Community Oriented Solutions to Minimise Aircraft Noise Annoyance

COSMA is expected to help to improve the understanding of the effects of aircraft noise near airports, to develop techniques for modelling the impact of aircraft community noise and to develop engineering guidelines, methods for implementing suitable designs, and, operating practices aimed at minimising noise annoyance, supported by a set of validated tools.

An extensive literature study on annoyance around airports since 1980 has already been performed. A list of moderator variables that affect the annoyance around airports has been established on the basis of this study. The powerplant and aircraft definitions have been established in every case - important for the further work in the technical work packages.

Telephone and field studies are part of the preparation for the central annoyance studies. More than 1200 telephone interviews have been performed to map the status of the current aircraft noise annoyance situation around 3 European airports. The field study (not yet available) will provide more detailed information about the existing current noise annoyance.

An interactive Sound Synthesis Machine (SSM) has been developed to improve the sound quality representation for an individual single aircraft flyover. Subjects will be able to create their own preferred sounds for different aircraft using this tool (see figure). It consists of an online SOUND MACHINE (SM) for interactive sound quality analysis and the AIRPORT NOISE CLIMATE SYNTHESIZER (ANCS), producing event sequences in real airport scenarios. Significant work has also been carried out to improve the source component and noise propagation models implemented in the ANCS tool.

Further work has been performed to develop an intelligent Data Reduction and Transformation (iDRT) module. Based on the reduced data a so-called “virtual listener” regression model has been developed to predict the annoyance. For longterm descriptors, a preliminary version of a neural network has been developed.

Finally, five different airport scenarios for investigation have been defined, along with the criteria for their optimisation. An interactive tool, to generate easily a sequence of arbitrary length from the available database, has been written and is already available on the COSMA website.

More project information is available on www.fp7-cosma.eu.

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