

Standards Status Including Improvement Efforts

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Biographies

Jackie Ferrell is Manager for coordination of International SEMATECH standards activities and maintains liaisons to industry standards organizations such as SEMI, ISO, and IEST. She has held leadership positions in the SEMI NA Standards Factory Integration Division (FID) for the last 15 years and is currently cochair of the SEMI Global Information and Control Standards Improvement Task Force, NA FID vice-chair, and Regional Technical Architects Board cochair.

Dr. Gerhard Kleineidam is founder and CEO of InReCon, a consulting company specialized on automation technology for the semiconductor and electronics industry. Before establishing his own business, Dr. Kleineidam worked for Infineon Technologies in manufacturing IT systems procurement and backend fab automation. He is now engaged since more than 18 years in the electronics and semiconductor industry. Dr. Kleineidam holds a doctorate in production engineering from the University of Erlangen-Nuremberg and a diploma in mechanical engineering from the Technical University of Munich. He is co-chair of the SEMI Europe Equipment Automation Committee.

Abstract:

The semiconductor industry is in a process to utilize a high level of automation to make better use of its investments in manufacturing capacity and to gain a better control on the work in process. Currently, the industry is preparing itself to make the next step by introducing a fully multi-access capable Equipment Data Acquisition interface ("interface A") and data utilization based on XML notation. This will become the basis for a e-Manufacturing and e-Diagnostics environment. A set of new SEMI standards is

currently established to support the introduction of this new technology. The presentation will give an overview on these standards activities and present an update on the status of the documents.

SEMI standards play an important role in specifying technology requirements and minimizing integration efforts. In 2003, the leadership of the SEMI Information & Control Committee (I&CC) established a special task force, the SEMI I&CC Global Standards Improvement Task Force (SITF), to focus on improving the process by which standards are created and maintained. The presentation will inform about the anticipated improvements in the SEMI standards process and first improvement implementations in the SEMI Information & Control Committee which will already support the creation of e-Manufacturing and e-Diagnostic standards.

The SITF is challenged to develop guidelines for global I&CC adoption to improve the approach to standards development. This presentation will describe the lessons learned from past standards development practices and proposed changes for improvement.

Data:

The increasing importance of automation in the semiconductor industry is reflected by the number of standards created by the SEMI Information&Control Committee (I&CC). Figure 1 depicts the first publication dates of the current 81 standards (including sub-documents) under the control of the I&CC. The dramatic increase in standards since mid of the 90's reflects the committee's activity as well as the demand from the industry.

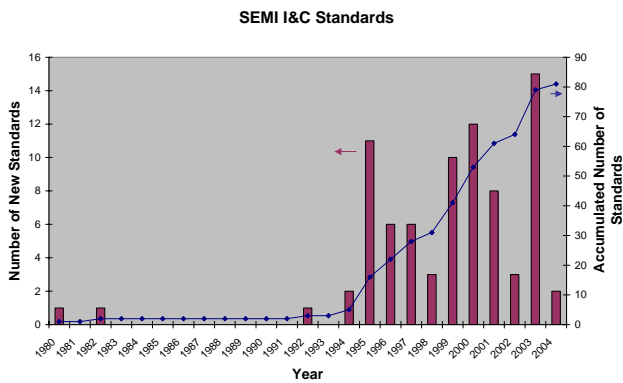


Figure 1: SEMI I&C Standards' Date of First Publication (as of March 24, 2004)

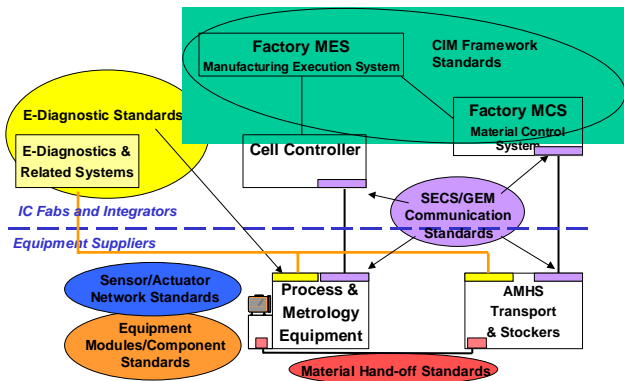


Figure 2: Areas of SEMI I&C Standards

Many of the existing I&C standards belong to the set of fundamental SECS/GEM communication standards for equipment integration. These standards are based on SEMI E5, which was published first back in 1982 and allows only for point-to-point connections.

In 2003, SEMI PR8 was published as a new interface standard that is fully network compliant. Based on this new interface standard, a lot of I&CC work is now focused on e-Manufacturing standards. An update on the status of these activities and the European participation in them will be presented (see attached presentation material). This update includes also the anticipated schedule for completing the documents.

The burst of I&CC activities since the middle of the 1990's, combined with the increased usage of SEMI standards, drew more attention to the quality and usability of the standards. The Global Standards Improvement Task Force (SITF) is

investigating with international participation how SEMI I&C standards are developed and which typical deficiencies can be reduced in the published standards. The goal of this Task Force is to propose improved processes and procedures to SEMI in order to achieve an improved quality, and testability of future standards.

The experience with existing standards taught, for example, that compliance testing needs more attention in standards than in the past. Concurrent work on several documents with related scope needs coordination on the leadership level. Clear specifications that reflect Device Maker operational requirements are essential for first pass success.

Initial proposals by the SITF have been tactical improvements to I&C committee processes, such as templates and procedures to streamline document development and approval. Next efforts will address the quality and content of I&C specifications. Preliminary study has begun on a new approach to standards development. The task force is considering the life cycle of a standard and determining where in that life cycle improvement can be made to reduce standard development cycle time, or improve the quality, testability and implementability of standards. The SITF describes the life cycle of a standard in terms of industry-accepted practices for software design, requirements definition, identification and mapping, and implementation roadmaps.

Conclusion:

The global I&C activities to create a new set of standards to enable and support e-Manufacturing and e-Diagnostics make good progress and are scheduled to finish most of their work within 2004. The activities are coordinated by the International Equipment Engineering Task Force and supported by International SEMATECH and Selete. European volunteers participate in many of these activities via Task Forces which discuss their views and inputs with their North American counterparts on a regular basis. More European volunteers are encouraged to join these Task Forces to familiarize themselves with the new and upcoming standards.

The processes and procedures being proposed by the SITF require significant changes in how SEMI committees develop standards. Global consensus and adoption by standards developers and implementors is needed in order to realize the potential benefit.

References:

Materials for the I&C Standards Status presentation are drawn from the I&C activities list maintained by International SEMATECH and discussions with the SEMI Europe I&C Subcommittee leadership, Jackie Ferrell, Lance Rist, and Harvey Wohlwend (all International SEMATECH).

Materials for the Standards Improvement presentation are drawn from the NA SITF meetings and supporting materials.

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