The current study pathway was developed to represent the profile of a professional tower ATCO, who has to be reskilled into a remote tower ATCO and is supposed to be relocated to another city in order to start working as a remote tower controller in a multiple remote tower

	PROFESSIONAL TOWER ATCO: Reskilling	
	FORMAL TRAINING	
	Main Topic	**Description of content**

Theoretical Training: Learning Courses and Instruction required to being ex. Pilot	Much of the basic knowledge and skills required to operate as an ATCO at a particular unit could be assumed to have already been acquired for an individual who is already a license holder at that unit. The training would focus on the specific procedures and knowledge associated with the new position. The assessment would also focus on these new areas, as the existing knowledge and skills will have already been tested and will	-Introduction to remote aerodrome air traffic services
		-Concept of remote aerodrome air traffic services
		-Remote tower modules'
		-Remote tower center'
		-Technical enablers used for remote aerodrome air traffic services
		-Operational applications
		-Operating environment
		-Configuration of the RTM and RTC (if applicable) and modes of operation
		-Visual presentation
		-Layout and orientation
		-Technical capabilities and limitations of a 'visual surveillance system' including
		  − Impact of weather conditions on site the aerodrome
		  − End-to-end delay
		  − Frame rate
		  − Any differences in light conditions between the aerodrome and the visual presentation
		  − 'Dead' pixels
		  − Any overlaid information and any site-specific equipment/functions such as sun filters and seasonal settings;
		  − Set-up and characteristics of the local equipment at the aerodrome, e.g. location of cameras, signaling lamp, etc.
		  − Familiarization with the physical aerodrome(s) environment and the different local stakeholders via liaison visit(s)
		  − Local weather characteristics
		  − Human factors aspects
		  − Human factors influence on remote aerodrome air traffic services
		  − Rostering arrangements e.g. Additional unit endorsements at a remote tower center
		
		Factors that can generate fatigue in a 'remote tower' environment for example:
		-Eye strain caused by the performance of the visual presentation or by contrast in lighting against the background
		-Artificial light and/or lack of daylight in the RTM)
		-Preventing and mitigating strategies on fatigue
		-Procedures for degraded modes, for example:

likely be subject to on-going competence review.		− Complete or partial loss of the visual presentation (Note, such loss may not be apparent to other stakeholder e.g., operations staff, pilots and additional mitigations required) − Corrupt, delayed, or frozen image − Loss or degradation of the 'binocular functionality' Multiple Mode of Operation When performing 'multiple mode of operation', the following items should also be considered: − Use of communication facilities (e.g., aeronautical mobile service, aeronautical fixed service and surface movement control service) for simultaneous provision of air traffic services in geographically separated areas of responsibility − Applicable procedures for traffic management, such as traffic prioritization, enabling multiple mode of operation − Procedures for prioritizing between aerodromes − Procedures for the transferring/merging/splitting of aerodromes in an RTM[1] − Different weather and light conditions at different aerodromes − Human capabilities/limitations regarding the simultaneous handling of more than one aerodrome and distribution of attention
	Virtual technology	Advanced use of a panoramic display & transition of ambient sound Advanced use of pan tilt and zoom cameras Advanced automatic identification and tracking of aircraft Advanced use of Head-up display of information Advanced facility to highlight certain objects / information (augment reality) Advanced use of video recording and play back Advanced use of electronic flight strips Advanced use of visual Enhancement Technology
	Met	MET Observer Training Requirements -Annex V to the ATM/ATS IR[2] requires that service provider's staff providing the MET observing service shall have and maintain adequate technical and operational expertise -Official Meteorological Reports (produced by Meteorological Service Providers certificated under Annex V to the ATM/ATS IR2 as an ANSP which, if in the form of a meteorological aerodrome report (METAR), may be disseminated beyond an aerodrome to pilots and other meteorological service providers using processes that adhere to ICAO Standards. An observer shall be accredited and competent to produce these observations -Local Routine and Local Special Reports (produced by Meteorological Service Providers certificated under Annex V1 to the ATM/ATS IR 40 as an ANSP) that are not disseminated beyond the aerodrome. MET observers must have a Basic Meteorological Observing competency

| | | -Details on MET observer training and competency requirements are published in CAP 746[3]
-Should an aerodrome wish to provide a Remote Aerodrome Meteorological Observing Service the permission of the CAA is required, and the CAA will require assurance that the service provider has carried out a review of Unit Met training and competency assessments for ATS personnel and/or accredited observers (and other personnel if applicable) to ensure that training syllabi and competency checks are updated where necessary to reflect any differences in the provision of a RAMOS

MET Observer Conversion Training
-MET Observer accreditation may only be transferred to a Remote Aerodrome Meteorological Observing Service once the service provider has ensured that the observer has been provided with sufficient training to ensure that the observer can competently use the remote observing equipment
-Training and competency assessments of Remote Aerodrome Meteorological Observers (RAMO) should, as a minimum, take account of the following
-Knowing and using the features and settings of the cameras and other remote observing equipment to best advantage
-Understanding and accounting for the differences between the camera images and the image that is seen by the human eye
-Understanding and accounting for the limitations of the camera and other remote observing equipment
-Understanding the advantages and disadvantages of the location (height and view) of the camera and other remote observing equipment
-Remote observing contingency arrangements
-Appropriate competency assessments must be carried out to ensure that MET observers are familiar with remote observing equipment, processes, and procedures before commencing unsupervised operational remote observing duties

Multiple Mode of Remote Met Observing Operation
-The CAA will require additional assurances in support of requests to operate a Multiple Mode of MET observing operation. Where applicable this should include addressing   factors as described in F 1.4.a, and if, or as, necessary specific factors relating to MET service provision including consideration of:
-Understanding how routine observations from multiple sites will be made and disseminated in a timely manner
-How a continuous weather watch will be maintained for multiple sites.

MET Observer Ongoing Competency Assessments
-Every accredited observer should be assessed on an annual basis by the Manager, or other nominated representative, of the Aerodrome Met Observing Service Provider to ensure the observer's ongoing competence
-The Unit's competency scheme must be reviewed and updated as applicable to reflect the competencies required to perform remote observing duties where appropriate including, as a minimum, the items listed in F.6.2.b. |

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[3] CAP 746 (Requirements for meteorological observations at aerodromes).

		TRAINING FOR AIR TRAFFIC CONTROLLERS PROVIDING AERODROME CONTROL SERVICE FROM A REMOTE TOWER
	Unit endorsement course	TRAINING FOR AIR TRAFFIC CONTROLLERS PROVIDING AERODROME CONTROL SERVICE FROM A REMOTE TOWER For air traffic controllers providing aerodrome control service from a remote tower, the following subjects, subject objectives, topics, and subtopics should be integrated into the unit endorsement course. Subject 1: TOPIC 1 REMOTE TOWER OPERATION The subject objective is Learners shall acquire knowledge of the concept of remote tower operations, the characteristics of the operating environment, as well as the functions and limitations of the equipment. 1.1 — Operational applications 1.2 — Remote Tower Modules (RTMs), Remote Tower Centre (RTC) 1.3 — Advanced Visual Features (AVFs) Technologies, if available, to enhance visual presentation TOPIC 2 OPERATING ENVIRONMENT 2.1 — Configuration of the RTM 2.2 — Visual presentation at the RTM, e.g. layout of the visual presentation, end-to-end delay, orientation, differences in light conditions between the aerodrome and the Out-The-Window (OTW) visual presentation, use of filters, recognition of 'dead' pixels 2.3 — Operating methods 2.4 — Set-up and characteristics of the local equipment, including the location of the cameras 2.5 — Familiarization with the physical aerodrome environment and the different stakeholders via study visit(s) 2.6 — Weather conditions' impact on the equipment and on the visual presentation Subject 2 -HUMAN FACTORS The subject objective is: -Learners shall appreciate the necessity to consider the specific human factors influence on the remote provision of aerodrome control service Subject 3 -ABNORMAL SITUATIONS The subject objective is: -Learners shall recognize specific abnormal situations and manage their impact TOPIC 1 LOSS OF VISUAL PRESENTATIONS 1.1 — Complete loss of visual presentation, e.g. 'blank screens' or frozen presentation 1.2 — Visual presentation not being current TOPIC 2 DEGRADED MODES OF VISUAL PRESENTATION 2.1 — Partial loss of visual presentation (e.g. loss of a screen(s) or camera failure) 2.2 — Loss or degradation of the labelling system, if available 2.3 — Loss or degradation of the zooming functionality and signaling lamp
	Main Topic	**Description of content**
Practical Training: All the hands-on	SA	Update training on SA to exclude the use of audio sound
	Visiting Aerodromes	Ensure ATCO/AFISOs are able to visit the aerodromes they are controlling to ensure their local knowledge and awareness are somewhat maintained

	Virtual Tools	NTS; new training on virtual meeting tools for TRM meeting with local staff when needed (aerodrome staff...) as it was done face to face in the past and with remote tower it needs to be done online most of the time
training, which can include simulation, on-site training, supervision flying…	New virtual environment	Fill the gap between mental models from years of experience and the new skills to acquire

KEY BEHAVIOURAL SKILLS AND COMPETENCES

Competence	Competence Description	Knowledge	Skill	Level	Preliminary Training Topics
Name	*Short competence description*	*The individual should have knowledge of…*	*With this skill someone should be capable of….*	*Beginner Intermediate Advanced*	*How to acquire the skill?*
Situational awareness	Comprehend the current operational situation and anticipate future events This competency takes into account the transition to the new remote scenario	-Perceptions' mechanisms -Changes form a physical tower to a remote one -Information needed to be scanned in a virtual scenario -Factors that may reduce s.a. -How to know monitor ATC system and equipment' status in a virtual scenario. -How to know to acquire information concerning flight data, meteorological data, electronic data, surveillance and other means available in a remote and virtual setting	-Monitor the operational situation Scan for specific or new information -Comprehend the operational situation Anticipate the future situation -Recognize indications of reduced situational awareness	Advanced: Is consistently able to form an overall traffic picture based on all information available. He is able to selectively pick the right information needed for the overall picture and is also able to scan the traffic and incorporate the background traffic during all traffic complexities The trainee consistently has a complete overview of the traffic situation, anticipates the future traffic situation safely and correctly in a consistent way for the full flight profile through his sector	A combination of: - Theoretical training to acquire know how on the virtual stimuli to take in to account - Simulation to apply knowledge and to train the skill - Recurrent training on the job assessment to check the skill's behavioral markers application - Simulation to check the skill's behavioral markers

Change Adaptability	Adaptability means one is able to quickly respond to changing trends, innovation, destabilization, industry shifts, and so forth	-Change process and possible resistances to it -Techniques to apply when change is needed -The personal leverages to change	-Look for ways to make changes work rather than only identifying why change will not work -Adapt to change quickly and easily -Make suggestions for increasing the effectiveness of changes -Show willingness to learn new methods, procedures, or techniques -Shift strategy or approach in response to the demands of a situation	Beginner: -Embraces Learning -Changes Your Thought Process. being open to the thoughts and opinions of others, i.e., different perspectives Advanced: -Shares best change management practices -Corresponds, influences and communicates the value that effective change management can confer on an organization's competitive advantage	A combination of: Theoretical training to acquire know how on - change management - resistances to change - coping strategies Coaching
Self-management and continuous development	Demonstrate personal attributes that improve performance and maintain as active involvement in self-learning and self-development Apply continuous learning in formal and informal way through training, sharing, asking and receiving feedback	-How and where find info and support for improving his/her learning and development -How to know to recognize if a learning need occurs -How to facilitate personal learning process -How to ask for objective feedback -Techniques for assessing his/her learning -How to accept and elaborate feedback -What a realistic goal and an action plan are, and how to create them	-Manage stress in an appropriate manner -Self-evaluate to improve performance -Use feedback to improve performance -Adapt to the demands of a situation, as needed -Engage in continuous development activities -Self-evaluate to improve performance -Use feedback to improve performance -Adapt to the demands of a situation as needed engage in continuous development activities	Advanced: -Takes responsibility for own performance and self-corrects own errors -Improves performance through self-evaluation of the effectiveness of actions -Accepts feedback and learns from mistakes -Maintains self-control in all situations and performs adequately in adverse situations -Priorities, changes behaviour and responds as needed to deal with the demands of the changing situation -Maintains, through personal initiative, good knowledge of aviation evolution -Participates in planned learning activities (e.g., team meetings, briefing and training sessions)	Assessment of new know how status Action plans with implementation of new knowledge Coaching/mentoring
Digital competences	Digital competence is a combination of knowledge, skills, and attitudes with regards to the use of technology to perform tasks, solve problems, communicate, manage information https://digital-competence.eu/dc	-Digital competencies and their meaning -Digital and virtual instruments to positively accomplish tasks -Potentialities that digital tools have on the individual performance	- Analyze, interpret and critically evaluate the data, information, and digital content -Share data, information, and digital content with others through appropriate digital technologies -Act as an intermediary, to know about referencing and attribution practices -Understand where one's own digital competence needs to be improved or updated -Support others with their digital competence development	Beginner: At this level the trainee still falls behind in monitoring and updating the electronic displays due to the new live environment and attention management Problems Advanced: At this level the trainee consistently monitors his displays and keeps them updated by appropriate system inputs	A combination of: Theoretical training to acquire know how on - virtual communication - digital mindset - efficiency and digital tools Simulation to apply knowledge and to train the skill

	/front/what-is-digital-competence/		-Seek opportunities for self-development and to keep up to date with the digital evolution		
Problem solving and decision making **https://ec.europa.eu /jrc/en/digcomp/digital-competence-framework**	Find and implement solutions for identified hazards and associated risks in a new remote environment	-The rules and the procedures changed due to the virtual environment -The possible solutions to apply in specific situations due to the virtual environment -How to solve problems in a virtual environment, using digital tools	-Determine possible solutions to an identified problem Prioritize effectively. -Manage risks effectively -Identify technical problems when operating devices and using digital environments, and to solve them (from troubleshooting to solving more complex problems)	Advanced: -Shows independence and resolve in timely decision making, during all traffic complexities -Sets priorities correctly all the time -Takes the initiative during all traffic complexities	-Assessment of new know how status -Action plans with implementation of new knowledge -Simulation to apply knowledge and to train the skill