ARIADNE

D7.1: Quantity of access offered

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SEVENTH FRAMEWORK PROGRAMME

Ariadne is funded by the European Commission's 7th Framework Programme.

Version: 1.0 *(final*) **21st October 2016**

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Document History:

- 25.08.2016 – Draft Version 0.1 Initial version of the document
- 31.08.2016 – Version 1.0 Revised version of the document submitted to the project coordinator for internal quality control
- 2.9.2016 – Delivery of draft to UoY ADS for quality control review
- 18.10.2016 – Draft returned by reviewer
- 21.10.2016 – Final revision delivered by author to the project co-ordinator

Executive Summary

This deliverable describes the activities carried out during the three editions of the Summer School "Design of Archaeological Datasets", hosted by the partner CNR – ISTI (NeMIS Lab) and reports the results achieved, relying on the feedback given by the students at the end of each edition of the courses. The feedback questionnaires completed by the attendees are reported in appendix. In the EC Surveys all the participants expressed an overall appreciation of the course between "Good" and "Very good". Students globally expressed satisfaction for the scientific contents of the school, appreciating the outlines of the Semantic Web architecture, metadata structure and database design. Most of them declared the course provided a broader and clearer picture of the Information Technology aspects and tools available to design the data collected in archaeological research.

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1 Introduction and Objectives

CNR-ISTI is the CNR Institute devoted to ICT research in Pisa, and the NeMIS Lab involved in the activity reported here carries out research and develops technologies for (a) modelling information systems using Semantic Web languages and technologies, (b) digital library services, and (c) services for multimedia information retrieval. Among other projects, the NeMIS Lab is an active participant in the building of Europeana since its inception in 2007.

In the context of the ARIADNE project, the NEMIS Lab has made its expertise available for the design of archaeological datasets and thesauri based on Semantic Web languages and technologies, the conversion of legacy datasets, the definition of metadata schemas compliant with relevant international standards,mapping to those standards using existing metadata schemas, as well as the formal description of the results in appropriate standard languages such as OWL, SKOS, etc. NEMIS has long-standing experience deriving from participation in digital library projects.

The services the NEMIS Lab currently offers are organised either within higher education or on education projects. The latter are offered on demand. They have concerned digital library activity in the framework of Europeana-related projects, among others. Teams from the collaborating institutions have spent periods of time at CNR designing the necessary operations together, followed by on-line remote support.

The Team at the NEMIS Lab involved in the Trans National Access activity in ARIADNE has formed a task force to address specific integration issues, and may support users willing to develop their own archaeological datasets, convert them and integrate them into wider frameworks as ARIADNE. The task force includes: Carlo Meghini, scientist responsible for the NEMIS Lab in ARIADNE, Cesare Concordia and Franca Debole, researchers, Nicola Aloia, senior technician, and Anna Molino, research assistant on financial and organisational matters. The task force also includes Achille Felicetti, researcher at PIN, who has been invited as an expert on Archaeological data models and ontologies.

The objectives of the TNA opportunity are to provide guidance and assist researchers, in person, for special kinds of activities concerning particularly complex legacy data, or involving challenging tasks, e.g. conversion from data formats which are no longer supported to using standards; introducing semantic annotation functionality on previous datasets; creating a new data set from analogue data, and so on. Also, mapping metadata schemas and extracting metadata to be used as integrating keys (e.g. spatial information) were addressed.

In order to achieve these objectives, and after consultation within the ARIADNE Consortium, a work programme was developed, consisting of three intertwined activities:

A formal education activity carried out by Carlo Meghini, Cesare Concordia and Achille Felicetti. The programme of this activity will be illustrated in detail later in this document.

A project presentation activity, during which the attendees presented their research project, and illustrated the specific research problems they expected to address during the TNA. These problems

concerned both legacy data as well as new datasets to be created, typically in the context of doctoral theses.

A collaboration activity, during which the task force members interacted with the attendees in order to help them address their problems, discussing designing options, relevant standards, and appropriate vocabularies, ontologies and knowledge organisation systems.

Each activity has been carried out in a highly interactive way. The attendees had ample opportunities to ask questions as well as request more elaboration on specific topics. Overall, each attendee spent a week in the NEMIS Lab, for each edition of the course.

Each edition of the course was appropriately advertised by the project through all its dissemination channels, including the web site, the newsletter, social media channels etc., as well as during training and dissemination activity, as described within the set of networking activities. These include communication at archaeological conferences and symposia.

The applications were evaluated by the task force and the outcome of the evaluation was also discussed with the project's user selection panel, so as to achieve uniformity of judgment.

The rest of the document is organized as follows:

- Section 2 illustrates the program and attendance for each edition of the course
- Section 3 presents an evaluation of the TNA, based on the feedback of the attendees
- Section 4 concludes
- The appendix reports the individual evaluation reports by the attendees over the whole three-year period.

2 ARIADNE "Design of archaeological datasets" Summer Schools

2.1 Year 1 (July 14 – 18, 2014)

The first edition of the ARIADNE Summer School "Design of archaeological datasets" was held from July 14th to July 18th 2014 in the premises of CNR – ISTI in Pisa. The detailed programme is presented in the table on next page.

After an initial session dedicated to a brief introduction of the students' profiles, research questions and data, the basics of web architecture and the Semantic Web were presented, laying down the fundamental elements of the programme to follow. With the basic elements laid down, an analysis of the research questions and data was carried out by the participants in the afternoon of the second day. The course then entered into the languages of the Semantic Web, starting with RDF as the tool for setting up semantic networks, then moving onto ontologies as a powerful means of organising knowledge within a semantic network. The Semantic Web language for expressing ontologies was then introduced. On the fourth day of the course, the specifics of using these technologies with archaeological data were addressed, by presenting the CIDOC CRM, a standard, top ontology for data integration, with an extension for the representation of archaeological data. The CRM is the best candidate for the course as it supports both the exploitation of legacy data (via integration) and the modeling of newly created data (via its archaeological extension). On the afternoon of the fourth day, the students were given the opportunity of applying what they learned thusfar on their data. This section included hands-on sessions on the tools surrounding the CRM, especially the 3M tools for editing ontology mappings and for applying them to the creation of new data. The morning of the last day was devoted to the production, consumption, and publication of Linked Data. The course concluded with another interactive session, during which the attendees were given the opportunity to ask more technical questions, as well as provide feedback on the course. During this session, it was understood that the course would benefit from a lecture devoted to the illustration of the conceptual bases of semantic modeling, which were not entirely known to some of the attendees. The advice was taken into account in the programme of the second year.

Classes were conducted by Carlo Meghini (CNR – ISTI), supported by Achille Felicetti (PIN) for the session on Metadata schemas and standards for Archaeological and Architectural Heritage, and Cesare Concordia (CNR – ISTI) for the session on Linked Data.

Three applicants were selected and received scholarships provided by ARIADNE to cover participation fees, board and lodging, and travel expenses. Their names, nationalities, affiliations, and positions are reported in the following table:

Name and Surname	Nationality	Affiliation	Position
Carlotta Capurro	Italian	Visual Dimension company (Belgium)	Researcher
Darìo Peña Pascual	Spanish	University of Santiago de Compostela (Spain)	PhD Student
Michelle Pfeiffer	Belgian	University of Heidelberg (Germany)	PhD Student

Reimbursements were allowed for a maximum of €800 per participant.

Anna Molino (CNR – ISTI) acted as local reference person for organisational aspects, from the collection of the students' documentation for the reimbursements to the logistical support on-site.

Summer School on "Design of archaeological datasets"
Pisa, 14-18 July 2014
Istituto di Scienza e delle Tecnologie dell'Informazione, Pisa, Italy

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Programme

	Monday July 14	Tuesday July 15	Wednesday July 16	Thursday July 17	Friday July 18
9.30 – 12.30		**Basics** Web architecture, the Semantic Web, URI, XML, XML Schema	**The Resource Description Framework** Syntax, RDF vocabulary, RDF Schema, Semantics, Inferences, SPARQL	**Metadata schemas and standards for Archaeological and Architectural Heritage** Critical overview on metadata schemas and standards for CH documentation	**Linked Data** Producing, consuming, publishing Linked Data **Demonstration**
12.30 – 14.30	Lunch break	Lunch break	Lunch break	Lunch break	Lunch break
14.30 – 17.30	**Welcome and introduction to the summer school** Presentation of the research questions & data by the participants	**Analysis of the research questions & data by the participants**	**Ontologies** Definition, the Ontology Web Language OWL 2, the ontology editor Protégé	**Design of metadata for archaeological datasets: hands-on session** Each participant will be assisted in the design of metadata for his/her archaeological dataset	**Lesson learned, questions and feedback from participants** **Conclusions**

2.2 Year 2 (July 6 – 10, 2015)

The second edition of the ARIADNE Summer School "Design of archaeological datasets" was held from July 6th to July 10th 2015 in the premises of CNR – ISTI in Pisa.

The programme (see table next page) was the same as the one followed the previous year, with an important exception: a lecture on the principles of data and conceptual modelling was included amongst the basics, on the morning of the second day. This lecture replaced the more technical ones on XML, which in this edition of the course was presented in a more concise way.

Classes were conducted by Carlo Meghini (CNR – ISTI), supported by Achille Felicetti (PIN) for the session on Metadata schemas and standards for Archaeological and Architectural Heritage, and Cesare Concordia (CNR – ISTI) for the session on Linked Data.

Five applicants were selected and received scholarships provided by ARIADNE to cover participation fees, board and lodging, and travel expenses. Their names, nationalities, affiliations, and positions are reported in the following table:

Name and Surname	**Nationality**	**Affiliation**	**Position**
Edeltraud Aspöck	Austrian	Austrian Academy of Science (ÖAW) (Austria)	Researcher
Christina Roditou	Cypriot	The Cyprus Institute (Cyprus)	PhD candidate
Ana Cláudia Oliveira Silveira	Portuguese	Universidade Nova de Lisboa (Portugal)	PhD candidate
Laura Stelson	German	German Archaeological Institute	Student
Seta Stuhec	Slovenian	Austrian Academy of Science (ÖAW) (Austria)	PhD Student

Reimbursements were allowed for a maximum of €1000 per participant.

Anna Molino (CNR – ISTI) acted as local reference person for organisational aspects, from the collection of the students' documentation for the reimbursements to the logistical support on-site.

Summer School on "Design of archaeological datasets"
Pisa, 6-10 July 2015
Istituto di Scienza e delle Tecnologie dell'Informazione, Pisa, Italy

.

Programme

	Monday July 6	Tuesday July 7	Wednesday July 8	Thursday July 9	Friday July 10
9.30 – 12.30		**Basics** Principles of Data and Conceptual Modeling. Web architecture, the semantic web, URI, XML.	**Modeling with the Resource Description Framework** RDF Syntax. Abstraction mechanisms and RDF Schema. RDF Semantics, Inferences, SPARQL	**Metadata schemas and standards for Archaeological and Architectural Heritage** Critical overview on metadata schemas and standards for CH documentation	**Linked Data** Producing, consuming, publishing Linked Data **Demonstration**
12.30 – 14.30	Lunch break	Lunch break	Lunch break	Lunch break	Lunch break
14.30 – 17.30	**Welcome and introduction to the summer school** Presentation of the research questions & data by the participants	**Analysis of the research questions & data by the participants**	**Ontologies** Definition and examples, the Ontology web language OWL 2, the ontology editor Protégé	**Design of metadata for archaeological datasets: hands-on session** Each participant will be assisted in the design of metadata for his/her archaeological dataset	**Lesson learned, questions and feedback from participants** **Conclusions**

2.3 Year 3 (July 4 – 8, 2016)

The third and final edition of the ARIADNE Summer School "Design of archaeological datasets" was held from July 4th to July 8th 2016 in the premises of CNR – ISTI in Pisa.

Programme (see table next page) and lecturers were the same as those of the previous year.

Five applicants were selected initially. However, only three were able to participate and received the scholarships provided by ARIADNE to cover participation fees, board and lodging, and travel expenses. Their names, nationalities, affiliations, and positions are reported in the following table:

Name and Surname	**Nationality**	**Affiliation**	**Position**
Ioannis Aliprantis	Greek	University of the Aegean (Greece)	PhD candidate
Ken Hanley	Irish	Transport Infrastructure Ireland (TII) (Ireland)	Project Manager
Nikolaos Kapellas	Greek	Ionian University (Greece)	MA student

Reimbursements were allowed for a maximum of €1000 per participant.

Anna Molino (CNR – ISTI) acted as local reference person for organisational aspects, from the collection of the students' documentation for the reimbursements to the logistical support on-site.

Summer School on "Design of archaeological datasets"
Pisa, 4-8 July 2016
Istituto di Scienza e delle Tecnologie dell'Informazione, Pisa, Italy

.

Programme

	Monday July 4	Tuesday July 5	Wednesday July 6	Thursday July 7	Friday July 8
9.30 – 12.30		**Basics** Principles of Semantic Data Modeling. Web architecture, the semantic web, URI, XML.	**Modeling with the Resource Description Framework** RDF Syntax. Abstraction mechanisms and RDF Schema. RDF Semantics, Inferences, SPARQL	**Metadata schemas and standards for Archaeological and Architectural Heritage** Critical overview on metadata schemas and standards for CH documentation	**Linked Data** Producing, consuming, publishing Linked Data **Demonstration**
12.30 – 14.30	Lunch break	Lunch break	Lunch break	Lunch break	Lunch break
14.30 – 17.30	**Welcome and introduction to the summer school** Presentation of the research questions & data by the participants	**Analysis of the research questions & data by the participants**	**Ontologies** Definition and examples, the Ontology web language OWL 2, the ontology editor Protégé	**Design of metadata for archaeological datasets: hands-on session** Each participant will be assisted in the design of metadata for his/her archaeological dataset	**Lesson learned, questions and feedback from participants** **Conclusions**

3 Evaluation and results

All students filled in both the online "EC User Group" questionnaire (https://ec.europa.eu/eusurvey/runner/RIsurveyUSERS) and the "ARIADNE TNA User Feedback Report" (http://www.ariadne-infrastructure.eu/Transnational-Access/User-feedback-report).

The majority of the participants of the three editions came from the academia; only two out of eleven were employed in the industry:

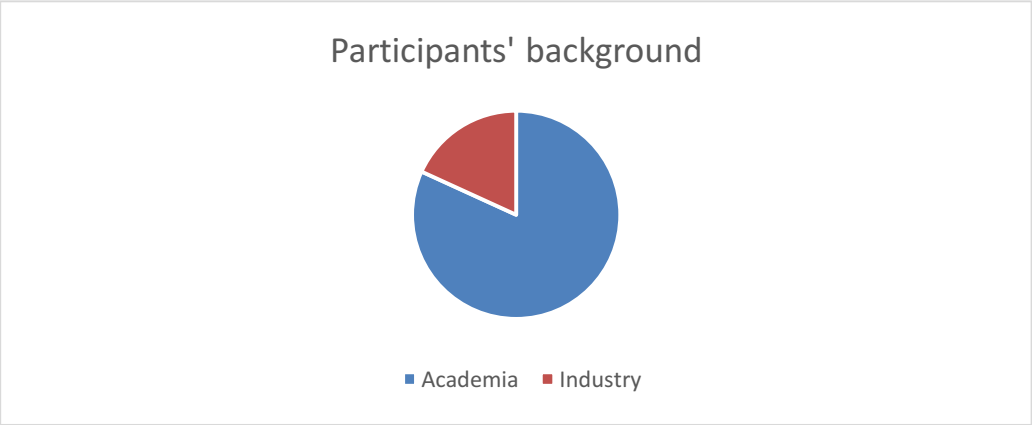

Fig. 1: Distribution of the background of the participants

Three participants were professionals (two researchers and one project manager); the rest of the people enrolled were both PhD (6) or MA (2) students:

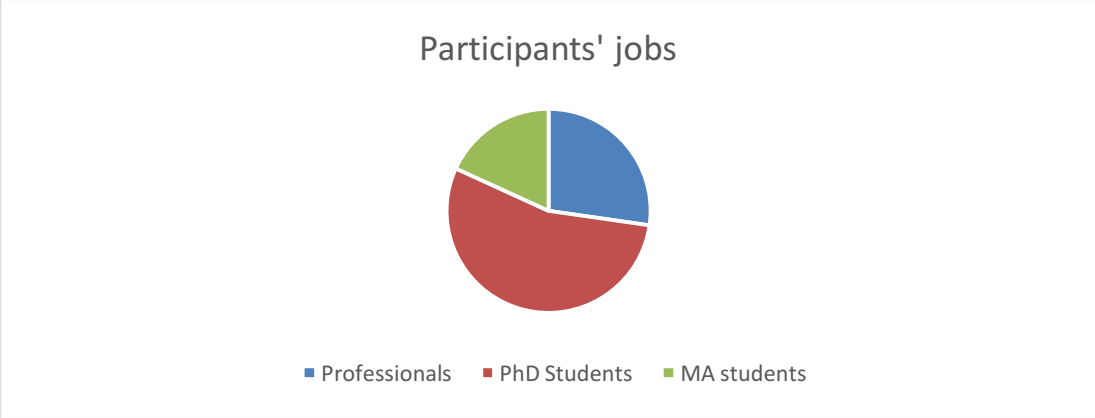

Fig. 2: Distribution of the professional background of the participants

As for the evaluation of the schools, in the EC Surveys all the participants expressed an overall appreciation of the course between "Good" and "Very good".

The majority of the participants declared that they would not be able to attend the school without the scholarships granted by the project.

Most of the students learned about the ARIADNE Summer Schools and the possibility of being supported by a bursary from personal contacts (e.g. academic tutors) or via the project website. One

person was notified by the Infrastructure's mailing list, while another found about the course through the National Contact Point (NCP).

Indeed, in the "ARIADNE TNA User Feedback Reports"[1] the majority of the students suggested that the project could improve the Transnational Access through a more efficient dissemination of the courses offered (workshops as well as summer schools).

Students globally expressed satisfaction for the scientific contents of the school, appreciating the outlines of semantic web and architecture, metadata structure and database design. Most of them declared that the course provided a broader and clearer picture of the Information Technology aspects and the tools available to design the data collected in the archaeological research.

Besides dissemination, the main suggestions given by the attendees concerns the duration of the course, the possibility of having more hands-on sessions and the size of the classes. The majority of them would have liked to spend more time practicing the concepts introduced in class, possibly relating practical examples to their own research. They would also have appreciated a more populated classes, even though the direct relation with the teachers and the contacts established at the end of the school have been really well evaluated by almost all the participants.

[1] Details on the feedback given by the students participating in the ARIADNE TNA are available in the Section 5 Appendix.

4 Conclusions

In conclusion, the TNA on the Design of Archaeological Datasets fulfilled its objectives, by offering the attendees as complete as possible picture of how the languages of the Semantic Web can be applied to the integration of legacy datasets and to the development of new datasets in archaeology. In particular, the attendees have been given a complete view of the current state of the languages for encoding (URIs, XML) and expressing (RDF) archaeological knowledge, based on ontology (OWL) in the archaeological domain (CIDOC CRM, CRMArchaeo).

During its offering, the course has been modified to adjust to the background of the attendees, so that the second and third editions included a survey of the principles of semantic modeling.

Attendance has been good, and feedback was overall between positive and very positive.