

## Summary of 17-18 January 2008 Interdependency Modelling Workshop

Hosted by NLR in Amsterdam (NL) and organised by AERONET III in close collaboration with X3-NOISE, QUANTIFY, ECATS and ANCAT/MITG



Basically **interdependency modelling** means the combined modelling of (local up to global) emissions, noise and economics and other parameters as part of an aviation policy assessment study.

Close to 40 representatives from near 20 different European organisations – aviation industry, operators, governmental bodies, SME, research establishments and universities – participated in the **Interdependency Modelling Workshop**.

The **aim** of the workshop was to keep up the momentum and foster research in the topic area and to reinforce the relevant multi-community relationships involving aviation emissions, noise, economics, science and policy maker communities. More specifically, the workshop **objectives** were:

1. to present and discuss at European level the progress, status and future plans and strategy re interdependency modelling
2. to facilitate a continued information exchange and discussion among communities involved, and probably to bring in new communities (e.g., aviation economics).

Moreover, the workshop has been organised in order to identify potential future issues, topics and priorities, and to trigger future work and to update planned actions / roadmaps.

After warm welcome and logistical matters, **Session 1** introduced the workshop and its topic – interdependency modelling – and discussed for instance workshop expectations.

**Session 2** continued with the current (early 2008) Status on Interdependency Modelling, addressing:

- **Basic Modelling System** – Report from 2007 EASA Economic and Environmental Modelling for Aviation (EEMA) study on a prototype version (QinetiQ)
- **Aircraft Type Modelling System** – Technology interdependency modelling for aviation policy assessment studies; future aircraft design spaces – technology response / forecast methods (Snecma)
- **Economic interdependency modelling** for aviation policy assessment studies (Mann Economic Consulting Ltd.)
- **Responsive Modelling System** – Report from 2007 AERO Reconnaissance study (NLR)
- **Aviation impacts modelling including monetisation** – Report from Oct/Nov 2007 CAEP Impacts workshop in Montreal:
  - Global environmental impact (DLR)

- Local impact – air quality (BUW)
- Local impact – noise (Anotec Consulting)

**Session 3** considered **Future Plans re Interdependency Modelling**, including:

- Integral development of modelling systems and add-ons: EU FP7 Collaborative Project proposal – Toolset for Environmental Aviation Modelling (TEAM) (DLR)
- ICAO/CAEP (FOCA/QinetiQ):
  - Modelling & Databases Task Force (MODTF)
  - Aviation environmental interdependency modelling and cost-benefit analysis - the CAEP process
  - Current and future European inputs for CAEP interdependency and CBA modelling activities
- October 2008 X-NOISE/AERONET seminar on Trade-Offs (FOI, MMU): preliminary seminar agenda and report from a preparatory study on noise and emissions trade-offs through operational practices
- Euro-modelling Management:
  - Data management – Realisation of a Data Warehouse System (EUROCONTROL)
  - EU FP7 NoE / CSA potential proposal – future coordination and management of interdependency modelling (cancelled but available)
- Practical provisions on access, use, ownership and intellectual property rights (IPR) re interdependency modelling elements (NLR)

Finally **Session 4** concerned the wrap-up and final discussions: i.e., a summary of workshop presentations, **conclusions, recommendations and list of actions**. The workshop with a large variety of presentations and multi-community discussions concluded and recommended, in summary:

- Analysis of short, medium or longer term aviation environmental policy issues requires econo-environmental interdependency modelling capabilities in Europe
- Relevant existing modelling competencies within Europe should be consolidated into a toolset capable of working as a network which can quickly and cost-effectively be brought together in various combinations to meet policy analysis requirements of the EC, Member States and of other organisations; a common modular application of the different quantification models is needed
- EEMA Data Warehouse concept demonstrated feasibility and value of collecting and controlling the model input data; acting as a warehouse for model outputs provides an additional benefit in terms of quality control; EEMA Data Warehouse probably further developed by EUROCONTROL
- CAEP/8 Analyses and CAEP MODTF: as a result of the evaluations undertaken, all candidate models including European in each domain area were found to be potentially suitable to support assessment of one or more of the current and likely future policy requirements of CAEP; sensitivity tests have been proposed to better assess differences among models
- Technology modelling and economics modelling subsystems identified as major gaps and, moreover, the need to develop management structures for further control and development of a European modelling system

- There is a strong need for a comprehensive set of suitable metrics involving all impact areas; currently monetization and acceptance is limited due to various reasons such as lack of knowledge and ethical reasons
- TEAM partners agreed to modify and resubmit the project proposal in FP7 Call 2, taking into account the evaluation report critics and additional FP7 requirements; focus will be on the establishment and validation of a model framework with linkages to (CAEP) candidate models, and to perform impact assessments to demonstrate European modelling capabilities and to foster development of a common and competitive policy assessment toolset.

NB: Relevant historical data prior to the workshop:

- 2005: establishment and first meeting of the ECAC/ANCAT Modelling and Interdependencies Task Group (MITG)
- Dec05-Jun06: AERONET EFEMTA study proposing 3 modelling systems & 2 add-ons; study presentation at April 2006 MITG/3 meeting
- 06-07: AERONET involvement in subsequent MITG meetings
- Nov06-Sep07: EASA EEMA study on prototype basic modelling system focused on CAEP/8 modelling purposes
- Jan07-Apr07: preparation of 1st call EU FP7 TEAM project proposal – not successful
- Mar07: AERONET/X3NOISE/QUANTIFY/MITG expert meeting on Interdependency Modelling with focus on a possible new Network of Excellence (NoE instrument within EU FP7)
- 06-07: ICAO/CAEP Modelling & Databases Task Force (MODTF) including CAEP NO<sub>x</sub> stringency sample problem exercise.