Scenari futuri nel trasporto aereo

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Quali conoscenze, abilità e competenze per il futuro trasporto aereo? Il progetto Skill-UP

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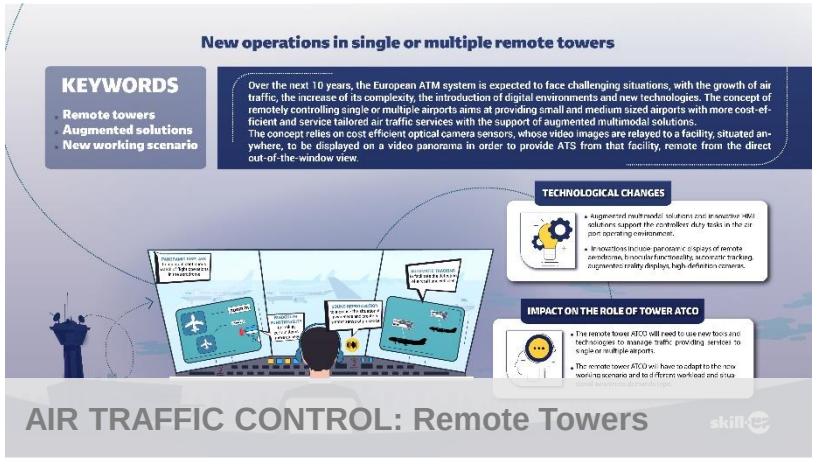
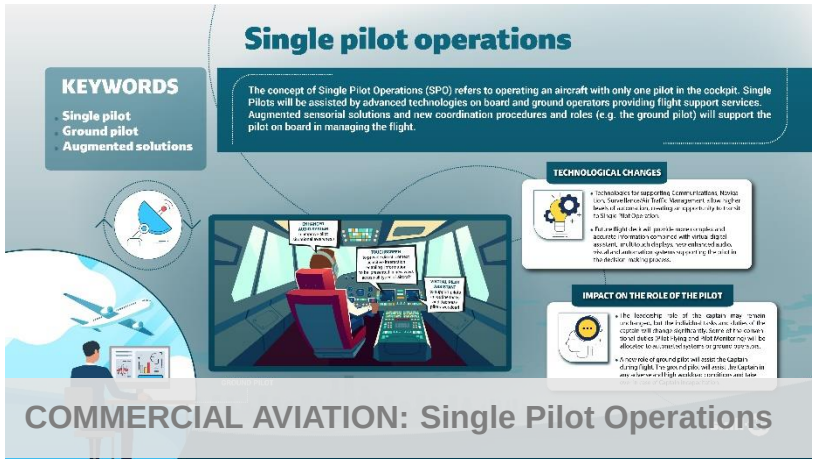
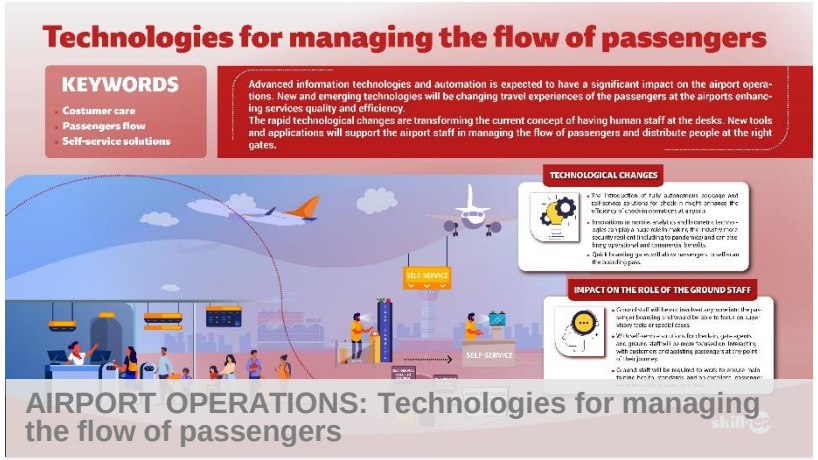
4 scenari futuri



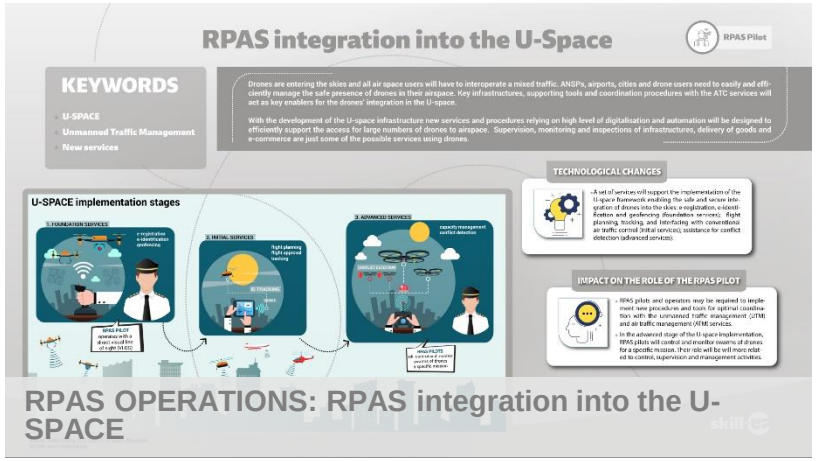
AIR TRAFFIC CONTROL: Remote Towers



COMMERCIAL AVIATION: Single Pilot Operations



AIRPORT OPERATIONS: Technologies for managing the flow of passengers



RPAS OPERATIONS: RPAS integration into the U-SPACE

Quattro visualizzazioni grafiche che raccontano i principali cambiamenti attesi nel settore e l'impatto sulle attività e sul ruolo degli operatori.

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Metodologia

TOP DOWN

BOTTOM UP

REVIEW DELLA LETTERATURA

- Review di documenti e report (e.g. Future of Airline Industry – IATA 2018; European aviation in 2020 – SESAR 2018; Global workforce forecast – Airbus; etc…)
- Review di progetti europei conclusi ed in corso (e.g. Skillful, KAAT, Mobility4EU, etc…)

COINVOLGIMENTO DI STAKEHOLDERS INTERNI ED ESTERNI AL PROGETTO

- Focus group
- Risultati del sondaggio e delle interviste

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New operations in single or multiple remote towers

Air Traffic Controller

KEYWORDS

- Remote towers
- Augmented solutions
- New working scenario

Over the next 10 years, the European ATM system is expected to face challenging situations, with the growth of air traffic, the increase of its complexity, the introduction of digital environments and new technologies. The concept of remotely controlling single or multiple airports aims at providing small and medium sized airports with more cost-efficient and service tailored air traffic services with the support of augmented multimodal solutions.
The concept relies on cost efficient optical camera sensors, whose video images are relayed to a facility, situated anywhere, to be displayed on a video panorama in order to provide ATS from that facility, remote from the direct out-of-the-window view.

TECHNOLOGICAL CHANGES

- Augmented multimodal solutions and innovative HMI solutions support the controllers' duty tasks in the airport operating environment.
- Innovations include: panoramic displays of remote aerodrome, binocular functionality, automatic tracking, augmented reality displays, high-definition cameras.

IMPACT ON THE ROLE OF TOWER ATCO

- The remote tower ATCO will need to use new tools and technologies to manage traffic providing services to single or multiple airports.
- The remote tower ATCO will have to adapt to the new working scenario and to different workload and situational awareness demands type.

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Single pilot operations

Pilot

KEYWORDS

- Single pilot
- Ground pilot
- Augmented solutions

The concept of Single Pilot Operations (SPO) refers to operating an aircraft with only one pilot in the cockpit. Single Pilots will be assisted by advanced technologies on board and ground operators providing flight support services. Augmented sensorial solutions and new coordination procedures and roles (e.g. the ground pilot) will support the pilot on board in managing the flight.

GROUND PILOT

TECHNOLOGICAL CHANGES

- Technologies for supporting Communications, Navigation, Surveillance/Air Traffic Management allow higher levels of automation, creating an opportunity to transit to Single Pilot Operation.
- Future flight deck will provide more complex and accurate information combined with virtual digital assistant, multitouch displays, new enhanced audio, visual and automation systems supporting the pilot in the decision-making process.

IMPACT ON THE ROLE OF THE PILOT

- The leadership role of the captain may remain unchanged, but the individual tasks and duties of the captain will change significantly. Some of the conventional duties (Pilot Flying and Pilot Monitoring) will be allocated to automated systems or ground operators.
- A new role of ground pilot will assist the Captain during flight. The ground pilot will assist the Captain in any adverse and high workload conditions and take over in case of Captain incapacitation.

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Technologies for managing the flow of passengers

Ground Airport Staff

KEYWORDS

- Costumer care
- Passengers flow
- Self-service solutions

Advanced information technologies and automation is expected to have a significant impact on the airport operations. New and emerging technologies will be changing travel experiences of the passengers at the airports enhancing services quality and efficiency.
The rapid technological changes are transforming the current concept of having human staff at the desks. New tools and applications will support the airport staff in managing the flow of passengers and distribute people at the right gates.

TECHNOLOGICAL CHANGES

- The introduction of fully autonomous baggage and self-service solutions for check-in might enhance the efficiency of check-in operations at airports.
- Innovations in mobile, analytics and biometric technologies can play a huge role in making the industry more security resilient (including to pandemics) and can also bring operational and commercial benefits.
- Quick boarding gates will allow passengers to self-scan the boarding pass.

IMPACT ON THE ROLE OF THE GROUND STAFF

- Ground staff will be not involved anymore into the passenger boarding and would be able to focus on supervisory tasks or special cases.
- With self-service solutions for check-in, gate agents and ground staff will be more focused on interacting with customers and assisting passengers at any point of their journey.
- Ground staff will be required to work to ensure maintaining health standards and an excellent passenger experience (no queues, no stress).

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RPAS integration into the U-Space

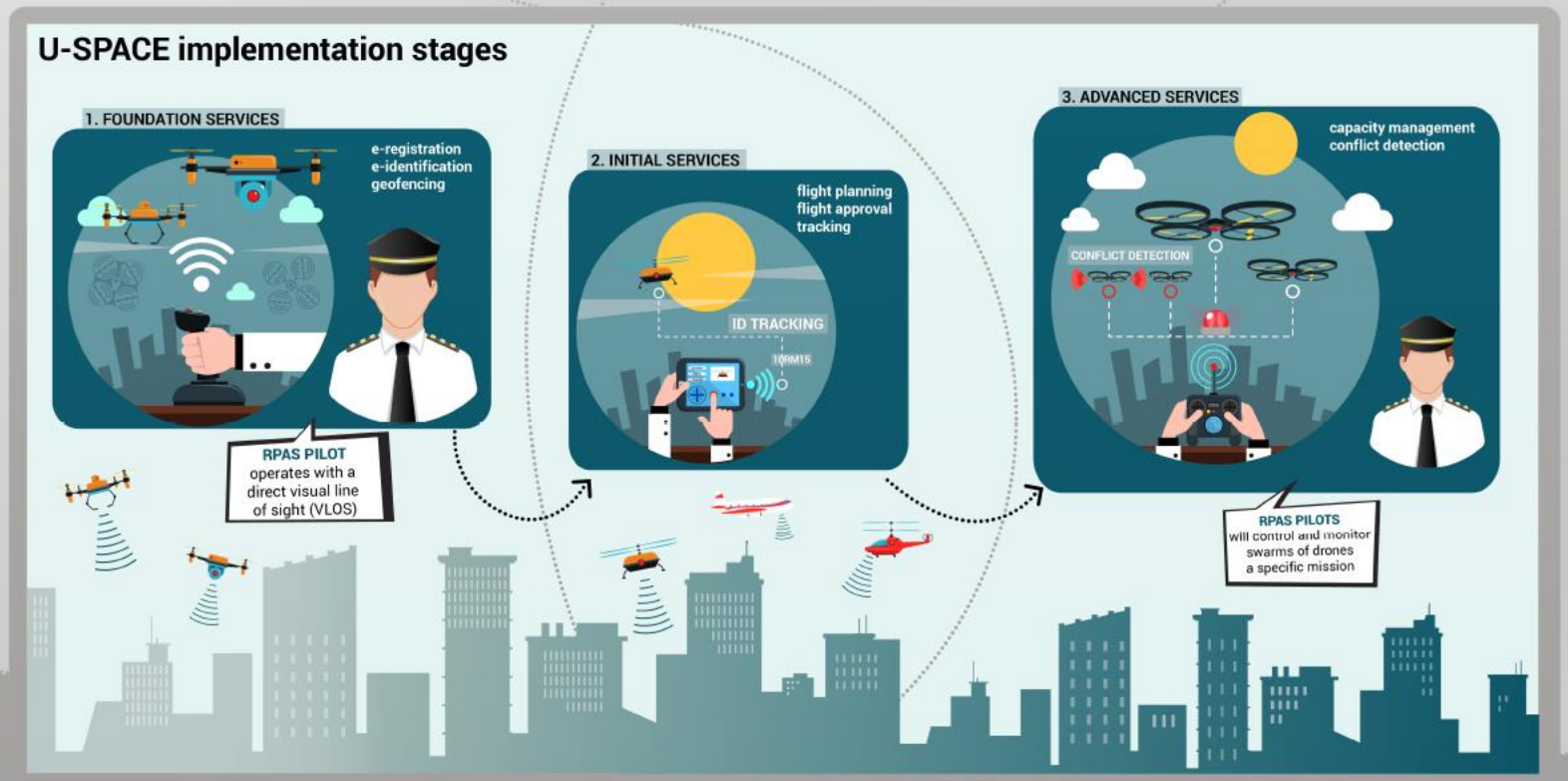
RPAS Pilot

KEYWORDS

- U-SPACE
- Unmanned Traffic Management
- New services

Drones are entering the skies and all air space users will have to interoperate a mixed traffic. ANSPs, airports, cities and drone users need to easily and efficiently manage the safe presence of drones in their airspace. Key infrastructures, supporting tools and coordination procedures with the ATC services will act as key enablers for the drones' integration in the U-space.

With the development of the U-space infrastructure new services and procedures relying on high level of digitalisation and automation will be designed to efficiently support the access for large numbers of drones to airspace. Supervision, monitoring and inspections of infrastructures, delivery of goods and e-commerce are just some of the possible services using drones.



Source: Undertaking, S.J. (2017). U-space Blueprint. SESAR Joint Undertaking

TECHNOLOGICAL CHANGES

- A set of services will support the implementation of the U-space framework enabling the safe and secure integration of drones into the skies: e-registration, e-identification and geofencing (foundation services); flight planning, tracking, and interfacing with conventional air traffic control (initial services); assistance for conflict detection (advanced services).

IMPACT ON THE ROLE OF THE RPAS PILOT

- RPAS pilots and operators may be required to implement new procedures and tools for optimal coordination with the unmanned traffic management (UTM) and air traffic management (ATM) services.
- In the advanced stage of the U-space implementation, RPAS pilots will control and monitor swarms of drones for a specific mission. Their role will be will more related to control, supervision and management activities.

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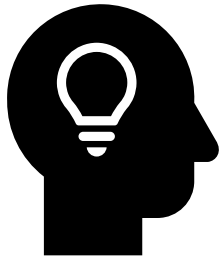
Gli scenari verranno usati per



Immaginare come cambieranno le attività lavorative di alcune professioni

Comprendere quali saranno le sfide future per la formazione in termini di bisogni formativi e nuove skills

Progettare nuovi corsi di formazione per la riqualificazione e l'aggiornamento dei professionisti

Gli scenari verranno presentati e validati durante una serie di focus groups con esperti del settore

Co-funded by the Erasmus+ Programme of the European Union

Grazie!

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