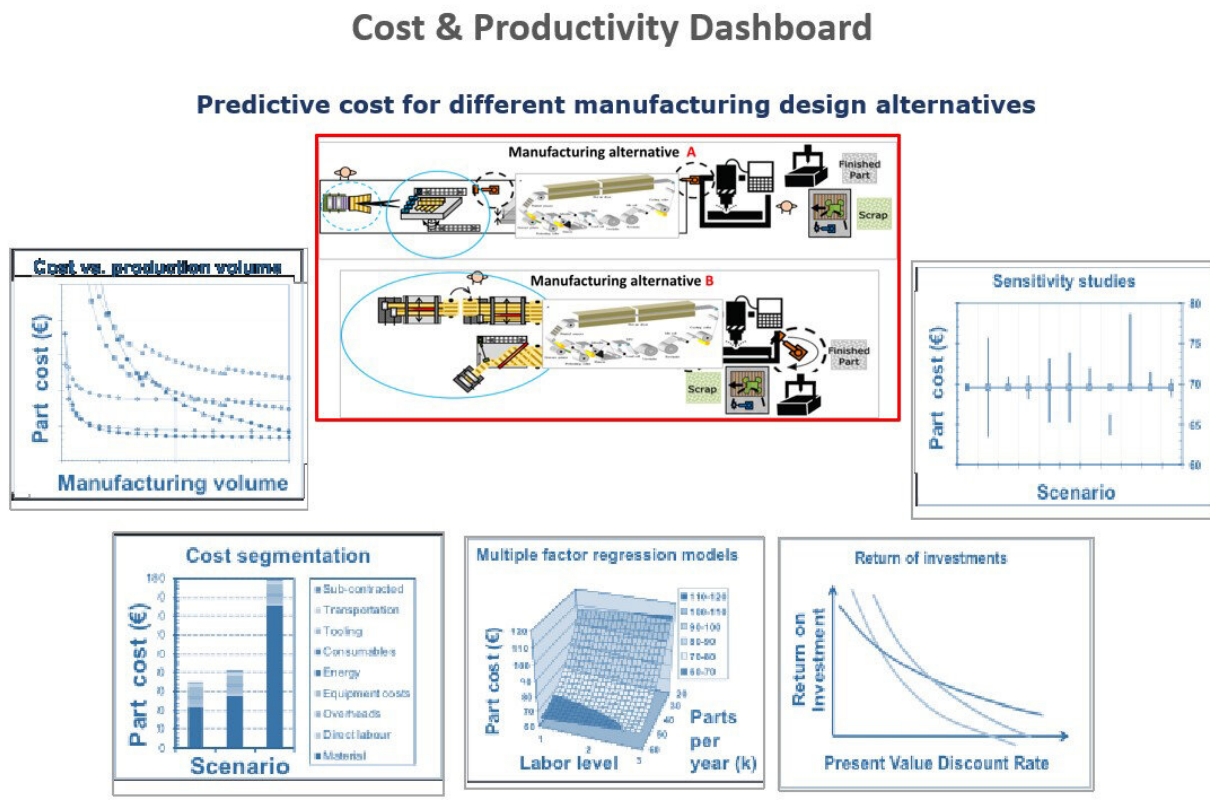# Software solution predicts costs for manufacturers

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Innovators at the Indiana Next Generation Manufacturing Competitiveness Center, or IN-MaC, created software to help manufacturers better predict overall costs and the costs associated with layout alternatives and adjustments to their manufacturing processes. Credit: Purdue University

New software designed to help manufacturers better predict and adjust

costs may assist organizers one day with huge events such as the Olympic Games.

Innovators at the Indiana Next Generation Manufacturing Competitiveness Center, or IN-MaC, created the software to help manufacturers better predict overall costs and the costs associated with layout alternatives and adjustments to their manufacturing processes.

"This software came after I spent 15 years in the composite manufacturing world and saw wonderful products being produced that ended up being too expensive to bring to market," said Jan-Anders Mansson, a Purdue distinguished professor of chemical and materials engineering who serves as co-executive director of IN-MaC. "This software is a predictive cost-modeling tool aimed to help manufacturers better understand the overall costs of producing a product, and how changes to the manufacturing process can affect those costs."

The software tool uses a drag-and-drop palette of process steps that allows a user to vary the manufacturing process line with alternate configurations, such as equipment, robots and employees, to see how changes affect the final cost of the product. Each process step is characterized by cost parameters which can be adjusted to study the effects on overall manufacturing costs.

"This software helps manufacturers strategically plan their operations and then evaluate changes, all within the scope of understanding how everything affects the total cost," said Ben Haley, the lead network engineer for IN-MaC, who worked with Mansson to develop the technology.

Haley also reconfigured the software to share with the International Olympic Committee. He used data from the 2016 Games in Rio de Janeiro to demonstrate how the software could help event planners

determine costs and configurations when dealing with crowds, security, transportation arrivals and other parameters.

Mansson is the head of the Manufacturing Design Laboratory, a part of the Indiana Manufacturing Institute (IMI), located at Purdue Research Foundation's Purdue Research Park of West Lafayette.

The software and its continued development are part of several projects underway at IN-MaC and IMI focused on the future of manufacturing, as well as proposed future efforts supported by the Department of Energy and the National Science Foundation.

Haley said the team is working on a web version of the system, along with connecting it to real-time data sensors on manufacturing equipment. The team also is exploring ways to integrate machine learning and deep learning into their solution.

Provided by Purdue University