



**MIT LGO**  
LEADERS FOR GLOBAL OPERATIONS



## Partnership Prospectus

MIT SCHOOL OF ENGINEERING | MIT SLOAN SCHOOL OF MANAGEMENT



A joint program of MIT Sloan School of Engineering, MIT Sloan School of Management and Industry partners.



## MIT LGO Leaders for Global Operations

### Why LGO?

An active partnership among MIT School of Engineering, MIT Sloan School of Management, and a wide variety of global corporations, the MIT Leaders for Global Operations Program (LGO) develops world-class leaders for manufacturing and operations. This innovative two-year graduate program, created in 1988, includes an integrated engineering and management curriculum along with a six-and-a-half month internship at a partner company. Students earn an MBA or Master of Science in Management as well as a Master of Science in one of eight participating engineering programs. LGO offers a range of benefits to industry partners in conjunction with this unique educational program.

### LGO Industry Partners

LGO Industry Partners are a highly select group of global manufacturing and operations companies around the world. Industries include aerospace, automotive, biotech, electronics, pharmaceutical, and retailing.

LGO Industry Partners commit to work closely with each other and with members of the MIT LGO community to address industry's current and future needs. LGO Industry Partners:

- » select student internships that can offer high value return to the host company.
- » provide input into designing and improving the LGO curriculum and further faculty research so that LGO continues to address partner companies' most pressing challenges.
- » host plant tours and participate in seminars and other events at MIT.
- » recruit and hire LGO graduates.

This synergy among LGO Industry Partners, faculty, students, and other members of the LGO community benefits the LGO program, individual partner companies, and industry at large.



## LGO Partner Companies

ABB

Amazon.com, Inc.

Amgen Inc.

The Boeing Company

Cisco Systems, Inc.

Dell Inc.

General Dynamics

General Motors  
Corporation

Genzyme Corporation

Honeywell International Inc.

Inditex, S.A. (Zara)

Intel Corporation

Kimberly-Clark  
Corporation

Northrop Grumman  
Corporation

Novartis AG

Raytheon Company

Spirit AeroSystems

United Technologies  
Corporation

## Benefits for LGO Industry Partners

There are a number of benefits of partnering with LGO:

### **Recruiting top global operations leadership talent**

Because they are “fluent” in both engineering and management, LGO graduates are highly sought after by LGO industry partners and other manufacturing and global operations enterprises. Each LGO student earns two degrees, an MBA from MIT Sloan School of Management and an SM in one of eight engineering disciplines from MIT School of Engineering. LGO partnership entitles your company to receive priority access to these candidates by participating in an exclusive partner recruiting process. Over half of the class of 2009 went into manufacturing and/or operations at LGO partner companies.

### **Developing and retaining in-house talent**

LGO partner companies can participate in a wide range of opportunities designed to help strengthen their workforce. This includes sponsoring high-potential employees to the LGO academic program and sending employees to attend workshops, conferences, web seminars, and best practice workshops led by MIT faculty.

### **Sponsoring LGO internships that offer high-value return**

Each LGO student participates in a six-and-a-half-month internship at a partner company, which affords an opportunity to address critical challenges that are difficult to address in the traditional three-month MBA internship offered by other universities. Each LGO intern receives supervision from two MIT faculty – one each from MIT Sloan School of Management and MIT School of Engineering – and internships can be designed so the LGO students and MIT faculty work at a partner company on a common set of issues over the long term.

### **Networking with peers at world-class partner companies and with MIT faculty**

LGO partner companies share knowledge, informally or formally, on common issues and concerns. These have included call center operations, lean implementation, and strategic sourcing. Many report that they have also developed professional relationships that last throughout their careers.

## Levels of LGO Partnership

There are two levels of LGO partnership. Companies normally enter as limited partners and transition to managing partners over time.

LGO Limited Partners participate through:

- » Membership on LGO's operating committee: Three one-day meetings are held annually in which a representative from each LGO partner company meets with LGO faculty alumni, students, and staff to work on operational issues assigned by the LGO governing board. Meetings are held primarily at MIT
- » Membership on LGO standing committees: Operating committee members participate in standing committees that address LGO program operations, internships, leadership, strategy/vision, and knowledge transfer. They also participate in plant tours, pro-seminars, and research projects with MIT faculty. Meetings are held primarily via conference calls.

LGO Managing Partners participate in the above, plus:

- » Governing board membership: A senior executive from each managing partner company attends three meetings a year – one held either at MIT or an LGO partner site and two conducted virtually. Together with other governing board members and the deans of MIT Sloan School of Management and MIT School of Engineering, they set long-range direction, review/approve all major policies, and assign tactical issues to be addressed by the LGO operating committee.



## Overview: LGO Academic Program

After graduation, many LGO graduates work in line and engineering managerial assignments, then progress to plant manager, supply chain manager, and beyond. Later in their careers, LGO graduates often assume leadership positions, such as vice presidents of major divisions at LGO partner companies and major global operations enterprises.

LGO Fellows prepare for these careers by participating in LGO's rigorous 24-month dual degree graduate program, which leads to two MIT degrees: an MBA or a Master of Science in Management from MIT Sloan School of Management and an MS from the MIT School of Engineering in one of eight engineering disciplines:

- » Aeronautics & Astronautics
- » Biological Engineering
- » Chemical Engineering
- » Civil & Environmental Engineering
- » Electrical Engineering & Computer Science
- » Engineering Systems
- » Materials Science & Engineering
- » Mechanical Engineering

Each LGO graduate develops a thorough background in critical areas of operations and manufacturing, including:

- » Manufacturing Processes
- » Design and Development
- » Lean/Six Sigma
- » Operations Management
- » Supply Chain
- » Information Technology
- » Marketing, Finance, and other management competencies

In addition, many LGO graduates participate in one of several optional interdisciplinary tracks to develop in-depth knowledge in a specialized area. These include energy and environmental sustainability, supply chain management, manufacturing systems, systems architecture, information and decisions systems, and semiconductors.



LGO's rigorous academic program comprises three themes:

**Foundations** LGO's foundation courses go beyond traditional management and engineering requirements to provide depth in each. LGO foundations focus on five major areas: economic (markets and finance); management and organization (organizational processes, marketing, strategy); physical processes; information sciences (communications, accounting and measures, information technology); and mathematics (systems, probability and statistics).

**Integration** LGO activities span engineering and management and embody LGO's conviction that future leaders must be able to integrate technical and managerial information and skills. LGO students learn about this by taking courses in operations management, product/process design, operations strategy, and high velocity systems, and by participating in plant tours. They integrate this knowledge by applying it in six-and-a-half-month internships at partner companies.

**Leadership** LGO interweaves leadership throughout all activities in the two-year program in order to prepare students for managerial and leadership positions at operations companies. The LGO leadership curriculum provides a model for lifelong learning, continuous improvement, and personal development.

During their first week on campus, students begin leadership development with "The Universe Within," a required weeklong class that provides an intense intellectual and physical orientation. Over the next two years, students acquire diagnostic tools, based on social science theory, for team structuring, participation, and organizational analysis.

Leadership is fostered through skill development in communication, motivation, and change management; practice in dealing with the dynamics of organizational change through case discussions, role-plays, project teamwork, the LGO internship, and participation on LGO standing committees; and reflection that ensures time for dialogue, evaluation, and intellectual integration. LGO's emphasis on reflection acquaints students with theories of leadership, learning, and organization, and encourages shifts in thinking and expansion of the mental models people use to understand the world.

## LGO Internships

All LGO partner companies sponsor LGO internships—a highlight of the program for LGO students and industry partners. These six-and-a-half-month onsite projects are designed in conjunction with companies, the academic program director, the internship director, and faculty to ensure that they address critical partner company challenges and achieve high-value, measurable results. Student internships include such topics as sourcing strategy, process improvement, lean implementation, energy consumption, and inventory policy.

Companies report that internship projects have yielded significant improvements and savings. This work also provides the basis for a joint engineering-management thesis that each student writes as a requirement for graduating from LGO.

Recent examples of LGO internships at LGO partner company sites include the following:

» **Inditex (Zara) S.A.** (La Coruna, Spain) Industry: Retail

Using a model developed by MIT Sloan School of Management professors, the LGO intern designed, implemented, and tested a pricing optimization model that would maximize perceived profits. Pilot test shows 4 percent increase in revenues, equivalent to \$35 M of additional profits in 2007 and \$47 M in 2008.

» **Raytheon** (Garland, TX) Industry: Defense/Aerospace

The LGO intern identified and assessed energy savings by examining the economics of photovoltaics, fuel cells, and other technologies. He performed cost-benefit analyses and energy balances of potential solutions and investigated possible subsidies and incentives at the local and national levels. He also assisted in identifying and implementing energy-saving solutions such as retro-commissioning buildings and optimizing building controls, and analyzed the facility's current and new strategies.

» **Dell Inc.** (Austin, TX, & Shenzhen, China) Industry: PC/Consumer Electronics

This LGO intern analyzed the impact and constraints resulting from the integration of Asian supply sources into Dell's Build to Order fulfillment model of desktop products. To do this, he employed alternative strategies for supply chain management and developed procedures for addressing problems resulting from changes within the supply chain flow.



- » **Amazon.com** (Luxembourg, Luxembourg) Industry: Internet/Retail  
The LGO intern identified areas for improvement in Amazon's current UK fulfillment network to enable total fulfillment cost reduction. He validated and proposed network-level changes in the United Kingdom, along with their applicability to other EU fulfillment networks. The intern also developed, validated, and implemented a complex optimization model to minimize outbound transportation costs resulting from a recent mailing rate structure change in the UK. This model is utilized on a bi-weekly basis by the EU Transportation Team. Finally, he developed proposals to improve an inventory allocation network optimization model for the EU.
  
- » **Amgen** (Thousand Oaks, CA) Industry: Biopharmaceutical  
This LGO intern developed a business case highlighting the major areas across the biopharmaceutical commercialization process that are likely to be affected by implementing Quality by Design (QbD). She identified two of the most important tasks: synchronizing ongoing activities under a comprehensive program and ensuring that the organizational structure and culture align with QbD principles. Her findings demonstrated the value of utilizing QbD in a large biopharmaceutical company. In addition, she showed that QdB can be extendable throughout the biopharmaceutical industry.
  
- » **Intel Corporation** (Hudson, MA) Industry: Semiconductor  
Lean methodology for cost-reduction. The LGO intern addressed the use of Lean methodology for cost-reduction to reduce costs and performance inefficiencies in a semiconductor fabrication facility. He developed a linear optimization program that enabled improved inventory distribution. He later designed, developed, and implemented a fab-wide program that prioritized and calculated thousands of test wafer start decisions based on a Days of Inventory metric. This program and its supporting standard process is reducing test wafer inventory by approximately 35 percent, improving availability by approximately 75 percent, and diminishing labor resources by four to five hours per week.



## About MIT

MIT is a world-class educational institution. Its mission is to advance knowledge and educate students in science, technology, and other areas of scholarship that will best serve the nation and the world in the 21st century.

The Institute is committed to generating, disseminating, and preserving knowledge, and to working with others to bring this knowledge to bear on the world's great challenges. MIT is dedicated to providing its students with an education that combines rigorous academic study and the excitement of discovery with the support and intellectual stimulation of a diverse campus community. We seek to develop in each member of the MIT community the ability and passion to work wisely, creatively, and effectively for the betterment of humankind.

MIT is independent, coeducational, and privately endowed. It is comprised of departments, divisions, and degree-granting programs, as well as interdisciplinary centers, laboratories, and programs, whose work cuts across traditional departmental boundaries.

Sixty-six current faculty and staff members belong to the National Academy of Engineering, 78 to the National Academy of Sciences, 30 to the Institute of Medicine, and 145 to the American Academy of Arts and Sciences. Seventy-three current and former members of the MIT community have won the Nobel Prize. Thirty-two current and former members of the MIT community have received the National Medal of Science, and two were awarded the National Medal of Technology and Innovation.

LGO is a partnership of MIT Sloan School of Management, MIT School of Engineering, and industry. The LGO program resides within the MIT Engineering Systems Division.



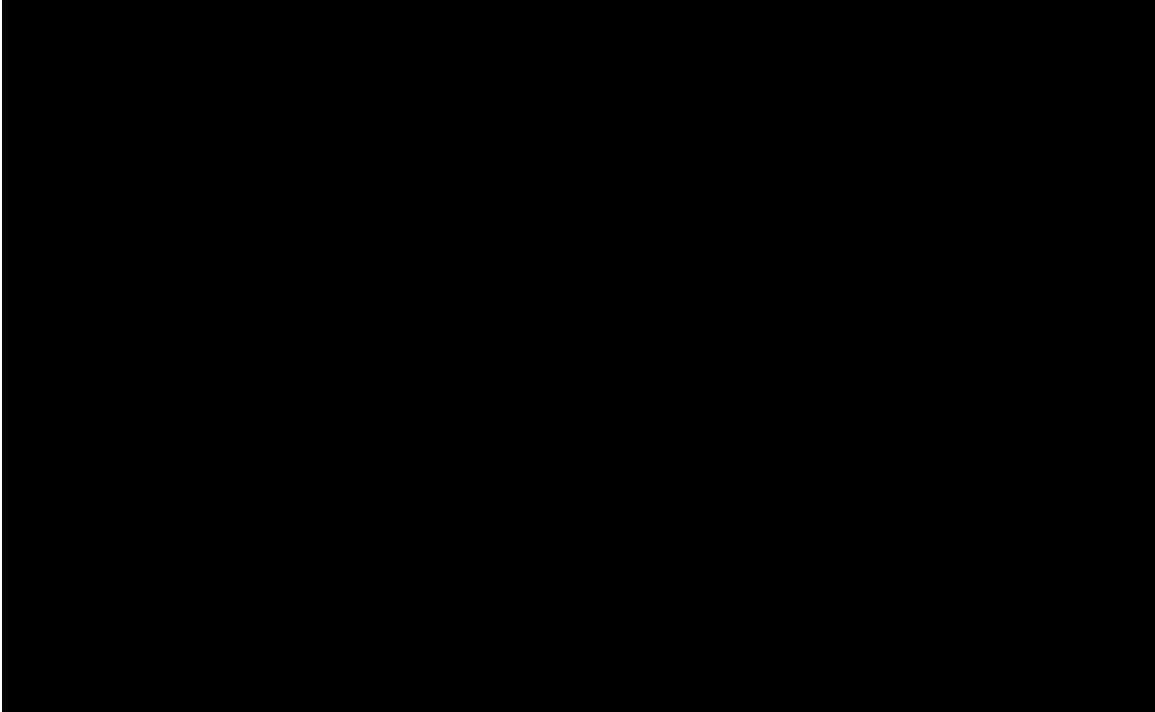
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**MIT LGO**  
**Leaders for Global Operations**

*formerly MIT Leaders for Manufacturing (LFM)*

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**MIT ENGINEERING**

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