Australian Animal Tagging and Monitoring System (AATAMS)

Acoustic Telemetry Data Management

User Interface Specification

Contents

Preamble

- The Australian Animal Tagging and Monitoring System (AATAMS) is one of eleven facilities of the Integrated Marine Observing System (IMOS). AATAMS represents the higher biological monitoring of the marine environment for the IMOS program.

- Acoustic telemetry is one of the methods employed by AATAMS to monitor coastal movements of marine animals around the Australian mainland.

- In addition to acoustic receivers deployed by AATAMS, the Ocean Tracking Network (OTN) and other organisations fund the deployment of receivers in Australian waters.

- This document is a specification of the user interface for an on-line, web based system for members of the AATAMS community (and, in the future, other acoustic transceiver users in Australia) to record acoustic telemetry data, including details of the analysis carried out to determine the user interface needs.

- This document references and, where possible, complies with the existing AATAMS database schema (See Appendix A), which in turn was derived from the Pacific Ocean Shelf Tracking (POST) database schema used by the OTN. Where compliance with the schema is not possible, detailed notes are provided to indicate schema changes required.

- This document will provide details of:
    - the processes required to manage AATAMS receiver and tag deployments and recovery;
    - the information required to manage AATAMS receiver and tag deployments and recovery, including variables recorded, their data types and scope and their relationship to the existing schema;
    - proposed screen layouts for recording data from each information entity or process;
    - proposed field sheets (and Excel spreadsheet design where applicable) for use in conjunction with the proposed screen layouts and
    - notes on additional information required for the AATAMS Application Developer.

AATAMS Data Summary

- For this analysis, information (data) is separated into two categories:
    - **Process** data, or data derived from processes associated with data collection. Eg. The action of deploying a receiver or attaching a tag to an animal.
    - **Entity** data, or data associated with mostly static objects. Eg. An organisation, person or receiver.

- AATAMS encompasses three main work processes:
    - receiver deployment;
    - receiver recovery and
    - tag surgery and deployment.

- The information required to effectively manage AATAMS receiver and tag deployments and recovery includes details about:

    - **organisations** collecting and accessing AATAMS data (entity);
    - **persons** collecting and accessing AATAMS data (entity);
    - **projects** initiated to collect AATAMS data (entity);
    - **receivers** deployed to collect data (entity);
    - **tags** that may be detected by receivers (entity);
    - the **deployment of receivers** (process);
    - the **surgery** required to attach a tag to an animal (process);
    - the **deployment of tags** attached to a animals (process);
    - the **receiver recovery**, and subsequent downloading of data (process) and
    - the tag **detections**, downloaded from the receiver (entity).

- The existing AATAMS schema does not directly recognise an animal as an entity. However
    - a **surgery** can be assigned an animal id (this accommodates the possibility of having multiple tags on one animal) and
    - biological measurements of an animal are included, but are associated with a **surgery** rather than an animal. For the purpose of this document, measurements are considered part of the **surgery**.

- All dates and times can be entered in either local or UTC time.
    - Time zone must always be included (to automatically generate the corresponding local or UTC time not entered)
    - Time zone dropdown to include city/UTC offset/zone abbreviation (might need a new table)
    - This should be uniform for all date/time entry and default to local time where relevant
    - It might be best to record all three values as fields, but could be done with two – discuss with Peter if needed

- Taxonomic data to include common name, genus/species and CAAB code. To be extracted and refreshed weekly from CAAB database (unique ID is CAAB code). Need to discuss access with Tony Rees, CSIRO/ALA. Anywhere a species is populated, include a link to CAAB web page (Peter has URL format or can get from CAAB web site).

Entity Definitions

An ‘*’ next to a variable denotes multiple elements associated with the entity.

An ‘^’ next to a list of values indicates the list is not finite and could change or grown in the future.

Organisation

An organisation is defined as the entity which owns/manages/initiates projects associated with animal tracking.

Variable	Description	Type	Size	Values
Name	Name of the organisation	Text		
Department	Name of department within the organisation.	Text		
Phone Numbers	Main contact number and Fax number	Text		
Physical Address	Physical street address including state, postcode and country	Text		
Postal Address	Postal address including state, postcode and country	Text		
Projects *	A list of projects associated with an organisation			

Organisation is referenced by the following elements:

- Person
- Project

Differences from schema:

- None

Access:

- System Administrator
- Any registered user (request only)

Validation Process

After a user fills in a request for to create an organisation (page 8), a system administrator will receive an e-mail with a web page link to complete validation (or rejection) of the new organisation. This form should include details of the requesting user to enable a response from the system administrator.

Organisation Summary Screen

Organisation Create/Edit Screen

Person

A person is defined as any person who may be associated with the following AATAMS data elements:

- Surgery
- Tag Release
- Device (either a receiver or a tag)
- Receiver deployment
- Receiver data download (the person who performed the downloading of data)

A person record must exist for anyone with a login to AATAMS.

Variable	Description	Type	Size	Values
Name	Name of the person	Text		
Organisation	Organisation to which the person belongs			
Email	An e-mail address for this person			
Phone		Text		
System Administrator	Flag to denote if this person is an AATAMS system administrator			

Differences from schema:

- Add System Administrator flag (default 'No', can only be set by eMII, no more than two users as defined in the security policy)

Discussion:

- SEC_USER_ID – is this just the internal link to the users login?
- Who can add and edit people?
    - System Administrator
    - Any PI can add (also in the project create/edit form), but can't delete
    - Any person can edit their own record (**will require link to login**), but not create or delete

Person Summary Screen

Person Create/Edit Screen

Role

A role is defined as a persons position within a project (and is only used in this context)

Variable	Description	Type	Size	Values
Name	Name of the role	Text		Principal Investigator / Co-Investigator / Research Assistant / Technical Assistant / Administrator / Student

Roles are managed by eMII staff and cannot be manipulated in the AATAMS user interface. Ie. No wire frames etc required.

Project

A project is defined as a project initiated by an organisation, represented by a number of persons with specific roles for the project, and associated with a device or receiver installation.

Variable	Description	Type	Size	Values
Name	Name of the project	Text		
Organisations *	(Multiple) Organisations associated with the project.			
Persons *	(Multiple) Persons associated with the project and their role and access rights in the project.			

Projects are referenced by:

- Receiver
- Tag
- Installation
- Receiver Deployment
- Tag Release/Deployment

Differences from schema:

- Internally, this references the PROJECT_ROLE_PERSON table, which will need to include a new field for access rights (read only OR read/write).

Discussion:

- A PI can create a person on the project edit form if they don't already exist.
- Only a system administrator can create a project
- A "New Project Request" form will be needed for registered users to request creation of a new project. It should collect Project Title, Organisation (default currently logged in users organisation) and PI's name (default currently logged in user). This should send e-mail and have a validation form in the same manner as Organisation.

Access:

- System Administrator (Add/Edit/Delete)
- Project PI (Edit)

Project Summary Screen

Project Create/Edit Screen

Receiver

A receiver is a device deployed in the ocean that is able to receive 'ping' transmissions from tags attached or surgically implanted into fish.

Variable	Description	Type	Size	Values
Code Name		Text		'Model and Manufacturer' and 'Serial Number ' concatenated - automatically generated when other fields altered.
Model and Manufacturer				VR2/VR2W/VR3-UWM ^
Serial Number		Text		
~~**Project**~~	~~Associated Project~~			REMOVE
Organisation				NEW
~~**Embargo Date**~~	~~Date when data from this receiver is no longer embargoed. A blank date indicates that no embargo exists.~~	~~Date~~		REMOVE
Status	Status if this receiver	Text		NEW/DEPLOYED/ RECOVERED/RETIRED/ LOST/STOLEN/DAMAGED/ RETURNED TO VENDOR
Comment		Text		

Receivers are referenced from:

- Receiver Deployment, Receiver Recovery

Difference from schema:

- Existing schema associates a receiver with a person in a particular role for a project rather than just a project.
- Existing schema using a flag to denote an embargo.
- Existing schema includes the following fields not defined here: RELEASE_CODE, MISSING_OFF_STATION, SENT_TO_MANUFACTURER, CRITICAL_DAMAGE, AWAITING_DATA, DATA_RECOVERED, LOSS_REPORTER and COMMENTS.

For discussion:

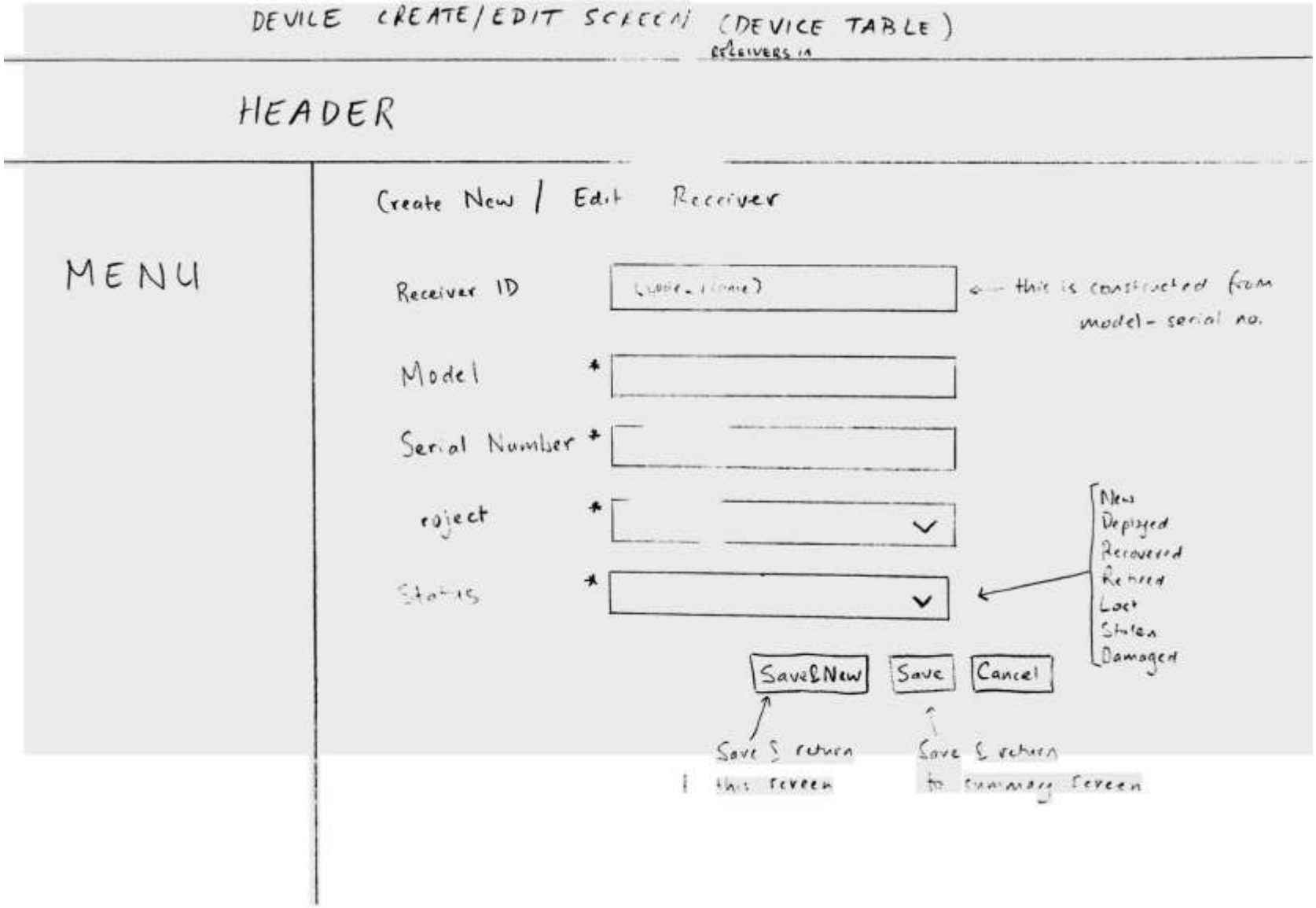
- New Organisation field, Remove Project
- Comments Added

Access:

- System Administrator

- ~~Receivers can be created and edited by any person with edit access for the associated project.~~ Any designated PI can create new receivers and edit any they create (but not those created by others). Only System Administrator can delete.

Receiver Summary Screen



Receiver Create/Edit Screen

Tag

A tag is a device attached to, or surgically implanted into, a fish that sends 'ping' ID codes that can be received and partially interpreted by a receiver. A single tag may send code map and ping ID code combinations that identify the tag only and/or codes associated with one or two sensors on the tag depending on the tag model. For tags with one or two sensors, these code map ping ID code combinations represent multiple rows in the tag table. This also means multiple rows may have the same serial number.

NOTE: A tag is uniquely identified by the combination of its serial number, code map and ping ID code. However, receivers only record the code map and ping ID code which may be associated with more than one tag serial number (this is an unlikely scenario, but possible). This will have implications for ensuring relationships between receiver detections and tag data are valid. This implication will be further complicated for embargoed data.

Tag data may be provided in a spreadsheet from VEMCO and subsequently imported into the database (see following import screen). This is now available (see email from Russ)

Variable	Description	Type	Size	Values
Code Name	Derivative of Code Space and Ping ID Code (below)	Text		
Model and Manufacturer				VR2/VR2W/VR3-UWM ^ Get full list from VEMCO website.
Serial Number	Currently recorded in the DEVICE table.	Text		Note: mandatory for both receivers and tags.
Project	Associated Project			
~~**Embargo Date**~~	~~Date when data from this receiver is no longer embargoed. A blank date indicates that no embargo exists.~~	~~Date~~		MOVED TO TAG DEPLOYMENT
Status	Status if this receiver	Text		NEW/DEPLOYED/ RECOVERED/RETIRED/ LOST/STOLEN/DAMAGED
Code Map	Called CODE_SPACE in the existing schema.	Text	10	
Ping ID Code	Transmitted ID number.	Integer		THIS SHOULD BE CALLED "PING ID CODE" ANYWHERE ITS USED
Transmitter Type	Ping or Sensor type			PING/~~DEPTH~~/ PRESSURE/ TEMPERATURE/ ACCELEROMETER
Slope	Calibration slope	Integer		
Intercept	Calibration Intercept	Integer		

Tags are referenced by:

- Tag Deployment/Release (Surgery)
- Detections

Difference from schema:

- Existing schema associates a tag with a person in a particular role for a project rather than just a project.
- Existing schema using a flag to denote an embargo.
- Transmitter type, slope and intercept have been added.

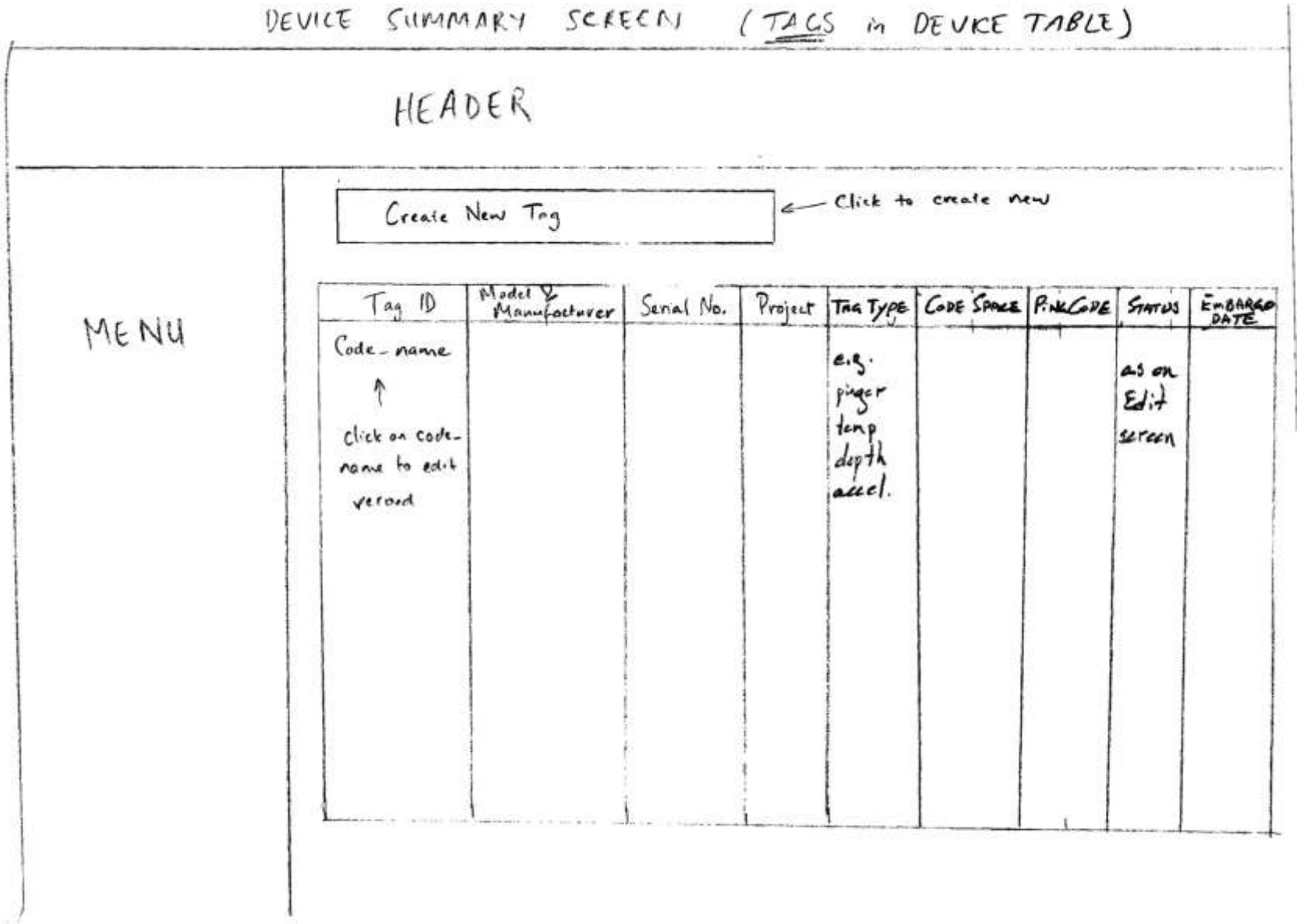
For discussion:

- ~~Should we associate a tag with a project OR a person in a project role OR a person? (recommend Project)~~ - Project
- ~~Do we want an embargo flag or an embargo release date (recommend date)?~~ – Moved to deployment
- ~~How do we manage multiple tags with the same code map and ping id combination (these are reported as the same tag by receivers)?~~ – any code map and ping ID combination can only be present once with a status other than RETIRED. Newly recovered detections can only be related to a tag record without a RETIRED status. User must be warned that tags changed to a RETIRED status cannot be linked to new detections.

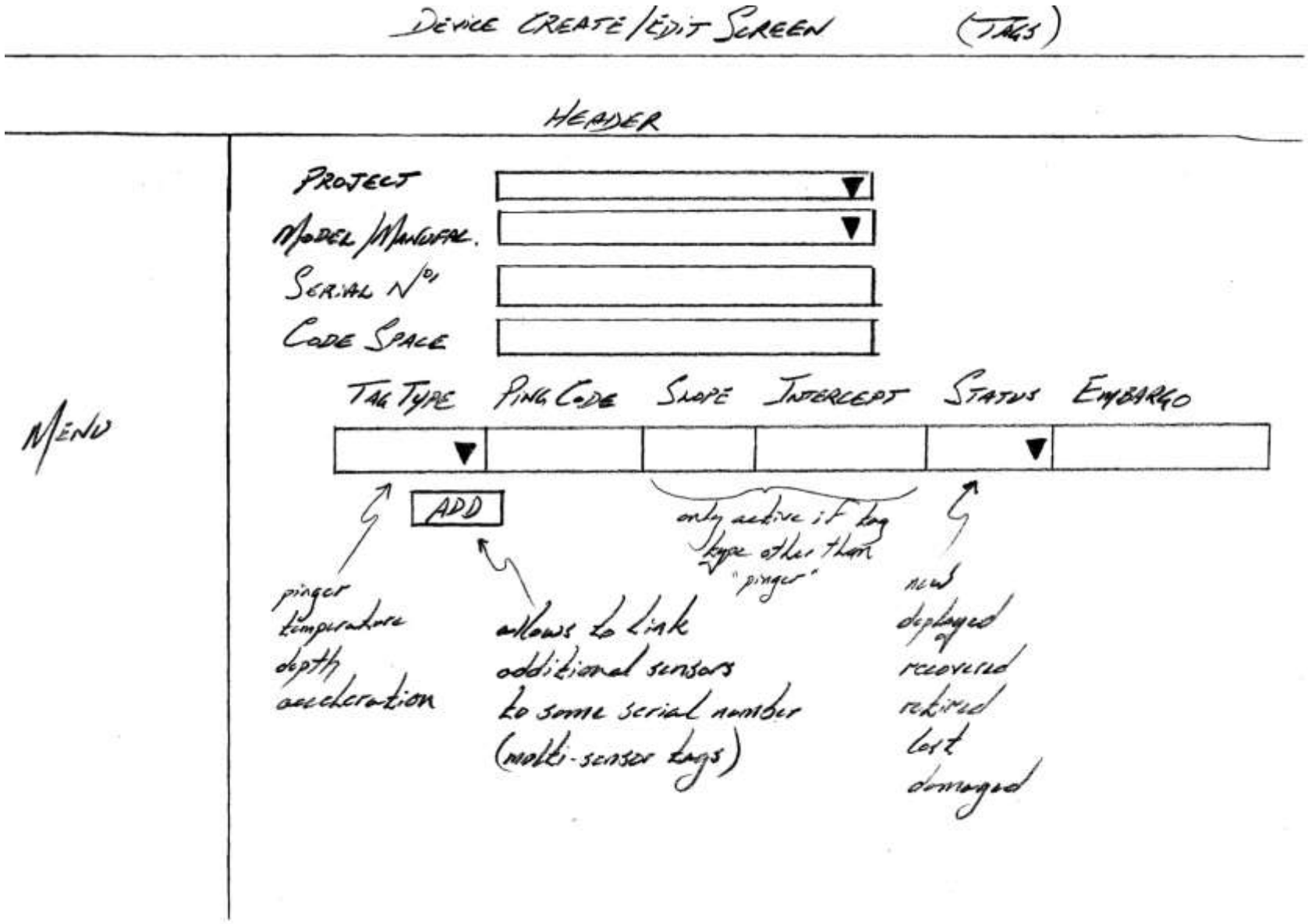
- Include details of import VEMCO file functionality – See Russ's e-mail – needs a new form to import from file.

Access:

- System Administrator
- Any user with edit access for a Project can create or edit a tag for same.



Tag Summary Screen



Tag Create/Edit Screen

TO DO

Tag Data Batch Import Screen (for VEMCO tag spreadsheet)

Installation

An installation is a configuration of multiple receivers generally identified by a geographic location. An installation can contain multiple Installation Stations.

Variable	Description	Type	Size	Values
Name	Identifies the Installation	Text		
Configuration Type				ARRAY/ CURTAIN/ SINGLE
Project				Limited to projects where this user is a member.
~~**Longitudinal Offset**~~	~~Maximum longitudinal offset used to scramble data for visualisations.~~			REMOVE
~~**Latitudinal Offset**~~	~~Maximum latitudinal offset used to scramble data for visualisations.~~			REMOVE

Installations are referenced by:

- Installation Station

Difference from schema:

- Current schema includes DATAFABRIC and METADATA columns.

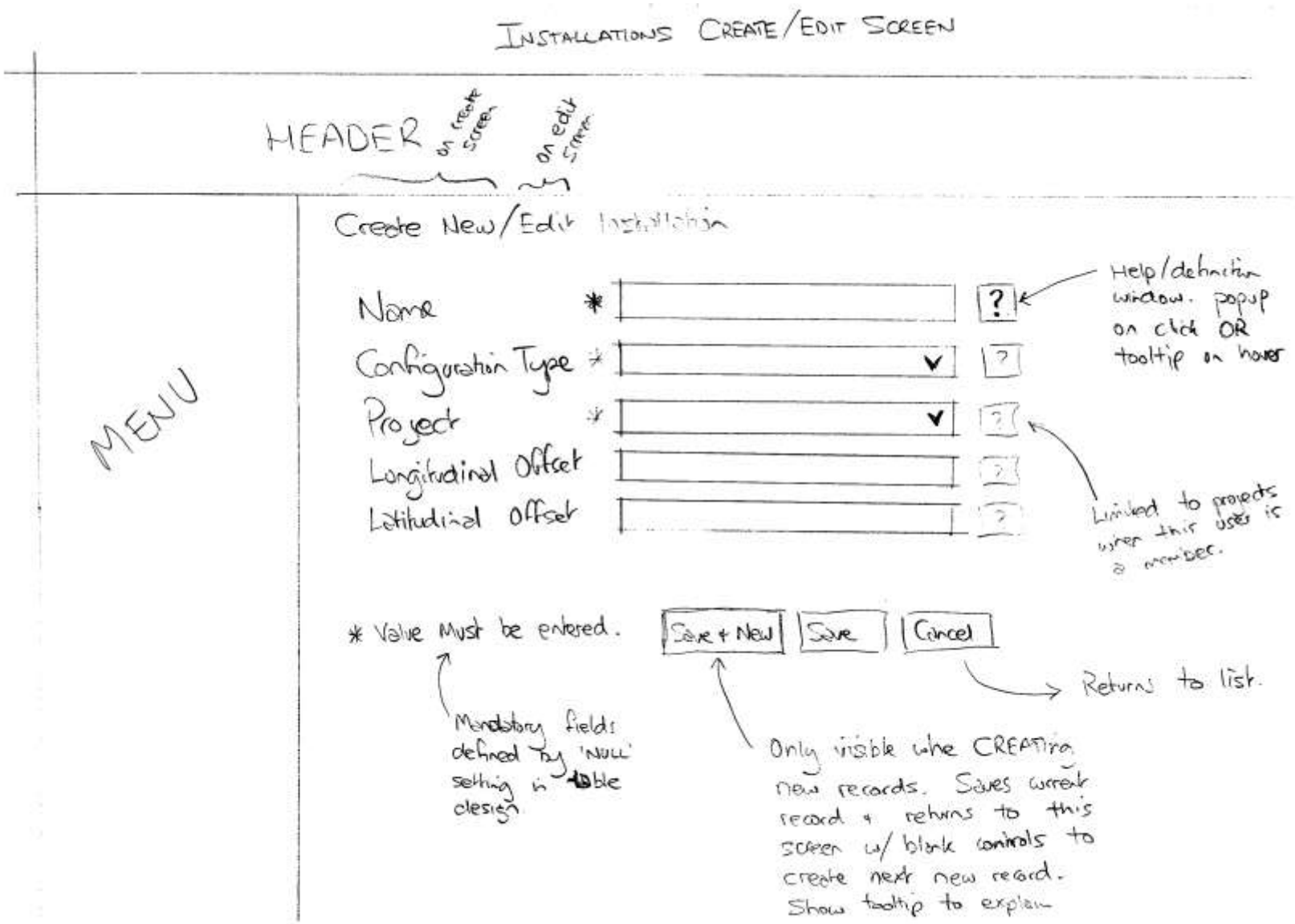
Discussion:

- ~~If we use geographic offsets, do we need a end date?~~ – Any lat/long data not accessed by a registered user (ie. public or guest access) to be truncated to 2 decimal places.

Access:

- System Administrator
- Any user with edit access for a Project can create or edit an Installation for same

Installations Summary Screen



Installations Create/Edit Screen

Installation Station

An Installation Station is a location within an Installation where a receiver is deployed. A single Installation Station will only have one receiver deployed at any one time, but may have multiple receivers deployed over time.

Variable	Description	Type	Size	Values
Name	Identifies the Installation Station	Text		
Curtain Position	Numeric sequence relating to Station position in this Installation	Integer		NOT MANDATORY
Latitude/ Longitude/ Datum	Geographic position of this Station	Geometry		

Installation Stations are reference from

- Receiver Deployment

Difference from schema:

- Display offsets for longitude and latitude ~~will be derived from same in the Installation table~~ not longer required.

Access:

- System Administrator
- Any user with edit access for a Project can create or edit an Installation Station for Installations created under that project.

Detection

Tag detections are received and stored on a receiver. Each detection represents a valid 'ping' signal from a tag attached to an animal, which may include information from one or two sensors on the tag. Sensor information can include temperature, depth, acceleration, pH and potentially other readings in the future.

NOTE: Files used for import must always contain uncalibrated sensor data.

NOTE: A tag is uniquely identified by the combination of its serial number, code map and ping ID code. However, receivers only record the code map and ping ID code which may be associated with more than one tag serial number (this is an unlikely scenario, but possible). This will have implications for ensuring relationships between receiver detections and tag data are valid. This implication will be further complicated for embargoed data. ***For this reason, it is not possible to maintain a foreign key relationship between the detection and tag tables, only the detection and receiver table.*** ***See page 20 under "Discussion" for resolution. Duplicates not allowed.***

Variable	Description	Type	Size	Values
Timestamp	Date/Time of the detection	DateTime		Always UTC.
Receiver	Name of the receiver in the import file (can be used to create a foreign key to ACOUSTIC_RECEIVER table)	Text		
Transmitter	Synonymous with tag Code Map and Ping ID code combined.	Text		
Transmitter Name	Only populated when the tag exists in the users VUE database	Text		
Transmitter Serial number	Only populated when the tag exists in the users VUE database. This is an assumed value in so much as it is based on the 'Transmitter' which could be replicated for multiple tags.	Text		
Uncalibrated Sensor Value	Only populated for sensor tags (as provided in import file).	Integer??		
Sensor Unit	Units of measure for sensor value.			
Station Name	Only populated when the Station exists in the users VUE database.	Text		
Latitude	Only populated when the Station exists in the users VUE database.	Numeric		
Longitude	Only populated when the Station exists in the users	Numeric		

VUE database.

Detections are reference by Receiver Deployment.

Difference from schema:

- Existing schema using a flag to denote an embargo. This is not required for individual detections.
- Existing schema does not include Receiver, Transmitter, Transmitter Name, Transmitter Serial number, Uncalibrated Sensor Value, Sensor Unit, Station Name, Latitude, Longitude. All are taken directly from the import file.
- ~~Existing schema includes a TAG_ID foreign key which should be removed to ensure referential integrity when multiple tags with the same code map and ping id exist.~~ Can now be used, see page 20.
- NEED TO ADD EVENTS DATA (NEW TABLE AND CSV FILE FOR IMPORT, see e-mail from Peter 13/7/11 for file format)

Access:

- System Administrator
- Any user with edit access to the project where the receiver is allocated.

Other Entities

Other entities that exist in the system, but are not part of the user interface. Records for these entities will need to be created manually by eMII.

Entity	Details
Device Type	Type of device – recorded as part of the device entity. Appears to determine whether the deivce is a receiver or a tag.
Device Model	Part of the device entity eg. VR2, VR2W etc.
Device Manufacturer	Part of the Device Model entity – eg VEMCO
Device Deployer	Exists in the schema, but is not relevant as a separate entity in this specification. Dealt with as part of receiver deployment. Continued use of this entity??? (Developer to decide)
Installation Configuration	Part of the Installation entity – values are ARRAY/CURTAIN/SINGLE.
Taxonomic data	CLASSIFICATION and CLASSIFICATION_LEVEL tables. These contain taxonomic data which will be imported from CAAB.
Locality	No longer required?????
Treatment Type	Used for Surgery
Implant Type	Used for surgery
Measurement Type	Used during tag release
Measurement Unit	Used during tag release
Device Deployer	No longer used????
Mooring Type	Used for receiver deployment

Process Definitions

An ‘*’ next to a variable denotes multiple elements associated with the field.

An ‘^’ next to a list of values indicates the list is not finite and could change or grown in the future.

Receiver Deployment

Receiver deployment is the process of deploying a receiver in the ocean. The receiver is attached to a mooring and sits under the surface at a pre-defined depth. It has an additional device attached that's used to release the receiver from its main connection to the mooring so it can float to the surface. A separate tether keeps the receiver attached to the mooring.

Variable	Description	Type	Size	Values
Code Name	Identifies the receiver (same as receiver Code Name field ie. Foreign key)	Text		
Installation Station	Identifies the Station in the Installation where this receiver is deployed			
Deployment Number		Integer		Auto populate with count of previous deployments for this installation station + 1
Project				
Time Zone		Text		Current time zone identifier. Eg. AEST
Date/Time (local)		DateTime		
Date/Time (UTC)	UTC date/time doesn't need to be part of the data entry interface, but can be stored or created as needed.	DateTime		
Scheduled Recovery Date	Date the receiver is scheduled for recovery.	Date		
Acoustic Release ID	An identifier used during recovery to remotely release the tether allowing the receiver to come to the surface.	Text		
Mooring Type		Text		~~CAR TYRE/ CONCRETE BLOCK/ DEEP WATER ^~~ FIXED/ FLOATING
Mooring Descriptor	Mooring Descriptor (eg. Car tyre, concrete block, navigation aid etc).			Include examples on form
Bottom Depth	Depth to bottom (m)	Integer		
Depth Below Surface	Depth from the surface to the receiver (m)	Integer		
Receiver Orientation				UP/ DOWN/ SIDEWAYS

Variable	Description	Type	Size	Values
Latitude/ Longitude/ Datum	Stored in decimal degrees	Geometry	Point	
Battery Life	Expected battery life in months.	Integer		
~~**Battery Voltage**~~	~~Battery voltage in volts~~	~~Decimal~~	~~4,2~~	REMOVE
Embargo Date	Date when data from this receiver is no longer embargoed. A blank date indicates that no embargo exists.	Date		
Deployment Comments		Text		
Recovery Comments	Comments field that can be filled in when the receiver is recovered.	Text		
Status	Status of the receiver. Assume deployed for a deployment. Can be changed following a recovery.	Text		NEW/DEPLOYED/ RECOVERED/RETIRED/ LOST/STOLEN/DAMAGED/ RETURNED TO VENDOR

Difference from schema:

- Existing schema associates a receiver deployment with a person in a particular role for a project rather than just a project.
- Existing schema using a flag to denote an embargo.

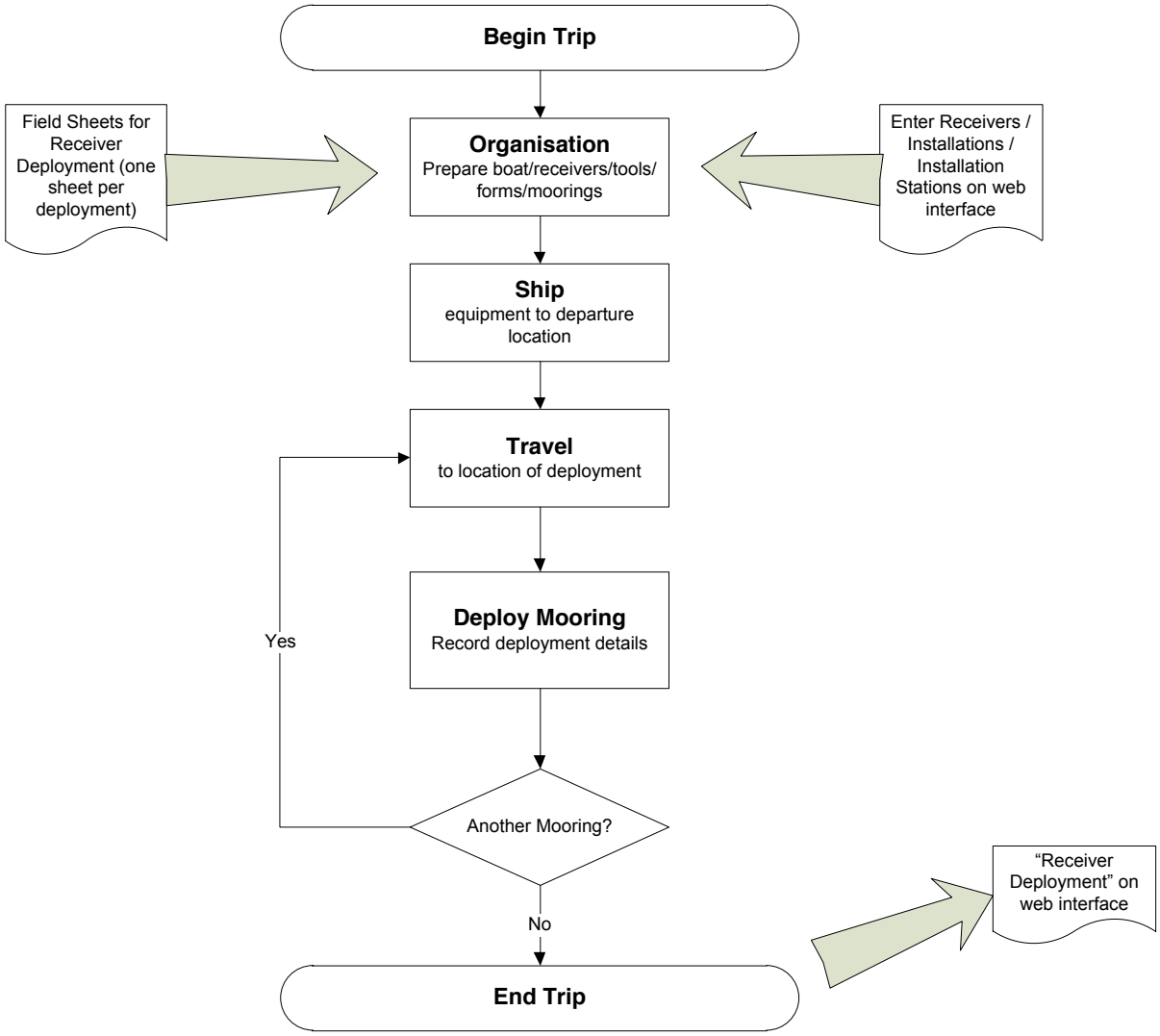
For discussion:

- Should we associate a receiver deployment with a project OR a person in a project role OR a person? Project
- Do we need to embargo receiver deployment data (Security policy says ?????)? No
- ~~Do we want an embargo flag or an embargo release date (recommend date)?~~

Access:

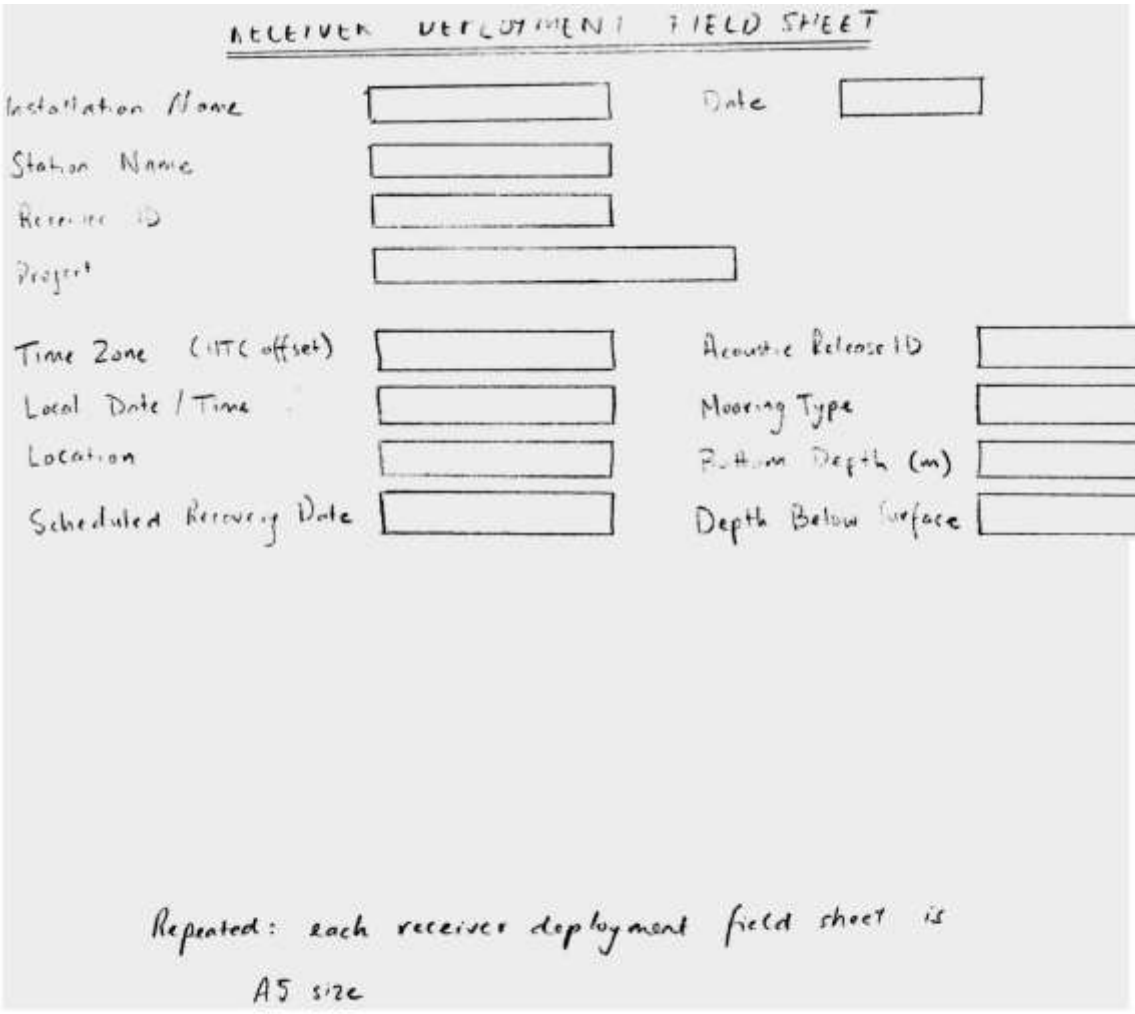
- System Administrator
- Any user with edit access to the project where the receiver is allocated.

Workflow


Begin Trip
Field Sheets for Receiver Deployment (one sheet per deployment)
Organisation
Prepare boat/receivers/tools/ forms/moorings
Enter Receivers / Installations / Installation Stations on web interface
Ship
equipment to departure location
Travel
to location of deployment
Deploy Mooring
Record deployment details
Yes
Another Mooring?
No
End Trip
"Receiver Deployment" on web interface

Receiver Deployment Summary Screen

Receiver Deployment Create/Edit Screen



Receiver Deployment Field Sheet

Tag Release/Deployment

Tag release/deployment is the process of capturing, tagging and releasing a fish, generally within proximity of previously deployed receivers in an installation, but may be released outside these areas to perform active tracking of a continuous tag (following the fish around for a couple of hours or days) or where they may be expected to enter an area containing receivers during future movements.

Variable	Description	Type	Size	Values
Project				
Species	CLASSIFICATION_ID in database			Retrieved from species table
Other Species	Species not listed in the species table	Text		
Capture Locality		Text		
Capture Location	Lat/Long/Datum	Geom		
Capture Date/Time	Local Date/Time	Date/Time		
Capture Method				NET/ LINE/ LONG LINE/ TRAP/ HAND CAPTURE
Time Zone		Text		Universal text code for time zone????
Tag/Surgery Data	See following table. Tag release may have multiple tags			
Measurements	See following table. Tag release may have multiple measurements			
Sex		Text		(M)ale / (F)emale / (U)nknown ~~Recorded in measurements or new field????~~ New Field as described here.
Release Locality		Text		
Release Location		Geometry		
Release Date/Time	Local Date/Time	Date/Time		
Embargo	Embargo recorded as days after release/deployment	Integer		
Comments		Text		

~~Tag/Surgery Data~~ Tagging ('Surgery' is not always applicable)

Variable	Description	Type	Size	Values
Date/Time	Local date/time of surgery	Date/Time		Default to Capture Date/Time (in table above).
Tag ID				
~~**Surgery Type**~~ **Tag Placement**				INTERNAL / EXTERNAL
~~**Sutures**~~				~~Y / N~~ REMOVE
Treatment Type				~~ANTIBIOTIC~~/ ANISTHETIC/ NO ANISTHETIC
~~**Person**~~	~~Person performing the surgery~~			REMOVE
Comments		Text		

Measurement Data

Variable	Description	Type	Size	Values
Type	Type of measurement			LENGTH / WEIGHT / ETC ????? Andrew will provide a complete list with units before launch
Value				
Units	Units of this measurement			mm / gm / etc see above
Estimated	Was this measurement estimated?			Y / N
Comments		Text		

Tag Release/Deployment records are not directly referenced from within the schema, but will be referenced by detections in order to tie specific animal/species data to detections.

Difference from schema:

- Existing schema only allows for one tag per release. Suggest changes:
  - Move DEVICE_ID to SURGERY table
  - Move ANIMAL_ID to TAG_RELEASE table
  - Move measurement relationship to TAG_RELEASE
  - Surgery / Release relationship becomes SURGERY (many) <-> TAG_RELEASE (one)
  - Rename TAG_RELEASE to something more meaningful in this context (RELEASE or ANIMAL_RELEASE???)
- Removed reference to person in TAG_RELEASE (ref in surgery is enough).
- Reference to person in surgery (not project).
- STOCK_ID removed (what is this???).
- CAPTURE_LOCALITY and RELEASE_LOCALITY changed to text field.

- Removed EMBARGOED (the tag is embargoed instead)

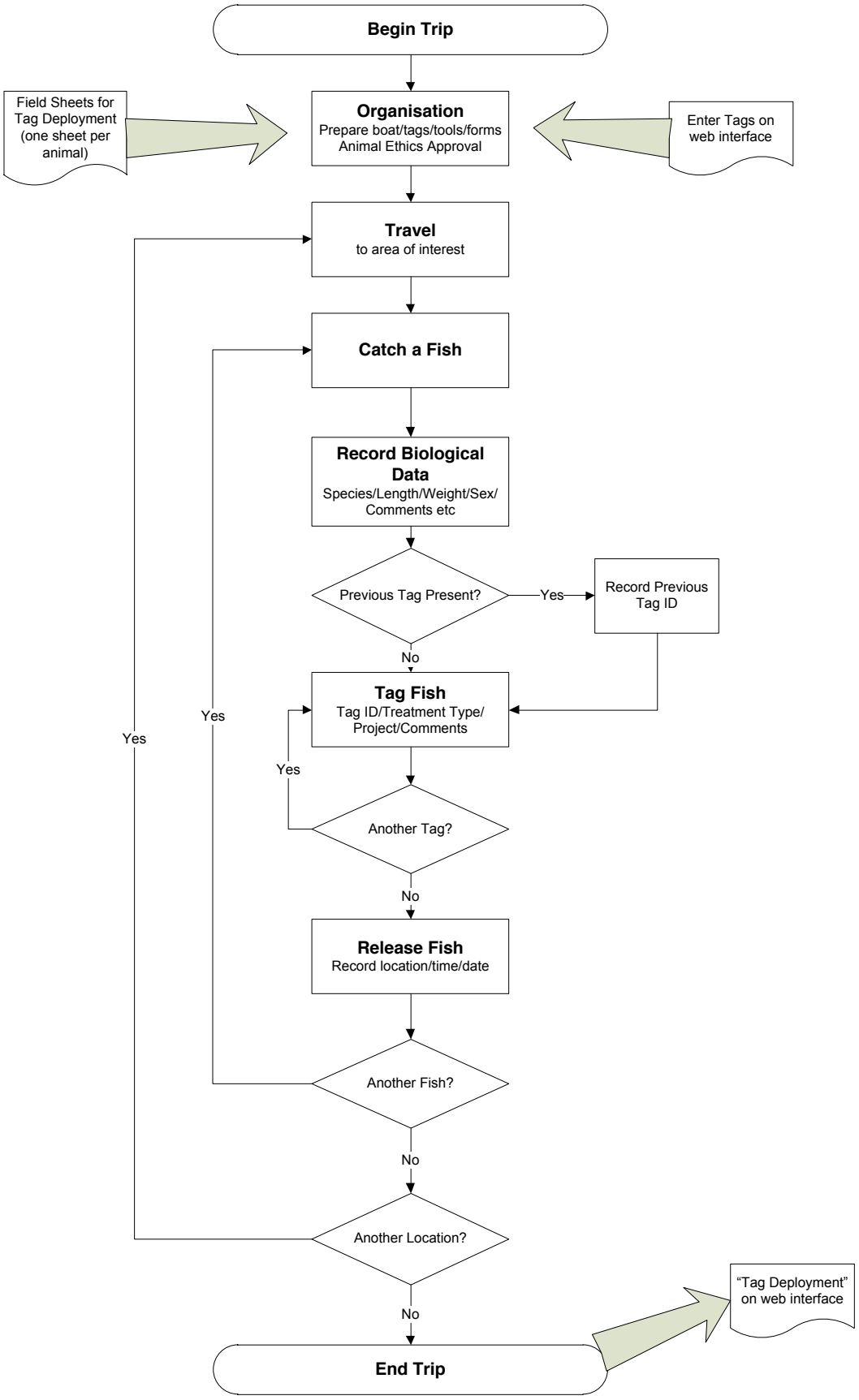
For discussion:

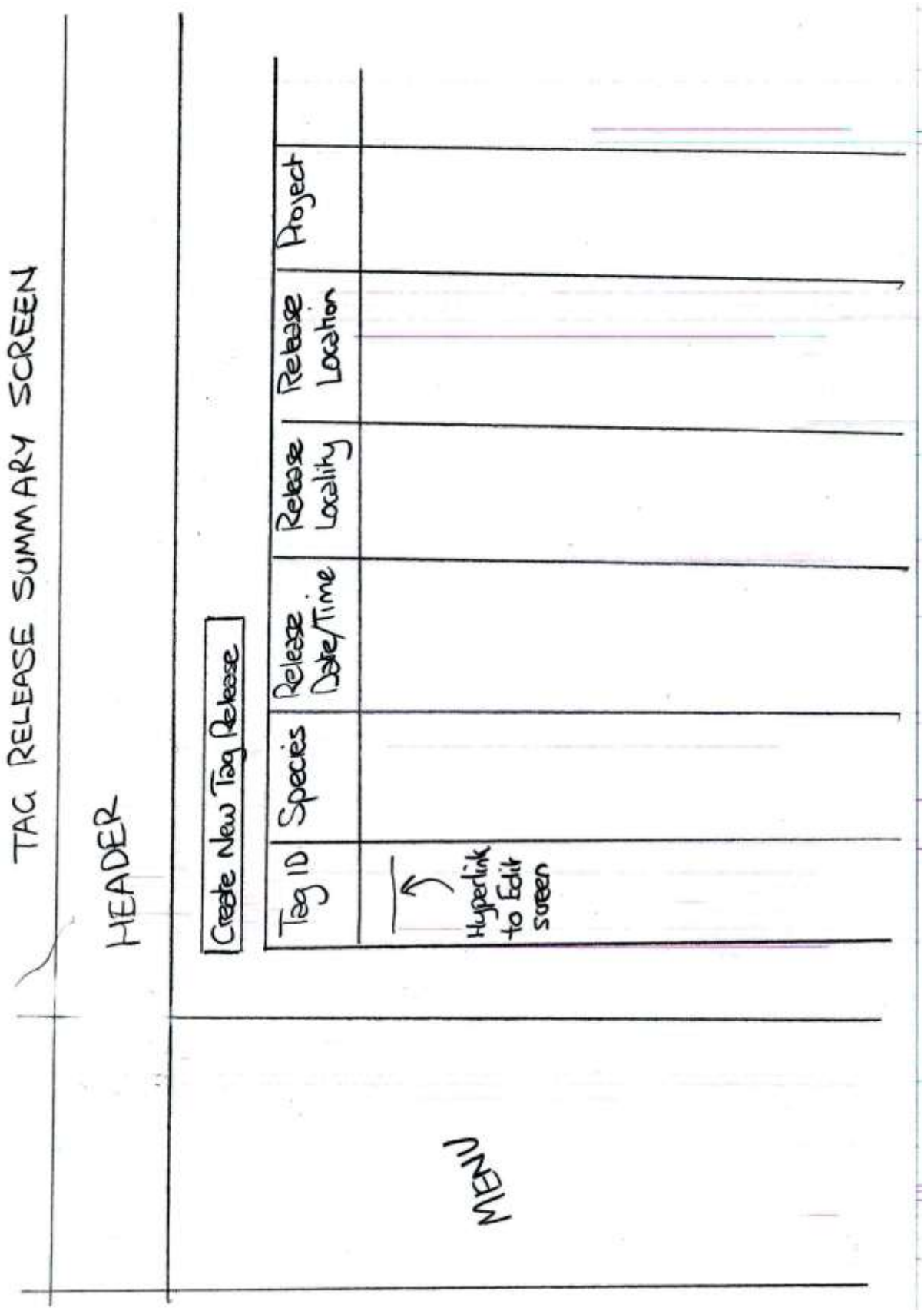
- Need to decide how to populate ANIMAL_ID – this should come from recording previous tag during field trips (might need to alter the screen form layout to include previous tag). Yes, need a form field added to record previous tag ID to search for existing animal ID.
- Given the amount of data on the screen, should the tag release create/edit screen be a wizard? – Yes, change to a wizard.

Access:

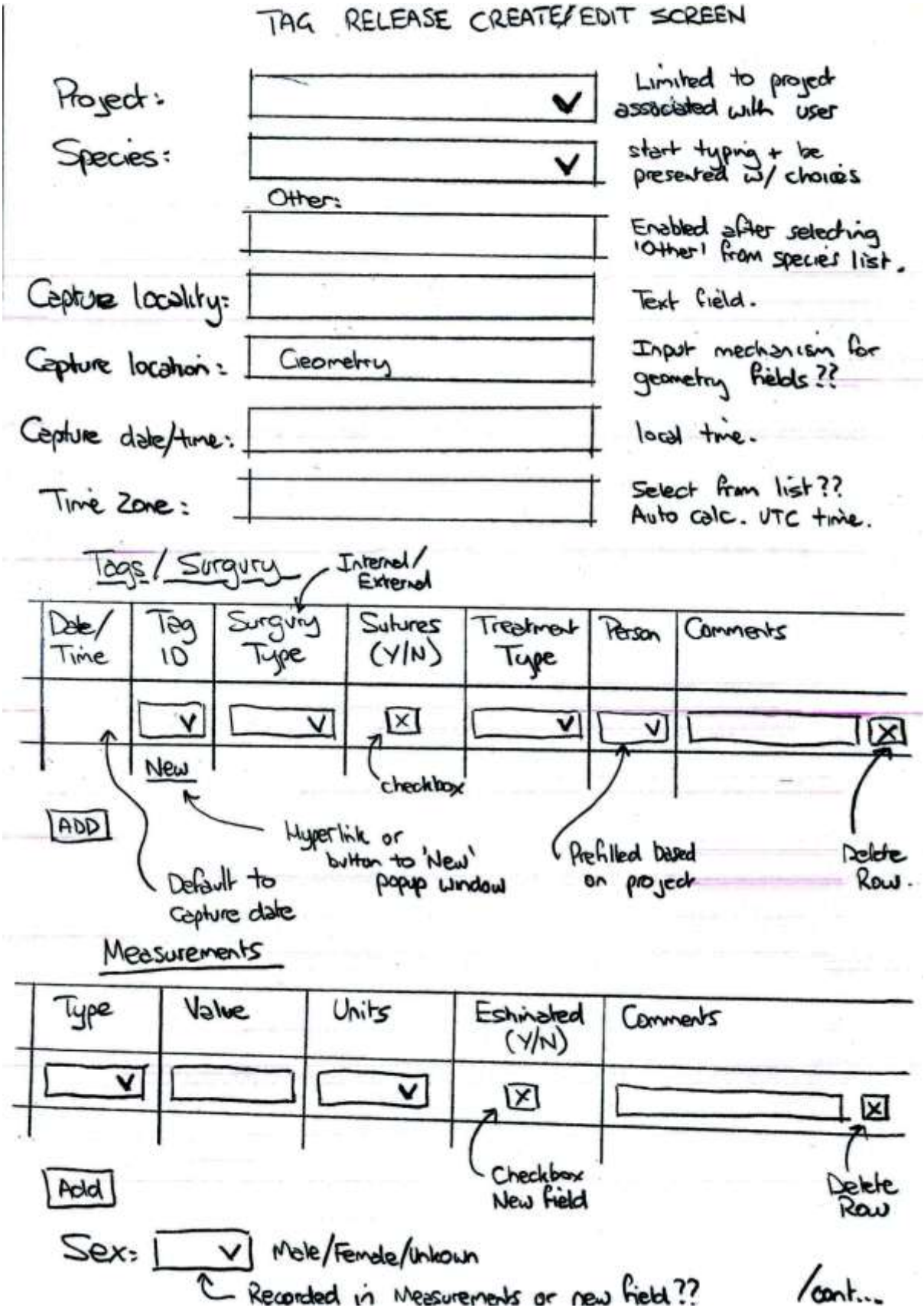
- System Administrator
- Any user with edit rights associated with this project

Workflow

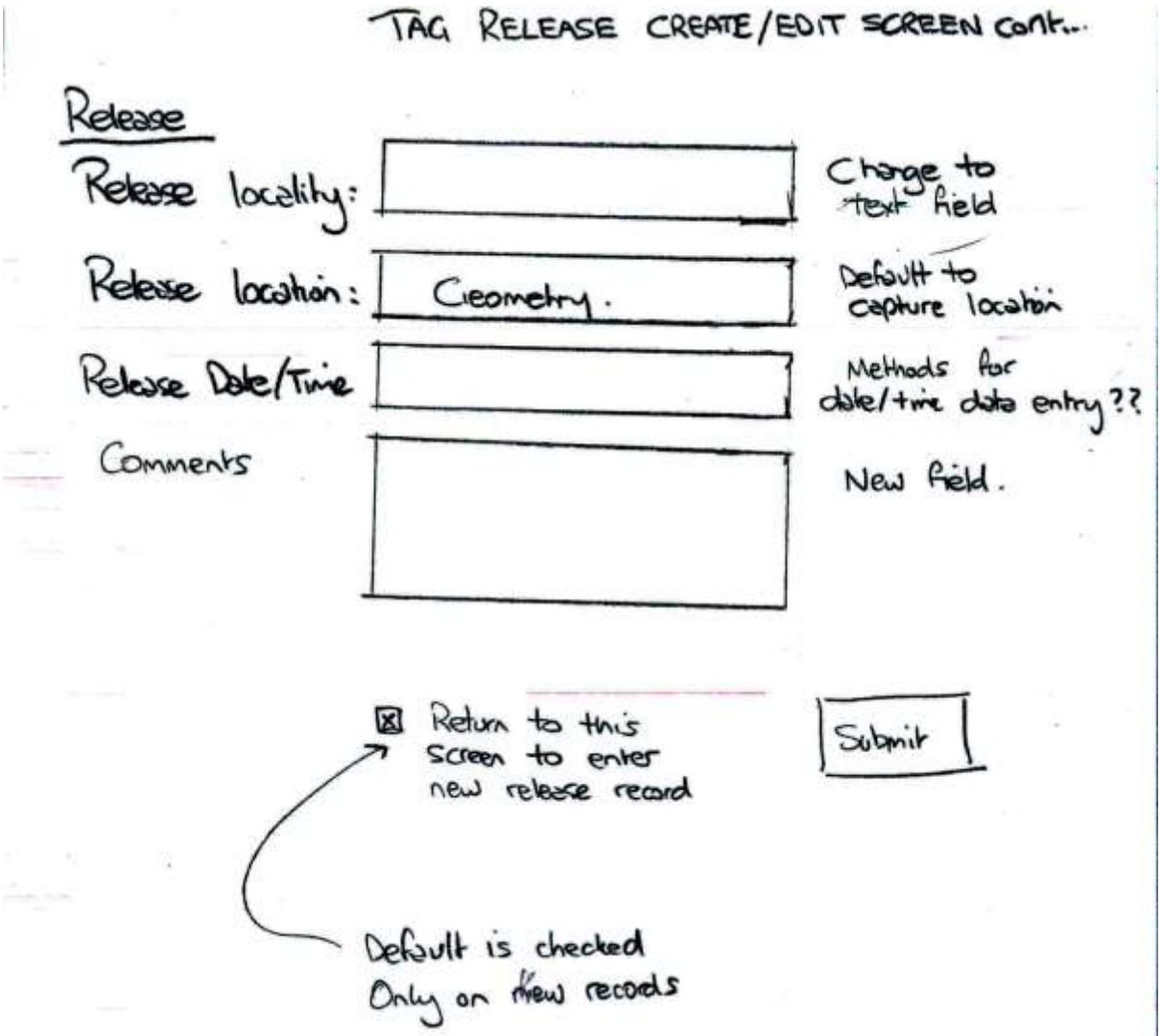

Begin Trip
Field Sheets for Tag Deployment (one sheet per animal)
Organisation
Prepare boat/tags/tools/forms
Animal Ethics Approval
Enter Tags on web interface
Travel
to area of interest
Catch a Fish
Record Biological Data
Species/Length/Weight/Sex/ Comments etc
Previous Tag Present?
Yes
Record Previous Tag ID
No
Tag Fish
Tag ID/Treatment Type/ Project/Comments
Yes
Another Tag?
Yes
No
Release Fish
Record location/time/date
Another Fish?
Yes
No
Another Location?
Yes
No
"Tag Deployment" on web interface
End Trip



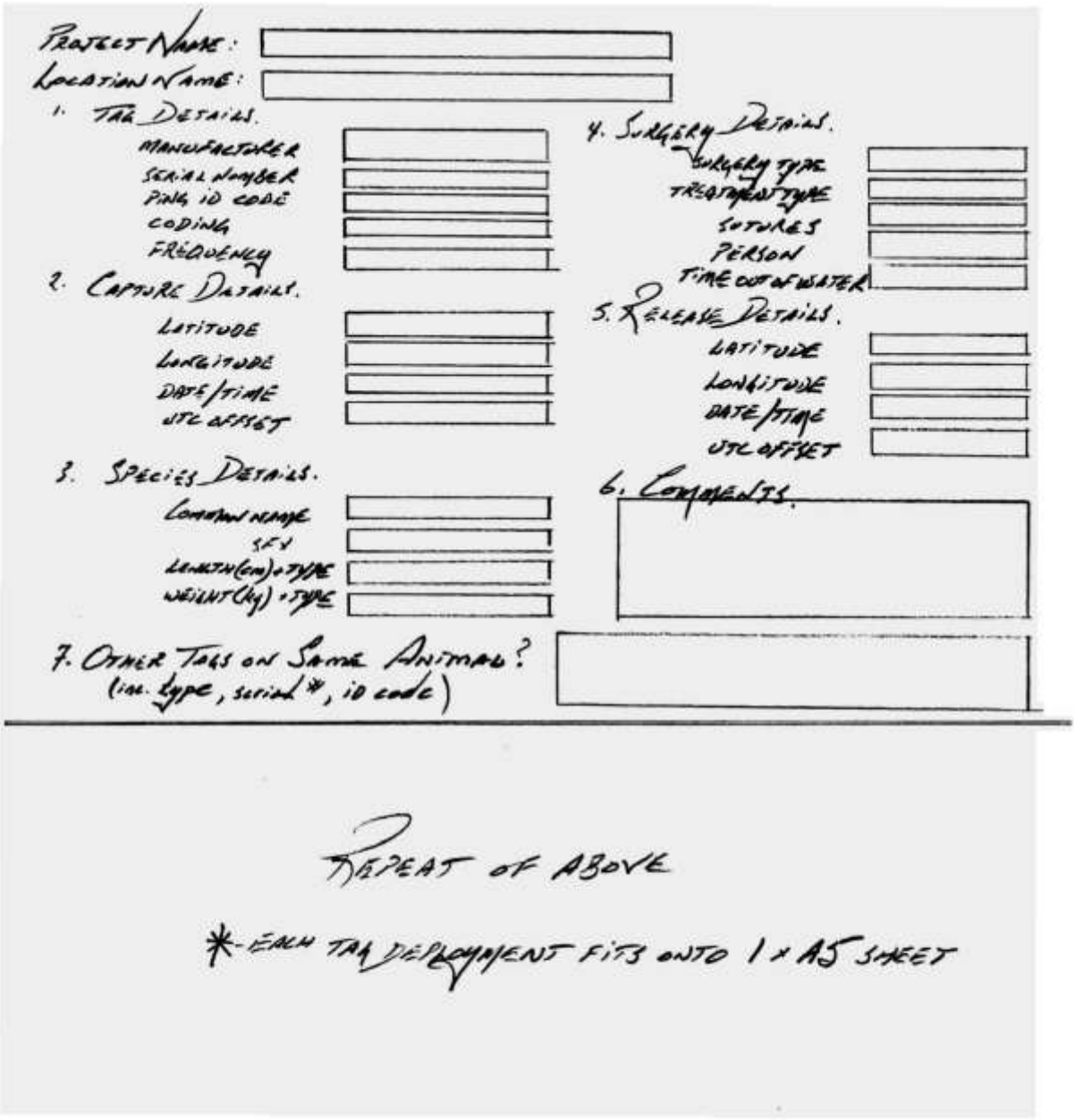
Tag Release/Deployment Summary Screen



Tag Release/Deployment Create/Edit Screen (Part 1, see over for remainder)



Release/Deployment Create/Edit Screen (Part 2)



Tag Release Field Sheet

Receiver Recovery

Receiver Recovery is the process of retrieving a receiver from the field and either (a) downloading data from the receiver and immediately redeploying it or (b) returning the receiver to the office for downloading and storage for future deployment.

In theory, recovery and upload could be separate functions, but this specification requires entering recovery details and uploading data at the same time.

If a receiver recovery is edited (after initial creation) the uploaded files must replace (not append) current data and files.

Recovery Details

Variable	Description	Type	Size	Values
Date/Time	Local date/time	Date/Time		
Time Zone	Textual time zone eg. AEST	Text		
UTC Time	Derived from other fields, not part of input form.	Date/Time		
Location	Latitude/Longitude/Datum	Geometry		
Status	Status of the receiver – this is updated in the device table			OK (Recovered)/ DAMAGED / LOST / STOLEN

Download Details

Variable	Description	Type	Size	Values
Date/Time	Local date/time data was downloaded from the receiver	Date/Time		
Time Zone	Textual time zone eg. AEST	Text		
UTC Time	Derived from other fields, not part of input form.	Date/Time		
Clock Drift	Difference between internal clock and UTC time at download time	Text		Should this be a numeric?
Pings	Total number of pings recorded (this is different to the number of records imported)	Integer		
Detections	Total number of detections recorded (this is different to the number of records imported)	Integer		
Comments		Text		
Filenames	Links to VRL & RLD files uploaded (CSV ia discarded)	Text		This is taken from the import process – not directly entered by the user.

Variable	Description	Type	Size	Values
Downloaded_By	Person who downloaded the data – foreign key to person table			
Battery Voltage		Numeric		
Battery Days		Integer		

Differences from schema:

- Project/Person/Role ID replaced with Person ID.
- Removed Detection Log and Raw Log fields (these recorded the size of log files)
- Removed time correction start and end
- Removed CC Email addresses
- Removed first/last detection timestamps
- Removed filename
- Removed time_correction_type_id

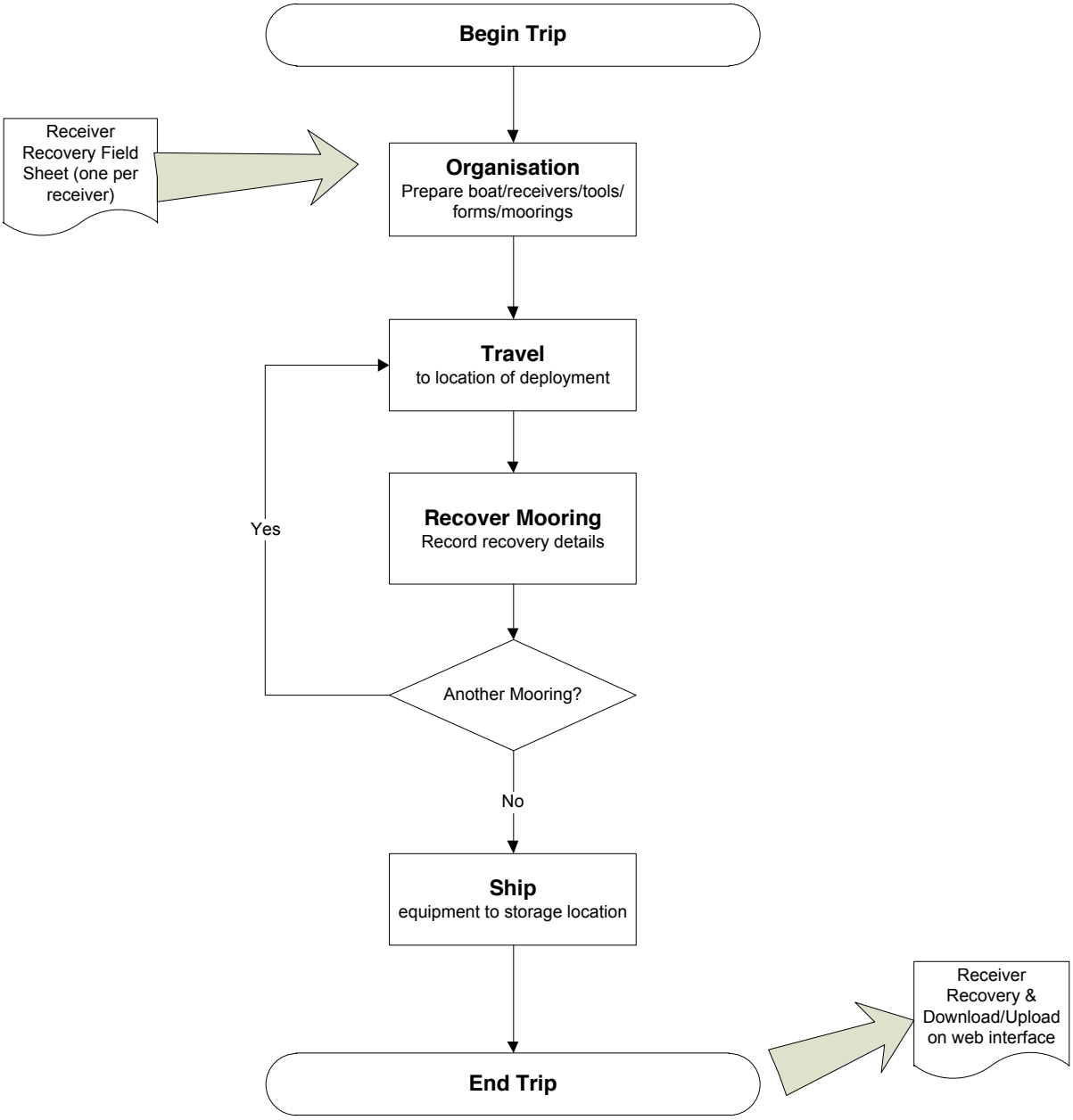
Points for discussion:

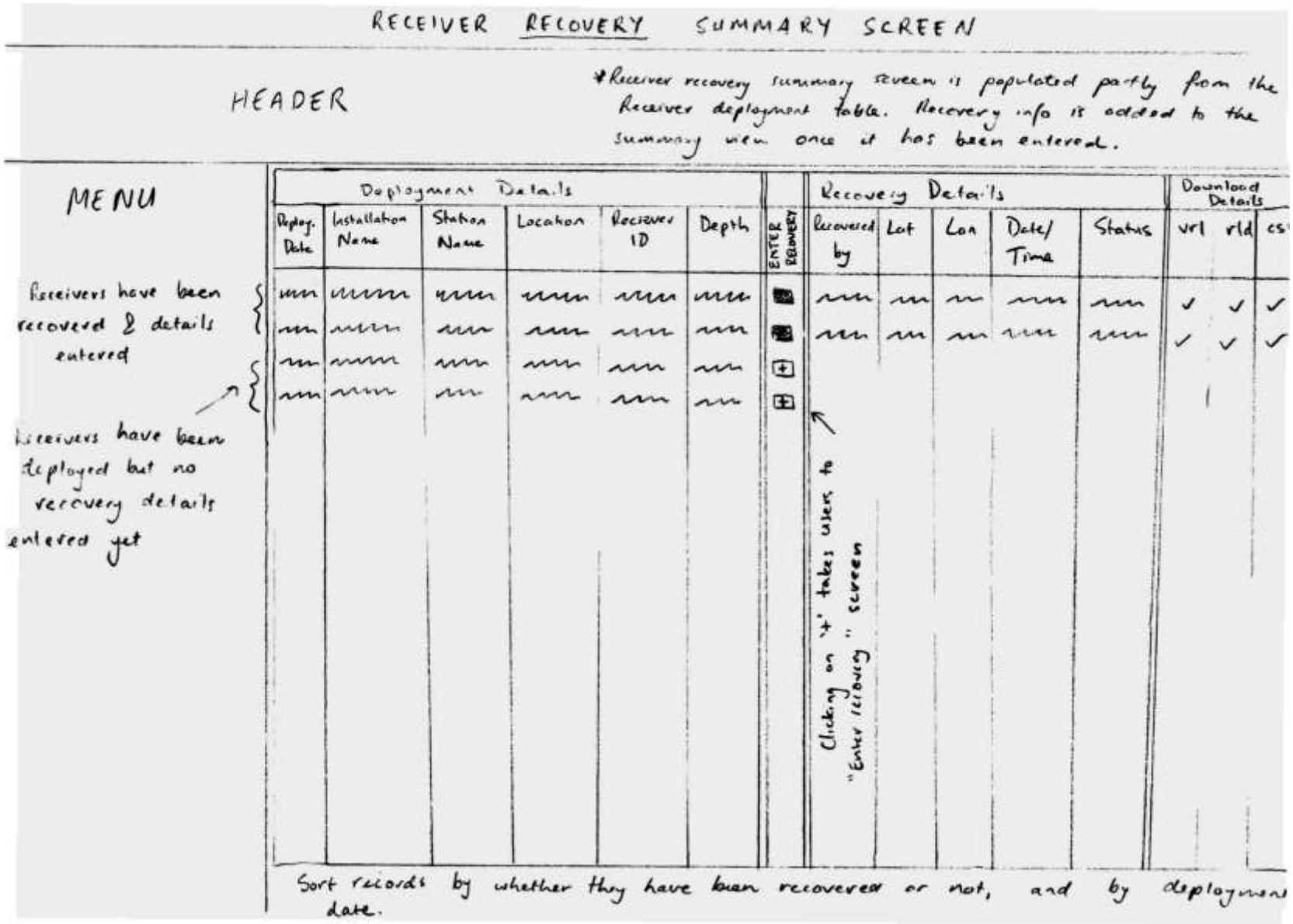
- If receivers are recovered, downloaded and immediately re-deployed, is this a new deployment (recommend yes)? - Yes
- May need to revisit screen form design IF data upload needs to be a function separate from entering receiver recovery details. Yes, needs redesign to allow later upload of data. Could be done from link (per row) on the summary screen (page 50) launching a popup screen to prompt for files.
- Do we support VRL file format for extraction of data into the database? Under discussion
- Do we need to keep CSV files? ~~Do we need a naming convention for csv files stored as part of the upload process? Eg username_receiverserialnum~~. No, all CSV data is stored in the database
- User reaches the summary screen by drilling down from a list of projects they have access to (ie. Summary screen only lists deployments for one project).
- Summary screen should have an option to only list unrecovered deployments.

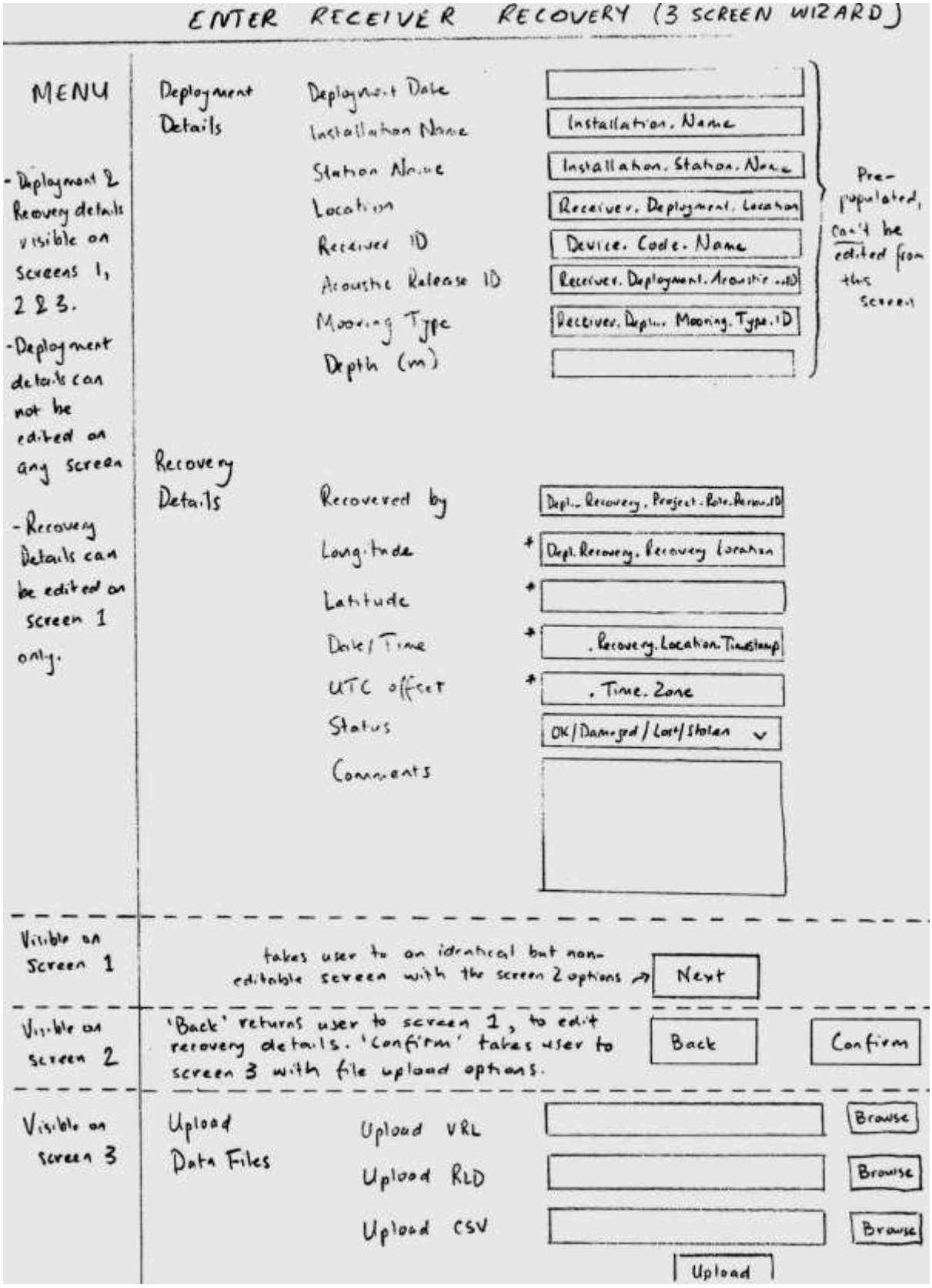
Access:

- System Administrator
- Any user with edit rights associated with this project

Workflow


Begin Trip
Receiver Recovery Field Sheet (one per receiver)
Organisation
Prepare boat/receivers/tools/ forms/moorings
Travel
to location of deployment
Recover Mooring
Record recovery details
Yes
Another Mooring?
No
Ship
equipment to storage location
Receiver Recovery & Download/Upload on web interface
End Trip


RECEIVER RECOVERY SUMMARY SCREEN
HEADER
*Receiver recovery summary screen is populated partly from the Receiver deployment table. Recovery info is added to the summary when once it has been entered.
MENU
Receivers have been recovered & details entered
Receivers have been deployed but no recovery details entered yet
Deployment Details
Recovery Details
Download Details
Depoy. Date
Installation Name
Station Name
Location
Receiver ID
Depth
ENTER RECOVERY
Recovered by
Lat
Lon
Date/ Time
Status
vrl
rld
Clicking on '+' takes user to "Enter recovery" screen
Sort records by whether they have been recovered or not, and by deployment date.



Receiver Recovery Wizard

Receiver Recovery Print Validation Screen

RECEIVER RECOVERY & DATA UPLOAD VALIDATION WORKSHEET (to print)

The following receiver recovery information has been entered to the AATAMS database on <date>:

Dep't Date	Installation Name	Station Name	Location	Receiver ID	Depth	Recovered by	Lat	Lon	Date/ Time	Status	VRL	RLD	ESV

Receiver Recovery Validation Worksheet

User Registration

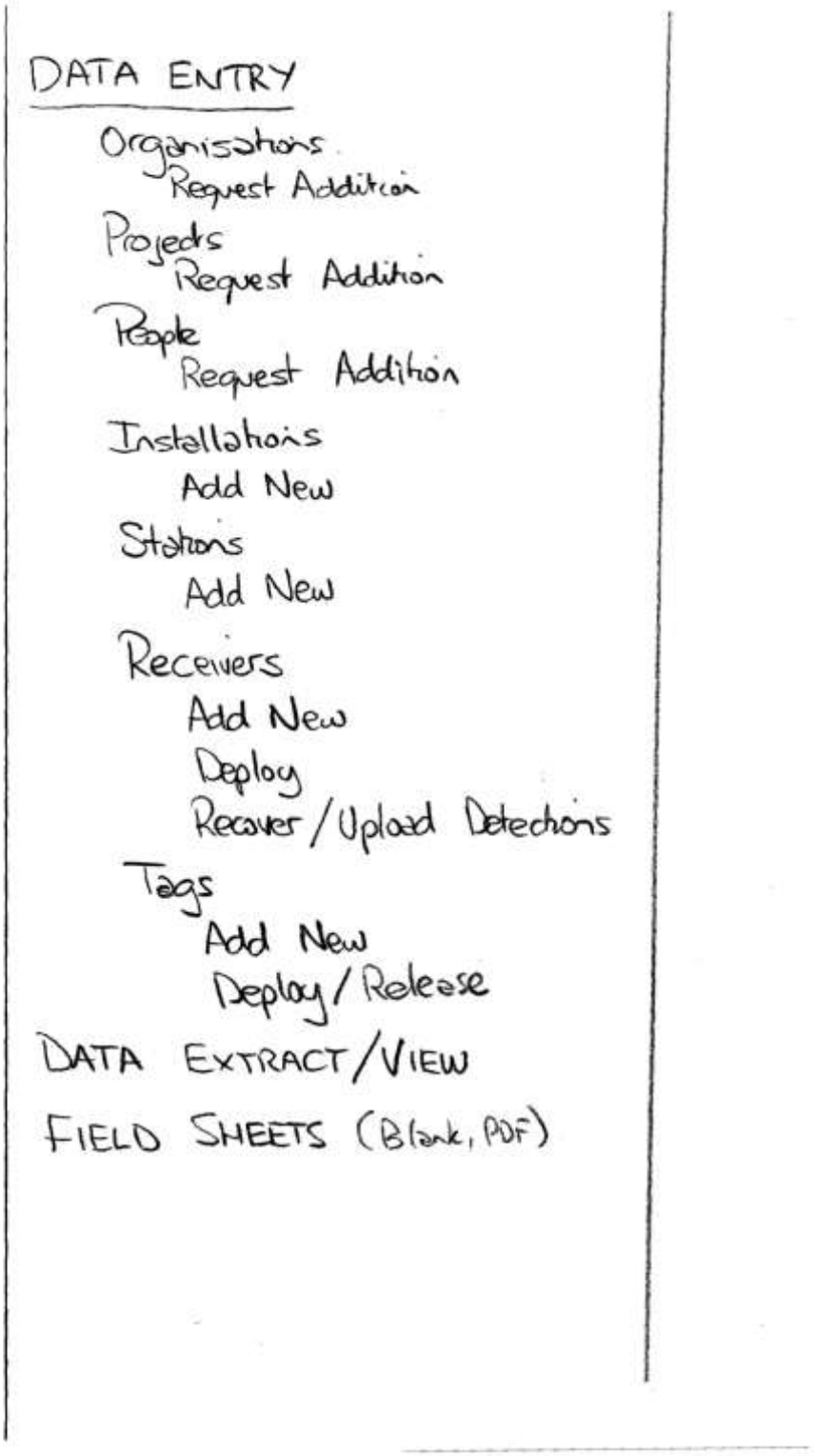
User registration requires a form accessible from the front page (probably a link near the login link) to collect the following information:

- Name
- Organisation
- E-mail
- Phone
- Comment

This should be e-mailed to a generic address (register@??????) which is forwarded to a system administrator.

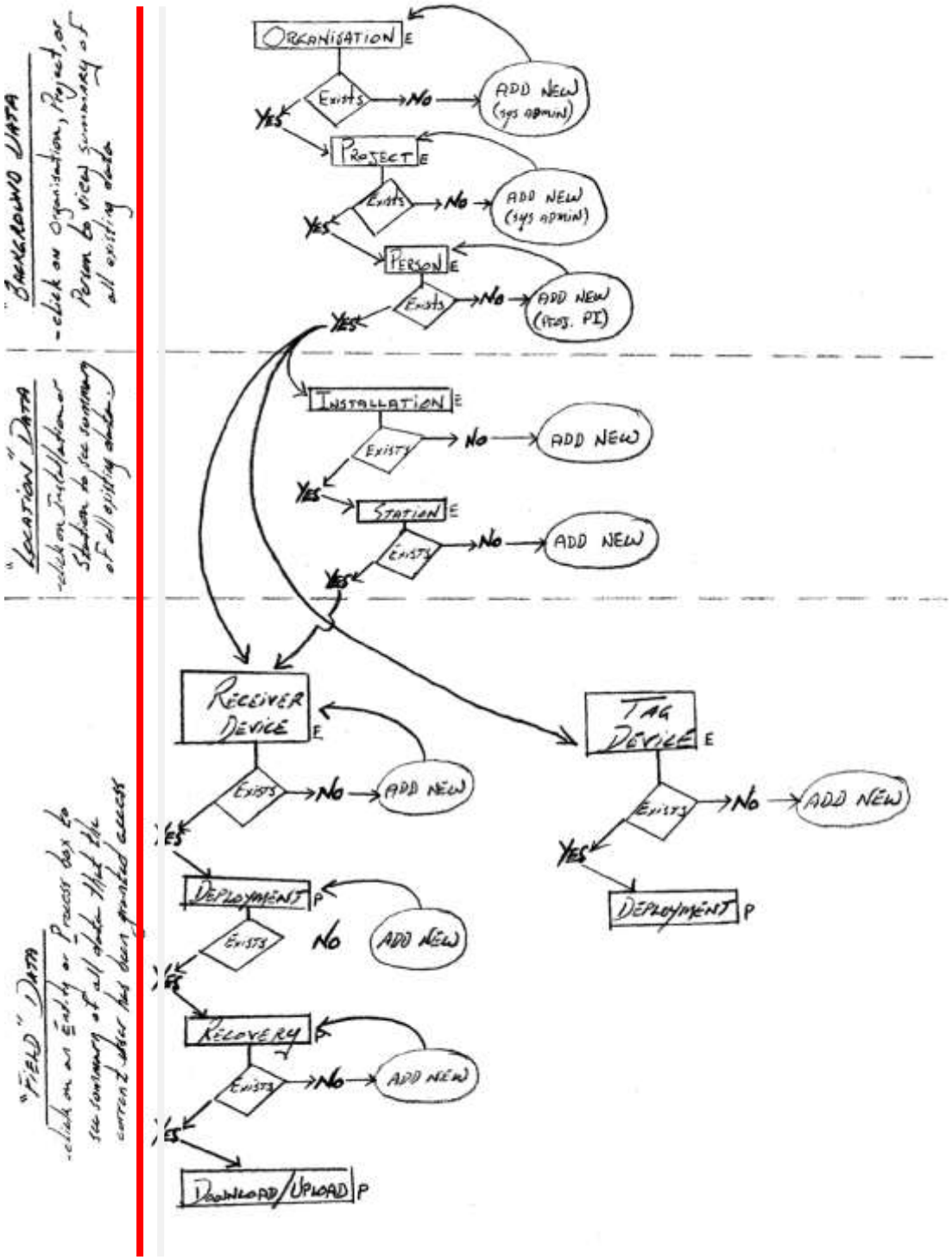
Menu

The menu is displayed on the left hand side of every screen in the interface (placeholder is shown in other wire frames)



Initial Screen

The intial screen attempts to show the normal flow of data in the system to give the user an idea of where they need to go next to achieve their desired outcomes. Three “boxes” left of red line are on first page and drill down to three corresponding diagrams on right of red line.



Reports

User reports and management reports?

Process to request new reports:

1. Suggestions to Andrew who adds to schedule of requests
2. Decision by data management or scientific committee made quarterly
3. Request submitted to eMII

Installation Data

Variables

(Installation->) Name, Configuration Type, Project, (Station ->) Name, Curtain Position, Latitude/Longitude.

Earliest deployment, most recent recovery, Station status (deployed, recovered)

Grouped By

Project. Installation Name.

Filters

Only return installations attached to projects where the user is a member
By project
All installations

Receiver Data

Variables

Project, Code name, Current Status, Manufacturer/Model, Serial Number

Grouped By

Project.

Filters

Only return receivers attached to projects where the user is a member
By project
All receivers

Receiver Deployment Data

Variables

Installation Name, Station Name, Code Name, Latitude/Longitude, Date Deployed, Acoustic Release ID, Mooring type, Depth below surface, Deployment comments.

Grouped By

Project, Installation Name

Filters

All receiver deployments attached to projects where the user is a member
By project
By Installation
All receiver deployments

Tag Summaries

Species summary – Number of tags deployed by species

Percentage of tags embargoed (by species??)

Statistics about tag life/deployment

Tag list (grouped by project)

Additional reports will be discussed before launch.

Extracting Data

What Data do we want to extract?

- Detections and Events (with or without tags)
    - By Location (User selects one or more Installations or Installation Stations ~~or some form of spatial query~~)
    - By Project(s) (User selects one or more)
    - By Tag(s) (User selects one or more)
    - Species (User selects one or more – filtered by species present in tag data)
    - ~~Non-detections on stations in the same installation where a detection exists in the requested data.~~
    - Temporal (start/end date)
- Tags
- Installations/Stations
- Receivers

Variables for the extracted detections: All