Coopetition as a successful scheme for European sovereignty in the infrared detector domain

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Abstract

Since 2019, LYNRED (France), AIM (Germany) and Xenics (Belgium) have contributed among others under the leadership of the European Defence Agency to build a common long-term roadmap on infrared sensors.

Their collaboration took definitely shape in 2023 with the EDF-funded HEROIC project—a four-year, €19 M initiative aimed at jointly accessing an advanced CMOS foundry and developing next-generation read-out integrated circuits (ROICs) to achieve sub-7.5 µm pixel pitches and secure European technological sovereignty in high-performance IR sensors like it was identified in the IR roadmap as a priority topic.

They share prototyping and validation platforms, while maintaining independent sensor roadmaps in SWIR to LWIR bands. In parallel, the 2nd EDF-funded project ECOSYSTEM (2024–2027, €20 M) engages LYNRED, AIM and Xenics alongside industry and research partners under Safran coordination to build a Type-II superlattice (T2SL) detector supply chain across Europe, integrating epitaxy, substrate growth, bump-bonding and cryocooler technologies.

These efforts directly anticipate the EDF-2025-DA-SENS-IRD-STEP call ("Technologies for optronic detectors", €29 M) which requires collaborative development of advanced ROIC-detector hybrid focal plane demonstrators across various IR architectures, leveraging 3D CMOS stacking and demonstrator testing to enhance detection-recognition-identification (DRI) performance and supply chain resilience.

Together, these initiatives embody a structured long-term "coopetition" wherein competitors pool resources under EDF frameworks to jointly solve key deep-tech challenges, while preserving differentiated product trajectories in pursuit of European IR sovereignty.