ISA112 Standards Committee Developing New SCADA Standard

BY GRAHAM NASBY

When designing, building, updating, or operating supervisory control and data acquisition (SCADA) systems, the use of SCADA standards is an essential tool. It is through the use of common SCADA standards that the inner working parts of SCADA systems are able to function. For example, inside a water facility, SCADA standards are used to define how equipment/instrumentation is wired, what signals are named, how PLCs are programmed, how servers are configured, how data is logged, and how information is presented to operators on view screens.

But where do SCADA standards come from? And what defines a good set of SCADA standards? Furthermore, how do I get a copy? These are all good questions that come up when working with SCADA systems. The answers to these questions can vary considerably, depending on who you talk to.

When working with a large water utility, internal SCADA standards are usually overseen by the organization's PCS (process control systems) group. Usually developed in-house, created by a consultant, or a combination of the two, it is a lot of work to develop SCADA standards and keep them up to date. In fact the work to keep a set of internal SCADA standards current at a large utility is a never ending task. For smaller utilities, dealing with SCADA standards is challenging due to limited staff resources, limited budgets, and few publicly available SCADA guidelines. In any utility, capital project work can also be challenging SCADA-wise, especially when a utility does not have a full set of SCADA internal
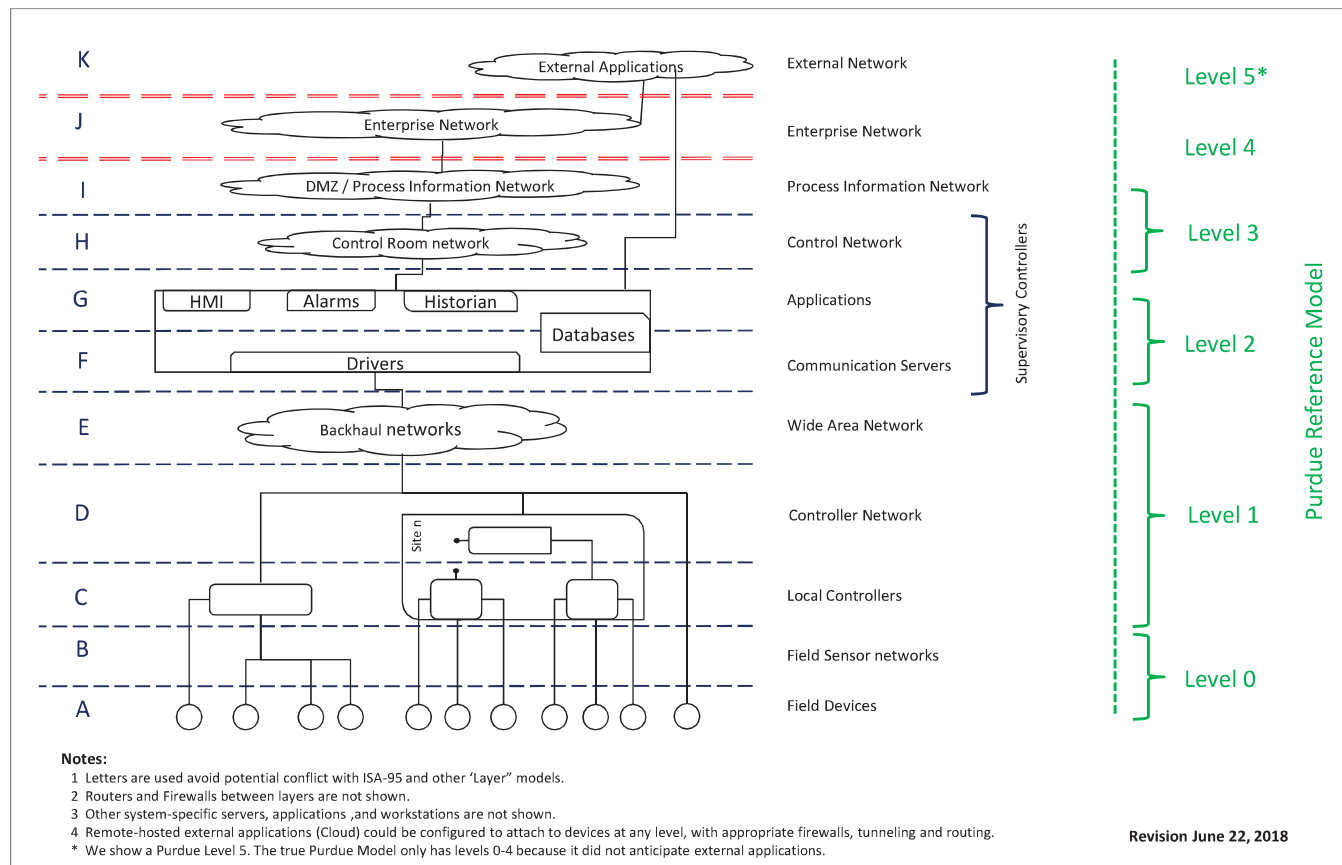

Figure 1: ISA112 SCADA System Architecture Model (draft, as of June 25, 2018)

standards, or when a utility's internal SCADA standards have not kept up with the times or are incomplete.

At OWWA Automation committee meetings, the discussion topic of SCADA standards is a frequent one. Regardless of whether one is with a utility, consultant, vendor, contractor, or system integrator, having a good set of SCADA standards makes working with SCADA systems easier.

Being able to use common terminology, techniques and templates has the potential for significant cost savings for everyone involved with SCADA systems.

In any SCADA installation, being able to apply a good set of SCADA standards can go a long way to reducing complexity or eliminating the need for custom code. Being able to avoid complexity and reducing the need for custom solutions are a

sure fire way to save costs and increase robustness. Thus, promoting the use of good SCADA standards is something we should be all doing.

For the past year, the OWWA Automation committee has been keeping a close eye on a recent initiative by the International Society of Automation (ISA) with respect to SCADA systems. Through its role as an international SDO
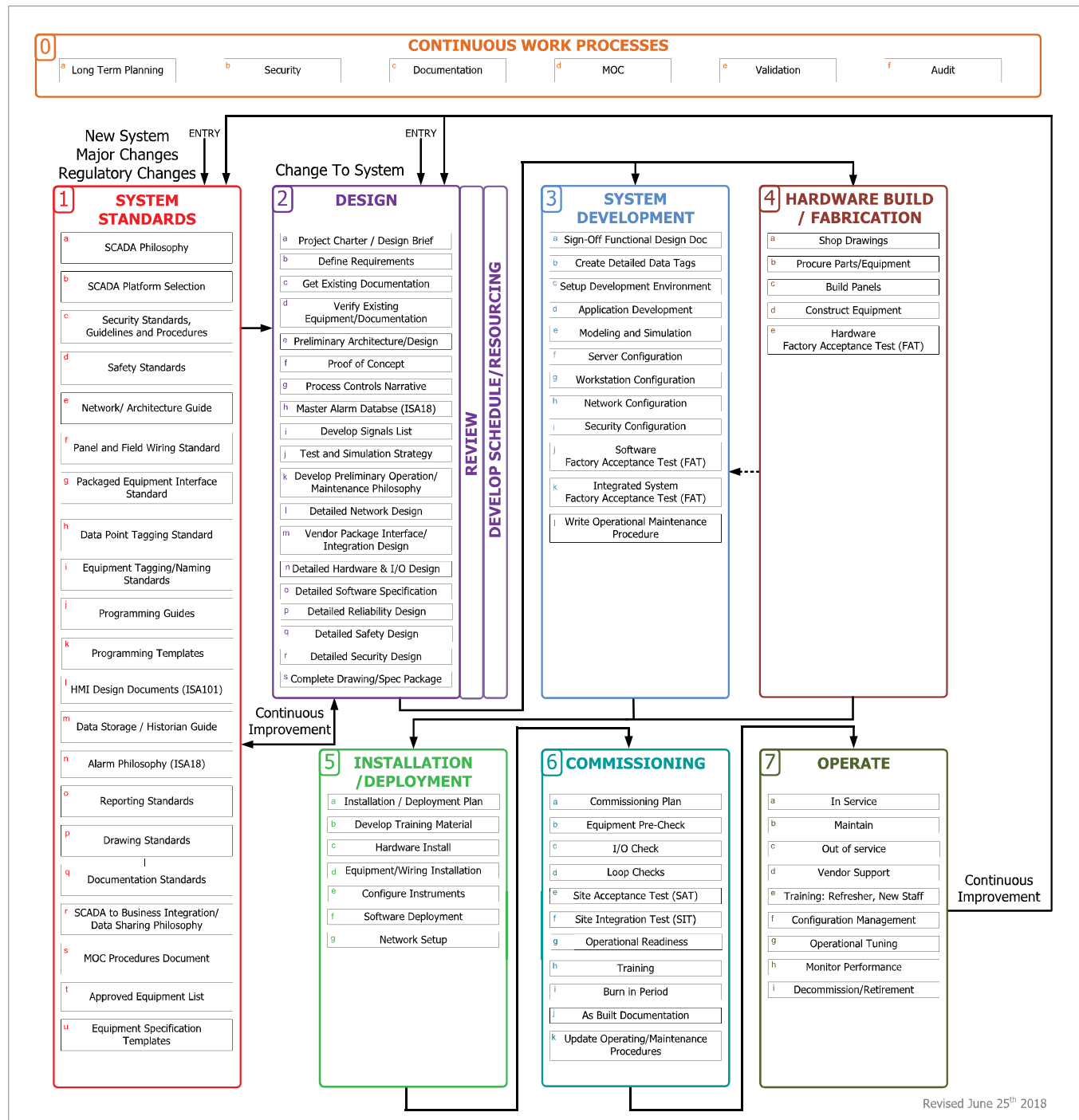

Figure 2: ISA112 SCADA Lifecycle diagram (draft, as of June 25, 2018)

(standards developing organization), the ISA has formed the ISA112 SCADA Systems Standards Committee. The ISA112 committee has been charged with developing an international SCADA standard that provides a set of minimum requirements for the planning, design, construction, and operation of SCADA systems.

Headed by two Canadian co-chairs, Ian Verhappen from CIMA+ and Graham Nasby from Guelph Water Services, the ISA112 committee now has over 150 members from a wide cross-section of industries that use SCADA technology. These include municipal water/wastewater, mining, oil/gas production, pipelines, environmental monitoring, electricity transmission, and telecommunications. One of the benefits of having so many industries involved is that good ideas from one industry can cross-pollenate into others. There are actually more similarities between SCADA applications between industries than there are differences. We are also fortunate that the ISA112 committee has a strong representation from the municipal water sector, including several members of our OWWA Automation Committee.

The ISA112 committee received its charter from the ISA's Standards and Practices board in 2016. Since that time the committee has continued to grow, with many members from around the world. Currently the committee has members from Canada, USA, England, Chile, Brazil, Germany, Australia, and numerous other countries. The committee also has a good cross-section of end-users, utilities, vendors, consultants, contractors, and system integrators. The committee has also made a point of ensuring that the major SCADA software vendors are involved, so that all view-points are considered.

Membership of the ISA112 committee is open to anyone with a SCADA background who is interested in contributing. More information on joining the ISA112 committee can be found at www.isa.org/isa112. Most committee members contribute by writing content, commenting on current drafts by suggesting revisions, providing examples to illustrate best practices, or assisting with the resolution of submitted comments and proposed revisions. The committee itself holds monthly conference calls, which are supplemented by face-to-face meetings twice per year. Much of the writing/editing work is done offline by committee members.

One of the main goals of the ISA112 committee has been to establish common SCADA terminology, architecture models, and workflows to enable the design, construction and operation of SCADA systems to be done more efficiently, consistently, and robustly. Many of the capital-project-oriented members of the committee, are looking forward to defining standardized SCADA terms that can be used to more clearly define requested features in SCADA specifications – to the benefit of both purchasers of SCADA systems and to those to supply/develop them. One of the current drafts of the ISA112 SCADA architecture model can be seen in Figure 1.

Another goal of the committee has been to develop a standardized workflow, or SCADA lifecycle, that provides an organized way to apply best practices in the design, development, testing and operation SCADA systems. A major part of this workflow is providing a consistent way in which internal SCADA systems standards can be organized. A copy of the current draft of the ISA112 SCADA Lifecycle can be found in Figure 2.

The ISA112 SCADA systems standards committee has now been active just over two years. In that time it has developed a SCADA lifecycle model, reference architectures, and a draft table of contents for the actual ISA112 SCADA standard. Presently, the committee is in the midst of firming up the table of contents, so the committee members can set to work on writing first drafts of the various sections of the main document. The writing and editing phase is expected to be very active for the next two years, then to be followed by several comment rounds where all committee members will have a chance to further refine/contribute to the document as it takes shape.

As the ISA112 SCADA systems standard develops, the OWWA Automation committee will be keeping a close eye on the ISA112 committee and its draft documents, both to contribute some of our made-in-Ontario know-how and to ensure that our Ontario water community can make the best use of this soon to be available SCADA resource document. 💧

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