DATA MANAGEMENT PLAN

Concerto Project
Cabin nOise reductioN ground Checked by nEw loudspeakeR exciTatiOn
GA # 886836

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Project Abstract

The current race for green mobility is changing the design philosophy in all engineering disciplines; this is tangible especially in aeronautical segment, where optimization and innovation are the key for a sustainable future mobility. In addition, the comfort of passengers is a critical issue for both, manufacturer and airlines, and the noise levels in the passenger cabin of turbopropeller-driven aircraft are typically higher than the levels in comparable turbofan-powered aircraft [1]-[2].

The noise generated during cruise phase is dominated by frequencies originated from boundary layer flow, whereas during the others flight phases noise is dominated by the propellers and engine rate; currently noise reduction development is based on experimental tests that, in the most cases, are very time consuming.

The **CONCERTO** project aims to develop an innovative cabin/fuselage noise testing equipment for regional aircraft platforms that will be user-friendly and fully configurable in all its parts to speed-up test procedures in several configurations and improve results accuracy. Scope of this research project will be the design, development, manufacturing and integration of an innovative Noise Generation System (iNGS) to test and validate new technologies for Regional Cabin Interior Noise evaluation. The innovative system, implementing advanced algorithms able to generate and control the real noise spectrum distributions and levels for all the flight conditions, will pave the way to a new scenario for cabin noise testing.

Main expected project outcome is to deliver a ready to use smart testing system that would be:

- Innovative: it will be adopted a closed control loop to obtain high speed performance with a control strategy and a pre-test analysis to reduce the number of control microphones, time and costs in the test set-up.
- Modular: its mechanical structure and software will be designed to accept fuselage of different diameters (from 2.5 m to 4 m) and customizable speakers/microphones configurations.
- Advanced: a dedicated software implementation will be developed in order to allow an easy and user-friendly interface.

Executive Summary

This document, LT-NA-21-001-00-RES-CON-D5.1 Data Management Plan (DMP) is a deliverable of the CONCERTO project launched under the IADP CleanSky 2, which is funded by the European Union's H2020 through Clean Sky 2 Programme under Grant Agreement #886836.

The CONCERTO produced dataset will be composed mainly by numerical data (as for reference spectrum sent by TM) and mechanical drawings.

Applicable Documents

[AD1] H2020-CS2-CFP10-2019-01

[AD2] Proposal number: 886836

[AD3] Concerto proposal granted part B

[D1.1] Analysis phase: Requirement matrix and support documentation

[D5.2] Plan for the communication, Dissemination and Exploitation of Results

References

[1] J. S. Mixson and C. A. Powell, " Review of Recent Research on Interior Noise of Propeller Aircraft," AIAA/NASA 9th Aeroacoustics Conference, AIAA Paper 84-2349, Williamsburg, VA., October 1984

[2] J. F. Wilby, "Aircraft Interior Noise", Journal of Sound and Vibration, 1996

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List of abbreviations

ACRONYM / SHORT NAME	MEANING
CONCERTO	Cabin nOise reductioN ground Checked by nEw loudspeakeR exciTatiOn
EC	European Community
KUL	Katholieke Universiteit Leuven
LT	Lead Tech
MS	MicroSoft
PEDR	Plan for the communication, Dissemination and Exploitation of Results
R&D	Research and Development

1.DATA MANAGEMENT AND RESPONSIBILITY

1.1. DMP Internal Consortium Policy

Data Supervisor and Project Data Contact

The data responsible has been selected in the project coordinator (PC) of the CONCERTO project. To ease the management of the data also a Project Data Contact (PDC) has been designated between CONCERTO partners: LEAD TECH srl (IT). While the PC has the final responsibility of data management, the PDC is in charge of managing the availability of the project data (i.e. find the online repository) as well as supporting the stream of the open data of the project (i.e. the ones related to dissemination activities) for each partner will need to disseminate its finding.

Public data policy

In agreement with the EU policy, and as suggested in preparatory meetings, it has been decided to make disclosable data available on the project website which is already online on www.project-concerto.eu.

At each deliverable the PC will update the public data and publication on the project website.

Confidential data policy

On the other part sensible data, which will NOT be disclosed, will be maintained inside a private project repository (Dropbox), with restricted access to the partners only, offered by LEAD TECH s.r.l. in accordance with the TM (as stated in the KOM).

Data generated by the TM will be shared to the CONCERTO partners, only for project purposes and marked as confidential.

At each deliverable or meeting the PC will upload the Minute of Meeting (MoM) and the updated documentation on the official Dropbox Business repository.

1.2. DATA MANAGEMENT Responsible

Project Data Contact (PDC)	**BIANCO Raffaele**
PDC Affiliation	**Lead Tech s.r.l.**
PDC mail	**raffaele.bianco@leadtech.it**
PDC telephone number	**+39 081 522 13 44**

1.3. DATA nature, link with previous data and potential users

In this chapter a tabled description of which data, and from who, will be generated during the CONCERTO project is provided.

Pre-screening of the future generated data

At this point of the project the consortium agrees to consider confidential most of the data, given the importance in terms of industrial exploitation, mainly for the Topic Manager. Any necessary changes will be discussed with the Topic Manager and will be entered in the next document reviews.

Data type and format

- Report data format : text file, rich text file (i.e. .doc, .docx, .odp, .pdf).
- Raw data formats: .txt, .csv, binary, .m-file, .xls, .calc and any other compatible data format.
- Drawing, CAD, 3D Images format: proprietary, .step, .iges, .brep .
- 2D Images format: any compatible picture format such as .jpg, .tiff, .bmp, .gif, .png.
- FE analysis format: proprietary results file (i.e. Abaqus, Ansys,…).

1.4. Data Summary

The data produced and collected during the project development will be used only for project purposes as reference for system development.
These data could be of several types and formats, mainly they should consist in numerical data as noise emission spectra and previous test campaign results as reference and validation case, moreover could be treated and/or used bibliographic data from third parties researches as reference cases and configuration to speed-up preliminary testing phase and assess CONCERTO system results during software development and tuning.
The produced data will consist mainly in reports, drawings, cad files and software packages.
The expected total size of CONCERTO produced data should not exceed 20 GB.

2. FAIR data

In this chapter the actions to make the data 'FAIR' are exposed.

2.1. Making data findable, including provisions for metadata

As previously stated, DROPBOX Business [www.dropbox.com] will be the official CONCERTO repository for confidential data.

Open data like public deliverables, images and news will be shared by a download section on the project website. To reach as many people as possible any update of the downloadable contents will be promoted by the Twitter and the LinkedIn social profiles of the project.

During CONCERTO project development no metadata release is expected, all the data will be easily found and recognisable on the download page of the project website, all the deliverables and documentation will be identified with Lead Tech's standard, where filename contains project abbreviation, revision number and document identifier (MR# for monthly report, D#.# for deliverable, etc..) as described in Figure 1.

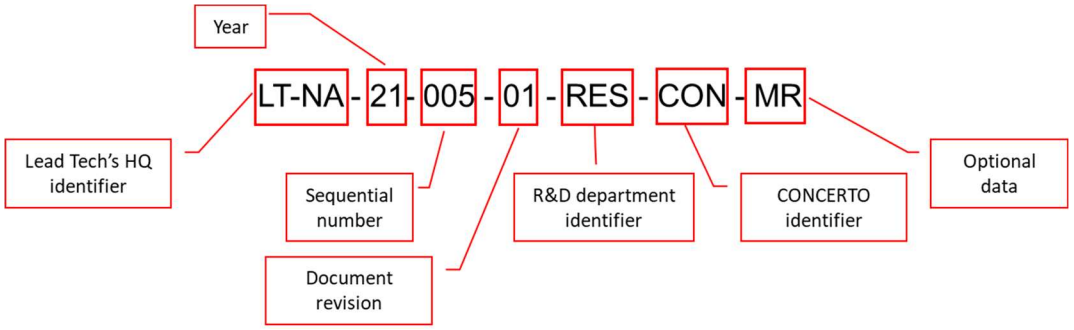

Figure 1 - Filename structure

2.2. Making data openly accessible

The data set for dissemination, see PEDR for more information, will be used for scientific papers, news, workshop presentations, … This data set will be loaded on the project website, hence it will be publicly available.
The data linked to a paper, for example, will be made available, and indexed, to the paper itself. For such reason the PDC will check the effective link between the articles and the open datasets. Data formats will be selected from the above mentioned in order to guarantee the maximum diffusion, avoiding where possible proprietary or low diffused data formats.
Other data, that are not specifically declared open, will be kept under reserved access (confidential). Partners and TM have reason to do so in order to protect industrially sensible data, previous know-how shared with the partners and every possible industrially exploitable (including also IPR activities).

2.3. Making data interoperable

Data interoperability is of primary importance for CONCERTO project. The definition of a new modular system for noise ground testing can introduce a new testing procedure in all related sectors. The best way to promote interoperability has been found in using standard formats and methodologies. Therefore the methodologies followed, and the results gained could be easily understood and reused for other projects and scopes.

2.4. Increase data re-use (through clarifying licences)

Based on preliminary project activities and the bibliographic research described in [D1.1], very few references and studies are dedicated to the noise generation system itself. CONCERTO project will be a reference in noise generation system creation due its public deliverables focused on system architecture and requirements and the social media coverage (website, Linkedin and Twitter).
Moreover, KUL will disseminate the results in the academic environment by attending conferences (by telco due SARS COVID-2 pandemic) and writing dedicated journal papers.
Despite the data will be open, so the largest amount of users can exploit their value, it is very important that their provenience is clearly identified. For such reason a specific data license will be employed. Open data of CONCERTO project will be released under the CC (Creative Common) license CC BY.
In terms of timing, data availability is surely an important asset for CONCERTO project, however, at this document level it is not possible to state which data will be subjected to a temporal embargo and how long this embargo will be before the data will be disclosed to the community. In any case, it will not be longer than 1 year. Such evaluation will be

discussed, depending on each results dataset, by the Consortium with the TM and each decision will be documented in this document.

3. Allocation of resources

3.1. Costs

Data management leads to data storing/publication related costs. Such costs have already been forecasted in the proposal phase and they will be covered completely by the CONCERTO project. Such costs are mainly composed by the staff costs (person months) and they are contained in the dedicated WP5 with a budget of 8 PM.
Other costs are related to the costs of private data storage, such data will be stored inside the Dropbox Business storage platform (with restricted access only to the CONCERTO partners); in order to strongly reduce related costs LT will make available to consortium its own existing repository.

3.2. Data management

As stated in the 1.1 and 1.2 section the project data responsible will be the project coordinator, with the support of the Project Data Contact (PDC). The data responsibility related to the operations on the project private storage will be of each single partner operating on the platform, this in order to promote an active and shared responsibility involvement among all the partners.

4. Data security

Confidential data must be keep in safe place (repository, virtual folders, servers, …) in order to prevent any unauthorized access. As stated in the CONCERTO KOM, confidential data will be stored inside the Project Coordinator virtual space (LT's Dropbox Business) with restricted access. In case more information is needed on such data storage, the PC or Data Manager Contact can be contacted.
As responsible of WP5 and, in general, as project coordinator Lead Tech is responsible of the repository and of data management.

5. Ethical aspects

As for ethics self-assessment, no ethical issues are expected.

6. Other issues

To better preserve data value, before any Consortium discussion about the findings and results, whenever not differently written, the CONCERTO partners must consider any data, documents or other material as confidential, following the indications of Gran Agreement. Only after the discussion on what can be disseminated, exploited or keep confidential due to industrial purposes, the data disclosure will be performed according to the paths described before.
No other issues are envisaged at this level.