ON THE

LEADING EDGE

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Leapp-ing Ahead

Welcome to our first issue of "*On the Leading Edge*" !
We hope you will find this issue to be interesting and stimulating, just as we have found the newsletters of others in the industry. Keeping informed, keeping in touch and keeping aware, benefits us all. Through this newsletter we hope to do our part.

We welcome feedback and comment on any of the topics discussed. Please feel free to contact us at: **info@leapp.com**.

May we wish our Chinese friends **Gong Xi Fa Cai.**

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New Flags in

Guyana

Trinidad & Tobago

We have a tradition of acquiring the national flags of each nation in which we work. During the past year, 2001, LEAPP added four new flags. LEAPP carried out aviation projects in Guyana (South America), Trinidad, Angola (Africa) and Singapore, bringing to 37 the number of countries in which we have worked.

2001

Angola

Singapore

Updates!

LEAPP's latest projects have been widely varied, widely scattered and very exciting…

Canada
- Maritime Airports – Saint John, Deer Lake and St. John's *Aircraft Performance & Runway Optimisation Studies, Airside Capacity Study*
- Toronto City Centre Airport *Aircraft Operations & Route Analysis for Commuter Services*

Guyana
- National Airports Authority *Creation of a corporatised airports authority, preparation of Business & Transition Plans, staffing and compensation schedules.*

Hong Kong
- Airport Authority Hong Kong *Development of Busy Day & Secondary Air Traffic Forecasts*

Ireland
- Shannon International Airport - *Wind Turbulence Assessment*
- Dublin International Airport *Planning New Parallel Runway*
- Galway Airport *Airside Operational Planning, Runway Planning for Regional Jet Services, and Aircraft Noise Modelling*

Mauritius
- National Transport Strategy *National Air Sector Plan*

Philippines
- Fernando Airbase Conversion *Airport Master Plan*

Taiwan
- Kaohsiung International Airport *Airport Master Plan*

Trinidad & Tobago
- Piarco International Airport *Commissioning of New Passenger Terminal Building*

International
- International Federation of Airline Pilots Associations (IFALPA) *Development of an international standard for Runway End Turnaround Areas*

Simulating Terminal Improvements for Vancouver

How does an Airport Authority evaluate solutions to congestion in a passenger terminal building? Vancouver's Airport Authority (YVR) recently tackled this using state-of-the-art simulation modelling. Responding to congestion in processing transborder passengers, YVR examined alternative physical and operational processing solutions. These involved dedicated transborder processing facilities, partial off-site processing, and special by-pass arrangements.

To assist YVR, LEAPP simulated the operation of the Vancouver Terminal, using LEAPP's dynamic passenger processing simulation model (PASSIM). Existing processing arrangements were simulated as a base case, and all modification options simulated as comparisons. Six processors were included in the simulation - Check-in for 9 airlines, US Customs and Immigration, Post-Customs Bag-drop, YVR Fee Collection, Security and Hand Baggage X-Ray. From the animation and simulation results, YVR determined the effects on passenger flows, queuing, and delays resulting from proposed processing options.

Haida Indian War Canoe in the YVR Terminal Building

Simulation has enabled YVR planners to reach decisions on critical terminal modifications.

LEAPP's PASSIM model is interactive: the user can modify traffic input data for each airline, make changes to passenger flow distributions at each processor, and change staffing levels to reflect shift-working patterns. Besides the animated display of passenger flows in fast time, the model provides on-screen data and statistics for further analysis.

Category III for New Delhi

Typical winter fog conditions at Delhi's IGIA

ILS Glide Path Installation for Runway 28

Winter fogs blanket New Delhi in the winter months to the extent that the Airports Authority of India (AAI) decided to upgrade Runway 28 at Indira Gandhi International Airport (IGIA) for Category IIIA operations.

Before certification of Runway 28 at Category IIIA, LEAPP carried out an aeronautical study and technical audit, commissioned by the ICAO Technical Cooperation Bureau.

The main features of the ICAO audit were to:
- Investigate the need for Category IIIA operations
- Inspect the runway environment in relation to ICAO Standards and Recommended Practices,
- Assess the obstacle environment and carry out Collision Risk Modelling
- Confirm Runway 28 Cat IIIA ILS operating minima at Zero Decision Height and RVR 200m
- Review IGIA's Low Visibility Procedures

Further action was recommended by LEAPP following a site inspection and audit of measures taken by AAI. A later follow-up inspection by LEAPP staff verified that all mandatory requirements for Cat IIIA had been met at IGIA. Agreement on other, longer term, improvements was also formalised.

Testing for Wind Hazards at Dublin

And that is just what LEAPP managed……. in response to concerns of Aer Rianta (Irish Airports Authority) that several large hangars at Dublin Airport might create hazardous turbulence for a proposed new parallel runway.

LEAPP assisted Aer Rianta, by designing and managing a wind testing programme, and in interpreting wind turbulence effects on aircraft flight operations.

Turbulence generated by the hangars and other central area terminal buildings at Dublin Airport, was measured using a boundary layer wind tunnel operated by RWDI of Canada.   The resulting data were then used by the UK's Defence Evaluation & Research Agency (DERA) aircraft to simulate the effects of turbulent winds on airspeed and attitude (roll, pitch and yaw). Deviations from an intended flight path, along with the necessary pilot response in recovering, were determined.

Although runway operations can be affected by wind turbulence from nearby structures, the project for Dublin Airport demonstrated that this effect would not be significant to flight operations on a new runway.
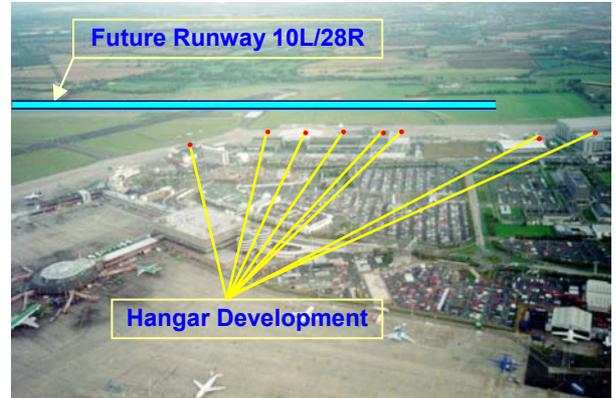
Future runway and prominent hangars at Dublin Airport

Guyana Restructures Civil Aviation Regulation

Responding to an ICAO Safety Audit, the Inter-American Development Bank commissioned the restructuring of the Guyana Civil Aviation Department into a commercialised, self-financing, regulatory agency. Led by the UK's Civil Aviation Authority, the project determined the optimum corporate structure and prepared a Business Plan and Transition Plan. LEAPP provided both corporate and financial planning expertise to the project, while air traffic forecasting was undertaken by Dr. Norman Ashford.

Planned to function through 4 Directorates - Aviation Safety Regulations, Air Navigation Services, Air Transport Management and Finance & Administration, the Guyana Civil Aviation Authority is to be led by a

Director-General of Civil Aviation reporting to the GCAA Board and the Minister of Transport.

In this project, LEAPP was responsible for:
- Assessment of Civil Aviation Department functions
- Analysis of financial performance
- Creation of organisation and staffing plan for the Civil Aviation Authority
- Preparation of a Business Plan and Transition Plan to guide implementation.

The new Guyana Civil Aviation Authority was launched in late 2001, with the appointment of an interim Director-General of Civil Aviation.

Technical Trends

LEAPP Runway Throughput Calculation Model

Ever wrestled with matrix manipulation? What about frightening formulae to calculate runway throughput..?

For those who have tried… and given up… help is now available !

LEAPP is pleased to announce its Runway Throughput Calculation Model, which is programmed for the PC and – surprise – for the Palm as well.

The Model enables users to input various mixes of aircraft, ATC separations, and calculates runway throughput, with and without position error.

The model designed for the PC and Palm will be available for sale soon.   Anyone interested in purchasing the model should contact us at **info@leapp.com**