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“Innovation Through Collaboration:
How Technology Supports Real Life Training in a Joint and International Mission Set.
The newly established German Army Air Manoeuvre Training Centre”

Population and buildup of the new German Army Air Manoeuvre Training Centre (AMTC) took place from July to December 2016. The delivery of pilot training is planned to start in mid-2017. Full training capability will be reached when the integrated air manoeuvre simulation network is deployed. Until then the AMTC will function with an experimental simulation system currently based on VBS 2/3.

The article outlines

1. The idea, rational and mission behind the AMTC
2. The organizational structure and the further roadmap to service
3. The idea of training and exercises delivered
4. Conclusion

Air manoeuvre operations are the most flexible, fastest and effective use of air space in favor of land based operations. They enable commanders in taking initiative and rapid reaction covering midrange distances und expand options in regard to the operational factors forces, time and space.

Air manoeuvre forces are orientated to all possible missions against symmetric or asymmetric opponents covering the full spectrum of intensity.

Air manoeuvre operations are extreme complex in nature taking into account the dimensions ground and air, may be even water and are influenced by technical, geological and meteorological factors under time limited conditions.

The highly evolved interdependencies cause complex processes and procedures and request a sophisticated coordination flow integrating costly and rare resources like helicopters and airplanes.

The availability of those genuine resources is very limited and therefore restricts necessary training to a minimum, resulting in a lack of competency and preparedness of AM-forces.

Using simulation systems may ease the situation providing all time available resources independent from weather, daylight and technical availabilities of flying systems. Additional simulation systems are cost effective.

They are suitable for planning and testing courses of action as well as train tactical sequences or phases of operations up to conducting real-time scenarios of joint and combined forces. A special benefit is the reduction of frictions and conserving of time when using real resources after all for life exercises or missions.

Thus the mission of the Air Manoeuvre Training Centre is to…

1. Function as a training environment for AM-forces, by providing practical training possibilities for tactics, technics and procedures on tactical level from platoon to task force.
2. Support the AM-leadership training in command and control procedures by providing a standing command post environment for planning, preparing, commanding and controlling virtual or live exercises.
3. Work as a Centre for shooting of and out of helicopters in coordinating all life firing exercises with helicopters in regard to all weapon systems.
4. Provide a simulation based training network for AM-operations thus integrating various centralized and/or decentralized simulation based systems.

For this purpose the AMTC is structured in

1. Staff, Controlling, Flight Safety and Flight Medic for administering
2. A Flight Operation Squadron running airfield and flight services.
3. A small component running the barracks
4. And the training branch consisting of the simulation and command post administration team and the training and exercises teams.

The latter are the core of the Centre, providing and running the training and simulation environment. The teams consist of IT, communication and simulation specialists as well as tactical supervisors and trainers in regard to all military capabilities essential for air manoeuvre, in particular infantry, air aviation, air force, joint fires, engineer, medical service, logistics, and communications.

The Centre comprises of 138 military and 30 civilian members with the option increasing up to total 186 along the next years.

After a phase of preparation and deployment the Centre went into service at 27 October 2016.

A demonstration exercise on platoon level in November 2016 demonstrated the possibilities and training systematics in using virtual simulation and practical means integrated and sequentially.

In 2017 and 2018 the training ability will smoothly advance in evolving the training level from platoon up to company level and may be reaching task force level in latest 2019. Parallel in 2018 the first multinational training audience (Dutch) will be expected.

Alongside the virtual training environment located in Celle will grow up from 60 systems up to 160 systems thus enabling a full reinforced AM-infantry company exercising in a real-time virtual scenario.

In 2019 the simulation network incorporating decentralized systems should be operable.

The training offered at the AMTC comprises three areas.

1. Ground based forces will train all necessary TTPs in cooperation with air based systems starting with the basic mounting and dismounting, loading and unloading, MEDEVAC and CASEVAC procedures, Close combat attack and Close air support procedures.

2. All air based forces will train all necessary TTPs vice versa. Additional all shooting activities and events of and out of helicopters will be coordinated by the Centre.

3. Using the command post environment all essential planning and cooperation procedures from staging, loading pick up, movements combat up to returning and recovery procedures will be trained, rehearsed or practiced.

The training level will be:

1. The team; comprising of infantry squads, air weapon teams or equivalent.

2. The tactical element platoon to company; integrating all necessary means for AM.

3. The tactical or operational element; from Quick Reaction Force to Task Force.

In principle no individual basic training will be part of the training even it would be possible. Furthermore the units themselves are responsible in principle for the training even supported and supervised by the AMTC training team.

This leads to the didactics of training.

The training may comprise:

1. A basic and advanced training of the planning, command and control process using the integrated Air Manoeuvre Planning Process (IAMPP) supported by the standing command post environment. It is backed up by C2 and communication systems available for training, exercises, experiments or war gaming. The CP is designed for task force size but could be expanded to Division size. It comprises classical planning means linked with C2 and the virtual simulation environment offering two level real-time exercises.

2. The virtual simulation environment using PC based virtual simulation. It is designed for reinforced company size comprising all necessary means and support for AM. The virtual environment is linked with the C2 systems of the Command Post.

3. A series of practical training means are concentrated in training shelters and the training ground. These Mock Ups and/or Dummies are intended for training TTP on tactical level of squad to platoon. Beside of basic practical training the set ups are designed to network with various part-task trainers and virtual simulation systems thus resulting in a scenario based real-time training of tactical elements.

All three pillars of those training areas can be used single, parallel or sequential, so a full task force can train with parallel team and leadership training, or sequential alongside particular air manoeuvre phases up to a full real-time operation using virtual simulation commanded and controlled by the CP.

1. The first pillar comprises the planning, command and control processes.

   The base will be a fully equipped command post, which will be constructed using a shelter. Modular elements may be combined according to commander's request and needs. The set up area is designed and basically equipped for extending with external modules up to Division size.

   The CP may be used in classical manner running a MAPEX or using the interlinked virtual simulation environment nearby ensuring Higher Control or Lower Control settings. Eventually a link to the German Army War Gaming Simulation Training Centre at Wildflecken might be established using the coherent C2 systems. It might even possible to interlink the virtual simulation network with the constructive network at the STC if wanted. The discussion is in progress.

2. The second pillar encompasses the simulation environment located at the AMTC.

   It eventually comprises up to 160 VBS-systems linked to the C2 systems of the Command Post and interlinked to the training environment in the training shelters. It covers all abilities and capabilities requested for training or running air manoeuvre operations.

   It is considered interlinking this environment with external systems, such as full motion flight simulators or Joint Fires simulators or similar ones, thus creating a simulation network which makes it possible exercising decentralized and creating a higher level of authenticity. A positive side effect will be the decrease of travelling and the increase of regular training possibilities.

   The virtual simulation environment, physically close to the command post environment, will be starting with 30 systems expanding up to 160 systems. The core will be the ground based systems, mainly infantry, embodying platoon to company size reinforced with snipers, Joint Fires, anti-tank and fire support capabilities.

   Secondly all necessary air means will be virtually available comprising, cargo, MEDEVAC, attack helicopters as well as drones and fixed wing fighters.

   It will be supplemented at least by additional components like paramedics, engineers, EOD, EOR, pathfinders or anti-tank missiles.

   A small OPFOR and administration component will conclude the environment.

3. Beside of the CP and the virtual environment there will be practical training grounds available.

   Built up in a former aircraft shelter there will be a practical training environment for TTPs in regard to preparation and pick up procedures.

   Using a variety of part task trainers, especially mock up shells, teams up to platoons will train procedures like mounting, loading, dismounting, unloading, and other

relevant procedures. The shelter makes it possible simulating various day and night scenarios up to emergency and recovery procedures. The aim is striving for skilled craftsmanship in regard to ground-air standards.

The second training ground is more or less new territory.

The former aircraft shelter will be designed for TTPs in regard to landing and combat scenarios. With moveable mock ups you can simulate landings and in using a VBS image area you create a limited combat ground where you interlink weapons and supporting systems based on a common data base. The supporting systems are located nearby and interlinked via the virtual simulation and a communication system which enables practicing combat procedures like CAS, CCA or MEDEVAC. In the same time you can use simulation means for combat causality care and for the gun fighting through the image area. This allows you to train phases and basic tactics on low level, but also gives you the opportunity for escalating and complexing the scenario. Eventually external simulation systems may be interlinked e.g. full flight simulators of attack helicopters or fighters.

The indoor training environment uses a full wall image area running the scenario. It integrates a simulated shooting range for all the basic weapons of the platoon plus helicopters. In future virtual 3D goggles or glasses might be possible to condense the situation.

Located in a nearby segment of the shelter the supporting elements will be set up. In several modular cabins various part task trainer could be established. Air based system cabins comprise part task trainer of different helicopters either side by side or tandem or single seater as well as control stations for drones or a fighter cockpit. In all cases only the essential abilities for the supporting role will be implemented. The cabins are as far as possible exchangeable. Ground based system cabins establish necessary ground support, Joint Fire Support, Control Station for Medevac, anti-tank or other supporting weapons, snipers or grenade launchers.

All cabins are interlinked with the image area and the C2 system in the command post and use a communication system simulating FM/VHF radio.

The shape and abilities of these simulators are under consideration.

A very special part of the practical training areas will be the mock ups.

As relevant real helicopters are not available most the time you have to substitute them in order for a regular and steady training result.

It is intended to set up vertical lift able mock ups in the training shelters. They should represent the common cargo helicopters used by the German Forces. But also a mockup of the CH47 is under consideration.

The mock ups will be craned with internal or remote control and can be released on trailers ready to deploy them on the airfield ground. This enables the AMTC setting up realistic pick up and landing zones outside the shelters.

The internal set up of the mockups allow various mounting and loading settings e.g. door guns, seating, sling load, repelling or medevac equipment.

Conclusion:

The AMTC is in service since November 2016, will evolve till 2020 in its full capabilities and makes it possible that forces designated for air manoeuvre operations may train from team to task force all necessary tactics, technics and procedures up to a full scale execise.

It makes the armed forces nearly independent from actual real limited availabilties of flight systems and yet makes it possible to train in all segments and areas of AM-Ops.

The AMTC will be flexible, effective, cost effective, comprehensive, efficient, sustainable and smart enabling the maximum of synergies for an optimized preparedness.

And beyond of all these advantages it gives a real prospect what positive effects interlinking various simulation means could achive.