Comprehensive Software Solution for the Management of Complex Oceanographic and Meta Data

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1. Introduction
This paper will discuss the AXYS Data Management System (DMS) software suite, plug-ins and data viewing beginning with system configuration and communication to data acquisition, storage, and the final delivery of your data.

AXYS has developed a comprehensive data management software package that allows operators to effectively manage all critical aspects of AXYS products including all Met-Ocean and Directional Wave systems in real-time using two-way communications [1].

The vertical integration of deployed system network management makes configuration management and remote diagnostics and troubleshooting more efficient, effective, and economical.

The DMS components include: DMS Service, DMS User Interface, Microsoft SQL Server Relational Database Management System (RDBMS), SmartView desktop viewing software, and the SmartWeb web-based viewing software. SmartWeb can be installed on a laptop or installed and distributed on a corporate network across different servers and user computers allowing for a flexible and scalable solution.

The DMS has features of ASCII text logging, database logging, raw communications data relaying, message broadcasting, as well as alerts that can be configured on any data parameter such as system voltage, geofence, flood warning. These as well as system inactivity alerts can be delivered via email or SMS. Geofencing uses radio frequency identification to define virtual geographical boundaries.

What sets the DMS apart is the integration with the Watchman500 and the ability to automatically request data from the datalogger, schedule and send configuration changes, update firmware, and pipeline directly to individual sensors.

These features are possible because the DMS supports standard communications: TCP Server; TCP Client; Email (POP3, SMTP, IMAP); Serial; Modem Dialup; FTP; as well as custom interfaces direct to Inmarsat M2M, Inmarsat IsatData Pro, and GOES. These communications make it possible to support telemetry options like: VHF/UHF Radios, CDMA Modems, GPRS Modems, Inmarsat C, Iridium, Inmarsat M2M, Inmarsat IsatData Pro, Wi-Fi, Bluetooth, GOES, and GlobalStar.

The DMS Service was designed to run unattended as a self-healing Windows Service allowing users to log on and log off a computer without interrupting its operation or to be installed on a server in a data center. The DMS User Interface can be run on a separate computer allowing interaction with the DMS Service over a LAN or VPN by multiple users.

The desktop viewing software SmartView allows users to query data, produce graphs, and check configuration and the web based software SmartWeb does the same and was developed supporting Javascript REST operations allowing for further customization.

The DMS supports the development of custom plugins to receive and decode data directly from sensors or to provide advanced functionality. AIS, SMS, Vindicator, and TRIAXYS plugins have already been developed further advancing the capabilities of the DMS. A schematic is provided in Fig. 1.

Figure 1. Example of a Typical Data Schematic for an AXYS System

Current and future development involves enhancing the mobile and web interaction with the systems through the DMS Service.

2. Conclusion
Operational systems such as SmartBay are applying these technologies [2]. Users of complex Met-Ocean systems need software applications to operate their remotely deployed systems, and manage large databases from collected transmitted information- DMS is one such tool.

References