D5.5 Exploitation and Dissemination Plan

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Dissemination Level		
PU	Public	X
CO	Confidential, only for members of the consortium (including the Commission Services)	

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Glossary

ASE	Aeroservoelastic
AFS	Active Flutter Suppression
CAD	Computer-aided Design
CPACS	Common Parametric Aircraft Configuration Schema
DLM	Doublet Lattice Method
FE	Finite Element
GLA	Gust Load Alleviation
LPV	Linear Parameter-varying
LPI	Linear Time-invariant
MDAx	MDAO Workflow Design Accelerator
MDO	Multidisciplinary Design Optimization
MIMO	Multi-Input Multi-Output
MLA	Manoeuvre Load Alleviation
PID	Proportional-Integral-Derivative
RCE	Remote Component Environment
ROM	Reduced Order Model
TCL	Tool Command Language
W3C	Wold Wide Web Consortium
XDSM	Extended Design Structure Matrix
XML	Extensible Markup Language
XSD	XML Schema Definition

1 Executive Summary

The FLiPASED project will generate results and related content that will advance the boundaries of MDO, modelling and testing of aircraft. Different types of materials will be generated including publications, technical reports, models, tools and test data. Moreover, the project will also facilitate the common thinking about technology approaches to reach new levels of environmentally friendly aircraft designs.

The current deliverable describes the planned exploitation and dissemination efforts within the project framework. The planned efforts are described partner by partner.

Note that more information about EC goals and rules about dissemination and exploitation can be found here: EC Dissemination Exploitation of results

2 Measures to maximise impact

Key European research and academic players are the core partners of FLiPASED, with each of them having a wide academic, scientific and industrial partner network. Hence they will use their own network to disseminate and exploit the results of the project. The complementarities of the project partners ensure the participation of different target groups. On the one hand, the universities will investigate the integration of the new technologies developed in FLiPASED in higher education courses and thus raise the awareness for the potential application of the developed techniques in aerospace while stimulating research in new application fields. By promoting the added value of their new technology, tools and applications they play a major role in creating awareness of the quality and potential of the results from FLiPASED. On the other hand, via sharing all information open-source and consulting with the industrial advisory group, the added value of the approach taken and of the technology being developed will foster adaptation in their industrial design processes. This will be made by means of meetings with potential users and other relevant stakeholders, especially in the context of the application being developed. Moreover the flight test results and the related flexible aircraft models will be posted online, as a part of the H2020 initiative “Open Research Data Pilot”, available for the entire aerospace community, which will generate significant impact on every research area concerned with ASE, MDO and flexible wing aircraft design in general.

2.1 Dissemination and exploitation of results

Dissemination activities will be implemented across the whole duration of the project. The Consortium composition (the presence of academic and research partners) and the project planning (divided into R&D, application and demonstration phases for the main RTD work packages) assures the dissemination of results. The project has defined a specific task (Task 5.3), directly associated with the dissemination and exploitation of results. The technical tasks described in this proposal form a major backbone of the interdisciplinary wings/systems design related technology development road maps of the industrial advisory group members (represented by Airbus Commercial Aircraft, Airbus DS and Dassault). As such, FLiPASED is well connected to the internal development plans of the European aircraft industry. This ensures that the multitude of deliverables and milestones passed during FLiPASED will be used to the best possible effect with the ultimate aim of allowing aircraft, assembly and component designers to extend their toolbox of available methods when designing next generation aircraft. Moreover, several key European and International initiatives are active about demonstrating research gains by using sub-scale demonstrators and FLiPASED aims at sharing experience and lessons learnt with these parallel projects.

Specific internal rules governing the dissemination activities and the publication policy are set out and included in the Consortium Agreement. These rules, being consistent with those set out in the EC Grant Agreement, will ensure the smooth flow of knowledge towards the European Scientific community without violating confidentiality and/or intellectual property rights. For dissemination a part of the project website will be open to the public, including present information on the project objectives, public deliverables and work program. A poster and a comprehensive slide-show will be made available for presentation at any information event organised by the Commission or other European institutions.

Dissemination of results will be mainly achieved through sharing data and tool chains for data analysis openly and by publications of the individual partners. Before disseminating or publishing, all partners have to inform the project partners about the respective dissemination by sending the abstract, manuscript, presentation etc. to them before final submission. The Steering Committee (SC) will check whether any patentable inventions are contained in the planned dissemination and initiate appropriate measures to secure protection of intellectual property before publishing the results together with the partner. The procedures are described in more detail in the Project Handbook.

The dissemination results will be quantified through number of publications per year per partner, citation index of journals in which publications are made, number of access to website and number of downloads, number of citations of the papers published, number of advanced degrees granted based on the FLiPASED project developments, number of patents originating from the project.

Exploitation of the project results by the partners will be performed in various ways. Industrial advisors from AIRBUS and Dassault will play a key role in transferring the results to R&D departments of their respective companies in order to achieve the required impact on product development and future strategy. The industrial end-users will in particular make use of the results of the FLiPASED scale-up task for the forecasted product design phase of a highly development cost effective, and operational cost efficient future derivative aircraft. Research establishments (SZTAKI, DLR, ONERA) and universities (TUM) will offer their gained knowledge to industry in and outside the aerospace sector. Results from the FLiPASED project will be presented during university lectures, not just at TUM but at SUPAERO and BUTE the university partners of ONERA and SZTAKI respectively, to show a broader, more in depth picture to the students. Research and industrial partners outside the consortium with compatible Design Tools will be able to apply their expertise to the benchmark and demonstrate their competence to prospective customers.

2.2 Management of intellectual property rights

The consortium is fully aware that strong potential economic impact is generated by protecting inventions resulting from the project and will take appropriate steps during the course of FLiPASED to ensure protection of the generated knowledge. Detailed rules are set up within the consortium agreement (CA) and the Grant Agreement (EC-GA). Basic principles are:

- Foreground Information generated in the project shall be the property of the Party generating it.
- Where several Parties have jointly carried out work generating the Foreground Information and where their respective share of the work cannot be ascertained, they shall have joint ownership of such Foreground Information.
- A Party may publish Foreground Information generated by another Party or any Background Information of such other Party, only with the other Party's prior written approval.
- The Parties undertake to cooperate to allow for the timely submission, examination, publication and defence of any dissertation or thesis for a degree, which includes their Foreground and Background Information.
- If dissemination of Foreground Information does not adversely affect its protection or use and subject to legitimate interests, the Parties shall ensure further dissemination of their own Foreground Information after the end of the project as provided under the Grant Agreement and the Consortium Agreement.
- In addition to the obligations pursuant to the Commission Grant Agreement rules, each Party shall take appropriate measures to ensure that it can grant Access Rights and fulfil the obligations under the Grant Agreement and Consortium Agreement to perform its own Work Package for the Project.
- The Parties agree that Access Rights are granted on a non-exclusive basis.
- The Parties will identify and list the Background Information for which they will grant Access Rights for the Project.
- Foreground Information developed by the Parties at the point at which a new Party is introduced into the consortium will be considered as Background Information for the new Party.

2.3 Dissemination related to expected impact

FLiPASED is not proposed to address the needs of one specific OEM; but rather as the project progresses, the aim is to disseminate the hands-on results to the European scientific community and the European industry. Doing so, it will maximise the potential exploitation of the new technologies developed and increase the competitiveness of the involved actors. Nonetheless, although the dissemination goal is intrinsic to the project, in order to respect proprietary rights and favour exploitation of results, the dissemination to third parties will be subject to consortium approval. Exploitation goals of the consortium and the planning of the individual partners are compiled in this Exploitation and Dissemination Plan. A preliminary version of the Exploitation and Dissemination Plan is generated mid-project and it will be updated during the second part of the project. The general objectives of the dissemination activities are:

- to ensure maximum awareness and visibility of the achievements and results of the project particularly in influential aerospace bodies,
- to make known new methodologies and standards that could be obtained as a part of the project results and to encourage their use to carry on this line of investigation,
- to promote the use of the new technology developed and tested in the project, across companies and institutions who have an interest in flexible aircraft design.

To maximize the diffusion of the project achievements several forms of dissemination media will be used to achieve that objective:

- A demonstration/final meeting where certification and policy-making authorities in the aeronautics and space sector will be invited.
- Organization of an International Workshop on Interdisciplinary Design Principles for Flexible Wing Aircraft Technology, to be held, and open to worldwide experts in the area, and EU graduate students.
- Attendance at conferences and workshops organised by aeronautical communities related to the project aims.
- Publications in scientific journals, specialized press, and general information press will be pursued.
- Social media sites (twitter, LinkedIn, Facebook) will be established besides the development of a project web site, to show the project goals, progress and results with special emphasis on reaching a general audience outside of the aeronautics domain from various age groups.

- Direct participation of project partners in influential aerospace organizations is part of the dissemination, especially with the help of the Industrial and Scientific Advisory Group.
- Special, invited sessions that address the inter-disciplinary aspects of FLiPASED will be organized in connection with more established conferences.
- As part of the normal tasks of the partners, during diplomatic visits from policymakers, politicians and high-profile researchers the key achievements of the projects and some of the physical components of the demonstrator will be advertised and displayed.

The project, and relevant news such as job posting, will be publicized through international channels (for example: IEEE CSS e-letter, EU CORDIS). A consortium-only web page will also be established open only to project members and EU authorities, for the purpose of project management and to serve as a project document repository.

2.4 Research Data Management

To maximise the dissemination and impact of the project and to embed the results into the aviation industry the FLiPASED consortium plans to make all parts of the simulation and ground and flight test data and the developed mathematical models available open to the research community in accordance with the H2020 initiative on Open Research Data Pilot. Additionally all parts of the flight test data together with design tools and embedded hardware and software components will be shared among research groups all over Europe. The various types of data include:

1. Time series data - which is associated with conducting software or hardware simulations and capturing the resulting input-output behaviour parameterized over time:
   (a) High-fidelity flexible aircraft simulation results
   (b) Reduced order flexible aircraft simulation results
   (c) Hardware-in-the-loop simulation results of the aircraft open-loop behaviour and of the behaviour with feedback control
   (d) Ground vibration test results of the instrumented airframe
   (e) Flight test data of the airplane with various wing configurations
2. Parametric data to capture physical or other characteristics of models:
   (a) Data associated with parameterizing the high-fidelity flexible aircraft simulation model

(b) Data associated with parameterizing the reduced order flexible aircraft simulation model

(c) Data associated with parameterizing the hardware-in-the-loop simulation

(d) Data associated with parameterizing the flight control algorithms both in HILS test and in flight tests

3. Specifications regarding the design objectives, tool interfaces and modelling fidelity

The project plans to use the NASTRAN and Matlab/Simulink software environment for simulation, control design and data analysis, hence all research data will be compatible with these platforms, moreover all raw data gathered by embedded platforms will have the corresponding data conversion tool. The standard data format for processes and parameter data will be stored in Matlab's ".mat" format, while raw data logged in embedded devices will be in binary ".bin" format. The project will also use Python based data science software, including numpy, scipy, pandas, scikit-learn, Tensorflow, Keras, matplotlib and many more, in Jupyter notebooks, as the emerging de facto standard sharing and collaboration tool for data scientists.

3 Exploitation of project results

This chapter describes the planned exploitation of the results, partner by partner.

3.1 TUM

Technical University of Munich is responsible for the following activities within the project:

- Aerodynamic low-order modelling for the advanced wing, including modelling of the movables

  The demonstrator will be modeled with different low-order aerodynamic modeling tools, which later on will be included within the overall MDO framework. Currently planned are modeling efforts with AVL, PAWAT, TORNADO, pyTORNADO, XFLR5 and VSPAERO. While there all the tools are already known and used in industry, validation and comparison of the tools is still not fully covered.

  The resulting models and summarised data will be uploaded for open access.

- Drag reduction through wing shape control

  Induced drag and trim drag would be modelled through aforementioned potential flow based solver. An optimizer will try to find the best flaps scheduling to minimize the drag. The flexibility of aircraft will be incorporated through aeroelastic splining.

  The resulting models and simulation data will be uploaded for open access.

- Aeroelastic modelling toolchain

  Parametrized structural model design using CAD and FEM methods will be performed in the first step of the toolchain. These models will then serve as input for the generation of reduced and parametric dynamical models, tailored to the analysis and the control design. The structural model will be linked with the aerodynamic models to get aero-elastic models. All the above tools will be integrated into RCE.

  The resulting models and toolchain will be uploaded for open access.

- Designing and manufacturing the advanced wing

  The new aero-servo-structural design model, together with control laws of the FliPASED wing derived from the MDO toolchain will serve as the input for the wing detailed design. Structure, sensors and data acquisition system will be finalised during the detailed design.The new wing will be manufactured based on the detailed design.

- Ground testing of the demonstrator

  Static tests will be performed for the advanced (-3) wing. Measurements will include undeformed and deformed coordinates of the wing. The data will be used for structural model calibration and will be shared with the community.

- Planning and performing the flight test campaigns

  This task covers everything required for taxi tests and flight tests. Flight test procedures and operations as well as all the related good-practises will be shared within an article. These could be especially important for industry or institutions who have just recently started performing UAV tests, or who are overwhelmed with the new EASA regulatory framework about conducting flighty with UAS.

  The data generated will be post-processed with a tool-chain and made available for the community.

- Deriving the demonstrator aerodynamic baseline from flight test data

  After analysing the data, baseline description of demonstrator's aerodynamics will be done. This will be summarised in an article.

All activities are performed within the academic environment involving the students of the Technical University of Munich. It is estimated that around 30-40 student theses will be written on various parts of the project.

The activities will result either in model or real-life test data or best-practise guidelines (regarding flight tests). The generated content will be discussed within the community and will also be made open-access as well as summarised within publications.

3.2 SZTAKI

SZTAKI is responsible for the following activities within the project:

- Baseline control design for the demonstrator as well as for the RCE toolchain based derivative demonstrator and scale-up aircraft
- Flutter control design for the demonstrator as well as for the RCE toolchain based derivative demonstrator and scale-up aircraft (in case flutter becomes a design constraint)
- Drag reduction control design and the corresponding reduced order drag model of the demonstrator, RCE derivative demonstrator and scale-up model
- Analysis framework (LTI) for the control design of the successive control loops, including uncertainty

- Demonstrator aircraft avionics architecture
- Hardware-in-the-loop test setup of the demonstrator, including aircraft mathematical model and avionics implementation
- Flight test preparation of the control laws and the corresponding user interface

All activities are performed within the public non-profit research center environment, also involving the students of the Budapest University of Technology and Economics. It is estimated that around 10-15 student theses will be written on various parts of the project.

The activities will result either in model or real-life avionics components, test data or best-practise guidelines (regarding avionics software and hardware development). The generated content will be discussed within the community and will also be made open-access as well as summarised within publications.

In particular the following question are addressed by the activities of SZTAKI to have a better exploitation and dissemination impact:

- How do the project results benefit for commercial purposes or in public policy-making?

  The project will greatly increase the capabilities of flight control system and avionics design, manufacturing and testing within SZTAKI. Moreover, feedback will be given to the Hungarian Drone Strategy based on the experience of the project members.

  Project results are also shared with key EASA certification authorities personnel.

- What test data will be shared at the end of the project?

  Along with the other project partners SZTAKI is also developing a low-order aeroservoelastic modelling framework for the advanced wing, including modelling of the movables. The demonstrator is modeled with Panukl a low-order 3D panel based aerodynamic solver tool, which is coupled to the overall MDO framework via a self developed Matlab based structures solver tool. The resulting models and part of the generated data will be uploaded for open access.

- What tools will be shared?

  Part of the avionics design and implementation involves working with standards like MAVLINK and JETI EXbus, what are based on open-source software components. Results and improvements to these protocols and their implementation will be shared with the community via the Git repository of SZTAKI.

  The tools used within the analysis of uncertain closed-loop systems, developed within the project are uploaded at: Github repositYory of worst-case uncertainty construction. These are regulary updated and maintained based on the feedback from project partners and from the control community.

- What results do we plan to share?

  The SZTAKI team developed an aeroservoelastic modelling tool-chain using the FLiPASED demonstrator as a use case. This toolchain is composed of a 3D panel solver (Panukl) and custom Matlab scripts to resolve the aerodynamics forces onto the aircraft structure (both in lift and drag dimensions). Development of this tool aims to be generic, so other aircraft can be also modelled with it, not just one particular.

- Where and when will we share it? Conferences, websites, journals, magazines, presentations?

  The proposed conferences where FLIPASED results will be published include:

  AIAA Scitech
  EURO GNC
  The International Forum on Aeroelasticity and Structural Dynamics (IFASD)
  AIAA AVIATION
  ICAS
  ACC 2022
  CDC 2022
  IEEE CCTA 2022
  61st Israel Annual Conference on Aerospace Sciences

- In what format (articles, database, software, equipment . . .)?

  The main project results will be published in peer-reviewed journal papers, including IEEE Transactions on Control Systems Technology, Elsevier Control Engineering Practice, and AIAA Journal of Guidance, Control, and Dynamics. The journal articles will be supported by an extensive list of conference publications appearing in the events listed above. Besides scientific peer reviewed publications SZTAKI will also publish popular media articles, mostly in Hungarian press to reach a wider target audience.

  The project results, including flight and simulation test data will be published in an openly accessible database, where the flight test data, as well as the corresponding Matlab/Simulink based evaluation scripts will be shared.

  Software tools, including the aeroelastic simulation framework will be also shared with the community. PCB design and embedded software onboard the demonstrator will be not available open-source, but we plan to share these items in a bilateral cooperation framework.

3.3 ONERA

ONERA is participating in model order reduction, gust load alleviation and maneuver load alleviation control design in addition to take a role in ground vibration testing.

All activities are performed within the public non-profit research center environment. The activities will result either in model or real-life control laws, test data or best-practise guidelines (regarding conducting GVT tests). The generated content will be discussed within the community and will also be made open-access as well as summarised within publications.

In particular the following question are addressed by the activities of ONERA to have a better exploitation and dissemination impact:

- How does the project results benefit for commercial purposes or in public policy-making? ONERA will share its expertise gained within the project with its strong academic partners (SUPAERO) within university courses, as well as participating in industry-academia research and innovation activities with Airbus and Dassault Aviation.
- What test data will be shared at the end of the project? ONERA will be partially responsible for GVT activities and test data from these test will be shared with the aviation community. Special emphasis will be made to capture modal data coming from aerodynamic control surfaces as well as capturing wing-fuselage joints related nonlinearities.
- What tools will we share? The GLA and MLA design tools within Matlab/Simulink will be shared open-source.
- What results do we plan to share? The frequency separation between the consecutive control design loops might not be always present, hence the plan within the project is to give general guidance to handle the successive loop closure in a systematic manner when considering flexible aircraft dynamics. The lessons learnt will be shared, along with results showing the benefits of active MLA and GLA functions, with their potential domain of application.
- Where and when will we share it? Conferences, websites, journals, magazines, presentations? The proposed conferences and journals where results will be published are:

  AIAA Scitech
  EURO GNC
  ACC 2022
  CDC 2022
  IEEE CCTA 2022

61st Israel Annual Conference on Aerospace Sciences
Systems & Control Letters
Mediterranean Conference on Control and Automation (MED)
Journal of Fluids and Structures

- In what format (articles, database, software, equipment . . .)?

  The main project results will be published in peer-reviewed journal papers, including IEEE Systems & Control Letters, Elsevier Journal of Fluids and Structures, and ARXiv papers. The journal articles will be supported by an extensive list of conference publications appearing in the events listed above. Besides scientific peer reviewed publications ONERA will also publish popular media articles, in French press to reach a wider target audience.

  The project results, including flight control design and model order reduction scripts will be published in an openly accessible database, where the flight test data, as well as the corresponding Matlab/Simulink based evaluation scripts will be shared.

3.4 DLR

DLR is responsible for the following activities within the project:

- Aeroservoelastic modelling of flexible aircraft

  It is important, that the aeroservoelastic effects of the considered aircraft configurations are modelled accurately. Therefore a strong focus lies on the interaction of aerodynamics, structural dynamics, actuator dynamics, sensor dynamics and control laws. The resulting models can be offered in a non-linear or linear time-invariant (LTI) form dependent on the use case. The models are needed for time simulations and controller synthesis.

  There already have been papers published on the aeroelastic modelling and more will follow. At the end of the project a non-linear model will be provided to the community.

- Estimation of aerodynamic parameters

  The aerodynamic parameters of the aeroservoelastic model are of great uncertainty. Therefore flight tests offer the opportunity to adapt aerodynamic parameters based on real measurements. A journal paper is planned in order to describe the aerodynamic parameter estimation process.

- Drag reduction with wing shape control

Besides other partners DLR analyses the reduction of induced drag. As a detailed drag modelling did not exist beforehand, the results of the drag modelling can be validated based on the different solutions of different partners. The resulting model provides the opportunity to apply active wing shape control and reduce the drag at different flight conditions through control surface deflection.

A draft paper has been submitted on drag reduction with wing shape control.

- Flight testing of a flutter controller

  The flutter controller synthesised within the FLEXOP project will be tested in flight. The results are very valuable to the community and will therefore published in at least one paper.

- Active gust load alleviation controller synthesis

  As the considered highly flexible aircraft are more vulnerable to gust encounter, active gust load alleviation control methods are synthesised and analysed within the project. A first simulation showed great potential with respect to the reduction of gust loads. Furthermore a multiple model adaptive control strategy is examined providing the opportunity to switch between control laws representing various mass cases. A draft paper has been submitted on the topic.

- Composite optimization in the framework of MDO

  The composite aeroelastic tailoring tools developed at DLR are planned to be included in the aeroservoelastic MDO toolchain, within the structural optimization task. The DLR-D150 will serve as the testbench for perfoming design studies considering different control technologies included. The results will be presented in a conference paper.

- Ground Vibration Test (GVT) Results

  In order to validate and update the various simulation models, a dynamic data driven model must be built from measurements of the actual structure. The results of the GVT will be published and the data model will be made open access.

- Online Monitoring of Flight Vibration

  During the flight test campaign, a system will run in real time on the aircraft to analyse the vibration signals in order to perform modal identification and tracking. The resulting model parameters will be made available to the other project partners as inputs to their models. The results will also be published and made open access.

4 Dissemination

This is a chapter describing the planned dissemination items in an orderly fashion. Since COVID and the related uncertainty and restrictions might impact the future conferences due to delays and shifting their dates there is a significant risk in being able to get the planned publications appearing in their proper place.

4.1 TUM

At the time of writing, multiple dissemination items are planned. These are listed in Table 1.

4.2 DLR

At the time of writing, multiple dissemination items are planned. These are listed in Table 2.

4.3 SZTAKI

At the time of writing, multiple dissemination items are planned. These are listed in Table 3.

4.4 ONERA

At the time of writing, multiple dissemination items are planned. These are listed in Table 4.

Table 1: Dissemination items from TUM.

Item name	Item type	Planned date	Responsible partner
Flight test data (wing -0)	Data set	12.2022	TUM
Flight test data (wing -1)	Data set	12.2022	TUM
Flight test data (wing -3)	Data set	12.2022	TUM
Static test data (wing -3)	Data set	12.2022	TUM
Aerodynamic models of the demonstrator for different preliminary design software	Data set	12.2022	TUM
Flight test data processing and analysis tools	Software	12.2022	TUM
Flight Testing of 65kg T-FLEX subscale demonstrator	Conference Article	10.2021	TUM
Design and testing of an in-flight thrust measurement system for a pylon-mounted miniature jet engine	Conference Article	02.2022	TUM
In-flight drag measurement of a 65kg T-FLEX subscale demonstrator	Conference Article	12.2022	TUM
In-flight drag measurement for medium-sized UAVs	Journal Article	12.2022	TUM
Comparing Potential Flow Solvers for UAV Modelling	Conference Article	12.2022	TUM
CAD design of a flexible aircraft wing	Data set	12.2022	TUM
Aeroelastic model of a flexible wing	Data set	12.2022	TUM
Reduced order aeroelastic model of a flexible wing	Data set	12.2022	TUM
High-fidelity flexible aircraft simulation results	Data set	12.2022	TUM
Reduced order flexible aircraft simulation results	Data set	12.2022	TUM
Aeroelastic modelling toolchain	Software	12.2022	TUM
Flight Testing and Evaluation of a Subscale Dynamic Demonstrator	Conference Article	12.2022	TUM

Table 2: Dissemination items from DLR.

Item name	Item type	Planned date	Responsible partner
Near-field drag implementation	Conference Article	01.2022	DLR
Comparison of different induced drag estimation methods	Conference Article	06.2022	DLR
Composite optimization studies on the DLR-D150 configuration	Conference Article	12.2022	DLR
Non-linear flexible simulation model	Software	12.2022	DLR
Results on the estimation of aerodynamic parameters	Journal Article	02.2022	DLR
Results on drag reduction with wing shape control	Conference Article	01.2022	DLR
Results on active gust load alleviation with a multiple model adaptive control strategy	Conference Article	01.2022	DLR
Results on flight testing a flutter controller	-	-	DLR
Results on Ground Vibration Test	Data set	2021	DLR
Results on modal identification from flight testing	Article	2021	DLR

Table 3: Dissemination items from SZTAKI.

Item name	Item type	Planned date	Responsible partner
3D panel method based ASE drag implementation	Conference Article	01.2022	SZTAKI
Comparison of different modelling fidelity on FDI performance	Conference Article	06.2022	SZTAKI
Drag reduction control law performance with application to the DLR-D150 configuration	Conference Article	12.2022	SZTAKI
Non-linear uncertain flexible simulation model with control loops	Software	12.2022	SZTAKI
Results on the wingshape optimization and control methods for drag estimation	Journal Article	09.2022	SZTAKI
Results on drag reduction with wing shape control	Conference Article	01.2022	SZTAKI
Results on control interaction and flight test results of a flutter controller	Conference Article	01.2022	SZTAKI
Results on flight testing an operational modal analysis algorithm	Conference Article	09.2022	SZTAKI
Results on Ground Vibration Test aided with on-board sensors	Data set	2021	SZTAKI
Results on modal identification from FLiPASED flight test data	Conference Article	2021	SZTAKI
Results on wingshape estimation methods using EKF and deep neural network based methods	Article	03.2022	SZTAKI
Flight testing a wingshape estimation methods based on EKF and deep neural networks	Software and Dataset	08.2022	SZTAKI

Table 4: Dissemination items from ONERA.

Item name	Item type	Planned date	Responsible partner
Results on Ground Vibration Test	Data set	2021	ONERA
Results on modal order reduction of flexible structures	Software and Article	2022	ONERA
Results on maneuver and gust load alleviation methods applied to the demonstrator	Article	03.2022	ONERA
Flight testing a maneuver and gust load alleviation control law	Software and Dataset	08.2022	ONERA

5 Conclusion

The present deliverable (D5.5) lists all the plans to make the impact of the project more widespread and to reach target audience both in academia, industry and general public. The results generated within the FLiPASED project will advance the boundaries of MDO and will increase the TRL level of implementing flutter, load alleviation as well as drag minimization control laws beyond the theoretical simulation framework. Proper dissemination of these results is fundamental to reach the necessary stakeholders in certification authorities as well as industry practitioners.

6 Bibliography

7 Annexes with additional information

This part might remain confidential and thus not be delivered.

The EC reviewer might ask for an insight – in this case a NDA is recommended.