

## EDITORIAL

The development and application of modern technology plays a pivotal role in modern warfare. Therefore it is evident, that projects on large material renewal and acquisition attract a lot of attention in both the military and the political scene. Introducing new technologies and novel military platforms can lead to fundamentally re-thinking on their usage and of course on the budget involved. When it comes to the acquisition of novel technologies, we therefore expect exciting years ahead.

In 2010, the Netherlands became the first customer to acquire the NATO Frigate Helicopter NH90 and in 2013 it deployed the helicopter to fight piracy in the Gulf of Aden. By January 2013, a total of 20 NH90s had been ordered by the Dutch government.

In 2015 the new Joint Support Ship Karel Doorman is scheduled to enter service. It will replace the present support ships HNLMS Zuiderkruis and HNLMS Amsterdam. In September 2013 it was announced that as part of a series of Dutch defence budget cuts, the vessel would not enter military service, but this decision has recently been reversed by the Dutch government.

In September 2013 the Dutch government also stated its commitment to replace the F-16 fighter with the new Joint Strike Fighter F-35. With a budget of 4.5 billion euros, the anticipated number of fighters is 37, incurring an additional 270 million euros per year in operational costs.

On 21 November 2013, the Dutch Minister of Defence announced that the Royal Netherlands Air Force has selected the MQ-9 Reaper as its new Medium Altitude Long Endurance (MALE) UAV. The new MALE UAV squadron will be based at Leeuwarden Air Base. The aircraft will enter service starting 2016 and should be fully operational by the end of 2017.

In the next decade the renewal of the Navy's mine-hunters and multipurpose frigates, as well as the possible update of the Dutch submarine fleet, will also give rise to interesting research questions with respect to both technological developments and operational use. In view of these developments we are proud to present this book discussing views on emerging technologies currently being carried out by the Netherlands Defence Academy and its partners. This book does not only deal

with the new technologies themselves, but also with the new operational challenges created by these technologies.

The book is divided into four parts, each dealing with different issues relating to emerging military technologies. The first part emphasizes the importance of fundamental research for military deployment. The second part deals with current hardware technologies and takes a look on future and emerging technologies. It contains a broad scope of papers ranging from launcher locations for anti-satellite missiles to new sensor technologies. Also the threats for new systems are being discussed from a technical point of view.

The third and fourth parts of the book are devoted to operational topics. First logistical and planning issues and system integrations are discussed. Amongst others, UAV mission planning and conflict detection for semi-autonomous vessels can be found here. Another ingredient of this part is the use of chat messages and new programming tools for Command and Control purposes. Finally the fourth part deals with life-cycle management issues considered both from a technological and management point of view.

In the context of future life-cycle management two recently graduated NLDA students present their Bachelor thesis work in the form of short communications. Both contributions deal with current questions on energy (re)sources and corresponding propulsion techniques for the modern Dutch naval fleet.