infoWERK
medien & technik

iv-sim
ATR 42-320 / 72-500

Frequently Asked Questions

What is iv-sim?

iv-sim is a new and innovative way to conduct theoretical knowledge courses for aircraft initial and recurrent type training.

The aim of the training is to train the pilot the way he/she is expected to work during the normal everyday operation, i.e. to include the aspect of system management and crew resource management (CRM) as well as procedural knowledge.

Training with iv-sim can be conducted by using the iv-cockpit, the iv-poster or a two screens desktop solution.

How does it work?

While the traditional theoretical knowledge course follows more or less the structure of ATA chapters, iv-sim implements the requirements of scenario, competency as well as evidence-based training.

The theoretical knowledge course is based on a line oriented flight session. From the very first minute the trainees are confronted with the cockpit environment, checklists, standard operating procedures (SOPs) while working on the theoretical knowledge of the aircraft.

The theoretical knowledge of aircraft systems, equipment, limitations as well as performance, flight planning and load & balance requirements are presented in context with the appropriate flight situation (information is provided when required).

The theoretical knowledge training is conducted within the future workplace of the flight crew member - the cockpit - using checklists, SOPs and CRM skills. As the training requires the manipulation of switches, buttons according to the checklist, the trainees will be made familiar with the cockpit.

As iv-sim is fully web based, the training can be conducted at any location worldwide, independently from the location of the Training Centre.

What is the difference to other type training courses?

While the classical WBT/MBT focuses on technical aspects of the aircraft only, iv-sim includes also practical as well as **procedural** aspects. **Two students** conduct the training together, which ensures the development of **core competencies** like application of procedures and communication.

The training is structured according to a normal flight, and includes procedures like:

- “Entering the Aircraft”

- “Cockpit Preparation”
- “Taxi”, “Take-off”, “Climb”, “Cruise”, and “Descent”
- “Approach”, “Landing”
- “Parking”, “Leaving”

Is there a legal requirement / background of this training

The training includes the requirements of ICAO Document 9995, Manual of Evidence-based Training.

How is the training organized?

iv-sim uses different training types to ensure the best training results.

Each procedure / flow contains at least one **GUIDED lesson**, and may comprise **panel familiarization**, one or more CONTENT lessons and one or more **FREEPLAY lessons** (drill and train to proficiency).

CONTENT lessons are available as multimedia based training via the didactical screen. In addition, included progress checks satisfy the requirements for checking.

Here you see a few examples of procedures/flows and their implementation:

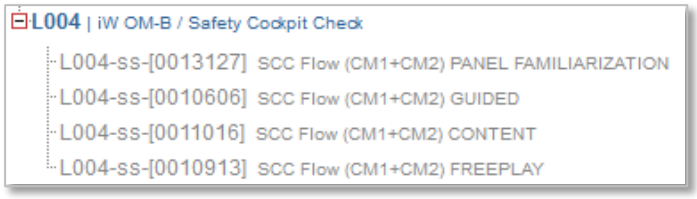

Figure 1: Implementation of the Safety Cockpit Check Flow

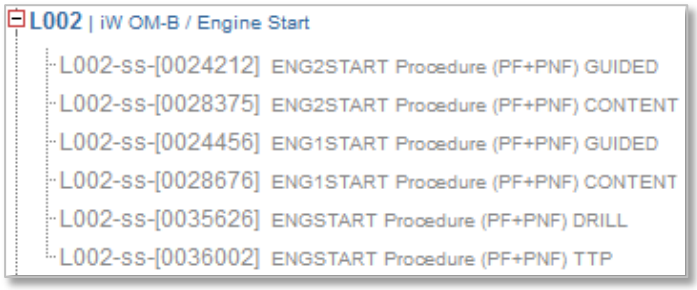

Figure 2: Implementation of the Engine Start Procedure

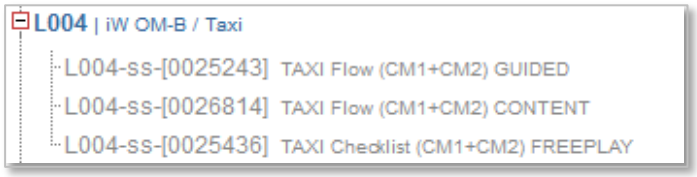

Figure 3: Implementation of the Taxi Flow

How do the different lesson types work?

During the **panel familiarization** the students learn about the panels required for the procedure (location of indications, knobs, levers, etc.).

During the **GUIDED lesson** the students receive general information about the current situation, the applicable checklist items and SOPs. The students are guided through the entire lesson by a virtual instructor.

During the **CONTENT lessons** the theoretical knowledge of the actually required aircraft systems and limitations for this procedure are presented step by step, while the procedure must be performed once again.

The procedure is completed by a **FREEPLAY lesson**, where the students have to demonstrate proficiency by conducting the procedure according to the flows and SOPs.

How does iv-sim technically work?

iv-sim consists of 6 components:

- The Real-time Aircraft Simulation
- The Learning Management System 'iv-track'
- The Multimedia Based Training
- The iv-sim Lessons
- The Theoretical Knowledge Checking
- The Interface

The Real-time Aircraft Simulation is connected to the Learning Management System which communicates with the Interface, where:

- The Real-time Aircraft Simulation is hosted by a simulator operator or infoWERK
- The Learning Management System is hosted by infoWERK (iv-track)
- The Interface is located at the customer's location
- The Multimedia Based Training, the iv-sim Lessons and the Theoretical Knowledge
- Questions are an integral part of iv-track

What are the advantages?

From the beginning, students use a (virtual) **cockpit as their learning environment**. The technical aspects of the aircraft are learned while performing procedures and considering mass & balance and performance requirements.

Built in **crew resource management** elements actively support two students learning together in the same cockpit.

While performing the procedures, the technical content of the aircraft is being explained step by step. Only necessary information is presented when needed, in order not to overload the students and keep the training interesting and interactive.

iv-sim will therefore reduce the required time in Full Flight Simulators used for cockpit familiarization, application of procedures, automation (aircraft flight path management) and communication. Those core competencies have been already trained to competency during the theoretical knowledge course using iv-sim.

This **available training time** can now be used in the Full Flight Simulator for e.g. Upset Recovery Training and Manual Flight Path Management.

Due to the new learning scenario the students will be **more focused and motivated** throughout the entire theoretical training.

What is required?

In contrast to a "normal" WBT the training is conducted within a living cockpit environment.

Therefore the digital cockpit (iv-cockpit) is required, comprising 4 touch screens for the cockpit panels plus 2 touch screens for the didactic screen.

The digital cockpit is connected via internet with infoWERK's Learning Management System iv-track (which hosts the multimedia based training, the lessons, and the theoretical knowledge course).

Software:

infoWERK's Learning Management System iv-track.

Hardware:

iv-cockpit (Digital Cockpit), or iv-poster (Digital Poster for classroom solution), with internet connection.

Network:

The full-duplex data transfer works with Internet Protocol v4. The minimum bandwidth needed is 5 MBit download, 0.5 MBit Upload, and a ping below 150 ms. The physical location of the Interfaces, the Learning Management System and the Real-time Aircraft Simulation can be spread worldwide.

Can the training be customized?

Yes, of course!
The training can be customized according to the operator's procedures. For this infoWERK's Storyboard Tool is used. Lessons and content are created and maintained by infoWERK, always in respect to customer requirements.

Is this training also available for other aircraft types?

Actually not, but infoWERK is keen to find new partners developing other aircraft types.

How is the training documented?

The backbone of iv-sim is the Learning Management System (iv-track) which allows the organization, tracking and documentation of the training activities.

The overall training status and detailed reports are provided by the LMS.

What is iv-poster?

Due to its huge size, it is primarily designed to present virtual cockpits or any aircraft system in front of an audience.

The instructor may use this device to connect to a real-time aircraft simulation. This guaranties correct system response and enables the instructor to perform correct procedures like in the real aircraft.

The iv-poster consists of a huge touch display and one standard PC with internet connection.