

UPDATER

Project Acronym: ODS

Project Title: Open Discovery Space: “A socially-powered and multilingual open learning infrastructure to boost the adoption of eLearning resources”

Open Discovery Space - Updater

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Authors:

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Project Co-ordinator

Company name: INTRASOFT International S.A.

Name of representative: Antonis Ramfos

Address: Rue Nicolas Bove 2b, L -1253
Luxembourg

Phone number: + 352 44 10 12 2186

Fax number: + 352 44 10 12 2359

E-mail: Antonis.ramfos@intrasoft-intl.com

Website: www.opendiscoveryspace.eu

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Table of Contents

| | | |
|-----|--|----|
| 1 | Introduction | 6 |
| 1.1 | Definition | 6 |
| 1.2 | Requirements..... | 6 |
| 1.3 | The ODS identifiers..... | 6 |
| 1.4 | XML files reading | 7 |
| 1.5 | Readable names for Drupal vocabularies | 13 |
| 2 | Development Issues..... | 17 |

List of Figures

| | |
|--|----|
| Figure 1: XML files location | 7 |
| Figure 2: Harvested data to be added to the ODS portal | 8 |
| Figure 3: Processed data files added to the ODS portal | 8 |
| Figure 4: Invalid data files discarded by the updater | 9 |
| Figure 5: Updater log sample | 13 |

List of Tables

| | |
|---|----|
| Table 1: Mapping between LOM fields and ODS Drupal fields | 10 |
|---|----|

1 INTRODUCTION

1.1 Definition

The updater is an application in PHP which is the responsible to create the educational object nodes for the ODS Drupal using LOM²-based XML files generated from harvested content from different repositories. Each XML file represents an educational object node in the Drupal portal.

1.2 Requirements

- Drupal 7.22
- Drush 5.8
- MySQL 5.1.6.3
- Apache 2.2.17
- PHP 5.3.5

1.3 The ODS identifiers

This version of the updater (14.0.5) rests on the premise that the current educational object nodes in the ODS portal could have the new two ODS identifiers that identify a specific resource: ODS general identifier (machine name: field_ods_general_identifier) and ODS metadata identifier (machine name: field_ods_metadata_identifier). However, it is mandatory that all the new ones must include them (files are discarded if they don't contain the ODS identifiers). Therefore, in order to determine if a new node is in the ODS portal yet, the updater follows the next process:

1. First, the updater checks if drupal nodes have the ODS identifiers filled: ODS general identifier (machine name: field_ods_general_identifier) and ODS metadata identifier (machine name: field_ods_metadata_identifier).
2. If not, then the updater checks the next ODS educational objects fields: LO identifier (machine name: field_lo_identifier³) and Data Provider (machine name: field_data_provider), where the Data Provider represents the ID of the repository term included in the *Repository* vocabulary (machine name: repository).

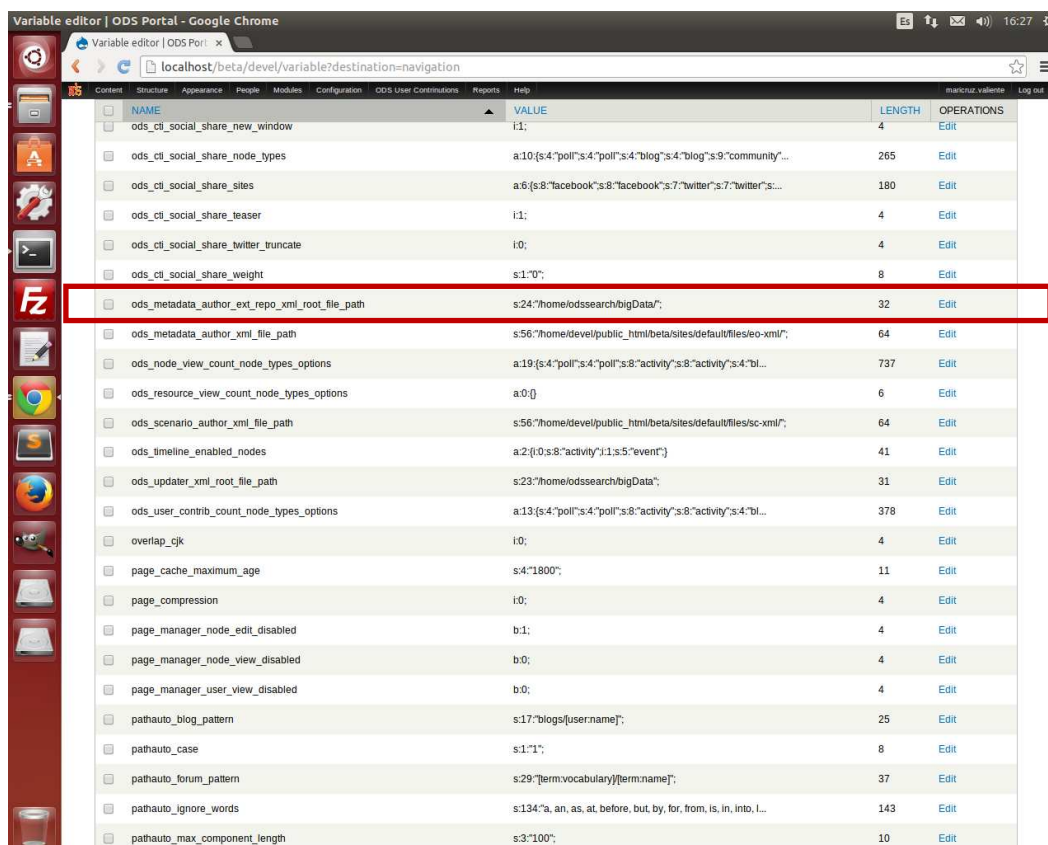
² Learning Object Metadata: http://ltsc.ieee.org/wg12/files/LOM_1484_12_1_v1_Final_Draft.pdf

³ Problem: this field is not mandatory according to the ODS Application Profile, however we need to check this field when we don't have the ODS identifiers. Therefore, this field should be mandatory.

If the updater finds the node in the portal, then it adds the new ODS identifiers to the existing Drupal node (if they were empty), and updates the information of this node with the new content.

1.4 XML files reading

The location of the harvested content is defined in the variable 'ods_updater_xml_root_file_path' defined in the ODS Drupal portal (*Administration menu > Development > Variable editor*) as shown in Figure 1.



| NAME | VALUE | LENGTH | OPERATIONS |
|---|--|--------|------------|
| ods_cti_social_share_new_window | i1; | 4 | Edit |
| ods_cti_social_share_node_types | a:10:{s:4:"poll";s:4:"poll";s:4:"blog";s:4:"blog";s:9:"community"... | 265 | Edit |
| ods_cti_social_share_sites | a:6:{s:8:"facebook";s:8:"facebook";s:7:"twitter";s:7:"twitter";s:... | 180 | Edit |
| ods_cti_social_share_teaser | i1; | 4 | Edit |
| ods_cti_social_share_twitter_truncate | i0; | 4 | Edit |
| ods_cti_social_share_weight | s:1:"0"; | 8 | Edit |
| ods_metadata_author_ext_repo_xml_root_file_path | s:24:"home/odssearch/bigData/"; | 32 | Edit |
| ods_metadata_author_xml_file_path | s:56:"home/develop/public_html/beta/sites/default/files/seo-xml/"; | 64 | Edit |
| ods_node_view_count_node_types_options | a:19:{s:4:"poll";s:4:"poll";s:8:"activity";s:8:"activity";s:4:"bl... | 737 | Edit |
| ods_resource_view_count_node_types_options | a:0:[] | 6 | Edit |
| ods_scenario_author_xml_file_path | s:56:"home/develop/public_html/beta/sites/default/files/sc-xml/"; | 64 | Edit |
| ods_timeline_enabled_nodes | a:2:{i:0;s:8:"activity";i:1;s:5:"event"}; | 41 | Edit |
| ods_updater_xml_root_file_path | s:23:"home/odssearch/bigData/"; | 31 | Edit |
| ods_user_contrib_count_node_types_options | a:13:{s:4:"poll";s:4:"poll";s:8:"activity";s:8:"activity";s:4:"bl... | 378 | Edit |
| overlap_cjk | i0; | 4 | Edit |
| page_cache_maximum_age | s:4:"1800"; | 11 | Edit |
| page_compression | i0; | 4 | Edit |
| page_manager_node_edit_disabled | b:1; | 4 | Edit |
| page_manager_node_view_disabled | b:0; | 4 | Edit |
| page_manager_user_view_disabled | b:0; | 4 | Edit |
| pathauto_blog_pattern | s:17:"blogs/[username]"; | 25 | Edit |
| pathauto_case | s:1:"1"; | 8 | Edit |
| pathauto_forum_pattern | s:29:"[term:vocabulary]/[term:name]"; | 37 | Edit |
| pathauto_ignore_words | s:134:"a, an, as, at, before, but, by, for, from, is, in, into, l... | 143 | Edit |
| pathauto_max_component_length | s:3:"100"; | 10 | Edit |

Figure 1: XML files location

The harvested data will be added in the 'new' folder of this location for the updater processing (see Figure 2). Each folder included in the '/home/odssearch/bigData/new' path is a repository and it stores the different XML files that are part of the repository (e.g. if the location of a XML file is /home/odssearch/bigData/new/ORGANIC_EDUNET/ODS_ORGANIC_EDUNET_1030.xml, then the repository name for this file will be 'ORGANIC_EDUNET').

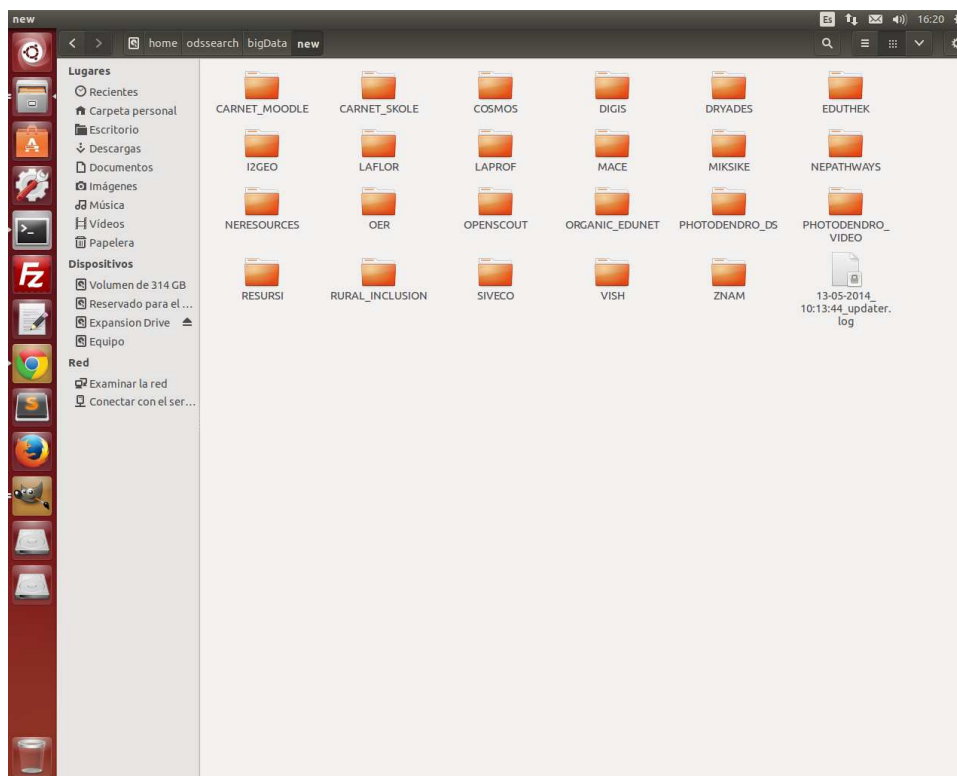


Figure 2: Harvested data to be added to the ODS portal

During the execution of the updater each processed file is moved to the 'old' folder of the ODS updater XML root file path for later data retrieval (see Figure 3), and invalid files are stored in the 'error' folder of this file path (see Figure 4)

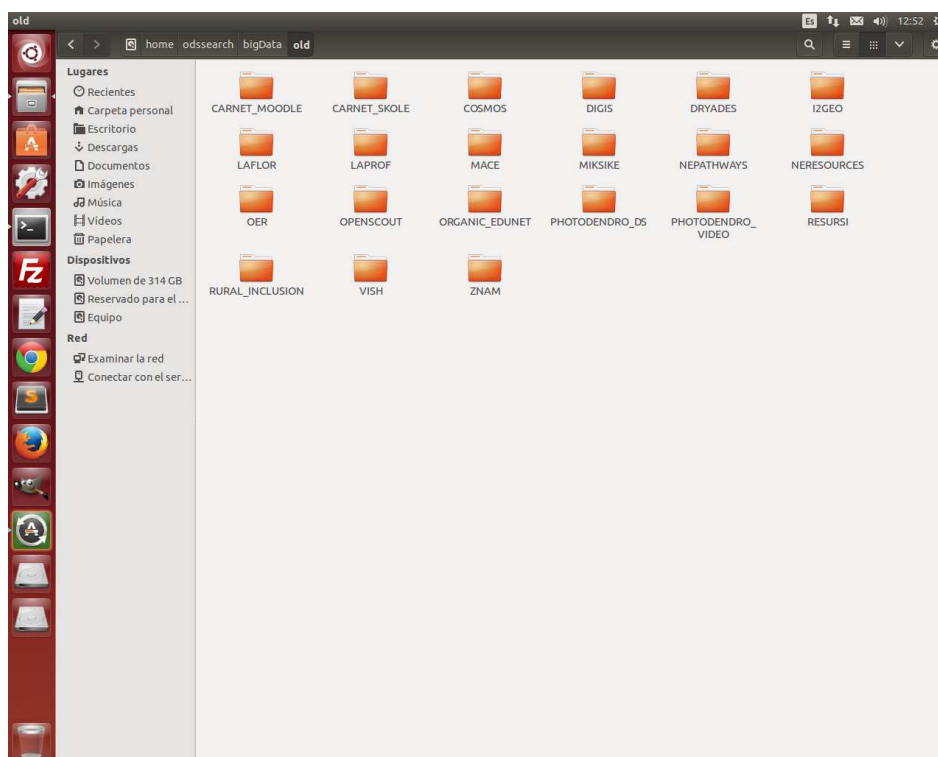


Figure 3: Processed data files added to the ODS portal

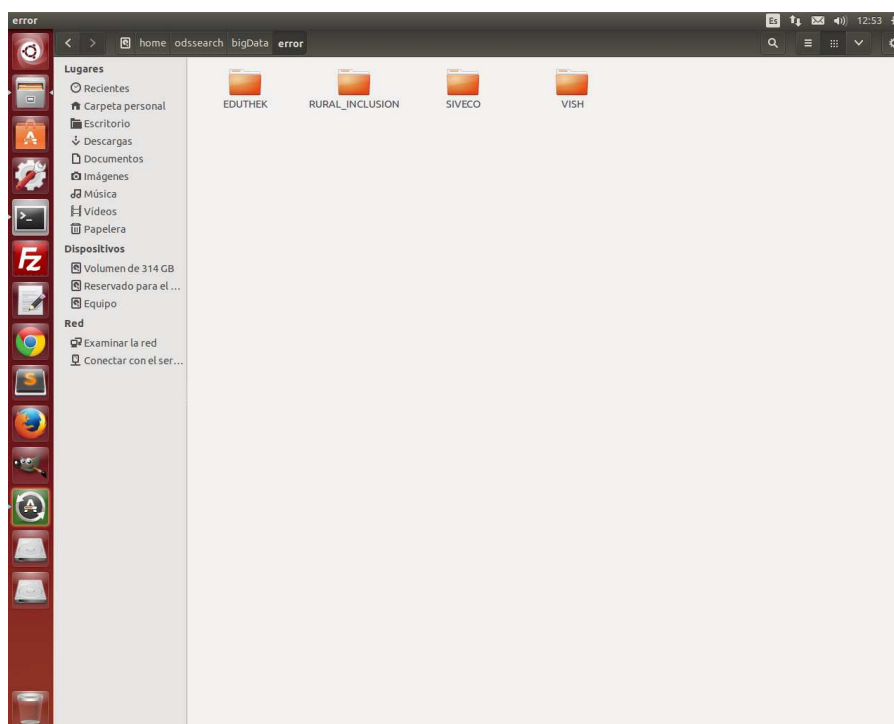


Figure 4: Invalid data files discarded by the updater

Not all the harvested data are used in the updater for the creation of the educational object nodes. Table 1 illustrates the mapping between the LOM fields that the updater processes from the XML files and the ODS Drupal fields from the 'Educational Object' content type (machine name: educational_object). It is worth noting that the updater fills the next ODS Drupal field with the current location of the XML file ('old' folder) in order to be able to retrieve this resource from the server for later processing of the whole content: ODS file location (machine name: field_ods_file_location).

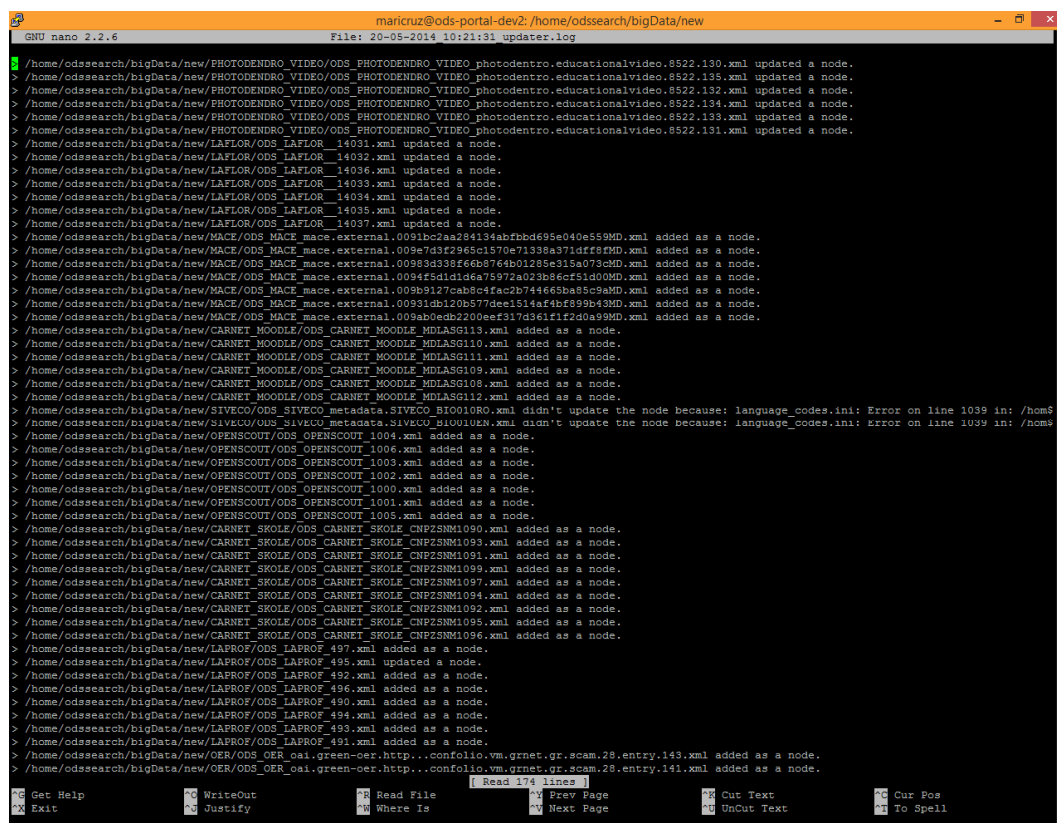
Table 1: Mapping between LOM fields and ODS Drupal fields

| LOM field | Educational Object field | Machine Name | Vocabulary |
|---|---|-------------------------------|--------------------------|
| general/identifier/entry | LO Identifier | field_lo_identifier | - |
| | ODS general identifier (catalog = 'ODS') | field_ods_general_identifier | - |
| general/title/string (language attribute) | Title | title_field | - |
| general/language | General Language | field_general_language | ODS AP Languages |
| | Language | language | - |
| general/description/string (language attribute) | Educational Object Description | field_eo_description | - |
| general/keyword/string (language attribute) | Edu Tags | field_edu_tags | Edu Tags |
| general/aggregationLevel/value | Aggregation Level | field_aggregation_level | ODS AP Aggregation Level |
| lifecycle/contribute/entity | Author Fullname | field_author_fullname | - |
| lifecycle/contribute/date/dateTime | EO Update Date | field_eo_update_date | - |
| metametadata/identifier/entry | ODS metadata identifier (catalog = 'ODS') | field_ods_metadata_identifier | - |
| technical/format | Media Type | field_technical_format | ODS AP Technical.Format |
| technical/location | Resource Link | field_resource_link | - |

| LOM field | Educational Object field | Machine Name | Vocabulary |
|---|-----------------------------|----------------------------------|--|
| educational/learningResourceType/value | Learning Resource Type | field_learning_resource_type | ODS AP Educational.LearningResourceType |
| educational/context/value | Educational Context | field_educational_context | ODS AP Educational.Context |
| educational/typicalAgeRange/string (language attribute) | Educational TypicalAgeRange | field_educational_typicalagerang | - |
| rights/cost/value | Rights Cost | field_rights_cost | ODS AP Rights.Cost |
| rights/copyrightAndOtherRestrictions/value | Rights Copyright | field_rights_copyright | ODS AP Rights.Copyright |
| classification/taxonpath/taxon/entry/string (language attribute) | Classification TaxonPath | field_classification_taxonpath | - |
| | Classification Discipline | field_classification_discipline | ODS AP Classification.Discipline |

As we have already mentioned, it is important to notice that the repository name of each XML file is the name of the folder in which the file is part of, and the educational object field Data Provider (machine name: field_data_provider) will store the ID for the corresponding term in the *Repository* vocabulary.

Finally, once the updater has finished the processing of the XML files it generates a log file which is located in the same path of the harvested data (i.e. '/home/odssearch/bigData/new') with information about the processed XML files. Figure 5 illustrates the content of a log file generated by the updater script.



```

maricruz@ods-portal-dev2: /home/odssearch/bigData/new
File: 20-05-2014 10:21:31 updater.log

/home/odssearch/bigData/new/PHOTODENDRO_VIDEO/ODS_PHOTOENDRO_VIDEO_photodentro.educationalvideo.8522.130.xml updated a node.
/home/odssearch/bigData/new/PHOTODENDRO_VIDEO/ODS_PHOTOENDRO_VIDEO_photodentro.educationalvideo.8522.135.xml updated a node.
/home/odssearch/bigData/new/PHOTODENDRO_VIDEO/ODS_PHOTOENDRO_VIDEO_photodentro.educationalvideo.8522.132.xml updated a node.
/home/odssearch/bigData/new/PHOTODENDRO_VIDEO/ODS_PHOTOENDRO_VIDEO_photodentro.educationalvideo.8522.134.xml updated a node.
/home/odssearch/bigData/new/PHOTODENDRO_VIDEO/ODS_PHOTOENDRO_VIDEO_photodentro.educationalvideo.8522.133.xml updated a node.
/home/odssearch/bigData/new/PHOTODENDRO_VIDEO/ODS_PHOTOENDRO_VIDEO_photodentro.educationalvideo.8522.131.xml updated a node.
/home/odssearch/bigData/new/LAFIOL/ODS_LAFIOL_14031.xml updated a node.
/home/odssearch/bigData/new/LAFIOL/ODS_LAFIOL_14032.xml updated a node.
/home/odssearch/bigData/new/LAFIOL/ODS_LAFIOL_14036.xml updated a node.
/home/odssearch/bigData/new/LAFIOL/ODS_LAFIOL_14033.xml updated a node.
/home/odssearch/bigData/new/LAFIOL/ODS_LAFIOL_14034.xml updated a node.
/home/odssearch/bigData/new/LAFIOL/ODS_LAFIOL_14035.xml updated a node.
/home/odssearch/bigData/new/LAFIOL/ODS_LAFIOL_14037.xml updated a node.
/home/odssearch/bigData/new/MACE/ODS_MACE_mace.external.0091bc2aa284134abfbbd695e040e559MD.xml added as a node.
/home/odssearch/bigData/new/MACE/ODS_MACE_mace.external.009e7d3f2965c1570e71338a371df8fMD.xml added as a node.
/home/odssearch/bigData/new/MACE/ODS_MACE_mace.external.00983d338f66b8764b01285e315a073cMD.xml added as a node.
/home/odssearch/bigData/new/MACE/ODS_MACE_mace.external.0094f5d1d1dea75972a023b86cf51d00MD.xml added as a node.
/home/odssearch/bigData/new/MACE/ODS_MACE_mace.external.008b9127c8ab84fca2b744663ba85e934MD.xml added as a node.
/home/odssearch/bigData/new/MACE/ODS_MACE_mace.external.00831db120b577dee1514af4bf899b43MD.xml added as a node.
/home/odssearch/bigData/new/MACE/ODS_MACE_mace.external.009ab0ed2200eef317d361f1f2d0a99MD.xml added as a node.
/home/odssearch/bigData/new/CARNET_MOODLE/ODS_CARNET_MOODLE_MDLASG113.xml added as a node.
/home/odssearch/bigData/new/CARNET_MOODLE/ODS_CARNET_MOODLE_MDLASG110.xml added as a node.
/home/odssearch/bigData/new/CARNET_MOODLE/ODS_CARNET_MOODLE_MDLASG111.xml added as a node.
/home/odssearch/bigData/new/CARNET_MOODLE/ODS_CARNET_MOODLE_MDLASG109.xml added as a node.
/home/odssearch/bigData/new/CARNET_MOODLE/ODS_CARNET_MOODLE_MDLASG108.xml added as a node.
/home/odssearch/bigData/new/CARNET_MOODLE/ODS_CARNET_MOODLE_MDLASG112.xml added as a node.
/home/odssearch/bigData/new/SIVECO/ODS_SIVECO_metadata.SIVECO_BIO010RO.xml didn't update the node because: language_codes.ini: Error on line 1039 in: /homs
/home/odssearch/bigData/new/SIVECO/ODS_SIVECO_metadata.SIVECO_BIO010EN.xml didn't update the node because: language_codes.ini: Error on line 1039 in: /homs
/home/odssearch/bigData/new/OPENSOURCE/ODS_OPENSOURCE_1004.xml added as a node.
/home/odssearch/bigData/new/OPENSOURCE/ODS_OPENSOURCE_1006.xml added as a node.
/home/odssearch/bigData/new/OPENSOURCE/ODS_OPENSOURCE_1003.xml added as a node.
/home/odssearch/bigData/new/OPENSOURCE/ODS_OPENSOURCE_1002.xml added as a node.
/home/odssearch/bigData/new/OPENSOURCE/ODS_OPENSOURCE_1000.xml added as a node.
/home/odssearch/bigData/new/OPENSOURCE/ODS_OPENSOURCE_1001.xml added as a node.
/home/odssearch/bigData/new/OPENSOURCE/ODS_OPENSOURCE_1005.xml added as a node.
/home/odssearch/bigData/new/CARNET_SKOLE/ODS_CARNET_SKOLE_CNFZSNM1090.xml added as a node.
/home/odssearch/bigData/new/CARNET_SKOLE/ODS_CARNET_SKOLE_CNFZSNM1093.xml added as a node.
/home/odssearch/bigData/new/CARNET_SKOLE/ODS_CARNET_SKOLE_CNFZSNM1091.xml added as a node.
/home/odssearch/bigData/new/CARNET_SKOLE/ODS_CARNET_SKOLE_CNFZSNM1099.xml added as a node.
/home/odssearch/bigData/new/CARNET_SKOLE/ODS_CARNET_SKOLE_CNFZSNM1097.xml added as a node.
/home/odssearch/bigData/new/CARNET_SKOLE/ODS_CARNET_SKOLE_CNFZSNM1094.xml added as a node.
/home/odssearch/bigData/new/CARNET_SKOLE/ODS_CARNET_SKOLE_CNFZSNM1092.xml added as a node.
/home/odssearch/bigData/new/CARNET_SKOLE/ODS_CARNET_SKOLE_CNFZSNM1095.xml added as a node.
/home/odssearch/bigData/new/CARNET_SKOLE/ODS_CARNET_SKOLE_CNFZSNM1096.xml added as a node.
/home/odssearch/bigData/new/LAPROF/ODS_LAPROF_497.xml added as a node.
/home/odssearch/bigData/new/LAPROF/ODS_LAPROF_495.xml updated a node.
/home/odssearch/bigData/new/LAPROF/ODS_LAPROF_492.xml added as a node.
/home/odssearch/bigData/new/LAPROF/ODS_LAPROF_496.xml added as a node.
/home/odssearch/bigData/new/LAPROF/ODS_LAPROF_490.xml added as a node.
/home/odssearch/bigData/new/LAPROF/ODS_LAPROF_494.xml added as a node.
/home/odssearch/bigData/new/LAPROF/ODS_LAPROF_493.xml added as a node.
/home/odssearch/bigData/new/LAPROF/ODS_LAPROF_491.xml added as a node.
/home/odssearch/bigData/new/ODS_ODS_OER_oai.green-oer.http...confolio.vm.qinet.gr.scam.28.entry.143.xml added as a node.
/home/odssearch/bigData/new/ODS_ODS_OER_oai.green-oer.http...confolio.vm.qinet.gr.scam.28.entry.141.xml added as a node.

[ Read 174 lines ]

```

```

maricruz@ods-portal-dev2: /home/odssearch/bigData/new
GNU nano 2.2.6      File: 20-05-2014_10:21:31_updater.log

> /home/odssearch/bigData/new/PHOTODENDRO_DS/ODS_PHOTODENDRO_DS_photodentro.lor.8521.1030.xml added as a node.
> /home/odssearch/bigData/new/PHOTODENDRO_DS/ODS_PHOTODENDRO_DS_photodentro.lor.8521.1032.xml added as a node.
> /home/odssearch/bigData/new/PHOTODENDRO_DS/ODS_PHOTODENDRO_DS_photodentro.lor.8521.1034.xml added as a node.
> /home/odssearch/bigData/new/PHOTODENDRO_DS/ODS_PHOTODENDRO_DS_photodentro.lor.8521.1031.xml added as a node.
> /home/odssearch/bigData/new/PHOTODENDRO_DS/ODS_PHOTODENDRO_DS_photodentro.lor.8521.1033.xml added as a node.
> /home/odssearch/bigData/new/PHOTODENDRO_DS/ODS_PHOTODENDRO_DS_photodentro.lor.8521.1035.xml added as a node.
> /home/odssearch/bigData/new/PHOTODENDRO_DS/ODS_PHOTODENDRO_DS_photodentro.lor.8521.1036.xml added as a node.
> /home/odssearch/bigData/new/PHOTODENDRO_DS/ODS_PHOTODENDRO_DS_photodentro.lor.8521.1037.xml added as a node.
> /home/odssearch/bigData/new/PHOTODENDRO_DS/ODS_PHOTODENDRO_DS_photodentro.lor.8521.1035.xml added as a node.

-----
SUMMARY
-----
Repositories: 23
Valid XML files: 133
Invalid XML files: 31
New nodes: 108
Updated nodes: 25
Number of files with missing titles in each repository:
--> Repository PHOTODENDRO_VIDEO: 6
--> Repository LAFLOR: 4
--> Repository MACE: 3
--> Repository CARNET_MOODLE: 6
--> Repository SIVECO: 0
--> Repository OPENSOURCE: 0
--> Repository CARNET_SKOLE: 9
--> Repository LAPROF: 0
--> Repository OER: 0
--> Repository COSMOS: 0
--> Repository NEPATHWAYS: 0
--> Repository ORGANIC_EDUNET: 0
--> Repository DRAPES: 0
--> Repository NEARSCOURCES: 0
--> Repository MIKSIKE: 14
--> Repository DIGIS: 4
--> Repository RESURSI: 6
--> Repository VISH: 4
--> Repository RURAL_INCLUSION: 5
--> Repository EDUTHER: 3
--> Repository ZNAM: 3
--> Repository I2GEO: 3
--> Repository PHOTODENDRO_DS: 9

```

Figure 5: Updater log sample

1.5 Readable names for Drupal vocabularies

Aggregation levels, language codes, languages and repository names from the harvested data must be replaced by an existing taxonomy term in the corresponding ODS Drupal vocabulary (*Administration menu > Structure > Taxonomy*). To do this, the updater uses different '.ini' files that contain the valid terms to use in the ODS Drupal vocabularies: aggregation_level.ini, languages.ini, language_codes.ini and repositories.ini. The '.ini' files must be located in the next path: /path_to_drupal_installation/odsUpdater. For each .ini file, it is important to check that the corresponding Drupal vocabulary has the same terms than the ini file. Besides, for the languages, if new languages are added the Drupal portal languages configuration has to be updated through the option *Administration menu > Configuration > Regional and language > Languages*.

aggregation_level.ini:

```

; Drupal Taxonomy: ODS AP Aggregation Level
; Machine name: ods_ap_aggregation_level
1 = "Educational Object"
2 = "Lesson Plan"
3 = "Educational Scenario"

```

language_codes.ini:

```
bg          = "bg"
cs          = "cs"
da          = "da"
de          = "de"
de-DE       = "de"
Deutsch     = "de"
el          = "el"
en-US       = "en"
eng         = "en"
english     = "en"
en          = "en"
es          = "es"
et          = "et"
fi          = "fi"
fr          = "fr"
ga          = "ga"
hr          = "hr"
hu          = "hu"
it          = "it"
lt          = "lt"
lv          = "lv"
nl          = "nl"
pl          = "pl"
pt          = "pt"
ro          = "ro"
ru          = "ru"
sr          = "sr"
sv          = "sv"
und         = "en"
```

languages.ini:

```
; Drupal Taxonomy: ODS AP Languages
; Machine name: ods_ap_languages
bg          = "Bulgarian"
cs          = "Czech"
da          = "Danish"
de          = "German"
de-DE       = "German"
Deutsch     = "German"
el          = "Greek"
eng         = "English"
english     = "English"
en          = "English"
en-US       = "English"
es          = "Spanish"
et          = "Estonian"
fi          = "Finnish"
fr          = "French"
ga          = "Irish"
```

hr = "Croatian"
hu = "Hungarian"
it = "Italian"
lt = "Lithuanian"
lv = "Latvian"
nl = "Dutch"
pl = "Polish"
pt = "Portuguese"
ro = "Romanian"
ru = "Russian"
sr = "Serbian"
sv = "Slovenian"
und = "Other"

repositories.ini:

```
; Drupal Taxonomy: Repository
; Machine name: repository

CARNET_MOODLE = "Carnet"
CARNET_SKOLE = "Carnet"
COSMOS = "Cosmos"
COSMOS_HEALTHY = "Cosmos"
DIGIS = "DIGIS"
DIGIS_HEALTHY = "DIGIS"
DRYADES = "Dryades"
DRYADES_HEALTHY = "Dryades"
EDUTHEK = "Eduthek"
GREEN_OER = "Green OER Comments"
GREEN_OER_HEALTHY = "Green OER Comments"
I2GEO = "i2geo"
I2GEO_HEALTHY = "i2geo"
LAFLOR = "La Flor"
LAFLOR_HEALTHY = "La Flor"
LAPROF = "LaProf"
LAPROF_HEALTHY = "LaProf"
MACE = "MACE"
MIKSIKE = "Miksike"
MIKSIKE_HEALTHY = "Miksike"
MOODLE = "Moodle Carnet"
MOODLE_HEALTHY = "Moodle Carnet"
NEPATHWAYS = "Nepathways"
NERESOURCES = "Neresources"
OER = "OER"
OPENSCOUT = "OpenScout"
ORGANIC_EDUNET = "Organic.Edunet"
ORGANIC_EDUNET_HEALTHY = "Organic.Edunet"
PHOTODENDRO_DS = "Photodendro"
PHOTODENDRO_DS_HEALTHY = "Photodendro"
PHOTODENDRO_VIDEO = "Photodendro"
PHOTODENDRO_VIDEO_HEALTHY = "Photodendro"
RESURSI = "Resursi"
RURAL_INCLUSION = "Rural Observatory"
```

| | |
|-------------------------|-----------------------|
| RURAL_INCLUSION_HEALTHY | = "Rural Observatory" |
| SIVECO | = "Siveco LRE" |
| SIVECO_HEALTHY | = "Siveco LRE" |
| SKOLE | = "Skole" |
| SKOLE_HEALTHY | = "Skole" |
| VISH | = "Vish" |
| ZNAM | = "Znam.bg" |
| ZNAM_HEALTHY | = "Znam.bg" |

2 DEVELOPMENT ISSUES

This chapter provides a set of remarks about some implementation issues that should be improved:

- The updater considers the first general language label of the XML file to be the language of the Educational Object node. If the XML file doesn't contain a general language label, then the updater assigns the "en" (English) language code to the language field of the Educational Object node.
- The updater considers the first string title with the same language of the Educational Object Node to be the title of the Educational Object Node. If the XML file doesn't contain a title with the same language of the language node, in order to avoid empty titles, the updater takes the first title as the title of the Educational Object node and it changes the language of the Educational Object node with the language of this first title (when a title doesn't contain the language attribute, the updater assigns the value "und" to the language of this title).
- The typical age range field is processed as a string and perhaps it should be better categorized into a real age range for further analysis in the ODS portal (especially for the search functionality: age filter).
- The updater considers the entry label of the classification/taxonpath/taxon element to be classifications of the Educational Object node. However, sometimes the value of the taxon entry is in the form "term::term::term..." or "term>term>term..." and this is how the classification is displayed in the summary page of the ODS portal.
- The updater considers the last term after the separators "::" in the entry label of the classification/taxonpath/taxon element to be disciplines of the Educational Object node. If the taxon entry doesn't include the separators, a discipline is not assigned.