



# Introduction to MIT CTL

CLI 4<sup>th</sup> Academic Workshop  
26-28 October 2010  
MIT Cambridge, MA

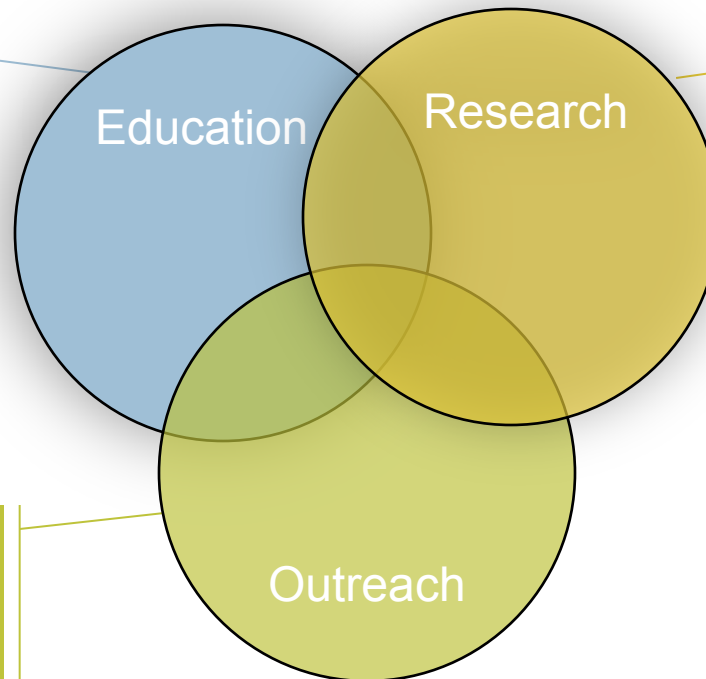
**Dr. Chris Caplice**  
Executive Director, CTL

# What is 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 all 5 MIT schools
- Works with over 50 companies across the world through the Global SCALE

- **Master’s Degrees**
  - MIT Supply Chain Management Program
- **Ph.D. in Logistics**
- **Executive Education**



- SC2020
- MIT FreightLab
- Security & Resilience
- Logistics Parks
- Emerging Markets
- Humanitarian Logistics
- Sustainability
- SC Risk Mgmt.
- Scenario Planning
- Strategy Alignment
- Education Partners
- MIT AgeLab

- Three-tier partnership model
- Exchange community
- Symposia & Conferences
- Communications

# MIT Global SCALE Network



# What is MIT CTL?

# Educational Programs

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Education

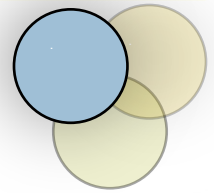
Research

Outreach

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# MIT Supply Chain Management Program



## Mission

SCM is a **nine-month**, **on-campus** master degree (MLOG) program designed primarily for supply chain management professionals with **industry experience** instilling in them a system-wide and **global** perspective, analytical **problem solving** techniques, and **change leadership** skills.

## Guiding Principles

- Keep It Short & Focused - 9 month on campus program
- Teach Small Group as a Cohort - 30-35 person classes
- Reach Young Professionals – target of 3-8 years of experience
- Maintain Industry Involvement - in coursework, thesis, etc.
- Set a Global View – in students, sponsors, and study
- Focus on Problem Solving - combine theory & practice
- Imbed Leadership Skills –negotiate, persuade, & communicate

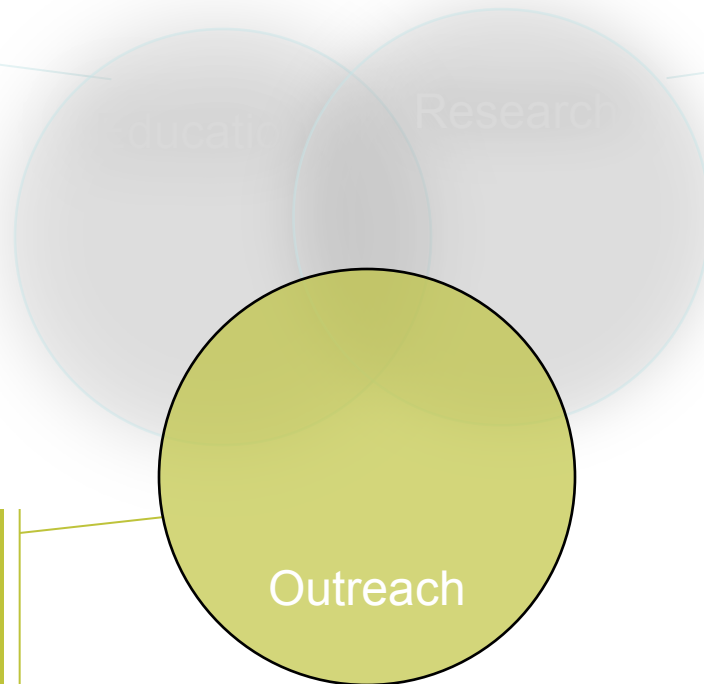
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# Corporate Outreach

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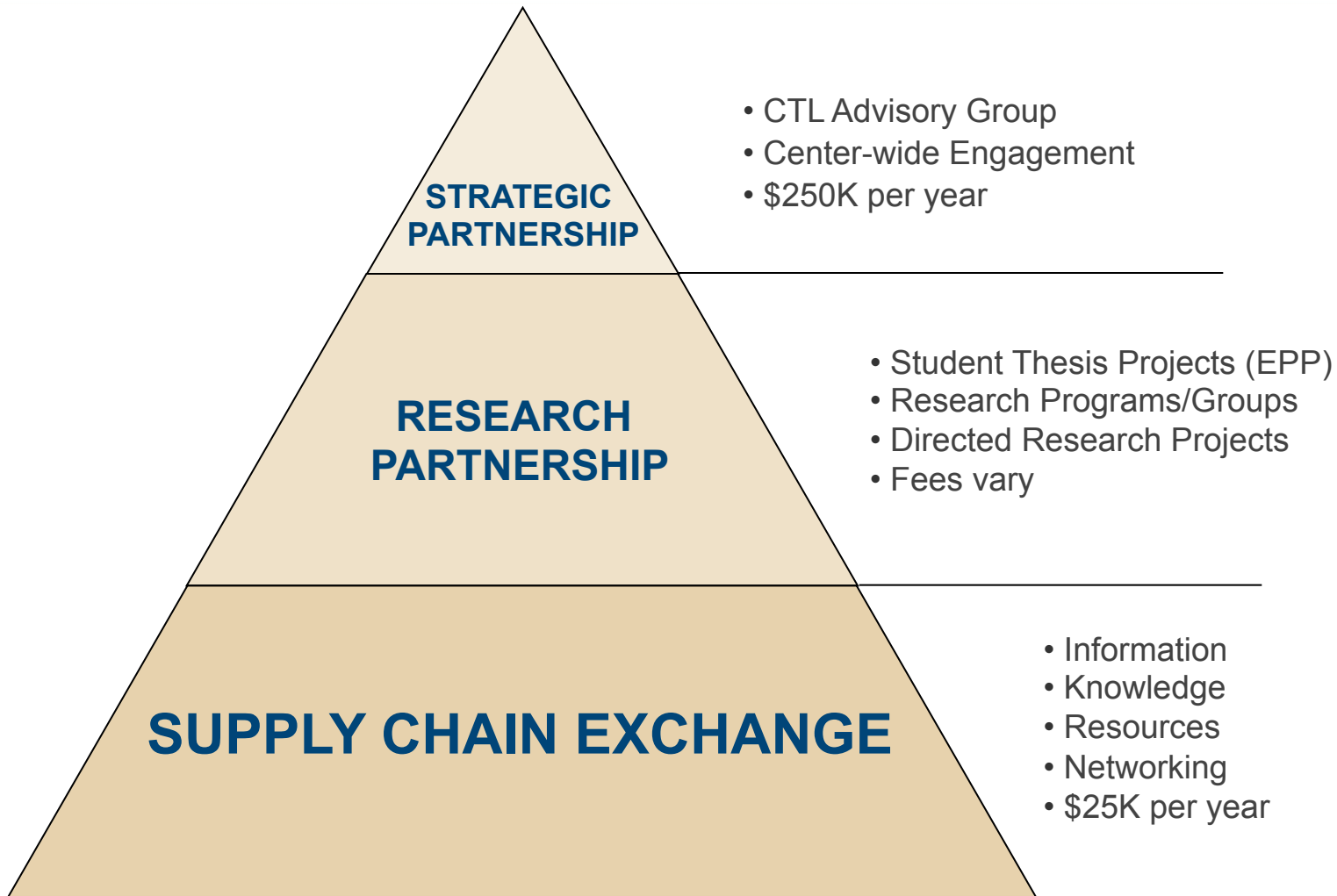
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# CTL Partnership Model



# Supply Chain Exchange



- Supply Chain Frontiers eNewsletter
- Reports, papers, presentations, theses;
- Symposia, conferences, webinars, roundtables;
- Website; archives; partner gateway

**News &  
Information**

**Knowledge  
& Skills**

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

**Access to  
Resources**

**Interaction &  
Networking**

- Access to research results;
- Partner-only Web portal;
- Access to CTL faculty & researchers;
- Optional Education Partners Program.

- Access to peers in CTL partner companies for advice, help, and collaboration;
- Ongoing forum for exchange;
- MIT-Zaragoza International Logistics Program;
- Center for Latin American Logistics Innovation



# CTL Executive Education

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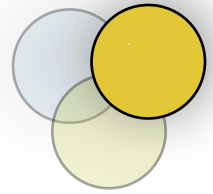
- **Supply Chain Courses:**
  - Strategic Supply Chain Management
  - Twice/year at MIT: each January and June
  - Custom courses available onsite
- **Supply Chain Workshops**
  - Strategic Alignment Workshops
  - Business Continuity Planning Workshops
  - Scenario Planning Workshops
- **Customized Courses and Workshops**
  - Encompass a broad range of content
  - Multiple formats: Lecture, Case discussion, Interactive exercises, Onsite or at MIT

# CTL Calendar 2010 - 2011



September 28, 2010	CSCMP Annual Conference (San Diego) – CTL “Hot Topic” Keynote Session
October 14, 2010	CTL Symposium – Supply Chain Talent Management
November 30, 2010	CTL Symposium – Global Impact of the Panama Canal
January 4-7, 2011	CTL Executive Course – Supply Chains Driving Strategic Advantage
January 13, 2011	CTL On-Campus Event – Student Research Poster Session
March 23, 2011	CTL Supply Chain Exchange Partner Annual Meeting & Dinner
March 24, 2011	CTL Crossroads 2010: Next Generation Supply Chain Technology
May 24-25, 2011	CTL On-Campus Event – MLOG Research Fest & Thesis Review
June 7-10, 2011	CTL Executive Course – Supply Chains Driving Strategic Advantage

# CTL Corporate Partners



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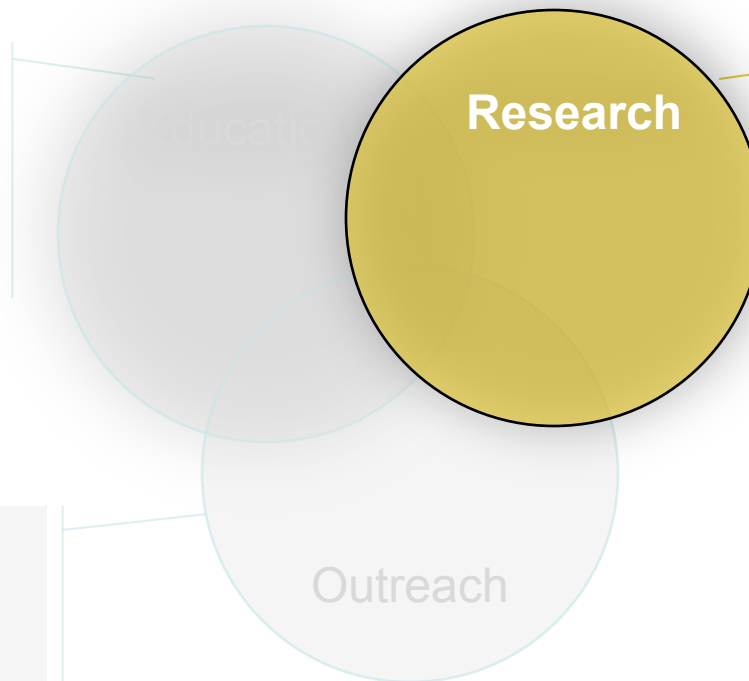
# Selected Research Projects

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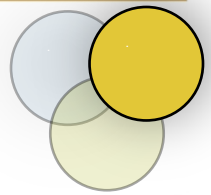
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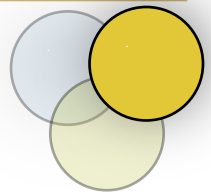
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# Supply Chain 2020



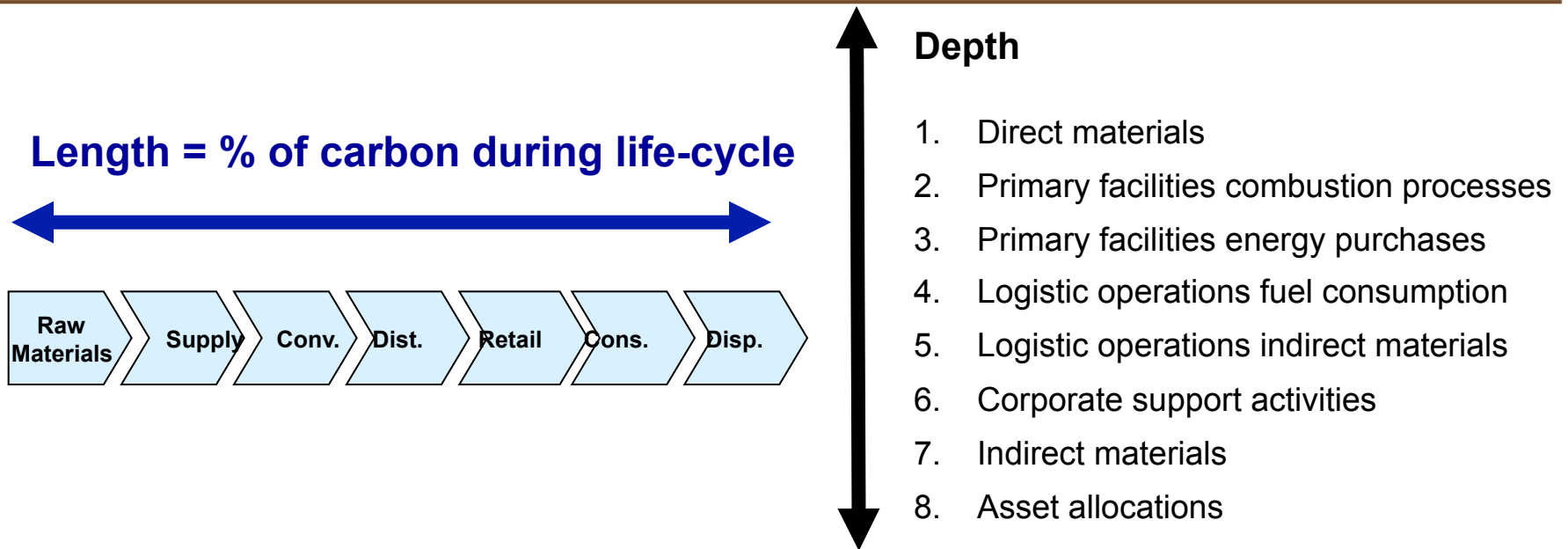
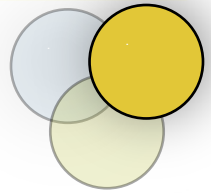
- Supply Chain 2020 is a pioneering project mapping innovations to successful supply chains as far into the future as the year 2020.
  - Phase I
    - Define excellent supply chains
    - Identify principles that drive excellent supply chain practices
  - Phase II
    - Create scenarios of the future: 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





- Objective:  
Investigate and develop better ways for the design, procurement, management, and analysis of freight transportation across all modes and regions.
- Principal Investigator: Dr. Chris Caplice
- Current Projects:
  - Transportation Portfolio Management - WalMart Stores
  - Optimal Flow Strategy - Subway Restaurants
  - Optimal Selection of Contract Type under Uncertainty
  - Carrier Bid Response to Auctions
  - Quantifying the Inventory Impact of Transit Time Variability
  - Developing a Statewide Freight Resilience Plan
  - Impact of Business Policies on Pricing

# Carbon Efficient Supply Chains

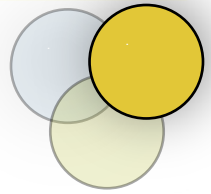


## Case Studies

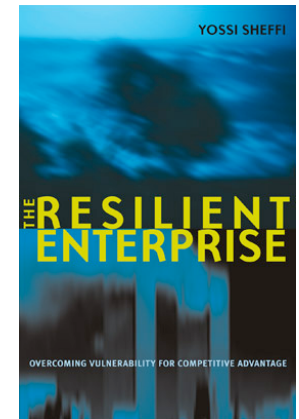
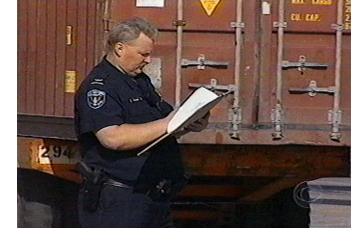
- Banana Supply Chain
- Paper Supply Chain
- Detergent Supply Chain
- Furniture Supply Chain
- Shoe Supply Chain
- Others... (TBD)



# Security & Resilience

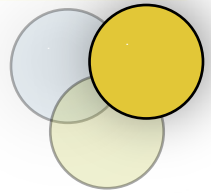


- Initially supply chain response to terrorism, started late 2001
  - Broader study of response to disruption
  - Studying dynamics disruption: security/prevention and consequence mitigation, development of resilience
- Funded by UTC, ISCM, CMI
- Multiple sub-projects
  - Field studies of response, risk management and security
  - System dynamics response modeling
  - Public-Private Partnerships
  - Collateral Benefits of Security Investments
  - Impact of Culture on Supply Chain Security
  - Public-Private Partnerships
- Deliverables
  - *The Resilient Enterprise: Overcoming Vulnerability for Competitive Advantage* book by Sheffi
  - Engagement by IBM for follow on study/report on collateral benefits "Investing in Supply Chain Security: Collateral Benefits"
  - Engagement by US Customs and Border Protection in agent training





# Renewable Energy Delivery



- Initial project funded by Spanish gover
- Collaboration with Acciona Energy
- Further issues
  - Infrastructure deployment
    - Generation locations
    - Grid linkages
    - Storage (technology choice, location)
  - Supply chain to build renewable infrastructure: Wind towers, blades, turbines, solar panels
  - Dynamic management
    - Grid management (source/sink pricing)
    - “Inventory” strategies
    - Demand shaping
    - Market structure
- Need new spatial-temporal models for both long- and short-term decisions

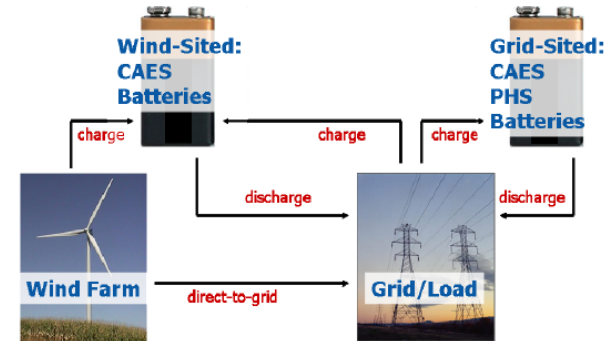


Figure 3. Storage-wind-grid interconnections