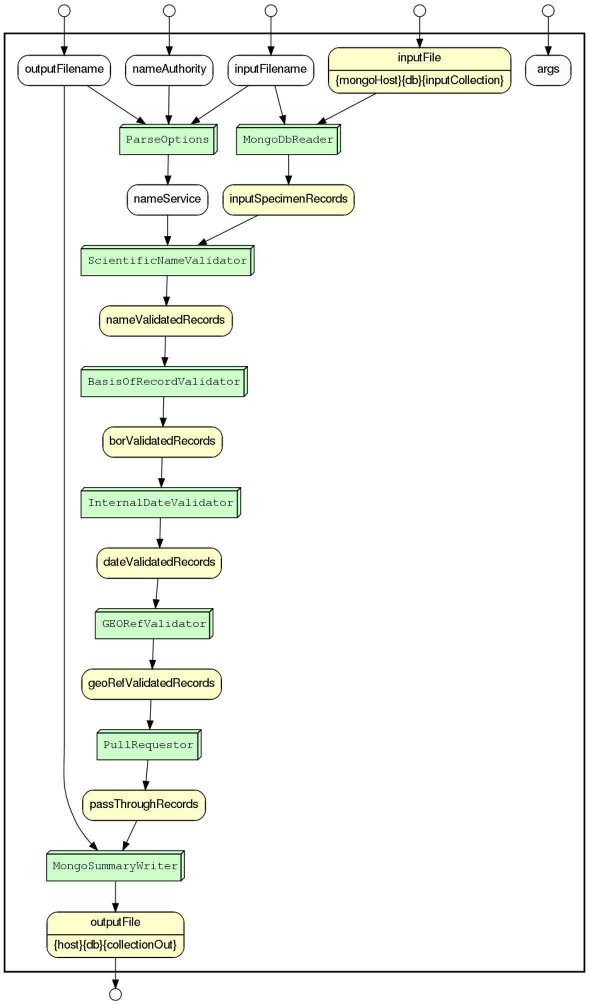
Class Dependencies

This page outlines the structure and behavior of the FP-Akka quality control workflow as of 19Feb15. Links are provided (in **blue**) to the source code for each key class comprising the workflow. Indentation is used to indicated class dependencies (*has-a* and *uses* relationships). For example, **akka.fp.Loader** is dependent on **akka.fp.MongoDBReader**. Maven modules packaging each class are given in grey.

This description is incomplete and includes deep dependencies only for the **akka.fp.NewScientificNameValidator** actor.

As of 2015 Jun 11 some substantive changes have occurred, including reorganization of the package heirarchy, and the production of a DwCaWorkflow that works with input and output files instead of a MongoDB datastore.

The diagram to the right was produced from YesWorkflow markup of the org.filteredpush.akka.workflows.MongoWorkflow class in FP-Akka 1.4.3.



akka.fp.Loader [FP-Akka module]

- Instantiates a FP-Akka QC Workflow comprising five Akka actors: **akka.fp.MongoDBReader**, **akka.fp.NewScientificNameValidator**, **akka.fp.InternalDateValidator**, **akka.fp.GEORefValidator**, and **akka.fp.MongoSummaryWriter**. (See below for descriptions of each).
- Configures **akka.fp.MongoDBReader** and **akka.fp.MongoSummaryWriter** actors using parsed command-line options.
- Injects **fp.services.COLService** into the *scientificNameService* field of the **akka.fp.NewScientificName** actor.
- Injects **fp.services.InternalDateValidationService** into the *singleDateValidationService* field of the **akka.fp.InternalDateValidator** actor.
- Injects **fp.services.GeoLocate3** into the *geoRefValidationService* field of the **akka.fp.GEORefValidator** actor.
- Executes the workflow.

akka.fp.MongoDBReader [FP-Akka module]

- First actor in the FP-Akka QC workflow.

akka.fp.NewScientificNameValidator [FP-Akka module]

- Second actor in the FP-Akka QC workflow.
- Akka actor for validating scientific name and authorship fields.
- Uses the class injected into the *scientificNameService* field (**fp.services.COLService** and its parent **fp.services.SciNameServiceParent)** to carry out validation tasks.
- Receives individual SpecimenRecord instances from upstream MongoDBReader.
- For each specimen record:
    - Disassembles the specimen record into fields.
    - Calls the *validateScientificName*() method on the *scientificNameService* (implemented by **fp.services.SciNameServiceParent**) passing the individual field values extracted from the record.
    - Calls getters *getCurationStatus(), getCorrectedScientificName(), getCorrectedAuthor(), getLSID(), getComment(), getServiceName()* on the *scientificNameService* to extract validation results.
    - If the result returned by *getCurationStatus()* is **CURATED** or **Filled_In**, **replaces** the *scientificName* and *scientificNameAuthorship* fields in the input specimen record with the results from *getCorrectedScientificName()* and *getCorrectedAuthor()* respectively.
    - **Adds** to the input specimen record three fields with labels *scinComment*, *scinStatus*, and *scinSource* using the results from *getCurationStatus(), getComment(), and getServiceName()* on the *scientificNameService.*
    - Forwards the updated specimen record to downstream actors in workflow.
    - **Comment by T.M.** *The NewScientificNameValidator actor overwrites the original* scientificName *and* scientificNameAuthorship *fields in each record that it updates. Downstream actors in the workflow, including MongoDBWriter which saves the workflow results, do not have programmatic access to the original values in these fields.*

fp.services.COLService [FP-KurationServices module]

- Injected by **akka.FP.Loader** into the *scientificNameService* field of the **akka.fp.NewScientificNameValidator** actor.
- Derived from **fp.services.SciNameServiceParent** (to which it defers most method calls from the actor).
- Overrides *nameSearchAgainstServices()* to look up scientific name and author in the Catalog of Life using the web service at http://www.catalogueoflife.org/col/webservice.
- By the FP-Akka 1.4.0, release this is one of several different Service classes that can be injected.

fp.services.SciNameServiceParent [FP-KurationServices module]

- Parent class of **fp.Services.COLService**. Implements most of the methods called by **akka.fp.NewScientificNameValidator** actor on the *scientificNameService.*
- Most of name validation logic is defined in *validateScientificName()* method which calls methods on other objects and services.
- Begins by checking internal consistency of scientific name fields *scientificName*, *genus*, *subgenus*, *specificEpithet*, *verbatimTaxonRank*, *taxonRank*, *infraspecificEpithet* using the static *checkConsistencyToAtomicField()* method defined in **fp.util.SciNameServiceUtil.**
- Under some conditions calls **GNISupportingService.resolveDataSourcesNameInLexicalGroupFromGNI()**, **SciNameServiceUtil.checklistBankNameSearch()**, and **nameSearchAgainstServices()**.
- ***Comment by T.M.*** *The internal logic of fp.services.SciNameServiceParent is unclear to me.*
- ***Comment by T.M.*** *A comment on line 150 states that the call to nameSearchAgainstServices() uses the GNI search. The* comment *value returned to* akka.FP.NewScientificNameValidator *via* getComment() *appears to state the same (see line 161). However, as implemented in fp.Services.COLService, it is the* Catalog of Life *web service that is used.*

fp.services.GNISupportingService [FP-KurationServices module]

- Implements *resolveDataSourcesNameInLexicalGroupFromGNI()* called by *validateScientificNameAgainstServices()* method in **fp.services.ScinameServiceParent**.

fp.util.SciNameServiceUtil [FP-KurationServices module]

- Implements the *checkConsistencyToAtomicField()* method invoked by **fp.Services.SciNameServiceParent**.
  - **Comment by T.M.** *checkConsistencyToAtomicField()* appears only to construct a scientific name from atomic fields for comparison with provided scientificName only if there is content in the *genus*, *specificEpithet*, and *infraspecificEpithet* fields. Otherwise it it reports UNABLE_DETERMINE_VALIDITY, "can't construct sciName from atomic fields." Is this the correct behavior?
- Implements the *checkMisspelling()* method invoked by **fp.Services.SciNameServiceParent**.
- Implements the *checklistBankNameSearch()* method invoked by **fp.Services.SciNameServiceParent**.

edu.harvard.mcz.nametools.NameUsage [FP-KurationServices module]

- Used by **fp.util.SciNameServiceUtil** during calls to *checklistBankNameSearch()*.fp.services.InternalDateValidationService

org.gbif.nameparser.NameParser

- Used by **fp.util.SciNameServiceUtil** during calls to *checkConsistencyToAtomicField().*

org.gbif.api.model.checklistbank.ParsedName

- Used by **fp.util.SciNameServiceUtil** during calls to *checkConsistencyToAtomicField().*

akka.fp.InternalDateValidator [FP-Akka module]

- Third actor in the FP-Akka QC workflow.
- Akka actor for validating the specimen collector an collection date fields.
- Uses the class injected into the *singleDateValidationService* field (**fp.services.InternalDateValidationService)** to carry out validation tasks.
- Receives individual SpecimenRecord instances from upstream MongoDBReader.
- For each specimen record:
  - Disassembles the specimen record into fields.
  - Calls the *validateDate()* method on the *singleDateValidationService* (implemented by **fp.services.InternalDateValidationService**) passing the individual field values extracted from the record.
  - Calls getters *getCurationStatus(), getCorrectedDate(), getComment(), getServiceName()* on the *singleDateValidationService* to extract validation results.

- If the result returned by *getCurationStatus()* is **CURATED** or **Filled_In**, **replaces** the *eventDate* field in the input specimen record with the results from *getCorrectedDate()*.
- **Adds** to the input specimen record three fields with labels *dateComment*, *dateStatus*, and *dateSource* using the results from *getCurationStatus(), getComment(), and getServiceName()* on the *singleDateValidationService.*
- Forwards the updated specimen record to downstream actors in workflow.

fp.services.InternalDateValidationService [FP-KurationServices module]

- Implements date validation methods called by **akka.fp.InternalDateValidator**.
- Most of name validation logic is defined in *validateDate()* method which calls methods on other objects and services.
- validateDate() calls the private parseDate() method to check internal consistency of fields.
- Then uses the *checkWithAuthorSolr()* method to to validate the collector and and collection date with the Filteredpush entomologists list (in a Solr server) and sets curationStatus to UNABLED_CURATED if collection date is not within the life span of the collector.
- ~~Although there there is a *checkWithAuthorHarvard()* method that validates collector and collection date against the Harvard List of Botanists, the code is hardwired only to use the *checkWithAuthorSolr()*.~~ As of FP-Akka 1.4.0 this has been fixed, with both the SCAN entomologists list and the HUH botanists list being used as sources.
- The validation of collector with respect to collection date is meaningfully performed only for ~~entomologists, not for botanists~~ entomologists and botanists, not for other collectors.

akka.fp.GEORefValidator [FP-Akka module]

- Fourth actor in the FP-Akka QC workflow.
- Akka actor for validating georeference fields.

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fp.services.Geolocate3 [FP-KurationServices module]

- GeoLocate3 checks decimalLatitude and decimalLongitude for sanity, compares them with the value of country using a shapefile of country boundaries, and checks them against the georeferences returned for the country /state/county/locality by the Tulane GeoLocate service (confusingly using the geolocate2 service call). A check is also made if the locality is on land, all marine localities will fail georeference validation.

akka.fp.MongoSummaryWriter [FP-Akka module]

- Fifth and final actor in the FP-Akka QC workflow.
- Writes out JSON containing the modified record, summary provenance, and a block of provenance provided by each actor.