In armed conflict, uncertainty, disorder and disharmony are enduring features, commonly referred to as the fog of war. ADF foundational doctrine argues that the lack of accurate or timely information, lack of situational understanding, information overload and contradictory information, all contribute to the fog of war. It proposes that the degree of uncertainty can be mitigated, to some degree, through a number of activities that include: addressing intelligence and information shortfalls; and improving information and communications technology (ICT) systems and processes.

Of the six domains that form the operating environment, Defence describes the information domain as all information and related infrastructure that may influence operations. It includes the collection and management of information and intelligence, information operations, and public domain information. Exploitation of the information domain facilitates the gaining of situational understanding, an essential prerequisite for success in campaigns and operations. Defence also states that the information domain includes cyberspace and the electromagnetic spectrum.

In his recent article quoted above, Lt Gen (Ret) Deptula observes that there has been an increase in the velocity of information due to continual advancements in telecommunications, sensors, data storage and processing power. As a result, he states that the targeting cycle has evolved from months to weeks to days to minutes, and from multiple, specialised, and separate aircraft assigned to separate commands, to “finding, fixing, and finishing” from one aircraft in minutes.

In an example from Operation Iraqi Freedom, a Predator piloted from Nevada by the Air Force successfully spotted and identified a sniper who had pinned down a Marine ground force. The remotely piloted aircraft delivered video of the sniper’s location directly to an on-site Marine controller who used it to direct a Navy F/A-18 into the vicinity. The Predator laser-designated the target for the Navy jet’s bombs, eliminating the sniper. The entire engagement took less than two minutes. Deptula argues that this synergy of precision and information is something we must strive to achieve routinely.

Lt Gen Deptula also states that the US military is now at a juncture where the velocity of information, advances in stealth and precision-engagement technologies, sensor developments, and other technologies will permit it to build a completely new concept of operations (CONOPS) different to those based on legacy models that simply align segregated land, air, and sea operations. The potential is there to link information-age aerospace capabilities with sea- and land-based means to create an omnipresent defence complex. The central enabling idea is cross-domain synergy, which refers to the complementary, as opposed to merely additive, employment of capabilities in different domains such that each enhances the effectiveness—and compensates for the vulnerabilities—of the others.

The right information delivered to the right place, at the right time and in the right form enhances the effectiveness of Defence capabilities in the maritime, land, air and space domains of the operating environment.
The concept of information superiority centres on the elements of the fighting force being interconnected at the tactical and operational levels by a robust network of Communication and Information Systems (CIS) that are capable of presenting and disseminating the data required by that force. Therefore, the acquisition, operation and support of CIS, and the recruitment, training and retention of the skilled people who provide these capabilities, require effective management and coordination.

Air Force has foreseen that the span of CIS is expanding and has initiated a transformation project, Project ZODIAC, to prepare for the demands of the future. Whilst traditionally CIS has resided within the ‘ground’ environment of air traffic control, air battlespace management and air base communications, new capability acquisitions are delivering air platforms that are incorporating highly technical, leading-edge onboard CIS along with platform specific mission planning and support networks. Coupled with this is a growing demand for and reliance upon ICT infrastructure and enhanced applications to conduct air campaigning, targeting and centralised ISR.

Project ZODIAC has two key aims. Firstly, it will define the critical operational and business information flows within Air Force, the CIS elements which enable them and establish a governance framework which will allow for the proactive management of CIS to ensure resilience, reliability and seamless integration. Secondly, it will review the CIS workforce requirements across Air Force in terms of organisational structure, job categories and skill sets in order to provide a plan to transform the current CIS workforce to the proposed future model.

Air Force has committed to a substantial transition in the coming decade, with new capabilities approved by government to undertake the core air power roles of control of the air, strike, ISR and air mobility. As highlighted in the Deptula article, Air Force will not be able to realise the synergies of the new capabilities if it applies current ways of business in the future environment. Air Force must adapt current concepts, processes, systems and command and control (C2) to take full advantage of the capabilities it is acquiring in order to be successful in future security challenges. The capabilities Air Force have now and will bring into service over the next decade are highly capable in their own right, but will be far more effective if operated as an integrated system.

Air Force is investing resources in people and systems to undertake the processing, exploitation and dissemination of ISR information so that it is put to good use. In order to enable superiority in the battlespace, the barriers that stop the best information from being made available for operations need to be identified and removed. Project ZODIAC will be a key element in creating an information environment that supports the decisive application of air power in the future.

To get best effect from the information domain in the generation of air power, Air Force needs to look at the changing nature of the movement and processing of information that supports decision cycles at all levels. In addition to velocity (as described by Deptula), Air Force needs to consider the importance of information to precision and awareness, as well as the risks, such as security, the challenges associated with volume and relevance, and the obstacles to access. Project ZODIAC is one step forward in harnessing the information domain in the pursuit of generating decisive and superior air power in the future.

Key Points

• The availability of accurate and timely information is one of the fundamentals for the effective application of military power.

• The velocity of information has increased due to continual advancements in telecommunications, sensors, data storage, and processing power.

• Project ZODIAC will be a key element in creating an integrated information environment that supports the decisive application of air power in the future.