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05-Nov-2026

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ASRU PoC



How we plugged it in the OPS room

5th November 2026

PoC = proof of concept

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- Connecting the prototype to the Operations room
  - Seeing it transcribing live data
  - Security considerations
  - The technical challenges
  - The final setup
- The results. Performance highlights and lowlights
- Next steps
- Q & A

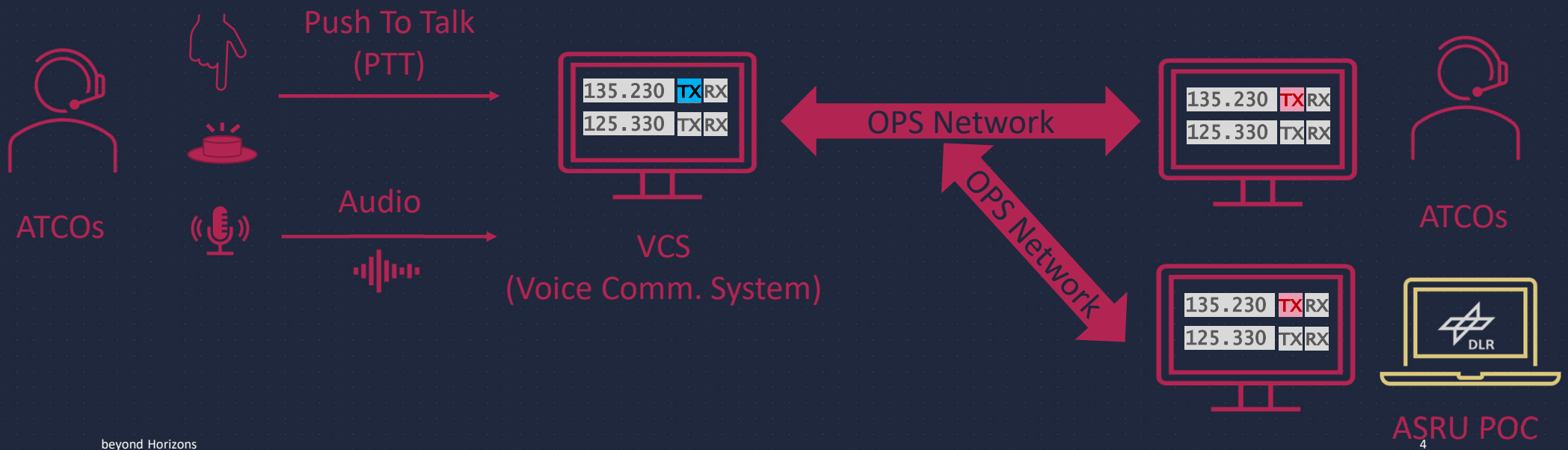
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- Seeing the transcription working **on live data** helps to show the full potential
  - Input data has never been seen before
  - Performance observed is not made up or pre-trained
  - Real-time speed and low latency are special challenges.

- Connecting an external device to the OPS room is normally not permitted.
  - It required several security checks
  - System Architecture Document had to be developed
  - Access to the voice system is in listening-only mode
  - Access to the Push-To-Talk status is key to segregate ATCOs and pilots' communications

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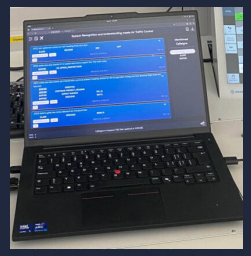
- ATCOs push the button as they speak
- All working positions connected to the network indicate that someone is transmitting (TX indicator) on this frequency (e.g.: 135.230 MHz)



The setup

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Legend
PROTOTYPE
OPERATIONS



BOB123
MUM456
Callsigns

ASRU prototype

Push To Talk (PTT)

PTT
time

Audio

Image Processing device

TX TX TX
time



ATCOs

VCS
(Voice Comm. System)

135.230 TX RX
125.330 TX RX

OPS Network

135.230 TX RX
125.330 TX RX

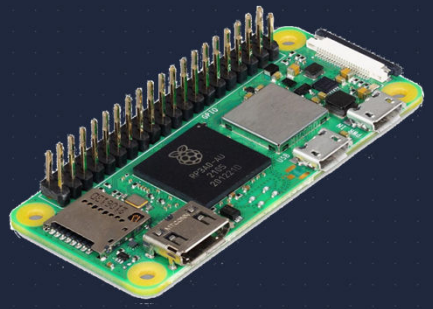
Non-functional CWP
(Controller Working Position)



beyond Horizons

Active HDMI Signal Splitter, one to CWP screen
the other to a C790 HDMI-to-CSI framegrabber:

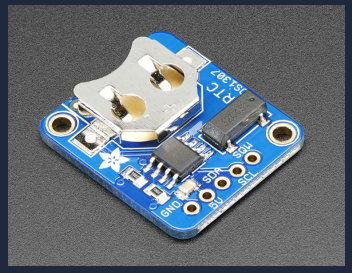




Raspberry Pi Zero 2W

- Powered via USB from Laptop
- acts as a USB HID Device (Gaming Pad)
- Fires Button A for TX and Button B for RX
- based on checking 3 critical Pixels on HMI

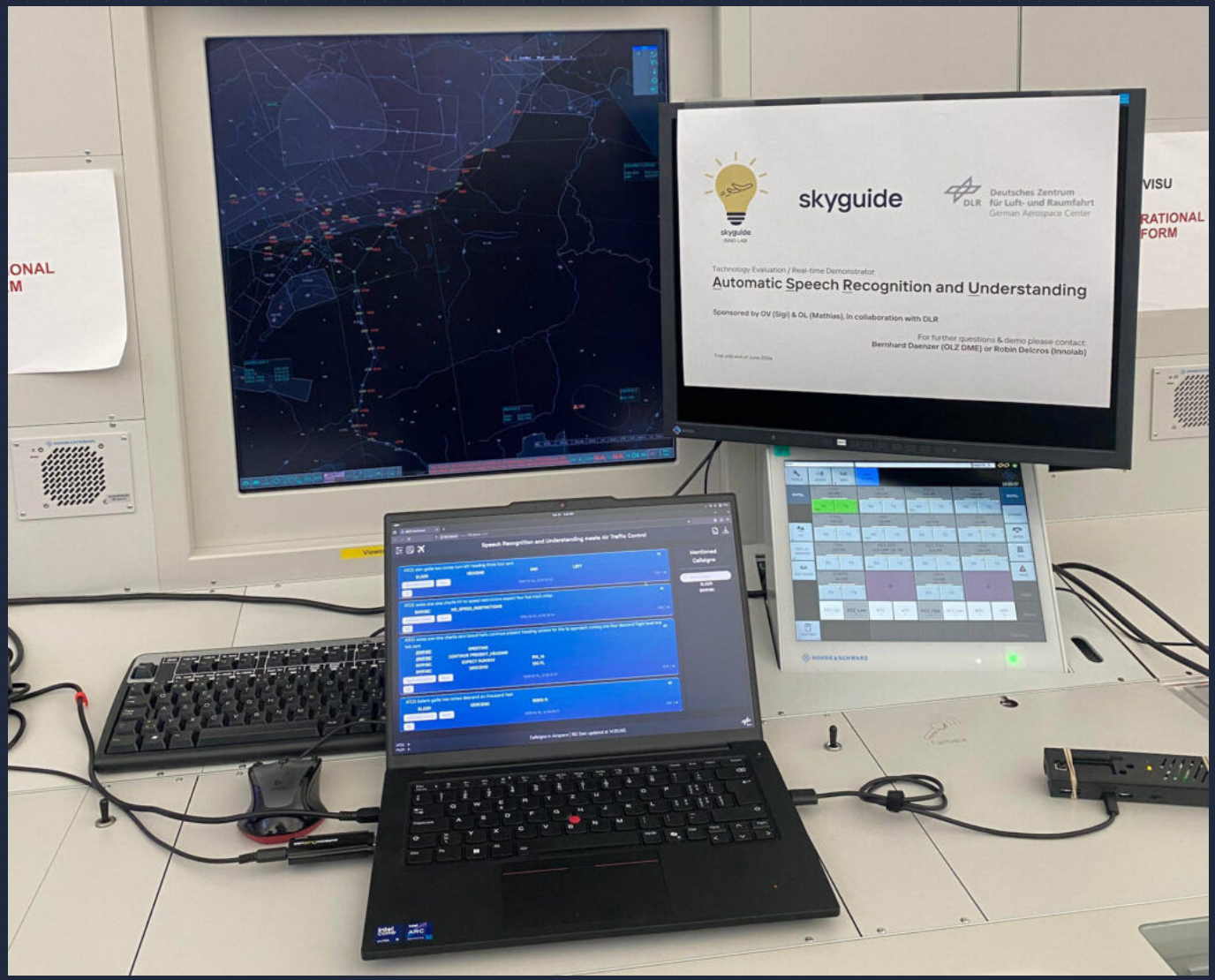
RTC Module for daily
reboot / timestamps

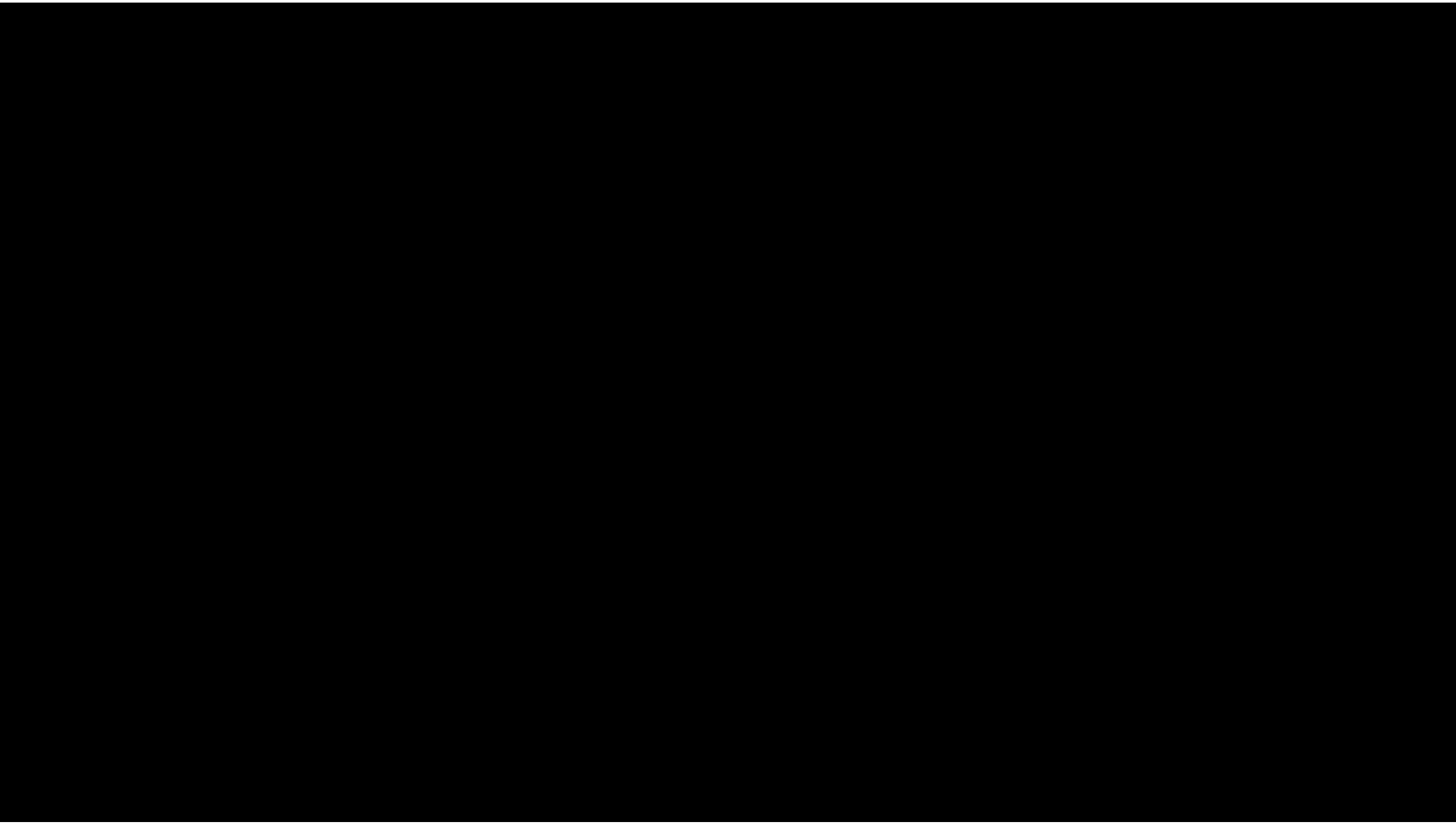




Prototype installed

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- Performance highlights
  - WER, ATCO only, between 1.5% and 6.7%
    -> Awesome!
  - Callsign recognition rate between 95% and 100%
    -> Awesome!
  - Command recognition rate, for most relevant: 95%+
    CLIMB/DESCEND/CONTACT/HEADING/SPEED
    -> Awesome
- Room for improvement
  - Callsigns not yet existing when initial model training was performed
  - Waypoints specific to Zurich airspace
  - Waypoint pronunciation variations

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- Together with DLR:
- Fine-tune the current model with data recorded on the prototype for the last 6 months
- Support SELF-MADE-ATC
- Research Paper based on gathered PoC data

- Rohde & Schwarz:
- Explore possibility for more elegant and scalable integration with the VCS.
- Feedback about necessary toolchain & maintainability

- Skyguide:
- PoC will end in Summer ’27. Concrete steps beyond not yet determined.
- Mid-term roadmap for Electronic Clearance Input.

Thank you for listening!

For questions & details, feel free to contact us!

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