



UNIVERSITY OF WASHINGTON
TEAM CERTIFICATE PROGRAM (TCP)

FOUR I'S WORKSHOP AND EUROPEAN SEMINAR

Invention/Innovation/ Implementation/Integration

As issues become global and more complex, professional both at management and technical levels need additional new skills to compete in the market place. The key success factors are cultural diversity, different technologies employed and deployed, and different types of management. The purpose of this two-day workshop was to have participants from different backgrounds thinking and working on the 4 I's.

Innovation has become a key process that we employ in a variety of fields. By itself, innovation is not a process that leads to closure. Accordingly, we have to consider *Innovation* with *Invention*, *Implementation*, and *Integration* (4 I's). The Boeing Business Jet (BBJ) is a pioneering example of the 4 I's in practice. Furthermore, the BBJ model will continue to develop in related and unrelated industries. Accordingly, this workshop focused on the current accomplishments

of the BBJ starting with the implementation of the successful Domus/BBJ design competitions, the AquaJet Shower, and the launching of the new BBJ II. In addition, building on an intellectual process that couples industry and academia, participants to the invitation-only workshop had a chance to participate in the foundation of our newly formed teams featuring systemic solutions to airline baggage transportation, a problem that has both business and social implications.

J.C. Seferis



Innovation with the interior design competition of the BBJ

Workshop location

Seminar participants arrived in Athens at various times. Most of them stayed at the Astir Palace Hotel/Arion, where the workshop was held.

The Astir Palace Resort, at Vouliagmeni, is only



12 km from Athens Airport and a half hour's drive from Athens.

It is built on a pine-grown promontory bathed by the clear, turquoise waters of the Saronic Gulf, a location that is generally acknowledged as the most beautiful in Attic.

Inside this issue:

Athens Seminar, Launching of the "BOX TEAM"	2
Behind the scenes look at the new Athens International Airport	2
Teaming, Innovation, Design and Business	2
Tour of Greek history	3
A day at Lufthansa Technik	4
From Design and Manufacturing to Total Integration at FACC	5
University of Washington. PCL Contact	6

Athens Seminar, Launching of the “BOX TEAM”, Behind the scenes look at the new Athens International Airport

Wednesday, October 25th 2000,

Informal teaming activities were already started at dinner, although some of the participants struggled with jet lag.

Day one October 26th 2000

The day started with the official launching of “the box” team, which is under the Team Certificate Program (TCP) at one of the Hotel beaches. “The box” team has to design a new Unit Load Devise (ULD) that is 50% lighter using composite material, including value add as well as leasing, tracking and supply chain. For some of the participants it was their first time to meet and this encounter gave them an opportunity to interact



by sharing information about their jobs, companies, and background.

As part of the workshop the teams toured the new Athens airport. The trip provided a behind the scenes look at the airport and the logistics and planning involved in its development. The baggage delivery system was particularly interesting as it exposed

a side of airport operations that is normally hidden from the average traveler.

Overall the airport was impressive, but there seemed to be too little space for parking and people meeting passengers. Without the development of a considerable amount of infrastructure it would be difficult for the people of Athens to reach the airport. The possibility of significant logistical problems in getting to and from the airport would be a major concern.

Day two October 27th 2000

Teaming, Innovation, Design and Business Development

After an introduction by Dr. James C. Seferis, on the workshops purpose and philosophy, Tish Hill, Borge Boeskov, and Bob Swain made presentations addressing Innovation, Design, and Business Development. They drew extensively from their personal experiences to discuss the nature of business and how innovation and design are key to survival in today's marketplace.

These lectures were followed by random distribution of the members into three teams. The first exercise for these teams was to underline similarities and differences between our lecturers.

Teams found that both large companies and small companies have the same goals: expand their business, and focus Innovation on their customers.

But the time scale from innovation to implementation is different: The “dot-com” company is run with high speed to be first to market in order to survive.

In the afternoon the workshop attendees (people from highly diverse backgrounds) came together to facilitate the

formation of three global teams: The “Box” team; The Design team, and The Innovation team. While the teams focused on different concepts they could be related very easily. Cooperation between the “Box” team and the Design team, for example, could lead to the design of new components to be used in the air cargo business. The diverse nature of the teams ensured that a variety of viewpoints were presented and creative solutions to the problems will be developed.

The most striking aspect of the workshop was that disciplines and backgrounds that usually do not interact with each other were able to come together and learn from each other. The synergy of the teams ensured that they will be much more than the sum of their parts.

The workshop was accomplished successfully overall in cooperation with people from the local Greek community.



Systemic approaches in Innovation can help you think about side benefits

Professor Seferis lecturing on Innovation



A tour of Greek history

At the end of the workshop participants had the opportunity to spend a weekend in Greece for an interesting cultural education. The mere experience of traveling to another country and interacting with people different from oneself was educational and provided one with a deeper understanding of other cultures and philosophies. The teams visited the Acropolis and enjoyed an excellent tour by a local guide.

The tour explored Greece's history and acquainted the participants with one of the country's great landmarks.



Aerial view of Athens

Everybody enjoyed the weekend in his/her own way.



View of Athens from Filopappo Monument

The Acropolis tour



Aerial view of Acropolis

The Acropolis hill, also called the "Sacred Rock" of Athens, is one of the most important sites in the city. During Perikles' Golden Age, ancient Greek civilization was represented in an ideal way on the hill and some of the architectural masterpieces of the period were erected on its ground.

The first habitation remains on the Acropolis date from the Neolithic period. Over the centuries, the rocky hill was continuously used either as a cult place or as a residential area or both. The inscriptions on the numerous and precious offerings to the sanctuary of Athena (marble korai, bronze and clay statuettes and vases) indicate that the cult of the city's patron goddess was established as early as the Archaic period (650-480 B.C.).

The Parthenon. It is the most important and characteristic monument of the ancient Greek civilization and still remains its international symbol. It was dedicated to Athena Parthenos, the patron goddess of Athens. It was built between 447 and 438 B.C. and its sculptural decoration was completed in 432 B.C.



A day at Lufthansa Technik

After a productive stay in Greece some of the team members continued on to Hamburg, Germany to meet with Lufthansa Technik. This meeting began with a discussion on innovation and how it could be incorporated into a business strategy, followed by a general presentation explaining the company profile and its business strategy.

The team had a fascinating tour of Lufthansa's aircraft repair facility. This provided the opportunity to examine the cargo hold and other systems on a Boeing 747 aircraft. For "The Box Team" this was a hands-on chance to investigate the systems with which they will be working.



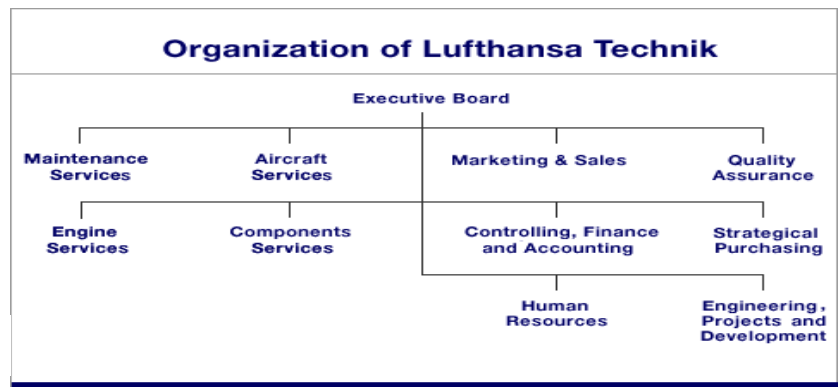
Boeing 747-400 in front of the overhaul center west, Picture from Lufthansa Technik web site

Engineering Service at Lufthansa Technik

Lufthansa Technik, as an independent division within the Lufthansa's airline operations, builds its Engineering Services up on three pillars:

- Engineering Support for aircraft operators
- Design & Development Engineering
- Production Engineering

Lufthansa-technik organization



Total Engine Service at Lufthansa Technik

Whether an engine spends 8,000 or 16,000 hours in the air before it has to go into the shop is primarily dependent on two factors: the quality of its most recent overhaul and how well it is regularly serviced.

With Lufthansa Technik's Total Engine Support TES® the aircraft engines get all the attention they need to ensure their optimal reliability, longest possible service life, and minimal cost per engine flight-hour.



Maintenance and overhaul

From Design and Manufacturing to Total Integration at FACC

The final destination of the workshop took place at Fischer Advanced Composite Components AG (FACC) manufacturing facilities in Reid, Austria. The day was filled with discussions of manufacturing methods and the differences between sporting goods and aerospace in the industries. The meetings also explored the nature of industry-academic partnerships in Europe and the United States. FACC also allowed the participants to tour their ski and aerospace manufacturing facilities. Their ski manufacturing process was automated and highly impressive. It was surprising to see that FACC uses wood instead of polyurethane foam as a ski core material. The aerospace manufacturing operation focused more on batch work and the production of individual components. The operation was very efficient and extremely well organized.



Aerial View of FACC

Engineering at FACC

FACC is a leading company in the development, design and fabrication of fiber reinforced lightweight systems for the aviation industry.

A highly skilled work force manufactures a wide range of products, from structural aircraft components to fuselage, wing and empennage, engine nacelle components, and complete aircraft cabins, employing state-of-the-art composite technology and advanced design and manufacturing methods.



Engine and engine nacelle components



STRUCTURAL AIRCRAFT FAIRING

*These pictures are from
the FACC web site*

AIRCRAFT INTERIOR





Professor Seferis being thanked by the FACC

**University of WASHINGTON
TEAM CERTIFICATE PROGRAM (TCP)**

DR. James C. Seferis
Phone: 206-543-9371
Fax: 206-543-8386
[Http://pcl.cheme.washington.edu](http://pcl.cheme.washington.edu)



PCL
Box 351750
University of Washington
Seattle, WA 98195-1750

**Conference Organized and Chaired By
Dr. James C. Seferis, Boeing/Steiner
Professor
University of Washington
Seattle, Washington**



FREEDOM
Foundation for
Research
Experiential
Educational
Developmental
Operational
Management



Produced, Edited, and Formatted by:
Salouhou Mahamouda