


A FUTURE FOR A COMMON BIO-LOGGING LANGUAGE?

DISCUSSIONS ABOUT DATA STANDARDS AND
INTEROPERABILITY IN THE BIO-LOGGING WORLD



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IBLS AND DATA STANDARDS

- A goal in the constitution of the IBLS:

“**standardize** data protocols to make the various marine and terrestrial databases **interoperable**”

HOW STANDARDS PROLIFERATE:
(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC.)

SITUATION:
THERE ARE
14 COMPETING
STANDARDS.

14?! RIDICULOUS!
WE NEED TO DEVELOP
ONE UNIVERSAL STANDARD
THAT COVERS EVERYONE'S
USE CASES.



SOON:

SITUATION:
THERE ARE
15 COMPETING
STANDARDS.

IBLS AND DATA STANDARDS

- A goal in the constitution of the IBLS:

“**standardize** data protocols to make the various marine and terrestrial databases **interoperable**”

- Support existing initiatives under the Society hat by creating ways for them to talk to each other.
- What are ‘standardisation’ and ‘interoperability’?

INTEROPERABILITY



‘Ability of a system or a product to work with other systems or products without special effort on the part of the users or customer’

Interoperability is made possible by the implementation of standards.



INTEROPERABILITY

- ▶ “Syntactic” interoperability (data formats)



INTEROPERABILITY

- ▶ “Structural” interoperability (data structure)

Data owner

Date of data collection

Parameter 1

Parameter 2

Parameter 3

...

...

...



Data owner

Date of data collection

Parameter 2

...

...

...

INTEROPERABILITY

- ▶ “Semantic” interoperability (understand data)

My data are
about ...
BARK



dog

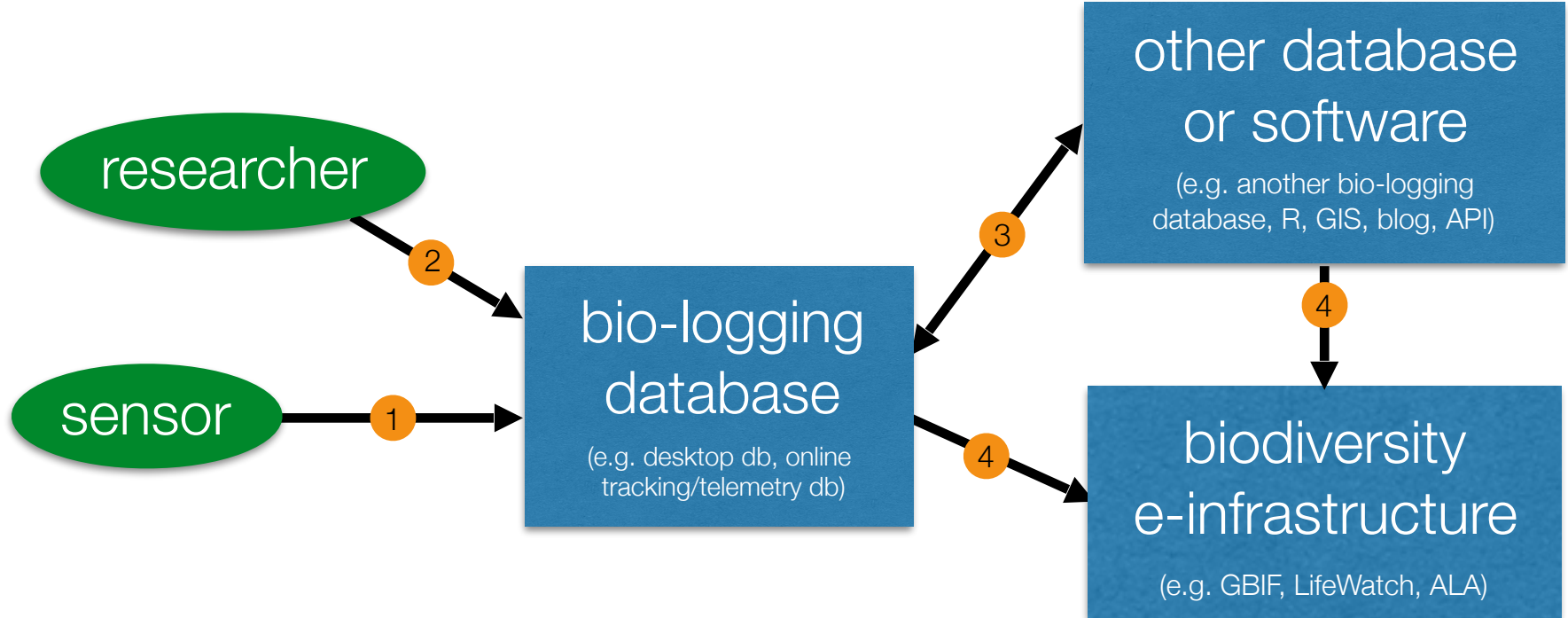


My data are
about ...
BARK



tree

MINDMAP: BIO-LOGGING STANDARDS



Goal: Standards to enable the integration and use of data collected by animal-borne sensors originating from different projects, sensor types and manufacturers

WHAT WE DID BEFORE THE WORKSHOP

- We followed the typical workflow for bio-logging data....
- ...and tried to mirror it in the discussions.
- Morning: Standards to get data from sensors to databases
Afternoon: Standards to share data from/between different databases
- An open call for those in the bio-logging world that have addressed these issues (manufacturers, biodiversity repositories, etc.)
- Questionnaires, contacts by email, invitation to attend and present
- Open discussion

WHAT WE DID BEFORE THE WORKSHOP


- Organizing committee: 10
- Identified and invited domain experts: ~130
- Survey for bio-logging manufacturers: 42, 24 responses
- Survey for biodiversity data experts: 25, 9 responses

WHERE ARE WE NOW?

- Many and **diverse sensors** and manufacturers
- Many and **diverse databases** for bio-logging data

SHARED BIO-LOGGING DATABASES

OCEAN
TRACKING NETWORK

 **EURODEER**
collaborative project


IMOS
Integrated Marine
Observing System


BirdLife
INTERNATIONALS

Seabird Tracking Database


MOVEBANK




zoaTrack



seaturtle.org


ATLAS

OBIS-SEAMAP

UvA
Bird Tracking System




IOOS
INTEGRATED OCEAN OBSERVING SYSTEM


WRM

GLATOS
Great Lakes Acoustic Telemetry
Observation System

and many others!

BIODIVERSITY DATA RESOURCES



Ecological Metadata
Language (EML)

Darwin Core



WHERE ARE WE NOW?

- Many and **diverse sensors** and manufacturers
- Many and **diverse databases** for bio-logging data
- Many and diverse **analysis tools**
- **Resources often restricted** by taxonomy, administrative unit, geography, etc.

*There are lots of good reasons for this! **But...***

WHERE ARE WE NOW?

*There are lots of good reasons for this! **But...***

- **Inconsistent data** formats, terms, documentation
- Many datasets remain **poorly documented or undiscoverable**
- **Little guidance** for many data users and providers

BENEFITS OF STANDARDS



AT THE WORKSHOP

- 50+ people participated (+ interest from non-BLS6 attendees)
- Manufacturers, representatives from bio-logging databases and biodiversity data initiatives, database geeks, users
- Geographic, institutional, taxonomic diversity

KEY POINTS

- Is it beneficial to talk about standard formats: YES!! 😊
- Manufacturers support request for standards, but want a single voice from the bio-logging community.
- Translators of existing formats would do the job.
- Sensor and databases do not need to change, but be able to talk to each other.
- Be aware of and use existing resources and solutions!
- Not all problems can be solved at once, but any step forward counts!

ACTIONS

- Create an IBLS *inclusive* working group on data standards and interoperability
- Find effective communication tools for the working group
- Decide upon 3-4 priorities to be developed in the context of sub-groups, e.g.

Evaluate existing vocabularies for bio-logging needs.

Decide upon translators for sensor data formats.

How can we document sensor function?

Build and test a proof of concept

- Share results within one year.

THANKS FOR YOUR ATTENTION!

- Please JOIN US or CONTACT US at:

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