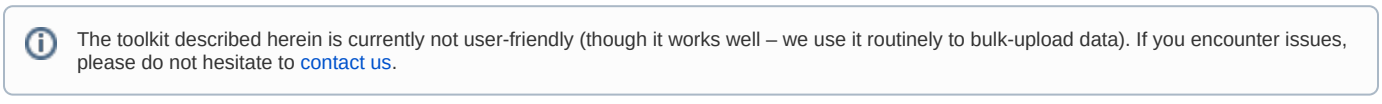
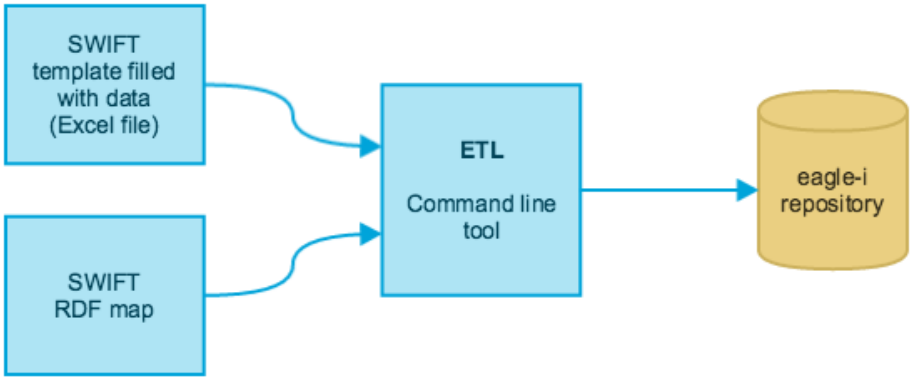
SWIFT Toolkit for Bulk Data Ingest



The toolkit described herein is currently not user-friendly (though it works well – we use it routinely to bulk-upload data). If you encounter issues, please do not hesitate to contact us.

SWIFT (*Semantic Web Ingest from Tables*) is a toolkit that allows experienced users to bulk-upload data into an eagle-i repository, via ETL (Extract, Transform and Load). The figure below is a high level depiction of the ETL process. The toolkit supports Excel spreadsheets and csv files as input (though both need to conform to a SWIFT template, see below).



This guide provides an overview of tasks pertaining to ETL and the usage of the SWIFT toolkit. The ETL workflow requires a person with domain knowledge and understanding of the eagle-i resource ontology to prepare the input files for optimal upload, and a person with basic knowledge of Unix to run the commands and troubleshoot potential errors. A detailed description is provided in the page Preparing Input Data and Running an ETL Process

The SWIFT toolkit is comprised of:

- an **ETL Input Generator** - command line program that generates Excel spreadsheet templates and mapping files for the various resource types of the eagle-i resource ontology (e.g. a template/map for antibodies, for instruments, etc.)
- an **ETLer** - command line program that executes a bulk upload
- a **deETLer** - command line program that deletes a previous ETL upload
- **Bulk workflow** - command line program that executes workflow transitions on groups of resources, e.g. Publish, Return to curation, Withdraw

Prerequistes

Running SWIFT Toolkit commands requires:

- A Unix-like environment including a terminal for executing commands
  - MacOS and Linux users don't need to install anything extra. For MacOS, use the Terminal app under Applications/Utilities
  - cygwin is recommended for Windows users
- A **Java 1.7** runtime environment
  - execute the command {{ java -- version}} to find out what version you have.
  - If necessary, you may download the JRE directly from Oracle and follow the installation instructions.

Download

The SWIFT toolkit is packaged as a zip file, and can be downloaded from our software repository.

Download the SWIFT toolkit distribution that **matches the version of your eagle-i repository**, named `eagle-i-datatools-swift-[version]-dist.zip`, Unzip it into a dedicated directory, and navigate to it. For example:

```
mkdir ~/eagle-i
unzip -d ~/eagle-i eagle-i-datatools-swift-2.0MS3.01-dist.zip
cd ~/eagle-i/swift-2.0MS3.01
```

Available commands

Input generation

To generate etl templates and maps, navigate to the dedicated directory (above) and run the script:

```
./generate-inputs.sh -t typeURI
```

- You may obtain the type URI from the eagle-i ontology browser . Use the left bar to find the most specific type you need, select it and grab its URI, e.g. `http://purl.obolibrary.org/obo/ERO_0000229` for Monoclonal Antibodies.

Innocuous warnings are produced when generating the templates; these may safely be ignored. If you encounter errors or issues, please do not hesitate to contact us.

This script will create/use two directories with obvious meanings: `./maps` and `./templates`. Do not modify them.

ETL

The ETLer expects data to be entered into one of the generated templates, and a few conventions to be respected (see Preparing Input Data and Running an ETL Process) . A data curator usually makes sure that the template is correctly filled. In particular, the location of the resources to be ETLd (e.g. Lab or Core facility name) must be provided in every row of data.

- A detailed report of the ETL results is generated in the `~/eagle-i/swift-2.0MS3.01/logs` directory; please inspect it to verify that all rows were correctly uploaded. The RDF version of generated resources is also logged in this directory.
- To further verify the data upload, log on to the SWEET application and select the lab to which the ETLd resources belong.

Assumptions

- Templates that were generated by `generate-inputs.sh` are completed and in a directory, e.g. `dataDirectory`.

  All files in the dataDirectory will be processed by the ETLer. Please be sure all secondary resource templates are in their own directories.

- Maps (`*.rdf`) that were generated by `generate-inputs.sh` have been copied to the SWIFT executable directory's maps folder, e.g. `~/eagle-i/swift-2.0MS3.01/maps`.

ETL to create new resources

ETL new resources

```
./ETLer.sh -d dataDirectory [-p DRAFT|CURATION|PUBLISH] -c username:password -r repositoryURL
```

- This command will not attempt to determine if matching resources exist already in the eagle-i repository; it is therefore not *idempotent* - if it is run two times with the same data file, duplicate resources will be created.
- The value of the `-p` (promote) parameter indicates the desired workflow state for **all** resources - we recommend to choose CURATION, verify the resources were ETLd correctly, and then publish using the bulk workflow command (see below). If you've already ran a test ETL in a staging environment, choose PUBLISH directly.
- To avoid classpath confusion, please use the fully qualified path for the `dataDirectory`.
- Make sure to use the full path of your directory,, eg /Users/juliane/swift-4.3.0/mcow_ipsc/test
- Make sure you are in your swift directory in your terminal when you execute the command.

ETL to replace existing or create new resources.

ETL command for replacing existing resources or creating new resources

```
./ETLer.sh -d dataDirectory [-p DRAFT|CURATION|PUBLISH] -c username:password -r repositoryURL -eid property-uri
```

- Use this command if the input file represents resources that have been previously uploaded or created in eagle-i
- The value of the `-eid` parameter (external identifier) is the URI of a property that uniquely identifies the resource outside eagle-i. This property will be used to match the input to a resource in the eagle-i repository. Grab the property URI from the eagle-i ontology browser (expand the property name to see all information about a property). Example properties are:

    - Catalog number, `-eid http://purl.obolibrary.org/obo/ERO_0001528`
    - Inventory number, `-eid http://purl.obolibrary.org/obo/ERO_0000044`
    - RDFS label, use the shorthand syntax `-eid label`
- If the ETL process finds a matching resource, it will **replace** all its properties with the values from the input file; the URI of the matched resource will be preserved.
- If the ETL process does not find a matching resource, a new resource will be created.
- The value of the `-p` (promote) parameter indicates the desired workflow state for newly created resources. Existing resources will retain their workflow state.
- To avoid classpath confusion, please use the fully qualified path for the `dataDirectory`.

Practicing ETL

If you are practicing the ETL process, you may wish to upload your data to the common eagle-i training node. For example, if your directory is named dataDirectory and you wish to practice creating new resources, the script would be executed as follows (default workflow state is DRAFT):

```
./ETLer.sh -d dataDirectory -c L4:Level4 -r https://training.eagle-i.net
```

Note that the data that is uploaded to the training node CAN be viewed and modified by others even in a draft state (even if you subsequently lock the records). Note also that the information in the training node is not persistent as the node is refreshed periodically.

De-ETL

Resources that are uploaded to an eagle-i repository via ETL are tagged with the name of the file from which they were extracted. It is therefore relatively simple to de-ETL an entire file. To do so, execute the following command:

```
./deETLer.sh -f filename -c username:password -r repositoryURL
```

Bulk Workflow

Execute the following command to perform workflow actions (e.g. send to curation, publish, unpublish) on **all** resources ETLd from a particular file (i.e. resources that are tagged with that filename in the eagle-i repository):

```
./bulk-workflow -f filename -p DRAFT|CURATION|PUBLISH -c username:password -r repositoryURL
```

Note the following limitations of bulk workflow:

- All the resources tagged with the filename must be in the same state
- You must choose a final state that is reachable from the resources' current state
    - if the resources are in draft, choose CURATION
    - if the resources are in curation, choose PUBLISH or DRAFT
    - if the resources are published, choose CURATION
    - if you want to publish resources that are currently in draft, you'll need to run the bulk workflow command twice