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Section I

Introduction to
Web Based Enterprise Energy and
Building Automation Systems
Chapter 1

Introduction to Web Based Enterprise Energy and Building Automation Systems

Barney L. Capehart, Professor Emeritus, University of Florida

This is the third—and most likely the last—book in the series on information technology for energy managers and web based energy information and control systems. This book concentrates on web based enterprise energy and building automation systems, and serves as a capstone volume in this series. The thrust here is that the highest level functions of a building and facility automation system are provided by a web based EIS/ECS system that provides energy management, maintenance management, overall facility operational management, and ties in with the enterprise resource management system for the entire facility or the group of facilities being managed. If there were ever to be a fourth volume in this series, it would follow the logical progression of the first three volumes, and would probably be titled Web Based Enterprise Resource Management Systems. This is where we are headed with our use of IT, TCP/IP, XML and web based systems to help us operate our facilities better; where better relates to higher energy efficiency and lower operating costs, improved occupant satisfaction, and higher productivity of our facilities through better indoor environmental quality, and a more direct tie-in to the business functions of our facilities.

In these three volumes we have progressed through the basic ideas of information technology, TCP/IP, and web based EIS and ECS systems, to the top of the pyramid in dealing with enterprise energy management in particular, and leading up to the implementation of enterprise resource management. The real news at this point in time is not that IT, the internet and web based EIS and ECS are the new wave of technology for buildings and systems, but that the application of these systems to improving the overall operation of the enterprise is the even newer and more powerful wave of change! The clear shift to the use of web based EIS and ECS systems for intelligent buildings, smart buildings and building and facility automation systems, including focusing on the enterprise level of control and management is the really new news. This is the future that all of our authors are talking about. When players like Cisco and Hewlett Packard start entering the market for applying enterprise resource management to our hotels, office buildings, schools, hospitals and manufacturing and industrial facilities, it should be clear to anyone that there has been a sea change—or paradigm shift—in our business.

Visualizing this relationship between IT, the internet, our facilities, and the enterprise is greatly assisted by the BuilConn Pyramid, shown below and provided by one of our authors, Anto Budiardjo who is with Clasma Events. From our side, starting with the building systems and facilities, we can clearly see how our job has changed so dramatically over the last several years. Just the facility’s information and control tasks are broad enough and complex enough to occupy our full attention—as it has been in the past. But now we also will have to focus on integrating the basic building systems together; and finally to integrate into the business side of our facilities.

With the help of 55 authors and 40 chapters, this book sets out to provide real-world assistance to the energy managers and facility managers who are now hav-
ing to deal with these greatly expanded and significantly more complicated tasks. The majority of chapters in this book are either case studies or applications related to actual facilities. Authors of these chapters are facing these new problems themselves, and solving them—or at least parts of them—every day. Huge strides have been made from the time the first book in this series came out. And even more great progress since the second book came out.

All of us associated with this book in particular—and those associated with one or both of the first two books—are pleased and proud to have helped so many people learn about this new technology and new applications of this technology. We all feel that our initial goal of this project has been met, and that was:

To help prepare energy and facility managers to understand some of the basic principles on IT, so that they can successfully:

- purchase or develop
- install
- operate
- improve, and
- capture the facility operational cost savings and improvements from web based energy information and control systems, including BAS systems and enterprise energy management systems.

The one over-arching theme that is common to each of the chapters in this third book is a critical need for detailed operational data from our facilities. Various authors then go on to tell us what they see as a specific application of the use of that data to help operate facilities better. Other authors address the problems of operating the individual building systems more efficiently and more cost-effectively. HVAC systems are the main ones, but lighting and heating systems are also important.

Starting with the introductory section of this book, we are fortunate to have the views and visions of some of the most well-known technologists in the building automation and intelligent buildings field. Anto Budiarjo, Paul Ehrlich, Bill Gnerre, Kevin Fuller, Michael Ivanovich, and Ken Sinclair all provide us with exciting