

Delhi-based Velmenni wins grant to develop submarine communication

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A small Delhi-based firm, Velmenni, is among the high-tech defence companies awarded the Innovations for Defence Excellence (iDEX) grant to develop wireless communication between submarines and the control centre.

The award is a Ministry of Defence (MoD) financial incentive for cutting-edge defence research and development.

The grant was awarded last year, but since the disbursement is milestone-based, it is still being paid out.

The iDEX programme aims to foster innovation in India's defence economy by identifying cutting-edge technologies such as Velmenni's Light Fidelity (Li-Fi) and matching them with requirements raised by other firms, under MoD projects such as Make in India, Start-up India and the Atal Innovation Mission (AIM).

To obtain iDEX funding, which must be matched by the winner, a defence firm must provide a solution to a "defence challenge", identified by another company. A list of these "defence challenges" is then promulgated and companies are invited to provide technical solutions.

Velmenni addressed one of the Navy's longstanding problems relating to the transmitting of data between their submarines and the control centre. After a submarine returns from patrol or surveillance, it is required to transfer large volumes of data, amounting to several terabytes, to the submarine command centre. Radio frequency (RF) data cannot be transmitted securely, since it is vulnerable to interception. To transfer data safely, a physical cable connection must



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be laid from the submarine to the command centre. Since the submarine would typically be docked at a distance of over 200 metres from the command centre, the submariners have to physically lay down a cable to extract the data.

Velmenni offered to transfer the data wirelessly, in a fully secured manner and proved they could technically do so.

Ujjwal Minocha, Velmenni's co-founder and chief operating officer, explains this was done using the technology Li-Fi. This involves using light to transmit data rather than the insecure RF band. "The iDEX grant is a testament to the potential of our Li-Fi technology," said Deepak Solanki, chief executive officer, Velmenni. "With these resources, we are poised to revolutionise wireless communication, ensuring secure and efficient data transmission using light," Solanki said. "Li-fi uses both parts of the light spectrum, visible and invisible, to transmit data from one point to another. Since data is made up of zeros and ones, it can

be transported through multiple mediums. While RF has been most widely used for this, light communication has also been in existence, such as in optic fibre cables, where data travels through light only," says Solanki.

Light Fidelity was first heard of in 2011, when it was raised by Professor Harald Haas of the University of Edinburgh, while researching alternate source of wireless communication.

"The MoD grant strongly validates Li-Fi's potential to address the Navy's communication challenges in harsh defence environments," said Minocha.

When Velmenni was launched, fundraising for deep-tech business in India was a major challenge and the company set about exploring opportunities overseas. Looking at the merit of the technology, Velmenni was given an opportunity to be incubated with airbus in Toulouse. This gave the company a credible head-start and it set up its first office in Estonia.