

Contacts:

Project coordinator:

Amela.Karahasanovic@sintef.no

Organization:

SINTEF

Communication leader:

jeanbaptiste.shamuana@dblue.it

Organization:

Deep Blue

Media:

Website:



LinkedIn:



**DIALOG aims to
promote human-AI
collaboration by
introducing AI as an
agentive, transparent
and trustworthy team
player**

DIALOG

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Human-Centered AI for ATC

Autonomous agents are introduced in many tasks to discharge ATCOs in their activity. Being able to **coordinate** with them is crucial, especially when facing **unanticipated events** (such as alarms, pilots' requests, emergency situations, etc.). To prevent this coordination from inducing **additional workload and complexity** it is essential to rely on a **human centric approach** based on human-autonomy teaming and explainability models, as well as physiological state monitoring. DIALOG will design an assistant that helps ATCOs respond to **pilots' requests** in an efficient collaboration-promoting manner.



Key challenges for making automation a team player

- ◆ **Artificial agents should be able to interpret their human teammate's intentions**

Need: Adequate modeling of partners' intentions

- ◆ **Artificial agents should be able to adapt to partner state**

Need: Characterizing partners' status

- ◆ **Artificial agents should be able to share their status and intention**

Need: Designing relevant communication

DIALOG's solutions

- **Automatic Speech Recognition** to transcribe pilot-ATCO communications
- **Hierarchical Task Analysis** to identify ATCOs goals and tasks
- **Attention tracking** to identify current task

- Attention tracking and HTA to identify ATCOs intentions
- **Physiological monitoring** (cardiac, cerebral, ocular and electrodermal activity) to characterize ATCOs' workload and attention
- **Machine learning and data fusion** to classify ATCO's state

- **Theories from the human-human joint action** to identify essential information sharing
- **Human-AI teaming and task sharing** as a framework for efficient collaboration
- **Explainability** to prototype the CWP