

POMS 2016 Martin K. Starr Excellence in Production and Operations Management Practice Award

The Martin K. Starr Excellence in Production and Operations Management Practice Award has been instituted by the Production and Operations Management Society (POMS) to recognize contributions made to the field of Production and Operations Management (POM) by POM practitioners. This award is based on exceptional quality of contributions to the POM field and is presented to an individual who has done an exceptional job in making advances in the practice of POM, promoting the profession, making an impact, and building a linkage between industry and academics. These contributions are not restricted to a single organization, and may span time spent at several organizations during the career of the candidate. The cumulative contributions made by the candidate during his/her career are evaluated. It is an international award, and is open to all POM practitioners from around the world. It is POMS' most prestigious award to recognize a practitioner and an industry leader. The POMS Board in its annual meeting held on April 28, 2006 in Boston, U.S.A. unanimously approved that the award be named after Dr. Martin K. Starr. The POMS Board in its deliberations noted that Dr. Starr has contributed to POMS and its activities since its inception and has been a constant source of guidance and inspiration to POMS. Naming this award after him is indeed a great recognition of his services to the POM profession in general and the POM Society in particular.

The first eleven recipients of the award are: Mr. Pier Luigi Sigismondi (2015), Dr. Dean Bartles (2014), Mr. Josué Christiano Gomes da Silva (2014), Mr. Thomas Debrowski (2013), Dr. Gang Yu (2012), Mr. Edwin Keh (2011), Dr. Krishan Kumar (2010), Ms. Erin J. Wallace (2009), Dr. Dino Petrarolo (2008), Dr. Corey A. Billington (2007) and Mr. Lee Cockerell (2006).

All eleven recipients are esteemed members of the POM field. Mr. Pier Luigi Sigismondi is the Chief Supply Chain Officer Unilever, and is a member of the Unilever Leadership Executive. Dr. Dean Bartles is currently serving as the General Manager of the Ordnance and Tactical Systems Division at General Dynamics. Mr. Josué Christiano Gomes da Silva is the Chairman and CEO of Coteminas, a global bed and bath home fashion products company based in Brazil. Mr. Thomas Debrowski was Executive Vice President, Worldwide Operations, Mattel, Inc. Dr. Gang Yu is the co-founder and former Chairman of New Heights Corporation and The Store Corporation (www.yihaodian.com). He is also an Adjunct Professor at Beijing University, Tsinghua University, The Chinese University of Hong Kong, Wuhan University, and Shanghai Jiao Tong University. Mr. Edwin Keh served as Chief Operating Officer and Senior Vice President of Wal-Mart Global Procurement. Dr. Krishan Kumar is the Director of Maruti Automotive Center of Excellence, Maruti Suzuki India Limited, the largest automobile manufacturer in South Asia. Ms. Erin J. Wallace serves as Senior Vice President of Operations Integration Line of Business for Walt Disney Parks & Resorts. Dr. Dino Petrarolo is the Managing Director at Shatterprufe, South Africa's Automotive Glass Manufacturer; and prior to his current position, Dr. Petrarolo served as the Global Head of Manufacturing Development, SABMiller pic, Sandton, South Africa. Dr. Corey Billington is Professor of Operation Management and Procurement at IMD in Lausanne, Switzerland; and prior to his current position, he served as a Senior Vice President for Hewlett Packard (HP). Mr. Lee Cockerell is a consultant, author, speaker, and a retired Executive Vice President of Operations for the Walt Disney World Company.

The committee for the 2016 award unanimously selected one candidate from a slate of excellent candidates — Dr. Russell Allgor.

Dr. Russell Allgor

Chief Scientist, Worldwide Operations and Amazon Logistics

Dr. Russell Allgor started his career in 1988 when he joined Air Products and Chemicals after graduating from Princeton University with a degree in chemical engineering. At Air Products he focused on process design, simulation, and optimization. He built software tools to enable other engineers to improve their process designs. He left to continue his education on process design and optimization by pursuing a PhD in Chemical Engineering from Massachusetts Institute of Technology, where his research focused on modeling and optimization of discrete continuous dynamic systems.



In 1997, Russell moved to Germany to work in the applied research and development department at Bayer AG's headquarters in Leverkusen. He worked on the design and optimization of batch and continuous chemical processes. He established that modeling and optimization techniques could be used to improve the performance of many of Bayer's batch manufacturing processes that traditionally were managed through intuition and experimentation. One process manufactured the color red for Legos, which delights his daughter to no end.

In 2000, a young startup, Amazon.com, was beginning to mature their operations, and leadership familiar with Russell's skills asked him to come to Amazon's headquarters in Seattle and start a strategic planning and optimization group. He started by building a team of like-minded scientists to tackle many of Amazon's supply chain challenges. His early efforts established rigorous and systematic approaches to inventory placement and improved understanding of the supply chain needs and capabilities in this new, innovative business model. Some key contributions were:

Established systematic model-based processes to plan capacity and expand and manage the North American (NA) network of fulfillment centers. His team extended the processes employed for NA to Europe and Japan.

Created tools to manage the network more efficiently during peak and off peak periods by load balancing across fulfillment centers in real time. Created a feedback control model to manage workloads in real time to leverage Amazon's network of fulfillment centers in order to deliver to customers in spite of localized disruptions such as labor shortages or snow storms.

Identified that the algorithm in the order assignment software would not scale with the expanding network and convinced the technology team of the need to redesign the system. Developed an alternative algorithm based on a set partition heuristic guaranteed to scale that demonstrated nearly exact solutions in practice and implemented this algorithm in the new software system.

Since 2010, Russell and his team have focused more broadly on Amazon's global operations and logistics. This talented group continues to apply advanced algorithms and optimization techniques to the design and improvement of Amazon's fulfillment center and logistics operations. They explore new frontiers in the application of modeling, simulation, and optimization methods with significant results. They focus on problems including network design and facility location, inventory planning, order assignment, equipment and process design, and process control within and across facilities. Ideas and algorithms developed by

Russell and his team have returned hundreds of millions of dollars to Amazon's bottom line. Some of his specific contributions are:

Designed the network and quantified the benefits of investing in sortation capacity across North America to ensure outbound transportation capacity at peak and leverage both USPS and local last mile courier capacity to provide deliveries to Amazon customers seven days a week. Implementation of these designs have saved tens of millions of dollars in year over year transportation costs.

Identified ways to quantify the value of an inventory distribution across the FC network (inventory balance) using simple optimization models. Leveraged this concept to modify fulfillment decisions based on the expected impact of that decision on future fulfillment costs (opportunity cost). The supply chain technology team has rolled out these concepts globally.

Developed models for inventory placement that formalize the interactions (e.g., affinity) among product groups at the planning stage. Solutions from these models were implemented to reconfigure the inventory placement to improve the inventory balance by 17%, reducing split shipments, and reducing outbound shipping cost per unit.

Developed optimization and simulation algorithms to design traditional storage locations and Amazon Robotics Pods to align the size distribution of storage locations to the expected product size mix to improve storage efficiency, enabling Amazon's FCs to store twice as much inventory as those designed five years earlier.

Russell leverages scientific knowledge and business judgement to develop implementable solutions that drive value. He has assembled a team with a diverse set of skills that work together to solve Amazon's increasingly complex problems as the business evolves and grows. He believes in the value of combining mathematical rigor and creative design with operational pragmatism and applies this to the projects his team tackles.

Russell is originally from Ocean, New Jersey and currently resides with his family in Seattle, Washington.

The committee for this year's award consists of the following:

- Edward Anderson, Professor, University of Texas at Austin, Austin, Texas, U.S.A. (Chair)
- Martin K. Starr, Emeritus Professor, Rollins College, Winter Park, Florida, U.S.A, and Emeritus Professor, Columbia University, New York, U.S.A.
- Nada Sanders, Professor, Northeastern University, Boston, Massachusetts, U.S.A.
- Gerard Burke, Associate Professor, Georgia Southern University, Statesboro, Georgia, U.S.A.
- Sushil Gupta, Professor, Florida International University, Miami, Florida, U.S.A