

Augmented reality tools to innovate interaction modes in Tower

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SESAR 2020 SHOWCASE

Motivation

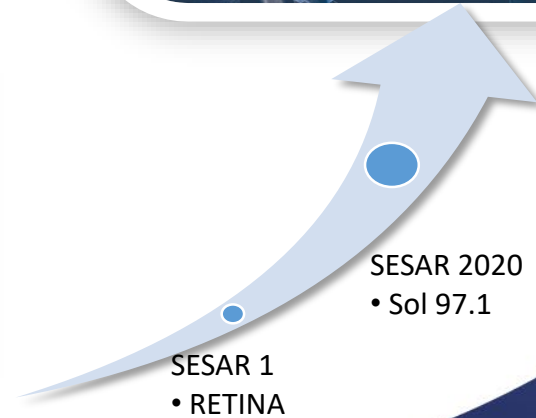
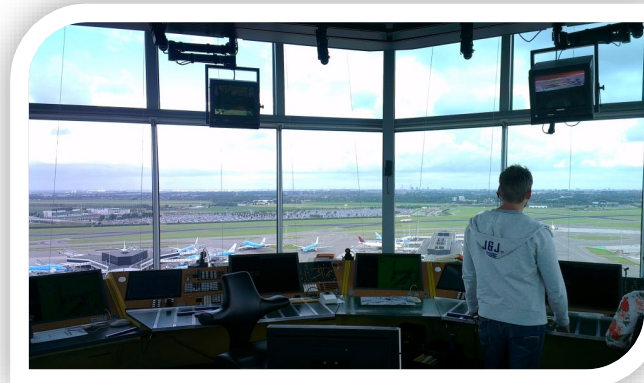


HEAD UP
Out the Window View

HEAD DOWN
*Displays
Keyboard
Strips*

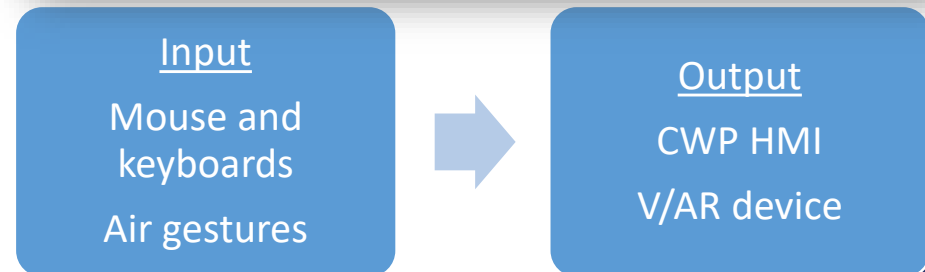


Augmented Reality



Augmented Reality with HoloLens 1 and 2™

- Head-mounted smart-glasses for perception of holograms that are integrated within real-world environment
- Features:
 - Tinted visor with transparent optical combiner lenses
 - Non-obstructing speakers with spatial sound
 - Hand and gesture tracking and eye-tracking



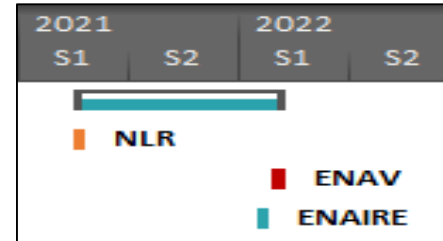
Technical Validations



PJ.05-W2 Digital Technologies for Tower
Solution 97.1 Virtual and Augmented
 Reality applications for tower



High-performing Airport Operations



Maturity

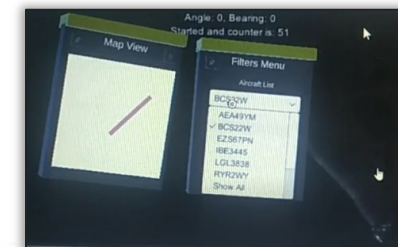
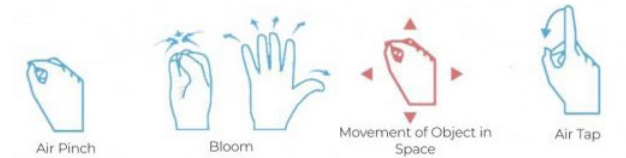
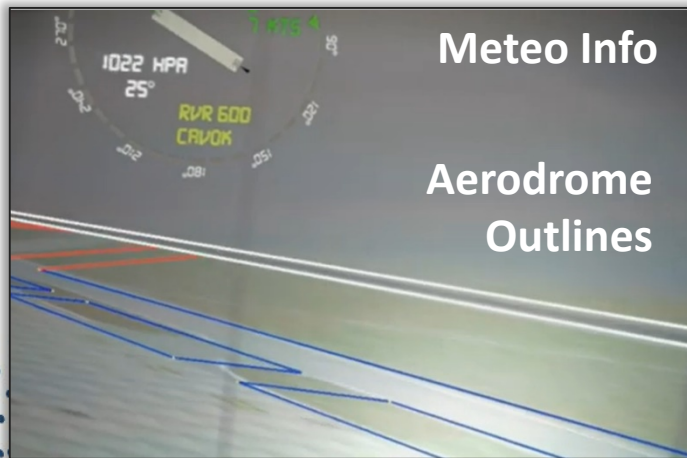


Expected Benefits

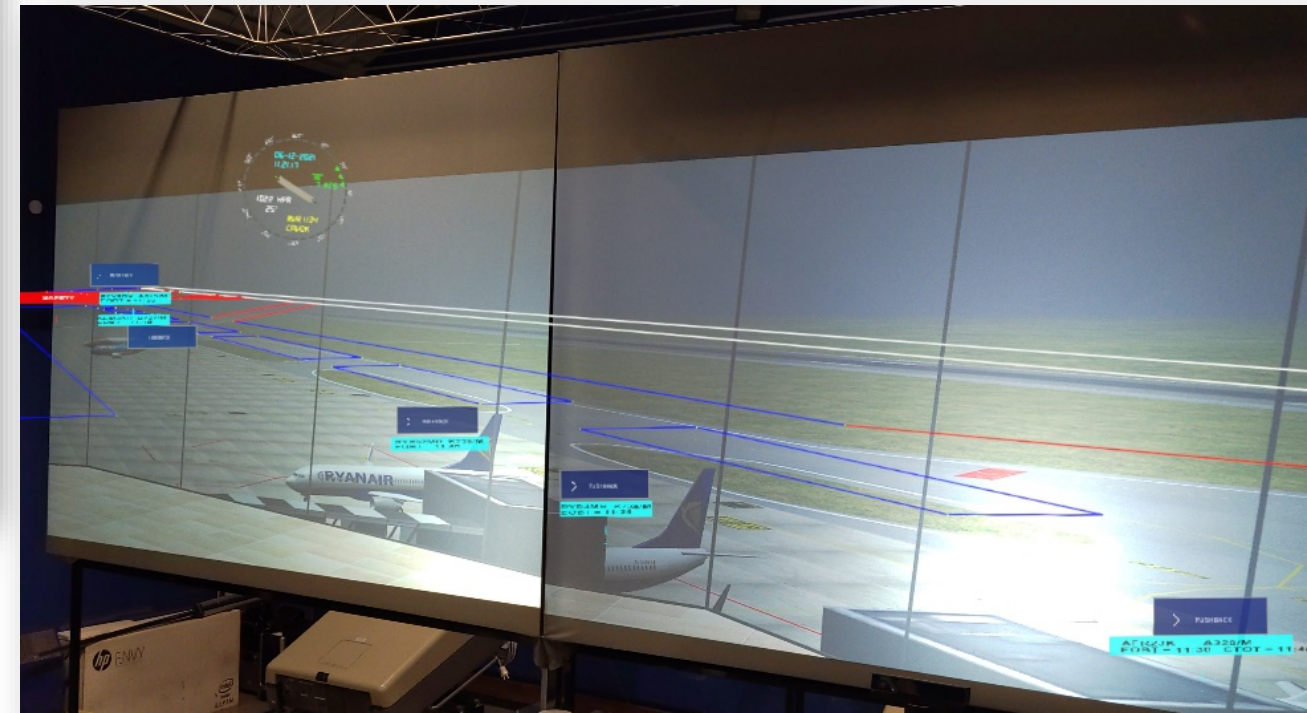
	Key Performance Area	Key Performance Indicator
	CEF2 (ATCO Efficiency and Productivity)	Flights per ATCO hour on duty
	Safety	Indirect Safety Impacts
	Human Performance	User Acceptability of Solution (qualitative) Cognitive indicators
	Resilience	Loss of Airport Capacity avoided



Keeping an Augmented Eye on the Traffic

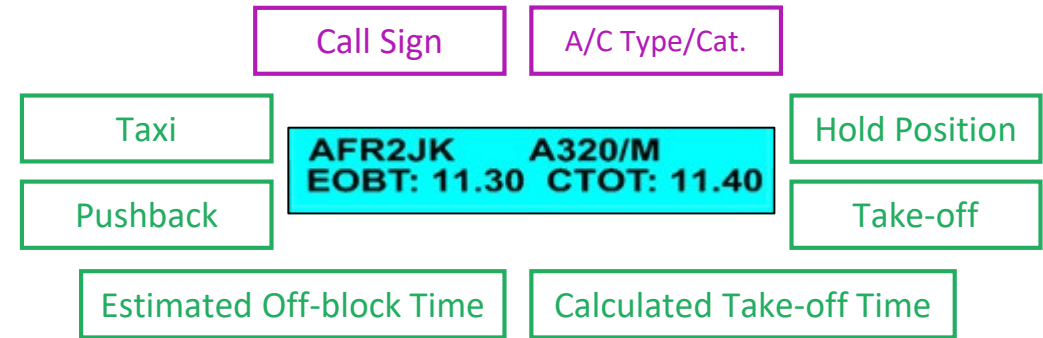


Adaptive HMI for Visibility Condition

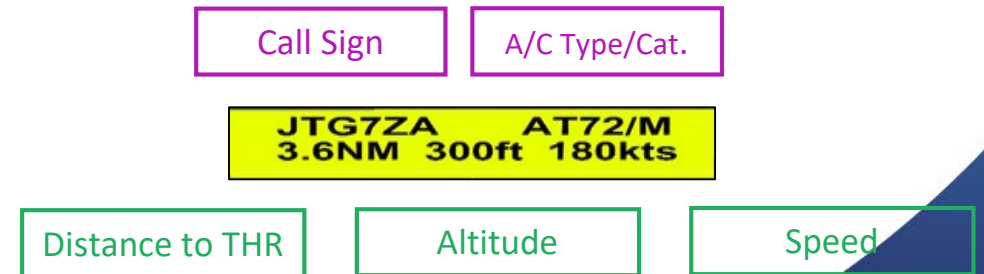


Tracking Labels

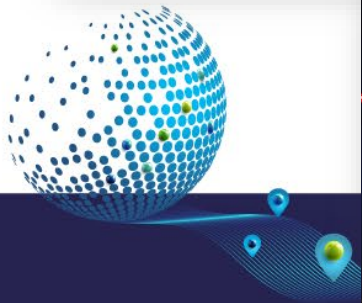
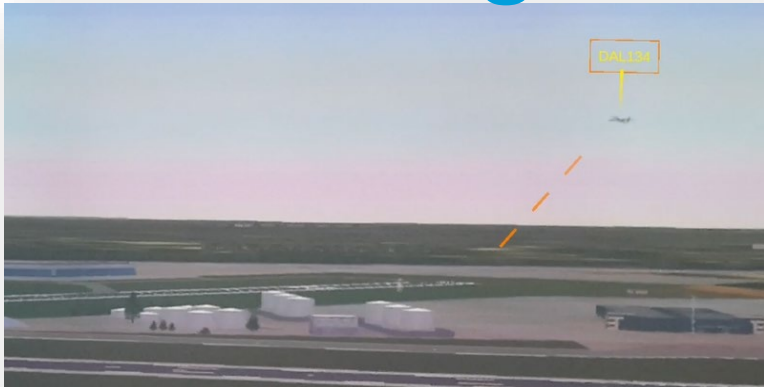
- Departure label (appears when handler is ready)



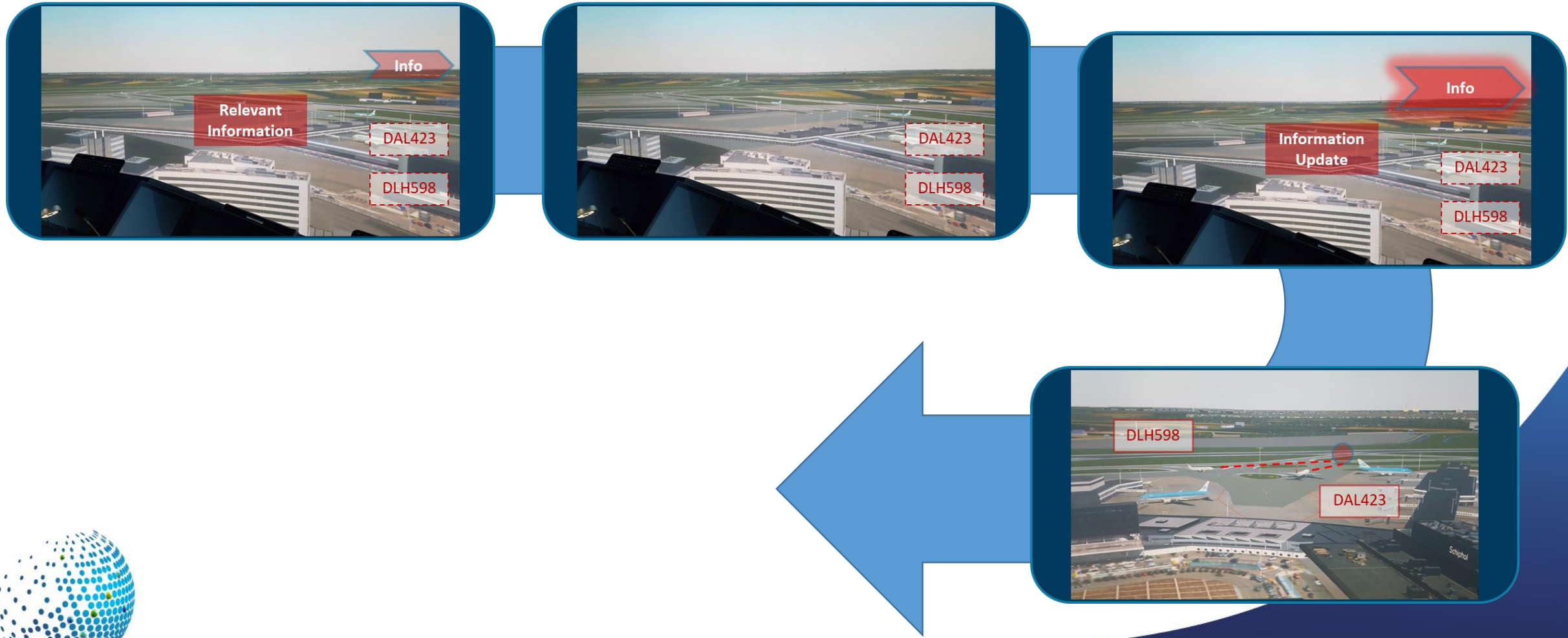
- Arrival label (appears at specific distance on final)



→ Adaptive information (in green)



Attention Capturing and Guidance

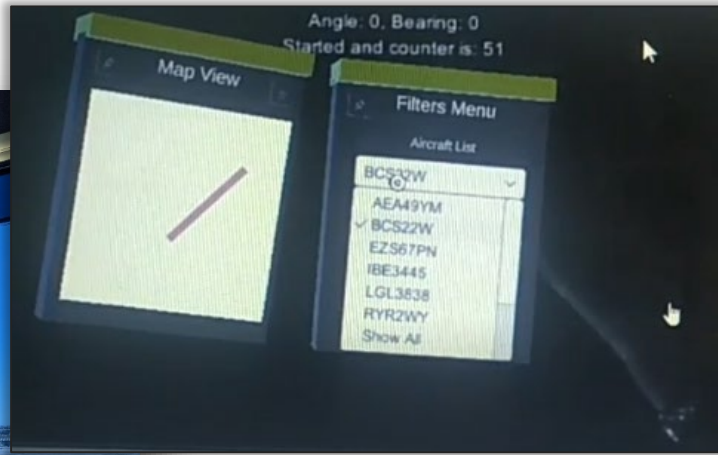


Air Gestures

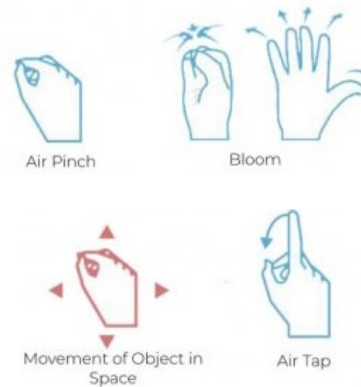
Non time-critical tasks

Pushback

Start-Up



Interaction with Menus

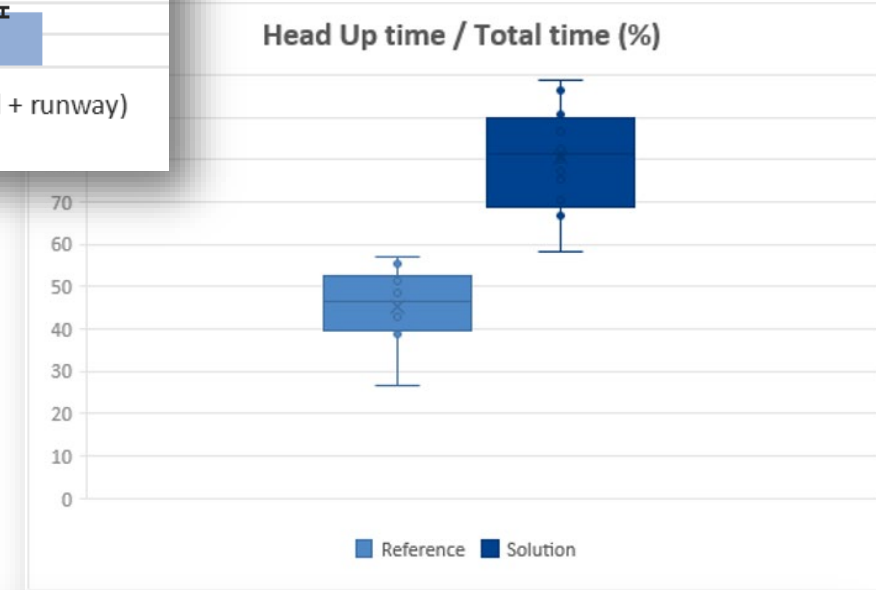
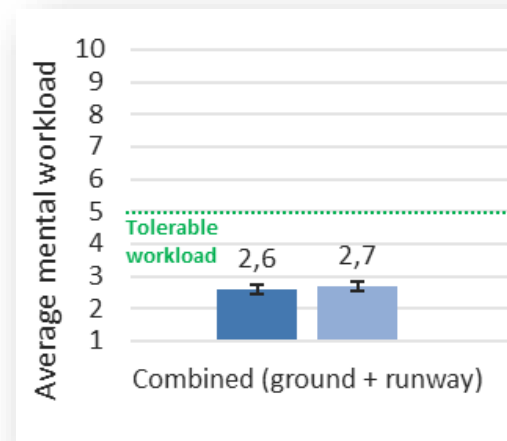


Main outcomes

Situation Awareness and WorkLoad

- CWP HMI to OTW monitoring tasks
- Head up > head down
- Low visibility: weather, layouts
- Reaction time to critical events
- Sharing of information displayed reduces the need of team communication

Acceptance depending on maturity of implementation, ATCO, ergonomics



Thanks for your attention

Show case at
ENAV stand, booth F19

Find more at

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🌐 www.remote-tower.eu

