Developing a New Interface Language for VIVO

This page is in DRAFT

Summary

This document presents the process required to develop a new language to be integrated into VIVO and Vitro. It is intended for any developer who wishes to develop a new integrated language. The development process requires a good knowledge of the VIVO internal structure and its internal working mechanisms. This document describes the development cycle of new languages as well as the components required for this development.

The project of adding a new language requires diverse and varied skills. Therefore, it requires the involvement of a multidisciplinary team composed of software developers, linguists and ontologists. It is therefore necessary to allow a few days or even a few weeks, depending on the computer skills of the team, to complete all the iterations presented in this guide. All team members must be able to master the development cycle presented below, as well as the IT actions associated with each stage of the cycle. It will therefore be necessary to offer adequate IT support to the non-IT personnel working on the translation of the texts contained in the various files. To simplify this work, we strongly recommend the use of UQAM-DEV R.3 : An Interoperable UQAM Development Environment for VIVO (UQAM-DEV) which has been specially designed to carry out this type of project. However, in order to preserve the generality of the presented solution, we have chosen to present the method in a Ubuntu Linux development context.

To illustrate the process of integrating new languages, we will give examples of how the French Canadian linguistic context is integrated into VIVO.

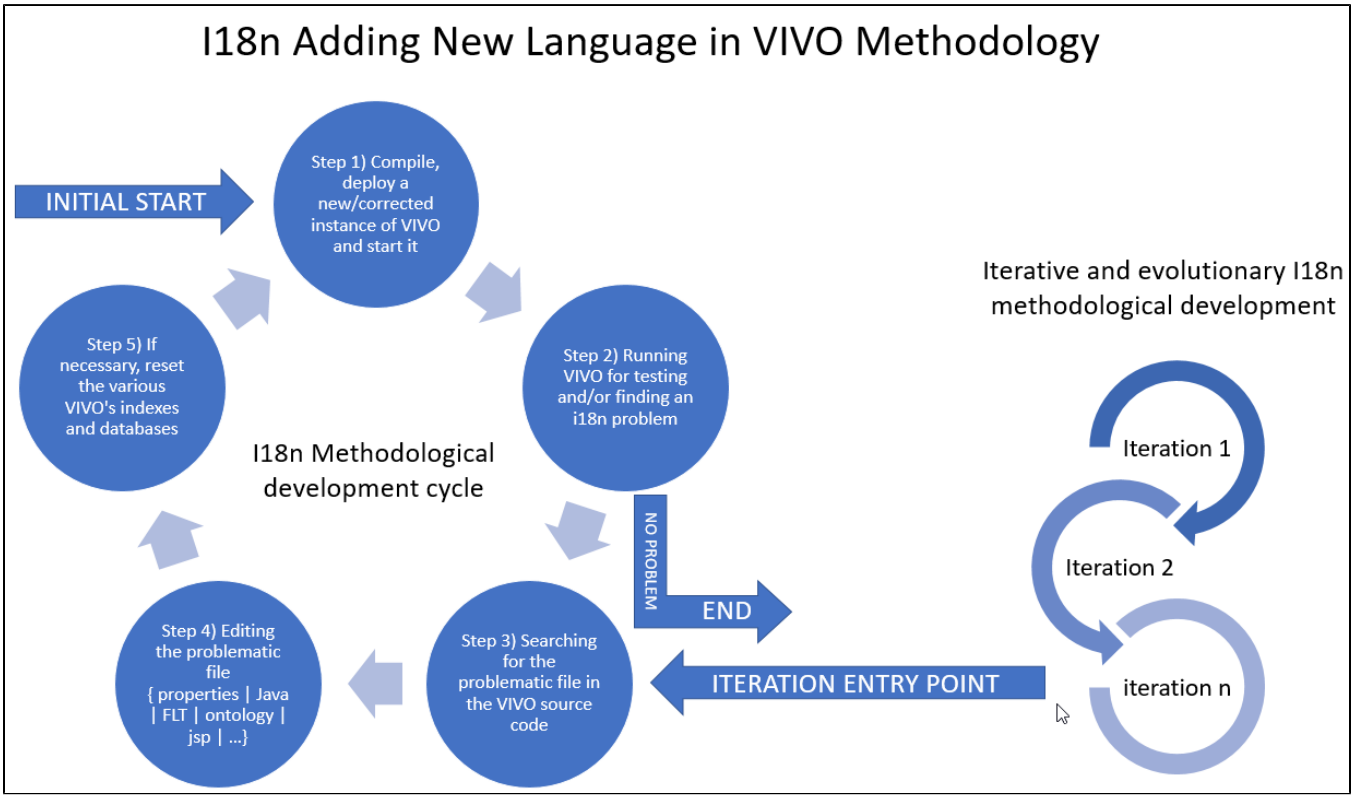
Methodological overview

The method developed to integrate a new linguistic context into VIVO is an Agile one that involves a development cycle punctuated by evolutionary iterations whose purpose is the introduction of new language into VIVO. Source code control aspects are deliberately not dealt with in this methodology in order to leave each team free to deal with this subject according to the governance rules specific to the institution leading the project.

Development Cycle

la figure ci-dessous schématise la méthodologie d'intégration de nouveaux langages dans VIVO. The cyclical, incremental and evolutionary methodology allows a segmentation of the tasks to be carried out. From the cyclical point of view, the methodology is segmented in five steps. At each iteration, the five steps punctuate the development cycle. Each iteration targets a specific point to be addressed which is defined in the goal to be reached in the iteration. Si

The figure below shows the five generic steps in the cycle of integrating a new language into VIVO that are performed at each iteration.



Vivo's internationalization process is a five-step cycle:

- Step 1) At the beginning of the cycle, the first step is to compile, deploy, and run the Vivo instance on the local computer.
- Step 2) The second step is to test and identify problems related to internationalization.
- Step 3) If everything works properly this ends the development cycle.
    - When a problem is identified it is necessary to search the code to find the problem.
    - This involves doing a lot of pattern managing search activities.
- Step 4) In fourth place, comes the stage of correcting the problem.
    - Once the problem has been identified, the professional must edit the concerned file to make correction.
- Step 5) In step five certain databases need to be initialized depending on the type of correction made.

- Then back to step one of recompiling and running vivo.

Development iteration

The development of VIVO's internationalization is an iterative process that requires several iterations before full internationalization is achieved. Each iteration runs through the development cycle we discussed earlier. In the following section we will present the different iterations by demonstrating the internationalization of the French Canadian. Each iteration will contain a section describing the purpose of the iteration, a section demonstrating each stage of the development cycle, and in conclusion a summary explaining the highlights of the iteration.

Iteration 1: Initial Start - Preparing and initializing the development environment

Goal:

This itération consists in setting up the software elements necessary to run an VIVO instance on a local host and prepare directories to undertake the task of internationalizing VIVO's content.

At the end of this iteration all software and data components will be in place to start the process of translating the files into the target language. French Canadian will be used as the demonstration language.

Item A) VIVO's software infrastructure installation

A.1 Linux configuration

Assume the configuration of the following environment variables

Example for Linux

```
export GIT_REPO=/opt/tomcat/GIT
export JAVA_HOME=/usr/lib/jvm/java-8-openjdk-amd64
export SOLR=/opt/solr
export TOMCAT_HOME=/opt/tomcat
export VIVO_HOME=/opt/tomcat/vivo_i18n/home
```

First it is necessary to install **Java**, **Maven**, **GIT**, and **SOLR**. If necessary, you will find instructions at the following link: Starting with basic installation: Java-Maven-Solr-GIT

Secondly, it is essential to install the Apache **Tomcat** application server. You will find the necessary instructions for its installation at the following link: Installing Tomcat 8.5 for Vivo-1.11.0-i18n

A.2 UQAM-DEV

An alternative VIVO deployment management solution is also available. You can see it here: UQAM-DEV R.3 : An Interoperable UQAM Development Environment for VIVO (UQAM-DEV)

Item B) Configuring the source code workspace and extracting the code

Step	Action

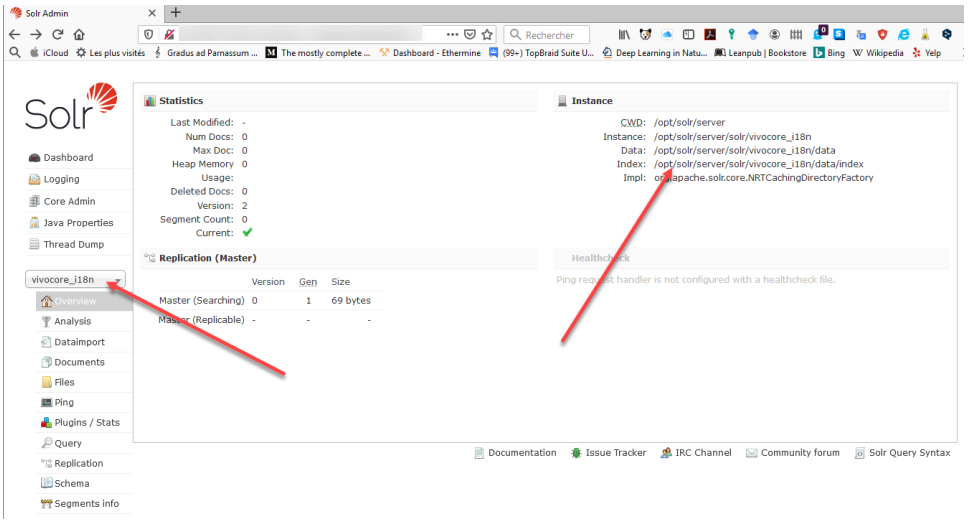
1) Creating the GIT directory
 	
Whether under Windows or on Unix it is necessary to create a space in which it is possible to work. As proposals we suggest creating a directory called under the Tomcat root directory. In the case of users and Unix we suggest to carry out the operations under the *tomcat* username. This precaution facilitates the management of credentials associated with development under Linux.
	`sudo -i -u tomcat # sudo in Linux - not on Windows`
	`mkdir $TOMCAT_HOME/GIT`
	`# $TOMCAT_HOME is predefined at the installation of Tomcat`
	`cd $TOMCAT_HOME/GIT`

2) Retrieving VIVO the code
 	
To VIVO internationalization, it is necessary to extract the four following GitHub repo:
	`git clone https://github.com/vivo-project/Vitro.git Vitro -b sprint-i18n`
	`git clone https://github.com/vivo-project/VIVO.git VIVO -b sprint-i18n`
	`git clone https://github.com/vivo-project/VIVO-languages VIVO-languages -b sprint-i18n`
	`git clone https://github.com/vivo-project/Vitro-languages Vitro-languages -b sprint-i18n`
	`git clone https://github.com/vivo-project/sample-data.git`

3) Retrieving UQAM VIVO-installer The installer makes it easy to manage the compilation and deployment of the VIVO i18n instance.	`git clone https://github.com/UQAM-SB/VIVO-installer -b sprint-i18n`

Item C) Configuring the VIVO search accelerator (SOLR)

Step	Action
1) Configuring SOLR	follow the configuration steps available at this link: Configure and Start Solr

2) Check vivocore in Solr	`sudo systemctl start solr`
	`http://localhost:8983/solr/#/vivocore_i18n/core-overview`
	 

Item D) Preparing VIVO for first start

Step	Action

1) Create VIVO home	`sudo -i -u tomcat # for Linux user`
	`mkdir -p $VIVO_HOME`
	`cp -r $TOMCAT_HOME/GIT/vivo-uqam-i18n/vivo-project-i18n-config/vivo_i18n/home/* $VIVO_HOME/home/`

2) Edit runtime.properties file
 	
Make sure that attribute properties fit with current installation
	`sudo -u tomcat vi $VIVO_HOME/config/runtime.properties`
	
	runtime.properties
	
	`Vitro.defaultNamespace = http://<your-server-ip-address>:8080/vivo_i18n/individual/`
	`...`
	
	`rootUser.emailAddress = YOUR_ADRESS`
	`rootUser.passwordChangeRequired = false`
	`rootUser.password = YOUR-PASSWORD`
	`...`
	
	`vitro.local.solr.url = http://<server-ip-address>:8983/solr/vivocore_i18n`
	`...`
	`RDFService.languageFilter = true`
	`languages.selectableLocales = en_US, de_DE`

3) Edit applicationSetup.n3 for TDB data persistence

applicationSetup.n3

```
# UNCOMMENT
:tdbContentTripleSource
    a   vitroWebapp:triplesource.impl.tdb.ContentTripleSourceTDB ,
        vitroWebapp:modules.tripleSource.ContentTripleSource ;
    # May be an absolute path, or relative to the Vitro home directory.
    :hasTdbDirectory "tdbContentModels" .

:sparqlContentTripleSource
    a   vitroWebapp:triplesource.impl.sparql.ContentTripleSourceSPARQL ,
        vitroWebapp:modules.tripleSource.ContentTripleSource ;
    # The URI of the SPARQL endpoint for your triple-store.
    :hasEndpointURI "http://localhost:3030/vivo/query" ;
    # The URI to use for SPARQL UPDATE calls against your triple-store.
    :hasUpdateEndpointURI "http://localhost:3030/vivo/update" .

COMMENT
#:sdbContentTripleSource
#    a   vitroWebapp:triplesource.impl.sdb.ContentTripleSourceSDB ,
#        vitroWebapp:modules.tripleSource.ContentTripleSource .

#REPLACE
:application
    a   vitroWebapp:application.ApplicationImpl ,
        vitroWebapp:modules.Application ;
    :hasSearchEngine              :instrumentedSearchEngineWrapper ;
    :hasSearchIndexer             :basicSearchIndexer ;
    :hasImageProcessor            :iioImageProcessor ;
    :hasFileStorage               :ptiFileStorage ;
    :hasContentTripleSource       :tdbContentTripleSource ;
#    :hasContentTripleSource       :sdbContentTripleSource ;
#    :hasConfigurationTripleSource :tdbConfigurationTripleSource ;
    :hasConfigurationTripleSource :tdbConfigurationTripleSource ;
    :hasTBoxReasonerModule        :jfactTBoxReasonerModule .
```

4) Edit and configure VIVO installation setting file

Check that the file contains the following code:

```
cd $GIT_REPO/Vivo-installer
sudo -u tomcat cp example_settings_i18n_linux.xml settings.xml
sudo -u tomcat vi settings.xml
```

settings.xml

```
<settings xmlns="http://maven.apache.org/SETTINGS/1.1.0"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:schemaLocation="http://maven.apache.org/SETTINGS/1.1.0
http://maven.apache.org/xsd/settings-1.1.0.xsd">
        <profiles>
                <profile>
                        <id>defaults</id>
                        <properties>
                                <app-name>vivo_i18n</app-name>
                                <vivo-dir>/opt/tomcat/vivo_i18n/home<
/vivo-dir>
                                <tomcat-dir>/opt/tomcat</tomcat-dir>
                                <default-theme>wilma</default-theme>
                        </properties>
                </profile>
        </profiles>
        <activeProfiles>
                <activeProfile>defaults</activeProfile>
        </activeProfiles>
</settings>
```

Item E) Compiling VIVO

This activity consists in making a first compilation of VIVO i18n.

Step	Action

1) check the state of the Git directory before starting the compilation
 	
make sure that all directories are present and are all at the same hierarchical level in Git directories
	Command
	
	`cd $GIT_REPO`
	`ls -al`
	
	Result
	
	`drwxrwxr-x ... Vitro`
	`drwxrwxr-x  ... Vitro-languages`
	`drwxrwxr-x  ... VIVO`
	`drwxrwxr-x  ... VIVO-installer`
	`drwxrwxr-x  ... VIVO-languages`

2) start compiling
 	
Before starting the compilation make sure you have correctly configured the settings_i18n_linux.xml file as described above. The -DskipTests option is optional.
 	
Make sure that the war file is installed in the appropriate tomcat directory.
	Command
	
	`cd VIVO-installer`
	`mvn -s settings.xml -DskipTests=true install`
	
	At the end you should see a compilation end looking like this:
	
	Result
	
	`[INFO]`
	`[INFO] --- maven-dependency-plugin:2.10:unpack (install) @ vivo-installer-vivo ---`
	`[INFO] Configured Artifact: org.vivoweb:vivo-installer-vivo:1.11.2-SNAPSHOT:war`
	`[INFO] Unpacking /opt/tomcat/GIT/Vivo-installer-i18n/webapp/target/vivo.war to /opt/tomcat/webapps/vivo_i18n with includes "" and excludes ""`
	`[INFO] ------------------------------------------------------------------------`
	`[INFO] Reactor Summary for VIVO Installer for i18n 1.11.2-SNAPSHOT:`
	`[INFO]`
	`[INFO] Vitro Home ..... SUCCESS [ 2.409 s]`
	`[INFO] VIVO Home ..... SUCCESS [ 1.453 s]`
	`[INFO] VIVO Languages for Home en_US ..... SUCCESS [ 0.340 s]`
	`[INFO] VIVO Languages for Home de_DE ..... SUCCESS [ 0.036 s]`
	`[INFO] VIVO Languages for Home es ..... SUCCESS [ 0.034 s]`
	`[INFO] VIVO Languages for Home pt_BR ..... SUCCESS [ 0.027 s]`
	`[INFO] VIVO Languages for Home en_CA ..... SUCCESS [ 0.024 s]`
	`[INFO] VIVO Languages for Home CORE ..... SUCCESS [ 0.105 s]`
	`[INFO] VIVO Installer for i18n`

```
........................... SUCCESS [ 0.151 s]
[INFO] Vitro Install Home for i18n
....................... SUCCESS [ 1.382 s]
[INFO] Vitro Dependencies
.............................. SUCCESS [ 0.447 s]
[INFO] Vitro API
....................................... SUCCESS [
1.295 s]
[INFO] Vitro Web App
..................................... SUCCESS [ 0.882 s]
[INFO] Vitro Languages for Web App en_US
.................. SUCCESS [ 0.313 s]
[INFO] Vitro Languages for Web App de_DE
.................. SUCCESS [ 0.064 s]
[INFO] Vitro Languages for Web App es
..................... SUCCESS [ 0.042 s]
[INFO] Vitro Languages for Web App pt_BR
.................. SUCCESS [ 0.051 s]
[INFO] Vitro Languages for Web App en_CA
.................. SUCCESS [ 0.099 s]
[INFO] Vitro Languages for Web App CORE
................... SUCCESS [ 0.212 s]
[INFO] VIVO API
....................................... SUCCESS [
0.379 s]
[INFO] VIVO Web App
..................................... SUCCESS [ 1.146 s]
[INFO] VIVO Languages for Web App en_US
................... SUCCESS [ 0.027 s]
[INFO] VIVO Languages for Web App de_DE
................... SUCCESS [ 0.104 s]
[INFO] VIVO Languages for Web App es
..................... SUCCESS [ 0.039 s]
[INFO] VIVO Languages for Web App pt_BR
................... SUCCESS [ 0.034 s]
[INFO] VIVO Languages for Web App en_CA
................... SUCCESS [ 0.026 s]
[INFO] VIVO Languages for Web App CORE
................... SUCCESS [ 0.085 s]
[INFO] VIVO WebApp Install dependencies for i18n
.......... SUCCESS [ 0.002 s]
[INFO] VIVO Install Web App for i18n
...................... SUCCESS [ 4.094 s]
[INFO]
------------------------------------------------------------
--------------
[INFO] BUILD SUCCESS
[INFO]
------------------------------------------------------------
--------------
[INFO] Total time: 15.851 s
[INFO] Finished at: 2020-09-23T14:50:52-07:00
[INFO]
------------------------------------------------------------
--------------
```

Item F) Preparing sample data

This activity is the first step in internationalization. It involves creating an internationalized test data file in the target language that will be used to assess the quality of the internationalization of the different VIVO modules.

Step	Action

1) access the sample file

Extract the sample file from GitHub

```
git clone https://github.com/vivo-project
/sample-data.git
```

2) build a translated file in the target language

This step consists of copying language files from the directory is in the target language and translating the content into the new language and associating the appropriate linguistic tag to it.

Notes: Make sure that your file is in UTF-8 format.
This procedure is for explanatory purposes, it is not to be carried out for fr_CA since the file sample-data-fr_CA.ttl already exists in the repo.

```
cd $GIT_REPO/sample-data/i18n
cp sample-data-en_US.ttl sample-data-
fr_CA.ttl
edit sample-data-fr_CA.ttl
```

#- sample change

Change from

```
sample-data:n1246
rdfs:label "ENC 1114 -- Introduction to
Rhetoric"@en-US ;
.
```

Change to

```
sample-data:n1246
rdfs:label "ENC 1114 -- Intruction à la
Rhétorique"@fr-CA ;
.
```

3) Install the files so that they are processed each time VIVO is started.

Change to

```
cp sample-data.ttl sample-data-en_US.ttl
sample-data-fr_CA.ttl $VIVO_HOME/rdf/abox
/filegraph
```

Item G) Starting VIVO

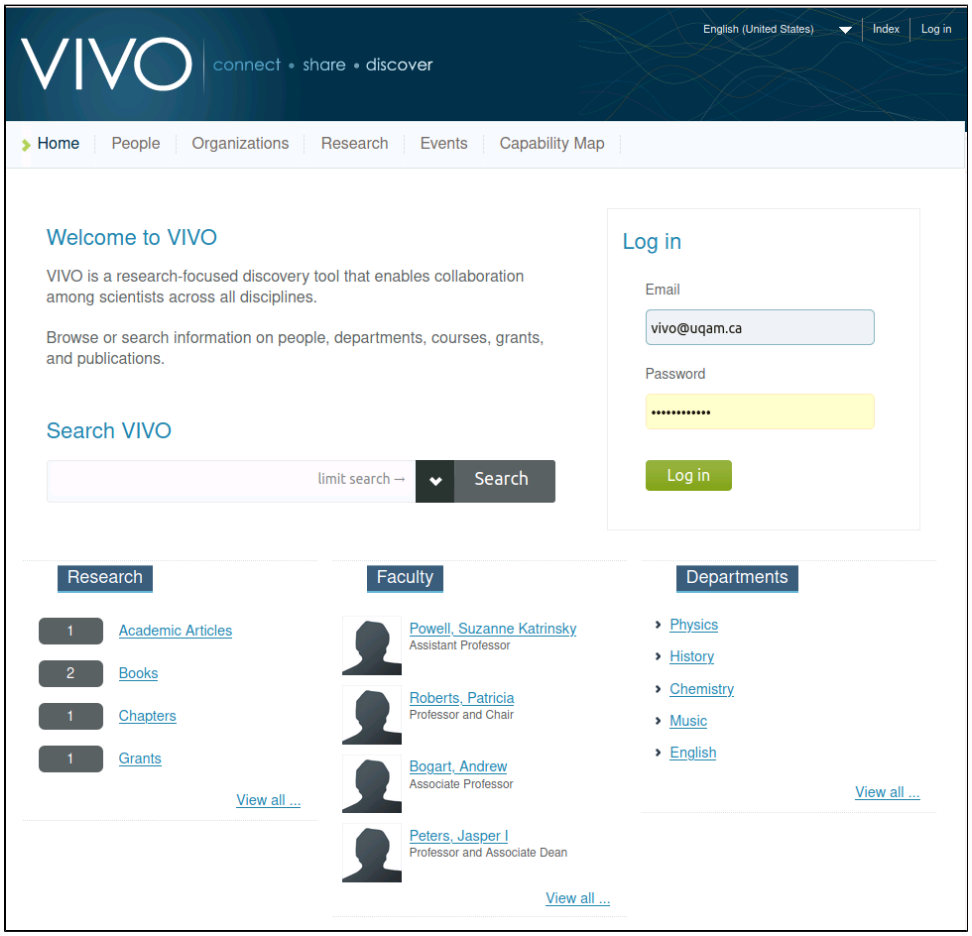
Step	Action
1) Start TOMCAT After making the appropriate configurations move to the TOMCAT executables directory and launch the application.	`cd $TOMCAT_HOME/bin` `./start.sh`

2) Monitoring the execution

after running the "taill -f" command you can do ^C to stop the Monitoring

```
cd $TOMCAT_HOME/log
tail - f

.createCacheHeaders=true, languages.selectableLocales=en_US, de_DE, orcid.api=sandbox, orcid.
apiVersion=2.0, orcid.clientId=APP-MWPTQ7Z850AY2GCH, orcid.clientPassword=5eeb8f1e-05fd-4aa3-af3f-
3bf12911f683, orcid.externalIdCommonName=Universitï¿½ du Quï¿½bec ï¿½ Montrï¿½al, orcid.
webappBaseUrl=http://locahost:8080/vivo/, proxy.eligibleTypeList=http://xmlns.com/foaf/0.1
/Person, http://xmlns.com/foaf/0.1/Organization, rootUser.emailAddress=vivo@uqam.ca, rootUser.
password=Vivo2435...., rootUser.passwordChangeRequired=false, rp.multiple=config, selfEditing.
idMatchingProperty=http://localhost:8080/ns#networkId, , vitro.local.solr.url=http://localhost:
8983/solr/vivocore_i18n}]
2020-09-23 15:32:27,278 INFO [RevisionInfoBean] Revision info [build date: 20-09-23 22 h 18,
level info: [[VIVO, 1.11.2-SNAPSHOT, d3e9606]]]
2020-09-23 15:32:27,321 WARN [StartupStatus] From FreemarkerEmailFactory$Setup: Invalid SMTP
host: 'smtp.mydomain.edu': host name is not recognized - Email functions are disabled.
2020-09-23 15:32:27,383 INFO [RDFFilesLoader] Loading rdf/display/everytime/dataGetterLabels.n3
2020-09-23 15:32:27,384 INFO [RDFFilesLoader] Loading rdf/display/everytime/displayModelListViews.
rdf
2020-09-23 15:32:27,386 INFO [RDFFilesLoader] Loading rdf/display/everytime/homePageDataGetters.n3
2020-09-23 15:32:27,388 INFO [RDFFilesLoader] Loading rdf/display/everytime/localeSelectionGUI.n3
2020-09-23 15:32:27,389 INFO [RDFFilesLoader] Loading rdf/display/everytime
/n3ModelChangePreprocessors.n3
2020-09-23 15:32:27,390 INFO [RDFFilesLoader] Loading rdf/display/everytime
/orcidInterfaceDataGetters.n3
2020-09-23 15:32:27,392 INFO [RDFFilesLoader] Loading rdf/display/everytime/pageList.n3
2020-09-23 15:32:27,393 INFO [RDFFilesLoader] Loading rdf/display/everytime/permissions.n3
2020-09-23 15:32:27,399 INFO [RDFFilesLoader] Loading rdf/display/everytime
/searchIndexerConfigurationVitro.n3
2020-09-23 15:32:27,404 INFO [RDFFilesLoader] Loading rdf/display/everytime
/searchIndexerConfigurationVivo.n3
2020-09-23 15:32:27,410 INFO [RDFFilesLoader] Loading rdf/display/everytime/vitroSearchProhibited.
n3
2020-09-23 15:32:27,411 INFO [RDFFilesLoader] Loading rdf/display/everytime
/vivoConceptDataGetters.n3
2020-09-23 15:32:27,414 INFO [RDFFilesLoader] Loading rdf/display/everytime/vivoListViewConfig.rdf
2020-09-23 15:32:27,426 INFO [RDFFilesLoader] Loading rdf/display/everytime
/vivoOrganizationDataGetters.n3
2020-09-23 15:32:27,431 INFO [RDFFilesLoader] Loading rdf/display/everytime/vivoQrCodeDataGetter.
n3
2020-09-23 15:32:27,434 INFO [RDFFilesLoader] Loading rdf/display/everytime/vivoSearchProhibited.
n3
2020-09-23 15:32:27,440 INFO [RDFFilesLoader] Loading rdf/displayTbox/everytime/displayTBOX.n3
2020-09-23 15:32:27,450 INFO [RDFFilesLoader] Loading rdf/displayDisplay/everytime/displayDisplay.
n3
2020-09-23 15:32:27,453 INFO [RDFFilesLoader] Loading rdf/auth/everytime/permission_config.n3
2020-09-23 15:32:27,464 INFO [RDFFilesLoader] Loading rdf/tbox/everytime
/initialTBoxAnnotations_de_DE.nt
2020-09-23 15:32:27,490 INFO [RDFFilesLoader] Loading rdf/tbox/everytime
/initialTBoxAnnotations_en_US.nt
2020-09-23 15:32:28,738 INFO [FileGraphSetup] Read 12 abox file graphs
2020-09-23 15:32:29,173 INFO [FileGraphSetup] Read 6 tbox file graphs
```

3) Observing the execution After logging in to VIVO and passing the smocktest you should see a presentation similar to this one. If you don't observe people in the faculties make sure that the example files are copied to the right place as indicated above or that Solr has been started .	Connect to http://localhost:8080/vivo_i18n 

Iteration summary

The objective of this iteration was to set up the software environment necessary for the integration of the new language. At this point an instance of TOMCAT, Solr, as well as the deployment of the en_US version of VIVO and an example file are fully operational and executable.

Iteration 2: Creating the directory structure of the target language context

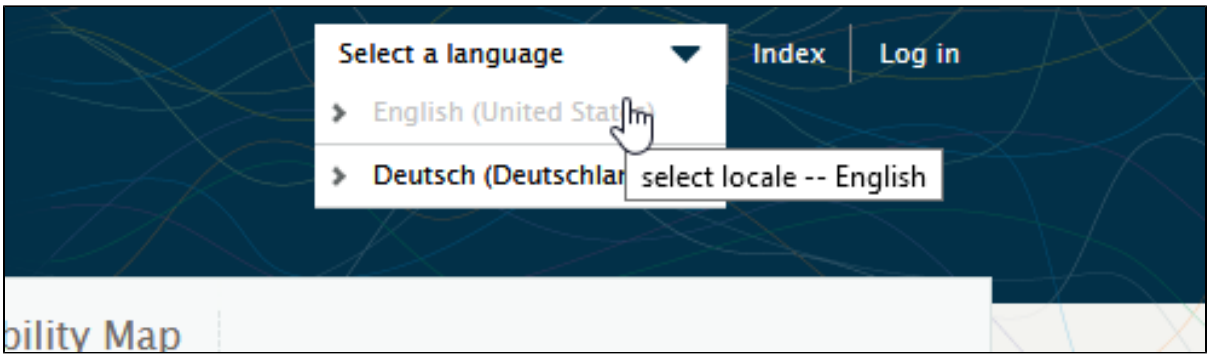
Goal

The goal of this iteration is to add the French Canadian linguistic context to the VIVO language selector. This goal includes the sub goal of initiating the implementation of the directory structure necessary to integrate the files needed to manage French Canadian in VIVO.

The methodological entry point of this iteration is step three

Step 3) Searching for the problematic file in the VIVO source code

The first functionality addressed in the internationalization and language management assumed by VIVO's language selector. As shown in the image below, the selector in its current state does not manage French Canadian. This iteration therefore consists in introducing French Canadian into the VIVO language selector.



Step 4) Editing the problematics files

4-1 Property, theme and other generic files

Several directory structures and files need to be set up to initialize the implementation of the linguistic context in VIVO.

The intention of this step is to produce the new structure (fr_CA) by copying an existing structure (en_US) and to make the necessary modifications to the elements of the new structure in order to finalize the new language insertion.

Step	Action

1) Create directory structures in Vitro-languages and VIVO-languages
 	
The demonstration is for the integration of the French Canadian fr_CA in Vitro-languages and VIVO-Languages
	Preparing Vitro-languages
	
	`cd $GIT_REPO/Vitro-languages`
	`cp -r en_US fr_CA`
	`mv en_US/webapp/src/main/webapp/i18n/all_en_US.properties fr_CA /webapp/src/main/webapp/i18n/all_fr_CA.properties`
	
	Preparing VIVO-languages
	
	`cd $GIT_REPO/VIVO-languages`
	`cp -r en_US fr_CA`
	`mv fr_CA/webapp/src/main/webapp/i18n/vivo_all_en_US.properties fr_CA /webapp/src/main/webapp/i18n/vivo_all_fr_CA.properties`
	`mv fr_CA/webapp/src/main/webapp/themes/wilma/i18n/all_en_US. properties fr_CA/webapp/src/main/webapp/themes/wilma/i18n/all_fr_CA. properties`
	`mv fr_CA/webapp/src/main/webapp/themes/tenderfoot/i18n/all_en_US. properties fr_CA/webapp/src/main/webapp/themes/tenderfoot/i18n /all_fr_CA.properties`

2) Translate the content of each properties file into the target language (here, the en_CA)	**Canadian French Translation example**
	
	`save_changes=Sauvegarder`
	`save_entry=Sauvegarder`
	`select_existing=Choisir l'enregistrement existant`
	`select_an_existing=Choisir un enregistrement existant`
	`add_an_entry_to=Ajouter un enregistrement de type`
	`change_entry_for=Modifier l'enregistrement pour:`
	`add_new_entry_for=Ajouter un enregistrement pour:`
	`change_text_for=Changement du texte pour:`
	`cancel_link = Annuler`
	`cancel_title = annuler`
	`required_fields = champs requis`

~~3) Creating themes~~ ~~Copy and adapt the themes from en_US to en_CA for VIVO Languages~~ ~~Translate each file of type en_US in the fr_CA/.../themes directory~~ • ~~translate the content into the target language~~ • ~~rename the file extension xxx_en_US.xxx with the extension of the target language (e.g. xxx_en_CA.xxx)~~	`mkdir -p VIVO-languages/fr_CA/webapp/src/main/webapp/themes/` `cp -r VIVO-languages/en_US/webapp/src/main/webapp/themes/* VIVO-languages/fr_CA/webapp/src/main/webapp/themes/`

~~4) Creating resources directory and assembly file~~
 	
• ~~the 'home.xml' file is necessary to ensure a viable compilation of the language files.~~
• ~~Only VIVO-languages contains home.xml file~~
• ~~Although is empty, it is necessary to create the directory resources~~
	`mkdir -p /VIVO-languages/fr_CA/home/src/main/resources/rdf/i18n/fr_CA`
	`mkdir -p VIVO-languages/fr_CA/home/src/main/assembly/`
	`cp VIVO-languages/en_US/home/src/main/assembly/home.xml VIVO-languages/fr_CA/home/src/main/assembly/`

Step 5) If necessary reset the various VIVO's indexes and databases

No action to do at this step for this iteration

Step 1) Compile and deploye a new/corrected instance of VIVO and start it

This step consists of integrating the new language into the VIVO installation process. To do this, a set of POM files need to be created or modified.

1-1 POM files for compilation

1-1-1 Steps to carry out from the Vitro-languages directory

Step	Action

Edit and modify ./core/pom.xml
 	
Add lines 6 to 11 in the <depedencies> section in the POM file
	`...`
	`    <artifactId>vitro-languages-webapp-es<`
	`/artifactId>`
	`    <version>${project.version}</version>`
	`    <type>war</type>`
	`</dependency>`
	`<dependency>`
	`    <groupId>org.vivoweb</groupId>`
	`    <artifactId>vitro-languages-webapp-`
	`fr_CA</artifactId>`
	`    <version>${project.version}</version>`
	`    <type>war</type>`
	`</dependency>`
	`<dependency>`
	`    <groupId>org...`

Edit and modify **./fr_CA/web_app/pom.xml** Pay particular attention to the version number which must correspond to the version currently under development.	... <modelVersion>4.0.0</modelVersion> **<artifactId>vitro-languages-fr_CA</artifactId>** <packaging>pom</packaging> **<name>Vitro Languages fr_CA</name>** <description>Vitro Languages</description> <url>http://vivoweb.org/</url> ...

Edit and modify **./fr_CA/web_app/src/pom.xml** Pay particular attention to the version number which must correspond to the version currently under development.	... <modelVersion>4.0.0</modelVersion> <groupId>org.vivoweb</groupId> **<artifactId>vitro-languages-webapp-fr_CA</artifactId>** <version>1.11.2-SNAPSHOT</version> <packaging>war</packaging> <parent> <groupId>org.vivoweb</groupId> **<artifactId>vitro-languages-fr_CA</artifactId>** <version>1.11.2-SNAPSHOT</version> <relativePath>..</relativePath> </parent> **<name>Vitro Languages for Web App fr_CA</name>** ...
Edit and modify ./pom.xml Add the following line which is in bold	... </distributionManagement> <modules> <module>core</module> <module>en_CA</module> <module>en_US</module> <module>es</module> **<module>fr_CA</module>** <module>pt_BR</module> <module>de_DE</module> </modules> </project>

1-1-2 Steps to carry out from the VIVO-languages directory

Step	Action
Edit and modify ./core/home/pom.xml Add the dependency (in bold) in the POM file	. . . <dependency> <groupId>org.vivoweb</groupId> <artifactId>vivo-languages-home-es</artifactId> <version>${project.version}</version> <type>tar.gz</type> </dependency> **<dependency>** **<groupId>org.vivoweb</groupId>** **<artifactId>vivo-languages-home-fr_CA </artifactId>** **<version>${project.version}</version>** **<type>tar.gz</type>** **</dependency>** <dependency> <groupId>org.vivoweb</groupId> <artifactId>vivo-languages-home-pt_BR </artifactId>
Edit and modify ./core/webapp/pom.xml Add the dependency (in bold) in the POM file	. . . <dependency> <groupId>org.vivoweb</groupId> <artifactId>vivo-languages-webapp-es </artifactId> <version>${project.version}</version> <type>war</type> </dependency> **<dependency>** **<groupId>org.vivoweb</groupId>** **<artifactId>vivo-languages-webapp-fr_CA </artifactId>** **<version>${project.version}</version>** **<type>war</type>** **</dependency>** <dependency> <groupId>org.vivoweb</groupId> <artifactId>vivo-languages-webapp-pt_BR </artifactId>

Edit and modify ./fr_CA/home/pom.xml Pay particular attention to the version number which must correspond to the version currently under development.	... <modelVersion>4.0.0</modelVersion> <groupId>org.vivoweb</groupId> **<artifactId>vivo-languages-home-fr_CA</artifactId>** <version>1.11.2-SNAPSHOT</version> <packaging>pom</packaging> <parent> <groupId>org.vivoweb</groupId> **<artifactId>vivo-languages-fr_CA</artifactId>** <version>1.11.2-SNAPSHOT</version> <relativePath>..</relativePath> </parent> **<name>VIVO Languages for Home fr_CA</name>** ...
Edit and modify ./fr_CA/webapp/pom.xml Pay particular attention to the version number which must correspond to the version currently under development.	... <modelVersion>4.0.0</modelVersion> <groupId>org.vivoweb</groupId> **<artifactId>vivo-languages-webapp-fr_CA</artifactId>** <version>1.11.2-SNAPSHOT</version> <packaging>war</packaging> <parent> <groupId>org.vivoweb</groupId> **<artifactId>vivo-languages-fr_CA</artifactId>** <version>1.11.2-SNAPSHOT</version> <relativePath>..</relativePath> </parent> **<name>VIVO Languages for Web App fr_CA</name>** ...
Edit and modify ./fr_CA/pom.xml Pay particular attention to the version number which must correspond to the version currently under development.	... <modelVersion>4.0.0</modelVersion> <groupId>org.vivoweb</groupId> **<artifactId>vivo-languages-fr_CA</artifactId>** <version>1.11.2-SNAPSHOT</version> <packaging>pom</packaging> <parent> <groupId>org.vivoweb</groupId> <artifactId>vivo-languages</artifactId> <version>1.11.2-SNAPSHOT</version> <relativePath>..</relativePath> </parent> **<name>VIVO Languages fr_CA</name>** **<description>VIVO Languages for fr_CA</description>** <url>http://vivoweb.org/</url> ...
Editing ./pom.xml Add the following line which is in bold	. . . <modules> <module>core</module> <module>en_CA</module> <module>en_US</module> <module>es</module> **<module>fr_CA</module>** <module>de_DE</module> <module>pt_BR</module> </modules> . . .

1-1-3 Steps to carry out from the VIVO-installer directory

Step	Action
Editing ./home/pom.xml Add the dependency (in bold) in the POM file	. . . <modules> <module>../../Vitro/home</module> <module>../../VIVO/home</module> <module>../../VIVO-languages/core/home</module> <module>../../VIVO-languages/en_US/home</module> <module>../../VIVO-languages/en_CA/home</module> <module>../../VIVO-languages/de_DE/home</module> <module>../../VIVO-languages/es/home</module> <module>../../VIVO-languages/pt_BR/home</module> **<module>../../VIVO-languages/fr_CA/home</module>** </modules> . . .
Editing ./webapp/pom.xml Add the dependency (in bold) in the POM file	. . . <dependency> <groupId>org.vivoweb</groupId> <artifactId>vivo-languages-webapp-en_CA</artifactId> <version>1.11.2-SNAPSHOT</version> <type>war</type> </dependency> **<dependency>** **<groupId>org.vivoweb</groupId>** **<artifactId>vitro-languages-webapp-fr_CA</artifactId>** **<version>1.11.2-SNAPSHOT</version>** **<type>war</type>** **</dependency>** **<dependency>** **<groupId>org.vivoweb</groupId>** **<artifactId>vivo-languages-webapp-fr_CA</artifactId>** **<version>1.11.2-SNAPSHOT</version>** **<type>war</type>** **</dependency>** <dependency> . . .
Editing ./webapp_dep/pom.xml Add the dependency (in bold) in the POM file	. . . <modules> <module>../../Vitro/api</module> <module>../../Vitro/dependencies</module> <module>../../Vitro/webapp</module> <module>../../Vitro-languages/core/webapp</module> **<module>../../Vitro-languages/fr_CA/webapp</module>** <module>../../Vitro-languages/en_US/webapp</module> <module>../../Vitro-languages/en_CA/webapp</module> <module>../../Vitro-languages/de_DE/webapp</module> <module>../../Vitro-languages/es/webapp</module> <module>../../Vitro-languages/pt_BR/webapp</module> <module>../../VIVO/api</module> <module>../../VIVO/webapp</module> <module>../../VIVO-languages/core/webapp</module> **<module>../../VIVO-languages/fr_CA/webapp</module>** <module>../../VIVO-languages/en_US/webapp</module> <module>../../VIVO-languages/en_CA/webapp</module> <module>../../VIVO-languages/de_DE/webapp</module> <module>../../VIVO-languages/es/webapp</module> <module>../../VIVO-languages/pt_BR/webapp</module> </modules> . . .

1-2 Compiling VIVO

	Action

Start compiling
 	
Before starting the compilation make sure you have correctly configured the settings_i18n_linux.xml file as described above. The -DskipTests option is optional.
 	
Make sure that the war file is installed in the appropriate tomcat directory.
	Command
	
	`cd $GIT_REPO/VIVO-installer`
	`mvn -s settings.xml -DskipTests=true clean install`

Observe lines 9, 21 and 30 which indicate that the new language is included in the installation process.

At the end you should see a compilation end looking like this:

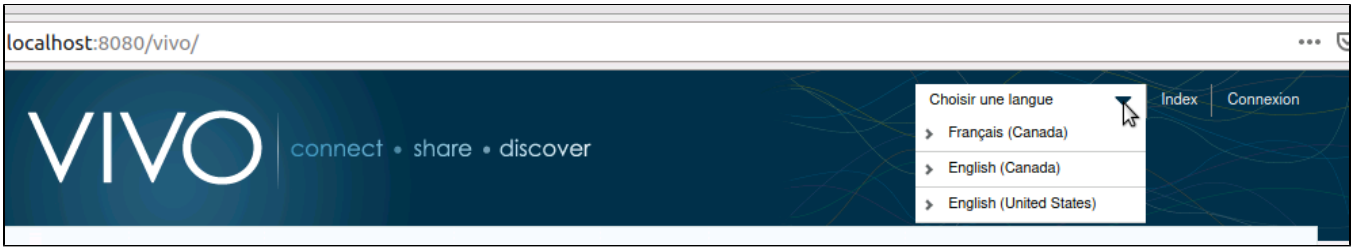
Result

```
[INFO]
------------------------------------------
----------------------------
[INFO] Reactor Summary for VIVO Installer
for i18n 1.11.2-SNAPSHOT:
[INFO]
[INFO] Vitro Home
.....................................
SUCCESS [ 3.782 s]
[INFO] VIVO Home
.....................................
SUCCESS [ 1.523 s]
[INFO] VIVO Languages for Home en_US
..................... SUCCESS [ 0.345 s]
[INFO] VIVO Languages for Home de_DE
..................... SUCCESS [ 0.042 s]
[INFO] VIVO Languages for Home es
..................... SUCCESS [ 0.025
s]
[INFO] VIVO Languages for Home fr_CA
..................... SUCCESS [ 0.020 s]
[INFO] VIVO Languages for Home pt_BR
..................... SUCCESS [ 0.025 s]
[INFO] VIVO Languages for Home en_CA
..................... SUCCESS [ 0.023 s]
[INFO] VIVO Languages for Home CORE
..................... SUCCESS [ 0.116 s]
[INFO] VIVO Installer for i18n
........................... SUCCESS [
0.185 s]
[INFO] Vitro Install Home for i18n
...................... SUCCESS [ 1.921
s]
[INFO] Vitro Dependencies
.............................. SUCCESS
[ 0.553 s]
[INFO] Vitro API
.....................................
SUCCESS [ 47.060 s]
[INFO] Vitro Web App
.................................
SUCCESS [ 1.268 s]
[INFO] Vitro Languages for Web App en_US
................. SUCCESS [ 0.369 s]
[INFO] Vitro Languages for Web App de_DE
................. SUCCESS [ 0.055 s]
[INFO] Vitro Languages for Web App es
.................. SUCCESS [ 0.055 s]
[INFO] Vitro Languages for Web App fr_CA
................. SUCCESS [ 0.040 s]
[INFO] Vitro Languages for Web App pt_BR
................. SUCCESS [ 0.048 s]
[INFO] Vitro Languages for Web App en_CA
................. SUCCESS [ 0.053 s]
[INFO] Vitro Languages for Web App CORE
.................. SUCCESS [ 0.136 s]
[INFO] VIVO API
.....................................
. SUCCESS [ 16.578 s]
[INFO] VIVO Web App
.................................
SUCCESS [ 1.399 s]
[INFO] VIVO Languages for Web App en_US
................. SUCCESS [ 0.034 s]
[INFO] VIVO Languages for Web App de_DE
```

```
..................... SUCCESS [ 0.058 s]
[INFO] VIVO Languages for Web App es
..................... SUCCESS [ 0.046 s]
[INFO] VIVO Languages for Web App fr_CA
..................... SUCCESS [ 0.034 s]
[INFO] VIVO Languages for Web App pt_BR
..................... SUCCESS [ 0.043 s]
[INFO] VIVO Languages for Web App en_CA
..................... SUCCESS [ 0.038 s]
[INFO] VIVO Languages for Web App CORE
..................... SUCCESS [ 0.096 s]
[INFO] VIVO WebApp Install dependencies
for i18n .......... SUCCESS [ 0.004 s]
[INFO] VIVO Install Web App for i18n
..................... SUCCESS [ 4.458 s]
[INFO]
------------------------------------------
------------------------------
[INFO] BUILD SUCCESS
[INFO]
------------------------------------------
------------------------------
[INFO] Total time: 01:21 min
[INFO] Finished at: 2020-10-30T06:44:16-
07:00
[INFO]
------------------------------------------
------------------------------
```

Step 2) Running VIVO for testing and/or finding an i18n problem

Running VIVO verifies that the linguistic context " Français (Canada) " fr_CA is functional.



Iteration summary

This iteration will have served to integrate the structure of the new language into VIVO. A first series of actions will have allowed to add and configure the necessary files to display the contextual linguistic menue including fr_CA. A second series of actions has been used to configure and add the necessary files for the compilation of VIVO by the i18n_installer program, including fr_CA.

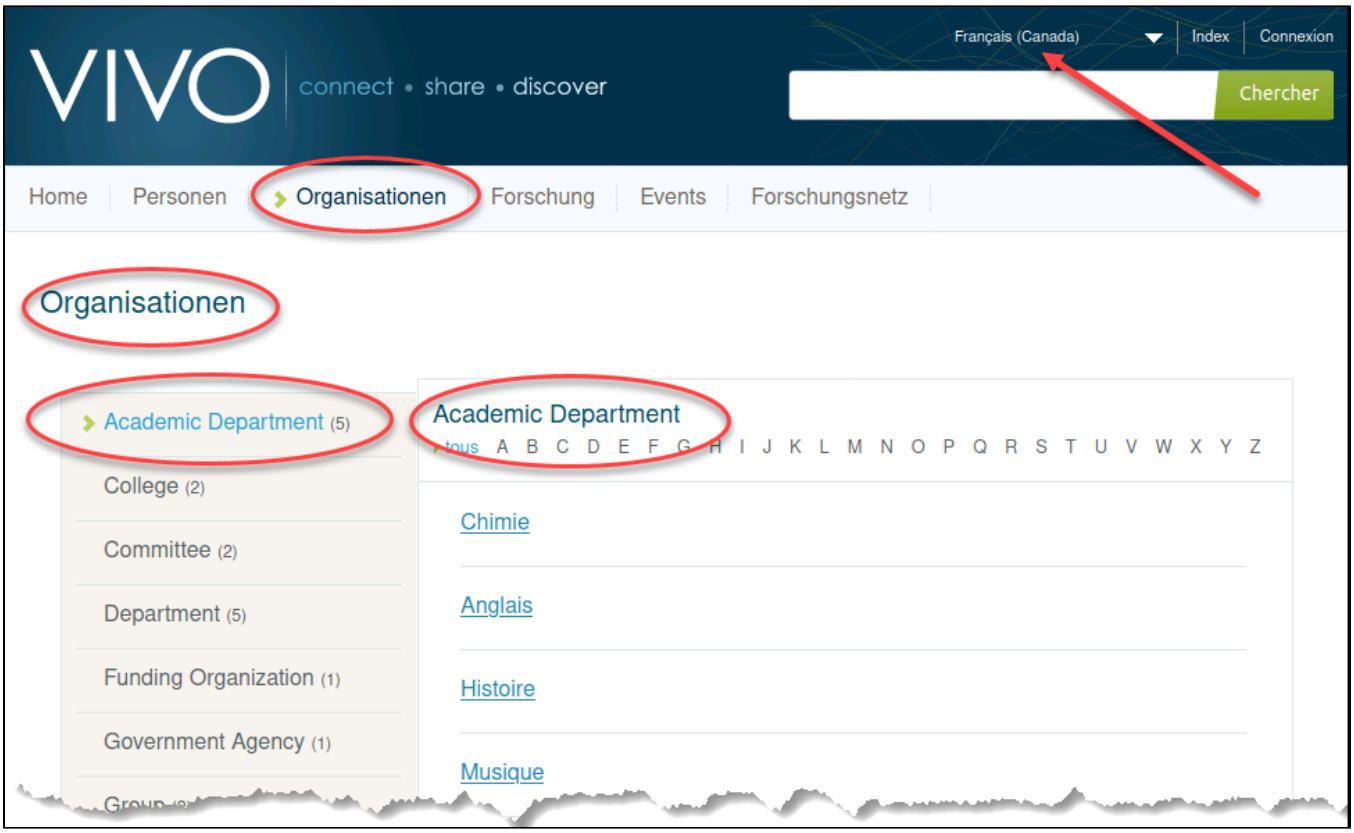
Iteration 3: Configuring menus

Goal

The purpose of this iteration is to configure the necessary files to ensure that the menus are presented in the proper linguistic context.

Step 3) Searching for the problematic file in the VIVO source code

The screenshot below indicates (circled in red) menu items that are not in the French Canadian context and need to be corrected.



Step 4) Editing the problematic files

4-1 Editing applicationMetadata files

The value of the fields displayed in the different menus is stored in the file **classgroups_LINGUISTIC_CONTEXT.ttl and propertygroups_LINGUISTIC_CONTEXT.ttl** contained in the directory: **VIVO-languages/LINGUISTIC_CONTEXT/home/src/main/resources/rdf/i18n/LINGUISTIC_CONTEXT/applicationMetadata/firsttime**

Step	Action
Moving directory structure to appropriate linguistic context	`cd ${GIT_REPO}` `mv VIVO-languages/fr_CA/home/src/main/resources/rdf/i18n/en_US VIVO-languages/fr_CA/home/src/main/resources/rdf/i18n/fr_CA`

Renaming ontologies
 	
From
 	
VIVO-languages/fr_CA/home/src/main/resources/rdf/i18n/fr_CA/applicationMetadata/firsttime/
 	
Renaming classgroups_en_US.nt to classgroups_fr_CA.nt
 	
and
 	
Renaming propertygroups_labels_en_US.nt to propertygroups_labels_fr_CA.nt
	`cd ${GIT_REPO}`
	`cd VIVO-languages/fr_CA/home/src/main/resources/rdf/i18n/fr_CA/applicationMetadata/firsttime/`
	`mv classgroups_labels_en_US.nt classgroups_labels_fr_CA.nt`
	`mv propertygroups_labels_en_US.nt propertygroups_labels_fr_CA.nt`

Change the content to approrpiate language. Both text and linguistic tag	**classgroups_fr_CA.nt**
	
	`@prefix owl: <http://www.w3.org/2002/07/owl#> .`
	`@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .`
	`@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .`
	`@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .`
	`@prefix vitro: <http://vitro.mannlib.cornell.edu/ns/vitro/0.7#> .`
	`@prefix vivo: <http://vivoweb.org/ontology#> .`
	`vivo:vitroClassGroupactivities rdfs:label "Activités"@fr-CA .`
	`vivo:vitroClassGroupcourses rdfs:label "Cours"@fr-CA .`
	`vivo:vitroClassGroupequipment rdfs:label "Équipement"@fr-CA .`
	`vivo:vitroClassGroupevents rdfs:label "Événements"@fr-CA .`
	`vivo:vitroClassGrouplocations rdfs:label "Lieux"@fr-CA .`
	`vivo:vitroClassGrouporganizations rdfs:label "Organisations"@fr-CA .`
	`vivo:vitroClassGrouppeople rdfs:label "Personnes"@fr-CA .`
	`vivo:vitroClassGrouppublications rdfs:label "Recherche"@fr-CA .`
	
	propertygroups_labels_fr_CA.nt
	
	`@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .`
	`@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .`
	`@prefix vivo: <http://vivoweb.org/ontology#> .`
	`@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .`
	`vivo:vitroPropertyGroupaddress rdfs:label "Coordonnées"@fr-CA .`
	`vivo:vitroPropertyGroupaffiliation rdfs:label "Affiliations"@fr-CA .`
	`vivo:vitroPropertyGroupbibliographic rdfs:label "Publications"@fr-CA .`
	`vivo:vitroPropertyGroupbibliographiconline rdfs:label "Documents associés"@fr-CA .`
	`vivo:vitroPropertyGroupbibmapping rdfs:label "Mappage bibliographique"@fr-CA .`
	`vivo:vitroPropertyGroupbibobscure rdfs:label "Infos supplémentaires sur le document"@fr-CA .`
	`vivo:vitroPropertyGroupbiography rdfs:label "Expérience"@fr-CA .`
	`vivo:vitroPropertyGroupidentifiers rdfs:label "Identifiants"@fr-CA .`
	`vivo:vitroPropertyGrouplinks rdfs:label "Liens"@fr-CA .`
	`vivo:vitroPropertyGrouplocation rdfs:label "Lieu"@fr-CA .`
	`vivo:vitroPropertyGroupmapping rdfs:label "Mappage"@fr-CA .`
	`vivo:vitroPropertyGroupoutreach rdfs:label "Services"@fr-CA .`
	`vivo:vitroPropertyGroupoverview rdfs:label "Aperçu"@fr-CA .`
	`vivo:vitroPropertyGroupresearch rdfs:label "Recherche"@fr-CA .`
	`vivo:vitroPropertyGroupteaching rdfs:label "Enseignement"@fr-CA .`
	`vivo:vitroPropertyGrouptime rdfs:label "Temps"@fr-CA .`

4-2 Editing DISPLAY files

Step	Action

Move to display and renaming ontologies:

Menu, PropertyConif and about Page

```
${GIT_REPO}
cd VIVO-languages/fr_CA/home/src/main/resources/rdf/i18n/fr_CA/display/firstime
mv menu_en_US.nt menu_fr_CA.nt
mv PropertyConfig_en_US.nt PropertyConfig_fr_CA.nt
mv aboutPage.nt aboutPage_fr_CA.nt
```

Change the content to appropriate language.

Both text and linguistic tag

menu_fr_CA.nt

```
@prefix : <http://vivoweb.org/ontology/menu_fr_CA#> .
@prefix bibo: <http://purl.org/ontology/bibo/> .
@prefix core: <http://vivoweb.org/ontology/core#> .
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix geo: <http://aims.fao.org/aos/geopolitical.owl#> .
@prefix ns: <http://www.w3.org/2003/06/sw-vocab-status/ns#> .
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix skos: <http://www.w3.org/2004/02/skos/core#> .
@prefix skos2: <http://www.w3.org/2008/05/skos#> .
@prefix statistics: <http://purl.org/net/OCRe/statistics.owl#> .
@prefix study_protocol: <http://purl.org/net/OCRe/study_protocol.owl#> .
@prefix terms: <http://purl.org/dc/terms/> .
@prefix vcard: <http://www.w3.org/2006/vcard/ns#> .
@prefix vitro: <http://vitro.mannlib.cornell.edu/ns/vitro/0.7#> .
@prefix vivo-display: <http://vitro.mannlib.cornell.edu/ontologies/display/1.1#> .
@prefix vivo-rech: <http://vivoweb.org/ontology/scientific-research#> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

vivo-display:CapabilityMap vivo-display:title "Expertises"@fr-CA .
vivo-display:CapabilityMapMenuItem vivo-display:linkText "Expertises"@fr-CA .
vivo-display:DefaultMenu rdfs:label "Menu par défaut"@fr-CA .
vivo-display:Events vivo-display:title "Événements"@fr-CA .
vivo-display:EventsMenuItem vivo-display:linkText "Événements"@fr-CA .
vivo-display:Home vivo-display:title "Accueil"@fr-CA .
vivo-display:HomeMenuItem vivo-display:linkText "Accueil"@fr-CA .
vivo-display:Organizations vivo-display:title "Organisations"@fr-CA .
vivo-display:OrganizationsMenuItem vivo-display:linkText "Organisations"@fr-CA .
vivo-display:People vivo-display:title "Personnes"@fr-CA .
vivo-display:PeopleMenuItem vivo-display:linkText "Personnes"@fr-CA .
vivo-display:Research vivo-display:title "Recherche"@fr-CA .
vivo-display:ResearchMenuItem vivo-display:linkText "Recherche"@fr-CA .
vivo-display:capabilityMapDataGetter vivo-display:htmlValue "Expertises"@fr-CA .
<http://vivoweb.org/ontology/menu_fr_CA> a owl:Ontology ;
owl:versionInfo "Adapted by Michel Héon, 2020, for Université du Québec à Montréal, http://uqam.ca" ;
owl:versionInfo "Translated by Pierre Roberge, 2020, for Université du Québec à Montréal, http://uqam.
ca" .
```

PropertyConfig_fr_CA.nt

```
@prefix : <http://vivoweb.org/ontology/vitroAnnotation_fr_CA#> .
@prefix bibo: <http://purl.org/ontology/bibo/> .
@prefix c4o: <http://purl.org/spar/c4o/> .
@prefix cito: <http://purl.org/spar/cito/> .
@prefix dcterms: <http://purl.org/dc/terms/> .
@prefix event: <http://purl.org/NET/c4dm/event.owl#> .
@prefix fabio: <http://purl.org/spar/fabio/> .
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix geo: <http://aims.fao.org/aos/geopolitical.owl#> .
@prefix obo: <http://purl.obolibrary.org/obo/> .
@prefix ocrer: <http://purl.org/net/OCRe/research.owl#> .
@prefix ocresd: <http://purl.org/net/OCRe/study_design.owl#> .
@prefix ocresp: <http://purl.org/net/OCRe/study_protocol.owl#> .
@prefix ocrest: <http://purl.org/net/OCRe/statistics.owl#> .
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix ro: <http://purl.obolibrary.org/obo/ro.owl#> .
@prefix scires: <http://vivoweb.org/ontology/scientific-research#> .
@prefix skos: <http://www.w3.org/2004/02/skos/core#> .
@prefix swo: <http://www.ebi.ac.uk/efo/swo/> .
@prefix vann: <http://purl.org/vocab/vann/> .
@prefix vcard: <http://www.w3.org/2006/vcard/ns#> .
@prefix vitro: <http://vitro.mannlib.cornell.edu/ns/vitro/0.7#> .
@prefix vitro-appconf: <http://vitro.mannlib.cornell.edu/ns/vitro/ApplicationConfiguration#> .
@prefix vitro-config: <http://vitro.mannlib.cornell.edu/ns/vitro/siteConfig/> .
@prefix vitro-public: <http://vitro.mannlib.cornell.edu/ns/vitro/public#> .
@prefix vivo: <http://vivoweb.org/ontology/core#> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

vitro-config:additionalEmailConfig vitro-appconf:displayName "courriels additionnels"@fr-CA .
vitro-config:addressLocationConfig vitro-appconf:displayName "lieu"@fr-CA .
vitro-config:adviseeRoleConfig vitro-appconf:displayName "mentoré(e) par"@fr-CA .
vitro-config:advisorRoleConfig vitro-appconf:displayName "Direction et mentorat"@fr-CA .
vitro-config:agentInFacilityConfig vitro-appconf:displayName "situé dans l'établissement"@fr-CA .
vitro-config:agentInGeoLocationConfig vitro-appconf:displayName "lieu"@fr-CA .
vitro-config:authorInAuthorshipConfig vitro-appconf:displayName "publications choisies"@fr-CA .
vitro-config:awardConferredByConfig vitro-appconf:displayName "prix conféré par"@fr-CA .
vitro-config:awardOrHonorConfig vitro-appconf:displayName "prix et distinctions"@fr-CA .
. . . etc.
```

aboutPage_fr_CA.nt

```
# $This file is distributed under the terms of the license in LICENSE$

@prefix about: <http://vitro.mannlib.cornell.edu/ns/default/about#> .

about:ABOUTDG
a <java:edu.cornell.mannlib.vitro.webapp.utils.dataGetter.FixedHTMLDataGetter> ;
<http://vitro.mannlib.cornell.edu/ontologies/display/1.1#htmlValue>
"""<h2>À propos de VIVO</h2>
<div class=\"pageGroupBody\" id=\"aboutText\"><p>VIVO est une application qui permet de découvrir des
chercheurs et chercheuses appartenant à différentes institutions qui opèrent leurs propres instances
de VIVO ou de répertoires compatibles avec les technologies du Web sémantique. L'information
globalement accessible grâce à VIVO est donc hébergée et gérée localement, au sein des différentes
instances de VIVO ou de ces autres répertoires.</p>

<p>VIVO est un logiciel libre originalement développé et implanté à l'Université de Cornell. Lorsqu'
installé et peuplé avec les données d'une institution, VIVO rend possible la découverte d'activités de
recherche parmi les différentes disciplines de cette institution. VIVO permet d'interroger et d'
explorer les données, et propose des résultats de recherche facettés qui facilitent le repérage des
informations souhaitées. Le contenu d'une instance VIVO peut être édité manuellement ou intégré
automatiquement depuis diverses bases de données: ressources humaines, bourses, subventions, cours et
activités facultaires.</p>

<p>Pour plus d'informations, veuillez consulter la <a href=\"http://vivoweb.org\">page du projet VIVO<
/a>.</p></div>
"""@fr-CA ;
<http://vitro.mannlib.cornell.edu/ontologies/display/1.1#saveToVar>
"aboutPage" .
about:ABOUTPAGE
a <http://vitro.mannlib.cornell.edu/ontologies/display/1.1#Page> ;
<http://vitro.mannlib.cornell.edu/ontologies/display/1.1#hasDataGetter>
about:ABOUTDG ;
<http://vitro.mannlib.cornell.edu/ontologies/display/1.1#title>
"About Page" ;
<http://vitro.mannlib.cornell.edu/ontologies/display/1.1#urlMapping>
"/about" .
```

4-3 Editing TBOX files

Step	Action

Move to display and renaming ontologies:
 	
InitialTboxAnnotation, Vivo and VitroAnnotation
	`cd ${GIT_REPO}`
	`mv VIVO-languages/fr_CA/home/src/main/resources/rdf/i18n/fr_CA/tbox/everytime /initialTBoxAnnotations_en_US.nt VIVO-languages/fr_CA/home/src/main/resources/rdf/i18n /fr_CA/tbox/everytime/initialTBoxAnnotations_fr_CA.nt`
	
	`mv VIVO-languages/fr_CA/home/src/main/resources/rdf/i18n/fr_CA/tbox/filegraph /vivo_fr_CA.nt VIVO-languages/fr_CA/home/src/main/resources/rdf/i18n/fr_CA/tbox /filegraph/vivo_fr_CA.nt`
	
	`mv VIVO-languages/fr_CA/home/src/main/resources/rdf/i18n/fr_CA/tbox/firsttime /vitroAnnotations_en_US.n3 VIVO-languages/fr_CA/home/src/main/resources/rdf/i18n/fr_CA /tbox/firsttime/vitroAnnotations_fr_CA.n3`

Editing initialTBoxAnnotations_fr_CA.nt vitroAnnotations_fr_CA.n3 for content translation	

inititialTBoxAnnotations_fr_CA.ttl

```
<http://vivoweb.org/ontology/core#pmcid> <http://www.w3.org/2000/01/rdf-schema#label>
"ID PubMed Central"@fr-CA .
<http://purl.obolibrary.org/obo/ERO_0000071> <http://www.w3.org/2000/01/rdf-
schema#label> "Software"@fr-CA .
<http://purl.org/ontology/bibo/Note> <http://www.w3.org/2000/01/rdf-schema#label>
"Note"@fr-CA .
<http://www.w3.org/2006/vcard/ns#language> <http://www.w3.org/2000/01/rdf-
schema#label> "a une langue"@fr-CA .
<http://vivoweb.org/ontology/core#offeredBy> <http://www.w3.org/2000/01/rdf-
schema#label> "offert par"@fr-CA .
<http://vivoweb.org/ontology/core#dateTimeValue> <http://www.w3.org/2000/01/rdf-
schema#label> "Date/heure"@fr-CA .
<http://vivoweb.org/ontology/core#isCorrespondingAuthor> <http://www.w3.org/2000/01
/rdf-schema#label> "Est-ce que cet personne est l'auteur recherché?"@fr-CA .
<http://vivoweb.org/ontology/core#SeminarSeries> <http://www.w3.org/2000/01/rdf-
schema#label> "Collections de séminaires"@fr-CA .
<http://purl.obolibrary.org/obo/ARG_0000172> <http://www.w3.org/2000/01/rdf-
schema#label> "ID de patient"@fr-CA .
<http://vivoweb.org/ontology/core#supplementalInformation> <http://www.w3.org/2000/01
/rdf-schema#label> "information supplémentaire"@fr-CA .
<http://www.w3.org/2006/vcard/ns#Geo> <http://www.w3.org/2000/01/rdf-schema#label>
"Géo"@fr-CA .
. . . etc.
```

vivo_fr_CA.ttl

```
@prefix : <http://vivoweb.org/ontology/core_fr_CA#> .
@prefix bibo: <http://purl.org/ontology/bibo/> .
@prefix core: <http://vivoweb.org/ontology/core#> .
@prefix core_fr_CA: <http://vivoweb.org/ontology/core_fr_CA#> .
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix geo: <http://aims.fao.org/aos/geopolitical.owl#> .
@prefix ns: <http://www.w3.org/2003/06/sw-vocab-status/ns#> .
@prefix obo: <http://purl.obolibrary.org/obo/> .
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix skos: <http://www.w3.org/2004/02/skos/core#> .
@prefix skos2: <http://www.w3.org/2008/05/skos#> .
@prefix statistics: <http://purl.org/net/OCRe/statistics.owl#> .
@prefix study_protocol: <http://purl.org/net/OCRe/study_protocol.owl#> .
@prefix terms: <http://purl.org/dc/terms/> .
@prefix vcard: <http://www.w3.org/2006/vcard/ns#> .
@prefix vitro: <http://vitro.mannlib.cornell.edu/ns/vitro/0.7#> .
@prefix vivo-rech: <http://vivoweb.org/ontology/scientific-research#> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

<http://aims.fao.org/aos/geopolitical.owl> rdfs:label "Ontologie géopolitique"@fr-CA .
geo:GDP rdfs:label "PIB"@fr-CA .
geo:GDPNotes rdfs:label "Notes PIB"@fr-CA .
geo:GDPTotalInCurrentPrices rdfs:label "Total du PIB en prix courants"@fr-CA .
geo:GDPUnit rdfs:label "Unité de PIB"@fr-CA .
geo:GDPYear rdfs:label "GDPYear"@fr-CA .
geo:agriculturalArea rdfs:label "secteur agricole"@fr-CA .
. . . etc.
```

vitroAnnotations.ttl

```
@prefix : <http://vivoweb.org/ontology/vitroAnnotfr_CA#> .
@prefix bibo: <http://purl.org/ontology/bibo/> .
@prefix c4o: <http://purl.org/spar/c4o/> .
@prefix cito: <http://purl.org/spar/cito/> .
@prefix dcterms: <http://purl.org/dc/terms/> .
@prefix event: <http://purl.org/NET/c4dm/event.owl#> .
@prefix fabio: <http://purl.org/spar/fabio/> .
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix geo: <http://aims.fao.org/aos/geopolitical.owl#> .
@prefix obo: <http://purl.obolibrary.org/obo/> .
@prefix ocrer: <http://purl.org/net/OCRe/research.owl#> .
@prefix ocresd: <http://purl.org/net/OCRe/study_design.owl#> .
@prefix ocresp: <http://purl.org/net/OCRe/study_protocol.owl#> .
@prefix ocrest: <http://purl.org/net/OCRe/statistics.owl#> .
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix ro: <http://purl.obolibrary.org/obo/ro.owl#> .
@prefix scires: <http://vivoweb.org/ontology/scientific-research#> .
@prefix skos: <http://www.w3.org/2004/02/skos/core#> .
@prefix swo: <http://www.ebi.ac.uk/efo/swo/> .
@prefix vann: <http://purl.org/vocab/vann/> .
@prefix vcard: <http://www.w3.org/2006/vcard/ns#> .
@prefix vitro: <http://vitro.mannlib.cornell.edu/ns/vitro/0.7#> .
@prefix vitro-public: <http://vitro.mannlib.cornell.edu/ns/vitro/public#> .
@prefix vivo: <http://vivoweb.org/ontology/core#> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

dcterms:contributor
vitro:fullPropertyNameAnnot "contributor" ;
vitro:hiddenFromDisplayBelowRoleLevelAnnot <http://vitro.mannlib.cornell.edu/ns/vitro
/role#nobody> ;
vitro:hiddenFromPublishBelowRoleLevelAnnot <http://vitro.mannlib.cornell.edu/ns/vitro
/role#public> ;
vitro:inPropertyGroupAnnot <http://vivoweb.org/ontology#vitroPropertyGroupmapping> ;
vitro:offerCreateNewOptionAnnot true ;
vitro:prohibitedFromUpdateBelowRoleLevelAnnot <http://vitro.mannlib.cornell.edu/ns
/vitro/role#nobody> ;
vitro:publicDescriptionAnnot "Entité chargée de verser des contributions à la
ressource. Les exemples de contributeurs comprennent une personne, un organisme ou un
service. Habituellement, le nom d'un contributeur devrait être utilisé pour indiquer
l'entité."@fr-CA ;
vitro:selectFromExistingAnnot true ;
.
dcterms:relation
vitro:fullPropertyNameAnnot "relation" ;
vitro:hiddenFromDisplayBelowRoleLevelAnnot <http://vitro.mannlib.cornell.edu/ns/vitro
/role#public> ;
vitro:hiddenFromPublishBelowRoleLevelAnnot <http://vitro.mannlib.cornell.edu/ns/vitro
/role#public> ;
vitro:inPropertyGroupAnnot <http://vivoweb.org/ontology#vitroPropertyGroupmapping> ;
vitro:offerCreateNewOptionAnnot true ;
vitro:prohibitedFromUpdateBelowRoleLevelAnnot <http://vitro.mannlib.cornell.edu/ns
/vitro/role#nobody> ;
vitro:publicDescriptionAnnot "Une ressource connexe. La pratique recommandée consiste
à identifier la ressource connexe au moyen d'une chaîne de caractères conforme à un
système d'identification formel. "@fr-CA ;
vitro:selectFromExistingAnnot true ;
.
. . . etc.
```

Step 5) If necessary reset the various VIVO's indexes and databases

The addition of ontologies for managing menus and menus brings major changes to the core content of VIVO data. For the success of this iteration, it is necessary to reinitialize the content of the VIVO triplestore. To do this it is necessary to delete the directories **rdf, tdbContentModels, tdbModels** contained in **vivo/home** and resettings de vivo web app in the tomcat directory

Step	Action

Stoping tomcat and delete vivo webapp	`${TOMCAT_HOME}/bin/cmd.sh stop`
	`cd ${TOMCAT_HOME)/webapps`
	`rm -rf vivo`

Removing directories from vivo/home	`cd $VIVO_HOME`
	`rm -r rdf`
	`rm -r tdbContentModels`
	`rm -r tdbModels`

Step 1) Compile and deploye a new/corrected instance of VIVO and start it

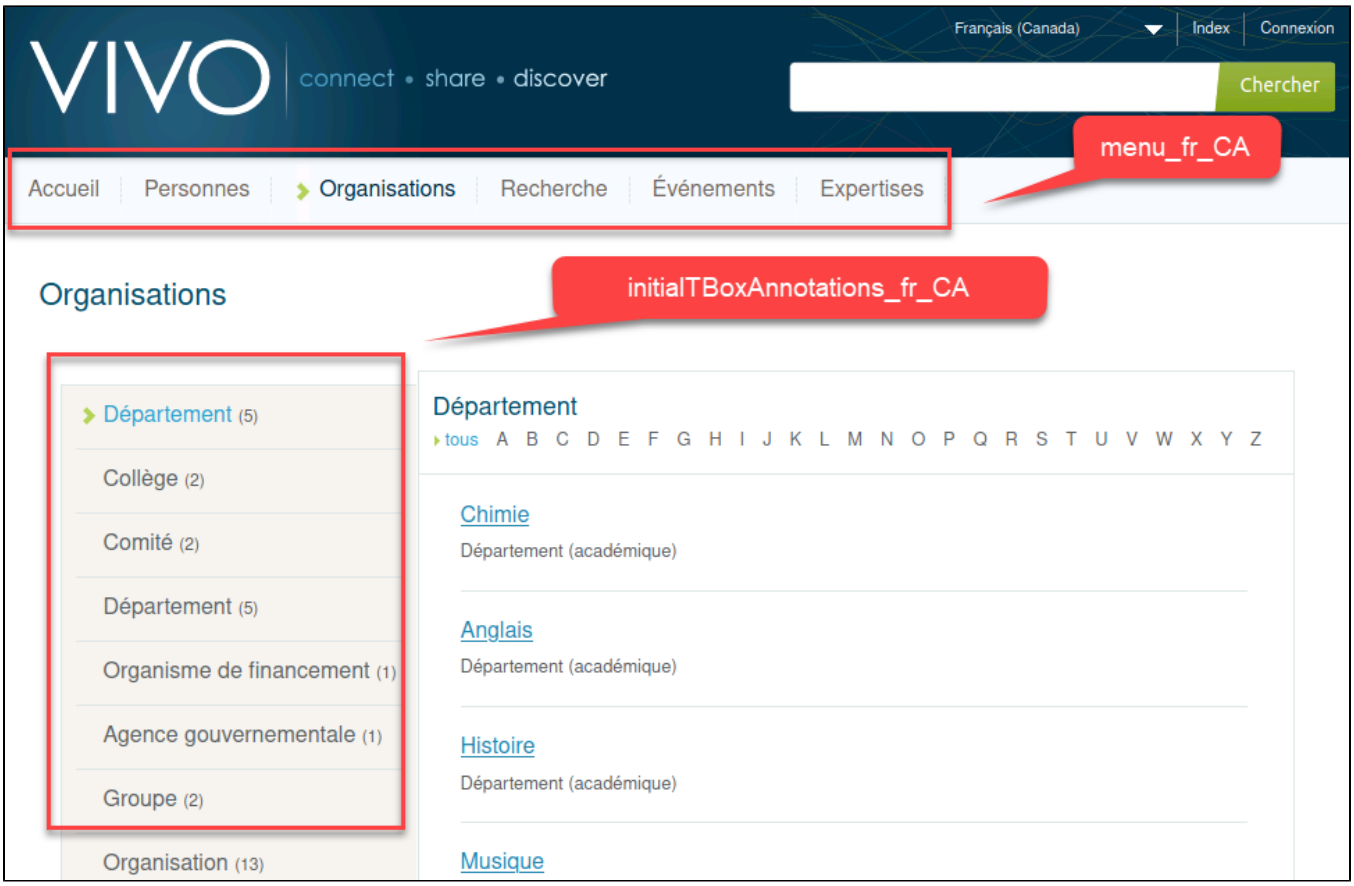
Step	Action

Compiling VIVO	**Command**
	`cd $GIT_HOME/VVO-installer`
	`mvn -s settings.xml -DskipTests=true clean install`

Populating VIVO with Sample-Data and restart Tomcat	`cp $GIT_HOME/sample-data/i18n/sample-data* $VIVO_HOME/rdf/abox/filegraph/` `${CATALINA_HOME}/bin/cmd.sh start`

Step 2) Running VIVO for testing and/or finding an i18n problem

The screenshot below shows an example of the various linguistic updates made from the addition of the various ontologies.



Iteration summary

This iteration made it possible to apply the necessary linguistic corrections to the main menus. Linguistic fixes were applied to the property files and ontologies by first adding the linguistic extension to the file name (e.g. vivo_fr_CA.nt), then translating the content in tags to the target language and finally adding the appropriate linguistic tag to each translation.

Iteration 4:

Goal

Step 3) Searching for the problematic file in the VIVO source code

Step 4) Editing the problematic file

Step 5) If necessary reset the various VIVO's indexes and databases

Step 1) Compile and deploye a new/corrected instance of VIVO and start it

Step 2) Running VIVO for testing and/or finding an i18n problem

Iteration summary

Iteration 5:

Goal

Step 3) Searching for the problematic file in the VIVO source code

Step 4) Editing the problematic file

Step 5) If necessary reset the various VIVO's indexes and databases

Step 1) Compile and deploye a new/corrected instance of VIVO and start it

Step 2) Running VIVO for testing and/or finding an i18n problem

Iteration summary