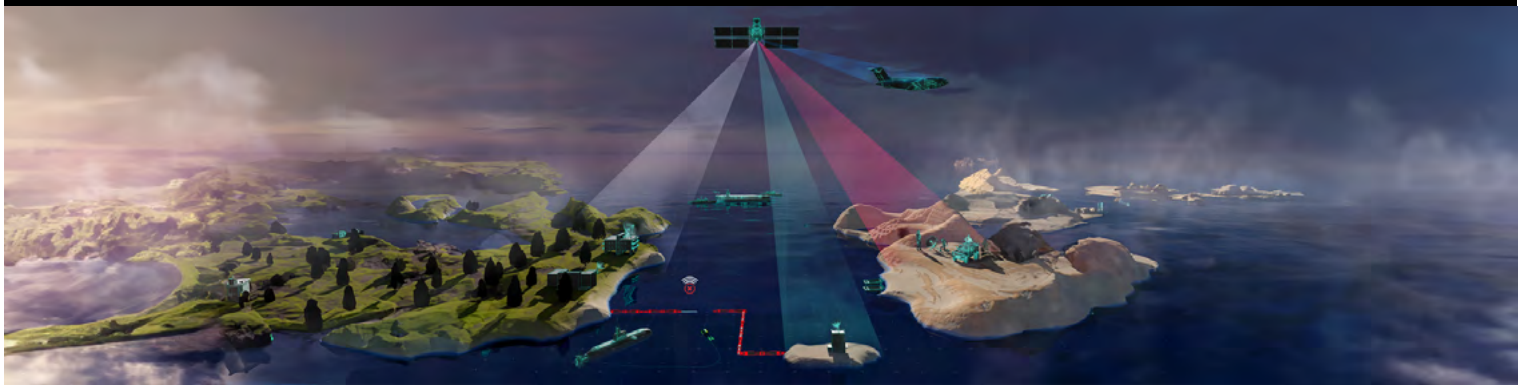
MULTI-DOMAIN COMMUNICATIONS



According to Douglas Adams' Hitchhiker's Guide to the Galaxy, the Babel fish draws energy not from its own host but from the surrounding environment. It absorbs all frequencies and then transmits them into the host's mind. As a result, you can immediately comprehend anything spoken to you in any language.

The ability to communicate and operate across all military domains and with all allies is a Babel fish-like nirvana. A multi-domain effect that adds up to more than the sum of the parts. Integration of communications and information systems between land, sea, air, space, cyber and allied forces become a force-multiplier, providing operational advantage over opponents.

Satellite communications can provide a global backbone of connectivity to enable this integration of C5ISR capabilities across platforms and domains. MilSatCom typically provides a highly resilient, low-throughput backhaul, which is excellent for critical traffic. However, with Avanti Communications' high-throughput satellites and MilKa steerable beams, we can now provide Gbps of capacity between platforms. This is what the future of Multi-Domain Integration (MDI) and Joint All Domain Command & Control (JADC2) needs - connecting the unconnected and integrating rich data services across a battlefield, and not just be limited to voice and C2 services.

Avanti's high-throughput satellite coverage provides an assured routed backbone, enabling vast amounts of data to be shared via a ubiquitous 'One System'. However, outside of voice and C2 communications channels, that have a multitude of interoperability standards, many armed forces have highly disparate, non-interoperable, high-throughput communications technologies such as MANET, HCLOS, Cellular and ComSatCom. This is where Software Defined-Wide Area Network (SD-WAN) becomes a key integration component to deliver a highly flexible, adaptable interface between these disparate systems. SD-WAN technologies can make multi-orbit and multi-domain communications a reality, enabling traffic to be routed efficiently from point of origin to point of need over the most appropriate, available, communications technology.

SD-WAN can also support the Primary, Alternate, Contingent and Emergency (PACE) resiliency requirements of a modern force, rapidly adapting and re-routing traffic in the face of cyber or electromagnetic attacks without increasing the cognitive burden on the operators.

Having highly diverse communications systems across domains and allies is useful for resiliency but can create a mountain of work to integrate systems of systems in an effective way. With a mature SD-WAN product, a lot of the complex networking is done up front, enabling new communications bearers (and their networks) to be added more efficiently. This increases the scale of the 'One System' and the amount of operational information available to operators to achieve strategic, operational and tactical advantage.

Avanti Communications' high-throughput satellites offer a high-throughput capability that can act as a core to a 'One System' approach, but this doesn't deliver the diversity of bearers needed to support a PACE plan, or to meet discrete traffic requirements for different data types. This is where a multi-orbit strategy, combined with SD-WAN integration, brings us closer to creating a Babel fish. Avanti Communications has the ability to bring together the widest range of commercial satellite, mobile and terrestrial communications bearers and intelligently manage them through a SD-WAN routing capability to automatically select the best bearer for the traffic in the current situation. This means that the core bearer requirements of MDI and JADC2 can be realised now, using readily available technology. This will ensure all communications traffic, regardless of form, are delivered using the best bearer, to the right locations in the right priority; then we just need the smarts to integrate it.

To learn more about how Avanti's multi-orbit strategy combined with SD-WAN technologies can help deliver multi-domain integration please contact us at defence@avanti.space