



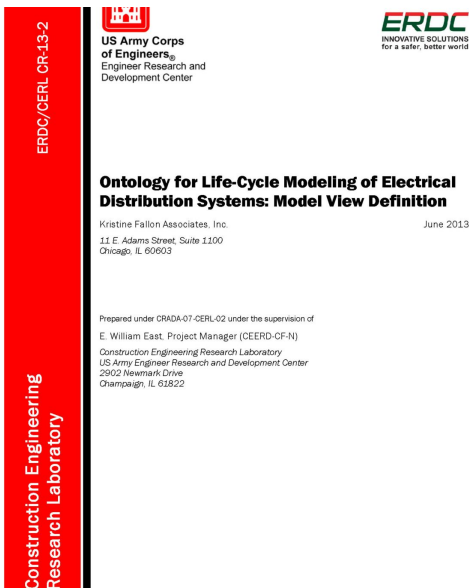
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# Ontologies For Electrical and Water Distribution Information Exchange (MVD Development)


## KFA White Paper


The objectives of this project, which is part of the Life-Cycle Model For Mission Ready Sustainable Facilities (LCM), were to collect and document the requirements for

electrical system design from subject matter experts (SMEs) – architects, engineers and specifiers involved in the design, specification and product selection for interior electrical systems – as well as from published documents on ELie (East, 2012c) and exploratory modeling of electrical system components and connections (SPARKie [East, 2012b]) which has not yet been published, in order to create formal specifications that can be directly applied to open standard building



ERDC/CERL CR-13-2

  
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**Ontology for Life-Cycle Modeling of Electrical Distribution Systems: Model View Definition**

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information models at the coordinated design (also called construction documents) stage. The requirements were used to update standard building models using commercial off-the-shelf software in order to demonstrate the capabilities and limitations of the development of open BIM models. KFA began the Ontologies project by creating process diagrams and descriptions that documented the typical design process and required information exchanges for electrical and water systems. After receiving feedback and suggestions for changes on these processes and information exchanges from a group of industry experts (Architects, Engineers, and Specifiers), KFA's subconsultant, Constructivity then developed the Model View Definitions (MVDs) for electrical and water systems which identified the specific product and equipment attributes needed by the design team during the design process.

KFA reviewed the MVD documents and determined applicable attributes and best method for adding the necessary information to model objects. KFA then used the MVD information to update the BIMs. KFA created custom Revit plugins to efficiently add properties and assign project values to objects in the Revit models. KFA validated data extracted from BIMs in IFC and COBie format, using BIMServices, BIMServer and ifcDoc tools.

The final ERDC-CERL Reports can be downloaded by clicking below. They are also available via the U.S. Army Corps of Engineers ERDC-CERL Library at:

<http://acwc.sdp.sirsi.net>.

Ontology for Life-Cycle Modeling of Electrical Distribution Systems: Model View Definition (ERDC/CERL CR-13-2)

Ontology for Life-Cycle Modeling of Electrical Distribution Systems: Application of Model View Definition Attributes (ERDC/CERL CR-13-3)

Ontology for Life-Cycle Modeling of Water Distribution Systems: Model View Definition (ERDC/CERL CR-13-4)

3

Ontology for Life-Cycle Modeling of Water Distribution Systems: Application of Model View Definition Attributes (ERDC/CERL CR-13-5)