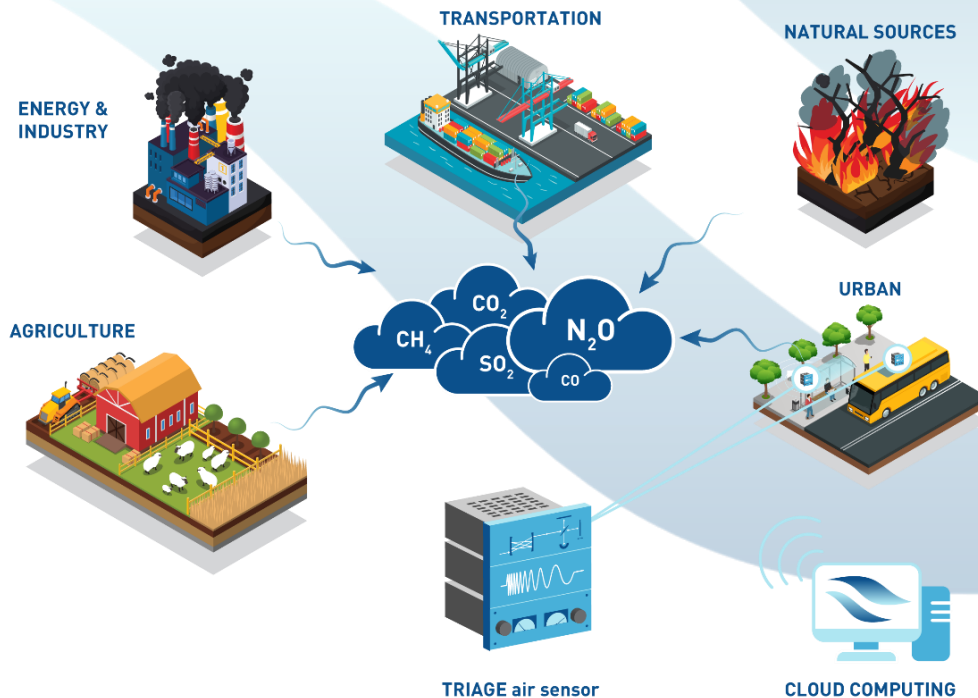


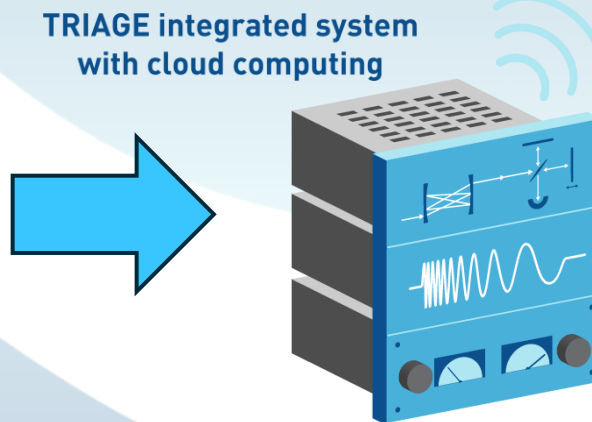
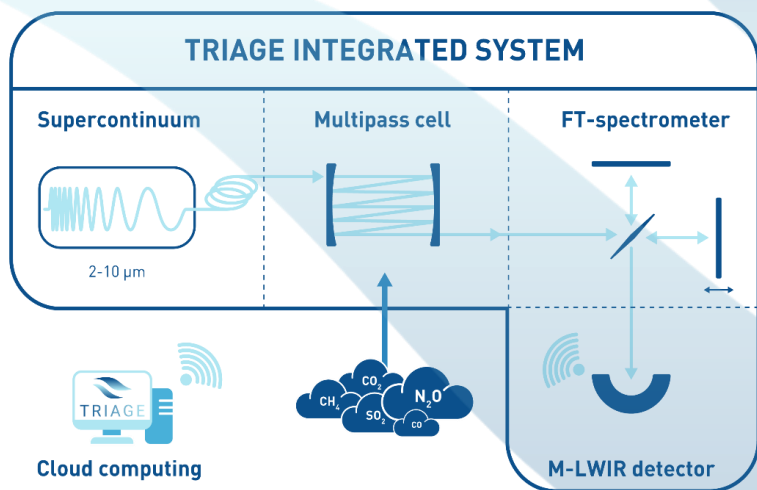
Air pollution is one of the largest risk factors for disease or premature death globally, yet current portable monitoring technology cannot provide adequate protection at a local community level.

TRIAGE aims to provide smart photonic sensing for environmental air pollution monitoring, by prototyping a portable, high-performance, sensing system, based on cutting-edge photonic technology for pervasive air quality sensing. By accessing the infrared atmospheric window between 2-10 μm , high specificity and sensitivity for molecular gases is achieved as each molecule has its characteristic infrared absorption spectrum in this 'fingerprint' region. As such, TRIAGE can detect minute traces of molecules in complex gas mixtures and will provide real time information and analysis.



- TRIAGE will develop a smart, compact and cost-effective air quality sampling sensor network for the hyperspectral detection of all relevant atmospheric pollution gases
- Resolution and selectivity will be two orders of magnitude better than current solutions and for lower cost
- Cloud-based deep-learning algorithms will enable automated short-term alerts and long-term trend analysis
- Extensive testing in urban settings with Swedish and Swiss environmental agencies and transport companies.

TRIAGE will propagate infrared radiation from a specifically designed supercontinuum laser (covering the wavelength region between 2-10 μm) through an air sample with an optical path length of many metres in either a compact multi-pass cell or through free space e.g. between buildings using a retroreflector. In both cases, a compact Fourier Transform (FT) spectrometer will be used in combination with an IR detector for hyperspectral analysis. The measured hyperspectral data will then be conveyed wirelessly to a nearby access point for analysis in “the cloud”, using sophisticated machine learning algorithms and neural networks.



- Demo activities will be conducted in real world settings (urban environments and on transport networks)
- Several key players from the TRIAGE-NET will be involved, including national agencies relating to environmental air monitoring and instrumentation manufacturers.