

MIT Center for Transportation & Logistics

For over 40 years, the [MIT Center for Transportation & Logistics \(CTL\)](#) has been a world leader in supply chain management, logistics, transportation education, and research. The center's world-renowned research programs directly involve more than 80 faculty and research staff from a wide range of academic disciplines, as well as researchers in various affiliate organizations around the world. In education, MIT is consistently ranked first among graduate business programs in logistics and supply chain management.

There were 105 active projects in FY2016. Major projects and initiatives are described below.

MIT Global Supply Chain and Logistics Excellence Network

Collectively, the [MIT Global Supply Chain and Logistics Excellence Network \(SCALE\)](#) now spans to six centers on four continents, with over 12 educational programs (both online and in residence), more than 55 academic partners, 80 researchers and faculty, 150 corporate partners, and over 1000 alumni working worldwide.

Ningbo Supply Chain Innovation Institute China

In early 2016, the government of Ningbo, China, home of the world's busiest port, partnered with the MIT Center for Transportation & Logistics to create a global center for supply chain education and research. The joint initiative will establish and develop the Ningbo Supply Chain Innovation Institute China (NSIIC). Ningbo will leverage MIT CTL's experience as the pre-eminent center for supply chain knowledge creation to build a research institute at this major hub for global trade.



CTL Director and MIT Professor Yossi Sheffi at the opening of the Ningbo Supply Chain Innovation Institute China

NSIIC is scheduled to open in the fall of 2016 with its first master's students matriculating in the fall of 2017.

Luxembourg Centre for Logistics

In late 2015, the Government of the Grand Duchy of Luxembourg and the University of Luxembourg, through a long-term partnership with the Massachusetts Institute of Technology Center for Transportation & Logistics, founded the Luxembourg Centre for Logistics (LCL). The LCL will help establish Luxembourg as the European standard for training, research and innovation in the logistics sector. The center will conduct applied research, provide executive education programs and work with corporations within Europe and across the globe, with the goal to become a world leader in education and research in Supply Chain Management, freight transportation, global trade and logistics.

Zaragoza Logistics Center

Zaragoza Logistics Center (ZLC) is a research institute established by the Government of Aragon in Spain in partnership with the Massachusetts Institute of Technology and the University of Zaragoza. Founded in 2003, the ZLC campus is located in the heart of PLAZA, the largest logistics park in the southwest of Europe that serves as a working laboratory to transfer new knowledge and working practices. The academic year 2015-2016 was marked by the launch of the new corporate image of ZLC.

Personnel consisted of 38 people, including nine faculty members, seven researchers and doctoral students, and 22 professionals in the areas of finance, marketing, information technology, human resources, and education and research management.

On May 30 2016, 42 students from 14 countries attended their graduation ceremony at the Government of Aragón, Pignatelli Building.



Students from the Zaragoza Logistics Center

The students came from the 15th class of the “Master en Dirección de Supply Chain” (MDSC), the 12th class of the MIT Zaragoza Master of Engineering in Logistics & Supply Chain Management (ZLOG), and the MIT Zaragoza PhD in Logistics and Supply Chain Management. Additionally, thesis projects were sponsored by BMS, Clariant, Halliburton, J&J, MHI, Schlumberger, Starbucks, Roche, Lacasa, Marcotran and

Decathlon, among others. More than 90% of students from all of the programs attained job placements within three months of graduation and the average rating for professors was 6/7. The average compensation salary increased by 17% compared with last year.

In terms of worldwide recognition, MIT SCALE Masters in Supply Chain were ranked #1 worldwide in the field of logistics and supply chain by Eduniversal Ranking. SCM World voted ZLC the best-specialized University for Supply Chain in Spain. Additionally, MIT Zaragoza Master in Supply Chain was ranked #1 in the field of logistics in the “250 Best Masters in Spain” rankings by the newspaper *El Mundo* in 2016 for the sixth consecutive year. The graduates of the ZLC program in Spanish (MDSC) won the Foro Pilot Award for the “Best MDSC Master Thesis”, and the Asociación Empresarial PLAZA (AEPLA) Award for the “Most Innovative Master Thesis”.

The MIT-Zaragoza doctoral program had five students during this academic year, two of whom successfully defended their dissertation and are currently working at ZLC and MISI respectively. Twenty-two PhD students from universities all over the globe participated in the ninth edition of ZLC’s annual PhD Summer Academy conducted over two weeks in summer. Prestigious instructors came from Georgia Tech, Georgetown, McMaster, and Koç Universities.

Over 250 professionals participated in different executive education programs and workshops in supply chain management designed and taught by ZLC and MIT SCALE faculty such as: the executive course for the Spanish military; the Workshop on “Supply Chain Strategies: Driving Value for the Business” in Basel; the 2nd “Global Supply Chain Research Forum”; and the executive course for PWC, Indico and ROCHE. Highly acclaimed speakers from universities and multinational companies around the globe participated in the MIT-Zaragoza Speaker Series organized at ZLC.

Within this period, there were 10 ongoing R&D projects at ZLC. Funding sources included the European Commission (which funds six of these projects), private companies (funding three projects), and the Centre for Industrial Technological Development (CDTI) (funding one project). Moreover, ZLC signed a Corporate Agreement with CLARIANT, within their strategic objective of bringing themselves closer to the business world and its needs. With these results, ZLC became the sole entity in Spain with the highest number of European R&D projects in the area of Logistics and Supply Chain Management. ZLC has continued with its participation in ALICE, the European Technology Platform in Logistics, an initiative that was promoted by ZLC. ALICE provides input to the European Commission to shape the European Logistics Research Agenda. ZLC’s Director is member of its Steering Board and ZLC also participates in four of its five working groups (supply chain security, synchronomodality, collaboration and urban logistics), being vice-chair of the supply chain security group.

Research at ZLC has resulted in 10 articles in peer-reviewed journals, such as: the European Journal of Operational Research, The International Journal of Logistics Management, International Journal of Production Research, Production & Operations Management, Journal of Manufacturing Systems, PLoS ONE, International Journal of Physical Distribution & Logistics Management, Maritime Policy & Management,

Transport Policy and other six articles will be published in the coming months. Several research reports have been submitted during this period. ZLC faculty and research staff presented their research findings in key national and international conferences.

ZLC received visits from prestigious international representatives, such as Mr. Johannes Hendrik Mattheus Van Bonzel, ambassador of the Netherlands in Spain, and Felix Grimm, head of operational excellence in Clariant. Additionally, ZLC hosted visits from prestigious international Universities such as Fraunhofer IML, Tecnológico de Monterrey, Kangnam University in South Korea and Universidad Talca-Chile.

ZLC had a direct financial impact on the local community of over an estimated €6 million during the last five years.

MIT SCALE Latin America & Center for Latin-American Logistics Innovation

The [Center for Latin-American Logistics Innovation \(CLI\)](#) has cultivated deep relationships with 27 top Latin American universities/institutions in the region. It currently has 14 full-time research staff and, as an official national center of excellence, has access to government grants and various thought leadership opportunities. Due to the quality and quantity of the publications, this year CLI has improved its category as a research center by Colciencias (the National Science Foundation of Colombia).

The flagship academic program is the [MIT Graduate Certificate in Logistics and Supply Chain Management \(GCLOG\)](#). The GCLOG is an elite program geared towards outstanding graduate students from Latin America.



Members of the 2015 GCLOG class with Dr. Roberto Perez-Franco PhD

The GCLOG is open for students fully enrolled in a master's program in areas relevant to supply chain management and logistics.

The GCLOG class 2017 (eighth cohort) gathers 28 outstanding students selected from among 50 candidates, most of them proposed directly by members of our network of partner universities throughout Latin America. This class hosted students from 16

universities hailing from: Argentina, Brazil, Colombia, Ecuador, Mexico, Peru, and Bolivia (for the first time). In its previous seven cohorts, the program has graduated 183 students, hosting them twice at MIT for three weeks each time: first in July and then again in January, alongside students from the CTL SCM program, the Zaragoza Logistics Center, and the Malaysia Institute for Supply Chain Innovation at Scale Connect. This year, the GCLOG program combined online courses with the on-campus experience through the online course entitled *GCx: Excellence in Supply Chain* which is designed in edXedge platform using content from the MITx MicroMasters in Supply Chain Management.

Another new initiative was the 2016 MIT SCALE Latin America Conference that was hosted at the MIT Campus on March 21-22, 2016. The event was organized by the MIT CTL in collaboration with CLI. The goal of the conference was to provide a forum for sharing educational and applied research in logistics and supply chain management relevant to Latin America. The event hosted 137 participants from 15 countries with 85% coming from Academia, 14% Industry and 1% Government. Seventy academic papers were presented in seven research tracks: Urban logistics, sustainability, case studies in logistics and SCM, applied operations research, trade and logistics, general topics and student competition.

CTL in collaboration with CLI organizes academic workshops that take place annually at various venues in the Latin American region and at the MIT campus. The latest workshop took place on March 2016 at the MIT Campus where we gathered the 27 SCALE Latin American partners to discuss and align the research and educational agenda of the region. As a result of the agreements, CLI will host the UCLOG (Undergraduate Certificate in Logistics & SCM) program which is expecting to be launched in the summer of 2017. The next academic workshop will be hosted in CLI (Colombia) in February 2017.

Corporate education is another CLI educational initiative. The center currently has 13 corporate partners with whom it develops a wide range of executive and collaborative research projects in seven research areas. To date, over 100 collaborative projects with industry have been successfully completed.

Malaysia Institute for Supply Chain Innovation

Located in Shah Alam, Malaysia near Kuala Lumpur, the [Malaysia Institute for Supply Chain Innovation \(MISI\)](#) was the fourth center in the SCALE Network. MISI is now in its fifth operational year as an institute of higher learning since being launched in March 2011 by the Malaysian Prime Minister as a joint initiative with MIT.

The full-time MSc degree in Supply Chain Management (MSCM) had its fourth intake of students in August 2015 comprised of 12 students from six different countries. There are 45 students in the part-time Master's program mainly from Malaysia. In January the MSCM students together with four high achieving students from the part-time MSc in Supply Chain Management (PSCM) attended the annual IAP program at MIT CTL in Cambridge. Student thesis projects were sponsored by: Schlumberger, Starbucks, Roche, Glaxo Smith Kline, Petronas, Century Battery and BASF. The PhD program proposal

has been reviewed and approved the Malaysian Qualification Agency and is expected to begin in 2017.

The fourth group of the MSCM students successfully graduated on May 25, 2016. The American Ambassador to Malaysia, His Excellency Joseph Y. Yun, inaugurated the convocation; also in attendance were the MISI Board of Governors, representatives from industry, student families and friends.

MISI co-hosted the 2015 International Association of Maritime Economists (IAME) conference in August, a first for Malaysia and South East Asia, with over 200 attendees. MISI hosted six, one-day seminars for Indian Railways management personnel. Training programs were held for Century Battery and Sime Darby in addition to SCM Executive Development Programs for industry participants. Prof. Steve Graves from MIT Sloan Business School gave two seminars to Industry, Students, and Faculty. Other distinguished speakers at MISI included Dr V. Sumantran (ex CEO Tata Motors), Paolo Rampichini (Head Roche AP), and Craig Davison (VP, Supply Chain GSK).

MISI increased its research activities by winning Government of Malaysia funding for the first time for two projects. Procter & Gamble continued their sponsorship of a research project into Palm Oil Sustainability. For the first time, MISI was awarded a two star ranking by MyRA, the Malaysian government ranking agency.

MISI is now comprised of eight permanent faculty members, two researchers and an administration support staff of eighteen. In this period, MISI faculty has had several articles accepted and published, in supply chain strategy, supply chain risk management, port logistics, and maritime and intermodal logistics.

MicroMasters Credential in Supply Chain Management

On October 7, 2015, President Rafael Reif announced the launch of the MITx MicroMasters Credential in Supply Chain Management. This is a new educational certification program that offers learners around the world a way to gain and demonstrate expertise in the growing field of Supply Chain Management. Additionally, students earning the MITx MicroMasters Credential have the opportunity of applying those credits toward a Masters Degree at MIT through the Blended Supply Chain Management Program.

CTL took the lead in the development and launch of this new initiative by incorporating its existing online courses (SCx1 Supply Chain Fundamentals and SC2x Supply Chain Design) into the more comprehensive MicroMasters Credential curriculum. The MITx MicroMasters Credential in Supply Chain Management is a stand-alone certification program designed and administered by MIT's Center for Transportation & Logistics and supported by the Office of Digital Learning (ODL). It is run separately from the residential MIT Supply Chain Management (SCMr) Masters Program.

The MicroMasters credential consists of five intensive on-line courses covering all aspects of logistics and supply chain management (equivalent to one semester worth of courses in the SCMr program). Students submit graded homework every week and take mid-term

and final exams. To earn the MicroMasters Credential they also have to pass a proctored exam. The total cost of this new MicroMasters Credential is approximately \$1,350, including the cost of the five courses and the capstone exam. The five courses are:

- CTL.SC0x Supply Chain Analytics
- CTL.SC1x Supply Chain Fundamentals
- CTL.SC2x Supply Chain Design
- CTL.SC3x Supply Chain Dynamics
- CTL.SC4x Supply Chain Technology
- EXAM Capstone Exam

It is important to note that the MicroMasters is NOT a degree-granting program, nor is it a guarantee of admissions to MIT or the Supply Chain Management graduate program. It is a separate stand-alone professional certificate.

As of July 2016, over 100,000 learners from more than 180 countries across the globe have participated in at least one of the MicroMasters courses. Currently, the team is working on final development of the last courses and preparing for the first cohort of MicroMaster graduates entering MIT in the SCM Blended program track.

Fifth Annual Supply Chain Management Directors Conference

Between March 23 and 25, CTL was the host of the 5th Annual Supply Chain Management Directors Conference. This conference, part of a series launched by University of Texas (UT) Dallas, is hosted every year in a different venue. This year's event included presentations by MIT Professors Anant Agarwal and Yossi Sheffi, and by CTL's Executive Director Dr. Chris Caplice, about edX, MIT SCALE, and the MITx MicroMasters credential, respectively.

The Conference also included six panels with over 30 panelists, on topics ranging from the creation of supply chain management centers and programs, to the newest trends in digital and experiential learning. The conference counted with more than a hundred participants, including more than 80 academics from dozens of universities across the US and around the globe.

MIT Responsible Supply Chain Lab

Initiated in 2015 as an outgrowth of prior work in sustainable supply chains, the [MIT Responsible Supply Chain Lab](#) was formed to examine the multitude of issues surrounding reducing the social and environmental impacts of supply chains. The Responsible Supply Chain Lab examines the past, current, and potential future practices of sustainability in supply chain management across various industries. It develops applied models for businesses to effectively implement strategies to improve supply chain management and control practices.

The lab has initiated research collaboration with other entities across MIT including the Sloan School of Management and the Abdul Latif Jameel World Water and Food Security

Lab. In August, the lab hosted a successful workshop on biodiesel in Mexico City, in cooperation with UNAB in Mexico, funded by a MISTI grant. The final report will be available in August of 2016 and proposes how biodiesel can be better integrated into the urban bus system.

In November, the RSC held a roundtable entitled Supply Chain Traceability: Ensuring Responsible Supply Chains through Technology and Multi-Stakeholder Collaboration. The symposium brought together 25 participants from industry, government, NGOs, and academics to discuss the issue of traceability to increase and verify sustainability in global and opaque supply chains.

The work and writings of the lab have been featured in the Wall Street Journal, Sloan Management Review, Industry Week, Supply Chain Management Review, and various other publications.

MIT Megacity Logistics Lab

Starting in 2012 as an outgrowth of research activities in logistics and supply chains in emerging markets, CTL created the [MIT Megacity Logistics Lab \(MLL\)](#). The MLL focuses on understanding and transforming the supply chains that interface with megacities, with a particular focus on last-mile delivery operations in large, densely populated, and congested urban environments.

In FY2016, the MLL has secured additional funding from various industry partners such as Anheuser-Busch InBev (USA), B2W Digital (Brazil), Coca-Cola Femsa (Mexico), and Walmart (USA), as well as academic grants from the New England University Transportation Center, and MISTI to support its research efforts, partnerships, workshops, and data collection efforts in numerous countries around the world. In its corporate and academic outreach, MLL has started to expand its activities towards the most relevant emerging markets in Asia by attending a three-day government-sponsored workshop on sustainable urban transport in Shenzhen, China, and starting to scope a research project on urban delivery models together with Flipkart in Bangalore, India.

Since its foundation, over 350 people from business, academia, and government have participated in MLL activities. Numerous graduate and undergraduate students, have experienced first-hand the challenges of freight movement. In FY2016, MLL has once again hosted masters and doctoral students from Germany, The Netherlands, and Chile as it builds its research agenda.

In 2016, together with its academic partners at Tecnológico de Monterrey in Mexico, MLL launched “[Insight Last-Mile](#)”, a suite of Android-based mobile applications that allow for the high-resolution collection and analysis of last-mile delivery operational data. The apps have been applied to data collection studies in São Paulo, Brazil, and several other cities in Latin America and will be further improved and extended in the near future.

The MLL has also further developed its partnerships within MIT with other related initiatives such as the Changing Places and City Science groups at the MIT Media Lab,

the Center for Advanced Urbanism and SMART, as well as Prof. Karaman from MIT Aero Astro and his group of researchers.

The MLL continues to work directly with policy makers in Mexico City, Mexico and Santiago, Chile to support urban re-design plans that take into account logistics flows. It is also deepening its relationships with institutions such as the Latin American Development Bank (CAF), or the Rocky Mountain Institute, to promote efficient and sustainable urban freight transportation in all parts of the world.

MIT Hi-Viz Project

The **Hi-Viz (high visibility) project** seeks to create an automated system to create near real time board-ready displays of a company's end-to-end supply chain and to highlight areas of risk or concern on those displays.

MIT CTL partnered with Sourcemap.com, a recent MIT PhD student startup company. The initial three year research project concluded in March 2014. Each subsequent year we have had master's thesis projects with sponsoring companies to expand the capabilities and apply the tools to risk modeling of their supply chains. The project succeeded in creating two valuable high-level displays of the supply chain: an interactive map and an interactive material flow diagram. Metrics highlighted atop these displays include inventory levels, recovery times, risk exposure, value at risk, and customer blackout days resulting from the loss of any supplier in the network. Geo-Emergency alerts were added to the Hi-Viz Displays. Initial progress was also achieved in adding geo-based underlying (baseline) natural disaster probabilities to each node in the supply chain. As a result of this project, one large multinational sponsor has launched a large internal IT project to build a global working version of the Hi-Viz software for its private internal use.

The most recent thesis project created a risk visualization and model of the supply chain for a large apparel manufacturing and uniform rental company. We worked with two analytical arms of Verisk Corporation: AIR Worldwide which does natural disaster probability modeling and Maplecroft which calculates a catalog of risk indexes for terrorism, corruption, political instability, etc. for all locations globally. Given these new associations, we were able to now include in our visualization and modeling the risk factors for 1) natural disasters, 2) political, corruption, and terrorism, and 3) financial collapse. I.e. the risk of losing suppliers due to these factors are now included in our calculations of Value at Risk for all supply chain locations. The resulting risk profile is now much more complete and useable by senior management, presenting a balanced view of many causes of disruption.

SC2020 Project—MIT Supply Chain Strategy Lab

After a decade of research in collaboration with world-class organizations, the Supply Chain 2020 Project (SC2020) was concluded in March of 2016. Launched originally in 2004, SC2020 focused on addressing the issue of how to prepare supply chains for future challenges. Around 2010, SC2020 was refocused on developing a toolkit to rethink a supply chain strategy.

The ideas on supply chain strategy generated in SC2020 - tested in half a dozen projects with several organizations, including some Fortune 100 companies, the UN and the Federal Government - have now been fully documented in a practitioner-oriented book, “Rethinking your supply chain strategy: a brief guide” (ISBN: 0692666532) published in March of 2016.

Open questions will continue to be explored by an offshoot of SC2020: the MIT Supply Chain Strategy Lab (SCS Lab). The SCS Lab was launched in March of 2016 and is directed by Dr. Roberto Perez-Franco, who served as Director of the Supply Chain 2020 Project between 2012 and 2016. It is dedicated to researching questions about supply chain strategy, its content and process—both in theory and in practice—within and across organizations.

Current topics of interest for the SCS Lab include supply chain strategizing and the impact that team dynamics have on the performance of supply chain teams.

MIT Humanitarian Response Lab

The mission of the [Humanitarian Response Lab \(HRL\)](#) is to help meet human needs by understanding and improving the supply chain systems behind public services and private markets. The Lab combines MIT expertise in engineering, management, technology, economics, urban studies & planning and other disciplines to drive practical innovations for humanitarian interventions.

This year HRL continued its work focused on emergency supply chains while expanding research to explore the role of supply chains in addressing chronic issues in global health and food security. HRL completed the third year of its five-year major research project with the [MIT Comprehensive Initiative on Technology Evaluation \(CITE\)](#), supported by the U.S. Agency for International Development (USAID). Field research with CITE led to published reports on the supply chains for malaria rapid diagnostics and for post-harvest storage technologies. HRL also launched a new CITE evaluation of advanced packaging technologies for international food aid, which considers the cost and quality for a range of commodities, shipping options, and foreign warehouses. The USAID Mission in Uganda awarded a new four-year program to HRL through the CITE cooperative agreement. The program aims to develop new approaches that assess the systemic impact of market facilitation activities in the agricultural sector, with a focus on USAID/Uganda Feed the Future Value Chain activities.

Following last year’s Ebola response work, HRL, as part of the Academic Consortium to Combat Ebola in Liberia (ACCEL), secured a two-year CDC award to continue work in Liberia. HRL leads the supply chain capacity building work with the Ministry of Health in Liberia, focusing on hospital supply chains and on a revision of the supply chain management course curriculum for the University of Liberia School of Pharmacy. Emily Gooding, a graduate student in HRL, completed thesis work supported by MIT Lincoln Laboratory to analyze the supply chain dynamics of the Ebola response; upon graduation she received a Fulbright U.S. Student Program award to conduct independent research at a hospital in the Democratic Republic of Congo.

Finally, HRL developed new models and metrics to assess emergency response capacity and was invited to present this analytical work at the United Nations [Humanitarian Networks and Partnership Week](#) in February. HRL was then invited to become a member of the newly formed Emergency Supply Pre-positioning Strategies (ESUPS) Working Group.

Corporate Resilience

Professor Sheffi's book "The Power of Resilience: How leading Companies Prepare for the Unexpected" was published in September 2015. The book is a culmination of four years of research beyond Professor Sheffi's 2005 best seller ("The Resilient Enterprise") which was translated to 17 languages and won several prizes. "The power of Resilience" is in the process of being translated to Korean and Spanish – these editions should come out in 2016.

Professor Sheffi continued with the research which also resulted in multiple papers and conference proceedings.

MIT FreightLab

The [MIT FreightLab](#) was established in 2008 to advance the art, science, and practice of how shippers, carriers, and third parties design, procure, and manage freight transportation across the globe. In the academic year 2016 the work was focused on masters thesis work. Projects included:

- "Multi-Stop Trucking: A Study on Cost and Carrier Acceptance" with CH Robinson
- "Efficient Supply Chain Design for Highly-Perishable Foods" with Starbucks
- "Prioritizing Inbound Transportation" with WalMart Stores

Both the Starbucks and WalMart projects were nominated for and recipients of best thesis awards.

New England University Transportation Center

MIT was competitively awarded the US Department of Transportation's Regional University Transportation Center grant. The [consortium](#) of universities includes MIT as the lead institution along with the Universities of Connecticut, Maine, Massachusetts, and Harvard University.

The grant will be used to support students, researchers and faculty in further development of a living laboratory in Cambridge, called the Massachusetts Avenue Area Living Laboratory (MALL), which includes urban landscape from Harvard Square to Memorial Drive. A new grant beginning 2017 for four years was announced Spring 2016. MIT CTL bid as the regional UTC lead and expanded the proposed consortium to include all six of the New England state universities including: the Massachusetts Maritime Academy and Harvard University. Awards will be announced late 2016.

AgeLab

The MIT AgeLab was created in 1999 to invent new ideas and creatively translate technologies into practical solutions that improve people’s health and enable them to “do things” throughout their lifespan. AgeLab is a multidisciplinary research program that works with businesses, government, and NGOs to improve the quality of life of older people and those who care for them.

AgeLab has grown in the number of students, staff, and faculty from engineering, social and behavioral sciences, management, Harvard Medical School, and others. AgeLab now enjoys sponsorship from corporations in multiple industry sectors addressing the needs of an aging society (e.g., retail, auto, financial services, pharma, consumer electronics, and consumer products). For the current reporting period, the AgeLab conducted experiments and fieldwork that engaged nearly 1,100 experimental subjects on campus and nearly 10,000 in field trials of hardware, surveys, focus groups and in-depth interviews in five countries, produced 16 peer reviewed journal and conference publications, convened four events engaging more than 500 participants addressing topics that included the sharing economy, the future of retirement planning, and the Internet of Things & aging-in-place.

AgeLab is recognized worldwide as an innovator in understanding the demands of the evolving longevity economy and its impact on various complex systems including transportation, health, finance, and community development. AgeLab collaborates with colleagues at the Media Lab (Livable Communities), Departments of Urban Studies & Planning (Future of Real Estate), Brain & Cognitive Sciences (Aging Brain Initiative), Civil Engineering (Transportation), Mechanical Engineering and CSAIL (Ubiquitous Computing & Autonomous Systems).

CTL Outreach

The foundation of CTL’s corporate outreach is the Supply Chain Exchange—believed to be the largest and most active membership program in the Supply Chain Management field.

Corporate Relations

During FY2016, CTL dropped two companies from the exchange: Siam Cement and Caterpillar. CTL continues to maintain and nurture its relationships with these companies and expects some to resume active membership in FY2017. Three companies were added as partners to the exchange: FedEx, FEMSA and Weft.

Outreach Events

In FY2016, CTL organized 11 events.

- CTL hosted the seventh Annual Partners Meeting on March 22, 2016, which convened key contacts from CTL’s partner companies for a review of research and customer feedback and input sessions.
- This year’s CTL Crossroads Conference (March 23, 2016) focused on innovations that are driving another decade of revolutionary change in the supply

chain world. The conference featured experts from MIT speaking about the technologies that will likely impact Supply Chain Management in the future



CTL's Crossroads Conference

- CTL held two sessions of its major Supply Chain Management executive education course (January and June), "Supply Chain Management: Driving Strategic Advantage. The June course was also attended by 65 Executive MBA students from the Antwerp Business School.



Participants of CTL's June 2016 major Supply Chain Management executive education course.

- CTL conducted custom Executive Education Courses at partner locations.
- On January 20, 2016, CTL held its eight annual networking night/poster session. Over 140 students from all SCALE Network programs (CTL, ZLC, CLI and MISI) presented over 80 thesis projects to more than 80 representatives from 50 companies.



Attendees of CTL's Eighth Annual Networking Night

- CTL also hosted the following events for CTL Supply Chain Exchange Partners:
- "Supply Chain Finance Workshop", October 27-28, 2015
- "Quantifying Resilience Roundtable", October 28-28, 2015
- "The Race to Trace: Integrating Profits, Planet and Precaution Roundtable", November 3, 2015
- "Supply Chain Innovation Summit at Flex Headquarters, "December 2-3, 2015



Supply Chain Innovation Summit at FLEX Headquarters, December 2-3, 2015

- End to End Visibility Roundtable May 12, 2015
- Research Fest of student thesis final presentations, May 19, 2016

Personnel Changes

In FY2016, new hires and appointments at CTL included: Sergio Alex Caballero Caballero, Postdoctoral Associate; William H Angell, Technical Assistant for Data Analysis; Samantha A Brady, Research Specialist; Andre Carrel, Postdoctoral Associate; Eva Ponce Cueto, Research Associate; Spencer Dodd, Technical Assistant for Data Analysis; Fredrik Eng Larsson, Postdoctoral Associate; Aren Ghazarians, Project Coordinator; Erin L. Hasselberg, Research Manager, Global Health Supply Chain; Shaoxuan Liu, Research Affiliate; Martina Julia Raue, Postdoctoral Associate; Timothy Edward Russell, Research Manager, Global Food Supply Chains; Benjamin D Sawyer, Postdoctoral Associate; Josue Velazquez Martinez, Research Associate; Sue Wang, SCM Leadership and Career Development Officer; Carley R Ward, Technical Assistant; Matthias Winkenbach, Research Associate; Benjamin A Wolfe, Postdoctoral Associate; and James P. Womack, Short Term Lecturer.

In addition, visitors to CTL included: Visiting Military Scholars Brad J Eungard, Milton L Griffith Jr, and Howard M Keebler; and Domestic and International Visiting Scholars, Prof Aruna Apte, Dr. Christina Katharina Busch, Prof. Raul Morales Salcedo, Prof. Lourdes Munoz Gomez and Prof. Michael Veatch.

Departures from CTL included: Alexis Hickman Bateman, Edgar Blanco, Jaime Andres Castaneda Acevedo, Fredrick Crist, Jeffrey Eget, Michal Isaacson, Katharina Koenig, Allison Rose Manning, Richard J Myrick, Eric Robinson, Sarah Smith, and Daniel Steeneck.

Yossi Sheffi

Director, MIT Center for Transportation & Logistics

Elisha Gray II Professor of Engineering Systems and Civil and Environmental Engineering

MIT Supply Chain Management Program

The MIT Center for Transportation and Logistics Supply Chain Management program (SCM) attract a diverse group of talented and motivated students from across the globe. Students work directly with researchers and industry experts on complex and challenging problems in all aspects of Supply Chain Management. MIT SCM students propel their classroom and laboratory learning straight into industry.

The SCM Program receives four to five times as many applications as available slots in the program. MIT SCM collaboration with other SCALE programs (Malaysia, Latin America, Spain) continues to increase with cross-center teams and international travel. All SCALE students congregate at MIT in January for an intense month of team projects, lectures, workshops, and presentations, followed by a one-week trek to Spain, China, or Panama.

The SCM Program has established the “MIT Supply Chain Excellence Award” (MIT SCEA) at 11 undergraduate programs at eight leading US universities. The MIT SCEA is given annually to the most outstanding graduating supply chain or industrial engineering major in each school (US citizens only). To date, 24 students have won the award and 24 have been named as honorable mention. Winners and honorable mentions receive a partial scholarship to attend the MIT SCM Program.

2016 Class

In spring 2015, 35 students (15 women and 20 men), were selected from more than 200 applicants to join the SCM program as its Class of 2016. Students came from 13 countries, and had an average age of 29 (ranging from 24-38) and an average of six years of professional experience.

Sixty companies recruited SCM students in 2015-2016. Of students who sought employment, 91% received job offers by graduation. SCM students received an average 85% boost in salary (50% for US, 200% for International students) with the average outgoing annual base being \$120,000 (ranging from \$87,500-\$150,000).

SCM Thesis Partners

Twenty companies participated as Supply Chain Exchange Thesis Partners. This year’s projects included:

- Post Serialization Data Management Strategy -Pharma
- Calculating Safety Stock for a Make-To-Order Environment-Consumer Goods
- Inventory Model for Multi-Variant Management in Level 2/3 Countries-Consumer Goods
- Do Truckload Stop Charge Levels effect RPM & Route Guide Performance-Freight Forwarder
- Using Real-Time Machine Failure Probabilities to Improve Cost to Serve-3PL
- How to mobilize a Temporary Supply Chain to Support a Big Construction Project? - Chemicals

- Supplier Flexibility Assessment Tool-3PL
- Impact of Regulation on Transportation Carrier Economics- Freight Forwarder
- Product Promotion Effectiveness-Consumer Products
- Optimal Product Mix for Retail Stores-Retailer
- Insights Driven Supply Chain-Chocolatier
- Robust Risk Mapping and Mitigation-Uniform Rentals
- Efficient Store Replenishment in the Piece Pick Environment- Drugstore Retailer
- Internal Cost of Water- Consumer Goods
- Production Capacity Vs Working Capital-Pharma
- Prioritization Model for Inbound Loads-Big Box Retailer
- Food Manufacturing Network Optimization- Beverage Retailer
- Direct Ship Vendors- Consumer Goods
- RNA Production Efficiency-Pharma
- Northeast Hops Growers Supply Chain-Independent Project

SCM Alumni Interaction

The SCM program has 548 alumni, plus over 500 alumni from other SCALE centers. SCM alums are working on six continents in myriad industries. MIT CTL held its tenth annual Alumni ReConnect event in May 2016. Panelists and topics included:

- Micro Masters and Blended SCM Degree explained – Dr. Chris Caplice
- Major Re-Construction coming to Building E40
- MIT Architect’s Plans for total overhaul of Kendall Square area
- The new Luxembourg SCALE Center –Asen Kalenderski ’15

Bruce Arntzen

Executive Director, MIT Supply Chain Management Program