Manufacturing managers face increasing pressure to reduce inventories across the supply chain. However, in complex supply chains it is not always obvious where to hold safety stock to minimize inventory costs and provide a high level of service to the final customer. In this talk we develop a framework for modeling safety stock in a supply chain that is subject to demand or forecast uncertainty. Key assumptions are that we can model the supply chain as a network, that each stage in the supply chain operates with a periodic-review base-stock policy, that demand is bounded, and that there is a guaranteed service time between every stage and its customers. We develop an optimization algorithm for the placement of strategic safety stock for supply chains that can be modeled as spanning trees.

As a partial validation of the model, we describe its successful application by product flow teams at Eastman Kodak. We discuss how these flow teams have used the model to reduce finished goods inventory, target cycle time reduction efforts and determine component inventories.

The final portion of the talk will discuss the challenges and opportunities that come from working on industry-sponsored research.

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