"KSAT's integrated services: Ground Station to End-user"

Stein Halvar Støver[(1)], Rolf Terje Enoksen[(1)], Marte Indregard[(1)]

[(1)]Kongsberg Satellite Services (KSAT)
Prestvannveien 38, 9291 Tromsø, Norway
stein.stover@ksat.no, rolf.terje.enoksen@ksat.no, marte.indregard@ksat.no

Kongsberg Satellite Services AS (KSAT) is a commercial Norwegian enterprise, providing services based on data from polar orbiting satellites such as Telemetry, Tracking and Command (TT&C), Global data dump and Operational Earth Observation. The company currently operates four ground stations; the Tromsø Station at 69°N, Svalbard Satellite Station at 78°N, Grimstad (South Norway) at 58°N and TrollSat 72°S (Antarctica). These stations all have direct data capture systems that acquire the raw data from the satellite directly to disks. KSAT downloads data from more than 50 Earth Observation satellites.

KSAT provides operational satellite based near real-time services within the maritime sector, such as oil and vessel detection where information to customers is guaranteed to be within 30 to 60 minutes from data acquisition. KSAT has served European authorities with an operational oil spill detection service based on satellite SAR (Synthetic Aperture Radar) images since 1998. The overall aim of the service is to provide operational detection and early warning of possible oil spills and associated sources for regional environmental monitoring. A short delivery time is essential in order for the information to be useful in support to surveillance means (coastguard vessels and surveillance aircraft). Since 2006 KSAT has been leading a consortium supplying the CleanSeaNet service, an integrated multi-user service for oil spill detection, to the European Maritime Safety Agency (EMSA). Satellite based vessel detection and information from Automatic Identification System (AIS) are fully integrated into the service. The KSAT vessel detection service provides vessel positions detected in satellite images. The satellite based information is combined with other available vessel tracking systems (VTS, AIS, LRIT, VMS, etc), and the non-reporting vessels are highlighted. Such a system is proven powerful for fisheries monitoring and control purposes. KSAT is currently together with MDA Geospatial Services using the system to monitor the situation in the Gulf of Aden and Somali coastline in response to piracy issues.

KSAT also focuses on developing new services based on user requirements, e.g. real-time image access for navigation, snow cover mapping, detection and tracking of icebergs, customized multi-mission data acquisition and delivery. KSAT is currently implementing a service named DirectImage. This development is based upon direct requests from users of monitoring services for various applications that require data from several satellites in order to obtain required temporal coverage. The DirectImage service is a result of the fact that KSAT supports a very high number of medium and high resolution Earth Observation satellites including QuickBird, WorldView, GeoEye, RapidEye, Kompsat-2, Formosat-2, Envisat, Radarsat 1 and 2. These missions use KSAT and KSAT infrastructure to optimize global data acquisition with respect to data delivery timeliness and the use of on-board storage dump. By using the pole-to-pole infrastructure of KSAT, the on-board storage can quickly be acquired in order to free up space for new imagery. The Svalbard Ground Station has access to the satellites on every orbit and the Troll (Antarctica) Ground Station has access to the satellites on 12 of 14 orbits. In addition KSAT has invested in new technology to allow the users to view the images anywhere in the world, even on low bandwidths.