

Wheels vs tracks: Reviewing AFV trends

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As conflicts have evolved, the requirements for AFVs have boosted cost, weight, and mission system needs. *Sam Cranny-Evans* and *Jon Hawkes* examine Western and Russian case studies in the continued evolution of the tracks versus wheels debate

The modern battlespace generally has typically had no clear lines of contact, and required a low force density and versatile vehicles that can perform multiple roles. The need for advanced mission and weapon systems are consequently essential. In this context, the argument for mobility in armoured fighting vehicles (AFVs) endures.



The Lynx IFV pictured during testing before its Eurosatory 2016 unveiling. (IHS Markit/Peter Felstead)

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Russia

In Russia the tracks versus wheels debate has taken the form of a mixed development path. The T-72B3 upgrade programme promises significant capability at a low cost, while the country's ambitious introduction into service of multiple protected mobility vehicles, such as the Tigr-M, reflects the needs of the modern battlespace.

The T-72B3 and its further upgraded sibling, the T-72B3 obr.2016, are both designed to increase the capabilities of the legacy T-72 fleet at a relatively low cost. Both vehicles are fitted with the Sosna-U gunnery sight that includes thermal and day channels, and enables the gunner to identify and engage targets at 3,000 m. Without the Sosna-U, or some form of thermal imaging, the T-72 would be incapable of engaging NATO forces at night, and so would become vulnerable.

Night operations are essential to minimise the effects of air power, and maximise surprise. Such systems, though, add to the cost of procuring or upgrading vehicles, and necessitate well-coordinated and established mixed workforces.

The survivability of the T72-B3 is upgraded through the addition of Relikt explosive reactive armour (ERA). Relikt utilises the 4S23 explosive insert and is claimed by the manufacturer, NII Stali, to provide protection against all "available and future kinetic energy and chemical energy threats". Furthermore, the obr.2016 standard carries the 2A46M-5 125 mm smoothbore gun, which provides an increase in pressure and penetration capability over the earlier 2A46 series guns that arm the older T-72s.

Altogether, the T-72B3, and to a lesser extent the obr.2016, represent an attempt by Russia to modernise its fleet while avoiding the cost spiral that is typically associated with bringing Cold War main battle tank (MBT) designs into the 21st Century. Russia is estimated to have around 500 T-72B3s in service, which represents an increase to the manoeuvrability and lethality of Russian armour.

For Russia's wheeled capability, much focus is now placed on protected mobility. While the BTR-80 and BTR-82A remain ubiquitous during the conventional exercises of Russia's motorised formations; operations in Syria and Ukraine show that protected mobility has come to the fore in Russia's inventory of wheeled vehicles.

The Kamaz-63968 appears to have been used in Syria by Rosgvardia (Russia's internal security force) and Russian military police, according to open-source images. It is a six-wheeled protected mobility platform, with a somewhat less threatening appearance than the majority of Russia's Soviet-era equipment. It has an advanced armour design, claimed by Rostec to offer protection from 14.5 mm armour piercing projectiles and improvised explosive devices (IEDs). It is also capable of carrying 16 personnel, and so is able to act as a 'battlefield bus' by delivering a significant quantity of personnel (compared to a standard mine-resistant ambush-protected [MRAP]).

Operating alongside the Kamaz-63968 is the now ubiquitous Tigr-M, which was developed from the original Tigr, and uses mostly Russian parts. The Tigr-M, or AMN-233114, has become one of the Russian ground forces' primary work horses. It acts as a utility vehicle, as a patrol vehicle, and as a combat platform for special forces. In the near future the Tigr is to be adapted to carry the Gibka-S very short-range air-defence system (V-SHORAD), KBM Joint Stock Company (High Precision Industries) said at the IDEX 2019 exhibition. In the past year it has been adapted to carry the Spectrum electronic warfare (EW) suite.

The purpose of Spectrum is unclear, but it is thought to have some ability to monitor communications and seek out special operations units. Before Spectrum, Tigr was configured to carry the Leer-2 EW system. In Russian terminology Leer-2 is defined as a 'mobile automated system for technical control, electronic imitation, and electronic jamming'. Finally, Tigr has been adapted to carry the Kornet-D guided-missile system. Three missiles are available to the Kornet-D that enable it to engage targets, from heavy armoured vehicles to unmanned aerial vehicles (UAVs) and fortifications.

When all of its current and potential roles are taken together, it appears that the Tigr-M is the result of a multi-skilled approach to vehicle development, using the expertise of EW-specialised companies as well as conventional vehicle and missile manufacturers. As the country places a greater emphasis on a light military footprint to influence geopolitical outcomes, it is likely that the easily deployable Tigr-M could prove a valuable tool.

Overall, Russia maintains a mixed fleet of modernised Soviet and modern vehicles represented by the T-72B3 and the obr.2016, as well as the Tigr-M. This mixed fleet will likely continue as development of the T-14 Armata to replace the T-72 and the K-17 Bumerang to replace the BTR-80 series, will not be concluded and executed in sufficient numbers before 2025.

[Continued in full version...]

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