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D5.1 Evaluation of the aggregation mechanism

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Abstract: This document contributes to task T5.2 *Aggregation Infrastructure Evaluation* and reports on an assessment of the available software components that go into generating the user aggregation experience through the MINT infrastructure, in terms of underlying technology and tools. The selected evaluation approach was two-fold: an online survey and face-to-face interviews. The methodology followed and the results obtained are reported.

Dissemination level	
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Confidential, only for the members of the Consortium and Commission Services	

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Statement of originality

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Project summary

Europeana Sounds is Europeana's 'missing' fifth domain aggregator, joining APEX (Archives), EUscreen (television), the Europeana film Gateway (film) and TEL (libraries). It will increase the opportunities for access to and creative re-use of Europeana's audio and audio-related content and will build a sustainable best practice network of stakeholders in the content value chain to aggregate, enrich and share a critical mass of audio that meets the needs of public audiences, the creative industries (notably publishers) and researchers. The consortium of 24 partners will:

- Double the number of audio items accessible through Europeana to over 1 million and improve geographical and thematic coverage by aggregating items with widespread popular appeal such as contemporary and classical music, traditional and folk music, the natural world, oral memory and languages and dialects.
- Add meaningful contextual knowledge and medium-specific metadata to 2 million items in Europeana's audio and audio-related collections, developing techniques for cross-media and cross-collection linking.
- Develop and validate audience specific sound channels and a distributed crowd-sourcing infrastructure for end-users that will improve Europeana's search facility, navigation and user experience. These can then be used for other communities and other media.
- Engage music publishers and rights holders in efforts to make more material accessible online through Europeana by resolving domain constraints and lack of access to commercially unviable (i.e. out-of-commerce) content.

These outcomes will be achieved through a network of leading sound archives working with specialists in audiovisual technology, rights issues, and software development. The network will expand to include other data-providers and mainstream distribution platforms (Historypin, Spotify, SoundCloud) to ensure the widest possible availability of their content.

For more information, visit http://pro.europeana.eu/web/europeana-sounds and http://www.europeanasounds.eu

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Executive summary: D5.1 Evaluation of the aggregation mechanism

Within Europeana Sounds, the aim of WP5 *Technical Infrastructure* is primarily to enable metadata aggregation by providing a mechanism that enhances existing Europeana aggregation functionality. Aggregation services within WP5 are covered by the MINT module, a web-based platform designed and developed to facilitate aggregation initiatives for cultural heritage content and metadata in Europe. The main role of the MINT ingestion platform in the Europeana Sounds project is to enable users to:

- Provide metadata records in a range of "source" formats
- Convert metadata to selected target schema
- Monitor the progresses of data provision
- Publish metadata to Europeana

This document contributes to T5.2 Aggregation *Infrastructure Evaluation* and reports on the evaluation process and results. The main focus was to assess all the available software components that go into generating the user experience, in terms of underlying technology and tools. The selected approach for the evaluation was two-fold: an online survey and face-to-face interviews.

The online questionnaire was completed by 29 individuals from 17 different organisations that are data providers within the Europeana Sounds project. The survey was structured in three parts: user information, MINT mini tasks and MINT overall rating. The questionnaire can be found in *Appendix A*. Users' responses and the analysis are reported in *Section* ***Error! Reference source not found.***.

In addition to the online survey, face-to-face interviews were organised to gather verbal feedback on how users found the module. Two sets of interviews were conducted with one and two interviewees each. The feedback gathered from those interviews is reported in *Section* ***Error! Reference source not ound.***.

1 Introduction

1.1 Background

Europeana Sounds focuses specifically on audio and audio-related content, primarily music and speech audio, including out-of-commerce recordings and a large number of unpublished works from Europe's major sound archives that are not widely available.

Efficient ingest of this audio and audio-related metadata is one of the main objectives of the project. It requires a framework for aggregating metadata for audio and related digital objects by defining and maintaining a content selection policy. Metadata aggregation covers registration and metadata import, mapping and transformation, cleaning and normalisation, link checking, thumbnail caching and quality checking prior to publication.

The aim of WP5 is primarily to enable metadata aggregation by providing an appropriate, fully functional and easy to use mechanism that enhances the existing Europeana aggregation functionalities. In interaction with WP1 *Aggregation*, the EDM sounds profile is deployed as an anchor, to which the

metadata supplied by data providers can be attached and become, at least partly, interoperable, while controlled vocabularies (defined in task T1.2 *Ontologies*) are used as part of the enrichment processes.

In the Europeana Sounds framework the basic aggregation functionality is covered by MINT ingestion services. MINT services compose a web-based platform designed and developed to facilitate aggregation initiatives for cultural heritage content and metadata in Europe. They cover registration and metadata import, mapping, validation and transformation, cleaning, normalisation and quality checking prior to publication.

MINT platform offers users a management system that allows the deployment and operation of different aggregation schemes (thematic or cross-domain, international, national or regional) and corresponding access rights.

The main role of the MINT ingestion platform in the Europeana Sounds project is to enable users to:

- Provide metadata records in a range of "source" formats
- Convert metadata to selected target schema
- Monitor the progresses of data provision
- Publish metadata to Europeana

MINT is designed as a web-based platform so as to be easily accessed, user-friendly and to enable users to easily perform mapping and transformation procedures, making the user experience as pleasant as possible. The aim of the aggregation mechanism evaluation, as foreseen by the DoW, is to assess all the available software components that go into generating the user experience, in terms of underlying technology and tools. The most appropriate way to perform the evaluation is by directly assessing users' feedback on their experience using the MINT aggregation services.

1.1.1 Objectives and scope

D5.1 Evaluation of the aggregation mechanism contributes to the aggregation infrastructure evaluation within task T5.2 *Aggregation infrastructure evaluation*. The scope of this evaluation is to validate the work that has taken place in the development cycle up to this date with respect to software components that go into generating the user experience. The main focus is on usability and satisfaction with respect to design, functionality, usability, navigation and search.

The purpose of this deliverable is to report the results of the evaluation approach followed within task *T5.2*, analyse these results and extract conclusions that can serve as a starting point for the improved and fully functional updated aggregation system that will be reported in M16 in D5.2 *Deployment of the fully functional updated aggregation system deployed by UIM*.

1.1.2 Related documents

D1.3 *Ontologies for sound* – reports on the controlled vocabularies defined within project for metadata enrichment.

D1.4 *EDM profile for sound* – reports on the adaptation of the EDM profile for audio and audio related objects to incorporate sound specific metadata.

MS23 *Revised aggregation design available* – outlines the basic components of aggregation infrastructure.

MS24 *Aggregation infrastructure prototype available* – reports on the delivered prototype that offers aggregation services such as registration and metadata import, mapping and transformation, and publication

MS25 *Sounds SKOS ontology normalisation and cleaning module beta* – outlines advance functionalities of aggregation mechanism.

MS26 *Aggregation mechanism ready* – reports on the delivery of the aggregation mechanism.

1.2 Evaluation approach

The framework for testing was structured so that data can be entered into an online system and reports and charts generated with a new dashboard tool to assist in the analysis. The method for receiving feedback is twofold –online data collection and face-to-face interviews.

1.2.1 Data collection

For the collection of data, feedback was gathered from a set of end-users across a range of countries and organisations. For this purpose a questionnaire was designed and delivered online to the end-users.

The questionnaire was designed by NTUA in cooperation with the rest of technical partners. It aimed to provide users with a general guideline on how to proceed with their mapping and to assess their experience with MINT's mapping functionality according to three major steps:

- Data import
- Data mapping
- Validation and transformation

The questionnaire was published as an online survey, since on-line survey tools have the advantage of making it possible to centralise and assimilate the results into charts and tables for reports and presentations. We opted for a professional service from SurveyMonkey[1] as it has already been used reliably earlier for other EU projects that NTUA has participated in. On-line survey tools also have a comprehensive set of customisable features, which fitted well into the Europeana Sounds project. The key advantages for us were:

- Professional templates and technical support
- Advanced features for customisation
- Report handling and export functionalities
- Secure storage of all data

[1] www.surveymonkey.com

1.2.2 Face to face interviews

In addition to the survey, face-to-face interviews were organised to gather verbal feedback on how users experienced the module. Direct verbal feedback often yields high quality information from users, which would otherwise not be collected in a simple 'self assessment' conducted through an online questionnaire.

The questions asked in the survey were used as the main thrust for conducting the interviews. Interviewees were first asked for information about their background. They were then invited to discuss freely their general impressions of the MINT tool, before answering more in-depth questions about the steps they had to perform while aggregating their data in MINT: creation of user accounts, upload of the data in the system, mapping and editing of the data, previewing and validating the result of transformations.

2 Evaluation survey: results and analysis

2.1 Survey questionnaire

The questionnaire comprised 36 questions, structured in three thematic parts. The questions were chosen with a focus on usability and satisfaction with respect to design, functionality, navigation and search. Repetition of several questions was mainly an effort to assess usability and satisfaction in progressive stages of the aggregation process.

The first part of the questionnaire was about general information. There were 12 questions in this part that refer to:

- User information
- Type of OS/browser environment
- Information about metadata

General information questions did not directly assess the aggregation mechanism but provided the necessary context against which the analysis was performed.

The second part consisted of the mini tasks the user was called to complete regarding specific MINT workflow functionalities such as metadata upload, mapping creation, mapping validation and mapping export. Instructions were provided to guide users through each stage defined by mini tasks. After completing each task, the user was asked to provide feedback regarding his/her experience in terms of ease of use and access, visual arrangement of elements, provided documentation, etc. There were 20 questions in this part (Import/upload metadata: four questions, Create mapping: 12 questions, validation and transformation: four questions).

The third part was composed of a set of four questions that aimed at an overall evaluation of the MINT platform.

The questionnaire can be found in Appendix A. Detailed responses of the participants are available in a PDF document as a supplement to this report.

2.2 Participants

In total 29 individuals completed the online questionnaire, coming from 17 different organisations acting as data providers within the Europeana Sounds project. Specifically the organisations that participated in the evaluation process were:

- British Library
- Centre National de la Recherche Scientifique
- Comhaltas Traditional Music Archive
- Deutsche Nationalbibliothek
- Friends of Music Society
- Irish Traditional Music Archive
- Istituto Centrale per il Catalogo Unico delle biblioteche italiane e per le informazioni bibliografiche
- Max Planck Gesellschaft zur Foerderung der Wissenschaften
- National Library of Latvia
- Netherlands Institute for Sound and Vision
- Oesterreichische Nationalbibliothek
- Osterrreichische Mediathek
- Rundfunk Berlin-Brandenburg
- Sabhal Mòr Ostaig
- Statsbiblioteket / State and University Library, Denmark
- The Faculty of Social Sciences and Humanities (Faculdade de Ciências Sociais e Humanas) at the Universidade Nova de Lisboa
- UAB DIZI

Each participant was requested to dedicate time to performing the individual tasks and then provide feedback online.

2.3 General information

The general information questions did not directly assess the aggregation mechanism but provided the necessary context. Through this set of questions we aimed to gather information with respect to users' background and their familiarity with concepts related to MINT and its functionality.

Starting with users' role/position in the organisation they work for, the results showed that the participants span a wide spectrum of expertise, ranging from project managers, research assistants, archivists, librarians, IT architects, information managers, metadata librarians and managers. Thus, there are participants that are more technically oriented having more advanced knowledge of technologies and on the other side there are people with more complete knowledge of metadata standards and

schemas, not excluding of course users in-between, who demonstrate both technical and theoretical skills.

The next part of the questionnaire provided information about users' XSLT knowledge, understanding of metadata transformation and methodologies, as well as more technical information such as their preferred web browser and operating system. The answers received are as follows:

Regarding XSLT knowledge, the majority of participants (97%) responded that their knowledge of XSLT is average (42%) to weak (45%) and only 3% had strong XSLT knowledge. Regarding the usage of other transformation tools/ methodologies and mapping tools, 27% of respondents skipped these questions. 44% responded that they have never used such tools before and 27% have used some other tools such as OpenRefine or similar.

When asked about other aggregation workflows or initiatives, 10.5% of the participants did not provide an answer, 24% have not participated in such workflows, whereas 65.5% of the participants have previously experienced other aggregation workflows such as API-OAI workflows, Europeana aggregation projects or other culture aggregation activities (for more specific information please see the provided answers).

When asked for how long had they been using MINT, the majority of respondents (75%) indicated they had been using MINT for about 6 months or less (since the MINT training workshop in Athens, which took place at the end of October 2014). Only 10% of the respondents had been using MINT for more than 6 months, whereas almost 15% had used MINT just a few times.

In terms of operating system, Windows proved to be the most used at 82.5%, MacOS at 23.5% (10% of respondents used both) and 3% used other operating systems. In the same manner, 48.5% of respondents use Google Chrome as the preferred browser, 24% used Firefox, 17.5% used both and the remaining 10% used other browsers.

The most popular metadata format is XML, with 76% of respondents providing their metadata in this format, 17.5% using CSV, 6.5% of respondents provide their metadata in both formats and 3% use something else in addition to XML.

Regarding users' knowledge of metadata schema, the majority of participants seemed to be familiar with the target schema (data model, field names, etc.). Specifically, 58.5 % answered that they have very good knowledge of metadata schema, 17.5% believe that they have good knowledge of it, 20.5% have average/basic knowledge and only 6.5% of the participants responded they have weak knowledge of metadata schema.

In the last metadata related question, 65.5% responded that their metadata needs processing before being uploaded to MINT and the remaining 34.5% answered that their metadata needs no processing.

Summary

To sum up, the vast majority of the respondents have a weak to average knowledge of XSLT and very little experience with other transformation tools. Only a few users have used other mapping tools besides MINT. Most users have not used other mapping tools before and their first mapping experience was with MINT within Europeana Sounds project, so for an average period of 2-5 months. The Windows

environment is the most prevalent among users, with Google Chrome and Firefox being the preferred browsers.

The most widely used metadata format proved to be XML and the majority of participants have a good knowledge of the metadata source schema.

2.4 MINT mini tasks

2.4.1 Import XML file - upload

In this mini task users were instructed to upload an XML file with their source metadata. They had to define the structure of the file by using the provided MINT functions for defining elements and separating items in the XML file. They were asked if they were able to fulfil this task and about the ways the documentation and the usability of the user interface supported users in doing so.

In general, the great majority of users managed to successfully upload their file (90%) and then define the relevant items by dragging and dropping fields from the source element tree (97%). The users that faced problems during these procedures indicated that they were trying to upload CSV files. Additionally, the great majority of users (86%) found the documentation sufficient and useful. Users that were not satisfied with the provided documentation found that the explanation about how to choose correct fields was not sufficient - the organisation into the collection hierarchy was not very clear for them. Many users commented that the training session that took place in October 2014 in Athens was very helpful and explanatory and aided them in completing the above tasks and using the documentation properly.

When asked to indicate their general impression of the data preparation phase in terms of ease of use/access, most users had no problems in importing or preparing their data in the MINT platform. Specifically, they found the tool to be intuitive, user friendly and fairly straightforward to use. The drag and drop features make the configuration even more convenient. A few users who have source data in CSV files made some negative comments. They could not successfully upload their file and found the error message was not very explanatory. They noted more information was needed about what was wrong with their data and what actions to take to overcome the problem. The arrangement of elements was in general found to be good, intuitive, understandable, clear and well formed, illustrating logical arrangement and providing a nice tab-based and easy to navigate environment, even without referring to documentation. There were also a few users that had some difficulty to find and define the elements correctly (item level, item label, id etc.) and needed more explanation and instructions.

2.4.2 Create mapping

Users had to create a new mapping of the source fields of their uploaded XML file to the Europeana Sounds EDM Prolife target schema by using the supplied drag and drop functionality. They were asked to identify problems arising from lack of functionality, usability issues or problems with the Europeana Sounds target schema. They were asked if they had used any of the advanced mapping functionalities and navigation aids offered and if the documentation supported them with their task. Moreover, they

were asked whether they managed to correct any validation errors that occurred during the mapping process and provide feedback with respect to this functionality.

Almost all users managed to map all their source data fields successfully to the respective targets with only a few exceptions. In most cases source fields that could not be successfully mapped proved to be fields not relevant to the project, non-standardised fields, empty source data fields or specific fields containing personal data that could not be shared. In other cases, extra processing of input data or combinations of conditional mappings and value mappings to input fields eventually led to successful mappings.

Users that were prevented from mapping all their source fields successfully identified the problem as not being able to find a way to do it in MINT (31%), usability issues (10%), problem with EDM Sounds target schema (14%). Specifically, lack of unique fields in source data, cataloguing to a much deeper level than MINT allows and redundant information in the source data that cannot be mapped to EDM Sounds, as well as difficulty in understanding target fields, are the main obstacles faced by users.

Within the mapping area, the drag and drop functionality proved to be very effective and much appreciated among users. The navigation aids provided such as bookmarks, source/target element search and input value statistics received positive comments and acceptance by users, with bookmarks being the most used navigational aid feature (41.5%) followed by input element search (38%) and target element search (34%).

MINT mapping services are also enriched by advanced functionalities such as functions, conditional mappings, value mappings, vocabularies and group edit functionality, which proved to be quite useful and extensively used during the evaluation session. In general, the feedback on these features was really positive with the vocabularies (52%) being the most frequently used advanced functionality, followed by conditional mappings (42%), value mappings (38%) and functions (34.5%).

In response to the question on whether the provided documentation was sufficient for the completion of the mapping task, the great majority of users responded that they found the documentation to be sufficient and clear. However, there were instances such as mapping the first of multiple fields or all instances of multiple fields in the source data where the users thought the documentation was not very detailed, and more information would have been helpful.

Regarding the ease of use and arrangement of elements of the mapping functionality, the feedback received from users was positive. In particular they found the mapping functionality easy to use and user friendly, exhibiting an intuitive interface with a clear and logical structure. Although the drag and drop functionality is widely accepted, some users mentioned that sometimes an element can be accidentally dropped elsewhere, leading to mapping errors. On this point, an option to ‘go back’ was missing, which was needed when users made mistakes in the advanced mapping area.

On the occurrence of validation error messages during the mapping process, most users (67%) were able to understand them and then fix them iteratively by checking the XML file and using the preview functionality. Users really liked that they could inspect both XSLT and transformed data at the same time, and by iteratively checking the preview, switching back to the mapping, editing the incorrect element and checking the preview again, they could finally perform a successful mapping. The rest of the users (33%), who could not cope with the validation errors, noted that they were not familiar with

many XML errors and required more detailed documentation, especially concerning the advanced mapping functionalities. These are considered useful but more complicated to achieve. The layout and the arrangement of elements was found to be user friendly in the case of validation error correction, but some added services would be helpful, such as MINT remembering the user preferences so that the user did not have to set them again each time. Also useful would be the appearance of the metadata field name after hovering over a specific field in the preview window, or a separate pop-up window for XML mapped data instead of going back and forth.

2.4.3 Validation and transformation

Users had to use the “Preview” functionality of MINT in order to perform a test validation before transformation. Using the “Preview” button in the mapping view, the users were directed to a separate Preview pane where they could select the respective item view by clicking in the text field and then choosing “Mapped Item” from the list and selecting the item to be validated. At this point the transformation was performed and once finished the “Mapped Item” view could be selected by clicking on the respective tab. The users were able to inspect the result of the metadata transformation and see highlighted lines in case of any validation errors. Their task was to solve as many of these errors by refining the mapping and noting the errors they were not able to solve.

At this part of the evaluation process, users had to follow exact instructions on how to find and use the “Preview” functionality to validate their mapping. Fewer problems were encountered and more users managed to correct the validation errors using the aid of “Preview”, since using the “Preview” assistance at a previous step proved to be really helpful and made the transformation process faster in this part. The validation functionality of MINT proved to be a valuable tool within the whole mapping process. As indicated by users, the validation functionality provided visual feedback about mapping errors with respect to the target schema. The process that had to be followed in order to correct any occurring errors was very intuitive, the interface was easy to use and the provided documentation was helpful. However, there were still some users that could not benefit from the validation, and required more help in order to fix errors.

For many users the error messages were clear and made it easier to correct errors and improve their metadata. As indicated, in many cases the problem was more about the data quality rather than the tool itself. The documentation was found to be satisfactory by most users, although there were users that encountered problems during validation and required a more detailed documentation or even extra training.

The validation errors correction functionality generally received positive feedback. The interface is user friendly, intuitive and easy to use and the layout illustrates a logical arrangement and is easy to follow. A pop-up window for the mapped XML data would perhaps help to avoid switching back and forth, or a way to preview all the fields that are mapped and will be published in "Europeana preview" are some of the users’ recommendations for improvement.

2.5 Overall MINT evaluation

Up to this point, the evaluation approach was based on mini tasks that users had to complete and then provide their feedback. These tasks were related to MINT functionalities that constitute basic steps of

the ingestion process. Users had to complete these tasks and then provide feedback about their experience with respect to ease of use and access, documentation, problems that occurred, etc. This last part of the evaluation survey focuses on MINT as a whole platform, and users are asked to rate the overall usability, satisfaction of the experience, navigation and search functionality of MINT platform, using the range from 1 to 5, with 1 being the best and 5 being the worst.

The obtained results showed that users consider MINT as a useful tool with an overall rating above average, that provides good navigation and search functionality.

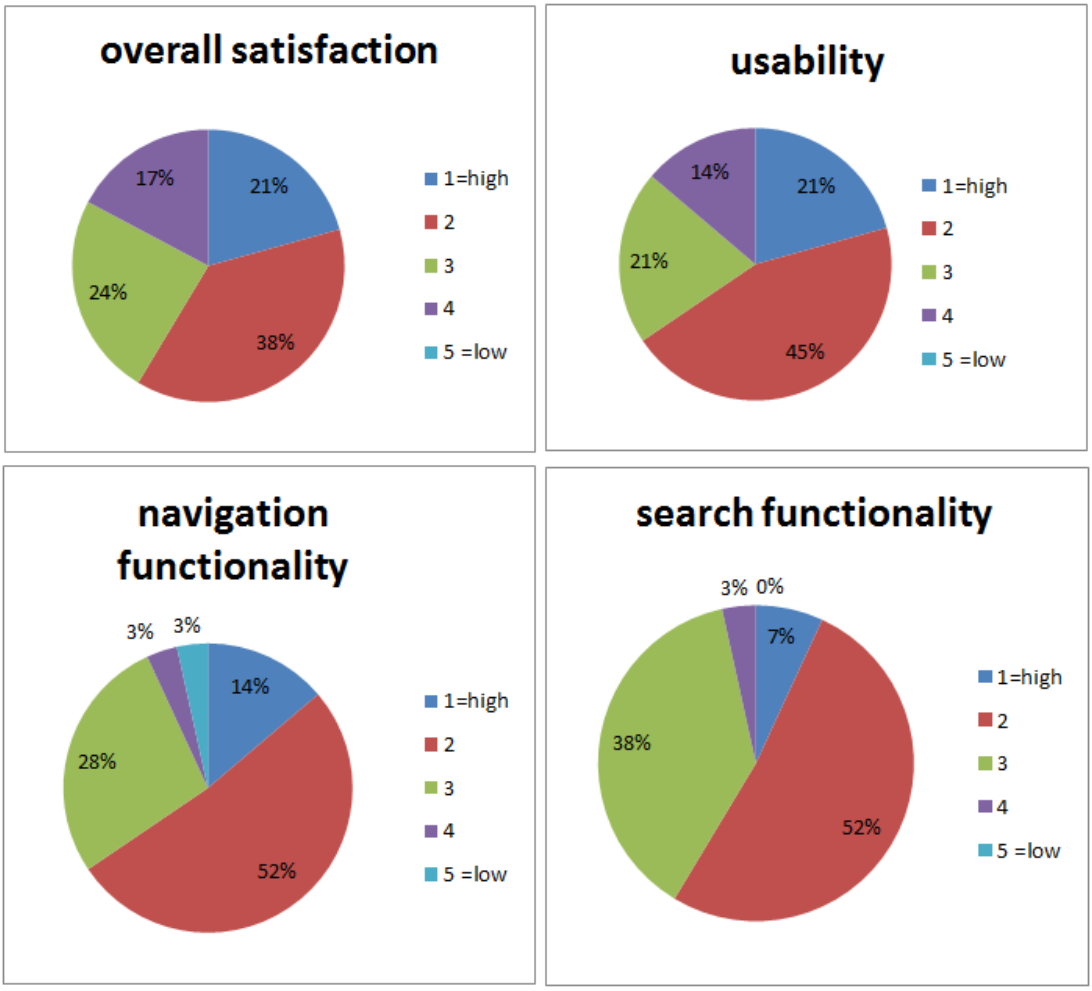

Figure 1. MINT satisfaction scores (1 =high; 5=low)

2.6 Summary and conclusions

Having reported all participants' responses and comments, the conclusions of the survey evaluation process can be summarised as follows:

The users that participated in this evaluation procedure come from 17 different European organisations related to the cultural heritage domain and span a wide spectrum of expertise, ranging from project managers, research assistants, metadata specialists and managers, archivists, librarians, IT architects. The vast majority of the respondents had a weak to average knowledge of XSLT and very little experience with other transformation tools. Only a few users have used other mapping tools besides

MINT, most users had their first mapping experience with MINT within the Europeana Sounds project and the average period of MINT usage was four months. The most widely used metadata format proved to be XML, which is really convenient, and it is impressive that the majority of participants have a good knowledge of the metadata source schema, which can ease the data preparation stage before applying any mapping using MINT.

Even though the majority of users had little or no previous experience working with MINT or other mapping tools, most of them managed to upload their metadata files successfully, define items correctly and prepare their metadata for mapping in a proper way. A few problems occurred with users who had their metadata in CSV format. In describing their experiences in performing these steps the users responded positively, finding the tool intuitive, user friendly and fairly straightforward to use. The drag and drop features made the process even more convenient. The documentation was generally found to be sufficient and helpful although there were users who would appreciate a more detailed documentation.

Regarding mapping, most users managed to map their metadata successfully either with no problems or with iterations and error fixes. In the mapping area, the drag and drop functionality proved to be very effective and much appreciated among users. In particular they found the mapping functionality easy to use, user friendly illustrating an intuitive interface with clear and logical structure. The provided navigational aids such as bookmarks, source and target element search and input value statistics received positive comments and acceptance and were extensively used by users, with bookmarks being the most convenient and helpful feature. Advanced mapping functionalities such as functions, conditional mappings, value mappings, vocabularies and group edit functionality, proved to be quite useful and were extensively used during the evaluation session, with the vocabularies being the most used advanced feature. The vast majority of users found the documentation for completing the mapping task complete and clear. However there were users that required more detailed guidance, especially with advanced mapping features. In the occurrence of validation error messages during the mapping process, most users were able to understand and fix them iteratively by checking the XML file, using the available preview functionality.

At the validation and transformation stage, most users could successfully resolve any errors occurring by using the available validation MINT functionality, which proved to be a valuable tool for mapping and transformation. Any validation errors that were identified prior to transformation were corrected in most cases as users used the preview to inspect both XSLT and transformed data and then iteratively correct the highlighted errors. The validation functionality of MINT proved to be a valuable tool that provides visual feedback about mapping errors with respect to the target schema, having an easy to use and intuitive interface, accompanied by helpful documentation. However, there were users that encountered problems, which could not be resolved and required a more detailed documentation or even an extra training session.

Regarding the evaluation of the overall MINT experience, users consider MINT as a useful tool with an above average rating, which provides good navigation and search functionality.

Summary

In conclusion, the feedback received during the evaluation process using the online survey was mainly positive. Although users had not been using MINT for a long time, they were mostly able to perform all tasks successfully. The layout and interface of the MINT platform were generally found to be intuitive, easy to use and user-friendly. The documentation was mainly sufficient and helpful, although attention should be drawn to more complicated MINT functionalities such as advanced mappings, for which more detailed documentation is required. It should also be noted that many of the issues that arose during mapping and transformation were either due to users' unfamiliarity with target schema or were due to the redundant information in the source data, which could not be mapped in EDM Sounds. As often mentioned in the comments of users, an additional workshop would be necessary in order to familiarise themselves further with the MINT tool and successfully proceed with the ingestion of their metadata. To this end, a training session covering simple and advance topics is scheduled for June 2015.

Users made many recommendations and comments while completing the online survey. All these have been gathered and will be taken into consideration for the improvement of MINT at the next phase of aggregation mechanism deployment.

3 Face to face interviews

3.1 General information about the interviewees

In addition to the survey, face-to-face interviews were organised so as to gather verbal feedback on how users experienced the module.

As for the online survey, interviewees were first asked for information about their background and knowledge. They were then invited to discuss their general impressions of the MINT tool before going into more depth about the steps they had to perform while aggregating their data in MINT: creation of user accounts, upload of data in the system, mapping and editing of the data, previewing and validating the result of transformations.

The sets of interviewees that participated in the face-to face interviews were:

1. Harry van Biessum, Project Assistant R&D, Netherlands Institute for Sound and Vision
2. Jeroen Geerts, Data-manager & Alexander König, Archive Manager, The Language Archive (TLA) MPI for Psycholinguistics

Answers further will be flagged with (1) and (2).

As a preliminary question, the interviewees were asked about the type of collections they would aggregate in MINT, whether the scope of their data provision was narrow or more diverse and whether they would aggregate their data in a batch or create specific transformations for each type of data:

- Netherlands Institute for Sound and Vision will aggregate audio objects as well as images, texts and videos, and each collection will be aggregated separately with specific mappings.

- The Language Archive (TLA) MPI for Psycholinguistics will aggregate around 13,000 sound objects and will also create specific mappings for several subsets of their data provision.

The interviewees had not used the MINT platform prior to their contribution to the Europeana Sounds project. Their knowledge of conceptual and technical mappings differed:

- (1): the interviewee had not performed a mapping in the past.
- (2): both interviewees were familiar with XSLT transformations.

3.2 General feedback on MINT

3.2.1 Introduction to the MINT tool, feedback on training and available documentation

Since the MINT platform was new to all interviewees before the Europeana Sounds project started, they were asked about their first contact with the tool.

- (1): the interviewee had read the available documentation before the training session in Athens, and considered the training as a complete enough introduction for him to be able to use the tool after the training.
- (2): the interviewees also considered that the training session was necessary and that it enabled them to be independent enough.

3.2.2 General impressions

Both interviewees said that their impression of the MINT tool was positive overall:

- (1): the interviewee considered that the tool would enable him to perform the task of aggregating data for the project well enough.
- (2): the interviewees considered the tool user-friendly; they mentioned that the extent of functionalities available was impressive, that remembering how things were implemented could be complex when you do not have a daily use of the platform.

3.2.3 MINT support

The interviewees were asked whether they could perform the necessary tasks on their own or whether they needed additional support after being trained:

- (1): the interviewee did not need much support; with the help of the documentation he could find out what he needed and he also consulted with colleagues from his own team on how to

solve the few issues he encountered while using MINT. He only contacted the NTUA team once through Basecamp for a specific question.

- (2): the interviewees used the tool's documentation provided with the "info" buttons directly in the user interface. They also did not encounter many difficulties; they used Basecamp for complex data issues that were not directly related to their use of MINT.

3.3 MINT workflow

3.3.1 User creation

All interviewees described the user account creation as a very easy step. They considered that having several accounts within an institution that gave the same rights to all users was according to their needs.

3.3.2 Upload of data

In both cases, interviewees imported XML files directly into MINT. They did not encounter any difficulties, and considered that the user interface gave them clear directions on how the step needed to be done.

The next task, consisting in defining items from the imported data was also not considered too complex:

- (1): the interviewee said that the drag and drop functionality was easy to use with the explanations provided in the user interface.
- (2): the step could be performed but the interviewees mentioned that the goal of this step was not completely clear to them.

3.3.3 Mapping the data from source to target

Navigation in the user interface, drag and drop mapping

Interviewees were asked to comment on their impressions about the navigation in the user interface while mapping data. They were asked to describe what functionalities they used to access properties from the source and target schemas and to describe their general methodology to perform the mappings.

- All interviewees liked the principle of dragging and dropping to create a mapping.
- (1): the interviewee found the general layout of elements in panels satisfactory; he mentioned that the user interface was well aligned with other recent web tools he was used to and that navigating was therefore quite easy. For each mapping, in order to access properties in the target schema, the search functionality was used. With the help of the EDM for Sounds profile documentation, the interviewee searched for all the properties that he wanted to map his source data to, and mapped them one after the other. This method proved to be efficient, even though the interviewee mentioned that on some occasions the navigation "jumped" and then

he needed to perform the search again. Furthermore, it would be good to let all the fields unfold automatically after searching in the navigation environment. A feedback message would be useful to indicate that something had been mapped properly or the mapping is saved.

- (2): the interviewees were also satisfied with the look and feel of the mapping user interface. They mainly navigated in the target schema directly using the central panel; they barely used the navigation functionalities accessible from the navigation panel, since it was easier for them to browse the target schema in its entirety. They used the bookmarks functionality for final checks only. Also here, both interviewees reported that the navigation sometimes became unstable.

Advanced mappings, vocabulary mappings and applying functions on data

For the Europeana Sounds project, partners are asked to enrich their data using domain vocabularies. As the ability to apply concepts from these ontologies is accessible in MINT, the interviewees were asked to describe how they used it and what their feedback was regarding the implementation.

- (1) The interviewee did not experience any difficulty; at the moment of the interview, he had not tried to apply conditions to map different terms of the vocabularies depending on the incoming data.

- (2) The interviewees did not experience difficulties either; they mentioned that the icons in the vocabulary navigation were not clear to them at first but that was no blocker for using the functionality. They did not apply refinements or conditions for the choice of terms since they will import separate archives and create as many mappings as imports.

A final question on the mapping step was whether the interviewees had applied functions on the values present in their data or on the mappings.

- (1) The interviewee only applied conditional mappings; he did not use other functions. He needed help from one of his colleagues to be able to enter the expected parameters and create the desired conditions.

- (2) The interviewees made use of various functions to edit their data while mapping it. They did not encounter difficulties but regretted that possibilities were a bit limited in some areas (e.g. a “replace” function exists but it is not possible via the user interface to create several replace functions on one property); they might instead choose in some cases to download the XSLT and edit it manually rather than trying to apply functions in the user interface.

3.3.4 Preview and validation

After performing a mapping, users of MINT have the possibility to preview the result and see whether their data transformed to the target schema is valid against this schema or not. The interviewees were asked to describe how they previewed their data in MINT in general, and whether the different ways to preview were according to their expectations.

- (1): The interviewee used all previews (import, mapped item, Europeana) and found all very clear and useful; the error messages associated with the invalid records in the mapped item

preview gave him the necessary feedback on the reasons why the records did not pass the validation. For the Europeana preview, the interviewee suggested that it would be useful to get the name of the EDM property behind the displayed label while hovering over a label for a property.

- (2): The interviewees also found the previews useful and clear.

3.3.5 Transformation

The interviewees did not express concerns about this step and did not foresee any difficulty with the following step that consists of preparing their data for publication.

3.4 Additional comments and suggestions

All interviewees referred to the fact that the navigation between panels was sometimes not completely stable and considered that some improvement could be made. Besides this comment, they were satisfied and considered MINT to be a user-friendly tool that would meet their needs within the Europeana Sounds project.

(2): The interviewees suggested finding a more structured way to manage several mappings and the connections between imports and mappings created to transform imports.

4 Summary and conclusion

This document contributes to task T5.2 *Aggregation Infrastructure Evaluation* and reports on the valuation process and results. The selected approach for the evaluation was two-fold: online survey and face-to-face interviews.

The feedback received during the evaluation process using the online survey was mainly positive. Although users had not been using MINT for a long time, they were mostly able to upload their metadata file, define items, create mappings, correct validation errors and transform their metadata to target schema successfully. The layout and interface of the MINT platform were generally found to be intuitive, easy to use and user-friendly. The documentation was mainly sufficient and helpful, although attention should be drawn to more complicated MINT functionalities such as advanced mappings, where more detailed documentation is required. It should also be noted that many of the issues that arose during mapping and transformation were due to users' unfamiliarity to target schema. Users made many recommendations and comments while completing the online survey. All these are reported in the corresponding sections above and will be taken into consideration during the improvement of MINT ready for the next deployment of the aggregation mechanism.

Face-to-face interviews gathered verbal feedback on how users found the module. Two sets of interviews were conducted with one and two interviewees each. The questions asked in the survey were used as the main thrust for conducting the interviews. Interviewees were asked about their background and then invited to discuss their general impressions of MINT, before providing feedback on specific data aggregation steps within MINT, such as creation of user accounts, uploading the data in the system,

mapping and editing the data, previewing and validating the result of transformations. All interviewees were satisfied and considered MINT as a user-friendly tool that would meet their needs within the Europeana Sounds project. As a negative point they referred to the fact that the navigation between panels was sometimes not completely stable and considered that some improvement could be made.

Appendix A: Questionnaire

SOUNDS Aggregation Infrastructure Evaluation Questionnaire

GENERAL INFORMATION

A) Information about user

1. What institution(s) do your work for?
2. What is your role/position in this institution?
3. What is your knowledge of XSLT? (Weak/ Average/Strong/other)
4. Please indicate other data transformation tools or methodologies you have used besides XSLT**.**
5. Please name other mapping tools you have used besides MINT.
6. Please state other Aggregation workflows / activities you have participated in.
7. How long have you been using MINT?

B) Type of OS / Browser Environment

8. Please state the operating system of your (e.g. WindowsXP, MAcOS, etc.**)**
9. Please indicate the web browser (+version) that you use for MINT (e.g. Fiiefox, Google Chrome, Safari, etc.)

C) Information about metadata

10. Please describe the format of your metadata (e.g. CSV, XML, RDF)
11. Please describe your level of knowledge regarding the input schema (e.g. data model, field names, etc.)
12. Does the metadata need any processing before they can be used in MINT?

MINT TASKS

Instructions: Please answer the questions in the following sections A-D as detailed as possible in the form of free text. Please note any positive/negative experiences within the described steps. Refer to the MINT documentation and use the online help within MINT.

A) Import XML - File

Instructions: Upload an XML file with multiple item records using the “Local upload” feature in the “Import” pane and follow the required steps in “Define Items” for your dataset.

13. Were you able to successfully upload your XML file? (Yes/No/Other + comment box)
14. In the “define Items” step, where you able to successfully define the relevant items by dragging and dropping fields from the source element tree?
15. Was the provided documentation sufficient to perform these steps? In case of negative answer, please specify what was missing.
16. Please indicate your general impression of the data preparation functionality- in particular:
    a) Ease of use/access
    b) Arrangement of elements

B) Create Mapping

Instructions: Create a new Mapping for your recently uploaded dataset. Use the provided “EDM Sounds” schema. Make sure that the “Enable automatic mappings” tick box is **disabled**. Start editing your mapping using MINT’s mapping GUI. Try to transform as many of your metadata fields as possible to the target schema. Use the EDM Sounds model specification.

17. Please note which of your source data fields you were able to successfully map to their respective targets.
18. Are there any source data fields you were unable to map to their respective targets? If yes, please specify which source data fields.
19. Could you identify the problem that prevents you from mapping these source data fields?
    a) MINT is lacking functionality / you were not able to find a way to do it in MINT
    b) Usability issues
    c) Problems with the EDM target schema
20. How do you like the general drag and drop content of MINT? (Great/Good/OK/Bad/Very Bad)
21. Which of the advanced mapping functionalities do you use?
    a) Functions
    b) Conditional Mapping
    c) Value Mapping
    d) Group Edit
    e) Vocabularies
22. Which of the navigational aids do you use?
    a) Bookmarks,
    b) Search Input Schema,
    c) Search Target Schema,
    d) Input Value Statistics

23. How do you like the navigational aids you have used? (Great/Good/OK/Bad/Very Bad)
24. Was the provided documentation sufficient to complete these steps?
25. Please indicate your general impression of the visual mapping functionality – in particular:
    a) Ease of use/access.
    b) Arrangement of elements
26. In case of any validation error messages, were you able to understand them?
27. Please describe your progress with iteratively correcting errors using the preview.
28. Was the provided documentation sufficient to perform these steps? (Yes/No/Other + comment box)
29. Please indicate your general impression of the preview/validation functionality- in particular:
    a) Ease of use/access.
    b) Arrangement of elements.

C) Validation and transformation

Instructions: Use the "Preview" Button in the mapping view for performing a test validation. You will be directed a separate Preview pane where you can select the respective item view by clicking in the text field. Choose "Mapped Item" from the list. Then select the item to be validated from the item list below. It will take a while until the transformation will be finished. Once done you can select the "Mapped Item" view by clicking on the respective tab on the right. There you will be able to inspect the result of the metadata transformation. In case of any validation errors, you will see highlighted lines in the result. Try to solve as many of these errors by refining your mapping and note the errors you were not able to solve.

30. Please describe your progress with iteratively correcting validation errors using the preview.
31. Was the provided documentation sufficient to perform these steps (Yes/No/Other + comment box)
32. Please indicate your general impression of the preview/validation functionality:
    a) Ease of use/access
    b) Arrangement of elements

MINT OVERALL RATING

33. Please rate the level of the usability of the tool in the range 1 to 5 (1 =best, 5= worst)
34. Please rate the level of the overall satisfaction of your experience using MINT in the range 1 to 5
35. Please rate the overall navigation functionality of the MINT tool in the range 1 to 5
36. Please rate the overall search functionality available in the MINT tool in the range 1 to 5.

Detailed results are available in the supplementary file.

Appendix B: Terminology

A project glossary is provided at: http://pro.europeana.eu/web/guest/glossary.

Additional terms are defined below:

Term	Definition
APEX	Archives Portal Europe network of excellence
EC-GA	Grant Agreement (including Annex I, the Description of Work) signed with the European Commission
PMB	Project Management Board
TEL	The European Library
UAP	User Advisory Panel
WP	Work Package