

**Let's Get Going: Advanced Energy Begins Its Digital Transformation**  
by  
**Isabel Yang, Chief Technical Officer**

You are already experiencing digital transformation. Online purchases, the card you swipe to pay for clothes, groceries or gasoline, PayPal and online banking are just a few proof points. Retail and financial industries have been working on digital transformation for a while. The industries that Advanced Energy serves, and AE itself, traditionally are more cautious. But it's time to start.

***Where Do We Start?***

Two goals for our partners and customers are zero downtime and increased supply chain efficiency. Let's first consider what we can do internally to reach those goals. We need to design our products to be "compatible" with digitally transformed partners and customers. Since we supply components that go into their end products, we provide a piece of a tool or end-user device that, if it is part of a system and can "call home," it can relay actionable performance data. Digital transformation goes hand-in-hand with Internet of Things, and with IoT connectivity comes the possibility for predictive maintenance and troubleshooting capabilities facilitating continuous operation – goal #1.

We also can *drive* digital transformation. The extent of our influence is industry-dependent. Some industries, for example semiconductor fabricators, already have done a lot to optimize their factories; some have data and artificial intelligence scientists in-house that are machine learning experts. For these industries, the data from the tools that our partners provide can help make factories even smarter. For industries that we serve but are starting to use AI and machine learning, connected components could give them process insights that will help them make a large digital transformation leap.

Our products need to be able to communicate with multiple interfaces, be smart themselves, and operate as a system. Finally, we need to practice what we preach and digitally transform our internal business processes, work smarter.

***Connecting the Value Chain***

I said before that increasing efficiency in the supply chain is another goal for customers. We share in that goal. I focus on this because I think that the value of digital transformation can be first realized in improved supply chain logistics.

Two forms of trust are at play here. First, there's the trust that's essential for us to work with our partners, who have always been reluctant to share data relevant to their intellectual property and trade secrets. Interconnected systems among stakeholders in the value chain almost by default enables that data to be seen by all of them. Blockchain security includes permissioned data access (not really a new concept) but also unprecedented insight into any data breaches (definitely a new capability). Identifying issues and prosecuting IP thieves is easier.

The second form of trust is in the data itself. Machine performance data gathered through interconnected systems and validated by a shared ledger can be trusted by everyone in the value chain. Our customers tell us that they would like for us to be more agile. Digital transformation

will enable that agility. When a component is underperforming, AE can diagnose the issue, troubleshoot and repair remotely, or alert supply chain partners that the component will need to be taken out of service, returned for repair and replaced. Electronic contracts are executed instantly accelerating that process by orders of magnitude compared with current processes.

### ***Let's Begin***

Making such a significant change calls for technological and cultural shifts. In a way, it's easier to evolve technology than company culture – it's often difficult for people to change the process that they have been using for years. However, I believe that if we and they are not on the digital transformation “bandwagon,” we all will be left behind.

One of our challenges is identifying innovation that really matters to AE within the remarkable volume of great innovative ideas that we have. Investing resources into what will most significantly impact technology innovation, cost reduction and process improvements is the starting point.

Every journey, even a journey of digital transformation, starts with a first step. Advanced Energy is taking that first step, and as CTO I'm looking forward to shifting both technology and cultural shift that we are starting to make. Let's get going.