Open Architecture ATE: Dream or Reality?

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“I’m all in favor of Open Architecture ATE, provided that it’s MY architecture.

Several years ago, when discussion of open architecture semiconductor ATE was openly starting, the bar discussion agreed with that comment from a leading ATE architect.

Since then, we have seen announcements, denouncements and many papers describing aspects of Open Architecture. Several goals motivated the demand for open ATE systems.

- Lower the cost of switching from one ATE system to another by having “the same architecture” from multiple companies.
- Make specialized, state of the art instruments available and fully integrated with the other instrumentation.
- Allow greater configuration flexibility, such as mixing 100MHz and 800MHz digital instruments within a single system.

There is nothing new about the idea of open test systems: the instrumentation industry has had several generations of standards that are still in wide use (GPIB, VXI, PXI). Most semiconductor ATE systems allow some of these instruments to be used, but they have always seemed to be unwelcome intrusions into the systems.

Such instrument standards have at times been described as “not being suitable for ATE systems”. But the semiconductor ATE industry hasn’t been an active participant in developing those standards, so it is no surprise that some of the requirements are not met. Maybe these standards could be used as a basis for semiconductor ATE standards.

The current interest in Open Architecture ATE could lead to several different outcomes:

- Rejection. State that this is an idea that doesn’t work with the ATE industry and ignore the issue for another decade.
- Very little change. The major semiconductor ATE systems each continue with proprietary architectures that allow addition of some industry standard instruments.
- Embrace and Extend instrument standards. An ATE system decides to fully integrate industry standard instruments and extend those standards to make them fully ATE-capable.
- Proprietary Open Systems. Each company describes at least one of its systems as being Open, but there is no commonality between any of those systems.
- Dominant Architecture Open Systems. One architecture, originally a proprietary open system, achieves a significant market share and becomes the preferred open architecture for the industry.
- Cooperative Open Architecture. Several systems companies decide to combine their architectures and develop a combined architecture that they will all implement.

Open systems will certainly have significant technical, business and political challenges. Will the original goals be achieved?