

SEMINAR SERIES  
Department of Quantitative Analysis and Operations Management  
College of Business, University of Cincinnati

**Cycle Time Predictions with Performance Guarantees**

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**Friday, May 25, 2007**

**1:30 p.m.**

**214 Lindner Hall**

There is an opportunity to apply cycle time prediction models to support alerting functions in today's data-rich, supply chain environments. The standard alerting approach is based on using mean values to predict cycle time on an item by item basis. A cycle time prediction based on mean values has a performance guarantee of something like 50%. In alerting applications, performance guarantees with percentages like 80% or 90% are more useful for managerial decision making. In particular, alerts attempt to identify special cases that managers must act on to prevent disruptions in supply chain activity. In this talk I will describe my work with NCR/Teradata to develop cycle time prediction models that leverage a large-scale data warehouse of operational data, and an understanding of operations, to achieve better alerting. To justify our recommendations, we use classic queueing models to demonstrate how our modified, percentile-based, cycle time predictions achieve performance guarantees. Furthermore, I will show how prediction errors can be significantly reduced by using insights from classic operational models to enhance the predictions.

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Dr. Frank W. Ciarallo is an Associate Professor in the Department of Biomedical, Industrial and Human Factors Engineering at Wright State University. He has been on the faculty at Wright State since 2003. Prior to coming to Wright State his background includes time on the faculty at the University of Arizona in Systems and Industrial Engineering, as well as a visitor at Cal-Berkeley in the Haas School of Business. He has a B.S. degree in electrical engineering, with a double degree in engineering and public policy from Carnegie Mellon. He has an M.S. and a Ph.D. in industrial administration, also from Carnegie Mellon. Dr. Ciarallo's research has been funded by sources such as the National Science Foundation, the Arizona and Ohio Departments of Transportation, and NCR/Teradata Corp. His publications have appeared in journals such as Management Science, International Journal of Production Research, and IEEE Transactions on Robotics and Automation. His research interests include using models incorporating uncertainty to improve supply chain operations.

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