DATA: THE NEW DNA OF CONNECTED COMBAT OPERATIONS

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Through the ages of military warfare, the ability to gather, exploit and disseminate information, whatever the supporting media, has become a tool of choice in military leaders' inventory. Over the last century, the development of communication techniques has led to dramatic improvements in information generation and processing, providing decisive operational advantage to those military commanders willing and able to capitalise on information superiority. This evolution has reached its climax with the emergence of digital communication technologies. Initially, digitalisation was considered essentially as a way to increase the speed, flow and amount of information available for commanders. But it rapidly became clear that there was much more to gain by concentrating on the operational value of digitalisation's key ingredient, it's true "DNA": data.

Data is nowadays indispensable to feed modern digitalised equipment, to train leaders and combatants in virtual realistic and challenging conditions, to take the full benefit of after-action review, and, increasingly to prepare and conduct actual missions in near real time. To exploit the full potential of digital technologies, many armed forces have launched their digital transformation by starting to digitalise their operational environment. In the process, a new paradigm has emerged: data-centric connected operations. The principle is to empower every player involved in and connected to the operational loop to become both a data generator and a data receiver.

It is thus possible to feed in near real time and then exploit large operational databases in order to allow commanders supported by artificial intelligence (AI) systems to make well informed decisions. At the combatant level, this opens the possibility of keeping a bird's eye view on the theatre of operations and adapt the course of action according to the real time situation. This is obviously an ideal description of data-centric connected operations' potential. It raises many key questions concerning crucial elements of this hyperconnected chain.

First and foremost, how to ensure extended operational networks' reliability and security, how much redundancy that would need, and how to cope with the disruption of the network or even part of it. As far as the nature, role, or reliability of AI cooperative command systems are concerned, the jury is still largely out. Leveraging the full benefit of digital transformation through data-centric connected operations will rely on the will and the ability to foster new collaborative and interactive chains of command, control and execution in keeping the centralisation of command and allowing the indispensable subsidiarity at the tactical level.

Not to be forgotten, the human dimension of the operational digital challenge. Big Data operational systems will be as good and as trustful as the data scientists and the algorithms who will feed these AI engines. Operational cybersecurity will always rely on the expertise and commitment of top-notch cyber combatants. The need for demanding, realistic training for commanders and combatants with a virtual interactive approach should be considered as a prerequisite for operationalising digital transformation.

Last but not least, enhanced partnerships between operational users and industrial providers can no longer be considered an option to define, develop, exploit and support connected data centric components. In the end, the success of data centric networked operational transformation will rely on mastering the most advanced digital technologies, effective collaboration within comprehensive teams able to combine very diverse expertise, innovation and an open mind, all led by a constant sense of operational purpose.

The 2021 Vauban Sessions represent an ideal and now traditional rendezvous for military leaders from NATO and beyond to address these crucial and exciting topics in an open and collaborative forum.