**Press contact:**
*Michele Moore*
*Tel.: +44 370 905 3408*
*Email: michele.moore@capgemini.com*

# Smart, connected products to add up to $685 billion to manufacturing revenue by 2020

***To capitalize on the opportunity, manufacturers will need to balance their efforts between legacy products and new services business models***

**Paris, June 21, 2018 – A new report by Capgemini's Digital Transformation Institute reveals that the global manufacturing industry could expect to see between $519-$685 billion in value-added revenue by 2020 through the development and sale of smart, connected devices.[1] The report, "Digital Engineering: The new growth engine for discrete manufacturers" highlights that while the potential returns are significant, manufacturers need to invest in digital continuity and digital capabilities to benefit.**

Manufacturers estimate that close to 50% of their products will be smart and connected by 2020, a 32 percentage point increase from 2014. In fact, 18% say that they plan to stop manufacturing products altogether and move to a pure service-based business model. A move in this direction will make the shift to a service-based model a business imperative and will require enhanced capabilities.

*"We want to bring value to the market by shifting our business model toward service-based and cloud-connected architectures. It is a key way to differentiate our value proposition in the market of pure hardware players,"* says Antoine Destribats, Vice President – Industrial Operations at Schneider Electric.

Manufacturers have responded enthusiastically to new technologies and are already rebalancing their IT investments accordingly. Around 50% of manufacturers aim to spend more than 100 million euros in Product Lifecycle Management (PLM) platforms and digital solutions in the next two years, while the proportion of IT budget earmarked for maintaining legacy systems has dropped significantly, from 76% in 2014 to 55% in 2017.

**Unlocking the opportunity**

While digital investment has increased substantially since 2014, few manufacturers have been able to scale their efforts. Two thirds (66%) acknowledge that they constantly face two competing priorities: accelerating time-to-market by maintaining continuous product innovation and development of legacy products versus investing in smart, connected products.

As a result of this tension, the use of model-based system engineering, data continuity, and virtual simulation within the industry is low; only 16% of organizations are fully implementing Digital Twins[2] while 45% are not beyond the pilot stage. Similarly, despite being responsible for 58% of global research and development spend in 2017, less than one-in-five (19%) of discrete manufacturers featured in the Forbes' list of the most innovative companies 2018, highlighting the 'anchor' effect of legacy products and the need to rethink current approaches to product and services innovation and engineering.

[1] Smart, connected products, are products, assets and other things embedded with processors, sensors, software and connectivity that allow data to be exchanged between the product and its environment, manufacturer, operator/user, and other products and systems.
[2] Digital Twin is the digital representation of the "current state" of a manufactured product or system at any given point in time.

**Investing in digital capabilities and a digital ecosystem will be key**

If manufacturers are to capitalize on the smart, connected product opportunities, they will also need to improve on their IT and software skills competencies. According to the report, 86% of 'novices'[3] do not have the sufficient availability, within their current capabilities, for data management; 95% have insufficient skills for app design, and 94% for artificial intelligence. Outside hires will not fill the digital talent gap completely, states the report, which means that organizations will need to invest in digital training, tools and new collaborative ways of working for their existing employees. In parallel, developing an extended digital ecosystem will be key to design and will provide new end-to-end services.

*"We assess the competencies of our staff very frequently with an emphasis on digital skills,"* says Jan Willem Ruisch, Senior Director - Head of Product Management at Signify (formerly Philips Lighting). *"We develop and implement training programs to ensure we stay up to date with the latest technologies."*

**Manufacturers are struggling to tap data from products and customers to drive innovation**

Manufacturers will also need to capitalize on the data generated by connected products in their transition to selling services. Usage of data from connected products, as well as customer feedback from social channels, is increasingly replacing traditional market surveys to fuel product and service innovation. Despite the growing importance of data and the technology through which it is garnered, the report finds that only a quarter of manufacturers are using data to deliver actionable insights for product innovation. In terms of new product development, only two in five manufacturers indicated they are using AI technologies to analyze customer data. These findings suggest that a significant proportion of manufacturers are missing an opportunity to leverage data in their design and development processes. Manufacturers are also facing multiple challenges when it comes to leveraging product data and partner ecosystems to drive product innovation. The research shows that 54% of organizations have established programs to foster collaboration with start-ups, third parties and suppliers. However, less than a third have leveraged such programs to co-develop products with their partner ecosystem.

As products shift increasingly towards connectivity, manufacturers will also need to integrate software capabilities into their product design processes. Product cycles will need to be adapted to meet the demands of frequent upgrades — a common phenomenon in the software world. The research shows that manufacturers consider the role of software and IT in products as one of the top three factors affecting their businesses, along with maintaining digital continuity and shifting from product to service-based business models.

Jean-Pierre Petit, Head of Digital Manufacturing at Capgemini said, "*With the significant potential gains of smart, connected products and digital continuity predicted in the next two years, the requirement to invest in new technologies is too large for manufacturers to ignore. However, the road to getting there is a challenging one. Manufacturers must balance the priorities between sustaining their core businesses while investing in digital acceleration. They must make investments in digital skills, ecosystems, tools, roadmaps and new ways of working. It will be a lot of work, but for those that get it right there is a sustainable leadership to gain*."

A copy of the report can be downloaded here.

[3] 'Novices' are defined as manufacturers that need a clear vision, strong leadership capability, and a focus on bridging gaps in both technology and talent.

**Research Methodology**

This research surveyed 1,000 senior executives from global manufacturing organizations across nine countries: Italy, India, China, Sweden, Netherlands, Germany, France, United Kingdom and the United States. These executives were drawn from director-level or above, from a diverse set of functions, and were closely associated with their organization's digital engineering initiatives. The survey sample included a range of industry segments including automotive and transportation, aerospace and defense, industrial manufacturing, industrial and agricultural equipment, high-tech, and medical devices. Of the organizations in the survey, 62% had global revenues of US $2 billion or more.

**About Capgemini**

A global leader in consulting, technology services and digital transformation, Capgemini is at the forefront of innovation to address the entire breadth of clients' opportunities in the evolving world of cloud, digital and platforms. Building on its strong 50-year heritage and deep industry-specific expertise, Capgemini enables organizations to realize their business ambitions through an array of services from strategy to operations. Capgemini is driven by the conviction that the business value of technology comes from and through people. It is a multicultural company of 200,000 team members in over 40 countries. The Group reported 2017 global revenues of EUR 12.8 billion.

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**About the Digital Transformation Institute**

The Digital Transformation Institute is Capgemini's in-house think-tank on all things digital. The Institute publishes research on the impact of digital technologies on large traditional businesses. The team draws on the worldwide network of Capgemini experts and works closely with academic and technology partners. The Institute has dedicated research centers in India, the United Kingdom and the United States.