travel information

Airport Kehl-Sundheim
Willstätter Straße
77694 Kehl, Germany
Latitude: 48.561882
Longitude: 7.842899

by plane...
Airport Strabourg (SXB)
Karlsruhe/Baden (FKB)
then by public transport
to Kehl and finally by taxi to
„Kehl Airport"

by public transport...
Offenburg main station to Kehl
main station and finally by taxi
to „Kehl Airport"

by car...
Kehl-Sundheim Airport
Willstätter Straße
77694 Kehl, Germany

Latitude: 48.561882
Longitude: 7.842889

numerous free parking lots!

partners

project partners...

Hochschule Offenburg
offenburg.university

INSA INSTITUT NATIONAL DES SCIENCES APPLIQUÉES STRASBOURG

IUAS Institute for Unmanned Aerial Systems

cnrs

ICPEES

associated partners...

MAHYTEC

in'air solutions

Pôle Véhicule du Futur

GeneSys

Modelage Concept

programme & funding...

Wissenschaftsoffensive

ERDF — European Regional Development Fonds

interreg Oberrhein Rhin Supérieur

transcending borders with every project

Grand Est

Baden-Württemberg

Rheinland-Pfalz

elcod sky solution

2nd workshop & Flight-Show!

within the European
INTERREG Programme

July 4th 2019
@ Airport Kehl

www.elcod.eu

interreg Oberrhein Rhin Supérieur

Endurance Low COst Drone

Within the **ELCOD** project that is co-funded by the European Regional Development Fund (ERDF) in the framework of the INTERREG V Upper Rhine program, we develop a long endurance low cost drone. With a maximum takeoff weight of 25 kg we aim for a range of 5'000 km, utilizing proven, robust and reliable components.

This workshop is intended for everyone who is interested in unmanned aerial vehicles. We hereby offer you an interesting programme, where development issues of drones, flight control systems, flight permission, light weight design, manufacturing, engineering simulations, etc. are covered.

In addition to a wealth of information presented during the technical sessions, we offer you the opportunity to have a „meet and greet" and an information exchange with the experts in panel discussion as well as in personal discussions.

As a highlight and amazement of the day, we invite you to attend flight demonstrations of different, well prooven drones and **ELCOD**'s technology carrier prototypes.

workshop programme

8:15—9:00 **Welcome & Reception**

9:00 — 9:15 **Prof. Dr. J. Ettrich | Welcome & Introduction**
A warm welcome to the ELCOD project! We will provide you with an introduction and the current status of the project.

9:15 — 9:45 **Prof. Dr. R. Kiefer | The "Stork" Drone**
The prototype developed by the project members at INSA Strasbourg, is designed with respect to the utilization of a fuel cell. We herein present you the design considerations, restrictions and the technical aspects and implementation for the so called Stork design.

9:45 — 10:15 **Prof. Dr. W. Schröder | The "Delta" Drone**
Aiming for long range long endurance applications, the project members from Offenburg combine a classical robust design strategy, low cost materials and a thermal engine. The presentation shows the growth and development of the so called Delta design, including impressions from the maiden flight and subsequent flight tests.

10:15—11:00 **Break** **+ SPECIAL !** **Helicopter Flight Demonstration**

11:00 — 11:20 **Dipl. Ing. M. Lefebvre | Manufacturing, Mechanical Simulations and Wing Optimization**
The presentation will provide an insight into the mechanical design and manufacturing process of the Stork Drone as well as details and findings from composite design and computational engineering methods.

11:20 — 11:40 **Dipl. Ing. P. Meyer | Embedded Air Quality Sensing**
A device gathering a set of environmental sensors has been developed at ICPEES. These sensors measure the concentrations of pollutants involved in the episodes of photochemical pollution in large cities. Once the proof of concept will be done in flight, these data could be used to map in 3D the air quality of an urban area.

11:40 — 12:00 **Steffen Schrock, MSc | Additive Tooling**
We herein present additive methods, e.g. Binder Jetting, used for manufacturing tools, which provide sufficient strength for thermoforming, while at the same time utilizing the comparatively low-priced inkjet technology for the layer construction and a polymer plaster as material, which results in significant cost reductions.

12:00—13:00 **Lunch** **+ SPECIAL !** **Drone Exhibition**

13:00 — 13:30 **Dipl. Ing. T. Pavot | Electronic Design and Automatic Flight Control**
The Stork UAV was designed to operate with a fuel cell. Its integration required the creation of an interface card to power all the electronic components of the drone, from the engine to the flight controller. The Stork UAV will be flown by the PX4 flight controller, renowned and proven by the scientific and industrial sectors.

13:30 — 14:00 **Prof. Dr. J. Fischer | Autonomous Control Strategy**
To realize a practically robust and reliable closed-loop system, a cascaded control structure is utilized comprising basic PID controllers on lower levels and classical navigation and guidance algorithms on higher levels. The controllers are tuned in simulation using a mathematical model of the flight dynamics that has been identified from real flight test data.

14:00 — 14:30 **Prof. Dr. W. Schröder | Optimal Load-Distribution for Non-Planar Wings**
Here we give a glimpse on the process of classical aerodynamic design, the challenges, restrictions and realization of optimum wing load-distribution — especially some new findings for optimal wing load-distribution for non-planar lifting surfaces.

14:30—16:30 **Break** **+ SPECIAL !** **Drone Flight Demonstration**

16:30 — 17:00 **Prof. Dr. J. Ettrich | Conclusions & Outlook**
Finally, we summarize the status and findings of the project as well as addressing the challenges and the perspectives of ELCOD and follow-up project ideas.

17:00 **Closing** **+ SPECIAL !** **"Hands on" Helicopters & Multicopters**

... our main speakers

Offenburg University of Applied Sciences | IUAS

Prof. Dr. Werner Schröder	Aerodynamic Design & Flight Control
Prof. Dr. Jörg Ettrich	Engine & Flow Simulation
Prof. Dr. Jörg Fischer	Control & Measurement
Steffen Schrock, MSc	Manufacturing Technology

Institut National des Sciences Appliquées Strasbourg | INSA

Prof. Dr. Renaud Kiefer	Design & Flight Control
Dipl. Ing. Martin Lefebvre	Mechanical Engineering
Dipl. Ing. Thomas Pavot	Electrical Engineering

Centre national de la recherche scientifique | CNRS/ICPEES

Dipl. Ing. Pauline Meyer	Chemistry & Measurements

Save the Date

Conference & Flight Demonstrations
Airport Kehl | July 4th 2019 | 8 am — 5 pm

Did we spark your interest?

please, **register** until **June 28th 2019**
... no fee !

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