Network Enabled Capabilities

TNO and Defence: working together on the solutions for tomorrow

Introduction
Network Centric Warfare (NCW) is a defence concept destined to reshape all future military operations. It is nowadays increasingly being referred to as Network Enabled Capabilities (NEC), because the network is no longer seen as the focal point, but rather as the enabler. NEC is based on the central idea that technological progress and innovation will enable Defence to counterbalance all the existing limitations in the gathering, processing, distribution and, ultimately, successful use of information. NEC offers the opportunity to deploy all the available military and civilian capabilities required for a mission - command elements, sensors and effectors - in a way that will be much more integrated than ever before. NEC will therefore, through the networked use of the current weapon, information and communication systems, considerably improve the effectiveness of future military operations. The information superiority promised by NEC will result in decision superiority and, eventually, military predominance on the battlefield. By now, the importance of the ability to operate on the basis of NEC has been recognised by all the leading military nations.

In view of the Netherlands Defence ambition to offer a high-quality and technologically advanced military contribution to international operations - joint, combined and multinational - across the full spectrum of military operations, the implications of NEC for the Netherlands Armed Forces will have to be made explicit. This is essential, because the future Netherlands Armed Forces are expected to be highly flexible and adaptive, and able to operate worldwide as part of a coalition force, on the basis of interoperability. The programme V409 Network Enabled Capabilities has therefore been specially designed to support the Netherlands Ministry of Defence in the assessment of the implications of NEC for the Netherlands Armed Forces.

Objectives
The development of NEC will follow two separate tracks: a step by step modernisation and a transformation. The modernisation is all about ‘doing things better’. The transformation, on the other hand, should eventually result in ‘doing better things’. Both tracks include Doctrine, Command, Training & Education, Organisation, Materiel and Personnel (Dutch: DCTOMP).

NEC is seen as an essential enabler for this
transformation. That is why the study and implementation of NEC have now become a matter of some urgency. The development of NEC for the Netherlands Armed Forces will, however, mean the continuous making of choices based on developments in doctrine, operational requirements, lessons learned, technology and the available budget. In short: to realise NEC, Defence has a need for knowledge, organisation and tools.

The programme V409 Network Enabled Capabilities aims to develop and secure the knowledge and skills required to enable the Netherlands Armed Forces to optimally control, determine, evaluate, implement and co-ordinate their NEC measures.

Projects
The programme V409 Network Enabled Capabilities will address three concrete research topics, including a number of subtopics:

- The meaning and realisation of NEC for Defence. The NEC targets and the terms to define these are not fully concrete yet:
  - What are the relevant national and international conceptual and policy developments in the field of NEC?
  - What are the possible implications of these developments for the Netherlands Defence policy, as well as for the V409 NEC research programme?
- NEC added value assessment. At present there are insufficient methods and tools to establish and demonstrate the added value of the various NEC subaspects:
  - What is the set-up of the analysis environment (metrics, tools, best practices) to enable the determination of the impact and consequences of networked capabilities?
  - In what way will we - within this analysis environment - be able to focus on the functioning of the human factor in the context of NEC?
- The influence of (international) developments on the realisation of NEC. A constantly updated insight is required into the technical and intrinsic developments, opportunities, feasibility and challenges, especially also when it comes to the functioning of the human factor in a networked environment (technology, architecture, human factor):
  - What does the - current and future - enabling grid look like?
  - What are the present and expected bottlenecks and showstoppers?
  - Which technical possibilities and solutions may be expected?
  - What is the best way to realise an open and interoperable sensor/C2/weapon grid?
  - What is the relation between the international NEC architecture developments and the initiatives from the Netherlands?
  - If we have NEC, what will be the possibilities and difficulties when it comes to e.g. delegating responsibilities to (much) lower levels, human flexibility when operating in various (sub)networks, and the processing, prioritisation and communication of vast quantities of information?
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  - What will be the human control and support needed to achieve synchronisation during operations by ad hoc coalitions?
  - What are the requirements for commanders in order to exercise control and to make the best use of the opportunities offered by NEC?

Application
The results of the programme V409 Network Enabled Capabilities will enable the Netherlands Ministry of Defence to identify the measures required to keep up with international NEC developments, thus offering the guarantee that for the next decade the availability of a high-quality and technologically advanced military contribution to international joint, combined and multinational - operations across the full spectrum of military operations will be assured.