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BACnet® Goes Global

By **Bill Swan**, Member ASHRAE

Two years ago in *BACnet Today*, my article “BACnet in Europe” featured BACnet activities in Europe, particularly those conducted by the BACnet Interest Group-Europe (BIG-EU, www.big-eu.org/eng/). The 12-year-old BIG-EU is the oldest of all BACnet Interest Groups. As with BACnet International (BI), www.bacnetinternational.org, BIG-EU is actively involved in promoting BACnet, conducting user education, supporting conformance and interoperability testing of BACnet devices, and advancing technical aspects of the BACnet standard.

BIG-EU has continued to grow, with a total of 88 member companies as of September 2010. Through its office, BIG-EU's BACnet presence has gone beyond Europe to the Middle East and China. In fact, the world of BACnet has become so interconnected internationally it is difficult to focus on a specific region.

Marketing BACnet

BIG-EU's Working Group-Marketing (WG-M) continues to actively promote BACnet in Europe. The amount of activity is so high that BIG-EU decided it needed to produce a periodic newsletter just to keep its own membership up to date on its activities and various related events. Starting in mid-2008, eight such newsletters have been distributed and their coverage has grown to include news items

further abroad, including an event put on by BIG-RU in Russia and the formation of BIG-CN in China last year.

For its outward reach, MarDirect GbR, the BIG-EU office, is now producing a series of BACnet Journals (www.bacnetjournal.org). These journals cover a range of BACnet-related information, including technical articles, news items, events coverage, exhibitions worldwide, product launches, BACnet projects, upcoming meetings and events, and more. Starting years ago with the BACnet Europe Journal (in German and English), its 12th edition having been recently published, the office now publishes a range of BACnet Journals in the local languages except as noted, these are: The BACnet Italy Journal, the BACnet France Journal, the BACnet Middle East Journal

(in English), the BACnet China Journal, and it recently launched the BACnet International Journal (for North America and the world, in English) to the list. The list is not likely to end here because others are under discussion.

BACnet is also a regular presence at conferences and fairs throughout Europe, with focuses on various aspects of buildings. These have included a “Smart Building” conference in the Netherlands (in Dutch), the biennial light+building and ISH trade shows in Frankfurt and the interclima+elec fair in Paris (presented by the BACnet France Association), and will wrap up this year with BIG-EU speakers at the GebäudeEffizienz 2010 (Building Efficiency 2010) conference in Frankfurt, Germany, this November.

In addition to being a presence at other conferences and fairs, BIG-EU produces its own events, which have included the BACnet Forum Wien (Vienna, conducted in German and English), BACnet Forum Helsinki (in Finnish), BACnet Forum Milano (in Italian), with a second BACnet Forum Germany to be held later in the year and the first BACnet Forum London in planning. These forums combine BACnet exhibitions with speakers on various

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topics related to building automation systems, often with multiple tracks.

These forums are also seen as a way to help start new national BACnet Interest Groups where there is interest. Two examples of this are BIG-Italy and BIG-China. Typically, financial assistance is provided for the first forum; by the second or third forum, the BACnet Interest Group is self-sustaining.

The message presented by BIG-EU has changed over time. When BIG-EU was formed, the issues addressed were the advantages of interoperability provided by BACnet under the theme “BACnet: World of Integration.” Over the years, these advantages have come to be understood and appreciated. As the issue of sustainable buildings came to the forefront, BIG-EU began demonstrating how integration of various building systems through BACnet could help provide the energy-efficiency aspect of sustainable buildings.

With energy prices rising as the result of carbon dioxide reduction policies, energy efficiency has become an issue in its own right, and BACnet International and BIG-EU’s marketing groups have combined their message under the common theme “BACnet: the Standard for Efficient Buildings.” This was the theme for conferences in the interclima+elec fair in Paris and Mostra Convegno Expocomfort exhibition in Milan, light+building in Frankfurt, and will be used for the upcoming Big 5 show in Dubai and the Shanghai China Expo 2010, coincident with the next BACnet Forum in China. However, BIG-EU’s original message continues with a new portable booth and the slogan “Be open, be BACnet.”

Learning and Languages

BACnet education has long been a focus in Europe. BACnet forums and localized seminars in Norway, Sweden and other countries often provide an introduction to BACnet, but the activity in Europe goes much further than that and in an increasing number of languages.

BIG-EU and the Verein Deutscher Ingenieure (VDI, Association of German Engineers) have for some time sponsored two-day BACnet classes conducted by VDI’s Hans R. Kranz, and BIG-EU member Frank Schubert, both of whom have been active in the BACnet effort for many years. Classes have been held in various cities across Germany and continue three times a year in the “VDI-Wissensforum” (“VDI Knowledge Forum”),

oriented to the needs of planners, implementers and operators of building automation systems. Hundreds of people have attended these classes.

Under the supervision of BIG-EU, MarDirect is disseminating BACnet knowledge further than ever through its BACnet Academy (www.bacnetacademy.org) program, which was formed last year and launched in Amsterdam. The international demand for this knowledge is high as demonstrated by the list of attendees’ countries: France, Germany, the Netherlands, Poland, Sweden, Switzerland and the UK. This diverse attendance was repeated in the next BACnet Academy conducted in Zurich, with attendees from Denmark, Finland, France, Germany, Italy, Portugal, Spain and Switzerland. The list of languages is growing beyond English and German as well with the BACnet Academy: the next one in Amsterdam will be in Dutch; Brussels will be in French; and Milan will be in Italian, reflecting the increasing numbers of experts, speaking other languages, who are able to conduct these classes.

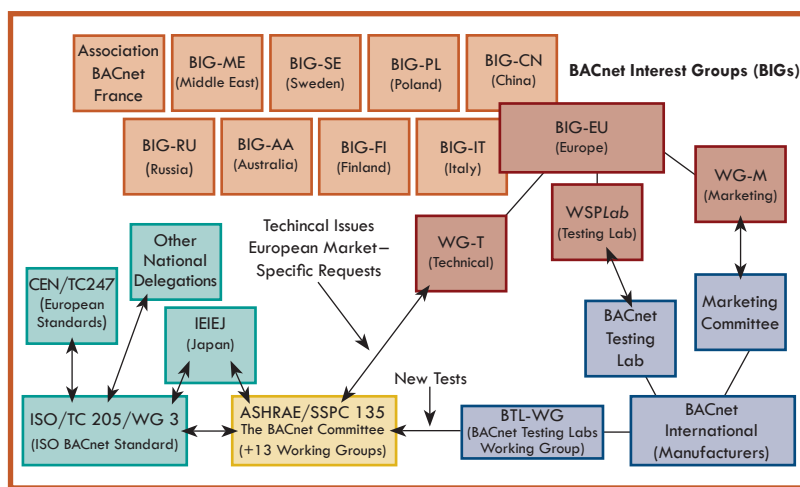
The syllabus for the BACnet Academy reveals a comprehensive course. It begins with a general introduction to building automation

and terminology, BACnet as a standard and its worldwide presence including interest groups, reference projects and more. It dives into BACnet data links, networking and routers, the message “language” of BACnet, and special functions such as alarms, schedules and trendlogs, and goes even deeper into BACnet arcana such as “priority arrays,” and the standard methods for specifying BACnet systems with device profiles, BACnet Interoperability Building Blocks, and so on.

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Aiding System Implementers

One of the last topics covered in the BACnet Academy is a unique contribution by BIG-EU to the BACnet world: the systematic method of planning, commissioning and documenting BACnet systems called the “BACnet–Project Address Table” or B-PAT (www.big-eu.org/eng/service/publikationen.php). Several years in development and published in late 2008, this method is incorporated into an Excel file and avoids addressing conflicts, whether in the assignment of BACnet device instance numbers, BACnet network numbers, BACnet/IP addresses and parameters, or others. B-PAT is configured for manually entering information



The interrelationships between the BACnet Interest Groups, BACnet International, and the ASHRAE and ISO standard committees.

into tables, performing error-checking and reporting errors, and performs and reports results of calculations.

BIG-EU provides a manual for properly using the B-PAT file called the “B-PAT Description.” This manual provides necessary definitions, BACnet addressing rules, special requirements for BACnet/IP networks, the use of the B-PAT in a project from planning through implementation and subsequent revisions, and is followed by detailed information on use of the various worksheets in the B-PAT file.

In addition, several years ago BIG-EU published an aid to consultants specifying BACnet’s alarm systems, in the form of a white paper on BACnet’s two systems of detecting and issuing alarms. The white paper, “Compare Intrinsic and Algorithmic Reporting: The Project Engineer’s View,” was generated in response to a number of bid invitations that seemed to show a lack of clear understanding of BACnet alarming.

Internal European efforts, such as the B-PAT, have the potential to produce results useful across the wider world of BACnet. One is the creation of WG-Germany, a working group for planners, specifiers, system integrators and consultants that addresses the particular regulatory environment in Germany. One such organization, AMEV, the “Arbeitskreis Maschinen- und Elektrotechnik staatlicher und kommunaler Verwaltungen” (Mechanical and Electrical Engineering Working Group of German National, Regional and Local Governments), has published (in German only) “BACnet in Public Buildings—BACnet 2007,” a recommended practice guide for use by governmental authorities throughout the country, currently under revision for publication this year.

Testing BACnet

One additional aid published by BIG-EU is for manufacturers of BACnet devices. “Conformance Testing and Certification—a BACnet Handbook” lays out the process for preparing and submitting devices for BACnet conformance testing, obtaining the BTL Mark for devices that pass (and rules for the use of the Mark) and achieving certification. As it notes in the introduction:

“BACnet Interest Group Europe defines a certification/listing scheme for products conforming to the BACnet protocol standard. This handbook describes this scheme, the certification/listing process and the process to qualify test labs.”

Originally published in 2006, this guide is being updated to reflect procedural changes resulting from the convergence of the BIG-EU and BI testing labs towards identical testing with unified listing and certification, and will be necessary

as additional BACnet testing labs open around the world. In addition, BIG-EU has conducted pre-testing workshops to acquaint manufacturers with the tools and processes used in BACnet testing to prepare them for the actual submissions to the test lab.

The desire to converge the testing conducted by these two BACnet labs has been around for as long as there have been two such labs, but the different market forces between Europe (Germany, in particular) and North America sent the two organizations’ test-development working groups in different directions. The North American group advanced in new test drafting and deployment while BIG-EU honed in on automated test execution with automatic certification-level documentation, but both were effectively working from the same scripts.

With the increasing maturity of the tests and testing tools, the convergence was able to get under way two

to three years ago with expressed wishes for plans and signed agreements. The process is ongoing, but many hurdles have already been cleared, including having a single website to list products approved by either test lab (www.bacnetinternational.net/

[btl/](http://www.bacnetinternational.net/btl/)) instead of a separate site for each lab and merging the two test-development working groups into a single group.

BIG-EU and BI continue to sponsor “plugfests,” which are cooperative events where manufacturers bring their BACnet devices to test with other BACnet devices. Although the test lab working groups have long defined interoperability requirements over and above the BACnet standard, the flexibility of the standard means that implementers’ assumptions need to be checked. In general, issues are most likely to be in an area once considered out of scope by the original BACnet committee: configuring devices using standard BACnet services. BIG-EU’s next plugfest is scheduled to be held in early May 2011, possibly in Vienna to attract even more North American participation.

In the first BIG-EU plugfests there were observable differences between European and North American implementation philosophies, but six years later, with more companies from around the world attending both plugfests, those differences have largely vanished.

Summary

As the BACnet standard matured, it spread from its first applications in HVAC control to integrate other formerly independent areas of building automation including fire/life safety, physical access control and more. Similarly, the world of BACnet has grown from a few relatively independent regional efforts to an increasingly integrated global community.●

