



# IdZ-ES Evolves Through Trials

Improvements over the first generation system are balanced with technology compromises as human factors and ergonomic refinement receive greater emphasis in the push toward series production

**Last year's operational field testing of Germany's *Infanterist der Zukunft – Enhanced Systems (IdZ-ES)*, its second generation of soldier modernisation ensemble, was undertaken using two systems each comprising ten individual equipment sets. Performing well in the trials, work is now underway on awarding the next phase of the programme leading to final testing of production series systems, starting as early as the end of next year, leading to large scale deliveries of 438 systems as early as the end of 2011.**

Karl Heinz Rippert, IdZ programme manager at the BWB outlined the considerable lessons learned from this process and the experience with the IdZ-Basic System (IdZ-BS), “[IdZ-ES] came out that from that first system which never worked well in service because of lack of planning. This was the number one lesson learned from the Basic System. IdZ-ES has been in development for 2.5 years now and we are now in the final stages of series production. The programme is more or less still on track, we have been in operational field testing which has had a heavy impact on human factors.”

Rippert reports that there is nothing essentially new for IdZ-ES in terms of the operational requirements compared to other countries' analogous programmes. “The basic idea was to go with a higher systems integration level and enhanced functionality relative to IdZ-BS. The goals were to have a reduction in weight, volume and power consumption, a connection to a battle management system and the realisation of an ergonomic system, so that human factors stand in the foreground.”

Further changes relative to the IdZ include the design of new training tools so that the system can be operated

at the training facilities of different nations. An enhanced squad rather than an enhanced individual remain the underlying system approach, a key aspect of continuity between the Enhanced System and its predecessor.

A number of lessons learned have been established from the Operational Field Testing from last year, “We had two difficult tasks to solve,” commented Rippert, “to reduce weight from the infantry soldier and also to take care of humans factors.”

Due to the overheating of subsystems at high activity levels, a new Load Bearing Vest (LBV) from Texplorer has been introduced. This has also prompted the development of a worn, powered ventilation system, also sourced from Texplorer, underneath the protection vest. Discussing the use of ventilation systems Rippert said, “It may not be an idea for high intensity missions, but you do recover much earlier in checkpoint operations and so on.”

Weight remains an issue for IdZ-ES with Rippert saying, “We still need to reduce more weight and to optimise the system for human factors.”

While still more integrated, Rippert explained that integration should not mean a single monolithic design. Rippert commented, “We changed our ideas from a highly integrated system to a really rugged modular system from which can take whatever we want for the individual mission.”

This approach also relates to C4I. Rippert said, “We originally had a highly integrated system in the C4I context, so the radio and everything was always wired through the computer but soldiers also wanted independent use of both the radio and computer.”

Rippert reported that in order to meet the goals for size, weight and volume, operational requirements for IdZ-

ES were modified and changes also made in technology terms. Rippert said, “The variety of users meant that it is really difficult to find a solution with one system. Our first lesson learned was that this is impossible. We had to change the specification including the introduction of special solutions for armoured vehicles because the Puma for instance is really challenging”

The IdZ-ES's load carriage system consists of an electronic backbone with the load distributed between the shoulders and hips. The system has a one click coupling between the LBV's electronic backbone and carry plate and bag frame.

Rippert said, “We have introduced different approaches in load carriage, the basic idea was to put all the weight on the shoulder or the hips. It came out that neither approach really worked well. Now we have a highly adaptable load distribution system which has all the electronic components in the rear and can be adapted to different sized soldiers.”

“If you look at what a soldier may have to carry on his own personal equipment for sometimes up to 72 hours but be in armour only for a few hours, so they have to have an adaptable system. The load carriage system stays at 30 litres and can be upgraded to 110 litres so it is a modular system that fits to their needs. There is also the possibility of adding other bags to the side, such as legacy first aid bags, the challenges there being having has been to fix those bags without any other support.”

The helmet, sourced from Schubert was already been delivered under the Basic System. It is lightweight and also which meets the EN 12492 climbing safety requirements for the mountain troops as well as using of

## IdZES-EQUIPMENT: AN OVERVIEW



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calottes to enable paratroops to add fixtures without the use of screws.

In regards to weapons and sensor, the programme office has taken a step back from their original goal of having a fully integrated video aiming device and have instead opted to use a number of legacy optical products. One addition however, is Aimpoint's BR8 fire control computer for the underbarrel grenade launcher.

Greater integration between the weapon and worn systems has taken place. Rippert said, "The soldier must have all the freedom to do his mission but never taking his hands off his weapon so there must be a push to talk button on the weapon. So all communications, must be operated without soldiers taking their hands off their weapon."

Under IdZES, a new Soldier Backbone Computer (SBC) has been introduced, which reduces weight and volume by 20 percent and improves a number of features such as map and route handling, user management with

additional Bluetooth devices added. In terms of continuity with its predecessor, the SBC retains an icon based user interface using APP6A symbology.

IdZES users are equipped with a Helmet Mounted Display with information also able to shown on the Lucie Night Vision Goggles. In addition, a held 'eye-piece type' control Unit/auxiliary display is used which incorporates a digital magnetic compass. Features originally believed to be useful such as Blue tooth modes, SD Card slot and USB hub have been dropped, resulting in a 15 percent weight reduction, a drop in power consumption by over a third and reduced error rates and heat emissions.

Rippert said, "There were heavy discussions in the past on how you operate the computer and the best display. One idea was to have a look through display another was a non-look through display but this is the approach which best fits the soldier. There was concern that if you always had a helmet display in front of you as your main display, you would lose Situational Awareness."

A key requirement for IdZES has been to integrate into the FÜInfoSys BMS, a task made more difficult by IdZES being roughly two years ahead of this system in terms of development schedules. An essential part of the integration solution has been to adopt MIP protocols already used at brigade level and higher.

In terms of communications capabilities, IdZES requires simultaneous bi-directional voice and data although other requirements, based around an AN/PRC-148 MBTR in VHF mode and the SOLAR UHF radio, have been modified in response to the trials. Rippert said, "We have had to reduce the capability requirement which basically had a requirement for 10km and beyond. We are now starting to run a programme which is a Software Defined Radio and so we have to fit into this radio's needs. The real challenge for our systems is that you have very little freedom to select the radios and procedures which are already working at higher echelons." Dr Rippert was speaking at WBR's Soldier Technology Europe. ■