PROJECT

HIPNOSIS

Hardware Implementation of Pilot-Non-intrusive cOgnitive States Identification System

Funding: European (Horizon 2020)

Duration: Nov 2018 - Oct 2021

Status: Ongoing

Total project cost: €968,166

EU contribution: €848,963

Call for proposal: H2020-CS2-CFP07-2017-02

CORDIS RCN : 218241

Background & policy context:

With ever increasing air traffic and the fierce competition between airlines, cost reduction is exerting more and more pressure on airlines, inevitably transferred to pilots whose profession becomes increasingly demanding. The adoption of new ground technologies has the potential to increase safety while decreasing operating costs. Platform 3 of LPA IADP aims to develop disruptive flight-qualified cockpit operations concepts by a major design re-thinking towards a “human-centric” approach to operate aircrafts. The ultimate goal is to reduce crew workload, improve fatigue-related safety, situational awareness and support disruptive cockpit operations.

Objectives:

HIPNOSIS will contribute to develop the next generation cockpit by providing a hardware and software implementation of smart sensors to monitor cognitive states such as drowsiness and fatigue, which will allow a great leap in flight safety. HIPNOSIS approach is to implement two sensing systems:

1. a vision-based system integrated in the cockpit dashboard to continuously monitor the pilots in the cockpit and detect suspicious behaviour linked to drowsiness and
2. a smart wristband which will sense several bio signals through advanced optical sensing technologies, before, during and after the flight.

The system will be interfaced to a “pilot state monitoring system” resulting from a previous development in Platform 3 of the IADP. The system design shall be compliant with aircraft cockpit installation, the operational environment and pre-certification requirements to reach TRL6, which will be verified after successful deployment in a Falcon 7X cockpit.

Methodology:

The HIPNOSIS consortium brings together partners able to cover the whole value chain of innovative product development: SERMA Engineering (F), an OEM for aeronautical equipment, CSEM (CH), an RTO experienced in innovative technologies and INNOV+ (F) a start-up company developing and selling standalone systems for cognitive states monitoring for the automotive industry.

Parent Programmes:

H2020-EU.3.4. - Horizon 2020: Smart, Green and Integrated Transport

Institute type: Public institution

Institute name: European Commission

Funding type: Public (EU)

Other programmes: JTI-CS2-2017-CfP07-LPA-03-13 Design and development of smart sensors for detection of human cognitive states implementable in cockpit environment

Lead Organisation:

Csem Centre Suisse D'electronique Et De Microtechnique Sa - Recherche Et Developpement

Address:
Rue Jaquet Droz 1
2002 Neuchatel
Switzerland

EU Contribution: €570,823

Partner Organisations:

Serma Ingenierie

Address:
RUE DE L AUSSONELLE AU VILLAGE
31700 CORNEBARRIEU
France

Organisation Website:
http://www.serma-ingenierie.com

EU Contribution: €235,659

Innov Plus

Address:
BATIMENT 503 CENTRE UNIVERSITAIRE D'ORSAY
91400 ORSAY
France

EU Contribution: €42,481

Technologies:

Cabin and cockpit design
Cockpit-based technologies for improved pilot workflow

Development phase: Demonstration/prototyping/Pilot Production

STRIA Roadmaps:
Cooperative, connected and automated transport, Vehicle design and manufacturing

Transport mode: Air transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Safety/Security

Geo-spatial type: Other