

# MIT-Zaragoza Program: Supply Chain Research & Education

September 2008



**MIT** Center for  
Transportation  
& Logistics



# MIT (Massachusetts Institute of Technology)

- One of the world's pre-eminent research universities
  - More than 900 faculty and 10,000 undergraduate and graduate students
  - 5 schools and 27 degree-granting departments
- Recognition
  - 57 present and former members of the MIT community have won the Nobel Prize
  - 24 current, emeritus, and past members of the MIT faculty have received the National Medal of Science
  - 56 faculty and staff members belong to the National Academy of Sciences, 57 belong to the National Academy of Engineering, 16 to the Institute of Medicine, and 116 to the American Academy of Arts and Sciences.
- Financial strength
  - Research sponsorship for 2002 of \$450 million
  - Endowment over \$5 billion



# MIT Organization

- Five schools

- Engineering
- Science
- Management (Sloan)
- Humanities, Arts, and Social Sciences
- Architecture & Planning

*Very porous boundaries; a lot of overlap; many cross-school and department activities*

- School of Engineering

- Nine departments; two divisions
- Many inter-disciplinary activities
- New initiatives, new Dean

# Engineering Systems Division **MIT**esd

21<sup>st</sup> century  
complexity is  
changing how  
systems are  
engineered

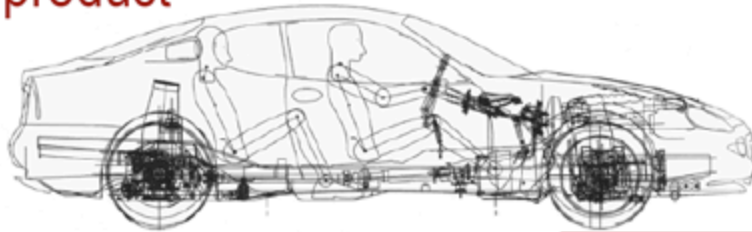
- ❖ Systems are more complex and collaborative than ever before, and must adapt to changes in mission and environment
- ❖ Systems need to be expandable, scalable, and designed to accommodate new capabilities
- ❖ Advances in computing technology, new infrastructure, and advanced methods provide engineers with ability to do things not previously possible
- ❖ We face new challenges in effectively defining, trading-off, and converging on the extended enterprise stakeholder needs

*System-of-Systems \* Family of Systems \* Product Families \* Network Centric Systems*



# ESD Themes

Problems are more complex and less isolated!  
product



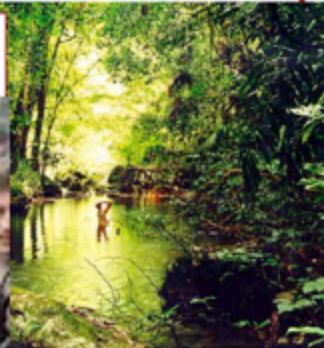
infrastructure



urban environment



sustainability



society



Need to look beyond 'traditional' engineering and management.

# ESD Themes

- ❖ Multidimensional Complexity/Emergent Properties
  - Technical Complexity – “Illities”
    - ◆ Quality, Flexibility, Sustainability, Maintainability, etc.
  - Organizational Complexity – Enterprise Perspective
  - Contextual Complexity – Societal, Qualitative etc.
  - Evaluative Complexity – Many Stakeholders, Lifecycle Analysis
- ❖ Holistic Perspective
- ❖ Inclusion of Other Factors in Design Process
- ❖ Uncertainty/Risk Management

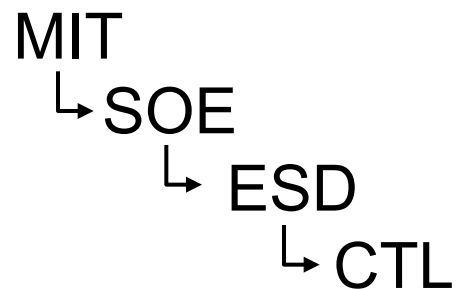
Shifting constraints to the objective function.



# ESD Components



TPP Technology & Policy Program	
LFM Leaders for Manufacturing	
SDM System Design & Management	
MLOG Logistics & Supply Chains	
ESD SM Program	
ESD Doctoral Program	

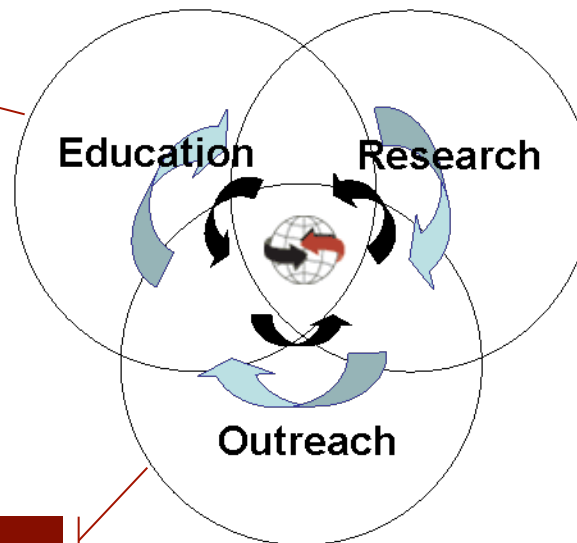


# MIT CTL



- **MISSION:** “Drive supply chain innovation and accelerate its adoption into practice.”
- Founded in 1973 as an interdisciplinary unit in the MIT School of Engineering
- Conducts research in transportation, logistics and supply chain management
- Engages over 60 faculty and research staff from 11 MIT departments & schools

- Master of Engineering in Logistics (MLOG)
- MIT-Zaragoza Master in Logistics (ZLOG)
- ESD SM in Logistics
- ESD Ph.D. in Logistics
- MIT- Zaragoza Ph.D.
- Executive Courses



- SC2020
- Healthcare SC
- Security & Resilience
- Transportation Mgmt.
- Emerging Markets
- Energy/Carbon
- Demand Mgmt.
- SC Risk Mgmt.
- Scenario Planning
- Strategy Alignment
- Education Partners
- MIT AgeLab

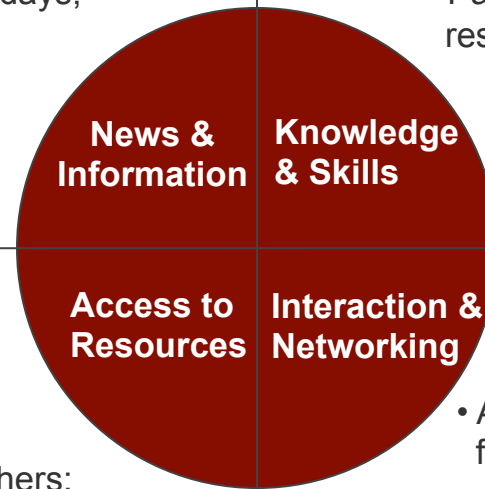
- Three-tier partnership model
- Exchange community
- Collaborations
- Communications



# Supply Chain Exchange

- *Supply Chain Frontiers* Newsletter;
- Reports, papers, theses, presentations;
- *Supply Chain Strategy* Newsletter;
- Symposia, conferences, partner days;
- Research briefings & updates;
- Web site & archives;
- Interactions.

- Executive Education;
- Recruitment of student new hires;
- Workshops (open enrollment & custom);
- Participation in events, projects, research, etc.



- Access to research results;
- Access to CTL faculty & researchers;
- Optional *Education Partners Program* (\$10K).

- Access to peers in CTL partner companies for advice, help, and collaboration;
- Ongoing forum for exchange;
- MIT Schools/Labs/Centers;
- MIT-Zaragoza International Logistics Program;
- Stanford Supply Chain Forum, etc.

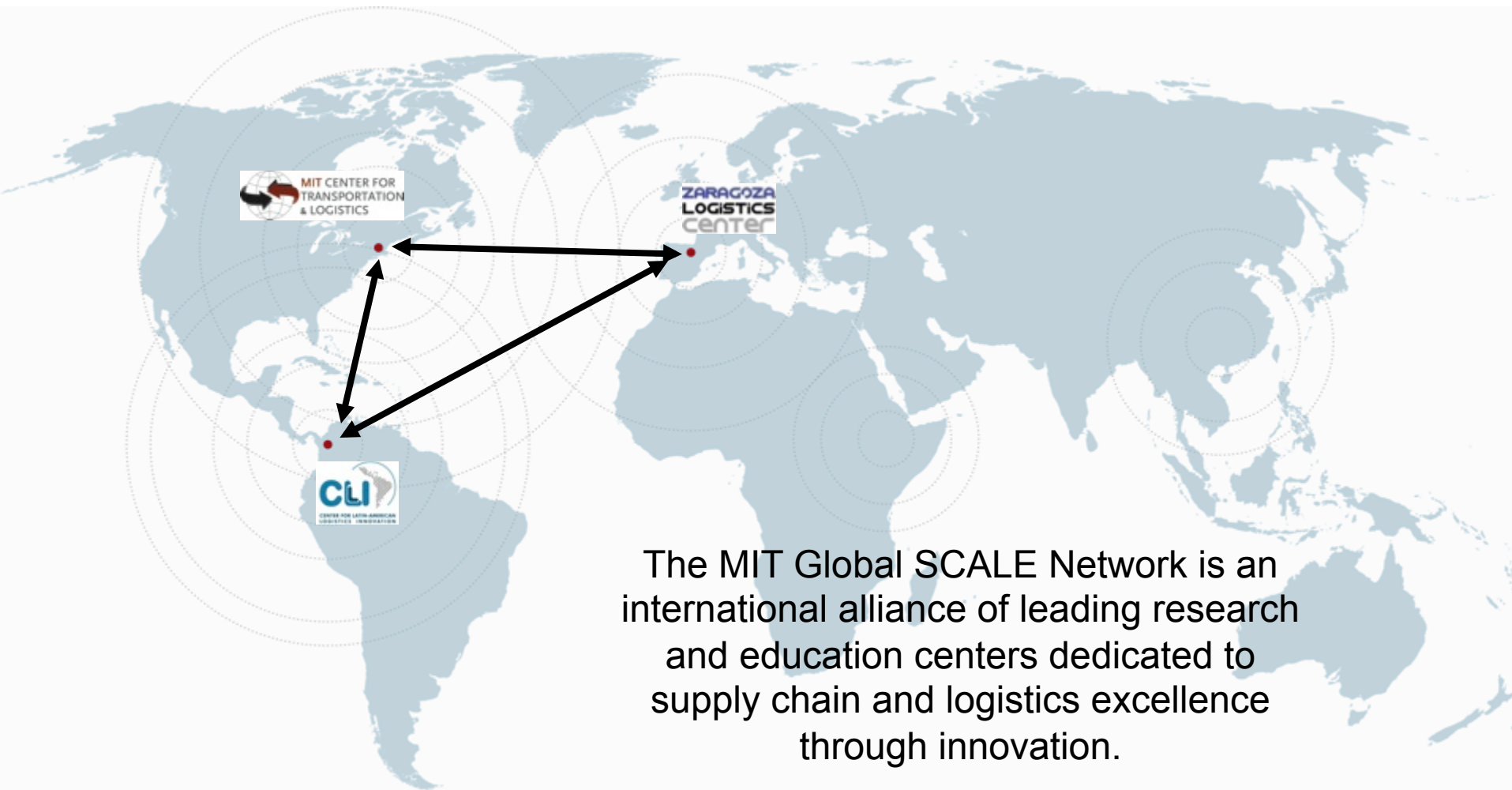
# MIT-CTL Supply Chain Exchange Members

(as of July 2008)



# International Research and Education

MIT Global  
**SCALE**  
Network

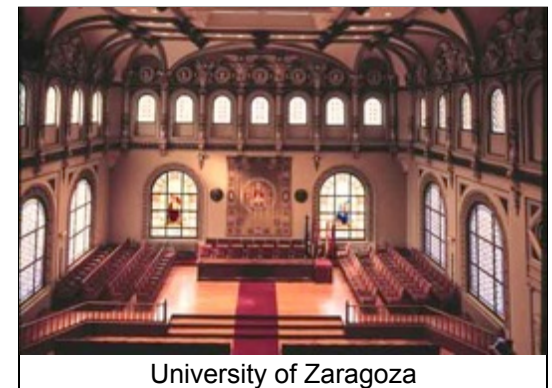
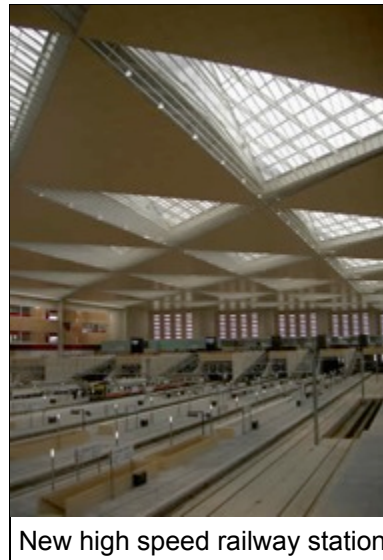


# Zaragoza

- Logistics hub of high-speed railway, highway exchanges, and an airport accommodating the world's largest cargo planes
- Over half of Spain's GDP and 20 million consumers within 300 kilometers (200 miles)
- Host city for World Expo 2008



September 2008



© MIT Center for Transportation & Logistics



# International Expo 2008



# The Zaragoza Logistics Park (PLAZA)



13-million square meter  
(3200 acre) complex of  
distribution centers,  
transportation, dry port,  
and intermodal services





# PLAZA Update



Over 170 companies  
under contract  
representing around  
8000 jobs

Over 90 companies  
already operating  
with nearly 5000  
workers, including  
Zara, Imaginarium,  
MemorySet, & DHL

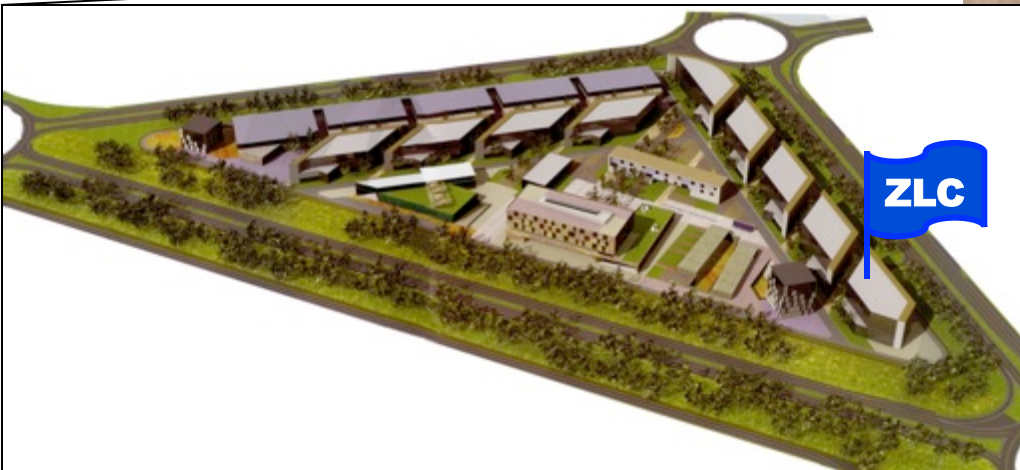
Phase 2 underway,  
rail/intermodal yard  
under construction





# Zaragoza Logistics Center (ZLC)

*Instead of putting a laboratory in a university, we put the university in the middle of a large-scale industrial laboratory.*



# Zaragoza Logistics Center (ZLC)

Created by the Government of Aragón and industry partners as a research institute associated with the University of Zaragoza

Partnership with the MIT CTL to create the  
**MIT-Zaragoza International Logistics Program**



Spain Ministry of Education & Science named ZLC to lead the  
**National Center of Excellence in Integrated Logistics**



# MIT-Zaragoza Mission

- Perform leading-edge research.
- Deliver world class education.
- Impact industry and society via outreach.
- Support the economic growth of the Aragón region.
- Create a new model for academia-industry-government cooperation.



# Hired a World Class Research Team



- Five full-time faculty members
  - Countries: Argentina, Brazil, India, Spain, Turkey
  - Degrees: Harvard Business School, Univ. of Toronto (Rotman), Univ. of Alabama, Univ. of Zaragoza, Univ. of Washington
  
- Visiting and adjunct faculty
  - MIT, Syracuse, London Business School, Lund (Sweden), Instituto de Empresa (Madrid), INCAE (Costa Rica), Mannheim (Germany), Cologne (Germany), Texas A&M, European Business School, Univ. of Texas at Austin, Stanford, York University
  
- Full time research staff
  - PhDs from University of Leipzig, ESADE Business School, University of Padova, University of Zaragoza

# ZLC Full-time Faculty



**Dr. Mustafa Çağrı Gürbüz**

- PhD from University of Washington Business School (Operations Management)
- Research: inventory management, distribution systems, project management, contract theory



**Dr. Santiago Kraiselburd (Director, Zaragoza Logistics Center)**

- DBA from Harvard Business School (Technology and Operations Management)
- Research: incentives, inter- and intra-firm coordination, finance-operations interaction



**Dr. Mozart Menezes**

- Ph.D. from Rotman School of Management, University of Toronto (Operations Management)
- Research: combinatorial optimization, facility location, reliability, supply chain network design, inventory management, workforce management



**Dr. Jesús Royo**

- Professor, University of Zaragoza (Industrial Engineering); Ph.D. from Univ. of Zaragoza
- Research: production management and maintenance, continuous improvement



**Dr. Maria Jesus Saenz**

- Ph.D. from University of Zaragoza (Industrial Engineering)
- Research: project management, warehouse layout & design, RFID



**Dr. Prashant Yadav**

- Ph.D. from University of Alabama (Management Science)
- Research: global health supply chains, closed-loop supply chain, order promising, coordination, contracts, pharmaceutical management science

# ZLC Research Staff



Dr. Desirée Knoppen

- Ph.D. from ESADE Business School, Barcelona
- Research: partnerships, management of change, interorganizational adaptation and learning, the impact of trust and power on partnerships



Dr. Rubén Sainz González

- Ph.D. from University of Cantabria (Economics)
- Research: transport economy, urban mobility, economic impact of infrastructures, cost-benefit analysis



Dr. Alessio Trentin

- Ph.D. from University of Padova, Italy (Operations Management)
- Research: product variety management, form postponement, organizational factors, mass customisation



Dr. Susana Val

- Ph.D. from University of Zaragoza (Industrial Engineering)
- Research: multimodal freight transport, urban logistics, infrastructure, trans-Pyrenean corridors

# ZLC Adjunct Faculty



**Dr. Juan Pablo Antún**

- Professor, Instituto Tecnológico Autónomo de México (ITAM); Director, Transport and Territorial Systems Laboratory at UNAM; Ph.D. from Université des Sciences Sociales Grenoble
- Research: strategic logistics, urban distribution, logistics centers, cross border distribution



**Dr. Daniel Corsten**

- Professor, Instituto de Empresa (Madrid); Ph.D. from University of St. Gallen
- Research: (service) operations management, retail supply chains, Efficient Consumer Response



**Dr. Nicole DeHoratius**

- Adjunct Professor, University of Chicago, DBA from Harvard Business School
- Research: retail supply chains, incentives, collaboration between manufacturers and retailers



**Dr. Asvin Goel**

- Ph.D. from University of Leipzig; researcher at University of Cologne
- Research: fleet telematics, real-time management & planning, operations research, vehicle routing, decision support systems



**Dr. Jarrod Goentzel**

- Exec. Director, MIT-Zaragoza Program; Ph.D. from Georgia Tech (Industrial & Systems Engineering)
- Research: global supply chain design, transportation optimization, information technology, humanitarian logistics, energy supply chains



# ZLC Adjunct Faculty



Dr. Rogelio Oliva

- Assoc. Professor, Mays Business School at Texas A&M University, Ph.D. from MIT
- Research: system dynamics, service operations, behavioral decision making



Dr. Richard Pibernik

- Dean of Research, European Business School; Ph.D. from Goethe-University, Frankfurt
- Research: supply chain information systems, Advanced Planning Systems (APS), order promising, coordination of distributed decisions, supply chain process management with Petri-Nets (XML-Nets)



Dr. Laura Rock Kopczak

- Ph.D. from Stanford (Industrial Engineering); former Director of Research for the Stanford Global Supply Chain Management Forum; has taught in Switzerland, the Netherlands, Spain and Hong Kong
- Research: humanitarian and health care supply chains for developing countries



Dr. Vicente Salas

- Professor, University of Zaragoza (Economics); Ph.D. from Purdue University
- Research: boundaries of the firm, allocation of ownership rights, governance of organizations



Dr. Fabrizio Salvador

- Professor, Instituto de Empresa (Madrid); Ph.D. from Univ. of Padova
- Research: mass customization, postponement, empirical methods



Dr. Yosef Sheffi

- Professor, MIT (Engineering Systems and Civil & Environmental Engineering)
- Research: transportation, combinatorial auctions, corporate resilience, RFID, yield management

# ZLC Visiting Faculty



Dr. Jim Hines

- Senior Lecturer, MIT; Past President, System Dynamics Society; Ph.D. from MIT
- Research: system dynamics, component-based technology, eigenvalue-based theory and software



Dr. Dorothee Honhon

- Asst. Professor, McCombs School of Business, Univ. of Texas at Austin; Ph.D. from NYU
- Research: inventory theory, assortment planning, retailing operations and variety theory



Dr. David Johnston

- Assoc. Professor, Schulich School of Business at York University
- Research: sustainability, management of new technology, supply chain management, entrepreneurship



Dr. Michael Ketzenberg

- Asst. Professor, Mays Business School at Texas A&M University; Ph.D. from Univ. of North Carolina
- Research: value of information for inventory management, management of closed loop supply chains



Dr. Pablo Martin de Holan

- Professor, Instituto de Empresa (Madrid); Professor, INCAE (Costa Rica); Ph.D. from McGill University
- Research: strategy, entrepreneurship, organizational practices

# Strategic Research Role in Spain

- National Center of Excellence in Integrated Logistics
  - Established by the Spanish Ministry of Education and Science and led by Zaragoza
  - Locus in Spain for scientific and technological research in logistics & supply chain management
  - Network includes CTL (Cantabria) & ITENE (Valencia)
- LogisTop
  - Consortia of leading companies and universities in Spain
  - Advise the government on investment strategy in logistics and SCM
- Singular Strategic Project for research in logistics and supply chain management
  - Funded by Spanish Ministry of Education and Science



# Strategic Research Partners

## ■ Intelligent Supply Chain Labs

- Investment by the EU, Aragon, ZLC, and DPWN/DHL
- DHL employees seconded to the ZLC
- Linked to recently opened DHL Innovation Center



## ■ Log-ID Lab

(Auto-ID applications for logistics)

- Partners include EDS, Sun Microsystems, Intermec
- Funding support from the Spain Ministry of Education & Science



# Strategic Research Project



- Supply Chain 2020 is a pioneering project mapping innovations to successful supply chains as far into the future as the year 2020.
  - Phase I
    - Define excellent supply chains
    - Identify principles that drive excellent supply chain practices
  - Phase II
    - Create scenarios of the future: technology, regulation, consumer expectations, environmental pressures, etc.
    - Determine how future supply chains should be designed to be excellent in various scenarios
    - Create a roadmap of actions organizations should take in order to be prepared
- Collaborators
  - Industry Advisory Council
  - European Advisory Council
  - Academic Partners



# Supply Chain 2020 Advisory Council



# ZLC Research Activity Highlights (2005-2006)

- Log-ID Lab (Auto-ID applications for logistics)
  - Partners include EDS, Sun Microsystems, Intermec
- Air cargo assessment for regional airports
  - Spanish Airport Authority (AENA/CLASA)
- Cash flow logistics in Spain
  - Study funded by Prosegur
- Spain Singular Strategic Project in Logistics & SCM
  - Funded by Spain Ministry of Science and Education
  - Topics
    - Organizational Learning and Innovation Lab
    - Incentives and Contracts
    - Order Promising
    - IT
    - Transportation
- Thesis projects





# ZLC Research Activity Highlights (2006-2007)

- Intelligent Supply Chain Labs
  - Investment by the EU, Aragon, ZLC and DPWN/DHL
  - DHL employees relocate to join the ZLC research team
  - Linked to recently opened DHL Innovation Center
- Malaria Treatment Distribution in Africa
  - Funded by the Center for Global Development
- Assessment of Air Cargo Services in Spain
  - Project with the Spanish Airport Authority (AENA/CLASA)
  - Funded by Spain Ministry of Public Works
- Hydrogen Supply Chain Network Design
  - Project with Gas Natural, Acciona, Repsol, and others
  - Funded by the Spain Ministry of Industry
- Reverse Logistics
  - Funded by Spain Ministry of Science and Education
- Container flows in Spain
  - Funded by Aragon Exterior
- Thesis projects



# ZLC Research Activities (2007-2008)

# UPDATE

- Intelligent Supply Chain Labs (concluded Phase I)
  - Investment by the EU, Aragon, ZLC and DPWN/DHL
  - DHL employees relocated to ZLC for 18 months
  - Research event at DHL Innovation Center
- Public Health Supply Chain Strategy in Resource Constrained Settings
  - Funded by USAID | Deliver Project
  - Project with John Snow, Inc. to create a framework for strategy development
- Prashant work
  - Funded by DFID, etc.
- TransPyrenee?
- Hydrogen Supply Chain Network Design
  - Project with Gas Natural, Acciona, Repsol, and others
  - Funded by the Spain Ministry of Industry
- Reverse Logistics
  - Funded by Spain Ministry of Science and Education
- Revenue Management
  - RENFE
- Thesis projects
  - General Motors
  - Others...



FONDO SOCIAL EUROPEO



# Thesis Project Examples **UPDATE**

- Supply Chain Excellence in the Retail Industry (METRO AG)
- Analysis of the European Apparel Supply Chain (Zara)
- Supply Chain Excellence in the Pharmaceutical Industry (Novartis)
- Supply Chain Excellence in the Oil and Gas Industry (Royal Dutch/Shell)
- Strategic Deployment of Specialized Testing and Remanufacturing in a Telecommunications Supply Chain (Bell Labs)
- The Influenza Vaccine Supply Chain: Structure, Risks and Coordination
- Strategic Supply Chain Network Design for a New Product Line (Sun Microsystems)
- The Value of Information Technology for Humanitarian Relief Logistics (Oxfam, Merlin, and Save the Children)
- Transportation Cost Volatility and Mode Choice (PepsiCo)
- Enabling Rapid Capture of Information Technology Opportunities (Nokia)
- Buffer Planning and Stock Positioning (Lucent Technologies EMEA)
- Logistics Parks in China: Case Studies and the Role of the Government
- How Improving Read Rates in the Retail Supply Chain Effects Supplier Value (T3Ci)
- Value of Advanced Order Information in Sequence-Dependent Make-to-Order Manufacturing (Mondi Business Paper)
- International Cargo via Regional Airports: Case Study of the Zaragoza Airport (AENA, the national airport authority of Spain)

# Selected Research Areas

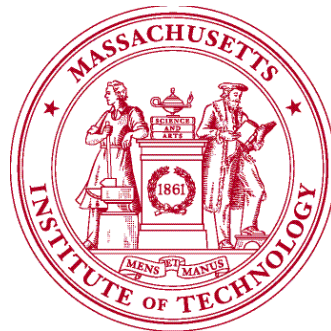
- Order Promising
- Auto-ID Technology
- In-Transit Visibility
- Reverse Logistics / Closed-Loop Supply Chains
- Postponement and Mass Customization
- Strategic Network Design
- Renewable Energy Delivery
- Carbon-Efficient Supply Chains
- Supply Chain Finance
- Manufacturer-Retailer Coordination, Contracts, & Incentives
- Transportation Infrastructure – airports, European rail
- Humanitarian Logistics (relief, development,...)
- Global Health Delivery (essential drugs, vaccines,...)

# World Class Education

- MIT-Zaragoza Master of Logistics & Supply Chain Management (ZLOG)
  - Full-time, 9 month, professional degree taught in English
  - Joint MLOG-ZLOG module at MIT and in Spain during January
  - Builds upon MIT's top-ranked programs in supply chain management
  - Degree from University of Zaragoza, Certificate from MIT
- MIT-Zaragoza Ph.D. in Logistics and Supply Chain Management
  - Coursework in Zaragoza and at MIT



UNIVERSIDAD DE ZARAGOZA



# MLOG-ZLOG International Exchange (January)



- Supply Chain Challenge – team competition where you manage a virtual supply chain for 4 weeks
- Supply Chain Innovation & Leadership Series – executives present real-world initiatives and leadership issues
- Company tours
- Recruiting



# ZLOG Class of 2009 Profile

- 33 students (from over 200 applications)
- Very international – from 14 countries and 5 continents
  - Canada, Colombia, Costa Rica, Dominican Republic, Germany, Ghana, Greece, India, Italy, Mexico, Norway, Peru, Spain, US
- 52% are female (17 of 33)
- Median GMAT of 690
- 36% of have advanced degrees:
  - 27% have MBAs
  - 9% more already have some other masters degree
- Approximately half of the students obtained their initial university degree in engineering; the other half in business, economics, physical science, political science, international studies, etc.
- Average age is 29
- Average 5 years of work experience
  - Industries - healthcare, energy, high tech, transportation, IT, financial, retail, software, consulting, and manufacturing.
  - Companies – ABB Power Technologies, Accenture, BASF, Citigroup, Cummins, Deutsche Bank, DHL, Ghana Ministry of Health, HSBC, IBM, Infosys, Intel, Lockheed Martin, Microsoft, Nestle, Oxfam, PricewaterhouseCoopers, Proctor & Gamble, Pyrex, RAND, SABMiller, Unilever, World Food Program, and others.



# Where do ZLOGers go?

- 74 alumni from four classes
- Employers of ZLOG students have included:
  - Accenture
  - Beiersdorf AG (Nivea)
  - C&S Wholesale Grocers
  - Cap Gemini
  - Caterpillar
  - Cummins
  - Deloitte
  - DHL
  - Dow Chemical
  - Dupont
  - Eagle Global Logistics
  - Hewlett Packard
  - Hill's Pet Nutrition (Colgate-Palmolive)
  - i2
  - ILOG
  - ING Group
  - International Paper
  - Jonova
  - KLA-Tencor
  - Kuehne & Nagel
  - Lucent Technologies
  - McKinsey & Company
  - Metro AG Group
  - Monitor
  - Nike
  - Optiant
  - Pepsi Bottling Group
  - Rubbermaid
  - Schlumberger
  - Solutia
  - Shell Oil Company
  - Standard Chartered Bank
  - Sun Microsystems
  - Target
  - Tempur-Pedic
  - ToolsGroup
  - Williams Sonoma
  - Startups, family businesses, etc.
- Some continued their education at:
  - Oxford University (MBA), Florida State (Law), Cal-Berkeley (PhD), University of Zurich (PhD), Pardee RAND Graduate School (PhD), Technical University of Athens (PhD), Zaragoza Logistics Center (PhD)

# Placement Statistics

- MLOG over last two years
  - 90% had accepted jobs at graduation
  - 2.3 Average offers per student
  - Starting Salaries
    - \$97,000 Average base salary (without bonus)
    - \$15,000 Average bonus
    - 50% Median differential increase from entering salary
- ZLOG Class of 2008
  - 95% had offers and 80% had accepted jobs at graduation
  - 2 offers per student on average
  - Starting salaries (converted to \$US)
    - \$101k average base salary (without bonus)
    - \$15k average bonus

# Master's Degree in Logistics (MDL)



Máster de Logística

- Established in 2001 by the Univ. of Zaragoza
- Part-time, professional degree taught in Spanish
  - Five core modules: Procurement, Production, Warehousing, Transportation, and Information Systems
  - Final thesis project with a company
- Over 50 graduates in the past three years



UNIVERSIDAD DE ZARAGOZA

# PhD Summer Academy

## Calendar

	09-jun	10-jun	11-jun	12-jun	13-jun	
	Monday	Tuesday	Wednesday	Thursday	Friday	
10.00	Retail Operations	Retail Operations	Retail Operations	Retail Operations	Retail Operations	10.00
13.00	Tom Van Woensel	Tom Van Woensel	Tom Van Woensel	Tom Van Woensel	Tom Van Woensel	13.00
	16-jun	17-jun	18-jun	19-jun	20-jun	
	Monday	Tuesday	Wednesday	Thursday	Friday	
10.00	Retail Operations			System Dynamics & Simulation in Research	System Dynamics & Simulation in Research	10.00
13.00	Tom Van Woensel			Rogelio Oliva	Rogelio Oliva	13.00
16.00		Newsvendor Problems: Extensions & Alternative Approaches	Newsvendor Problems: Extensions & Alternative Approaches	Newsvendor Problems: Extensions & Alternative Approaches	Newsvendor Problems: Extensions & Alternative Approaches	16.00
19.00		Nils Rudy	Nils Rudy	Nils Rudy	Nils Rudy	19.00
	23-jun	24-jun	25-jun	26-jun	27-jun	
	Monday	Tuesday	Wednesday	Thursday	Friday	
10.00	Newsvendor Problems: Extensions & Alternative Approaches					10.00
13.00	Nils Rudy					13.00
	30-jun	01-jul	02-jul	03-jul	04-jul	
	Monday	Tuesday	Wednesday	Thursday	Friday	
10.00	Advanced Topics in Inventory Management		Advanced Topics in Inventory Management		Advanced Topics in Inventory Management	10.00
13.00	Dorothee Honhon		Dorothee Honhon		Dorothee Honhon	13.00
16.00	Operations Management		Operations Management		Operations Management	16.00
19.00	Yehuda Bassok		Yehuda Bassok		Yehuda Bassok	19.00
	07-jul	08-jul	09-jul	10-jul	11-jul	
	Monday	Tuesday	Wednesday	Thursday	Friday	
10.00	Advanced Topics in Inventory Management		Advanced Topics in Inventory Management		Advanced Topics in Inventory Management	10.00
13.00	Dorothee Honhon		Dorothee Honhon		Dorothee Honhon	13.00
16.00	Operations Management		Operations Management		Operations Management	16.00
19.00	Yehuda Bassok		Yehuda Bassok		Yehuda Bassok	19.00
	14-jul	15-jul	16-jul	17-jul	18-jul	
	Monday	Tuesday	Wednesday	Thursday	Friday	
10.00	Research Topics in Supplier Relationships	Research Topics in Supplier Relationships	Research Topics in Supplier Relationships	Research Topics in Supplier Relationships	Decision Making & Analysis in Operations Management	10.00
13.00	Doug Thomas	Doug Thomas	Doug Thomas	Doug Thomas	Richard Pibernik	13.00
16.00	Decision Making & Analysis in Operations Management	Decision Making & Analysis in Operations Management	Decision Making & Analysis in Operations Management	Decision Making & Analysis in Operations Management	Decision Making & Analysis in Operations Management	16.00
19.00	Richard Pibernik	Richard Pibernik	Richard Pibernik	Richard Pibernik	Richard Pibernik	19.00

# Industry Involvement in Education

- Tours
  - Boston Scientific
  - DHL
  - EPC Spain
  - General Motors
  - ILPA
  - Imaginarium
  - Mango
  - PLAZA
  - Port of Barcelona
  - Reebok
  - Shaw's
  - UPS
  - Zara (Inditex)
- Workshops
  - Six Sigma
  - i2
  - SAP
- Lectures & Seminars
  - Accenture
  - ARIS
  - Bell Labs Ireland
  - Caterpillar
  - CIBA Vision
  - Cordis
  - Cummins
- Lectures & Seminars (cont.)
  - Dell
  - EDS
  - Eli Lilly
  - Ex Works, Inc.
  - Fairchild
  - First Advantage Corporation
  - Gazeley (division of Wal-Mart)
  - General Motors
  - GeoLogistics
  - i2
  - Intel
  - International Paper
  - Lucent
  - Lufthansa Systems
  - McKinsey
  - NCR Teradata
  - Nike
  - Pepsi Bottling Group
  - PepsiCo
  - Rand
  - Reebok
  - Schneider
  - Solutia
  - Sysco
  - Target
  - TNT Express
  - Tools Group
  - Tyco

# Partnership with MBA Programs



- Instituto de Empresa / IE Business School (Madrid, Spain)
  - Created in 1973 to offer postgraduate training in business; International MBA started in 1983
  - A top-ranked international business school
    - #8 worldwide Global MBA by FT (2008), #9 worldwide MBA by The Economist (2007), #14 worldwide MBA by The Wall Street Journal (2007)
  - Network of 35,000 alumni that hold management positions in 100 countries



- INCAE (Alajuela, Costa Rica)
  - Founded in 1964 by the business community and governments of Central American nations under the technical supervision of the Harvard Business School.
  - INCAE has been recognized as the best business schools in Latin America by América Economía and is one of only three schools in Latin America to be ranked in the top 100 by Financial Times in the past three years.
  - Network of 12,000 alumni in 35 countries



# Customized Programs

- Executive Masters, INCAE Business School
  - June 5-13, 2008 and July 17-25, 2008
  - Zaragoza and Biescas
- IVECO Supply Chain Academy
  - Designed by MIT-Zaragoza for SDA Bocconi
  - October 20-23, 2008
  - Zaragoza

# Outreach

- Supply Chain Summit
- Academic Conferences
- Symposia
- Distinguished Lectures
- Logistics Seminar
- Presentations at industry and academic events

# 2004 Zaragoza Supply Chain Summit

- March 24-26, 2004 in Zaragoza
- Theme: *Supply Chain Management – The Future*
- Appox. 800 attendees
- Keynote Addresses

- Gabriel Bitran, MIT
- Martin Christopher, Cranfield
- Morris Cohen, Wharton
- Marshall Fisher, Wharton
- Hau Lee, Stanford
- Don Ratliff, Georgia Tech
- Yossi Sheffi, MIT
- International Panel:

*Supply Networks*

*Creating the Agile Supply Chain*

*After-Sales Service Strategy*

*Rocket Science Retailing*

*Information-Based Supply Chain Innovations*

*The Supply Chain Complexity Gap*

*RFID in the Supply Chain*

*Past, Present, and Future Innovation*

- Download keynote presentations:

[www.zaragozalogistics.com/downloads.php](http://www.zaragozalogistics.com/downloads.php)



# 2005 Zaragoza Supply Chain Summit

- May 31 - June 1, 2005 in Zaragoza
- Theme: *Beyond Offshoring – The Road to Globalization*
- Appox. 400 attendees
- Keynote Addresses
  - David Abney, President, UPS International
  - John Allan, CEO, Exel
  - Jan Hammond, Professor, Harvard Bus. School
  - Nicky Hartery, VP of Manufacturing (EMEA), Dell
  - Thomas W. Malone, Professor, MIT Sloan School of Management
  - Edouard Michelin, CEO, Michelin
  - Michael J. Schabel, Technical Manager, Bell Labs, Ireland
  - Yossi Sheffi, Professor, MIT
  - B.G. Srinivas, Senior Vice President, Infosys
  - Journalist Panel from Dow Jones, Financial Times, The Economist, and Harvard Business School Publishing
- Download keynote presentations:  
[www.zaragozalogistics.com/downloads.php](http://www.zaragozalogistics.com/downloads.php)



# 2006 Zaragoza Symposium



- April 6, 2006 in Zaragoza
- Theme: *Building the Future Supply Chain Now*
- Over 50 participants from international companies
- Panel discussions and breakout sessions facilitated active participation
- Speakers
  - Dennis Lockett, British Telecom
  - Raymond Vanrykel, ExxonMobil
  - Lawrence Wilkinson, Global Business Network
- Panelists
  - Supply chain executives from Metro Group, Novartis, Borealis Group, Unilever, Volvo Logistics, NCR

# 2007 Zaragoza Supply Chain Summit

- March 21-22, 2007 in Zaragoza
- Theme: Supply Chain Innovation
- Appox. 500 attendees
- Keynote Addresses
  - Susan Hockfield, President, MIT
  - Robert A. Willett, CIO, Best Buy and CEO, Best Buy International
  - Lorena Alba, Managing Director of Logistics, Zara
  - Timothy E. Carroll, Vice President, Supply Chain, IBM
  - LaVerne H. Council, CIO, Johnson & Johnson
  - Claus Garbisch, Sr. Vice President, DHL Exel, and executives from DHL Innovation Initiative partners: Intel, SAP, and IBM
  - Presidents of the Cotec Foundations of Spain, Portugal, and Italy
- <http://www.zlc.edu.es/summit07>





# 2007 Zaragoza Conference on Logistics & SCM

- September 12-13, 2007 in Zaragoza
- Roundtable on Innovation in Reverse Logistics
  - Stefan Voss, Professor, University of Hamburg
  - Joseph Sarkis, Professor, Clark University
  - José Ramón Carbajosa Morales, General Manager, Foundation ECOLEC
  - Fernando Carreras Lario, General Manager, Carreras
  - Pedro Vicente, Manager Iberian Distribution Center, Philips
- Keynote on The Resilient Enterprise
  - Yossi Sheffi, Director, MIT Center for Transportation & Logistics
- Over 70 papers presented in 15 sessions
- Organized by ZLC and promoted by the Spanish National Center of Excellence in Logistics (CNC-LOGISTICA)

# MIT-Zaragoza Distinguished Speaker Series

- Dan Roos, Engineering Systems Division, MIT (November 10, 2003)
  - The Machine That Changed the World – Lessons and Future Directions
- Charles Fine, MIT Sloan School of Management (June 3, 2004)
  - Latest Developments in Supply Chains
- Daniel Corsten, University St. Gallen (September 6, 2004)
  - Collaborative Supply Chain Management
- Ana Meca Martínez, University Miguel Hernandez (March 23, 2007)
  - Inventory Games: A repeated cost allocation scheme for dynamic realization games
- Nils Rudi, INSEAD (April 27, 2007)
  - End-of-period vs. continuous accounting of inventory related costs
- Jens O. Riis, Aalborg University, Denmark (June 7, 2007)
  - The Interactive Firm – Towards a New Paradigm. A framework for the strategic positioning of the industrial company of the future
- Alex Grasas, University of Florida (June 22, 2007)
  - Product Assortment and Return Policy



# MIT-Zaragoza Distinguished Speaker Series

- Kalyan Talluri, Universitat Pompeu Fabra, Barcelona, Spain (September 14, 2007)
  - On Upper Bounds for Network Revenue Management
- Emre Berk, Bilkent University, Ankara, Turkey (October 10, 2007)
  - Stochastic Joint Replenishment Problem: Single Location and Multi-Echelon Models for Non-perishables
- Joe Blackburn, Vanderbilt University, Nashville, TN, USA (October 23, 2007)
  - Valuing Time in the Supply Chain: Using a Product's Marginal Cost of Time to Drive Supply Chain Design
- Cagri Haksoz, Cass Business School, City University of London, UK (October 26, 2007)
  - Supply Contract Fragility Risk
- Oli Madsen, Technical University of Denmark (November 20, 2007)
  - Time Window Constrained Vehicle Routing Problems - Survey and Recent Developments
- Yehuda Bassok, Marshall School of Business at University of Southern California, USA (December 11, 2007)
  - Inventory Assortment and Substitution Problems
- Jan Fransoo, Technische Universiteit Eindhoven, Netherlands (December 19, 2007)
  - Research Overview at the Department of Operations, Planning, Accounting, and Control at Technische Universiteit Eindhoven

# MIT-Zaragoza Distinguished Speaker Series

- Agata Jaworska, Freelance Designer, Amsterdam, Netherlands (February 15, 2008)
  - Made in Transit - shifting the paradigm of packaging from preserving freshness to enabling growth
- Victor Martínez de Albéniz, IESE Business School, Barcelona, Spain (March 12, 2008)
  - Competing for Shelf Space
- Ted Farris, University of North Texas, USA (April 11, 2008)
  - Solutions to Strategic Supply Chain Mapping
- Rene Castro, INCAE Business School, Costa Rica (April 15, 2008)
  - The use of economic instruments for local and global sustainable development
- Juan José Salazar Gonzalez, Universidad de la Laguna, Spain (April 18, 2008)
  - Models and algorithms for answering some questions on the one-commodity pickup-and-delivery TSP with stochastic demands
- Mitchell Tseng, Hong Kong University of Science and Technology (May 19, 2008)
  - Creating Value in Global Manufacturing for a Flatter World
- Nicole DeHoratius, University of Portland & University of Chicago (May 20, 2008)
  - Do Upstream Stockouts Matter? A Natural Experiment at Fashion Manufacturer Costis Moros
- Cristina Gimenez, ESADE Business School, Barcelona, Spain (May 20, 2008)
  - Supply Chain Integration and Performance: The Impact of Business Conditions
- Maureen Lewis, World Bank (June 30, 2008)
  - Governance Tools for Strategic Purchasing in the Health Sector

# MIT-Zaragoza Distinguished Speaker Series

- Hans Sebastian (Seb) Heese, Kelley School of Business at Indiana University (July 3, 2008)
  - Pitch it Now or Pitch It Later? Extended Warranty Sales Strategies and the Impact on Manufacturer Warranties
- Canan Ulu, McCombs School of Business at Univ. of Texas at Austin (July 7, 2008)
  - The Flip Side of the Innovator's Dilemma: Technology Adoption Decisions with Uncertain Improvements
- Fernando Bernstein, Fuqua School of Business at Duke University (July 8, 2008)
  - Managing Operational Risks in Decentralized Supply Chains
- Ana Muriel, University of Massachusetts at Amherst (July 10, 2008)
  - Impact of Consumer Behavior on the Profitability of Remanufactured Products
- Kyle Hyndman, Dept. of Economics at the Southern Methodist University (July 11, 2008)
  - Learning, Belief Formation & Strategic Teaching in Games
- Dmitry Krass, Rotman School of Management at University of Toronto (July 14, 2008)
  - Facility location, capacity allocation and pricing under spatial equilibrium
- Rohit Verma, School of Hotel Administration at Cornell University (July 16, 2008)
  - Scripting the Service Encounter

# MIT-Zaragoza Event Calendar **UPDATE**

- MIT-Zaragoza Symposium: Workshop on Learning and Innovation in Collaborative Projects (July 11, 2008)
- Webcast: New Research in Humanitarian and Health Care Supply Chains for Developing Countries (May 28, 2008)
- Graduation (May 27, 2008)
- MIT-Zaragoza Symposium: ZLOG Thesis Presentations (May 26, 2008)
- MIT-CTL Symposium: MLOG Thesis Presentations (May 21-22, 2008)
- Co-Organizer: Supply Chain Research Developments Seminar, *with DHL Innovation Center* (April 10, 2008)
- CNC Symposium: Jornada de Innovación y Estrategia de la I+D en Logística (April 2, 2008)
- MIT-CTL Executive Education Course: Strategic Supply Chain Management (January 8-10, 2007)
- Conference: *At the Crossroads of Supply Chain And Strategy: The Next 10 Years* (March 27, 2007)
- MIT-CTL Symposium: Freight Resilience and Economic Recovery (November 28-29, 2007)
- Co-Organizer: RFID Seminar, *with Confederación de Empresarios de Aragón [CREA]* (October 18-19, 2007)
- MIT-CTL Symposium jointly hosted with Stanford GSCM Forum: RFID & Beyond (October 10-11, 2007)
- MIT-CTL: Efficient Healthcare Delivery (MEHD) Group Meeting (September 27, 2007)
- MIT-Zaragoza Symposium: Workshop on the Auto-ID PLAZA Project (September 19, 2007)
- Conference: Zaragoza Conference on Logistics & SCM (September 12-13, 2007)
- Zaragoza Graduation (May 30, 2007)
  - Speaker: Dr. Hans-Joachim Körber, CEO, Metro Group
- MIT-Zaragoza Speaker Series
- ZLC Logistics Seminar
  - ? events during 2007-2008
  - Ten events during 2006-2007
  - Six events during 2005-2006
  - Nine events during 2004-2005



# Participation in External Events

## ■ Presentations at industry events

- IV Conferencia Sector Gran Consumo, Madrid (February 2006)
- XXI Jornadas de Distribución y Comercio Internacional (March 2006)
- 3er Forum Mundial de Logística y Comercio Internacional, Mexico (March 2006)
- Humanitarian Logistics Conference, Geneva (April 2006)
- Foro Global de Logística y Comercio Internacional, Panama City, Panama (May 2006)
- SIL International Logistics Fair, Barcelona (May 2006)

## ■ Participation in academic events

- INFORMS, DSI, POMS, EurOMA, Workshop on Business Aspects of Closed-Loop Supply Chains (CLSC), and the 3rd International Workshop in Supply Chain Management and Information Systems in Thessaloniki (received Best Paper)

UPDATE

# Support Economic Growth

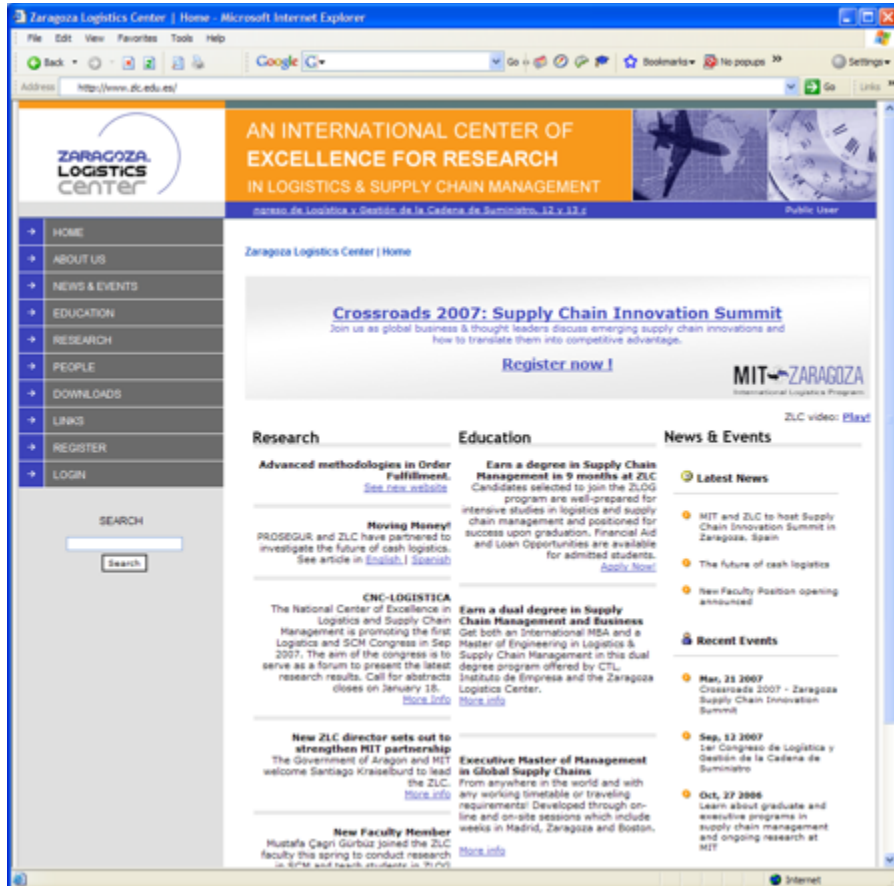


- Aragon Logistica
  - Gateway for companies looking to establish operations in Aragon (Collaboration with Aragon Exterior)
  - ZLC forming a network of expertise and training for companies (Collaboration with Technological Institute of Aragon)
- Research in air cargo services sponsored by AENA, the Spanish Airport Authority
  - Zaragoza airport then launched services to increase cargo by 300%
- Logistics Forum events open to the business community
- International Media Coverage
  - Feature articles and other coverage in *The Financial Times*
  - Business feature on *BBC Radio4* and *BBC World Service*
  - Articles in *CLM Logistics Review*, *CLM Logistics Comment*, *DC Velocity*, *The Economic Times*, *Global Logistics & Supply Chain Strategies*, *Inbound Logistics*, *Industrial Engineer*, *Industry Week*, *Logisteik Krant*, *Logistics Business*, *Logistics Europe*, *Manufacturing Chemist*, *Pharmaceutical Executive*, *Traffic World*, *Warehouse Europe*

# New model for academia-industry-ent

- The Government of Aragon establishes an academic institute in the middle of an industrial complex
- Education
  - Industry involvement in education
- Research
  - Intelligent Supply Chain Labs (DHL, EU, Aragon)
  - Log-ID Lab (EDS, Sun Microsystems, Intermec, Spain Ministry of Education & Science)
- Summit
  - Government hosts C-level executives and leading professors

# For more information



www.zlc.edu.es



ctl.mit.edu

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# MIT Supply Chain Frontiers

- Email newsletter published 8 times/year by CTL
- To subscribe, email contact info to: [frontiers@mit.edu](mailto:frontiers@mit.edu)

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