6. Process View

The activities a user can perform within FSDAS are centred on 4 major contexts. Each of these include a number of use cases restricted to the first iteration design, as they are described in D7.1.1:

6.1 Account context

This is closely related with all the use cases involving operations to manage user accounts entering, exiting and using the application:

- Login
- Logout
- Register
- Modify profile
- Modify user account

6.2 Search context

This is closely related with all the use cases involving search operations without regard to resource type (ontological or data source):

- Search ontological resource in ontology
- Search for related ontological resources
- Query for data related to individual

6.3 Display context

This is closely related with all the use cases involving GUI capabilities of the application needed to give an interaction end point to the user and a way to visualize retrieved resources:

- Browse taxonomy
- Change language of the interface
- Change language of the ontological resource
- Visualize data source related to individual
- View ontological resource annotation
- View data source annotation
- Compare data by reporter

6.4 Interaction context

This is closely related with all the use cases involving operations the user performs as complementary activity to the main purpose of the FSDAS application:

- Email results
- Add to favourites
- Save session
- Annotate retrieved document with comments
- Annotate retrieved document with comments on quality
- Index enrichment against ontology(ies) domain model

Because each use case is associated with a process flow that involves many components of the design, it is useful to have a picture of how the collaboration among multiple objects finalizes in a use case process.

In the following pages there are pictures of collaboration diagrams reflecting the contexts mentioned above.

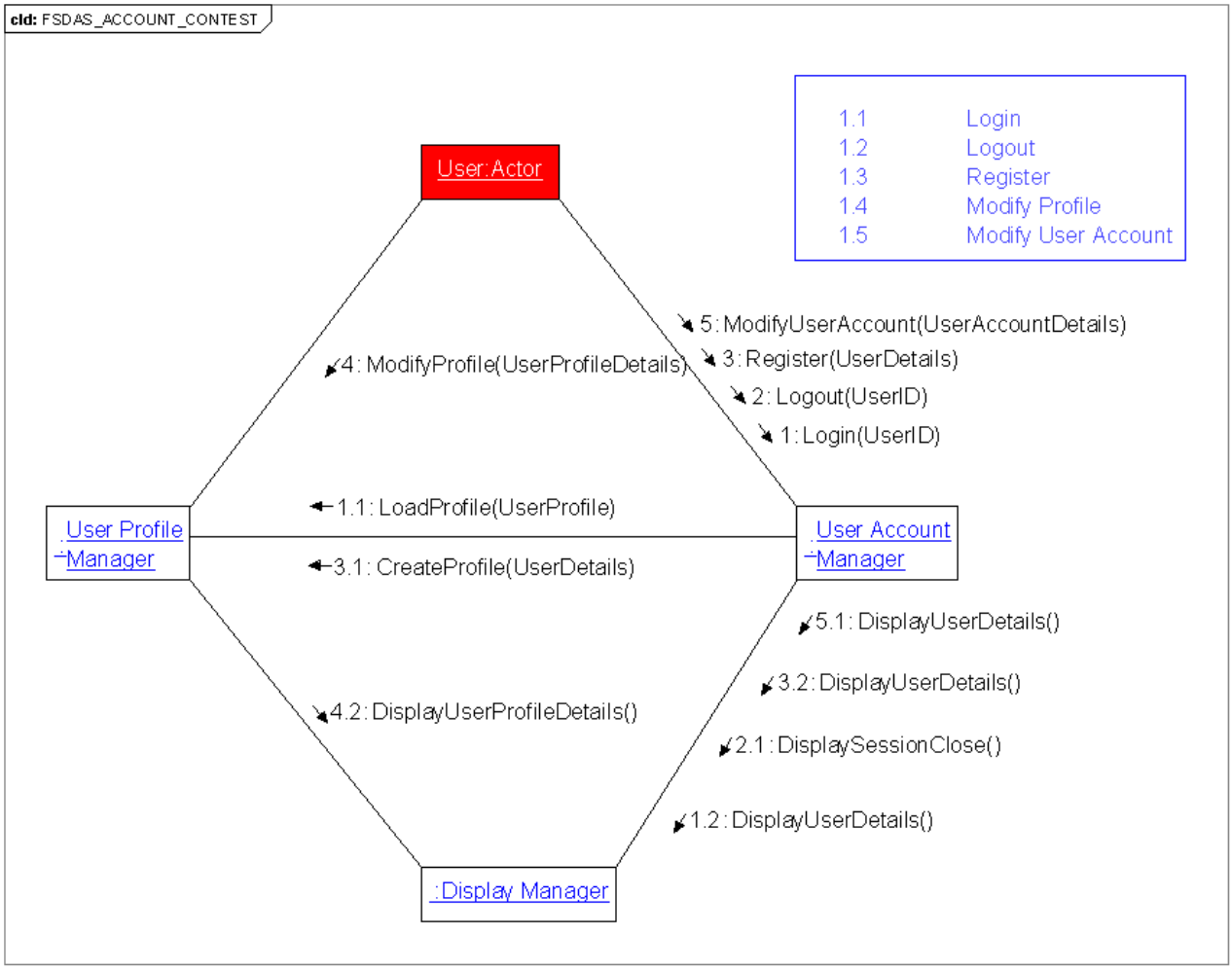

Figure 17 - Collaboration diagram of account context components

Only first iteration use cases are considered

The above diagram shows how the user can manage his account and what processes this involves.

When Login or Registration processes are triggered, User Account Manager internally asks for the user profile or creates one if it doesn't exist. Granting access, loading or creating the profile creates a user account object within the session that is finally displayed through the Display Manager.

When Logout or Modify User Account processes are triggered, they involve the User Account Manager straight away which performs logout action or update action and finally shows a confirmation message through the Display Manager.

When Modify User Profile process is triggered, User Profile performs the update.

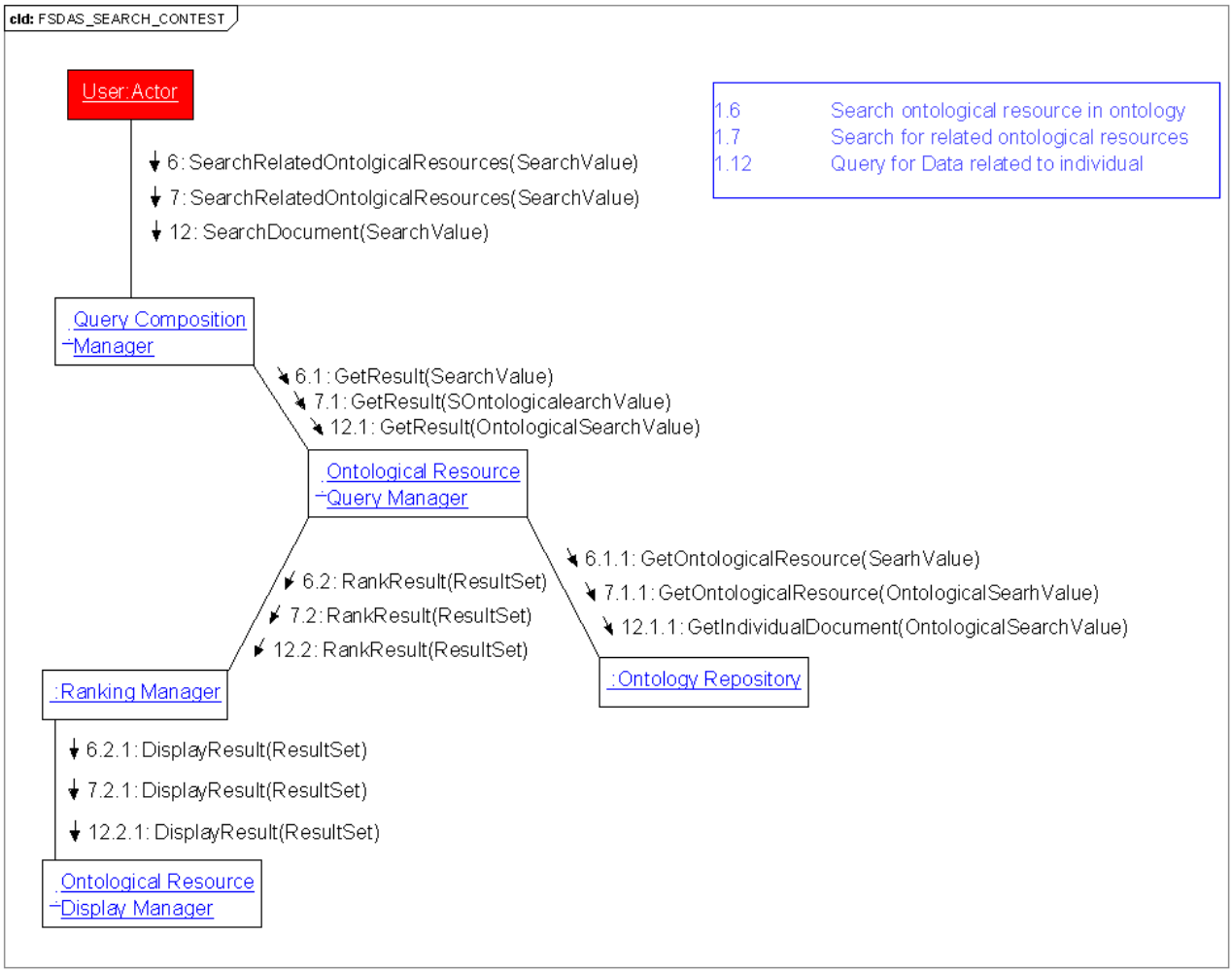

Figure 18 - Collaboration diagram of search context components

Only first iteration use cases are considered

The above diagram shows how the user can achieve the FSDAS application main goal of document retrieval and what this involves.

When any search process is triggered, the Query composition Manager is involved for query building. The Query Manager then executes the retrieval process from the Ontology Repository and transfers the result to the Ranking Manager which will make them available for display through the display manager specialized for visualization of ontological resources.

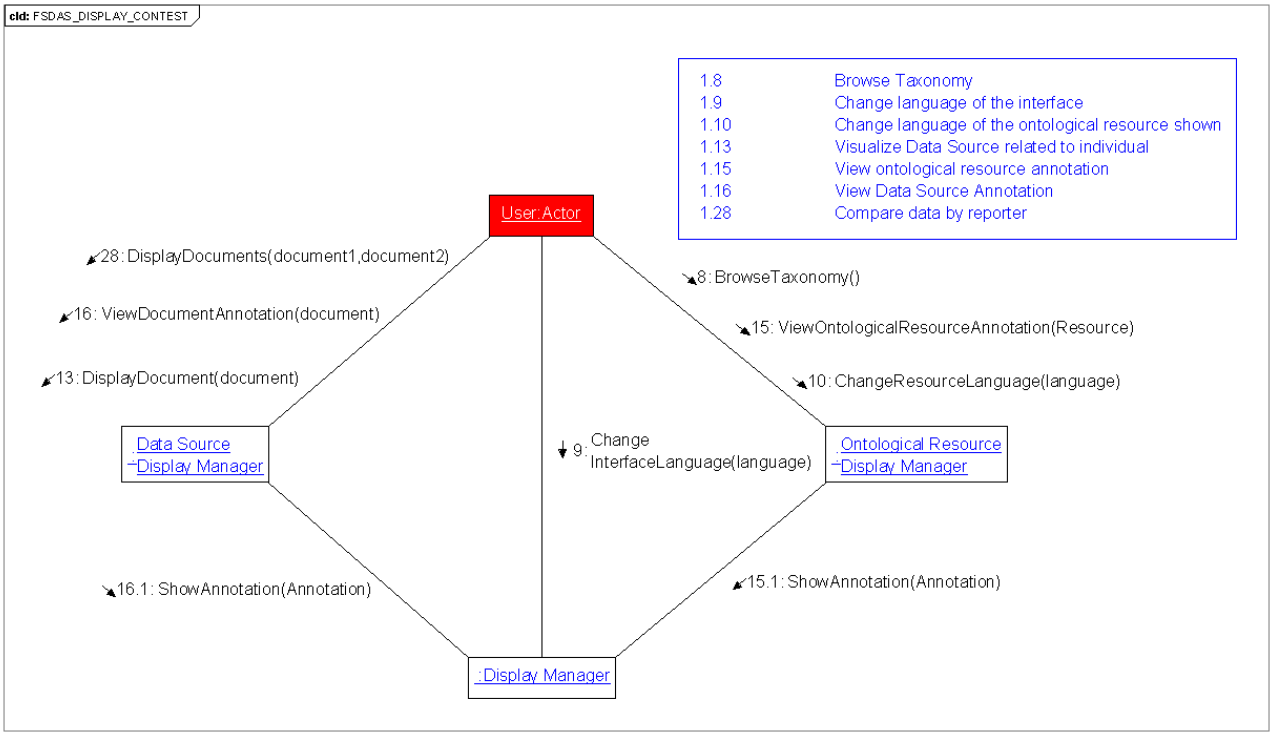

Figure 19 - Collaboration diagram of display context components

Only first iteration use cases are considered

The above diagram shows how the user can visualize generated content in FSDAS application and what this involves.

When Browse Taxonomy, View Ontological Resource Annotation or Change Resource Language processes are triggered, Ontological Resource Display Manager is component invoked; it is specialized for visualizing ontology or ontological elements as classes, properties or individuals.

Showing annotations for the focused resource also involves the display manager which is the general purpose visualizer.

When Display Document, Compare Data by Reporter or View Data Source Annotation processes are triggered, Data Source Display manager is the component invoked.

Showing annotations for the focused document instance also involves the Display Manager which is the general purpose visualizer.

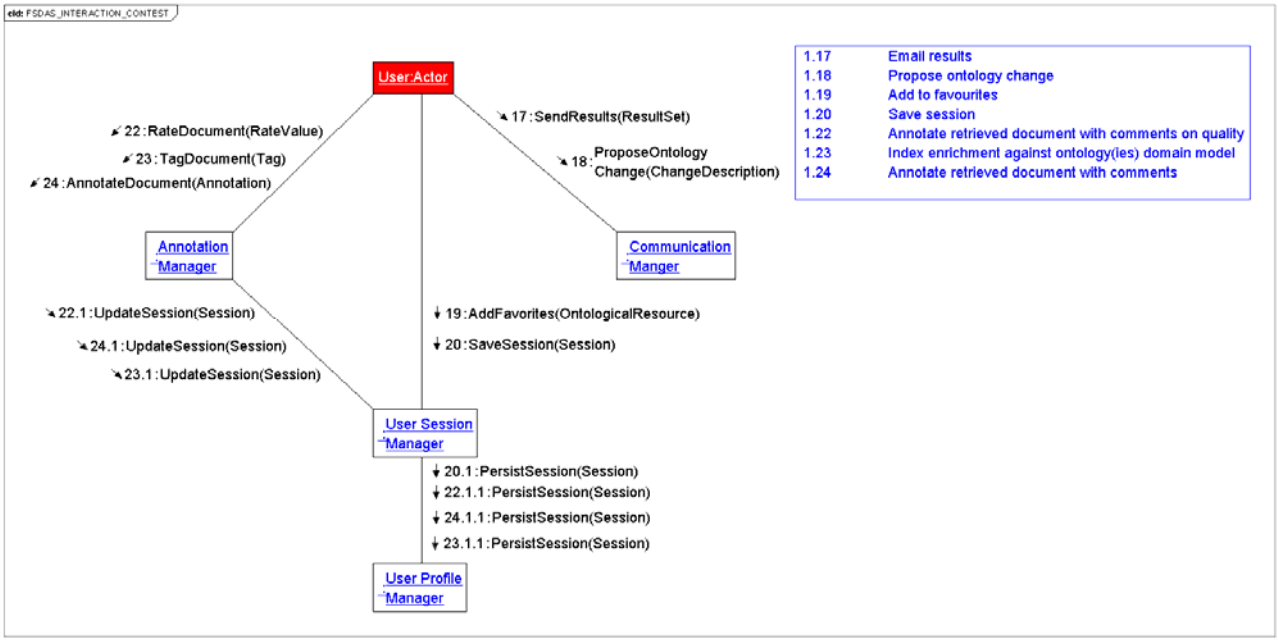

Figure 20 - Collaboration diagram of interaction context components

Only first iteration use cases are considered

The above diagram shows how the user can perform complementary operations to the main purpose of the application and what this involves.

When Email Result or Propose Ontology Change processes are triggered, the only component in charge of executing both these activities is the Communication Manager which embeds capabilities of message exchange.

When Annotate Retrieved document with comments (comments on quality), or Index Enrichment against Ontology Domain Model processes are triggered, the Annotation Manager component collects the data and updates the session with the newly generated content, persisting this within the User Profile.

When Save Session or Add to Favourites processes are triggered, User Session Manager will update the session and then persist within the User Profile.

7. Deployment View

7.1 Overview

FSDAS application is meant to be used by any user involved in working with Fishery department resources, not necessarily within any FAO site.

In Figure 21 is depicted the connection of a single user computer with all the parts reached by the application once it has been downloaded from the Fishery Department portal. It is restricted to the first iteration design.

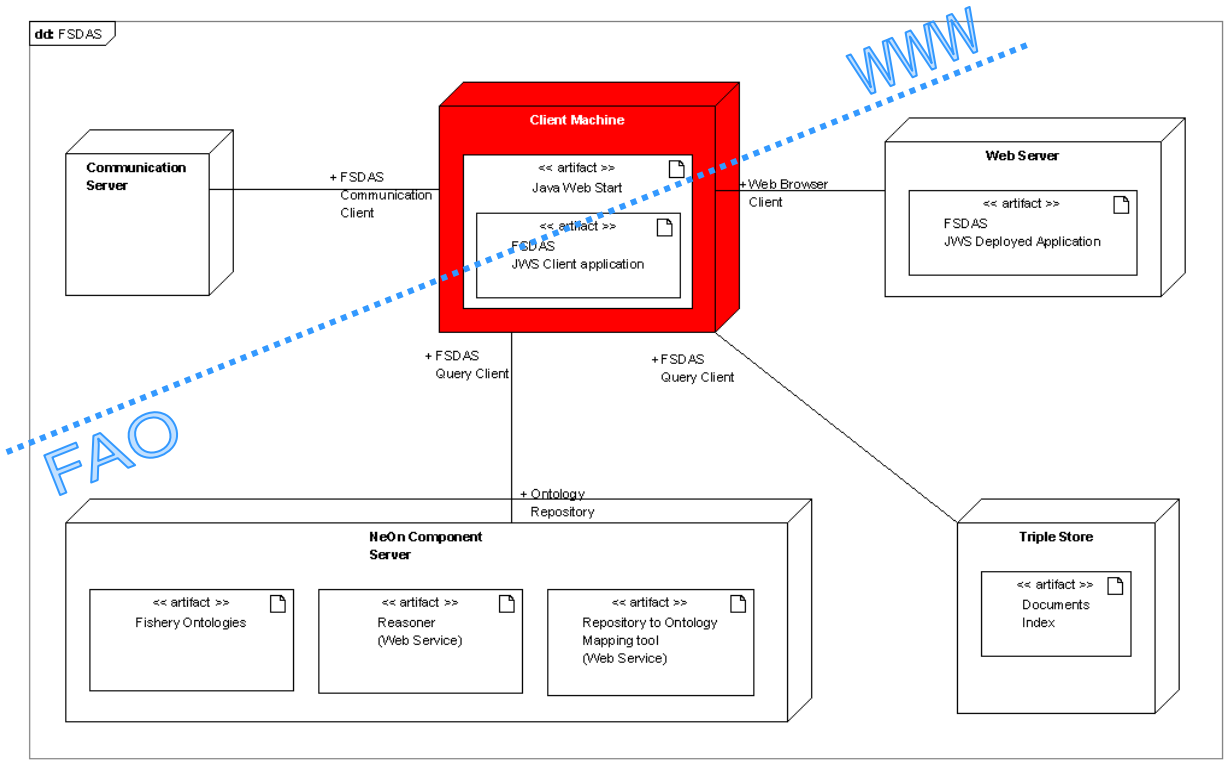

Figure 21 - Deployment view of the FSDAS application main activities

In the above view is depicted the separation between resources belonging to the FAO network domain and to those reachable over the World Wide Web. Typically a user computer is assumed to be anywhere in the world together with is mail client communication software. The server containing the downloadable Java Web Start deployment package of the application is internal to the FAO domain, as are those infrastructure and engineering components capable of being run in server mode that are proper to the NeOn toolkit.

7.2 Configuration description

Considering physical nodes in Figure 21, 5 main processes representative of FSDAS capabilities can be described in term of the hardware configuration involved.

7.2.1 User downloads FSDAS application from Fishery portal

Physical nodes:

- User computer: any computer internal or external to FAO network domain.
- Web Server: this is the computer where the Fishery portal is hosted.

Process:

- User computer runs a web browser application and connects to Fishery portal. User clicks on link to download FSDAS application distributed through JWS technology. If JWS is not installed the user is pointed to download it then the FSDAS download starts.

Communication:

- Communication is established via HTTP and is transported over TCP/IP

7.2.2 User runs FSDAS application

Physical nodes:

- User computer: any computer internal or external to FAO network domain.

Process:

- User computer has installed the JWS, user runs FSDAS application.

Communication:

N/A

7.2.3 User Loads Ontologies

Physical nodes:

- User computer: any computer internal or external to FAO network domain.
- NeOn Component Server: this is the computer where NeOn infrastructure and engineering components are deployed

Process:

- User computer runs FSDAS application and loads ontologies from ontology repository hosted on NeOn Components Server, internal to FAO network domain.

Communication:

- Communication is transported over TCP/IP

7.2.4 User performs a query:

Physical nodes:

- User computer: any computer internal or external to FAO network domain.
- NeOn Component Server: this is the computer where NeOn infrastructure and engineering components are deployed.
- Web Server: this is the computer hosting an RDF triple store of the indexed documents.

Process:

- User computer runs FSDAS application. User performs a query which returns result from ontology repository in NeOn Components Server and from web service invocation of the RDF triple store. Reasoning web service can be also invoked for reasoning support.

Communication:

- Communication for web services is established via SOAP and is transported over TCP/IP.

7.2.5 User communicates with other users

Physical nodes:

- User computer: any computer internal or external to FAO network domain.
- Communication Server: computer providing communication gateway capabilities.

Process:

- User machine runs FSDAS application; user selects to communicate with other user registered to the application and prepares a message and/or object to send.

Communication:

For the first iteration design communication is established via the user's mail client that in general is already configured to communicate with a mail server.

8. Implementation View

8.1 Overview

This section describes how the components envisaged for the FSDAS design fit in to a layered structure reflecting the NeOn architecture layers.

In Figure 22 are depicted the design components divided by architecture such that one can see the support that the NeOn toolkit can provide to the FSDAS application in its final design version.

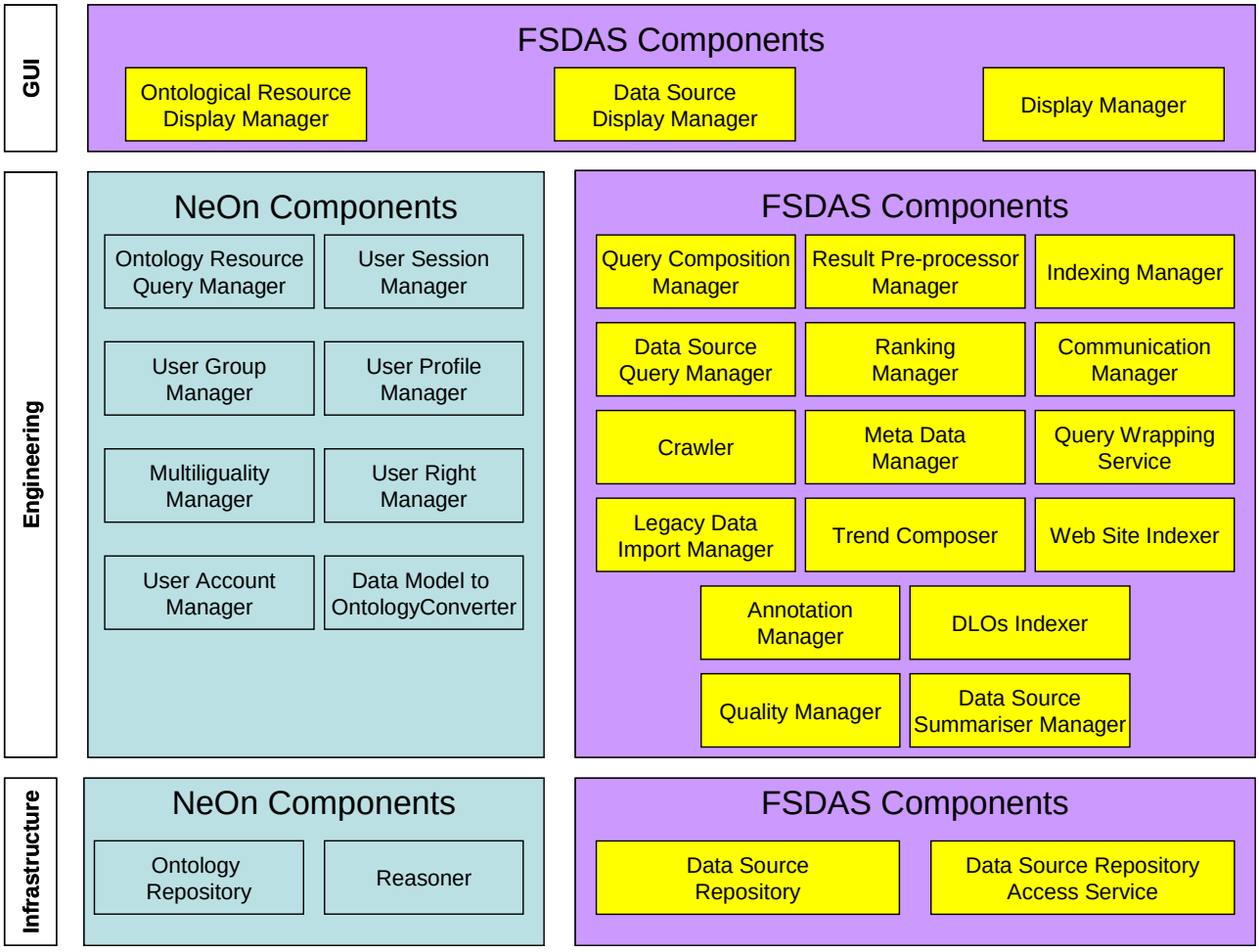

Figure 22 - Layered vision of FSDAS application design

The layers are based on the proposed layering definitions promoted by work package six and found in deliverable D6.2.1.

A component is grouped in the NeOn set if its functionalities are planned to be covered by the NeOn toolkit, otherwise a component is in the FSDAS set if its functionalities are ad-hoc for the application.

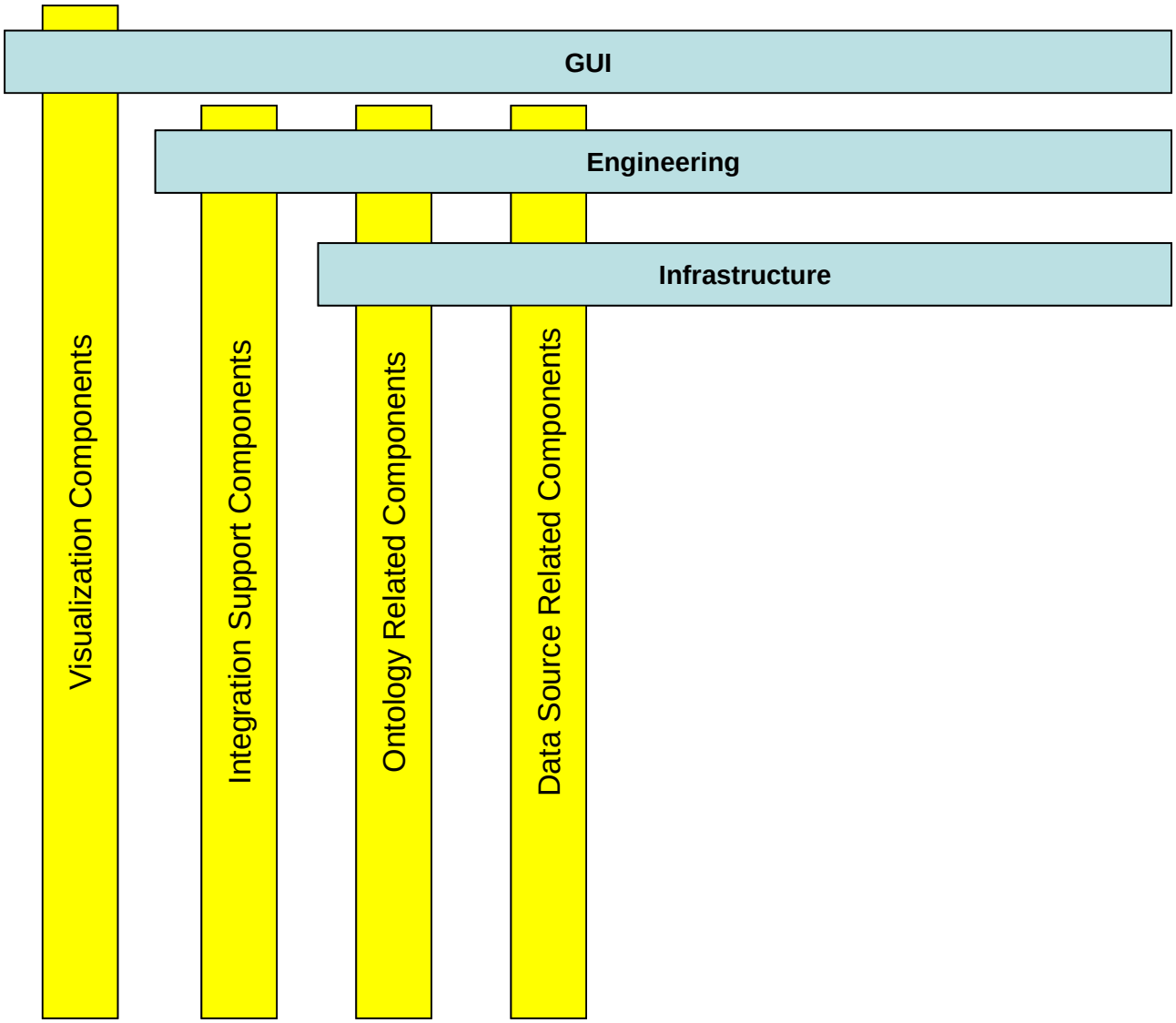

Figure 23 - FSDAS design conceptual partition against NeOn architecture layered vision

A complementary view of FSDAS design comes from considering the conceptual partition introduced in Chapter 2 compared against the layered vision of the NeOn architecture.

What is highlighted by this cross comparison is the architecture domain each partition involves. Most components are centred in the engineering layers, confirming a high dependency on functionalities developed in the toolkit. It is also natural to expect that the GUI layers provide little dependent functionality as the toolkit is mostly focused on developing infrastructure and engineering layers.

9. Data View

FSDAS will rely on the OntoMap/Semantic Miner component capabilities of the NeOn toolkit which can be run in stand-alone server mode.

The creation of ontological mappings between end user domain ontologies and database schema ontologies will be handled within the NeOn toolkit as part of ontology lifecycle management.

Data instances returned will be transparent to FSDAS and will be merely the result of a semantic query towards the reasoner.

Documentation on Semantic Miner can be found in Annex B.

9.1 RDBMS systems

9.1.1 Aquatic Sciences Fisheries Abstracts (ASFA)

The Fisheries and Aquaculture department is currently awaiting the full set of ASFA abstracts from the commercial publisher in a format that will allow importing them into a database. The database will in all likelihood be Oracle 10G, as that is the FAO standard, and what is used within the Fisheries department.

The database schema will be extracted as an ontology and mapped to the ASFA thesaurus ontology (currently being produced by ASFA in OWL) and/or fisheries domain ontologies via OntoMap.

It is important to note that this database will be fire walled and any server accessing it will need to be within the firewall.

9.1.2 Electronic Information Management System (EIMS)

EIMS is a FAO-wide document repository of official publications. Metadata including abstracts is stored for each publication in a queryable RDBMS (Oracle).

The database schema will be extracted as an ontology and mapped to the AGROVOC ontology and/or fisheries domain ontologies via OntoMap.

It is important to note that this database will be fire walled and any server accessing it will need to be within the firewall.

9.1.3 FishBase

Hosted by World Fish Center in Penang, Malaysia, FishBase is an encyclopaedic database of species data. A partner with FAO on various projects, final approval is yet to be obtained on connecting directly to the WorldFish database.

The database schema will be extracted as an ontology and mapped to the aquatic species ontology via OntoMap.

9.1.4 FIGIS RDBMS fact sheets

A series of fishery fact sheets divided by domain and stored as XML in Oracle, and connected to classification schemes that are also stored in Oracle.

The database schema will be extracted as an ontology and mapped to fisheries domain schemas via OntoMap.

9.1.5 Fishery Resources Monitoring System (FIRMS)

FIRMS is a consortium of over a dozen regional fishery bodies that pools, harmonizes and publishes resource assessments. They are stored as XML in an Oracle database and connected to classification schemes that are also stored in Oracle.

The database schema will be extracted as an ontology and mapped to fisheries domain schemas via OntoMap.

9.2 Flat file systems

There are some repositories for which we there is no database access. There may be a queryable index, but the API's vary.

This document describes an RDF indexing component that will be used to index these resources using one or more fisheries ontologies to limit the indexing terms to those concepts found in the ontologies. The index is created at engineering time, and queried at run time simultaneously with the query to the reasoner. This will give a stable, centralized access with a single API.

9.2.1 FIGIS flat-file fact sheets

One branch of fact sheets is stored in directories on a server. A Lucene index is created from these fact sheets to render them queryable.

Either they will be indexed by the RDF indexing component or OntoMap can be connected to the Lucene index.

9.2.2 RFB's document repositories

The document repositories of the approximately fifty regional fishery bodies constitute an important source of information for resource assessments. Agreement can likely be reached to index at least some of these using the RDF indexing component.

9.2.3 Globefish document repository

GlobeFish represents an important, frequently updated source of commodities data which can among other things indicate trends of relative species abundance. Hosted by FAO, this repository can be indexed using the RDF indexing component.

9.3 ISIS systems

The UNESCO ISIS system is a database system in production since the 1980's. It does not have any standard ODBC/JDBC connectors. It can however produce an output in ISO2709, a standard format for exchange of bibliographic data, as well as data in XML.

9.3.1 FAOLex

FAOLex is a database of agricultural regulation which contains a large amount of fisheries and marine legislation.

Further investigation is needed. It may be simplest to output the entire database periodically to ISO2709 and import it into a standard RDBMS with JDBC connectors.

9.4 Time-series systems

This refers to systems containing numeric data as a sequence of data points, measured typically at successive times, spaced at (often uniform) time intervals. Within fisheries these sets typically regard capture and production for commercially important aquatic species, collected annually, and expressed in units of metric tonnes by country, year and species.

9.4.1 FIES commodity, capture, production and fleets databases

Fisheries and Aquaculture Information and Statistics Service maintains statistical datasets stretching back to the 1950's. Stored in an Oracle RDBMS, data are linked to reference data in a separate set of tables.

For these time-series, there is no URI that points to a stored "resource" per se, but rather a flexible dynamic tabular, chart or graph result based on a wide variety of criteria, e.g. a range of years, a set of water areas, groups of species, catch data, display type, etc.

It is not clear how a semantic query can retrieve a useful table, chart or graph of data from these databases, yet the results are vital to a knowledge base on fishery resource assessments.

The preferred option at this point is to generate at engineering time URI's related to ontological concepts that return relevant formatted statistics from the time-series databases. These URI's could be stored as instances in the RDF triple store index discussed in the previous section.

9.5 GIS systems

A geographic information system (GIS) is a system for capturing, storing, analyzing and managing data and associated attributes which are spatially referenced to the earth. For the purposes of FSDAS, it is a computer system capable of integrating, storing, editing, analyzing, sharing, and displaying geographically-referenced information.

9.5.1 Species distribution maps

Fisheries and Aquaculture Information and Statistics Service maintain species distribution maps created dynamically from an in-house GIS system known as KIMS/KIDS. Shape files are stored for land areas, water areas and species. Most shape files also have an associated XML file of

metadata about the shape file that conforms to ISO tc211. Images based on the shape files are generated dynamically on request.

It should be possible to map the KIMS/KIDS data model to a GIS ontology, thus linking the shape file metadata to it and giving the possibility for such resources to be returned with a semantic query.

9.6 Ontologies

The ontologies developed or in development for FAO are in OWL format. They represent either thesauri or domain-specific ontologies that will be mapped and loaded together on the reasoner side of FSDAS.

At least the following ontologies will be used in FSDAS, though the list will likely grow following the first iteration:

- biological species http://www.fao.org/aims/aos/fi/species_v1.0.owl
- land areas http://www.fao.org/aims/aos/fi/lands_v1.0.owl
- water areas http://www.fao.org/aims/aos/fi/fishing_areas_v1.0.owl
- fishery commodities http://www.fao.org/aims/aos/fi/commodities_v1.0.owl
- vessel types http://www.fao.org/aims/aos/fi/vessels_v1.0.owl
- gear types http://www.fao.org/aims/aos/fi/gears_v1.0.owl
- ASFA thesaurus
- AGROVOC thesaurus

10. Size and Performance

10.1 Operating Environment

Server-side must operate on an Intel/Linux platform.

Client must function on Windows/Linux/Mac OS-X operating systems.

10.2 Implementation Constraints

Reasoner, OntoMap and triple store server should be able to coexist on a single hardware platform.

Due to FAO network security constraints, the server-side of FSDAS must reside within the FAO firewall in order to be able to connect with local databases.

Memory requirements should be less than four gigabytes.

Any need for RDBMS support must use either ORACLE 10G or MySQL5.

Application must be written in Java (min ver. 1.5) to take advantage of developer knowledge at FAO.

Application must be able to work natively with UTF-8 in order to support FAO languages (Arabic, Chinese, English, French and Spanish)

Results should not take more than two seconds to display.

10.3 Assumptions and Dependencies

FSDAS depends on the NeOn toolkit reasoner and OntoMap running in server mode for reasoning capabilities and mapping to relational databases.

FSDAS depends on the creation of a data services API that can run in server mode and return pieces of the ontology model in a standard format. This API has not yet been defined. Partners involved in T7.6 need to collaborate with WP6 on this aspect of the design and implementation of FSDAS.

FSDAS depends on the creation of a set of ontologies describing the fisheries domain.

FSDAS depends on the cooperation of a group of partner information repositories from which to draw its concept instances.

All users of the system will need to be authenticated as some concept instances and/or ontologies may not be part of the public domain.

Annex A – Updated use cases from Requirements D7.1.1

UC1 Login [page 62 in D7.1.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- User logs into the system

PRECONDITIONS

- Application launch

TRIGGERING EVENT(s)

- Application launch

POST CONDITIONS

- User is logged in

FLOW OF EVENTS

a. BASIC FLOW

- User inputs name and password.
- User is authenticated
- System loads default profile and user rights

b. ALTERNATIVE FLOW

- User not found, is invited to try again
- User not found, is invited to register

RELATED USE CASES

- Register

NOTES / ISSUES

- N/A

UC2 Logout [page 63 in D7.1.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- User logs out

PRECONDITIONS

- User is logged in

TRIGGERING EVENT(s)

- User selects logout

POST CONDITIONS

- User is logged out, system returns to login screen

FLOW OF EVENTS

a. BASIC FLOW

- User selects logout
- System asks if user wants to save session
- System updates user profile
- System logs user out
- System returns to login screen

b. ALTERNATIVE FLOW

RELATED USE CASES

- Register
- Save session

NOTES / ISSUES

- N/A

UC3 Register [page 64 in D7.1.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- Register

PRECONDITIONS

- Application launch

TRIGGERING EVENT(s)

- User selection of “register” link from login page

POST CONDITIONS

- Creation of generic user
- Registration request is sent to admin for role specification
- System displays a success page to the user

FLOW OF EVENTS

a. BASIC FLOW

- User inputs: name, email (twice), desired password (twice)
- User inputs profile: user type, organization, ontologies preferred language, etc.
- User clicks “submit”
- Registration request is sent to the system administrator with details
- System displays a success page to the user

b. ALTERNATIVE FLOW: email or password double entries do not match

- System invites user to repair input

c. ALTERNATIVE FLOW: mandatory field(s) is missing

- System invites user to repair input

d. ALTERNATIVE FLOW: mandatory field(s) is missing

- System invites user to repair input

RELATED USE CASES

- Login
- Logout

NOTES / ISSUES

- Registration is sent for action by system administrator

- Defaults access rights should be “read only”
- Administrator will establish more detailed privileges

UC4 Modify Profile (medium priority) [page 66 in D7.1.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- User modifies her profile

PRECONDITIONS

- User is logged in

TRIGGERING EVENT(s)

- User clicks “modify profile” from main page

POST CONDITIONS

- Profile is modified
- User is shown main page

FLOW OF EVENTS

a. BASIC FLOW

- User clicks “modify profile” from main page
- System loads profile page
- User modifies profile details
- User validates changes
- System returns to main page

b. ALTERNATIVE FLOW

- User abandons action by clicking “cancel”
- System returns to main page, no changes are made

c. ALTERNATIVE FLOW

- User makes some kind of invalid input
- System invites user to try again

RELATED USE CASES

- Save session

NOTES / ISSUES

- The user profile contains information about the user preferred options including list of ontologies and collections of documents and statistics commonly used for search, browsing and reading.

UC5 Modify User Account [Formerly not included in D7.1.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- User modifies his account

PRECONDITIONS

- User is logged in

TRIGGERING EVENT(s)

- User clicks “modify account” from main page

POST CONDITIONS

- Account is modified
- Registration request is sent to admin for role specification
- User is shown main page

FLOW OF EVENTS

a. BASIC FLOW

- User clicks “modify account” from main page
- System loads account page
- User modifies account details
- User validates changes
- Modify request is sent to the system administrator with details
- System returns to main page

b. ALTERNATIVE FLOW

- User abandons action by clicking “cancel”
- System returns to main page, no changes are made

c. ALTERNATIVE FLOW

- User makes some kind of invalid input
- System invites user to try again

RELATED USE CASES

- Register

NOTES / ISSUES

- The user account contains information about the user (name, organization, email, editing rights, ...)

UC6 Search ontological resource in ontology [Update of UC 5.4.6 in D7.1.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- Search ontological resources within an ontology

PRECONDITIONS

- At least one ontology is loaded
- User is logged in

TRIGGERING EVENT(s)

- User enters text in search box and clicks “search ontological resource”

POST CONDITIONS

- System displays retrieved ontological resources

FLOW OF EVENTS

a. BASIC FLOW

- User enters text in search box
- User clicks “search ontological resources”
- System consults loaded ontologies
- System displays results

b. ALTERNATIVE FLOW: no ontological resources found

- System returns message that no ontological resources were found
- User invited to try another query

c. ALTERNATIVE FLOW: closely matching ontological resources found

- System displays result with a warning that ontological resources are closely matching

d. ALTERNATIVE FLOW: search box is empty when user clicks “search ontological resource”

- System shows alerts message

RELATED USE CASES

- Browse ontological resources
- Search for related ontological resources

NOTES / ISSUES

- N/a

UC7 Search for related ontological resources [Update of UC 5.4.7 in D71.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- User searches for ontological resources related to the one at hand

PRECONDITIONS

- User has selected a ontological resource (after browsing or searching)

TRIGGERING EVENT(s)

- User clicks “search for related ontological resources”

POST CONDITIONS

- Related ontological resources are displayed

FLOW OF EVENTS

a. BASIC FLOW

- User selects a ontological resource
- User specifies relation(s)
- User selects direct/indirect relation (reasoning)
- User clicks “search for related ontological resources”
- System queries loaded ontologies
- Related ontological resources are displayed

b. ALTERNATIVE FLOW

- Related ontological resources are displayed
- User is invited to try another query

RELATED USE CASES

- Browse ontological resources
- Search ontological resources in ontology

NOTES / ISSUES

The option “search for related ontological resources” is only available if an ontological resource has been selected

UC8 Browse Taxonomy [Update of UC 5.4.8 in D71.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- User browses concepts in an ontology

PRECONDITIONS

- User is logged in
- Taxonomy panel is visible

TRIGGERING EVENT(s)

- User clicks “browse concepts” from main page
- Taxonomy panel is in focus

POST CONDITIONS

- Browsable list of concepts displayed

FLOW OF EVENTS

a. BASIC FLOW

- User clicks “browse concepts” from main page
- Systems queries ontology server for concepts
- Browsable list of concepts displayed

RELATED USE CASES

- Search concepts
- Search for related concepts

NOTES / ISSUES

- n/a

UC9 Change language of the interface [page 72 – section 5.4 in D7.1.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- Change language

PRECONDITIONS

- User is logged in

TRIGGERING EVENT(s)

- User clicks a language icon in the toolbar

POST CONDITIONS

- User interface has changed to selected language

FLOW OF EVENTS

a. BASIC FLOW

- User clicks a language icon in the toolbar
- System asks the user whether to extend the choice to ontological resources
- User interface changes to selected language

RELATED USE CASES

- Change language of the ontological resource shown

NOTES / ISSUES

- The languages at disposal of the user for the interface are the five languages of FAO: Arabic, Chinese, English, French, and Spanish.
- The languages at disposal of the user for the content depend on the availability
- Object annotation should also switch if users selected to extend the choice to ontological resources

UC10 Change language of the ontological resource shown [page 74 – section 5.4 in D7.1.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- User changes language of the resource being displayed

PRECONDITIONS

- User is logged in

TRIGGERING EVENT(s)

- User clicks a language icon among those associated with the resource being displayed

POST CONDITIONS

- The resource is displayed in the selected language

FLOW OF EVENTS

a. BASIC FLOW

- User clicks a language among those associated to the resource being displayed
- The resource is displayed in the selected language

RELATED USE CASES

- Change language of the interface

NOTES / ISSUES

- The languages at disposal of the user for the interface are the five languages of FAO: Arabic, Chinese, English, French, and Spanish.
- The languages at disposal of the user for the resource depend on the availability
- The possibility of setting preferences for associating language of interface with language of resource

UC11 Query Composition [Formerly not included in D71.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- Add ontological resource to query

PRECONDITIONS

- User has selected a ontological resource

TRIGGERING EVENT(s)

- User drags the selected ontological resource to the query area

POST CONDITIONS

- Ontological resource displayed in query area

FLOW OF EVENTS

a. BASIC FLOW

- User drags a ontological resource to the query area
- Ontological resource is displayed in query area
- System adds the ontological resource to the query being formulated

RELATED USE CASES

- Search ontological resource in ontology
- Browse Taxonomy
- Modify set of ontologies

NOTES / ISSUES

- How many concepts will need to be added to the query area depends on the type of query being formulated, which depends, in turn, on the type of resource to query. For example, in order to query a statistical database, the user needs to specify at least *three* variables, i.e., time, space, and subject.

UC12 Query for Data related to individual [Update of UC 5.4.11 in D71.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- User queries available instances of concepts

PRECONDITIONS

- User composed a query
- At least one concept is in the query area

TRIGGERING EVENT(s)

- User clicks “search Data”

POST CONDITIONS

- System has displayed results as clickable titles linked to their parent concept classes
- System displays related concept instances, if available

FLOW OF EVENTS

a. BASIC FLOW

- User clicks “search data”
- System consider user tags (local/remote)
- System displays results as clickable titles linked to their parent concept classes
- System displays related cluster of document, if any

b. ALTERNATIVE FLOW: no results found

- System returns to previous page with message

RELATED USE CASES

- Refine query
- Visualize Data Source related to individual
- Visualize Data Source metadata
- Query Composition

NOTES / ISSUES

- N/a

UC13 Visualize Data Source related to individual [Update of UC 5.4.12]

ACTORS

- Fisheries scientist

DESCRIPTION

- Visualize Data Source instance

PRECONDITIONS

- At least one Data Source is listed in the query result

TRIGGERING EVENT(s)

- User clicks on the title of the Data Source

POST CONDITIONS

- System has opened resource in associated application, e.g. browser, word, Acrobat, image viewer, etc.

FLOW OF EVENTS

a. BASIC FLOW

- User clicks on the title of the Data Source
- System opens resource in associated application, e.g. browser, word, Acrobat, image viewer, etc.

b. ALTERNATIVE FLOW: there is no associated application

- System invites user to locate another application or to install needed application

RELATED USE CASES

- Query for Data related to individual
- Refine query

NOTES / ISSUES

- N/a

UC14 Refine query [page 77 in D71.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- Refine query

PRECONDITIONS

- At least one query has been performed

TRIGGERING EVENT(s)

- User clicks “refine query”

POST CONDITIONS

- System has returned to concept page with previously selected concepts still in the query area, and last searched or selected concept in centre of screen with related concepts

FLOW OF EVENTS

a. BASIC FLOW

- User clicks “refine query”
- System returns to concept page with previously selected concepts still in the query area, and last searched or selected concept in centre of screen with related concepts

RELATED USE CASES

- Visualize Data Source related to individual
- Query for Data related to individual

NOTES / ISSUES

- N/a

UC15 View ontological resource annotation [Update of UC 5.4.15 in D71.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- View ontological resource annotations

PRECONDITIONS

- At least one ontological resource is displayed

TRIGGERING EVENT(s)

- User selects an ontological resource and clicks “view annotation”

POST CONDITIONS

- System displays ontological resource together with associated annotations

FLOW OF EVENTS

a. BASIC FLOW

- User selects an ontological resource and clicks “view annotation”
- System queries loaded ontologies and displays ontological resource together with associated annotations

RELATED USE CASES

- View Data Source Annotation
- Visualize data related to individual

NOTES / ISSUES

- It is especially important that the visualized metadata include the provenance of the concept, i.e. who created/revised it

UC16 View Data Source Annotation (low priority) [Update of UC 5.4.16 in D71.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- View Data Source metadata

PRECONDITIONS

- At least one Data Source is displayed

TRIGGERING EVENT(s)

- User selects a Data Source and clicks “view provenance”

POST CONDITIONS

- System displays Data Source metadata, e.g. title, author, subject, last modified, etc.

FLOW OF EVENTS

a. BASIC FLOW

- User selects a Data Source and clicks “view provenance”
- System queries ontology server and displays concept together with associated metadata

RELATED USE CASES

- View ontological resource annotation
- Visualize data related to individual

NOTES / ISSUES

- N/a

UC17 Email results (low priority) [page 80 in D71.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- Email results

PRECONDITIONS

- At least one Data Source link is displayed

TRIGGERING EVENT(s)

- From a results page user clicks “email results”

POST CONDITIONS

- System has emailed results

FLOW OF EVENTS

a. BASIC FLOW

- From a results page user clicks “email results”
- A form is displayed to allow the user to write and send an email message
- User inputs email and clicks “send”
- System sends formatted results, informs user of success and returns to previous result page

b. ALTERNATIVE FLOW: email is malformed

- System invites user to retry

RELATED USE CASES

- Browse Taxonomy
- Search ontological resources
- Query data related to individual

NOTES / ISSUES

- N/a

UC18 Propose ontology modification (medium priority) [page 81 in D71.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- Propose to modify ontology

PRECONDITIONS

- User is logged in
- At least one ontology is loaded

TRIGGERING EVENT(s)

- User selects “propose modification to ontology”

POST CONDITIONS

- Proposal sent to ontology editors/reviewer

FLOW OF EVENTS

a. BASIC FLOW

- User selects “propose modification to ontology”
- System queries ontology server and opens a page showing the currently loaded ontologies together with any contexts, unions or intersections modifying the overall ontology set and any available unloaded ontologies
- User selects the element(s) to modify (i.e. concepts, instances, entire branches, context), and writes the reason for changes
- User clicks “propose modification to ontology”
- The modification proposal is sent to the ontology editors/reviewer

RELATED USE CASES

- Browse Taxonomy
- Search ontological resources
- Search ontological resource

NOTES / ISSUES

- N/a

UC19 Add to favourites (medium priority) [page 82 in D71.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- Add to favourites

PRECONDITIONS

- A results page

TRIGGERING EVENT(s)

- User selects “add to favourites”

POST CONDITIONS

- System has added current set of query concepts to a list of favourites against the user profile
- The list appears under a heading of “favourites”

FLOW OF EVENTS

a. BASIC FLOW

- User selects “add to favourites”
- System durably writes parameters for current set of concepts and underlying ontology set to a favourites list
- The item is added to a list that appears under a heading of “favourites”

RELATED USE CASES

- Save session
- Modify profile

NOTES / ISSUES

- N/a

UC20 Save session (medium priority) [page 83 in D71.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- Save session

PRECONDITIONS

- User is logged in

TRIGGERING EVENT(s)

- User selects “save session”
- User Log out

POST CONDITIONS

- System has saved the session parameters against the user profile
- The list appears under a heading of “favourites”

FLOW OF EVENTS

a. BASIC FLOW

- User selects “save session”
- System durably writes parameters for current set of concepts and underlying ontology set against the user profile
- The user is made aware that the save was successful

RELATED USE CASES

- Add to favourites

NOTES / ISSUES

- N/a

UC21 Generate RSS feed from current query (iteration 2) [page 84 in D71.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- Generate RSS feed

PRECONDITIONS

- A results page is displayed

TRIGGERING EVENT(s)

- User selects “generate RSS feed”

POST CONDITIONS

- System has opened a browser with the URL for the RSS feed based on the current concept query set

FLOW OF EVENTS

a. BASIC FLOW

- User selects “generate RSS feed”
- System opens a browser with the URL for the RSS feed based on the current concept query set

RELATED USE CASES

- Add to favourites
- Modify profile

NOTES / ISSUES

- N/a

UC22 Annotate retrieved document with comments on quality (low priority) [page 85 in D71.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- After reading a retrieved document, a user annotates it with a judgement and a comment about its usefulness

PRECONDITIONS

- User is logged in
- A document is opened
- User has annotation rights

TRIGGERING EVENT(s)

- User selects “assess this document”

POST CONDITIONS

- System has attached an assessment to the document, together with relevant metadata concerning the user who issued the assessment.

FLOW OF EVENTS

a. BASIC FLOW

- User selects “assess this document”
- System requests user to rank the document according to some criterion (e.g., reliability)
- User ranks the document
- System requests user to add a comment on the ranking

RELATED USE CASES

- View data related to individual

NOTES / ISSUES

- Document generically refers to any type of annotatable resource, such as textual documents, graphics, statistical tables, ...
- The model of interaction with the system to produce the information requested in Basic Flow is to be defined. For example, the user could be requested to fill in a form, or follow a step-by-step process (first the ranking, then the comment)
- Annotation cannot be conflicting, as they express the personal view of the user who made them

UC23 Index enrichment against ontology(ies) domain model (low priority) [Update of UC 5.4.23 in D71.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- After reading a retrieved document, user annotates it (or part of it) with keywords

PRECONDITIONS

- User has annotation rights
- A document is opened

TRIGGERING EVENT(s)

- User selects “assign keywords to this document”

POST CONDITIONS

- System has attached keywords to the document

FLOW OF EVENTS

a. BASIC FLOW

- User selects “assign keywords to this document”
- User inputs keyword(s) and finishes the operation
- System annotates document with relevant keyword(s)

RELATED USE CASES

- Annotate retrieved document with comments on quality
- Annotate retrieved documents with comments

NOTES / ISSUES

- The possibility of adding keywords not taken from any resources could be discussed
- The possibility of letting the system suggest which keywords to assign to the document should also be investigated: for example, the system could show keywords already assigned to the document, or compare the document with a selected thesaurus or classification schema

UC24 Annotate retrieved document with comments (low priority) [page 88 in D71.1]

ACTORS

- Fisheries scientist

DESCRIPTION

- After reading a retrieved document, user annotates it

PRECONDITIONS

- A document is opened

TRIGGERING EVENT(s)

- User selects “add your comment”

POST CONDITIONS

- System has attached user comment to the document

FLOW OF EVENTS

a. BASIC FLOW

- User selects “add your comment to this document”
- User writes comment

RELATED USE CASES

- Annotate retrieved document with comments on quality
- Index enrichment against ontology(ies) domain model

NOTES / ISSUES

N/A

UC25 Select ontologies to use for browsing documents or web pages (iteration 2) [page 89 in D71.1]

ACTORS

- All

DESCRIPTION

- User selects ontologies to support browsing and reading of documents and web pages

PRECONDITIONS

- User is logged in

TRIGGERING EVENT(s)

- User selects “add ontologies for browsing”

POST CONDITIONS

- Ontologies are selected and can be activated to be used to support browsing and reading

FLOW OF EVENTS

a. BASIC FLOW

- User selects “add ontology for browsing”
- System asks user to select an ontology from file system
- User selects ontology from file system
- System asks whether to select the entire ontology or a fragment of it
- User selects “entire ontology”
- System saves the selected ontology in the user profile

b. ALTERNATIVE FLOW: user selects fragment of ontology

- System asks whether to select the entire ontology or a fragment of it
- User select “fragment”
- System opens the ontology
- User selects the desired fragment and finishes the operation
- System saves the selected fragment in the user profile

RELATED USE CASES

- Include a selection from an existing ontology (see Chapter 4)

NOTES / ISSUES

- (MAGPIE FUNCTIONALITY)

UC26 Use ontology to support browsing (iteration 2) [page 90 in D71.1]

ACTORS

- All

DESCRIPTION

- User uses ontologies to support browsing and reading of documents and web pages

PRECONDITIONS

- User is logged in
- Ontologies are selected to support browsing

TRIGGERING EVENT(s)

- User selects “activate ontologies for browsing”

POST CONDITIONS

- Ontologies are activated to be used to support browsing and reading of ontologies

FLOW OF EVENTS

a. BASIC FLOW

- User selects “activate ontologies for browsing”
- System loads the selected ontologies
- Words occurring both in the opened document or webpage and the ontologies are highlighted, and
- Information or services associated with the ontologies are shown to the user

RELATED USE CASES

- Select ontologies to use for browsing documents or web pages

NOTES / ISSUES

- Examples of pieces of information associated to an ontology are: available relations to other terms or documents, translation of a highlighted word in other languages, available definitions
- Examples of services associated with the ontology are: search for documents relevant to the highlighted term, search for documents annotated with the highlighted term (i.e. the term user as keyword).
- (MAGPIE FUNCTIONALITY)

UC27 Identify trend (iteration 2) [page 91 in D71.1]

ACTORS

- All

DESCRIPTION

- System presents the trend of one or more selected parameters

PRECONDITIONS

- User is logged in
- At least one concept instance has to be selected

TRIGGERING EVENT(s)

- User selects “identify trend”

POST CONDITIONS

- User is shown the trend of the selected parameter

FLOW OF EVENTS

a. BASIC FLOW

- User selects one or more parameter to compute a trend
- User clicks “identify trend”
- System shows trends of the selected parameter

a. ALTERNATIVE FLOW

- System has no data about the trend
- System returns warning and suggestions about available “similar” trends

RELATED USE CASES

- N/a

NOTES / ISSUES

- Possible parameters of which to compute the trend include: marine areas, land areas, national fishing fleets, species, species groups, fisheries commodities, vessel types, time ranges

UC28 Compare data by reporter (iteration 2) [page 92 in D71.1]

ACTORS

- All

DESCRIPTION

- User compares data

PRECONDITIONS

- User is logged in
- At least two data source results have been returned

TRIGGERING EVENT(s)

- User clicks “compare”

POST CONDITIONS

- Two documents are shown side by side for comparison

FLOW OF EVENTS

a. BASIC FLOW

- User makes a query that returns a result set of at least two documents
- User selects two items from the list and clicks “compare”
- System opens the two selected items, and shows them side by side

RELATED USE CASES

- N/a

NOTES / ISSUES

- By data source we mean the organization or body (national ministries, regional fisheries bodies, institutions, etc.) that released the data

Summary Table of Use Cases and Priorities

Use Case	High Priority	Medium Priority	Low Priority	Second Iteration
1.1 Login	X			
1.2 Logout	X			
1.3 Register	X			
1.4 Modify Profile		X		
1.5 Modify User Account	X			
1.6 Search ontological resource in ontology	X			
1.7 Search for related ontological resources	X			
1.8 Browse Taxonomy	X			
1.9 Change language of the interface	X			
1.10 Change language of the ontological resource shown	X			
1.11 Query Composition	X			
1.12 Query for Data related to individual	X			
1.13 Visualize Data Source related to individual	X			
1.14 Refine query	X			
1.15 View ontological resource annotation	X			
1.16 View Data Source Annotation			X	
1.17 Email results			X	
1.18 Propose ontology modification		X		
1.19 Add to favourites		X		
1.20 Save session		X		
1.21 Generate RSS feed from current query				X
1.22 Annotate retrieved document with comments on quality			X	
1.23 Index enrichment against ontology(ies) domain model			X	
1.24 Annotate retrieved document with comments			X	
1.25 Select ontologies to use for browsing documents or web pages				X
1.26 Use ontology to support browsing				X
1.27 Identify trend				X
1.28 Compare data by reporter				X

Figure 24 - Use case priorities

Annex B - List of Acronyms used in this deliverable

AGROVOC	FAO-Multilingual Agricultural Thesaurus
API	Application Programming Interface
ASFA	Aquatic Sciences Fisheries Abstracts
CITES	Convention on International Trade in Endangered Species
CORBA	Common Object Remote Broker Architecture
COTS	Commercial off the Shell
CPUE	Fishery Basic Catch Per Unit Effort
DLO	Document-Like Object
CSV	Comma Separated Value files
EIMS	Electronic Information Management System
FAOLEX	FAO-Legislative database
FI	Fisheries Department, FAO of the UN
FIDI	Fishery Information, Data and Statistics Unit, FAO of the UN
FIGIS	Fisheries Global Information System
FIRMS	Fishery Resources Monitoring System
FSDAS	Fisheries Stock Depletion Assessment System
GIS	Geographical Information Systems
HTML	HyperText Markup Language
ISO	International Organization for Standardization
ITIS	Integrated Taxonomic Information System
JWS	Java Web Start
KIMS/KIDS	Key Indicator Mapping System/Key Indicator Data System
MIME	Multipurpose Internet Mail Extensions
MIT	Massachusetts Institute of Technology
NMFS	National marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OBIS	Ocean Bio-geographic Information System
OO	Object Oriented

OWL	Web Ontology Language
PDF	Portable Document Format
RDF	Resource Description Framework
RMI	Remote Method Invocation
RFB	Regional Fishery Body
RSS	Really Simple Syndication
RTMS	Fisheries Reference Table Management System
SGML	Standard Generalized Markup Language
SOAP	Simple Object Access Protocol
SQL	Structured Query Language
UTF8	8 bit Unicode Transformation Format
WP	Work package
XML	Extensible Markup Language
XHTML	EXtensible HyperText Markup Language
XSL	EXtensible Stylesheet Language

References

NeOn WP6:

- 6.2.1 - NeOn API and Architecture (05/04/2007)

NeOn WP7:

- D7.2.2 - Revised and enhanced Fisheries ontologies (ongoing due 15/08/2007)
- D7.4.1 - Software architecture for managing the fishery ontologies lifecycle (ongoing, due 15/08/2007)
- D7.1.1 - User requirements specifications for the Fisheries ontology, knowledge tools and alert system (15/11/2006)
- Fisheries Systems Inventory T7.2.1 (05/04/2007)

ISO standards:

- ISO 9126-1 Non-functional requirements (2006-09-15)
    - See also: http://www.cse.dcu.ie/essiscope/sm2/9126ref.html
- ISO 2709 bibliographic exchange format
- ISO tc211 GIS metadata standard

Design analysis methods:

- Evolutionary Process for Integrating COTS-Based Systems (EPIC, 2002)
- The 4+1 View Model of Architecture (Kruchten, 1995)

Licenses:

- GNU GENERAL PUBLIC LICENSE (June 1991)

Software:

- Log4J Logging software (N.D.)
- JUNIT code-driven testing software (N.D.)
- JavaDoc code documentation tool
- UNESCO ISIS database
- BIRT Project (Business Intelligence and Reporting Tools)