

## **AOCS SENSORS AND ACTUATORS ROADMAP**

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An analysis of past and present EADS Astrium AOCS architectures covering Earth observation and interplanetary class of applications will be presented. The main limitations of sensors and actuators leading to increased AOCS/system complexity/costs will be identified. Starting from this analysis, desirable changes, improvements in the AOCS function sharing and interfaces are identified. A review of identified future missions and the trend in sensor/actuator performance requirement evolution will be presented. On the basis of planned evolution of sensor/actuator market and the ESA Sensor roadmap, Earth observation, Interplanetary and  $\mu$ sats class of missions are analysed in more detail to identify potential interest of the new developments (MEMS, Sensor on the chip), derive performance objectives and recommended interfaces (Power, data links). Especially, the following topics will be addressed:

- GNSS receiver :
- MEMS gyrometers:
- Star tracker:
- Low cost Earth sensors:
- Wheels and CMG:

The presentation will address the link between system level requirements and AOCS complexity. Especially, gyroless architecture will be addressed highlighting the class of missions that can be covered without gyros or with MEMS gyros only. The impact of the availability of miniaturized sensors on the AOCS architecture will be addressed for both classical missions and  $\mu$ sats.

Finally, the main recommended evolution of the ESA sensor and actuator development roadmap will be derived.