

December 2012

## Short and illustrative description of the advantages of BOXER's modularity

The 8x8 BOXER vehicles are basically defined by a Drive Module – common to all versions – and a Mission Module – defining the version.

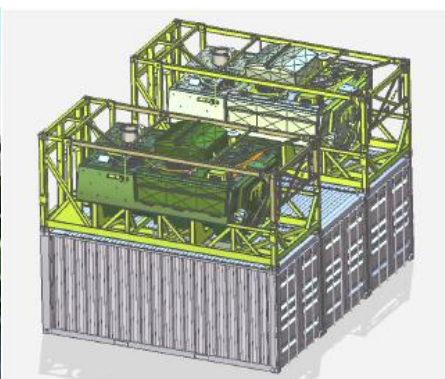
The change of Mission Modules takes less than 30 min.

This modular principle enables efficient introduction of diverse requirements and provides for a unique range of advantages, compared to other vehicles in different areas.

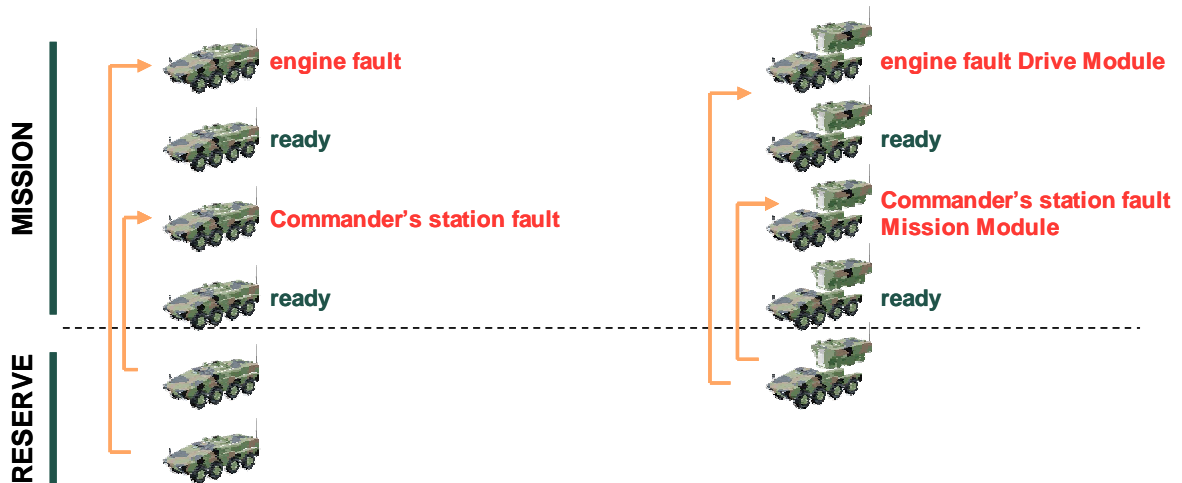


### Operation in theatre

- **Tailored to Mission** – Vehicles can be tailored to the Mission requirements even on-site in theatre by exchanging the Mission Modules.  
*“Why equipping all Ambulances in theatre with a Drive Module if not permanently needed?”*  
This philosophy has already been adapted by the Danish Navy with the “StanFlex”-Modules.
- **Severe wear or puncture** – In case of wear or severe puncture of the Drive Module, the Mission Module can be taken off and reused thereby preserving the mission capabilities.
- **Lowering costs of transport** – In case of overhaul in Denmark or any other place in theatre, only the Drive or the Mission Module needs to be transported – significantly lowering costs of transport (e.g. by smaller aircraft, less weight) and keeping presence in theatre with the left-back item.



- **Lower number of complete vehicles for technical reserve in theatre** – Flexibility of modular design allows for a lower number of complete vehicles on standby for replacing vehicles which are damaged in operations compared to standard APCs.



- **Easing maintenance** – Removal of Mission Module enhances maintainability, e.g. by easy access to the complete drive-train and other core automotive components from above whilst having the advantages of a fully protected driveline from below – no compromise and of large benefit especially in areas with poor infrastructure.
- **Supporting operational concept of DALO** – The modularity also offers possibilities for using the Drive Module as reserves for vehicles in international missions, while some types of Mission Modules can be used for training at home.
- **Stationary situations** – Even if not mounted on a Drive Module some Mission Modules (e.g. Ambulance, Command Post) could be used in stationary situations (e.g. in camps), by providing external power supply and mounted on a certain bed. Specific capabilities can thereby cost effectively be used, while the Drive Module is operating with another Mission Module or the Drive Module is being overhauled.

## Adaptation and growth potential

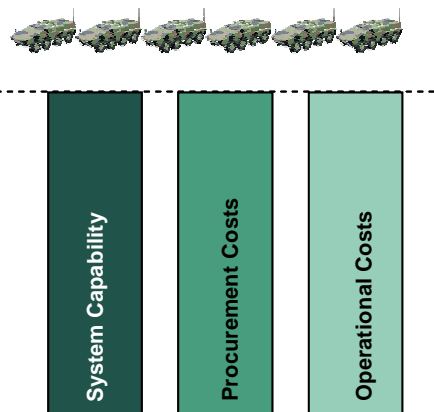
- **Growth Potential** – For future mission necessities only Mission Modules need to be developed or alternatively existing variants of allied nations could be used (BOXER user nations club) – as already practised successfully with LEOPARD 2.
- **Adaptation of Mission Modules** – For major changes in the future (e.g. specific communication equipment) the respective Mission Modules only need to be updated and adapting the new equipment will be very easy.
- **Adaptation of Drive Module independently** – Drive Module changes for reasons of functional improvements or sheer obsolescence management purposes do not negatively influence the national specifically driven developments, which incorporate almost exclusively in the Mission Module.

## Procurement

- **Efficient Through Life Support** – Maintaining the common Drive Modules together with other user nations allows for sharing the sustainment cost on the full automotive part of the vehicle system and reduces Danish-only sustainment cost to the national specific Mission Modules.
- **Meeting accentuated principles for material supply in Denmark**
  - Acquisition of new material (e.g. Drive or Mission Module) primarily directed towards on market existing solutions (of other BOXER nations)
  - Development of new solutions only if not yet available on the market (at other BOXER nations)
- **Cost efficient extension of APC-R-System Capability** – for new variants only development of Mission Modules must be ordered as existing Drive Modules can be used. In case of phasing out an introduced variant, the Drive Modules can be kept and only new variants of Mission Modules have to be procured.
- **Cost efficient enlargement of APC-R fleet** – additional Mission Modules or Drive Modules can be purchased independently.
- **Optimised Procurement Price** – Procuring less Drive Modules than Mission Modules is a way to reduce procurement cost. Only the number of Drive Modules simultaneously operated (incl. training, in operation and reserve) needs to be procured. *“Why equipping all vehicles with a Drive Module if not all vehicles are in use simultaneously?”*

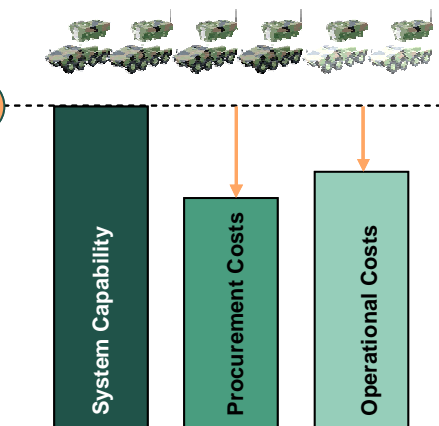
### APC procurement “standard”

- Using standard vehicles or
- No use of modular concept



### APC procurement “optional”

- Use of modular concept
- Flexible use



- Same system capability possible
- Reduced procurement costs
- Reduced operational costs