BSI Standards Publication

Information technology – Home electronic system application model

Part 3-2: GridWise – Interoperability context-setting framework

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National foreword

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TECHNICAL REPORT

colour inside

**Information technology – Home electronic system application model –
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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

CONTENTS

INFORMATION TECHNOLOGY –
HOME ELECTRONIC SYSTEM APPLICATION MODEL –

Part 3-2: GridWise – Interoperability context-setting framework

FOREWORD

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ISO/IEC TR 15067-3-2, which is a Technical Report, has been adopted and adapted by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

This Technical Report is closely based on the document GridWise®[1] Interoperability Context-Setting Framework (March 2008), prepared by The GridWise Architecture. Also, the original structure of the technical part of this document has been maintained.

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[1] GridWise® is a registered tradename by The GridWise Architecture Council.

This Technical Report has been approved by vote of the member bodies, and the voting results may be obtained from the address given on the second title page.

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**INFORMATION TECHNOLOGY –
HOME ELECTRONIC SYSTEM APPLICATION MODEL –**

Part 3-2: GridWise – Interoperability context-setting framework

1   Executive Summary

As the deployment of automation technology advances, it touches upon many areas of our corporate and personal lives. A trend is emerging where automation systems are growing to the extent that integration is taking place with other systems to provide even greater capabilities more efficiently and effectively. GridWise provides a vision for this type of integration as it applies to the electric system.

Imagine a time in the not too distant future when homeowners can offer the management of their electricity demand to participate in a more efficient and environmentally friendly operation of the electric power grid. They will do this using automation technology that acts on their behalf in response to information from other automation components of the electric system. This technology will recognize their preferences to parameters such as comfort and the price of energy to form responses that optimize the local need to a signal that satisfies a higher-level need in the grid.

For example, consider a particularly hot day with air stagnation in an area with a significant dependence on wind generation. To manage the forecasted peak electricity demand, the bulk system operator issues a critical peak price warning. Their automation systems alert electric service providers who distribute electricity from the wholesale electricity system to consumers. In response, the electric service providers use their automation systems to inform consumers of impending price increases for electricity. This information is passed to an energy management system at the premises, which acts on the consumer's behalf, to adjust the electricity usage of the onsite equipment (which might include generation from such sources as a fuel cell). The objective of such a building automation system is to honor the agreement with the electricity service provider and reduce the consumer's bill while keeping the occupants as comfortable as possible. This will include actions such as moving the thermostat on the heating, ventilation, and air-conditioning (HVAC) unit up several degrees. The resulting load reduction becomes part of an aggregated response from the electricity service provider to the bulk power system operator who is now in a better position to manage total system load with available generation.

Looking across the electric system, from generating plants, to transmission substations, to the distribution system, to factories, office parks, and buildings, automation is growing, and the opportunities for unleashing new value propositions are exciting. How can we facilitate this change and do so in a way that ensures the reliability of electric resources for the wellbeing of our economy and security? The GridWise Architecture Council (GWAC) mission is to enable interoperability among the many entities that interact with the electric power system. A good definition of interoperability is, "The capability of two or more networks, systems, devices, applications, or components to exchange information between them and to use the information so exchanged."[2] As a step in the direction of enabling interoperability, the GWAC proposes a context-setting framework to organize concepts and terminology so that interoperability issues can be identified and debated, improvements to address issues articulated, and actions prioritized and coordinated across the electric power community.

By a context-setting framework, we mean something at a high, organizational level (see Figure S.1), some neutral ground upon which a community of stakeholders can talk about

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[2]   "EICTA Interoperability White Paper," European Industry Association, Information Systems Communication Technologies Consumer Electronics, 21 June 2004.