



## Traffic Management



Boeing Commercial Airplanes (BCA), the world's leading manufacturer of commercial jetliners, has recently launched the 777X, a derivative of Boeing's flagship 777 aircraft. The 777X will be the largest and most efficient twin-engine jet in the world and will have the longest composite material wings ever produced. These wing components for the 777X will be fabricated in the Composite Wing Center (CWC), a brand new, state-of-the-art factory in Everett, Washington.

In order to build a full set of composite wing components at the CWC, nearly a dozen transportation methods will be implemented to conduct over 1700 movements for each airplane, which involves substantial interaction between overhead cranes, automated vehicles, and human operators. This material movement is further complicated due to the large size of the components and the speed limitations of the transportation methods. The Tauber team was brought in for a 14-week project to assess how this traffic could impact production and to provide solutions to mitigate production risks.

The team began by identifying the key stakeholders and conducting interviews with the industrial engineers of each of the wing components in order to develop an extensive process map that captured every movement required for material flow in the building. Due to the facility's early stage of development, it was also necessary for the team to identify critical assumptions regarding the future state of the CWC and to develop a dynamic tool to assess how the utilization of the transportation aisles matures over time under various conditions.

Analysis of the process map revealed that severe over utilization of the transportation aisles would occur, preventing Boeing from meeting its monthly 777X production targets. In response, the team provided a solution to immediately re-route automated vehicle paths to reduce traffic utilization in the high impact areas. These re-routes will reduce the utilization of the transportation aisles by 12%, allowing the CWC to produce an additional full set of wing components each month. Next, the team conducted 5 benchmarking trips to other Boeing facilities, and provided recommendations to implement a dynamic system for scheduling production movements and a communication protocol for mitigating cross-product traffic delays. Finally, the team led a cross-functional

workshop that established how to prioritize traffic conflicts, which resulted in a defined list of future factory data requirements.

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"In 2016, Boeing received the Longevity Award for 20 years of team project sponsorship with the Tauber Institute for Global Operations."  
—Diana Crossley, Managing Director

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The Tauber Team identified significant traffic impacts to production and recommended vehicle reroutes, communication protocols, and traffic scheduling to eliminate production risks. Collectively, implementation of these recommendations will result in millions of dollars in annual cost savings.



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L to R: Bennie Williams, Katie Leikhim, Alberto Arguello (MBA'17), Susan Biggart (EGL BSE/MSE in Industrial and Operation Engineering), Travis Parson (EGL MSE in Electrical and Computer Engineering) and Scott Foreman. Photographer: P. Dattilo

## Boeing 777X Project Team

### Students

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## About Tauber Team Projects

Each two to three person Tauber Team consists of graduate Engineering, MBA, and/or MSCM students. Along with receiving high-level corporate support from the sponsoring company, each team is advised by a College of Engineering and a Ross School of Business faculty member and overseen by a Tauber Institute Co-Director. The projects begin on-site in May and continue for 14 weeks. Students present the results of their projects and compete for over \$40,000 in scholarships at the U-M Tauber Institute's annual *Spotlight!* event, held each September in Ann Arbor, Michigan. *Spotlight!* provides outstanding opportunities for students and corporate partners to establish relationships while exploring innovations in operations and manufacturing.

The 2016 Tauber Team Projects resulted in \$460 million in savings according to sponsoring company calculations, an average of \$14.4 million per project over three years.

To learn more about the Tauber Institute for Global Operations, visit [tauber.umich.edu](http://tauber.umich.edu) or contact us at 734-647-1333.



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