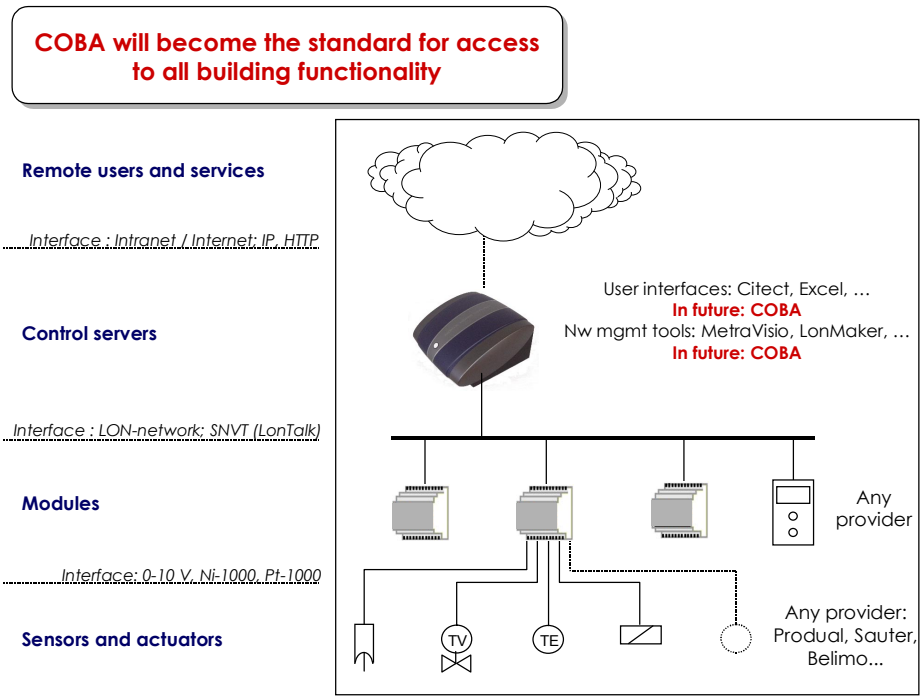

Figure 2. COBA server creates a common framework to user interfaces and network management tools

Examples on COBA usage

Case 1 – automatic services

The roof of a single family house gets damaged in an autumn storm, and some water leaks through. The family sleeps tight, completely unaware of the damage. The system is however wide awake: leakage detector identifies the incoming water and sends an event to COBA server through the automation module.

Based on the location of the leakage detector and the status information from a detector on the backyard ('wet weather'), the system concludes that the source of the problem might be a broken roof. The system wakes up the family and logs on an external e-broker server to search candidates for fixing the roof.

The e-broker utilizes the COBA server to get static information of the facility and its owner (e.g. building structure, location, price preferences, etc) and dynamic information of the facility (suspected damage and details about it), and finds the most suitable service providers from the market. The e-broker negotiates conditions of an offer with a couple of candidates.

Using certificates, the e-broker authenticates and authorizes the customer and the potential service providers. Then the e-broker sends information about the potential service providers and their conditions to the family through text messages, for example. If the family wants to accept one of the offers, the order can be initiated through again e.g. a text message. If the family does not want any of the services, they simply do not answer anything. If a window is also broken in addition to the roof, the family can log on the e-broker through a WAP phone and request for window repair.

Case 2 – facility control

In an office building Megahouse there are several separate systems: HVAC-automation systems, facility access control, security cameras, intranets, telephone networks, etc. Each of these are operated and maintained by different companies or peer groups. One company – the user of the facility – wishes to reduce costs of the maintenance, so they install a COBA server to the facility. No changes to the subsystems are required.

Now maintenance companies can access the systems remotely, and the maintenance can be done by any capable company on the market.

Case 3 – alarms

An automation device located in the facility heating substation has detected that a valve is stuck. The automation device gives an alarm to COBA server, which then forwards it to the facility maintenance company. When the alarm arrives, the maintenance company fetches more information about the heating substation from the facility using COBA and from other relevant sources pointed from COBA. Information includes static data (e.g. type and location of the building etc) and dynamic data (e.g. current season and weather, weather forecast, etc). Based on the information the maintenance company decides on the urgency of the alarm and makes plans for correcting actions.

More info

COBA Technical White Paper
www.coba-group.com