

Transitioning to Interface A Data Collection

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Companies currently starting up new wafer fabrication plants with high levels of factory automation face a dilemma choosing a data collection strategy. For years data collection has primarily been implemented through the unique protocols of the SECS/GEM interface to the tool. Device Manufacturers with highly automated factories have invested heavily in factory systems that control the tool and collect data through the single-client SEC/GEM tool interface. Interface A provides a new data port on the tool that can be accessed by multiple clients using standard commercial technologies such as XML, SOAP and web services. Interface A also holds the promise of providing higher data rates and new sources of data. However, the four SEMI standards (E120, E125, E132, E134) that comprise Interface A are very new. Very few tools currently offer Interface A capabilities and the early offerings will likely prove to be immature. Thus AMD faced a dilemma in late 2003!

when planning the startup of our new 300mm factory, Fab 36.

The prudent approach to data collection for Fab 36 was to rely on the SECS/GEM interface rather than risk reliance on immature or unavailable Interface A capabilities. But we also sought a way to structure the factory systems so we could easily take advantage of Interface A capabilities as they matured and became available. We wanted an approach that would allow us to implement many of the new technologies and standards immediately, and then transition to Interface A later with minimal disruption. Based on Interface A experience gained through a NIST R&D project, AMD developed a low-risk data collection strategy for Fab 36 that facilitates a future transition from SECS/GEM to Interface A.

This presentation will discuss how Interface A standards and technologies have been incorporated into the Fab 36 factory systems. The strategy chosen by AMD enables immediate use of the Interface A standards and technologies in the data collection setup environment as well as the data reports sent to factory applications. The sensitivity to whether the data is collected via SECS/GEM or Interface A is isolated in the program that implements the Data Collection Plan (DCP) on the tool. In this presentation we will provide an overview of the data collection setup environment, including the User Interface (ADAPT) and the XML documents based on E120, E125, and E134. We will also discuss the application interfaces, including the XML document containing the data collection report, also based on E134. We will describe some of the biggest challenges we've encountered, and how we have addressed them. These challenges include transforming XML documents due to schema changes and managing DCPs when a tool's data collection capabilities change. Looking to the future, we'll discuss various alternatives for incorporating Interface A data collection into the Fab 36 environment.