THE FUTURE OF UNMANNED AERIAL SYSTEMS

In slightly over a decade, Unmanned Aerial Systems (UAS) have become increasingly more important to the efficient conduct of combat operations. Their impact has been particularly noticeable in the conduct of counter-insurgency operations of the past decade in Afghanistan, where it has attained the status of a critical element. As a corollary, this focus on a land-locked operation has also meant that most of the developments in the UAS capability spectrum have been oriented towards its employment in counter-insurgency operations across largely uncontested airspace, which may not be the reality in future theatres of operations. As multi-national forces commence their withdrawal from Afghanistan, there is a perceived need to reorientate the operational employment and development of UASs.

While the efficacy of UASs in the battlefield has been accepted, further enhancement of their capabilities and the development of new UASs have hit a roadblock. Over the past few years the global financial crisis has forced governments across the world to reconsider and recast their national budgets. In these circumstances the debate tends to focus on whether or not the nation should engage itself in wars of choice. The answer normally, especially when the nation is facing financial stringency, would be in the negative. These are the circumstances that the democratic world faces today. When defence budgets are trimmed across the board in almost all nations, the resources available to further develop a fledgling idea—albeit one that has proven to be extremely efficacious—will also automatically dwindle. The development of UAS capability, therefore, is at a crossroads now.

The United States (US) has so far been the largest developer of UAS technology, and its military forces have been at the forefront of UAS employment in combat situations. However, with the US Government’s sequestration plan that intents to cut US$500 billion from the defence budget over the next 10 years, the decision to curtail the number of UAS strikes, and the US pivot to the Asia-Pacific while withdrawing from Afghanistan combine to retard possible development initiatives in UAS technology. The developmental trajectory that UASs enjoyed in the last decade and more will, of necessity, decline and may even plateau. Since there are fewer resources available globally for indulging in cutting-edge research, the focus is likely to shift to improving the existing system performance and developing innovative concepts of operations.

Under these conditions, it would be worthwhile to examine the advantages that UASs bring to the combat capability of a military force. The fundamental benefits are extremely high endurance in relation to manned platforms, flexibility, the ability to provide timely intelligence and sophisticated targeting capabilities. Furthermore, armed UASs can act on freshly available intelligence much faster that other systems and thereby reduce the so-called ‘sensor-to-shooter’ timeframe, which can be a distinct advantage when operating against irregular adversaries. However, arming of UASs have become a politically fraught debate and therefore, nations at the forefront of such developments are likely to slow the developments in this direction. The four characteristics...
that make up the UASs’ coveted capabilities have as much importance in maritime operations as in the current land-centric ones being carried out in Afghanistan, although the mainstay of the UAS in a maritime environment will be its long endurance and its unmatched capacity to carry out intelligence, surveillance and reconnaissance (ISR) role.

Smaller UASs that have already been operationalised permit small, forward-deployed units to function effectively even in semi-autonomous conditions. These small and relatively inexpensive UASs have captured the attention of all ground forces, but are specially prized by Special Forces who traditionally operate autonomously in small groups. This is one area of UAS employment that is bound to see further developments.

The changing focus of the US military towards the Asia-Pacific has highlighted the peculiarities of operating in a maritime environment. While the ADF has always been cognisant of the maritime environment, the renewed interest of Australia’s closest ally to the Asia-Pacific is likely to bring about some salutary changes. For one, there is already a proposition to use UASs as relay platforms for long-distance communications that would be vital in a maritime environment. This conversion should not be cost-intensive and will provide another role for the existing long-endurance UASs. While this would involve a passive relay system, the concept could be further developed to provide a stop-gap solution in situations wherein satellite communications have been denied by an adversary.

Another concept that is attractive to fielded forces is the arming of small UASs operated by forward-deployed forces with small munitions of the calibre of a sniper rifle. The use of small calibre weapons could overcome the political pushback that is apparent when arming of a UAS involves weapon systems like the Hellfire missile that have a high probability of creating collateral damage. From a purely ISR role that provides a certain amount of force protection, small UASs could assume a more proactive role—almost akin to offensive air support, but in a more controlled manner. UASs that can be towed by a normal vehicle and are easy to on- and off-load from ships for amphibious operations are likely to become more ubiquitous than they are currently. Further, the internal bays of these UASs are being converted to ‘plug-and-play’ facilities to increase the flexibility of the platform to carry out a number of roles. Some of the loads currently being tested include synthetic-aperture radar, ground-moving target indicator radar and communications relay systems. Already some of the UASs have swing role capabilities and this is likely to get further emphasised into the future. These developments will likely focus on UASs weighing less than 100 kilograms to retain surface mobility and ease of deployment.

Irrespective of the lack of resources to continue further developments, UASs have proven their worth in the battlefield in a number of ways and are therefore unlikely to become a redundant capability. There are a variety of innovative usages that are being envisaged for the existing family of UASs, without having to expend large amounts of resources to develop new versions. These new concepts will continue to retain the position of a ‘must have’ capability that the UASs have ascended to in the past two decades.

Key Points
- UASs have become a critical capability of fielded forces in the past decade
- Budgetary constraints in most of the nations will force a reduction in military budgets that in turn will have an adverse effect on the further development of UASs
- Innovative concepts of operations and improvement of existing performance will ensure that UASs remain essential elements in the overall capability of a joint force.