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By providing a software configurable sensor and emittor infrastructure distributed in southern Scandinavia, LOIS aims at enhancing the atmospheric and space physics capabilities of the new-generation digital radio telescope LOFAR (Low Frequency Array), currently being built in Netherlands and northwestern Germany. Primary target areas for LOIS are solar physics, ionospheric physics, and space weather as well as large-scale sensor, radio, antenna, telecom, and IT research.

The novel technology used in LOIS, based on the use of an array of field vector sensing antennas, making it possible to make use of symmetry properties of the electromagnetic radio field, will be described and the LOIS Test Station in southern Scandinavia will be presented.