



Steelcase WorkLife Centers around the world offer an array of applications and floor-plate designs (WorkLife Chicago).

# Steelcase Inc.

**Advanced Analytics team helps global company unlock human promise by creating great work experiences, wherever work happens.**

**By Tim Merkle**

**For more than 100 years, Steelcase Inc. has helped create great experiences for the world's leading organizations,** across industries, through its family of brands including Steelcase, Coalesse, Design-tex, PolyVision and Turnstone. Together, they offer a comprehensive portfolio of architecture, furniture and technology products and services designed to unlock human promise and support social, economic and environmental sustainability. Steelcase is globally accessible through a network of channels, including more than 800 dealer locations. Steelcase is a global, industry-leading and publicly traded company with fiscal 2015 revenue of \$3.1 billion.

As the global leader in furnishing workplace environments, Steelcase has a unique ability to satisfy the needs of its customers anywhere in the world, wherever they work. The company's products and services are inspired by more than 100 years of insight gained from serving the world's leading organizations.

Headquartered in Grand Rapids, Mich., Steelcase's global reach provides a broad context for understanding emerging issues and what it means to be a responsible corporate citizen. In a fast-changing world that's more interdependent every day, Steelcase provides insights, products and services that help people do their best work. Unlocking human promise is the fundamental principle on which the company was founded in 1912, and it remains the focus today.

Steelcase began as The Metal Office Furniture Company in Grand Rapids and received its first patent in 1914 for a steel wastebasket – a major

# All About the Roundtable

innovation at a time when straw wastebaskets were a serious office fire hazard. That led to metal desks, and Steelcase has led the way with product and service innovations ever since. Across borders, time zones and languages, Steelcase's global network of capabilities – unmatched in its industry – gives the company roots and reach to provide products to its customers all over the world.

From environmental leadership to supporting diversity to strengthening communities, and spearheading efforts to improve urban schools, Steelcase invests in helping people realize possibilities. Through its own efforts and collaboration with others, Steelcase is recognized as a company that creates social, economic and environmentally sustainable value. As a global company, Steelcase is dedicated to creating relationships with diverse businesses to create a better, more sustainable world.

## Building an Advanced Analytics Team

In 2013, Steelcase formalized its commitment to become data-driven by establishing a new Advanced Analytics team. The team was organized not just to solve problems, but also to think through the solutions differently, specifically with data. As Steelcase enters its second century of operations, it strives to learn more from its data and leverage it to its fullest potential. To transform data to insights and drive action effectively, the Advanced Analytics team must approach data with greater care, and think past the initial transactional use of data and realize the greater value on “Day 2” and beyond. New people, processes and technology come together to bring a broad spectrum of methodologies to solve problems large and small. The Advanced Analytics team has partnered with the company's Business Intelligence Competency Center to provide end-to-end descriptive, predictive and prescriptive analytics to support the varying needs of the organization.

The Advanced Analytics team is comprised of analytics professionals with robust experience applying statistics, economics, computational science and operations research (O.R.). As a composite of four sub-groups (Statistical Learning, Computational Intelligence & Machine Learning, Operations Research and Architecture), the Advanced Analytics team is designed for agility; it handles a wide array of problems by varying the composition of the project teams. Early in the team's history, its executive sponsor drove engagements with key leaders throughout

The Roundtable consists of the institutional members of INFORMS with member company representatives typically the overall leader of O.R. activity. The Roundtable is composed of about 50 organizations that have demonstrated leadership in the application of O.R. and advanced analytics. The Roundtable culture is peer-to-peer, encouraging networking and sharing lessons learned among members.

The Roundtable meets three times a year. Roundtable goals are to improve member organizations' OR/MS practice, help Roundtable representatives grow professionally and help the OR/MS profession to thrive. Further information is available at <http://roundtable.informs.org>.

The Roundtable also has an advisory responsibility to INFORMS. According to its bylaws, “The Roundtable shall regularly share with INFORMS leadership and advise the INFORMS Board on its views, its suggested initiatives and its implementation plans on the important problems and opportunities facing operations research and the management sciences as a profession and on the ways in which INFORMS can deal proactively with those problems and opportunities.” The Roundtable meets with the INFORMS president-elect each spring to discuss practice-related topics of interest to him or her, and with the entire INFORMS Board each fall to discuss topics of mutual concern.

This series of articles aims to share with the INFORMS membership at large some information and insights into how O.R. is carried on in practice today.



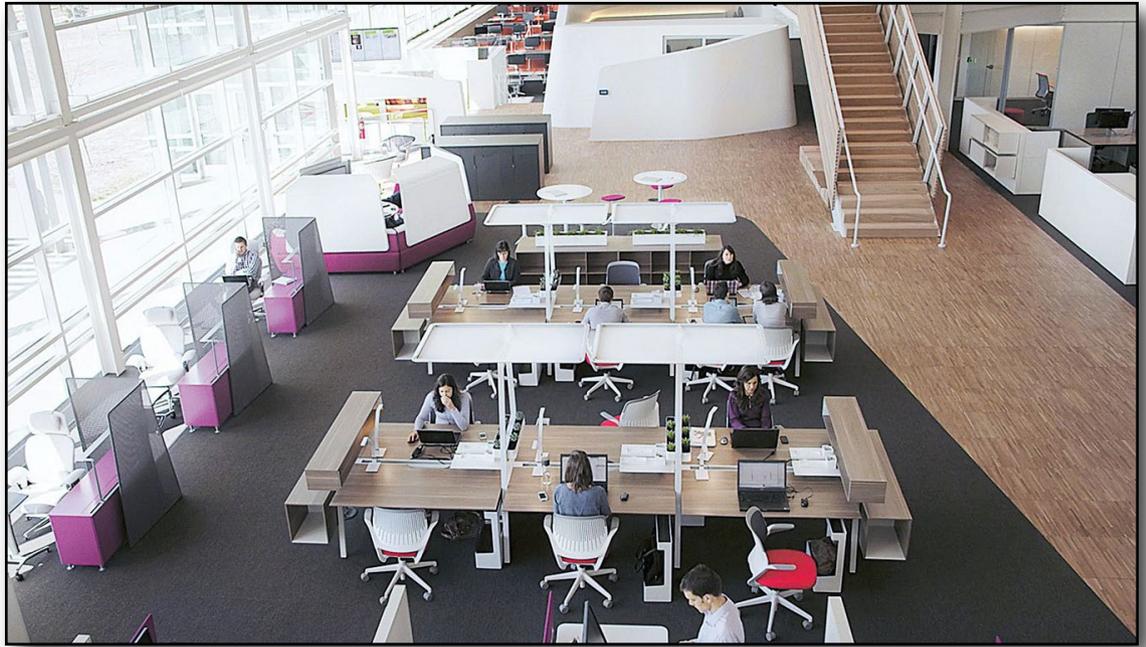
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the business to assess initial analytics opportunities. This led to a large list of projects for the new team to undertake. The rapid influx of projects led to the growth of the Advanced Analytics team and a need for project governance. To that end, guidance committees representing every major business function were organized to develop, prioritize and support execution of projects within the Advanced Analytics portfolio.

## Beyond Projects: Building Partnerships

Every project the Advanced Analytics team undertakes is an opportunity to increase revenues or deliver cost savings; moreover, it is an opportunity to deepen the trust and confidence in analytics. As an

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In a protected “incubator” environment, teams are free to test and develop fragile ideas, accelerating iteration and innovation (Innovation Center, Grand Rapids, Mich.).

internal consulting group, the team has become a hub of cross-functional information, plugged into the company’s large global network at various levels. The team’s portfolio is a diverse collection of projects from Marketing, Sales, Finance, Sustainability, Procurement, Manufacturing, Logistics, Quality and Information Technology. The team’s analysts often find themselves working with multiple groups simultaneously on very different problems. In order to maneuver the complexity of Steelcase and meet customer expectations, the team relies heavily on its business partners and sponsoring organizations. Learning from the subject matter experts and studying the systems that create, modify and store their data is an important part of the team’s process. The team does not operate unilaterally; rather, it exposes its business partners directly to the new analytical capabilities and methodologies employed by the team. This is critical to the customer experience, trust in solutions and growing a data-driven mindset.

### **Delivering Insight**

With a portfolio spread across major business functions, the Advanced Analytics team strives to find “one-to-many” opportunities; that is, solutions where the methodology, model or outputs can be utilized by multiple stakeholders. We also want to help mentor and grow analytics capabilities throughout the global team. Certain areas of Steelcase were more prepared than others to leverage traditional analytics because their people, leaders and/or their data were more progressive and prepared. A few examples of early applications:

**Optimizing networks:** As Steelcase modernizes its industrial system, the team has found multiple opportunities to support network redesign. Efficient inbound and outbound transportation is critical to deliver product and ensure the customer experience is maximized. To this end, Advanced Analytics supported multiple efforts to study and optimize distribution networks. The most recent undertaken by the O.R. group was to rapidly formulate a capacitated optimization model to find optimal distribution center locations. A build-to-order business model resulted in some interesting constraints that not only challenged the team, but helped the team better understand operations in all three operating regions simultaneously. The resulting optimization model was designed to handle discrete inputs, but it could be modified for stochastic inputs in the future. We ran 300+ scenarios to identify the optimal locations for distribution centers in the current and proposed industrial system, thus providing a solid business case for implementation.

**Right-sizing energy:** As a passionate advocate and leading organization in environmental sustainability, Steelcase is very much interested in protecting the environment through reducing our carbon footprint and energy waste. The Advanced Analytics team partnered with the company’s sustainability and procurement groups to study historical electricity consumption of the Grand Rapids facilities. The result yielded a new purchase strategy for electricity blocks. Leveraging optimization, the team not only right-sized purchased electricity blocks to handle Michigan seasonal weather and manufacturing swells, but through mapping the

problem we developed a vendor management strategy that yielded even more value. Through the use of data we challenged the vendor to provide us more flexibility shifting from annual block purchases to a more dynamic model.

**Improved forecasting:** Long histories and structured hierarchies were ripe for applying time-series forecasting to improve or provide forecasts to areas of the business previously without. Over the last 24 months, the Advanced Analytics team has kicked off multiple strategic projects to provide higher frequency, automated, hierarchical forecasts across Steelcase. The team has established a robust analytics ecosystem to provide tens of thousands of statistical forecasts to support various stakeholders. Additionally, we are currently piloting hybrid forecasts, leveraging system dynamic simulation and other non-traditional approaches for areas with less than desired histories. Clearer demand signals and the ability to navigate hierarchies are changing the way our business partners operate with data.

**Near future:** As our current partnerships shift into business implementation, we keep a weathered eye on the future. A few areas will get special focus from the O.R. group. We are actively developing projects that will apply stochastic processes, Markov

chains, dynamic simulation, optimization, Industrial Internet of Things and game theory. Leveraging the depth and breadth of the entire Advanced Analytics team and strong business partners, the opportunities for complex ensemble solutions are abundant.

### Continued Growth

Building on Steelcase's tradition and commitment to excellence, the Advanced Analytics team continues to drive math and science deeper into the core business processes throughout. The team is working closely with key executive sponsors to diversify its portfolio of solutions and grow descriptive, predictive and prescriptive analytics capabilities throughout an exceptionally talented global workforce. The strength of Steelcase's culture is the passion and resolve for solving wicked problems; the Advanced Analytics team is excited to offer its business partners new and expanding capabilities to translate data into actionable insight. **ORMS**

*Tim Merkle is the manager of Advanced Analytics at Steelcase, leading the analytics team and program to improve data-driven capabilities throughout the global enterprise. He is a former Marine Corps officer, combat veteran and current Steelcase representative to the INFORMS Roundtable.*

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