

# CERGE-EI repository as part of NEEO: A Case Study<sup>1</sup>

Tereza Klozová<sup>2,3</sup>; Cristian Neculăescu<sup>2,4</sup>

## Abstract:

NEEO implementation at the UK CERGE library involves managerial and technical details and difficulties that have been addressed and some which still remain to be solved. We present the institutional and researcher benefits of implementation. Information for Economic Research, online services and technical solutions are growing at a fast rate; an effort to organize and integrate them has to be done. The institutional repositories and their integration are a modern solution to organize and integrate the information. Since September 2007 an integration initiative named NEEO has been started which presently connects 16 partners from eight EU countries; it is a project funded by eContentplus. Creating informational networks through building/unifying institutional repositories has grown also across all over the world. The UK CERGE library experience while being a part of the above digital information structures is a practical example of European cooperation and it is hoped that this experience and the lessons drawn from it will be inspiring for others as well.

Keywords: Institutional Repositories, metadata, library, project management

The modern professional<sup>5</sup> researcher is dependent on research infrastructure. Parts of this research infrastructure are: scientific up-to-date information,<sup>6</sup> scientific writing support,<sup>7</sup> project management infrastructure,<sup>8</sup> administrative support,<sup>9</sup> computer science support,<sup>10</sup> legal support<sup>11</sup> and internal research auditing.<sup>12</sup> All of these components—working together—are necessary for a researcher to function properly. But there is more: the researcher needs to be affiliated with scientifically recognized organizations providing this infrastructure and needs to be part of a complex network formed by people/organizations with similar professional interests. The research product has to be internally/externally discussed, criticized, published and, ultimately, recognized. This evolutionary process has to be supported for Economics researchers and is part of the goals for projects like NEEO (Network

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<sup>2</sup> CERGE-EI, a joint workplace of Charles University in Prague and the Academy of Sciences of Czech Republic, 11121 Prague, Czech Republic.

<sup>3</sup> Library Software System Administration, tereza.klozova@cerge-ei.cz

<sup>4</sup> Academy of Economic Sciences, Piața Romană 6, sector 1, Bucharest, Romania, cristiann@ase.ro

<sup>5</sup> Professional because he is paid, recognized and/or promoted for the results of research.

<sup>6</sup> Which usually consists of various subscriptions managed by a library service.

<sup>7</sup> This is provided by an Academic Writing Department.

<sup>8</sup> Responsible for consulting in the “fund hunting” process, various managerial tasks related to an approved funding line and preparing specific documentation.

<sup>9</sup> This includes physical security issues.

<sup>10</sup> This includes issues like internal networking/security, web-pages/emails and providing support for necessary scientific software.

<sup>11</sup> This includes support for national/international legal issues, copyright issues, fund management according to legal specifications of potential financiers and support for potential private/public consultancy contracts.

<sup>12</sup> Like discussion papers, working papers and internal peer-review.

of European Economists Online). They started the quest for standards in building a network of professionals and disseminating research results. They identify difficulties along the way when building standards and trying to surpass them. While it is an ongoing initiative, it is better for organizations with specialized research components and for the professional researcher to be involved in the process of finding standards for presenting and disseminating research results.

### **NEEO short presentation:**<sup>13</sup>

In September 2007 an integration initiative was started, namely NEEO, which is a project funded by the EC eContentplus Program.<sup>14</sup> It connects until May 2008 16 partners<sup>15</sup> from eight European countries with Tilburg University as the leading partner and several partners like London School of Economics, Erasmus University Rotterdam, the University of Oxford and Charles University in Prague. NEEO has concrete plans to extend this network to at least 20 if not more by 2010. The “Institutional Repository” (IR) is a relatively new concept and deserves a separate presentation. As it involves institutional resources far beyond an institutional library<sup>16</sup> and as the benefits of being a member in such networks are more than institutional, funding schemes have been established and the coordination of leading universities was welcomed.

### **I. NEEO Key objectives**<sup>17</sup>

1. To improve the usability, global visibility and management of European economics research.
2. To provide for various users easy and open access to high-quality multilingual academic output of leading European economics institutes and their researchers via a reliable and sustainable portal with aggregated and enhanced metadata enabling an infrastructure for new services.

### **II. The clear identification of user needs will serve NEEO:**

- To provide a critical mass of quality economics content from 500 leading researchers and 16 academic institutions;
- To unlock publications and datasets and to make them open access online and interconnected where possible;

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<sup>13</sup> [http://www.nereus4economics.info/neo\\_intro\\_press.html](http://www.nereus4economics.info/neo_intro_press.html)

<sup>14</sup> The eContentplus program (OJ L 79, 24.3.2005, p. 1.) is a multiannual Community program to make digital content in Europe more accessible, usable and exploitable.

<sup>15</sup> [http://www.nereus4economics.info/partners\\_neo.html](http://www.nereus4economics.info/partners_neo.html)

<sup>16</sup> It mainly provides more human power available for tasks like testing new technologies/alternatives and their implementation; for examples specialized computer science testing skills (like system administration for alternative operating systems, Java programming, LAMP/WAMP administration, web design and alternative database administration) and project management skills.

<sup>17</sup> [http://www.nereus4economics.info/about\\_neo.html](http://www.nereus4economics.info/about_neo.html)

- To provide a multi-lingual portal for economics focusing on European research, but in the context of worldwide results;
- To provide services including a full text search engine, automated publication lists and RSS feeds;
- To provide multi-lingual content from 8 countries and access to NEEO content and IPR support documentation in 4 languages;
- To promote NEEO content towards other important information providers for further visibility;
- To organize user satisfaction activities and content targets in order to assess the achievement of goals;
- To present project results and the NEEO model within the international community.

The UK CERGE<sup>18</sup> library<sup>19</sup> is part of the infrastructure established by the Center for Economic Research and Graduate Education of Charles University together with the Economics Institute of the Academy of Sciences of the Czech Republic. The CERGE-EI official language is English and it is a unique example (in the Czech Republic) of cooperation between teaching and research areas. Currently CERGE-EI has about 70 affiliated researchers in economics (various types of affiliations) and goals such as:

- To create academic and policy-oriented economic research,
- To train members of former communist countries of Central and Eastern Europe<sup>20</sup> in modern economics research,
- To disseminate the results to government officials, corporate managers and academic economists throughout the region and the world through seminars, symposia, conferences and scientific publications<sup>21</sup>,
- To support collaborative efforts between international organizations<sup>22</sup>.

As part of CERGE-EI, the CERGE-EI Library has specific tasks regarding all UK CERGE and EI AS CR, v.v.i. activities and tasks as part of Charles University's library system and as a special research library. Among them:

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<sup>18</sup> CERGE-EI, a joint workplace of Charles University in Prague and the Academy of Sciences of Czech Republic, 11121 Prague, Czech Republic, [www.cerge-ei.cz](http://www.cerge-ei.cz)

<sup>19</sup> <http://www.cerge-ei.cz/library/default.asp>

<sup>20</sup> CERGE-EI runs a PhD program in economics which is fully accredited in both the United States and the Czech Republic.

<sup>21</sup> Publications in top international journals, working papers, discussion papers, policy briefs, books, doctoral dissertations, lecture notes, newsletters and scientific software projects.

<sup>22</sup> CERGE-EI is the East European Regional Network representative for the Global Development Network (GDN) which is an open, worldwide network of policy and research institutes aiming to support the generation, sharing and application to policy of development knowledge.

- To serve the needs of the PhD graduate program,
- To run an official repository for World Bank publications,
- To maintain electronic forms of personal bibliographies of researchers (in Advanced Rapid Library) with records containing citation, annotation and keywords in English; all types of documents published in different stages of their development have to be collected and the last revised versions in full-text will be included in the UK CERGE Institutional Repository (IR).
- To list (for databases like SHERPA/ROMEO) publisher copyright policies and self-archiving of three Czech institutions that publish researcher publications,
- To disseminate (online) questionnaires for library users (as part of the VERSIONS Consortium Agreement with Charles University in Prague)
- To test, decide and accommodate appropriate solutions for the interface between internal research activity and external presentation/dissemination, mainly through the Institutional Repository.

At CERGE-EI more than 350 Working Papers and 200 Discussion Papers have been published since 1991, over 160 being placed in the RePEc archive and in PDF full-text and they are freely available on the CERGE-EI web site. The CERGE-EI Library maintains complete personal bibliographies for 20 UK CERGE researchers in electronic form (using Advanced Rapid Library software) and prepares other entries. Each record contains a citation, an annotation and keywords in English. All types of documents published at different stages of their development have been collected. It is envisaged that the last revised versions in full-text will be included in the IR. For the SHERPA/ROMEO database the publisher self-archiving policies of three Czech institutions have been listed through UK CERGE and EI AS CR, v.v.i., that publish the works of their top researchers.

For UK CERGE, an Institutional Repository<sup>23,24</sup> (IR) is a digital archive of the intellectual output of the institution. Material is thereby collected, preserved in the long-term and disseminated more widely externally. It may contain – but is not restricted to – digital versions of objects such as:

- scientific journal articles, chapters, books,
- working/discussion papers,

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<sup>23</sup> Raym Crow: “A Guide to Institutional Repository Software”, third edition, Open Society Institute, 2004. [http://en.wikipedia.org/wiki/Institutional\\_repository](http://en.wikipedia.org/wiki/Institutional_repository)

<sup>24</sup> Alternative terminology used for Institutional Repository: Electronic Archive, e-print archive, Digital Repository or Open Access Repository.

- preprints and/or post-prints undergoing peer-review,
- internal peer-review systems and different versions of reviewed – or in the process of being reviewed – documents,
- theses/dissertations,
- internal documents and/or grey literature (like lecture notes/other learning objects, administrative documents and technical reports; a good example is “The Academic Journals Feedback Project – Economics and Psychology”<sup>25</sup>)

All these digital objects represent the intellectual assets of the institution designated for dissemination and presentation and need to be described in a single location, namely in the IR. Description includes the possibility for digital objects to be searched, browsed, and retrieved by others, freely, openly and/or in a restricted way under different types of copyright agreements. The IR should also solve problems like digital interoperability and it might be viewed as the digital analogue of the classical library (collecting, housing, classifying, cataloguing, solving, preserving and providing access to content). An online locus for keeping the intellectual output of the institution should be easy to install/maintain/upgrade/update and should offer an automated way of the dissemination of that information to other resources. Furthermore it should be suitable for the long-term preservation of well-organized digital objects; it should be able to restrict the access to some of the resources to specific users and it should make materials widely visible/accessible in order to improve the citation index of the authors. The technical/commercial solutions available are very heterogeneous. Institutional repositories should cover as much intellectual content as possible for their institutions; their standardized interoperability is a necessary condition to increase each member’s competitiveness and it is an issue of European interest.

The library bibliographic infrastructure has completely changed since the early days of the computing age. It is no longer about only one library cataloguing system and only one standard. Changing infrastructure requirements attracted a wide variety of formats on different levels of standardization. Among the most widespread ones are MARC<sup>26</sup> (which was the first format and addresses obsolete conditions<sup>27</sup>), MODS<sup>28</sup> and DC<sup>29</sup> (which seem to be too simplistic, for some goals); each of these has advantages and disadvantages. Complex

<sup>25</sup> <http://www.cerge-ei.cz/multiversity/jfeedback/>, initiated and maintained by A. Ortmann, P. Todd and M. Krajč.

<sup>26</sup> MARC=MAchine-Readable Cataloguing <http://www.loc.gov/marc/>

<sup>27</sup> Such as backup/preserving information on obsolete hardware systems.

<sup>28</sup> MODS=Metadata Object Description Schema <http://www.loc.gov/standards/mods/v3/mods-userguide.html>

<sup>29</sup> DC= Dublin Core Metadata Initiative <http://dublincore.org/>

object issues are also approaching, like transporting/importing/exporting existing records (horizontal/vertical/diagonal movements<sup>30</sup>), with procedures/standards related to DIDL<sup>31</sup>, METS<sup>32</sup>, or ORE. A major drawback of using these structures (while each service provider imposes her/his own application profile) is that it puts a big burden on the data provider, who has to (re)develop a crosswalk functionality in the OAI frontend of her/his IR. A standardization of the exchange format for institutional repository content is required. This would have the advantage that there would be a good chance that developers of IR software would propose this scheme as a standard feature, and that the service providers could move away their development efforts away from rewriting application profiles and crosswalks to developing user-friendly interfaces with rich functionality. Some entities are trying to cooperate and develop a European specification for new bibliographic metadata infrastructures, e.g. DRIVER, SURF and NEEO<sup>33</sup> but while projects like these and others are large, some of them are also temporary. As open initiatives should be used, they require local UK CERGE involvement (in terms of adaptation and testing) while commercial products are not very eager to respond to the diversity of record formats. OCLC's "Extended WorldCat" potentially should be able to accept virtually any bibliographic record as it stores records using the internal XML encoded format in its Oracle 9i database in order to create a software service that can take a record in one format as input and output that record in a different metadata format via a Web Services interface. But projects such as NEEO have concrete goals and they have to rely on one particular chosen metadata solution<sup>34</sup>. NEEO will develop crosswalks for selected repository systems which reflect the majority of NEEO systems. With partners not supporting ARNO EPrints, DSpace and other cases, there is a need to solve these issues locally, with support from NEEO.

The intellectual content should reflect the interests of the researcher, so IR construction should take into account the researcher's needs. Projects to study researchers' needs have been started and Charles University in Prague signed the VERSIONS Consortium Agreement. The CERGE-EI Library in cooperation with the Czech Association of Economists disseminated a VERSIONS<sup>35</sup> questionnaire to researchers and other interested parties. This will help in the decision on the selection of the authors whose scientific publications will be

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<sup>30</sup> Movements across different standards and/or different versions.

<sup>31</sup> DIDL=Digital Item Declaration Language.

<sup>32</sup> METS=Metadata Encoding and Transmission Information

<sup>33</sup> "The Economists Online" (NEEO) will be a sustainable service run by NEREUS.

<sup>34</sup> For reasons of interoperability between 16+ IRs

<sup>35</sup> Shipsey, Frances: "VERSIONS Toolkit for authors, researchers and repository staff", Feb. 2008, [http://www.lse.ac.uk/library/versions/VERSIONS\\_Toolkit\\_v1\\_final.pdf](http://www.lse.ac.uk/library/versions/VERSIONS_Toolkit_v1_final.pdf)

archived in the IR in the first stage. Meanwhile the researchers' personal web pages are being studied for data which might be used in the IR.

The next step after establishing the intellectual asset of an institution is to develop (at least) two levels of interoperability: with the IR's of other institutions and with "harvesters"<sup>36</sup>.

Probably the most important element to realize the technical objectives is the NEEO Technical Guidelines which is mature enough for the core partners to implement into their IR infrastructure.<sup>37</sup> It is however foreseen that, based on practical implementations, several minor adaptations will still need to be done. A Technical Workshop with technical implementers from NEEO partner institutions discussed this in detail on 6 March 2008 at LSE in London to guarantee an interoperable working system.

To present the chosen solutions on the central side briefly: the NEEO gateway will incorporate the holdings of all NEEO partners by harvesting their records using the OAI-PMH protocol. This means that local metadata bibliographic records are copied into the central NEEO repository. The Gateway thus holds the OAI-PMH harvester software accompanied by crawler software to search for any missing information. The Meresco software of the company Seek You Too has been chosen as the search engine of choice and the gateway is being developed, with the first version to go live at the end of August 2008. Its core will be built on protocols, standards and services such as OAI-PMH, SRU, RSS, Atom, DIDL, ReDIF, AMF, MODS, Ajax, Javascript and portlets.

From the local partner's side, the main task is to build a local institutional repository complying with the Technical Guidelines of NEEO. In this document's standards, metadata formats and an application profile is given. The repository software used by the partners can be from different vendors, others may use their own developments.

The CERGE-EI Library started by investigating the software and other repositories utilized in the Czech Republic. Some findings are listed below:

- The Charles University Computer Centre presently offers Digitool<sup>38</sup> software.
- The Library of the Academy of Sciences presently offers local software Qbizm KRAMERIUS<sup>39</sup> (OAI-PMH v2.0 protocol). Journal titles from 18<sup>th</sup> century are stored.

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<sup>36</sup> Harvesters are software solutions specialized in gathering information offered by IR's and presenting them in a unified manner.

<sup>37</sup> NEEO Technical Guidelines:

<http://homepages.ulb.ac.be/~bpauwels/NEEO/WP5/WP5%20Technical%20guidelines.pdf>

<sup>38</sup> [www.digitool.com](http://www.digitool.com)

<sup>39</sup> <http://www.qbizm.com/products-and-services/products-and-solutions/document-management-solutions/>, a Document Management System available only in the Czech language.

- The National Library in Prague presently offers local software Qbizm KRAMERIUS. Manuscripts and old prints are stored.

The search in Europe for solutions in the area of interoperability have achieved some results; among others: SURFshare<sup>40</sup>, Knowledge Exchange<sup>41</sup> and DRIVER<sup>42</sup>. In 2007 the CERGE-EI Library started to investigate the technical details needed to ensure the requested interoperability for UK CERGE choice of software with NEEO. As a result, the library started to develop the idea of accommodating the CERGE-EI library system<sup>43</sup>. The new version includes an OAI service and further work has been done on primarily to adapt the internal record structure. Fretwell-Downing Informatics has promised to manage this especially upon CERGE-EI Library's request, but the activity depends on further information about the Nereus XML Schema. This idea seems sound, allowing the exposure of metadata on the Internet through Olib 7 WebView and the use of delimited OPAC to control file-access and to pre-filtered searching.

A lot of alternative available software solutions are coming from the open-source area (examples are Linux-type OS, solutions like WAMP/LAMP, alternatives based on PostgreSQL/Java and specialized solutions like Dspace). Unfortunately, due to the relatively small dimensions (which is a tradition in the Czech library world), the CERGE-EI Library doesn't have the necessary labor force to implement open-source solutions. These solutions<sup>44</sup> are demanding with their special qualification which sometimes means additional working hours; for this reason the library has chosen a "hybrid" solution. This is based on Windows-type OS, alternative virtual machines (based on VMWare<sup>45</sup> solutions) - with different types of OS for running/testing/backup, and open-source solutions available for all types of OS, with source-code for custom compilations. This approach is fully compatible with the level of EU standards and is similar to solutions chosen by other NEEO partners.

The activity described above needs more than a web site so UK CERGE and the CERGE-EI Library decided to address these issues by joining the existing initiatives.

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<sup>40</sup> SURFshare program 2007-2010:

[http://www.surfoundation.nl/eng/download/SURF-Strategic-Plan\\_2007-2010.pdf](http://www.surfoundation.nl/eng/download/SURF-Strategic-Plan_2007-2010.pdf)

<sup>41</sup> Knowledge Exchange: <http://www.knowledge-exchange.info/>

<sup>42</sup> DRIVER project : <http://www.driver-repository.eu/>

<sup>43</sup> FDI Oracle for Libraries, OLIB upgraded to version 7.6.1 on 10g Oracle platform, with WebView 2.6.1.

<sup>44</sup> A preliminary study identified as compulsory the existence of (at least) two parallel systems (identical, if possible), one for various testing and the other one for the current solution. Both should be based on virtualization technologies (which is a separate discussion), and should include different programming environments and adequate hardware design to support these requirements.

<sup>45</sup> [www.vmware.com](http://www.vmware.com)

A modern solution to organize and integrate this continuous flow of information is given by the institutional repositories approach and their integration. The CERGE-EI Library joined the NEEO project ECP-2006-DILI-510001, eContentplus Program, EU DG Information Society and Media, for 30 months, until March 2010. The CERGE-EI Library extended the cooperation with the Charles University Computer Centre (CUCC), as part of Charles University and results have started to appear. The CUCC supported the participation of Mr. Martin Vojnar (the local specialist on metadata and on the repository software DigiTool) at the London NEEO Technical Workshop in March 2008. DigiTool has been used by Charles University as the central repository since 2004 and it is a complex and fully featured repository software solution.

The CERGE-EI Library is an independent small library with virtually no IT staff which make running of the local software a problematic issue. After we have left the idea of incorporating the small repository into OLIB, we have turned back to DigiTool which had a new OAI-PMH module installed. As the library of the Center for Economic Research and Graduate Education of Charles University, we naturally turn to Charles University Computer Centre, as the right partner for arranging a central repository for the whole university. In December 2004 CUCC purchased a complex and fully-featured repository called DigiTool from Ex Libris. Ex Libris does not support DIDL and it is not in their plan for the next year. CERGE-EI bibliographic records are ready and they are stored in the Advanced Rapid Library. Their transfer to DigiTool should be made automatically using MARC XML export. (DigiTool then transforms records to the MODS dynamically). We visited in April 2008 the first meeting of Czech DSpace users to gain more experience with DSpace, as open source software is adequate for required changes although it demands resources. We have thus to consider multiple alternative solutions for the same problem.

Unfortunately a major technical issue preventing the accommodation of DigiTool to the NEEO application profile was identified: DigiTool doesn't support DIDL, but rather METS. Although CUCC is able to write an XML crosswalk, it still cannot be generated on the DigiTool side.

After the London Technical Workshop, we have made the following agreement with CUCC:

- Mr. Vojnar is working on finding suitable solutions together with Benoit Pauwels, technical WP leader of NEEO from Université Libre de Bruxelles.

- The question whether DigiTool (perhaps together with some crosswalk tool; e.g. some kind of OAI proxy server) can be able to comply with the NEEO application profile well before the final deadline in August 2009 will be finally decided at the end of 2008.
- In the negative case the CERGE-EI Library will have to adopt its own solution without the help of CUCC.
- An alternative solution would be to install DSpace at UK CERGE (using DSpace with support offered by a NEEO core partner). The key preparation for this is being done presently (April –May 2008): buying a new system (server/software/maintenance/backup) and getting more information about DSpace.

Economists Online<sup>46</sup> is a service resulting from a SURF-funded pilot project which was completed in 2005. Economists Online has taught NEEO lessons with respect to the importance of granular metadata and existing schemas and their shortcomings. It was early on in the project that the service of presenting automated publication lists for the participating authors could not be accomplished with metadata schemas that were typically used at that time in the IR context, namely Simple Dublin Core (SDC) or (a variant) of Qualified Dublin Core (QDC): no provision is available in these schemas, for example, to express a unique identifier of the co-authors of a publication, which makes it virtually impossible to build automated correct publication lists on a per-author basis.

The NEEO community has thus decided to follow the Economists Online experience as well as those of SURF in the Netherlands and other international developments seen in the UK, for example. After the comparative study SURF has chosen MODS as the best choice. Also, both SURFshare and DRIVER use MPEG21-DIDL to structure the compound object, and NEEO will follow the conclusions of these European initiatives and studies. NEEO has therefore decided to adopt the MODS<sup>47</sup> and DIDL<sup>48</sup> application profiles being developed by SURFshare; DRIVER is following these same profiles. These are included in the NEEO Technical Guidelines for all NEEO partners. They include specifications on the NEEO application profile including MODS and MPEG21-DIDL, the OAI-PMH protocol, persistent

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<sup>46</sup> <http://nereus.uvt.nl/eo>

<sup>47</sup> DRAFT SURFshare MODS application profile:

<https://www.surfgroepen.nl/sites/oai/metadata/Shared%20Documents/Use%20of%20MODS%20for%20institutional%20repositories.doc>

<sup>48</sup> DRAFT SURFshare DIDL application profile:

[https://www.surfgroepen.nl/sites/oai/complexobjects/Shared%20Documents/XMLcontainerSpecification\\_EN\\_v.2.2.2.doc](https://www.surfgroepen.nl/sites/oai/complexobjects/Shared%20Documents/XMLcontainerSpecification_EN_v.2.2.2.doc)

identifiers, and the impact of these specs on local partner IRs. The WP5 Technical Workgroup<sup>49</sup> has met twice for this purpose and there is active communication between members via email and in the internal working room set up by the WP leader Benoit Pauwels and Thomas Place when working on developing documents for this purpose. Several other technical documents have been drawn up (“Choosing for DIDL/MODS”, “DISpace2MODS” and “Mapping DI-fusion into NEEO-MODS” with tables showing how to map DSpace entries into MODS, and “Multilingual Information Access in NEEO” in collaboration with the Workpackage on multilingual issues).

The experience accumulated by the UK CERGE Library in participating in international projects shows that the range of problems to be addressed is growing very fast. This calls for a more dynamic and flexible managerial structure with solutions for problems specific to international environments. Classical librarian tasks and new tasks have to be solved in a digital world, with international partners and with international funding schemes. As open source software solutions are serious alternatives to commercial solutions, management schemes for the international human resource involved in this type of activities have to be improved.

#### **Appendix 1: NEEO Work-packages<sup>50</sup>**

- WP1. “Project Management”, responsible for the efficient and successful execution of the project and its products: core activities include planning, controlling, product delivery, reporting and communication structures.
- WP2. “User Requirements”, responsible for identifying the needs of the end users as a basis for the content dissemination plan and design of the project's information services.
- WP3. “Content - Traditional publications”, responsible for coordinating and monitoring the local aggregation of high-quality content-enriched academic output amongst all partner institutions. A sub-work-package is dedicated to IPR issues which deal with raising awareness of relevant IPR issues in the scientific community. It also encourages the utilization of IPR controlling mechanisms to ensure the authorized unlocking of open access material.
- WP4. “Content – Datasets”, responsible for making primary research data publicly available. It will produce guidelines on how to do this. Data will be stored either in the local

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<sup>49</sup> NEEO Work-packages are presented in Appendix 1.

<sup>50</sup> NEEO description of work, Tilburg University.

institutional repository, in a national data archive or in a central data repository, which will be set up in this work-package.

- WP5. “Interoperability infrastructure and Gateway”, responsible for the creation of an interoperable infrastructure to allow the smooth aggregation of dispersed information for the duration of the project and after, concentrating on setting common guidelines and standards. It will be responsible for the implementation and design of the gateway and search service for improving simplified access and will address challenges in interoperability between local systems and the common gateway. In addition, added value services will be offered and the content of the partners will be complemented with other relevant open access content.
- WP6. “Multilingual issues”, responsible for increasing access to economics content to the European community and four of its languages (EN, FR, DE and ES) by the manual translation of essential documentation and portal interface as well as through the utilization of translation tools to identify more content.
- WP7. “Awareness and Dissemination”, responsible for advocacy activities relating to a) the dissemination of content from the project to further national and international information service providers to have a multiplier effect and b) information on the project's aims and services to both the economist and library community. In addition, it will be responsible for organizing a final conference.
- WP8. “Assessment and Evaluation”, responsible for monitoring the visibility, access and re-use of material. In addition, it will carry out a user evaluation of the project's services and content. A sustainability and business plan will address the future, and a model infrastructure report will outline lessons learned and guidelines for utilization by new partners and other disciplines.