

# Making Profitability and Sustainability a Reality for a Better World

aPriori's Manufacturing Insights Conference 2022

## Key takeaways

aPriori's key message is that, with respect to sustainability, it's time to move from intent to impact.

aPriori announced aP Sustainability Insights, scheduled for release in Q1 2023, which garnered a lot of attention from attendees.

aPriori announced aP Workspace scheduled for release in Q1 2023, with the promise of greater collaboration across the extended enterprise.

aPriori announced the next major releases of aP Pro, aP Design, and aP Analytics in March 2023.

Presenters at the conference emphasized the importance of applying early product design feedback, which improves manufacturability, profitability, and sustainability.

Sustainable design is the key to identifying costly outliers, achieving a reduced carbon footprint.

CIMdata attended aPriori's Manufacturing Insights Conference 2022 in Boston, MA on November 15-16, 2022. This was a return to an in-person event for the first time since 2019, with approximately 200 attendees filling the halls, exhibit space, and meeting rooms at the Boston Marriott Long Wharf. aPriori is a leading digital manufacturing platform that combines product cost management, design for manufacturing, and supplier collaboration. They are releasing two new products, aP Sustainability Insights and aP Workspace, merging cost and carbon equivalents to enable companies to reduce their carbon footprint while maintaining profitability with greater collaboration using their Manufacturing Insights Platform.<sup>1</sup>

During her keynote, aPriori's CEO, Ms. Stephanie Feraday, stated that aPriori's focus is on making profitability and sustainability a reality for a better world. Ms. Feraday reviewed the challenges facing industrial manufacturers such as inflation and margin pressures, mitigating supply chain disruption, closing the labor gap skills shortage, and the need to drive sustainability by reducing carbon emissions.

Regarding the first challenge, she made the point that few organizations create enough capacity to address the growth necessary to pursue innovation opportunities. aPriori enables companies to optimize cost while creating value by providing stakeholders with better insights on should cost, Design for Manufacturing (DFM), Design for Sustainability, and machine selection for process routing. aPriori

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<sup>1</sup> Travel and/or other expenses related to this commentary were provided by aPriori.

supports these with two applications: aP Design, which is a role-based application for Design Engineers, and aP Pro, a role-based application for experts in cost, manufacturability, and sustainability. aPriori offers a wide range of manufacturing process models such as forging, additive, extrusions, welding, machining, plastic molding, casting, tube fabrication, and many others.

Ms. Feraday discussed mitigating supply chain risks, reminding us that even a delay of only thirty days has an impact on profitability, and that building resilient and efficient supply chains is critical to mitigating current and future disruptions. She discussed achieving supply chain resilience with digital twins of the most critical parts of the supply chain, creating “what if” scenarios, the need to share data with suppliers, and consideration of ring fencing for critical parts of the supply chain team. She reviewed how Alstom used aPriori to create a digital supply chain, in which Alstom runs a manufacturing simulation and then issues a PO to a supplier for the amount calculated by aPriori. This has achieved 40% savings on recurring costs on over 100K parts.

Regarding the labor and skills gap, Ms. Feraday reviewed survey results that demonstrate students are prepared for CAD, but the vast majority are not prepared for designs that can be manufactured. Her recommendations are to adopt design for manufacturability and Design to Cost (DTC) practices, accelerate product development leveraging design best practices, automate design analysis processes to deliver cost and manufacturability impact at scale, and to share data for better collaboration across organizations. To do this, aPriori offers aP Generate, which enables integration to other applications including major PLM solutions.

Ms. Feraday highlighted survey results that point to the importance of collaboration as being key to personal productivity. aPriori plans to release aP Workspace in Q1 2023. This provides design engineers, managers, cost experts, sourcing, and other experts with real-time collaboration and task management.

The last challenge Ms. Feraday covered was driving sustainability impact. Quoting Bain & Company, “only 12% of all corporate change efforts fully succeed; the success rate for sustainability initiatives is substantially lower—a paltry 4%.” Ms. Feraday made the point that the intent is there, but what we need now is impact. Manufacturers represent 54% of the world’s energy consumption and are responsible for one-fifth of global emissions. Increases in efficiency driven by technology can help reduce materials consumption and CO<sub>2</sub> emissions.<sup>2</sup>

Ms. Feraday closed with her main message—now is the time to move sustainability from intent to impact as consumers are demanding more sustainable products. There is increased pressure from new legislation and regulations (i.e., EU Taxonomy, SEC) and we no longer need complex and time-consuming full lifecycle assessments. aPriori will now be able to calculate carbon equivalents (CO<sub>2</sub>e) at the same time as cost, enabling product development to make better decisions early in design, thereby improving sustainability without harming productivity or profitability. She announced the next major releases of aP Pro, aP Design, and aP Analytics would be March 2023.

Mr. Tristan Abend, a Manager in Value Engineering from Carrier Corporation, presented a case study of how they transformed their cost engineering process across multiple business units. This was one of many case studies presented by aPriori customers highlighting how they gained efficiency using the aPriori Manufacturing Insights Platform.

Mr. Rob Lidster, former Chief Procurement Officer of GE Appliances and aPriori’s Ms. Feraday sat down for a “Fireside Chat on Strategies for Overcoming Challenges with Today’s Supply Chain.” Mr. Lidster described how they were well along their way to adding should cost modeling when COVID hit causing them to become very tactical. This impacted not just tier 1 and tier 2 suppliers, but down to tier 4 and 5.

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<sup>2</sup> <https://www.weforum.org/impact/carbon-footprint-manufacturing-industry/>

One lesson learned was to multi-source and lessen your risk by diversifying your suppliers across multiple countries. Another was to focus on the total landed cost of ownership instead of trying to lower piece part costs. This highlighted the need to have more strategic sourcing, and in some cases, use zero RFQ sourcing where there is more proactive transparency between the OEM and supplier. In terms of new data that he wished he had, Mr. Lidster focused on value chain analysis and design for sustainability.

Mr. Lidster discussed how supply chain disruptions have been an enormous challenge. Another point was transitioning to more scenario planning to overcome unforeseen disruptions. He made the point that having a competitive advantage is no longer just about cost reduction. During the discussion, Mr. Lidster described the opportunity to both drive efficiency in the supply chain and to own the disruption. He also explained the importance of being resilient to market disruptions and become a fast follower. And lastly to be the disruptor—support new business models or re-imagine existing ones. Such as with skills, there is a bigger emphasis on influencers and people that can work end-to-end with digitalization skills with both technical and business background and emphasize technical training for non-technical people.

Mr. Lidster discussed the importance of using PLM to understand the differences, not just in cost, but form, fit, and function to determine how to move from a more tactical approach to a strategic approach where focus is more on allocation and expansion on margins and less on cost out.

His view is that ESG regulations will only get stronger, driving the need to design for sustainability, especially regarding Scope 3 emissions. He believed this needed to be taken into account as we plan for near shoring and onshoring.

The aPriori team of Mr. Chris Jeznach, Mr. Mark Rushton, Mr. Cormac Eastwood, Mr. Barton Phinney, and Mr. Gibson Peters demoed a scenario that involved a design engineer, cost engineer, sustainability expert, and a sourcing manager using the aPriori Manufacturing Insights Platform and introducing the aP Workspace application to collaborate and manage tasks more effectively and in less time. In this scenario, they looked at three aspects of manufacturing insights: cost, improved performance (via DFM), and sustainability or reducing the product carbon footprint, plus the issue of unlocking these insights, which are typically siloed. This was an impressive presentation of how a collaborative team could gain insights faster, reduce risk early, and make better decisions faster.

Mr. Chris Platz, a Global Commodity Category Manager at Woodward, presented how digitalization helps them address labor shortages in the aerospace and defense market. He did an excellent job describing the labor shortage as it impacts machining and manufacturing. According to Gartner, today 45% of machinists in the US are 45 years old or older. According to the National Association of Manufacturers, 2.1 million manufacturing jobs could be unfilled by 2030. He covered the three areas that Woodward is focusing on to make themselves more competitive: Digital factories, emerging regions, and Cobots. He compared the old RFQ process where engineering and sourcing working in a linear process took 10 weeks versus a new one-week “digital partnering” process where, if the partner is selected, they will win 100% of the opportunities presented because they have digitalized the supplier’s capabilities, so the right parts are being done by the right source. Cobots produce high-quality and lower-risk parts by augmenting the machine labor pool, driving to a 6-8:1 vs. a 1-2:1 (machine to man) ratio.

Mr. Carsten Hochmuth, Director of Product Management at aPriori, moderated a panel discussion titled “Partnering for Sustainability” with a sustainability innovation program lead at Google, a supplier development engineer at Heliogen, a value engineering manager at Carrier Corporation; a technical manager of value engineering at Scania Group, and a vice president at Vestas Wind Systems. Carsten reviewed COP27, which said 24% of GHG emissions comes from manufacturing. Each of the panelists introduced their companies and what they are doing in terms of sustainability. This was a great discussion

on how they think about sustainability with a lot of questions from the audience. Clearly, sustainability was a hot topic with the conference attendees.

Mr. Mark Rushton, Senior Product Marketing Manager at aPriori, presented Design for Sustainability, reviewing how products can be designed with a lower environmental impact. Mr. Rushton reviewed sustainable design, the differences between eco-design and circular design, and defined a sustainable product or company. He reviewed benchmarking products and how design decisions impact 80% of the environmental impact of a product. He provided a detailed look at the entire product lifecycle, explaining direct emissions (scope 1), indirect (scope 2), and both upstream supply chain indirect and downstream supply chain indirect (scope 3) emissions. He discussed how the location of manufacturing, the manufacturing process and holistic design change the potential impact of GHG emissions. Of particular importance was Mr. Rushton's review of how early design has the biggest impact on potential CO<sub>2</sub>e reduction and cost versus later changes where the costs and timeline would increase. He then demonstrated this by giving examples of how manufacturing location is a key driver for processing CO<sub>2</sub>e. Mr. Rushton ended with his key point, which is that you must take a holistic approach to reducing CO<sub>2</sub>e and that sustainable design is key to a more sustainable product.

This is a small piece of the content presented at aPriori's Manufacturing Insights Conference 2022. The customers were excited about the new product offerings at the in-person conference.

## Conclusion

CIMdata believes aPriori has demonstrated a solid approach to helping manufacturers who are struggling to manufacture "green" products by merging CO<sub>2</sub>e emissions data with should cost and design for manufacturing. This enables a company to see both cost and CO<sub>2</sub>e data in a PLM solution as well as aPriori's Manufacturing Insights Platform. This provides companies with the ability to evaluate trade-offs, optimize product design and production for cost, and help enable more resilient supply chains. CIMdata believes this could help manufacturers in many industries, reduce their carbon footprint and measure greenhouse emissions throughout a manufacturer's supply chain (scope 3).

CIMdata looks forward to the new releases of aP Pro, aP Design, and aP Analytics as well as the product launches of aP Sustainability Insights and aP Workspace. CIMdata agrees with Ms. Feraday that now is the time to move sustainability from intent to impact, and that providing the ability to calculate cost at the same time as CO<sub>2</sub>e will enable companies to make better decisions early on in design, which will lead to more sustainable products without harming productivity or profitability.

## About CIMdata

CIMdata, an independent worldwide firm, provides strategic management consulting to maximize an enterprise's ability to design, deliver, and support innovative products and services by identifying and implementing appropriate digital initiatives. For nearly forty years, CIMdata has provided industrial organizations and providers of technologies and services with world-class knowledge, expertise, and best-practice methods on a broad set of product lifecycle management (PLM) solutions and the digital transformation they enable. CIMdata also offers research, subscription services, publications, and education through certificate programs and international conferences. To learn more, visit [www.CIMdata.com](http://www.CIMdata.com) or email [info@CIMdata.com](mailto:info@CIMdata.com).