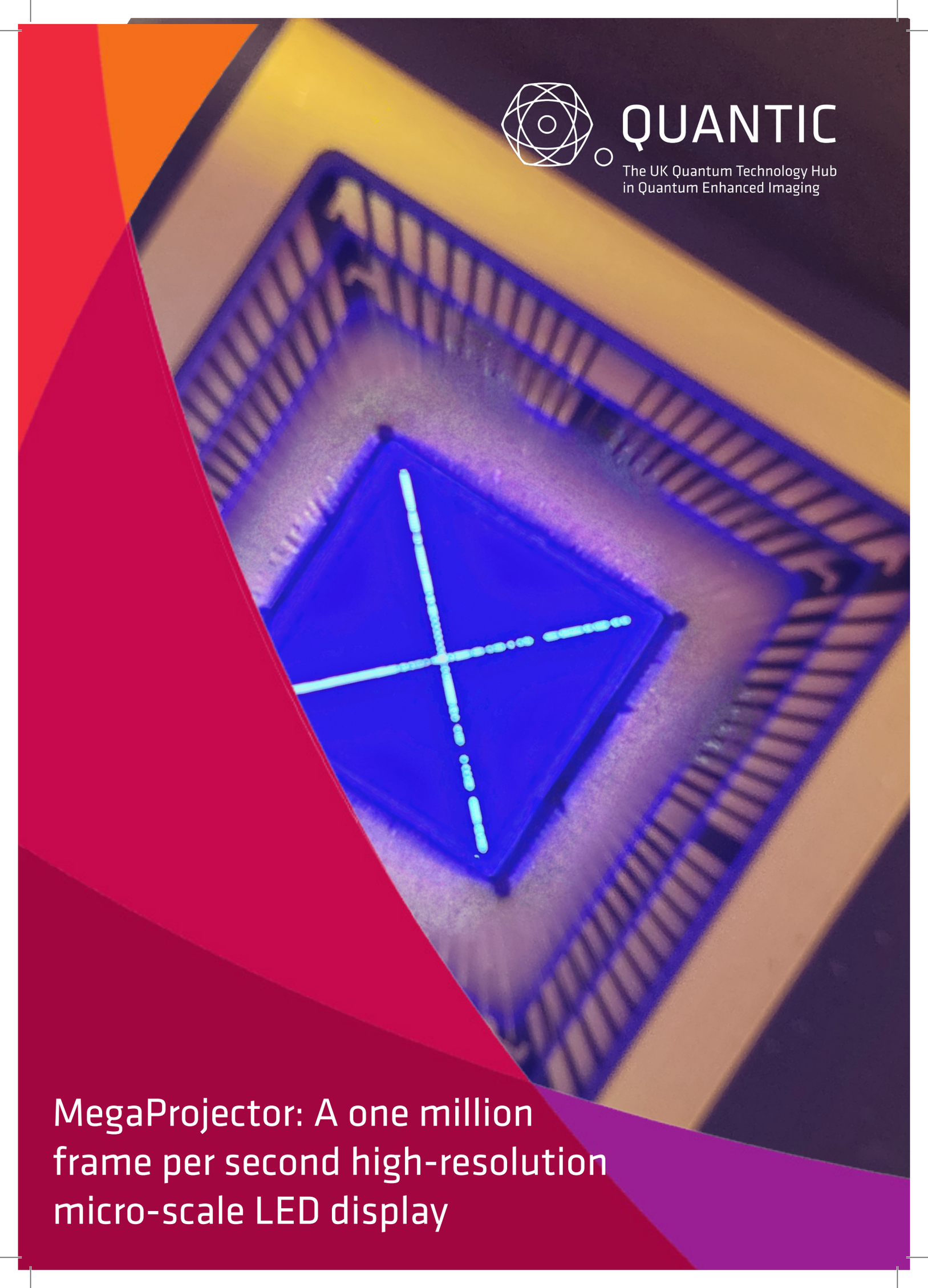
QUANTIC

The UK Quantum Technology Hub
in Quantum Enhanced Imaging



MegaProjector: A one million frame per second high-resolution micro-scale LED display

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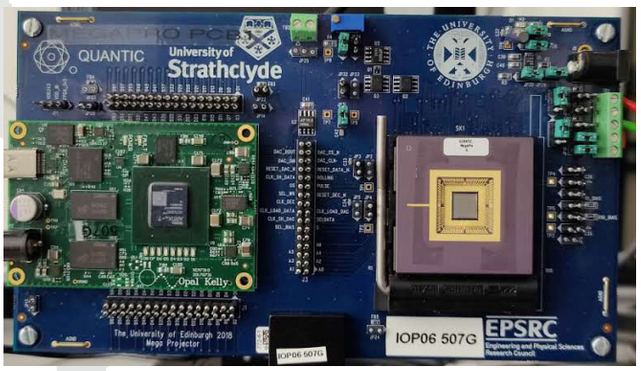
LEDs have become the standard technology for lighting and in application areas from displays to automotive systems. At QuantIC we are advancing this technology with MegaProjector, a 128×128 micro-scale Light-Emitting Diode (LED) display that is capable of displaying grayscale patterns at up to 1 million frames per second.

MegaProjector can project patterns carrying data and image information with extremely low size, weight and power requirements. By coupling these emitters with single-photon sensing devices, our demonstrators can determine their position accurately within an environment, obtain 3D and/or hyperspectral images, or transmit data over kilometre distances. Furthermore, by encoding data in both the spatial and intensity domains, MegaProjector can enable wireless data communication to standard smartphone image sensors at data rates of Mb/s or more, and has been demonstrated at 5 Gb/s using a dedicated high-speed camera.

MegaProjector is based on established gallium nitride LED and silicon semiconductor technology and can deliver chip-scale devices with lower power requirements than comparable radio-frequency devices. Its functions can be scaled from micrometre to kilometre ranges, and can also be retrofitted to existing lighting infrastructure or high-resolution displays.

We are looking for new industry partners interested in developing systems and possible modifications based on this technology to address market needs in the following areas:

- Smart Lighting Systems
- Internet of Things
- Optical Wireless Communications
- Security and Defence
- 3D Imaging Systems



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