Common mission planning and situation awareness model for UxS Command and Control systems

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Multi-vendor operations of uncrewed vehicles as part of the observations, surveillance and surveying are already daily practice in many fields. The popularity of the integration platforms that manage multiple, sometimes simultaneously, systems is also already proven by the integration platforms' popularity. With new European regulations for the drone industry and the growing popularity of various (ground, water surface, underwater, aerial) systems exploitations, the need for situation awareness and planning that will be flexible and vendor lock-in free is leveraged. However, despite several recent efforts and some popular specifications that aim at becoming de-facto standards, civil operations' interoperability challenge is unsolved. To assess whether a shared data model is suitable for multi-domain, multi-heterogeneous vehicle use, and challenge it with real applications and demonstrate the exchange of command and control information, OGC members started an Interoperability Experiment in 2022. IE is based on a data model developed by Kongsberg Geospatial and partners under the Standards-based UxS Interoperability Test-bed (SUIT). The IE considers those other standards and specifications which were used in the SUIT work as well as other Command and Control practices from the aviation and marine communities. The presentation depicts selected use cases and scenarios and outlines the information model of the localized situation awareness and mission planning and operations. Being specific for autonomous vehicle operations, they extend the needs of generic geospatial representations. Authors will explain relations to other similar models like (LSTS, MavLink, UMAA, STANAG 4586, JAUS, C2INav) and modern geospatial data exchange standards like OGC SensorThings, Features, Moving Features, GeoPose.