



MIT
Global Airline Industry Program

AIRLINE INDUSTRY CONSORTIUM

November 6, 2008

MIT

MIT Global Airline Industry Program

- **Established in September 1999 with a pilot grant from Alfred P. Sloan Foundation**
 - **Develop** a **body of knowledge** for understanding development, growth and competitive advantage in the airline industry
 - **Educate** airline **industry's future leaders**
 - **Increase** the number of **Ph.D. and other graduate students** engaged in airline-related research
 - **Produce** authoritative **research reports** and **educational materials**

Interdisciplinary Faculty Team 2008

Prof. Arnold Barnett

Prof. Cynthia Barnhart

Dr. Peter Belobaba

Prof. R. John Hansman

Prof. Tom Kochan

Prof. Robert McKersie

Prof. Amedeo Odoni

Prof. Nancy Rose

Mr. William Swelbar

Prof. Jody Hoffer Gittel (Brandeis University)

Prof. Amy Cohn (U. of Michigan)

Prof. Joakim Karlsson (Daniel Webster College)

Prof. Andrew von Nordenflycht (Simon Fraser University)

Economics

Sloan School

ICAT

CTL

ORC

Aero/ Astro

CEE

Other Universities

Aviation Research at MIT

- **Over 25 graduate student RAs involved**
 - As well as approximately 10 faculty researchers
- **Integrated research efforts supported by:**
 - Pilot funding from Sloan Foundation (through 2008)
 - Sponsored research projects – airlines, airports, manufacturers, IT providers
 - Government grants and research funds
 - PODS Revenue Management Consortium
(7 airline members)
 - Airline Industry Consortium (11 members)

Airline Industry Consortium

Consortium of major industry stakeholders:

- Contribute to forward-looking research agenda for the entire industry
- Form an academic/industry partnership for strategic airline industry research
- Gain access to MIT student interns and graduates
- Participate in continuing education workshops

Consortium members include:

- Major international airlines
- Aircraft manufacturers and suppliers
- Information technology providers
- Infrastructure and regulatory agencies

Current Consortium Members

- Air Canada
- Air Transport Association
- Amadeus SA
- American Airlines
- American Express
- Federal Aviation Administration
- Jeppesen/Boeing
- Lufthansa German Airlines
- Metropolitan Washington Airports Authority
- United Airlines
- SITA

Executive Education Course at MIT

- **“The Airline Industry: Recent Developments and New Challenges”, June 11-12 2008**
 - Attended by 36 representatives of Airline Industry Consortium members
 - This year’s focus was on emerging challenges and new research findings on airline industry trends
- **Your inputs and feedback needed as we plan for next year’s course in June**
 - Is there interest among members for a more fundamental course on airline industry concepts, issues and models?
 - Or, should we continue to present more advanced research-based content?

Airline Data Project

- **Web site airlinedataproject.mit.edu:**
 - Comprehensive compilation of traffic, revenue, operating cost, fleet, productivity and financial data
 - Comparative measures for 15 largest US airlines over the period 1995-2007
 - Data has been updated and new analyses added
- **Site provides a valuable data resource:**
 - Used extensively by MIT students and researchers
 - Also followed by many diverse stakeholders, including media, government agencies, industry analysts, labor groups, and airline planners

“The Global Airline Industry” Textbook

- **Our textbook is now complete, and will be published by Wiley (UK) in early 2009**
 - Compilation of lecture materials from our introductory graduate level subject at MIT, “The Airline Industry”
 - Edited by Peter Belobaba, Amedeo Odoni and Cynthia Barnhart
 - Chapters contributed by faculty and researchers affiliated with our Program, at MIT and other universities
 - Will serve as a reference book for a wide range of aviation professionals, in addition to graduate students at universities

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1. **Introduction and Overview** (Belobaba, Odoni)
2. **International Institutional and Regulatory Environment** (Odoni)
3. **Overview of Airline Economics, Markets and Demand** (Belobaba)
4. **Fundamentals of Pricing and Revenue Management** (Belobaba)
5. **Airline Operating Costs and Measures of Productivity** (Belobaba)
6. **The Airline Planning Process** (Belobaba)
7. **Airline Schedule Optimization** (Barnhart)
8. **Airline Flight Operations** (Midkiff, Hansman, Reynolds)

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9. **Irregular Operations: Schedule Recovery and Robustness** (Barnhart)
10. **Labor Relations and Human Resource Management in the Airline Industry** (Gittell, von Nordenflycht, Kochan, McKersie, Bamber)
11. **Aviation Safety and Security** (Barnett)
12. **Airports** (Odoni)
13. **Air Traffic Control** (Hansman, Odoni)
14. **Air Transport and the Environment** (Marais, Waitz)
15. **IT in Airline Operations, Distribution and Passenger Processing** (Belobaba, Swelbar, Barnhart)
16. **Critical Issues and Prospects for the Global Airline Industry** (Swelbar, Belobaba)

Morning Agenda

0910 **Update on Airline Industry Recent Trends**

0940 **Operating Costs and Productivity**

Update: US Airline Cost and Productivity Trends

The Coming Crisis in Labor Relations and How to Avoid It

1030 *BREAK*

1050 **Airline Markets and Competition**

Update: Fares and Competition in Top US Domestic Markets

Recent Developments in Pricing and Revenue Management

Update: US Domestic Aviation Ticket Taxes

Evolution of Trans-Atlantic Routes and Competition

1215 *LUNCH*

Afternoon Agenda

- 1300 **Infrastructure Costs and Capacity Management**
North Atlantic Fee Analysis Model
Air Transportation Infrastructure Systems Worldwide:
Opportunities for Improvement
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Economic Activity
Update on ADS-B Benefits and Operational Approval
- 1420 *BREAK*
- 1440 **Operations & Scheduling Research**
Alternatives for Reducing Aviation Fuel Consumption and
Emissions: A Portfolio and Real Options Approach
Update: Robust Scheduling and Modeling of Airline Capacity
Reductions
Comparing Flight Delays and Passenger Delays When Passenger
Booking Data is Unavailable
- 1540 **Wrap-up and Discussion of Research Directions**