

Snapshot Spectral Imager for IR Surveillance (SEERS) looking at lower cost, good capabilities

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Credit: Horizon2020

(Tech Xplore)—Scientists in Europe could be taking an imaging camera to a new level. The team are working on a multi-spectral imaging camera, in a project called SEERS, coordinated in Spain.

While some sites are using the word surveillance to tell the story, the mission appears to be more of one that can be applied not to catch the thief but to save [citizens](#) in times of danger, such as for operations of search & rescue, identifying harmful pollution, or improving tunnel safety.

The team participating in SEERS which stands for Snapshot Spectral Imager for IR Surveillance want to produce a snapshot spectral imaging system in the infrared domain, which will bear the advantage of being cost effective.

Horizon2020projects.com is one of the sites reporting on the [project](#).

While being lower in cost is one goal, another is coming up with technology that has the potential of saving lives; the camera can see what is invisible to humans.

Life-threatening instances of poisonous gas or fire sources masked by dense fog are examples.

The device could be of help on land, at sea, such as coastal rescue times in low visibility conditions, or in the air.

The technology involves multi-spectral imaging. This is a process that captures the same image at different frequencies from the electromagnetic spectrum. The image combinations deliver visual information the human eye cannot detect. The camera is described as the size of a shoebox and weighing less than 2kg. It is a multi-aperture, multi-sensor camera capturing several wavelengths simultaneously in one place.

So now we have a breakthrough approach to imaging in the infrared domain, said *optics.org*, a site devoted to the business of photonics. This,

said the report, is a spectral imaging system in the infrared domain of 0.7 to 14 microns wavelength.

The camera is capturing several wavelengths simultaneously in one place.

SEERS Project Coordinator, Anton Garcia-Diaz, said, "It has no need for cooling and can process the [images](#) in real-time, meaning key parts of processing are embedded within the device."

"With the World Health Organisation estimating in 2014 that nearly 600,000 deaths are a result of air pollution in Europe and with monitoring of civil infrastructures being an important area for video [surveillance](#) equipment and services in the future, this device looks set to play a key role in high-tech safety and security," said the news release from Photonics21. This is the European Technology Platform (ETP) for photonics. It was set up in December 2005 to bring the community together of photonics professionals and industries.

"Accidents in tunnels, while rare, are extremely serious when they do happen. Responding quickly and in a targeted manner is vital. We expect rescue and response times will be cut significantly with the SEERS camera," Garcia-Diaz said.

Cost factors are being highlighted in this project.

"Based on CMOS compatible FPA manufacturing technology means it is much cheaper than alternative IR technology. A commercial monochromatic [camera](#) working in the mid infrared range of 3-5 μm wavelengths is a bulky, cooled device that costs anything over €70,000."

As per quote in *optics.org*, Garcia-Diaz said, "Few imaging systems exist with the capability to identify gases, but even they can cost over

€100,000. The SEERS project aims to deliver MSI technology in an extended infrared domain at under €40,000 with improved persistence and gas identification capabilities."

So what is next? The project runs until 2018. The report in *optics.org* said, "According to SEERS [project](#) data, the development process will involve first the design of a suitable snapshot multispectral imager in the IR domain, followed by 'an embedded approach to image reconstruction, cognitive image fusion, video pre-processing and event-driven [operation](#) .' Then the benefits of multispectral imaging to performance and persistence for smart networked operation will be demonstrated, using a novel video analytics solution."

More information: [horizon2020projects.com/pr-kno ... bility-surveillance/](http://horizon2020projects.com/pr-kno...bility-surveillance/)

[www.photonics21.org/download/N ... EERSpressrelease.pdf](http://www.photonics21.org/download/N...EERSpressrelease.pdf)

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