Q&A With **Cognizant**

THE DIGITIZATION OF MANUFACTURING

AMERICAN MANUFACTURING SUMMIT 2016

February 29th – March 1st, 2016

INTRODUCTION

Technology plays a major role in efficient manufacturing and the early adoption of emerging technologies can lead to a significant competitive advantage. As a result many manufacturers are looking towards digitization to drive profitability and maintain competitiveness. To help us understand how digitization is changing the manufacturing landscape we sat down with Cognizant, a leading provider of information technology, consulting and business process outsourcing services, to gather their thoughts on this burgeoning trend.

What are 'Smart' products and how are they currently affecting the manufacturing industry?

Smart Products (aka Connected Products) have the embedded capability to sense, process and communicate the performance parameters and conditions inside and around them to different entities such as manufacturers, service providers, and operators/customers. This is achieved through embedding sensors, processors, communication gateways, software and integrating the device with different information systems through a secure gateway.

Smart products are impacting the manufacturing industry in two ways:

A) Impact on the manufacturers of the products in a massive change in the design, development, sourcing and production processes (for smart enablement).

B) Leveraging the equipment suppliers' smart enablement to improve OEE, Yield and Operations visibility.

These can lead to different ways of improving productivity, higher predictability and better customer experience.

Why should manufacturers embrace digitization? (what opportunities/ advantages do these new technologies offer manufacturers)

Digitization now goes beyond mere "paperless" processes. The new technology stack includes not just IT and automation systems but also smart products/equipment in use for production, material handling and outside the plant logistics and smart devices (such as smart phones, wearables) used by individuals. The information sources around the manufacturers have simply exploded as well as the smart device proliferation. These are presenting unprecedented opportunities to create new levels of efficiencies with dynamic information processing (such as real time notification of a delay in an inbound parts shipment) as well as designing products that can meet the personalization needs of the customers.

Digital offers endless such opportunities that can truly impact the way consumers experience products, help create new business models and capital investment strategies.

Are manufacturers readily adopting these new technologies? Why or why not?

Digital is not just about a technology implementation. It's a paradigm shift. Manufacturers need time and investment to bring about this change. Additionally, there are competing continuous improvement programs, capital investments and a volatile business environment to boot. However, the emerging new business models in the value chain do present interesting implementation options. Digital adoption is gaining pace as customers are demanding effective & revamped interfacing processes in both the B2B and B2C space. This is leading to an increasing adoption of mobile and analytics and exploratory programs in cloud. Some areas in manufacturing lend themselves to easy adoption while in some core processes a full scale adoption is still some distance away.

What are some of the major challenges manufacturers face when incorporating 'Smart' products and transitioning to an advanced state of digitization?

Smart products require bringing in additional capabilities from concept to product design and development, sourcing, manufacturing and post-manufacturing support. Introducing "soft features" in the product requires agile software development approaches and synchronization with product launches. This synchronized development of physical features and digital components of a product has become a critical area of capability for most manufacturers.

How can manufacturers ease the transition to digitization and successfully integrate 'Smart' products?

Since managing a new set of competencies (such as software features of the product), managing an integrated information technology infrastructure integrated with products is not native to the manufacturing industry therefore building a partner ecosystem can help.

Smart products are no longer a fad- it's a definitive need that manufacturing is rapidly adopting. Executing some quick pilots and then scaling and transforming the product portfolio are recommended. Increasingly, manufacturers are looking to create theme-based platforms that are enabling the smart products. An investment in building or adopting a platform eases the introduction of new a smart products portfolio.

There is a growing skill shortage in the manufacturing industry. In your opinion, how can manufacturers manage this shortage? What solutions will help the industry overcome this growing gap?

Skill shortage needs to be addressed in multiple different ways. There are 3 key strategies – Retain, Attract and Automate. We need to plug the talent migration from the manufacturing industry to other sectors. The other key aspect is attracting more talent to the sector and finally increased adoption of the technology convergence to create higher levels of automation in core and non-core processes associated with manufacturing.

Designing work systems and processes leveraging digital can help in driving each one of these strategies. Smart products transformation is bringing Silicon Valley to the manufacturing world. This opens up avenues for ICT talent and the millennial workforce to be attracted to the manufacturing industry. Aside from a digital design approach, increased levels of automation are to be expected as well.

How will the convergence of technologies affect the evolution of manufacturing over the course of the next 5 years?

Digital is bringing convergence of a wide set of technologies. Some of these are IoT & M2M communications; SMAC (Social Mobile Analytics Cloud); smart devices & wearables and the next generation of unmanned systems (multi robot/swarm systems, drones); augmented & rirtual reality. Coupling these with new forms of manufacturing (Additive Manufacturing) can potentially create hyper personalization of products for the customers. This "extreme convergence" also aligns well with the trend of customizations at lower costs.

As new supply chain configurations emerge, the convergence will play a greater role in enabling new levels of productivity and effectiveness. Aligning to market demand across the value chain will finally become a reality as information flows seamlessly and without touch.

The roles of individuals will also evolve as increased levels of automation are experienced. The next wave of automation is in automated information flows and decision making. This could lead to productivity gains through reduced supervisory and reporting workload.

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Applying Digital Design Approach to Talent & Productivity Challenges on the Shop Floor

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