Agenda Day 1: Monday 2021-06-28

Start		End	Duration	TOP	Who
13:00	-	13:05	5	Welcome by Christian Kern/Austro Control	ACG
13:05	-	13:10	5	Welcome by SJU	SJU
13:10	-	13:35	25	Overview of the HAAWAII-Project	DLR
13:35	-	14:00	25	Speech Recognition in the ATC environment for Human Performance Evaluation, Radar Label Maintenance, Readback Error Detection	NATS / ISAVIA
14:00	**-**	**15:00**	**WORKSHOPS IN PARALLEL**		
- Readback Error Detection Assistant: What is a readback error? - Standardizations related to Speech recognition - Access to speech training data in Europe					
15:00	-	15:15	15	Coffee Break	
15:15	-	15:45	30	Presentation of Workshop Results (5-10 Minutes per Workshop)	All
15:45	-	16:00	15	Closing Words Day 1	DLR

Abstracts – Presentations and Workshops

Overview of the HAAWAII-Project

The Horizon 2020 funded HAAWAII project aims to develops a reliable, error resilient and adaptable solution to automatically transcribe voice commands from both air traffic controllers (ATCO) and pilots.

Using machine learning, the project builds on large collections of speech data, organized with a minimum expert effort. Test areas are Isavia enroute and oceanic airspace and Europe's most complex approach airspace, the London terminal area (TMA) with five major airports. Addressed applications of the automatic speech recognition in HAAWAII project are ATCo workload prediction, callsign highlighting in realtime, pre-filling of radar labels and CPDLC messages and most challenging read-back error detection.

The presentation gives a first overview of the project objectives, the applications, first results and introduced the following presentations and especially the workshops which aim to get input from the audience for the next phase of the project.

Speech Recognition in the ATC environment for Human Performance Evaluation, Radar Label Maintenance, Readback Error Detection

The HAAWAII project aims at developing a reliable, error resilient and adaptable solution to automatically transcribe voice commands from both air traffic controllers (ATCO) and pilots. The question from an ANSP point of view is how this technology can safely and efficiently be integrated into the live operation. Various applications will be explored as part of the project such as read back error detection, human performance metrics extraction, callsign highlighting and pre-filling of CPDLC messages. Results of this project will deliver insights into the maturity and feasibility of this technology and the real-life safety and efficiency benefits that are envisaged. From an ANSP perspective automatic readback error detection will bring great safety and workload benefits. Having a reliable readback error alert will free up ATCOs' cognitive capacity spent on listening to readbacks for other tasks and can prevent ATCO-pilot miscommunication leading to safety incidents. Efficient objective ATCO workload predication will support not only the individual controller but enable operational management to make informed decisions about capacity and airspace management. Radar label maintenance will decrease ATCOs' psychomotor workload which also frees up capacity for other tasks and increases overall efficiency.

Readback Error Detection Assistant: What is a readback error?

If the ATCo cleared a descent to flight level 100 and the pilot's read back is to flight level 90, the situation is quite clear. It is a readback error which must be corrected very, very soon. If the ATCo wants "contact frequency one one nine decimal eight zero zero" and the pilot confirm with "nineteen eight bye" the situation with respect to ICAO phraseology is quite clear, but this readback is common practice. How to react? And what about "climb flight level one eight zero expedite passing flight level nine zero" and the readback "expedite nine to one eighty"?

The workshop wants to bring together safety managers, air traffic controllers and other ATM experts.

Standardizations related to Speech recognition

How to integrate the ABSR to the ATC systems, what protocols should be used, are there any existing protocols that can be adapted, or we need new protocols to successfully integrate the ABSR?

The ABSR needs to be integrated into the ATM environment as a feasible solution for the future. The ABSR should receive data from the existing ATM systems (e.g. surveillance data, voice data, weather data etc.) and send the analyzed results or commands towards the controller working position or/and towards a technical workstation.

The workshop wants to bring together technical staff of industry and technical staff of ANSPs and other interested parties to discuss about integration.

Access to speech training data in Europe

As automatic speech recognition, or other related topics (e.g. natural language processing) are data-driven, this workshop gives an overview on which data can be used for training, and how to improve access to training data in Europe for air traffic control?

Is it well-known that big companies such as Google use large scale training data for its speech recognizers. Past projects such as MALORCA benefited from small amount of speech corpora (e.g. several hours of manually transcribed ATC data for Prague airspace and for Vienna airspace). Recent challenge organized by Airbus has offered 40 hours of training for its Speech Recognition Challenge in 2018. MITRE has access to 150,000 hours of recorded voice utterances – every month.

This workshop will attempt to answer questions such as: How can we improve the situation in Europe? How to decrease the price of collecting manually transcribed data? How to reach good quality data? What are the legal challenges (in more detail on Day 2)? What are business challenges? Data is the oil of the 21st century, so why sharing data with a possible competitor? What are the technical challenges?