

School of Engineering

Continuing Education Secretariat
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Methodology

The continuing education course includes various activities such as lectures supported by practical examples and two days where the concepts discussed are applied to real case studies.

Prerequisites

The course is intended for all those interested in applying for SORA as part of UAV operation. A basic knowledge of UAV operation (and related issues) is therefore required. The course does not require particular mathematical or technical skills, although these may be an advantage.

Course language

The language of instruction is English. The course and all related materials are prepared in English, as this is the international language of aviation professionals.

Course manager

Dott. Ing. Pierluigi Capone
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Instructors

The lecture team comprises:

- Dott. Ing. Pierluigi Capone: ZHAW School of Engineering, Senior Lecturer Flight Mechanics and Flight Control Systems; responsible for the SYS-RAMS course (system reliability, availability, maintenance and safety)
- Dannick Riteco: Head of UTM Risk Services, AirMap/founder of SORA Consulting

Certification

Participants who complete the course will receive a certificate of attendance.

Enrolment

Participants can enrol directly at
www.zhaw.ch/en/engineering/continuing-education



School of Engineering

Continuing Education Course on Specific Operations Risk Assessment (SORA) for unmanned aerial vehicles (UAV)



Course description

Safety for manned aircraft is based on a well-established process. This process places a heavy burden on the industry, but is necessary in order to guarantee the safety of manned aircraft flight.

The relatively low cost of Unmanned Aerial Vehicles (UAV) and their versatility have led to many small manufacturers and operators being established. It is not uncommon for the personnel of these companies to have limited experience of the safety process for manned aircraft.

Certification authorities, such as EASA (European Aviation Safety Agency), want to establish clear rules that will guarantee the safety of UAV operations while allowing the development of new UAV-based applications. This effort has led to the creation of the Specific Operations Risk Assessment (SORA).

Target audience

The course is aimed at a wide audience:

- Manufacturers or operators who want to become familiar with or apply for SORA assessment
- Professionals who want to understand how the new SORA process works
- Professionals who have to control or operate UAV operations, such as air traffic controllers, police, pilots, etc.
- Representatives of safety agencies required to enforce SORA
- etc.

Objectives

Participants will acquire both knowledge of the theoretical background and the practical experience to effectively address the issues posed by the SORA process.

This modular course is structured over four days, with eight hours of lessons per day.

Content

	Content	Learning objectives	Hours
Day 1	Introduction to UAS operation	Familiarisation with UAS operation and related issues.	2
	Safety in aviation (manned vs. unmanned)	Differences between safety approaches for manned and unmanned aviation.	2
	Qualitative and quantitative approach to safety	Qualitative and quantitative analyses of compliance with safety regulations. Discussion of the main differences and benefits and drawbacks of the two approaches.	2
	Bow-Tie model	Understanding of the Bow-Tie model, since this is the basis of the SORA method.	2
Day 2	Introduction to SORA	Understanding of the SORA assessment. Holistic approach. Various aspects of the SORA process.	2
	Concept of operation and robustness	Operation and related robustness are discussed in principle and via practical examples. The objective is to familiarise participants with these concepts.	2
	Ground risk class and mitigations	Familiarisation with the methodology required to assess the ground risk class and the appropriate harm barriers.	2
	DAL and SAIL	Introduction to Specific Assurance and Integrity Level (SAIL) and in relation to the manned aviation concept of Development Assurance Level (DAL).	2
Day 3	OSO and SAIL	Based on the previous steps, participants should be able to define SAIL and thus the related Operation Safety Objectives (OSO).	2
	Introduction to the air risk model	Familiarisation with the air risk model adopted in SORA.	2
	Nominal collision risk and DAA	Familiarisation with the concepts of nominal collision risk and DAA.	2
	Off-nominal risk, failures and Air SAIL	Familiarisation with the concepts of off-nominal risk, failures and Air SAIL.	2
Day 4	Case study 1	The knowledge acquired over the previous three days is applied to a practical example based on a real case.	4
	Case study 2	The knowledge acquired over the previous three days is applied to a practical example based on a real case.	4
	Total		32