Towards collaborative development for managing biologging data

# 1. Background

In 2012, after two years of development, IMOS launched a designated database and web application for hosting and managing acoustic telemetry data. Using OTN’s original database design, the IMOS database was adapted to meet the needs of the Australian acoustic telemetry community. This automated back-end information infrastructure is supported by a [web interface](https://animaltracking.aodn.org.au/) allowing users to input tag metadata, upload detection and events data, and download detection data through a set of basic filtering options. Following IMOS policy, the code to compile the IMOS acoustic database and web application is open source and freely available for everyone to re-use on [GitHub](https://github.com/aodn/aatams).

Prior to being able to input data or metadata users must first register and become affiliated with a research project. Security measures can be implemented in the web app to allow scientists to publish first (‘tag embargo’, see [here](http://imos.org.au/fileadmin/user_upload/shared/AATAMS/IMOS-Animal_Tracking_-_Tag_Embargo_Policy.pdf)) or, in rare cases, to minimize threats to tagged animals (‘protected project’, see [here](http://imos.org.au/fileadmin/user_upload/shared/AATAMS/IMOS-Animal_Tracking_-_Protected_Data_Policy.pdf)). Since its inception the numbers of detections and tags stored in the IMOS database have grown exponentially to reach 70 million detections and over 6000 tags while the corresponding numbers of embargoed or protected data has shrunk.

# 2. Existing issues

While such an information infrastructure still meets the basic needs of the acoustic telemetry community and greatly facilitates data retrieval for individual tags, more support and development are needed to address long-standing [issues](https://github.com/aodn/aatams/issues) and improve the overall system so that it remains up-to-speed with technological advancements (*e.g.* real-time data, mobile receivers). In addition to the current lack of resources to manage adequately this infrastructure, a major re-design is now required to simplify both the database schema design and the overly complicated web application. Furthermore, with IMOS’ role expanding to ingest marine and climate data from major institutions and universities around Australia, there will be a growing need to diversify the existing infrastructure so that it is able to cater for archival and satellite telemetry data. Other international groups managing animal telemetry data are facing identical issues and, up until now, have been developing independently their own suite of tools for data and metadata ingestion.

# 3. Way forward

IMOS, IOOS-ATN, OTN, and VLIZ have all recently acknowledged that a common solution for the issues outlined above is needed and that a joint development program would save resources while simultaneously allowing each group to diverge from a core database service to meet their specific needs. Such an international collaborative development of the animal tracking database and web application would benefit from the work achieved by IMOS and IOOS-ATN on designing a database schema adapted to all three kinds of biologging technologies. Moreover, by adopting a common database schema each group could exchange data more easily, which would eventually facilitate the creation of an international repository for all biologging data similar to the Argo program.