

No Place to Hide: Enhanced Weapon Sights for Dismounted Close Combat

The Qioptiq team has been busy supporting a number of customer demonstrations and trials throughout the world

DRAGON Compact, in particular has attracted a lot of interest. Its light weight and compact package, combined with an effective detection range of over 600m delivers a well-balanced trade of Size, Weight and Power (SWaP) with performance. Having the flexibility to be used as a stand-alone sight, or as an in line/clip on again provides the customer with a piece of kit that can be used for many tasks in many scenarios, both on and off the weapon system.

DRAGON S (Sniper) has also attracted good interest. We have put a lot of effort into the integration with the weapon, along with well thought out Man Machine

Interface (MMI) by providing features such as motorised focus and remote control units to improve the ease of control to the user, therefore reducing the cognitive burden and allowing him to focus on the target and taking the shot.

We think we have got the balance right with the DRAGON range of equipment. A range of variants, all built on a common architecture, with a high degree of commonality of parts and User spares. The system architecture is now fully digital, which provides great flexibility and potential for technology insertions and the ability to tailor the equipment with specific features required by the customer. Using the latest in low power

processor technology provides both headroom and flexibility. The architecture will also support a number of different thermal detectors, again allowing us to tailor the equipment to suit the customer.

New Developments for 2012

We have strengthened our research and development capacity, as reported in the last issue and have undertaken some interesting work packages looking at Sensor Fusion, Digital Optical Weapon Sights (DOWS) and Augmented Weapon Sights.

This has been real a learning experience that will continue on. There is considerable "Technology Potential" currently out there and both Industry and the Customer communities are aware of this. The real issue is to understand the "why would you" question rather than the "because we can" answer. As ever, our approach is to form close working relationships with the technology, Scientific and User communities in order to have an informed balance at the product development stage.

We are now at the stage where Sensor Fused Weapon Sights can be produced within a realistic SWaP trade whilst offering real benefit to the individual Soldier.

Digital Weapon Sights can also offer enhancements due to advances in low power processors predominantly driven by the smartphone market and high resolution CMOS sensors, which have the ability to operate at a higher wavelength than the human eye, therefore offering potential low light enhancement. Coupled with high optical/digital magnification capability, enhancing Detect, Recognition, Identify (DRI) capability is a reality, therefore reducing the number of pieces of kit the User needs



Dragon S. © Qioptiq.

- ▶ to carry, which has positive reduction effects to both physical and cognitive burdens.

Augmented Reality (AR) has been demonstrated within military equipment over the last few years. Systems such as POINTER, developed by QinetiQ, Qioptiq and ISTEK have demonstrated the benefit of integrating and displaying target cueing information into support weapon sights to provide enhanced situational awareness and target designation across a networked battlefield. AR provides the potential to improve the capability of the Individual Soldier by providing targeting/navigation information within the weapon sight view, therefore

reducing the need for other display devices to be carried and accessed.

Again, the rapid development and ruggedisation of COTS technology provides a number of the enablers required for the C4I AR weapon sight to become a reality.

The Big Integration Push

"Integration, Integration, Integration", is still a common cry amongst the DCC community, as the focus to reduce weight continues. With many nations quoting figures in the region of 55-60kg carried by its dismounted users, then the issue is very real, so we all need to do our bit.

The Integrated Weapon Sub System (WSS) has been explored by a number of nations as part of their respective Soldier Modernisation Programmes (SMPs) with varying degrees of success, however the challenge remains.

Powered Interface Rails and flexible power architectures offer potential for weight reduction and closer integration. This initiative requires a close working co-operation between the weapon manufactures, sighting system providers and the power industry, along with common interfaces and transportable design standards in order to allow customers to maintain a choice of solution providers.

The potential is certainly there, but as with any "revolutionary vision", there are a number of gremlins lurking in the shadows that need to be attacked and overcome, and these things take time. From our experience it can be anything between three to seven years, and considerably longer in some cases between Industry coming up with a 'good idea' to the capability actually being deployed with Users on Operations, with the road in between often involving multiple development/refinement cycles and a lot of patience.

It's widely recognised that modern small arms weapon systems are incredibly accurate and reliable, and that the challenge is being able to DRI the target 24 hours a day, through all weathers and battlefield conditions, with Users under physical and cognitive pressure.

Sighting Systems need to be easy to use, effective through all weathers and provide the ability to detect targets at the maximum range possible in order to prepare the User for the next course of action. The Urban scenario requires enhance situational awareness, wide fields of view and a rapid engagement process in order to respond within the close quarters.

The challenge for us is to provide all of this capability to the User in a package (or suite) that is easy to use and easily configurable for role / mission requirements, whilst remaining affordable and having the potential to endure a service life of 10-15 years.

Conclusion

The next three to five years are shaping up to be extremely busy, interesting and revolutionary when it comes to Surveillance and Target Acquisition for dismounted Soldiers. A number of programmes are entering procurement phases, with some of the more mature programmes now starting to cast the net out to 2015-2020 and look at 'what's next'.

Technology development continues to gather pace with more and more Military customers looking to COTS (Commercial Off The Shelf) technologies/equipment to see how they could be integrated into the 21st century battlefield, the message to industry is clear, we need to be agile and supportive across multi-year programmes in order to ensure equipment remains current and doesn't go OBD. ■



Dragons. © Qioptiq.

High Performance Equipment... ...for Demanding Environments

DRAGON-C



Hand-Held role



Stand-Alone role



In-line role

DRAGON-C (Compact) is an ultra lightweight multi purpose thermal weapon/surveillance sight that provides all round capability for the dismounted close combat user

Weapon Sights: Uncooled Thermal Imagers



DRAGON-SR



DRAGON-MR



DRAGON-LR



DRAGON-S

Weapon Sights: In-Line Image Intensifiers



MERLIN-SR



MERLIN-MR



MERLIN-LR

Weapon Sights: Stand-Alone Image Intensifiers



KITE



MAXIKITE-1



MAXIKITE-2

Surveillance: Uncooled Thermal Imagers



VIPIR-2S



VIPIR-2S+

Weapon Sights: Uncooled Thermal Imagers



VIPIR-2



VIPIR-2+



S-VIPIR-2+



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VISIT: www.qioptiq.com



Qioptiq
Tel: +44 (0)1745 588000
www.qioptiq.com

