

IMS HOSTS SEVENTH EDITION OF THE WORLD MANUFACTURING FORUM



IMS International and partners Politecnico di Milano and Confindustria Lombardia held the seventh edition of the World Manufacturing Forum on September 27th and 28th at the Villa Erba in Cernobbio, Italy. The international event on manufacturing produced record numbers with thirty international speakers and 900 participants from over 40 countries. This year's record turnout coincides with the newly formed World Manufacturing Foundation from partners Intelligent Manufacturing System, Confindustria Lombardia and Politecnico di Milano. The new foundation's success is indicative of the global outreach achieved by the World Manufacturing Forum.

IMS Chair, Jack Harris, opened the forum and emphasized the importance of the origins of the forum and how this new organization can help to foster new and productive dialogues on the future of manufacturing.

This year's speakers came from prestigious organizations including: Carlsberg Group, CEEMET, World Economic Forum, DG Research and Innovation,

IBM, Lavazza, SAP Labs, PTC, Local Motors, Kaspersky, Caixa Capital, Siemens, UNIDO and representatives from the governments of Italy, France, Japan, Mozambique, South Africa, Brazil, Thailand and Cambodia.

The first World Manufacturing Forum Global Report entitled: *The 2018 World Manufacturing Forum Report - Recommendations for the Future of Manufacturing* was presented at the annual meeting. The report includes expert advice from over 30 world experts as well as review of over 150 policy documents. The report yielded ten key recommendations for policymakers to consider in order to bolster regional, national, and international agendas.

Throughout the two-day conference eight plenary sessions and four keynote sessions were held. All of the sessions provided valuable insight on a range of topics from resource aware manufacturing to manufacturing in emerging countries.

For more information on the World Manufacturing Forum including ways to engage with the forum please visit: www.worldmanufacturingforum.org

WORLD MANUFACTURING FOUNDATION SIGN AGREEMENT WITH UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

During the WMF annual meeting, the World Manufacturing Foundation signed a cooperation agreement with UNIDO, the United Nations Industrial Development Organization, which aims to promote sustainable industrial development, particularly in developing countries and in countries with economies in transition.

The second day of the event was marked by a speech from Li Yong, Director General of UNIDO, as a

testimony of the cooperation agreement signed between the World Manufacturing Foundation and UNIDO.

Mr. Yong, and the President of the World Manufacturing Foundation, Alberto Ribolla, announced the content of this strategic agreement which aims to:

1. Promote a common global agenda on technological innovation for inclusive and sustainable industrial development;
2. Collaborate in the following areas: the agenda for the annual or multi-annual WMF; the WMF Report; joint activities to foster ISID to advance the 2030 Sustainable Development Agenda.

Mr. Yong noted that he was very pleased to speak at the World Manufacturing Forum given the strong cooperation and partnership that UNIDO has formed with WMF. "The World Manufacturing Forum has a similar mandate to UNIDO's mission of promoting inclusive and sustainable industrial development, as it also convenes stakeholders involved in industrialization on a global scale. [To this end] partnerships with multilateral organizations such as WMF will be beneficial to [UNIDO's] efforts, given the necessity of leveraging knowledge networks and thought leadership for achieving the Sustainable Development Goals." said **Mr. Yong**.

UPCOMING EVENTS

IMS/WMF To Speak at Boston Innovation Center

Dan Nagy, IMS Managing Director of IMS and Vice President for the World Manufacturing Foundation, will speak at the Reebok Innovation and Flex Manufacturing Center on the 15th of October about IMS and the World Manufacturing Forum to over thirty manufacturing industrialists from Italy. He is joined by the Boston Economic Development Agency and the Italian General Consul. Mr. Nagy is Managing Director of IMS and Vice President for the World Manufacturing Foundation.

IMS Presents Keynote at 4th Industrial Revolution Forum in Ulsan

IMS will deliver a keynote speech at the "4th Industrial Revolution Forum" to be held in Ulsan, Korea, on November 6 and 7. The focus of the discussion will be on workforce development. Mr. Dan Nagy, IMS Managing Director, will also meet

MANUFACTURING NEWS

Many Parents Undervalue Manufacturing as a Career for Their Children

(IW – Staff: 10-4-18) There is a disconnect between how we are training our kids and what careers they will choose. While 58% of parents want their child to be knowledgeable about science, technology, engineering and math (STEM) subjects and 43% agree STEM-focused careers have a promising future, only 20% of U.S. parents associate STEM education with the manufacturing industry, according to a new survey from Kronos Incorporated. The Kronos 2018 Manufacturing Day Survey conducted online by The Harris Poll in September 2018 surveyed 1,004 U.S. parents of children under 18 to explore their perceptions of the manufacturing industry as well as priorities regarding their child's future career path. The survey revealed a general lack of knowledge about the manufacturing industry, with many parents (40%) stating that they do not have any experience with the manufacturing industry, and three out of four (76%) admitting they were unaware that the manufacturing industry is facing a workforce shortage. But the parents changed their minds once presented with facts about the industry's surging growth, strong economic outlook, and wide availability of high paying jobs.

Building a Future Supply Chain

(MH&L – Dave Blanchard: 10-2-18) Every day, every employee at online retail giant Amazon wakes up ready to go to war for their customers. That's how David Bozeman, vice president of Amazon Transportation Services, describes the laser-like focus he and his colleagues have on customer service, or as Bozeman calls it, customer obsession. "We know our customers want things faster," he says. "They want ordering from us to be as predictable and automatic as entering a room and turning on the light." And to make that possible, Amazon taps into deep machine learning technology to identify what its customers want and how they want it. Bozeman was part of a keynote panel discussion at CSCMP Edge 2018, held in Nashville, Tenn., titled, "Consumer Attractions: How Iconic Brands Are Building the Future Supply Chain." Joanne Wright knows a little something about machine learning herself, as her company, IBM, is home to Watson, one of the best-known AI programs in the world. And according to Wright, IBM's vice president of enterprise operations and services, it's intelligent technology that will give companies the supply chain edge they need to

compete and win.

How to Win in The New Era of Innovation

(Innovation Excellence – Greg Satell: 9-27-18) IBM, to a large degree, invented the information technology industry. For the first half of the 20th century, it dominated the market for tabulating machines. Then digital computing posed new challenges and, by the 1950s it had begun to cede ground to UNIVAC, which led to Thomas Watson Jr's \$5 billion gamble to build the System 360. That effort was transformative, but by the 1980s the company had fallen behind again and it was only the crash development of the PC that saved it from irrelevance. Yet this time, it did not return to dominance, but was consistently outmaneuvered by smaller and nimbler competitors, like Microsoft and Intel. Lessons from one era often cannot be applied to the next. In the 50s and 60s, IBM's singular focus proved decisive. A generation later, agility and speed to market became key attributes. Today, we're entering a new era of innovation in which the basis of competition will shift from disruptive to fundamental technologies. Here's what you need to do to win: Widen and Deepen Connections ... Rethink The Scientific Method ... Look for The "Hair on Fire" Use Case ... Focus On Networks Rather Than Nodes.

AI, Personalized Learning Are a Dynamic Duo for K-12 Classrooms

(EdTech Magazine – Hilary Scharton: 9-24-18) During back to school season, so many things are new. New students. New teachers. New learning. New school or district wide initiatives, including new software. Yet, for all that's new, there are certain things that don't change. For the last decade, some of the most common initiatives have been about increasing personalization and using technology. Educators however need to tread carefully or run the risk of technology making teaching and learning less student-centered instead of more and failing to prepare our students to be successful adults. ... The impetus for personalization lies in increasing student achievement. Research conducted in the mid-80's by Benjamin Bloom, of Bloom's Taxonomy fame, found that the most effective model of instruction is one student to one teacher. This almost necessarily customizes the teaching to the learner. Most students are able to achieve at much higher levels with 1:1 teaching, but, of course, the logistics are impractical. The mission of educators then becomes figuring out how to provide 1:1-level results with group instruction -- the problem of scale.

Half of Work Will Be Done by Machines by 2025

(Bloomberg -- *Jeremy Kahn*: 9-20-18) Machines and automated software will handle fully half of all workplace tasks within seven years, a new report from the World Economic Forum (WEF) forecasts. But the group said technologies such as artificial intelligence, robotics, and precision medicine, could create more jobs than they threaten. In a study of executives and specialists across 12 industries, published on Sept. 17, the WEF concluded that this so-called "Fourth Industrial Revolution" could create 133 million jobs globally, while 75 million workers may be displaced. Saadia Zahidi, head of the WEF's Center for the New Economy and Society, said companies had "a moral and economic imperative" to invest in retraining and continuing education for their employees. "Without proactive approaches, businesses and workers may lose out," she said. The report is the latest effort by academics, consultancies, and governments to assess the impact of new technologies on employment. Previous studies, including an earlier one by the WEF, have generally forecast automation will destroy more jobs than it creates. The scale of projected displacement varies enormously between research groups, however.

Manufacturing 4.0: Just add people

(Plant Engineering -- Keith Barr: 9-20-18) Current advances in manufacturing have been branded as Industry 4.0, an idea that accurately describes the rise of automation, robotics, and smart technology but omits the role of human workers. Manufacturing 4.0, in contrast, is a new dynamic era where unlocking and multiplying human ingenuity is central to manufacturing, increasing efficiency, inspiring a new generation of skilled workers, and creating bottom line profitability. Manufacturing in the United States is evolving. Digitalization, improved monitoring and sensors, and faster computing and data networks have created a new, smart factory environment. This evolution has been described as Industry 4.0, the merge of Internet of Things (IoT) technology, automation, and other smart factory technologies. *The problem with the current definition of Industry 4.0 is that it ignores or discards the role of human knowledge and creativity.* It is a weak argument that more data alone is enough to evolve manufacturing, or that robotics and artificial intelligence (AI) can analyze and solve complex issues the way a human can. ... Factory employees aren't going anywhere soon. The question is, what role do the

play going forward?

The 70-20-10 Rule for Innovation

(Innovation Excellence – Greg Satell: 9-20-18) One of the things I always get asked about from the companies I work with is how to manage their innovation resources. Should they bet big on an unproven, but possibly breakthrough idea? Or focus on improving the products that they already know their customers want? Or maybe leveraging existing resources into a new market? This is an important question. As Steve Blank pointed out in an article in Harvard Business Review, it was the failure to deal with this issue that led to many of GE's current problems. The company became so focused on "disruptive opportunities" that it let execution slip. Fortunately, there is a good rule of thumb to follow called the 70-20-10 rule. Many point to a book called The Alchemy of Growth as its origin. Others say that it dates back to the 1950s. Whatever is the case, many organizations find it very useful to guide investment, and it's amazingly simple to learn and apply. Sustaining innovations are improvements to existing products and services that align well with your organization's current strategy. While these types of innovations are often derided as "incremental innovations" that pale in comparison to "disruptive" or "radical" innovations ... they are at the heart of any strong innovation effort.

Artificial intelligence can transform the economy

(Washington Post -- Erik Brynjolfsson, Xiang Hui and Meng Liu: 9-18-18) After half a century of hype and false starts, artificial intelligence may finally be starting to transform the U.S. economy. An example is machine translation, as we found when analyzing eBay's deployment in 2014 of an AI-based tool that learned to translate by digesting millions of lines of eBay data and data from the Web. The aim is to allow eBay sellers and buyers in different countries to more easily connect with one another. The tool detects the location of an eBay user's Internet Protocol address in, say, a Spanish-speaking country and automatically translates the English title of the eBay offering. After eBay unveiled its English-Spanish translator for search queries and item titles, exports on eBay from the United States to Latin America increased by more than 17 percent. Other language pairs produced similarly significant gains. But the machine-learning tool is imperfect — it doesn't translate the entire description of an eBay offering. Refinements would almost certainly drive even larger increases. The eBay machine-

translation results show how two barriers to productivity improvement can be overcome.

Industrial AR Moving to Production

(IoT World Today -- Courtney Bjorlin: 9-17-18) More enterprises are launching augmented reality experience in industrial use cases, according to PTC's head of augmented reality, evidence that the technology is shifting from "buzz to business value." The market should expect a wave of industrial AR experiences for service, sales and manufacturing to be released in the next six to 12 months, both customer-facing use cases and internal use cases for workers, according to PTC's Mike Campbell, executive vice president Augmented Reality Products. Campbell was reflecting on recent research with PTC customers who are deploying IIoT and AR technologies. Among the most popular use cases are those that leverage IIoT data, with businesses finding service and maintenance-centric scenarios "the killer use cases" for AR, according to the report, [The State of Industrial Augmented Reality: A Spotlight on Industrial Innovation](#). Core areas include predictive service and predictive maintenance, according to Campbell. Among the most popular use cases are those that leverage IIoT data, with businesses finding service and maintenance-centric scenarios "the killer use cases for AR ...

Solving Your Cybersecurity Skills Shortage

(VentureBeat – Brian Ahern: 9-16-18) We use the internet for day-to-day activities from work to play to shopping under the assumption that security experts are keeping us safe from cybercriminals. But those security experts are already stretched thin — and the situation promises to get worse. The nonprofit group [ISACA](#) predicts that by 2019, there will be a global shortage of 2 million cybersecurity experts. That is a skills gap crisis of epic proportions, and few organizations or companies have any clue what to do about it. Part of the reason the situation has become so bad is that instead of taking active measures to solve this growing worker shortage, many in the security industry have placed blame elsewhere. Too often, the lack of a talent pipeline is attributed to the failure of universities who supposedly have not done enough to prepare the next generation of cybersecurity experts. Instead of actively seeking measures to enable the development of new workers, companies are more likely to poach top-tier talent from another company, adding an incivility and unending staff changes to the existing talent-shortage problem.

Reviving Tool and Die Making in the IIoT Age

(IW – Laura Putre: 9-14-18) Tool and die making is one of those professions that prompts a layperson to ask, open-mouthed, “does that job still exist?” In 2016, nearly 75% of tool and die makers were over age 45, according to study from by the Center for Automotive Research. Only 2% were younger than 35. Two of five are either already eligible to retire, or will be in the next 5 to 7 years. Although the job numbers are dwindling, tool and die making is still a necessary skill in the U.S. where automakers and aerospace companies need precision machinists and moldmakers to do the fine work onsite or near their operations. With high schools no longer offering vocational training and apprenticeship programs a shadow of what they were 30 or 40 years ago, the National Tooling and Machining Association, which represents precision custom manufacturers, has ramped up its training in recent years. A newish online curriculum called NTMA-U offers coursework in metallurgy, moldmaking, dimensional metrology and advanced diemaking. It also runs the National Institute of Metalworking Skills (NIMS), a credentialing program for precision machinists who have completed specialized training through their schools or companies.

How Technology Is Leading Us to New Climate Change Solutions

(Triple Pundit – Fred Krupp: 9-11-18) A fresh wave of technological innovation is deepening our understanding of tough environmental challenges—and giving us new ways to solve them. As thousands of business leaders and policymakers gather in San Francisco this month for the Global Climate Action Summit, these game-changing innovations will be showing up all over town. One example will be new approaches to measuring and reducing emissions of methane, a potent greenhouse gas that has pound-for-pound more than 80 times the near-term warming power of carbon dioxide. Human-made methane emissions are responsible for a quarter of all the warming we’re experiencing today. That’s a problem, but it’s also an enormous opportunity. One of the largest sources of methane is the oil and gas industry. Indeed, natural gas is mostly methane. And it turns out that reducing these industrial methane emissions is the fastest, most cost effective way to slow the rate of warming, even as we continue working hard to decarbonize our energy system. But we didn’t know that until recently—or at least we couldn’t prove it—because nobody knew how

much methane was coming from the oil and gas sector.

DARPA announces \$2B campaign to develop next wave of AI technologies

(Intelligence Community News – Loren Blinde: 9-11-18) To address the limitations of first and second wave AI technologies, DARPA seeks to explore new theories and applications that could make it possible for machines to adapt to changing situations. DARPA sees this next generation of AI as a third wave of technological advance, one of contextual adaptation. To better define a path forward, DARPA announced on September 7 a multi-year investment of more than \$2 billion in new and existing programs called the “[AI Next](#)” campaign. Agency director, Dr. Steven Walker, officially unveiled the large-scale effort during closing remarks at DARPA’s D60 Symposium that was held last week at the Gaylord Convention Center in National Harbor, MD. “With AI Next, we are making multiple research investments aimed at transforming computers from specialized tools to partners in problem-solving,” said Dr. Walker. “Today, machines lack contextual reasoning capabilities and their training must cover every eventuality. *We want to explore how machines can acquire human-like communication and reasoning capabilities, with the ability to recognize new situation and environments and adapt to them.*”

Toyota grants \$2M to launch new STEM-focused school

(Dallas Business Journal – Evan Hooper: 9-11-18) Toyota USA Foundation is granting \$2 million to help launch a new school in West Dallas, the company announced. The money will go to Southern Methodist University’s Annette Caldwell Simmons School of Education and Human Development, which will develop a curriculum focused on science, technology, engineering and math for the new school. The West Dallas school, which doesn't have a name yet, will be operated and staffed by Dallas Independent School District and the DISD Office of Transformation & Innovation. It will open in fall 2021 and will serve as a feeder school for Pinkston High School. “We want to help increase access to opportunity, connecting students to the millions of STEM jobs that exist today, and the many more that will be created as industry advances,” said [Mike Goss](#), president of Toyota USA Foundation, in a prepared statement. A company financially backing the launch of a school is rare. Representatives from the three parties involved said this is the first project of its kind they've worked on.

Companies Invest in Preparing K–12 Students as Older Sectors Become Tech Integrated

(EdTech – Eli Zimmerman: 9-10-18) Technology giants are working to bolster K–12 education in Middle America, targeting subjects that will help young students learn the skills they’ll need as traditional jobs like agriculture and manufacturing evolve with the rise of emerging technology. Work in rural, agricultural America has seen major disruption from innovative technology, globalization and a shift away from resources like coal and steel. At the same time, major companies are recognizing the potential of a generation that will be looking for jobs as the market for jobs in these fields changes — and offers new options to workers and employers. “It is our job as parents, educators and technology creators to encourage children to test the waters of STEM, whether they simply want exposure to science and technology, or they have a curiosity as to how to design and launch a rocket,” Ann Woo, senior director of corporate citizenship at [Samsung](#) Electronics North America, wrote in the [Houston Business Journal](#). “Many science and engineering ideas come to life through the devices we hold in our hands, but cutting-edge technologies aren’t easily available to every young person.”

HP Unveils 3-D Metal Printer in Bid to Expand in Manufacturing

(IW -- Nico Grant: 9-10-18) HP Inc., the largest maker of personal computers, is making a big push into the manufacturing industry with its first printer that can churn out 3-D metal parts. [HP](#) is unveiling the Metal Jet printer, and some early customers, at a manufacturing trade show (IMTS 2018) in Chicago on Monday. Engineering firm GKN Plc is using the printers in its factories to produce parts for companies including Volkswagen AG, one of the biggest automakers. GKN makes more than 3 billion components a year and expects to print millions of production-grade HP Metal Jet parts for customers as early as next year, HP said in a statement. “We are in the midst of a digital industrial revolution that is transforming the \$12 trillion manufacturing industry,” HP Chief Executive Officer Dion Weisler said. “HP has helped lead this transformation by pioneering the 3-D mass production of plastic parts and we are now doubling down with HP Metal Jet.” Since its split from Hewlett Packard Enterprise Co., HP has redoubled efforts to expand beyond its core PC and paper printer businesses. 3-D

printing is a big part of this plan.

MANUFACTURING FACT OF THE MONTH

World Trade in manufactured goods has doubled between 2000 and 2014.

World Trade in manufactured goods increased from \$4.8 trillion to \$12.2 trillion in just 14 years. U.S. consumption of manufactured goods (domestic shipments and imports) equaled \$4.1 trillion in 2014, equaling about 34 percent of global trade in manufactured goods.

(Source: World Trade Organization)

For More Information on IMS and its services please contact IMS Inter-Regional Secretariat Managing Director, Dan Nagy (dnagy@ims.org) or IMS ISC Chairman, Jack Harris (jack.harris@ims.org).