

The National Digital Library – collaborating and interoperating

Publications of the Ministry of Education and Culture 2011:26

The National
Digital
Library





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Ministry of Education and Culture

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Ministry of Education and Culture

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Summary

The National Digital Library is the Finnish Ministry of Education and Culture's way of creating a unifying structure for contents and services with the purpose of promoting the availability of digital information resources of archives, libraries and museums and developing the long-term preservation of digital cultural heritage materials. It is one of the key electronic research and culture infrastructures currently under construction in Finland.

The National Digital Library also contributes to the European Union's objectives concerning the digitisation of cultural materials and scientific information and their digital availability and long-term preservation. The priorities of the project are:

- The creation of a joint public interface for the materials and services of libraries, archives and museums
- The digitisation of key materials of libraries, archives and museums, making them available through the public interface
- The development of a long-term preservation (LTP) solution for digital cultural heritage materials
- Competence development.

Through the public interface, users can search through the digital information resources of libraries, archives and museums, renew loans, buy pictures, order materials and use a wide variety of other services. A large majority of the 16 million objects digitised during the project – including historical photographs and maps, old newspapers, church records, war diaries, works of art, artists' sketch books, museum artefacts and herbarium specimens – will be available to all through the public interface.

The public interface will be introduced in phases, beginning in 2011. It is maintained and developed centrally at the National Library of Finland in cooperation with participating organisations. The body responsible for maintaining the technical environment is CSC – IT Center for Science.

A centralised long-term preservation solution for the digital materials will solve the long-term preservation needs of several organisations. It will secure transitions between generations of systems, software and equipment, keeping digital information coherent and understandable for future users. Even in the

long-term preservation system, the ownership of materials will remain with the organisations which stored them. The system will be designed to allow for the preservation of electronic data resources for research materials in the future.

The long-term preservation development project (2008–2010) was led by the National Archives. The organisation responsible for the first implementation phase (1 June 2010–31 December 2013) of the digital long-term preservation system is CSC – IT Center for Science. The aim is to have the long-term preservation system in use by 2016.

The National Digital Library is the most extensive cooperation project to date between libraries, archives and museums in Finland. During the project, cooperation both between and within the library, archive and museum sectors has increased and intensified. Competence enhancement has taken place through training events and meetings that have attracted thousands of participants in total.

According to plans, the administrative model in the next phase (2011–2013) will be two-layered. The

administration layer consists of the Ministry of Education and Culture as well as the management and steering groups of the National Digital Library. The service system layer consists of the public interface, which is being maintained and developed further, and of the long-term preservation solution, which is in the planning and implementation phase.



Preface

The digitalisation of public services opens up unprecedented possibilities for developing the management, dissemination, use and preservation of information resources. This opportunity was embraced by Henna Virkkunen, the Minister of Education and Science, and Stefan Wallin, the Minister of Culture and Sport, when they launched the National Digital Library (NDL) project and appointed a project organisation for the period 2008-2011.

The project is unique in many respects: it brings together the key organisations under the administration of the Ministry of Education and Culture to build a customer-oriented solution that makes easily accessible the digital materials and services of libraries, archives and museums and secures the preservation of these materials for future generations.

The essential foundation of the NDL is high-quality content. A part of its establishment has been a rapid digitisation of a large number of materials from libraries, archives and museums – documents, books, newspapers, museum artefacts, works of art,

photographs, maps, audiovisual materials and sound recordings.

The NDL helps to decrease overlapping costs, converge the participating organisations' everyday practices and release organisational resources to core tasks. The ultimate goal is to enable a fully fledged utilisation of the electronic materials of libraries, archives and museums for the benefit of both individuals and the community.

The first phase of the NDL project is about to end in March 2011, but the work continues. As the first phase is now coming to an end, we wish to submit the Ministry of Education and Culture this report on the results of the project between 2008 and 2011.

Helsinki, 31 March 2011

**Harri Skog,
Permanent Secretary, Chairman
of the National Digital Library
monitoring group**

Background

Digitalisation and the development of the information society have a large-scale impact on culture, science and education. The digital information resources of libraries, archives and museums are becoming increasingly important for individuals and various players of the society as a source of creative action, education and research and as a support mechanism for general access to information. The development of the management, dissemination and preservation of these resources as an administrative sector-level initiative is one of the strategic guidelines of the Ministry of Education and Culture.

The Government Resolution on the Objectives of the National Information Society Policy and the Ubiquitous Information Society action plan that implements the latter are the basis on which the NDL project, launched in 2008, is established.

The Government's report to the Parliament "Tuottava ja uudistuva Suomi – Digitaalinen agenda vuosille 2011–2020" (A productive and innovative Finland – A digital agenda for 2011–2020), the

Ministry of Education and Culture's future outlook "Osaava ja luova Suomi" (A competent and creative Finland) and the Government's report to the Parliament on the future of culture and arts have strengthened the strategic foundation of the NDL project and helped to outline its development. Objectives of the NDL are further supported by the Government Resolution, issued early in 2011, on better accessibility to and improved reuse of the digital materials of the public sector.

The National Digital Library project also contributes to the European Union's objectives concerning the digitisation of cultural materials and scientific information and their digital availability and long-term preservation. The NDL is our national response to the European Union's Digital Agenda for Europe and its objectives concerning the digitisation of cultural heritage as well as to the Europeana project. Europeana is expected to become the focal point of the European online cultural heritage.

Objectives and priorities

The National Digital Library is the Ministry of Education and Culture's way of creating a unifying structure for contents and services. Its foundation rests on the efforts of libraries, archives and museums, other organisations that preserve cultural heritage materials, and the organisations responsible for their IT applications.

The NDL promotes the availability of digital information resources of libraries, archives and museums and helps to develop the long-term preservation of digital cultural heritage materials.

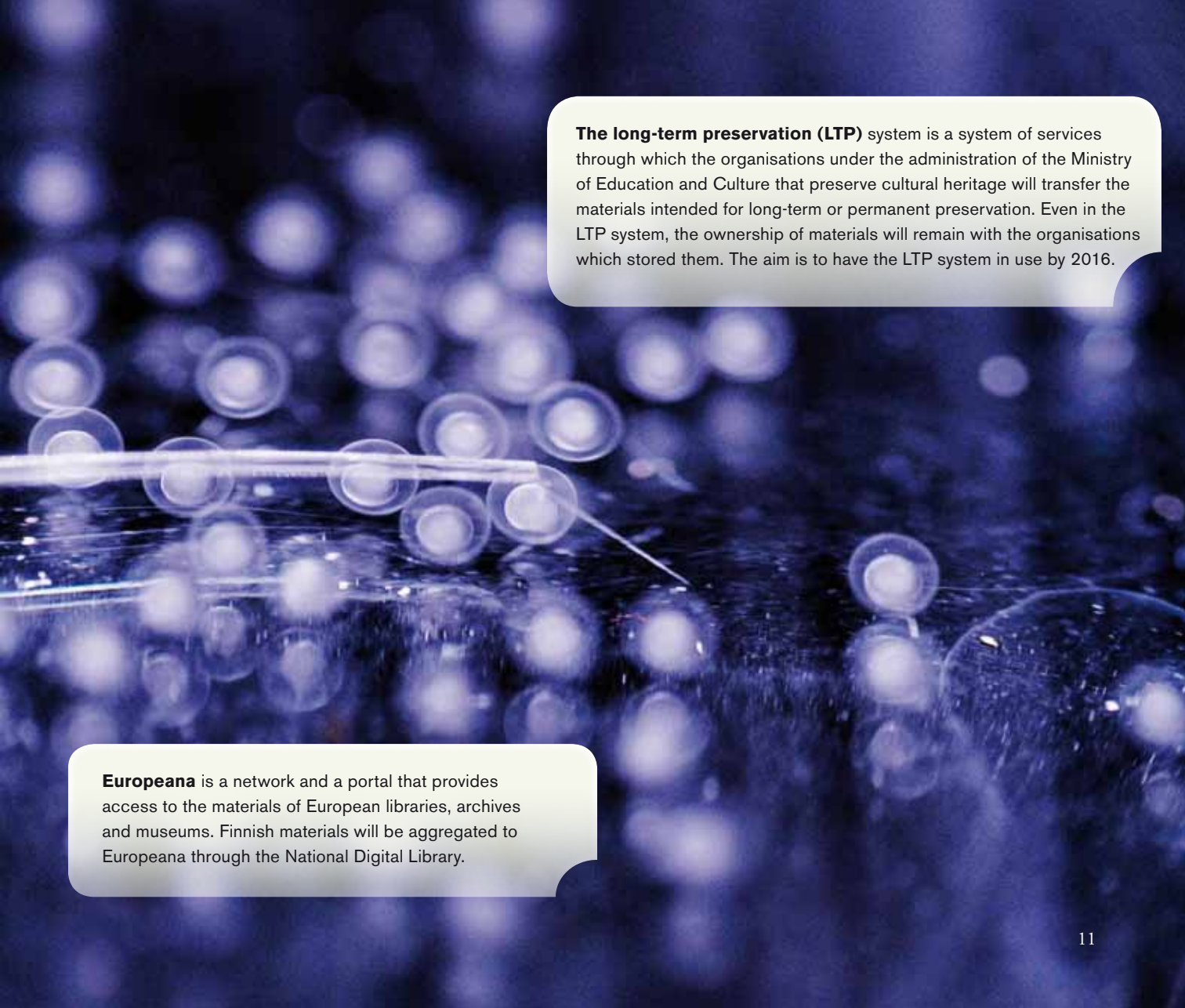
The public interface is the access route to the information resources and services of libraries, archives and museums. It also functions as an interface for the long-term preservation system. The public interface will be introduced in phases, beginning in 2011.

The priorities of the NDL project between 2008 and 2011 were:

- The creation of a joint public interface for the materials and services of libraries, archives and museums
- The digitisation of key materials of libraries, archives and museums, making them available through the public interface
- The development of a long-term preservation (LTP) solution for digital cultural heritage materials
- Competence development.

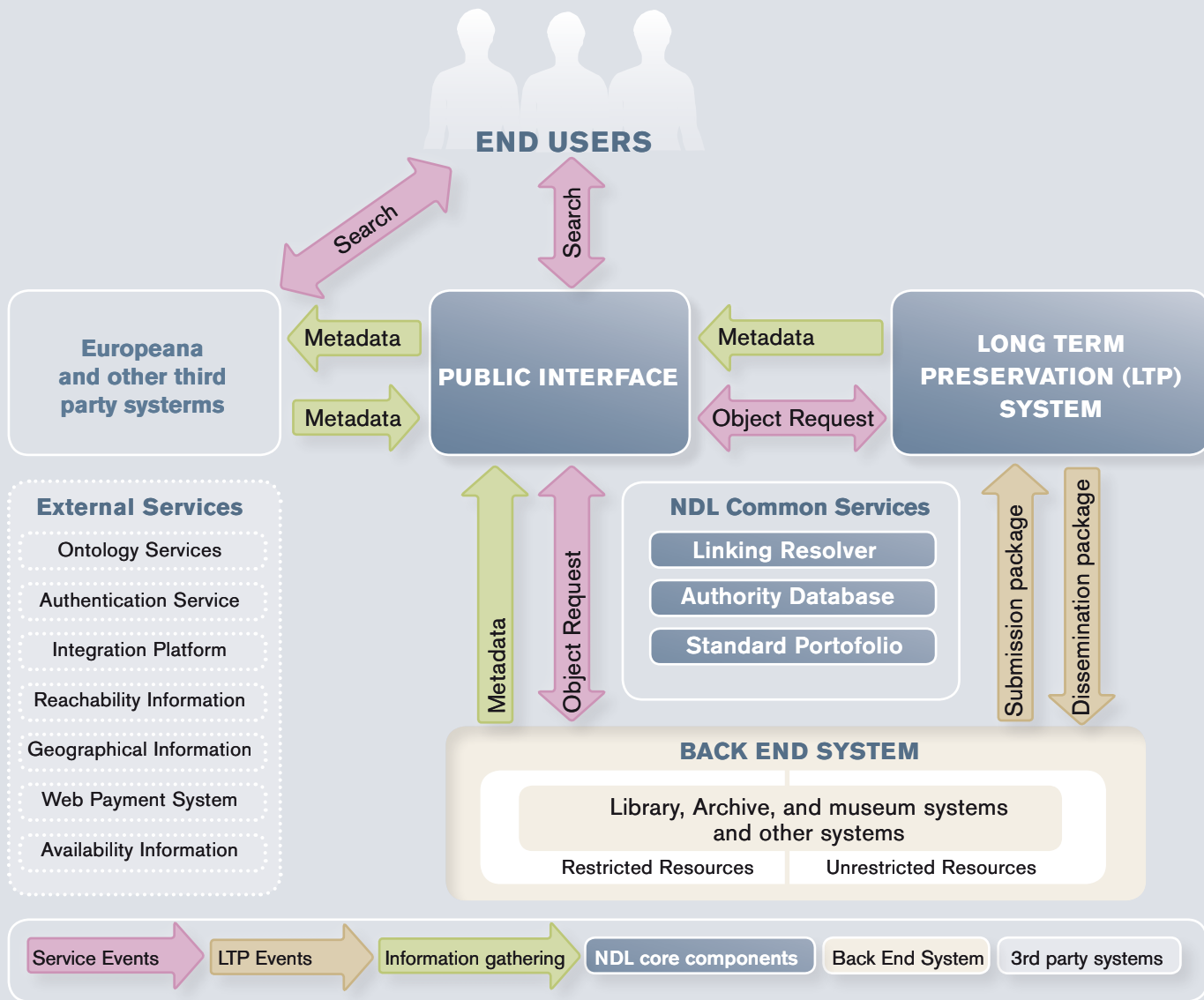
As a result of the establishment of the NDL, the information resources of libraries, archives and museums will be combined across organisational boundaries into a rich national complex of materials and services.

The LTP system will safeguard the accessibility of both digitised and born-digital cultural heritage objects for future generations. The joint infrastructures and services bring the practices of museums, libraries and archives closer together, reducing costs while increasing system integration and strengthening co-operation.



The long-term preservation (LTP) system is a system of services through which the organisations under the administration of the Ministry of Education and Culture that preserve cultural heritage will transfer the materials intended for long-term or permanent preservation. Even in the LTP system, the ownership of materials will remain with the organisations which stored them. The aim is to have the LTP system in use by 2016.

Europeana is a network and a portal that provides access to the materials of European libraries, archives and museums. Finnish materials will be aggregated to Europeana through the National Digital Library.



Interoperability

The National Digital Library is an extensive complex of systems, some of which already exist in the operations and systems of the organisations and others are being planned or under construction. A tool that helped outline the overall picture and define which direction to take was the Finnish Government's enterprise architecture planning method.

The enterprise architecture, one of the design tools of the NDL, was utilised in describing the roles and responsibilities of various systems and organisations. The services and functionalities of the NDL will complement the existing back-end systems.

During the planning of the enterprise architecture, a conclusion was reached on how the different systems of the NDL shall operate together. To enable the management of the entire complex, a certain degree of uniformity is required from the public interface and the LTP system. The enterprise architecture does not concern the internal operation of the system, but defines the standards and protocols required for interoperability. A key feature

of this definition is the standard portfolio, a part of the enterprise architecture, which defines the use of metadata formats and identifiers, the usable file formats and the protocols for information retrieval and data transfer. The NDL's standard portfolio is one of the key materials employed in the definition of the data architecture solutions of the "Valtiotason arkkitehtuurit" (State-level IT architectures) project.

The purpose of the enterprise architecture is to describe the NDL system and to confirm its interoperability with the public administration's development policies and tools for data management. One of the key dimensions in the future enterprise architecture development work is the description of the developing interconnections between the NDL and the information infrastructure in research.

Sectors really converged when the enterprise architecture was being prepared. We achieved something new and constructed a system with long-lasting effects.

Arto Teräs, CSC – IT Center for Science

The **business architecture** of the NDL describes the arrangement of services provided.

User services are provided partly at the public interface of the NDL, partly in the background organisations, and partly by other parties. The public interface is where the primary user experience takes place. However, many services still remain the responsibility of individual organisations.

There are four support services that should be provided within the scope of the NDL:

- Permanent actionable identifiers of digital objects (such as URN identifiers).
- An authority database, i.e. a system that interconnects the names of persons and organisations in different languages and forms.
- Maintenance of the standard portfolio.
- Services related to competence development.

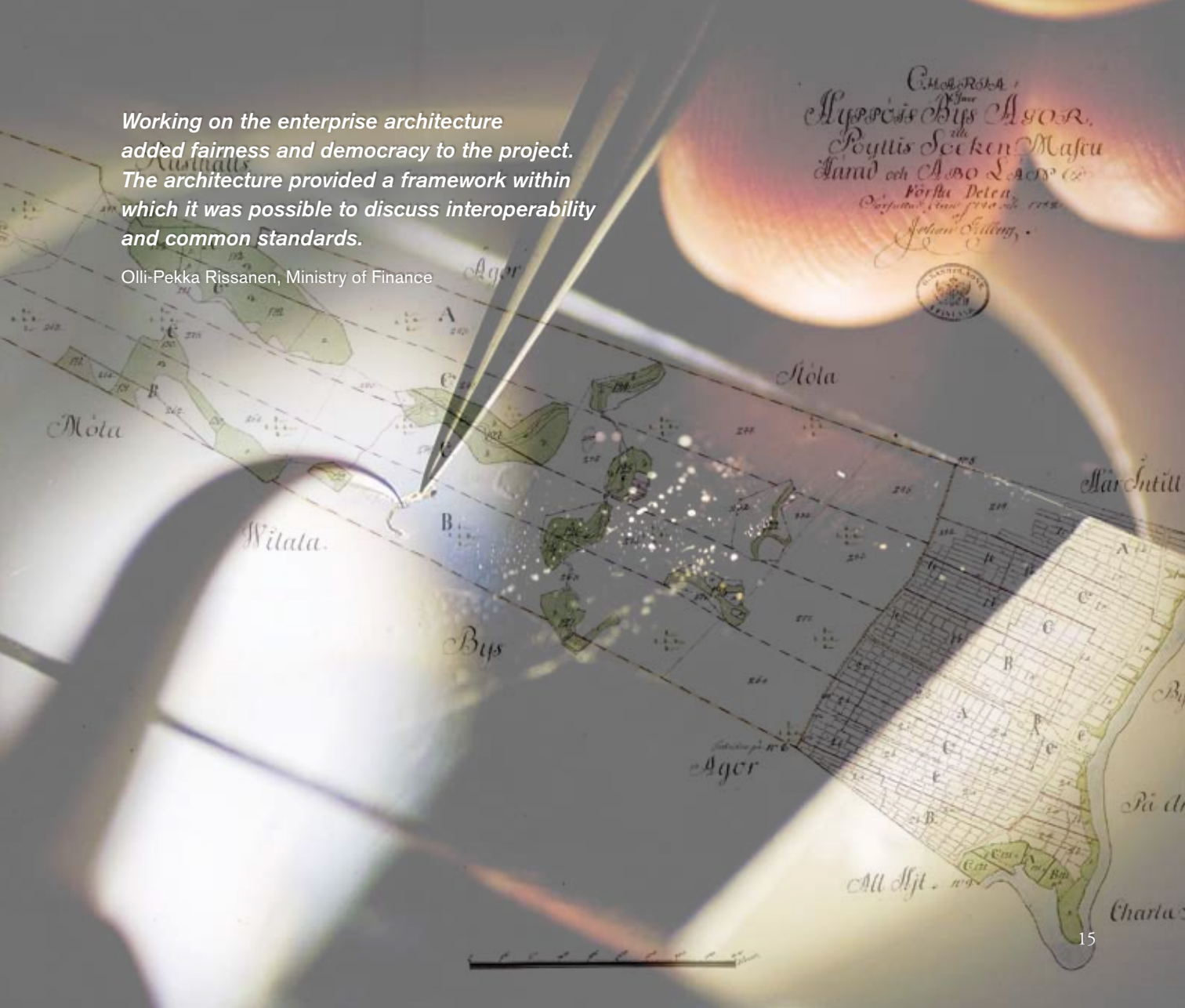
In addition, the NDL makes extensive use of external support services related to user authentication, e-payment and ontologies.

The preparation of the **data architecture** underlined the fact that the data resources of the NDL make up a very diverse arrangement. Resources may be, for example, pictures, texts, sounds, videos or reference data of physical objects. The purpose in preparing the data architecture was to create an overview of the arrangement by charting the data flows, i.e. the transfer of materials between systems, and by assessing the importance of the various types of resources in different organisations.

During the preparation of the **application architecture**, the current systems to be incorporated in the NDL scheme were charted. There are several dozens of such systems, operating in about fifteen different roles. In the **technical architecture**, the focus was on the standards of presentation and transfer of information. In addition, preparations were made to outline a reference architecture for the public interface and the LTP system based on the OAIS framework.

*Working on the enterprise architecture
added fairness and democracy to the project.
The architecture provided a framework within
which it was possible to discuss interoperability
and common standards.*

Olli-Pekka Rissanen, Ministry of Finance



Q: 14.

Maanantaina 18 p:nä helmikuuta

1861.

Stromgalt. — Hufengalt.

Pleisiä ja laillisia julistuksia ja eväisiä ilmoituksia.

Stomach.

Selimaista.

[illegible][illegible]

niin, *Siipurin* toisen kappelin *Rafin*,
 ottaak' multa tois' tunnustusta pöytästä
 tullaan muogia pyyhästä saada otteuden
 vireall' ei pöytäsiellä siellä luorasteen
 tuomet' kosto kibatunna (tuomari nää)
 tä joutuu entuill' pöä karsas siun norma
 ja taidava entuill'ain, niin lieveä toi-
 meä mailiut' pöytäin pian toistuttua,
 meänkin pöä kaimet' pöytäsiellä, joi-
 ta oret' Staffattajan kausi pöä kait-
 ta oret' pöytäsiellä kamaa pöytäsiellä
 mien *Samasia* arvellaan muuttua
 luultua on, *Siipurin* enä-tirolla
 kausi luultuina 27 v. tammik. tii kau-
 purin enä maan luomalliset kuuatun-
 nat pyyhästä saada eroa tuollaista
 seutunomista, ja kuuun heillä nyt o-
 man ajonnuu hiiputtua hallinnolle
 luorasteen oitella oian, luetaan tuolle
 kappaleittena matkaa itsemän valon
 siun mikä heille, k. armellisen maasta-
 ren muutan 20 v. tammik. 1844, tii
 tuollaisten kausi yhdestä oitella ja
 heitä eri tirolla valvella.

R. S. R.

Ulkomaalta.

[illegible]

Saksanmaalta. Ne, jotta ei-
n taitso että Saksan kansa wa-
ietistiskeli ja aheroisti totimailla
tita ja parannuksia, ovat ta-
tsaa vlyyttämässä Danstalai-
Holsteinia ja Schleswigia

ovat tämän liitteen yhtyksiä seä Saksaa etä heruuttunutta, saappaensa kanna ajatelmasta omia waltapannuita. Sillä aateli Saksassa peltä waltapannunhita omian waltansa ja warhojen osuutensa kowenemista. Ja aateli heruuttunutta, tain se jo on Danstan waltapannunnen taitta taottanut kiltä ja sitenkuin, pyytää saada niitä taita, wanhin niintuitten sotalajien waltapuitten uudesta woimaan saattamata. Walffa Schleswig si, miten Holstein, tuntu Saksan-liittokuntaan, niin Saksan kanta sentään, etä etelä Schleswigissa enimmistä (heraslaadissa) on jaksan suuna, taatoo Schleswigin aiioihin sotentua ja saada siinä liittoa.

(Zöbetetto.)

Kirje Karypa Wolotifelle
 Mesrijärmeen.

Karjan pitäjästä helmik. 11 p. 1861.

2 Karppas meilän! Ei sihö Karppa tohso,
 laab lih tuunut toivutia mutt tieraaš uhohehän,
 ehto mietääš iihde uhohtontt siä kondanaatoh
 iohalle luttääwän. Mutt mie tohista tiih uho-
 tie, ba muhstih ihua, meilän, ei muumantkuul
 ruutarjoj eräitäh faneajoš tähtäš pogoštah.
 Miih eian ba ruupen, tohista multa täš keroh ei
 minuta pittoen oot. Ma etäh "ruoskijoh" felt-
 teh laajoh täät, ni pitkäen iään "ruoskijohs"
 ba muumant jett tohie, tunti Ruoskioh oot waiel.
 danuh tamaroh lauball, hywin malbat paghstohab
 Ruoskiohš tiehäh.

Muistatko Karppa ne ajat, kun
 nä tuntuu seijäsi ennen waaanpaan t
 meille ka, tuihka tuihkaani teitit d
 seijäsi?" janoit samalla apaa a
 seijä, welleit? "Ei se meitot a
 toja? "Maitta minä filloin olin a
 ni ja hietelä, että minä tiimola
 waaanfilloin yletin waaan hyppyt
 tellä seijäsiäsi olemaa lauttia, v
 tan minä ne wietä tammint
 minä aina tuulin sinun matkasi
 sin mallatuntaan. Mutta waa
 wabbin filloin olleeni waa
 fa, seä että Suomenmaan
 fanaa et tulwaa ohtala tu
 tulla tuihkaani wendatun
 tuulin "Kun tuihkaani a
 rajoittelemään toistansa a
 todenperästä teitewät
 maataa tulwutaan.

Digital information resources

There is a cumulative increase in the volume of digital information resources everywhere in society. This is also reflected in the library, archive and museum sectors tasked with feeding into the compilation, management, availability and preservation of the digital information and semantic capital that is essential for the functioning of the information society.

Digital materials owned and administered by libraries, archives and museums make up a very heterogeneous whole. Materials that were originally in physical form are being digitised, and an increasing share of material is born digital. A major share of digitised materials consists of documents, newspapers and photographs. The volume of born-digital materials is expanding quickly as public administration is gradually taking up electronic storage of documents and as the scope of statutory archiving of materials has been extended to comprise digital materials disseminated as recordings, materials available to the public via information networks, and radio

and TV broadcasts. The ever-increasing practice of parallel publication of research results in publication archives also adds to the body of available digital material.

Another key component in the information structure is electronic research data, the volume of which becomes at least ten-fold every five years.

A large share of the digital materials in libraries, archives and museums can be made freely available through the Internet, but with respect to some materials, usability or accessibility is limited or other restrictions apply. The user interface of the NDL provides access to both materials open to all and materials with limited usability or availability, such as e-journals licensed for library use or archive materials for restricted use and with restricted accessibility.

A significant share of essential collection materials is not copyrighted. During the NDL project, solutions have been outlined with which it would be possible to make a representative sample of

copyrighted material available through the Internet. Alternatives to this effect include extended collective licensing, individual licensing and, respectively, possible co-operation between the public and private sectors. In addition, investigation and licensing activities related to the materials' copyrights can be facilitated through providing instructions, model agreements and other tools.

Materials freely accessible via the public interface will also be available, for example, through social web services or services provided by the public administration with the aid of open interfaces and metadata.

During the first phase, digital information resources to be transmitted to the LTP system will mainly consist of digital materials of the organisations responsible for the preservation of both material and intellectual cultural heritage, operating within the administrative sector of the Ministry of Education and Culture.

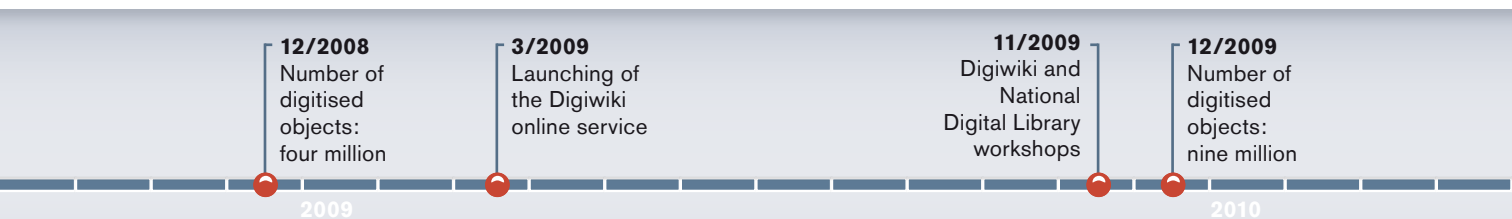
There have been quite a few pilot projects and experiments concerning digitisation and the accessibility of materials – it's good to see that permanent, sustainable solutions are finally being found.

Elina Heikka, the Finnish Museum of Photography

Digitisation projects 2008–2011

The key purpose of the digitisation of materials is to make them more easily usable and accessible. Utilisation of digitised materials brings significant benefits to the society: it strengthens the general cultural foundation, facilitates the evolution of culture and research, and promotes innovation.

Funding for the digitisation of cultural heritage materials has been made available in the NDL project. Digitisation skills have been developed by providing training as a joint effort of several organisations and by supporting the construction of the Digiwiki online service and other services that promote digitisation.



During the project, the progress made with the digitisation of library, archive and museum materials has been rapid. At the end of 2008, libraries, museums and archives had 3.9 million digital objects in total. In 2011, the number of objects had increased to 19.5 million. The most extensive digitisation projects were those administered by the National Archives, the National Library and the Finnish Museum of National History in the University of Helsinki.

As a result of active digitisation efforts, the collections of libraries, archives and museums – including historical photographs and maps, old newspapers, church records, war diaries, works of art, artists' sketch books, museum artefacts and herbarium specimens – are turned into digital materials.

The total funding of the Ministry of Education and Culture allocated to projects that contribute to the digitisation efforts amounted to EUR 16 million between 2008 and 2010. The total employment effect of the projects in the public, private and third sectors was 400 person-years.

With respect to the digitised materials freely available in the Digital Archive, we encourage self-service, and our policy is that the quality of the materials in the web should be good enough for printing, and they can be freely copied and used.

István Kecskeméti, the National Archives

Future prospects

As the Internet is now a key environment for information retrieval, research, learning and perception, the need for digitising and making available the essential materials in libraries, archives and museums is even more acute.

The objective of the Ministry of Education and Culture is to step up the digitisation of cultural heritage and documents and to promote measures that help to harmonise the metadata of library, archive and museum materials and develop digitisation processes.

10/2010
Launching of
Kuvakokoelmat.fi
by the National
Board of Antiquities

12/2010
Number of
digitised
objects:
18 million

2/2011
Launching of
Digitalkoot.fi,
a crowdsourcing-based
gaming platform

12/2011
Number of
digitised
objects:
19.5 million

2011

3/2011

The number of files in the Digitaaliarkisto (Digital Archives) of the National Archives Service reaches 10 million

The public interface

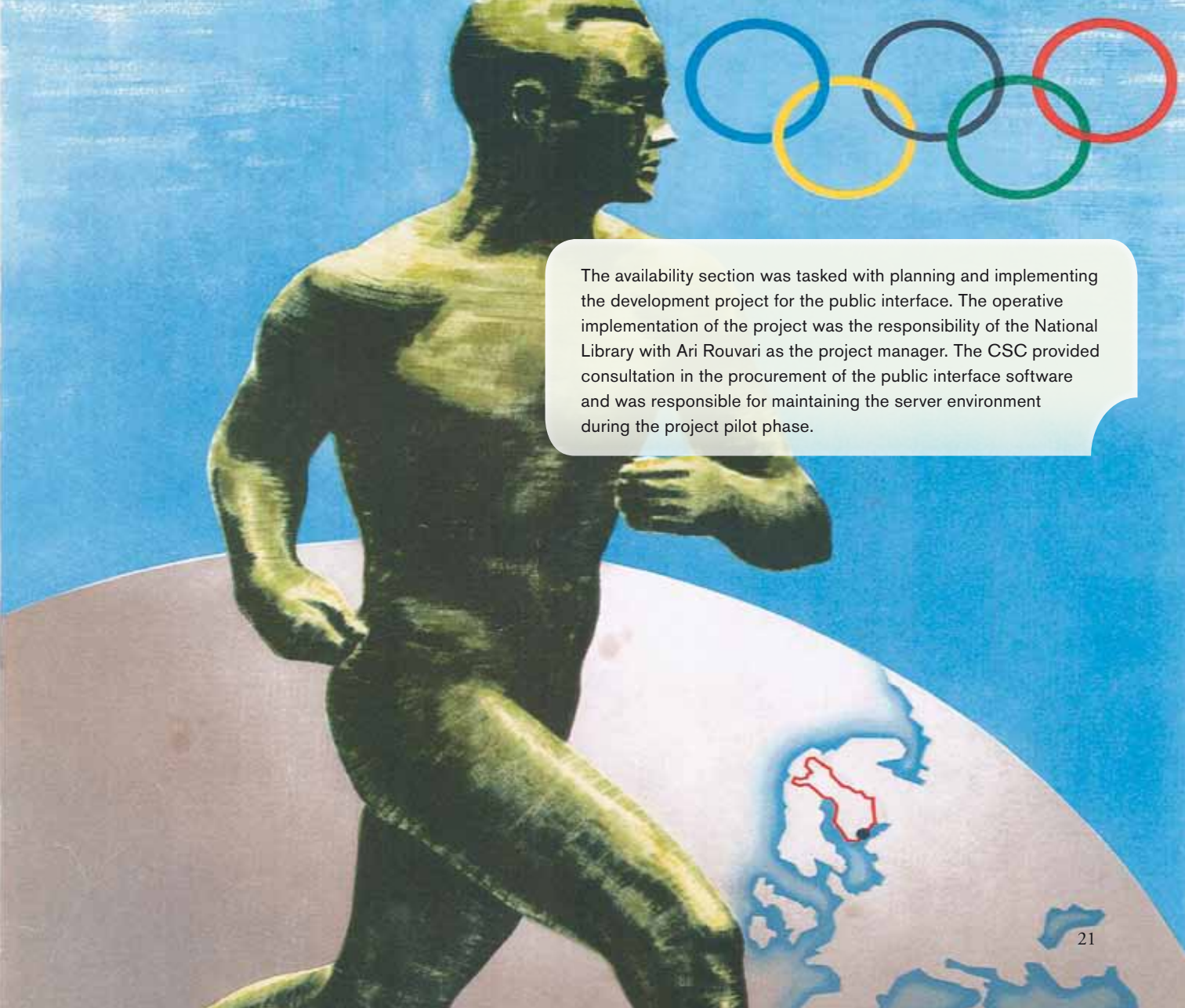
The public interface is a one-stop service through which users can access the required data irrespective of the organisation that provided the data. Materials from archives, libraries and museums make up a diverse source of information for the purposes of research, education and other information acquisition.

Through the public interface, users can search information, retrieve materials and access digital services. There are pictures, texts, documents, sound recordings, videos, e-publications and other materials available at the public interface. With the services integrated into the system, the user can, among other things, renew loans, buy pictures and order materials.

With respect to its operating principle, the user interface is something new in Finland: it is based on a centralised indexing of the information resources, allowing quick and versatile searches. The user interface can be integrated in e-learning environments and social web services. Its key design principles are usability and the utilisation of the social web.

The public interface is maintained and developed centrally at the National Library of Finland in co-operation with participating organisations. In most cases, libraries, archives and museums no longer need their individual user interfaces, as they can tailor the features of the common public interface so that it best answers the needs of their user groups and supports their own service profile.

The qualitative and operational advantages of the NDL public interface include the more efficient use of online services, easier and quicker access to services, user-orientated development of services, increased co-operation within the network and a decrease in the number of overlapping solutions. With respect to financial benefits, the most important are the cost savings in the production of deliverables achieved when searches are performed and materials obtained more efficiently. Estimated according to the benefit assessment model of the SAdE programme, the annual cost savings from 2015 onwards, when the solution will become widely available, will be EUR 25 million.



The availability section was tasked with planning and implementing the development project for the public interface. The operative implementation of the project was the responsibility of the National Library with Ari Rouvari as the project manager. The CSC provided consultation in the procurement of the public interface software and was responsible for maintaining the server environment during the project pilot phase.

We expect the public interface to be a genuine tool with which students could use our different systems through a single user interface.

Päivi Kytömäki, Oulu University Library

Planning and specification of the service

During the planning phase, the participating organisations got to know each other and each others' digital resources and systems. What was important at this stage was the formation of a shared view between the organisations, on the one hand, and, on the other hand, an analysis of users' needs. The formation of a shared view among organisations with respect to the functionality of the public interface and a determination of its added value was the key issue in the early work of the project.

The formation of the shared view was further boosted by the interactive operating model that included, among other activities, expert visits to different organisations, cross-sector seminars and wiki-based work. As the project proceeded, the shared broad lines of development became more precise. As a result, during the pilot phase of the public interface, for example, the need to increase the use of uniform metadata formats in the museum and archive sectors was highlighted.

A working group that comprised representatives from various sectors was responsible for preparing the technical and operational requirement specifications for the public interface software. The requirement specifications contained about 90 operational and about 80 technical requirements and their descriptions. In addition, a number of descriptions of user cases were prepared. At the finishing stage of the requirement specifications, there was an extensive round of comments open also to those sector experts who did not otherwise participate in the project.

Software procurement

The method employed in the procurement of the public interface was competitive dialogue. Legal consultation in the procurement phase was provided by PTCServices Ltd. A total of eight replies were received after the request for tenders was published in the European Union. Three respondents were then invited to provide preliminary bids and participate in further negotiations. The winner of the tender procedure and the software considered to best correspond to the operational and technical requirements set for the software was Primo by Ex Libris. During the selection phase it was also observed that the APIs in Primo are transparent and properly documented and

that Ex Libris is able to provide a well-functioning developer community for its customers.

The competitive dialogue took a long time and a lot of effort, but the end result of the procurement procedure was a system that matched the requirements of libraries, archives and museums best.

Ari Rouvari, the National Library

Piloting of the system

The piloting of the public interface system was started as soon as the procurement was made. There were eight participating organisations: the National Library, the National Archives, the National Board of Antiquities, the Helsinki City Library, the Turku City Library, the Jyväskylä University Library, Lusto – The Finnish Forest Museum, and the Tuusula Museum of Art. Five of them had already participated in the NDL project, plus three were new organisations. During piloting, metadata was collected from all organisations and normalised, local user interfaces were developed, self-service functions of libraries and archives were integrated and customer authentication was carried out. The piloting is expected to end during the spring of 2011. The decision on whether

the software will be approved will be made on the grounds of the piloting experiences.

During the piloting, three pilot museums made the decision to use the common harvesting schema Lido to transfer metadata to the public interface. As a result of positive piloting experiences, Lido will also be recommended to museums that will participate in the public interface in the future.

A pilot agreement concerning the distribution of work was made between the pilot organisations and the National Library. In the production phase, experiences gained during piloting will be used in drawing up a service agreement that, among other things, describes the responsibilities of different parties. Another set of guidelines drafted during the project phase were the operational principles of the public interface consortium, describing the purpose of the public interface, the distribution of tasks between the National Library and the participating organisations, and the administration model of the service.

Pilot-phase meetings and the mailing list yielded a wealth of information that went beyond one's own materials and involved a lot of peeking over the fence and asking, 'Why do you do that?'

Riitta Autere, Valtion taidemuseo

Usability

Piloting also involved the execution of a usability plan for the public interface. When the usability plan was prepared, the focus was on the development of a national view through which users can access all public domain materials.

For the purpose of developing the service concept for the public interface, the needs and expectations of class teachers, upper secondary school students and history enthusiasts were studied with interviews concerning the use of digital materials and services provided by libraries, archives and museums.

In the prototype phase, the service was tested on users. These actual usability tests were performed by Adage Corporation. On the basis of the test results, measures were taken to develop the national view further so that it suits various user groups and usages in the best possible manner.

Future prospects

The National Library is responsible for maintaining the public interface of the NDL and will develop it further in co-operation with the public interface consortium to be established in the spring 2011. The body responsible for maintaining the technical environment is CSC – IT Center for Science.

The influence of the organisations participating in the public interface on planning and development policies and other key aspects will be ensured with the NDL's administrative bodies and the public interface consortium. Interactive working environments will be utilised in joint planning and communication.

The public interface is one of the key electronic research and culture infrastructures currently under construction in Finland. As the project proceeds, the integration of mutually supportive national and

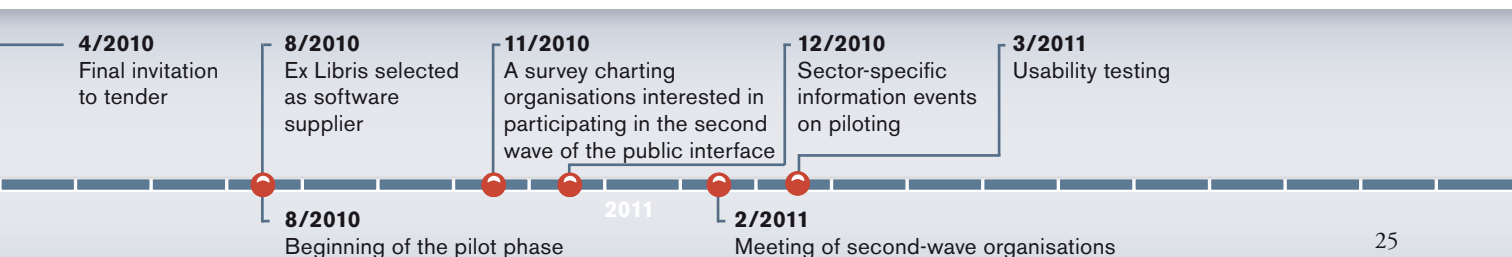


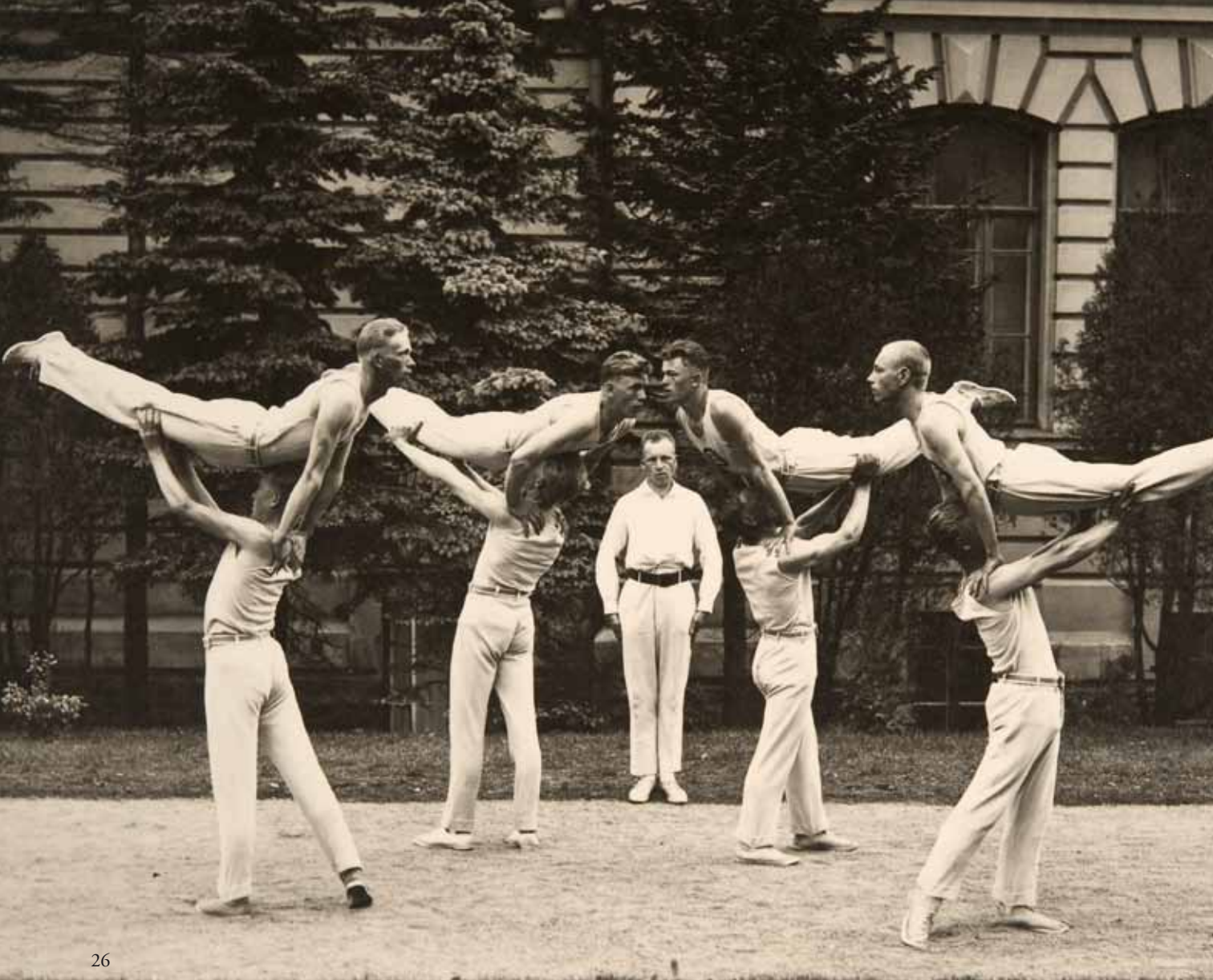
thematic infrastructures must be ensured. A special priority for further development will be the utilisation of the high-quality Finnish expertise in language technology and ontology-related efforts.

The public interface will be developed together with users and user communities. Users will be actively offered opportunities to participate in the development of services and the enrichment of information content.

I expect the public interface to provide more visibility and usage to the fine materials we have and to bring the user perspective to everything we do.

Jessica Parland-von Essen,
Brages Pressarkiv





Long-term preservation

The need for developing a long-term preservation solution arises from the electronic management and use of digital materials, the rapid increase in the volume of digital materials, and the necessity to ensure their preservation.

Organisations under the administration of the Ministry of Education and Culture – the National Archives Service, the National Library, the National Audiovisual Archive, the National Board of Antiquities, the Finnish National Gallery, the Finnish Museum of Natural History, the Research Institute for the Languages in Finland and numerous other libraries, museums and archives – have the obligation to preserve a major share of their materials for future users.

Most of cultural heritage materials to be preserved are composed of digitised archival documents, maps, photographs, newspapers, films and audio recordings. The focus is gradually moving towards born-digital material. In the future, the largest content categories in this group will be re-

corded TV and radio programmes, films and digital documents and publications.

According to one estimate, at the end of 2011, long-term preservation will be required for 10 million documents, one million photographs, 100,000 audio recordings, 10,000 films, 400 million web archive objects and the associated metadata for all of them. By 2025, the volume of cultural heritage materials to be preserved in the LTP solution is estimated to be at least 12-fold.

The current information management systems of organisations are not suited to ensure the preservation of digital materials over the very long term. According to the NDL's enterprise architecture, preservation could take place as a centralised system which would solve the long-term storage needs of many organisations at once. A common LTP system will secure transitions between generations of systems, software and equipment, keeping digital information coherent and understandable for future users.



Benefits

Risk and cost/benefit analyses included in the NDL project, showed that a joint LTP system is a more secure and a more cost-effective solution than individual material- or sector-specific systems.

A centralised LTP service has the following benefits:

- cost savings in investments and management of materials
- secured preservation for digital materials with national-level importance
- the removal of overlapping functions
- improved quality of processes and services
- use and re-use of the materials in the future.

Estimated according to the benefit assessment model of the SAdE programme, the cost savings associated with the introduction phase of the joint LTP system, compared to a decentralised solution, would be about EUR 30 million. In the production phase, annual cost savings would amount to about EUR 10 million.

What is so motivating is the fact that there is an actual need for this work. Securing the long-term preservation of materials is a very tangible and a very acute question.

Kimmo Koivunen, CSC – IT Center for Science

Tasks and services of the long-term preservation system

The long-term preservation planning in the NDL project involved two phases:

- The LTP development project between 2008 and 2010 was steered by the LTP section, led by the National Archives. The project manager was Markus Merenmies, Development Manager.
- The organisation responsible for the first implementation phase (1 June 2010–31 December 2013) of the digital long-term storage system is CSC – IT Center for Science.
- The project manager for this LTP follow-up project is Kimmo Koivunen, Development Manager.

During the project steered by the LTP section, a joint model for an LTP solution was developed for the digital materials of archives, libraries and museums. In addition, measurable benefits associated with the use and preservation of digital materials were studied during the project. The technical expert group of the NDL project was responsible for defining technical and administrative metadata associated with long-term preservation. A final report that sums up the work of the LTP section is available on the NDL website at <http://www.kdk.fi/en/long-term-preservation>. Report appendices include documentation on the functionality and execution of the system as well as on the responsibilities of the participating organisations.

The main task of the LTP system is to keep digital information understandable. Each organisation still has the ownership of their own materials and makes independent decisions on how they are handled, but the systems specially designed for preservation purposes and the associated expert services on preservation issues will be implemented centrally.

Ingestion, preservation and access services are included in the LTP system according to the OAIS reference model. The metadata of the materials to be transferred to the LTP system must meet the respective metadata requirements. A preservation service for materials means measures associated with long-term preservation, such as the intactness monitoring of materials and their conversion from one file format to another. Access services include the delivery of Dissemination Information Packets (DIPs) to the back-end systems of the organisations that use the system, to the NDL public interface and other external interfaces.

A prerequisite for the use of the LTP service is that the user organisations must implement prescribed and predefined operating principles and practices of production, processes, administration and utilisation of digital materials. These will be defined more precisely during the LTP follow-up project.

Future prospects

During the planning of the LTP system, a number of international LTP development projects have been utilised (particularly Caspar, Planets and Shaman).

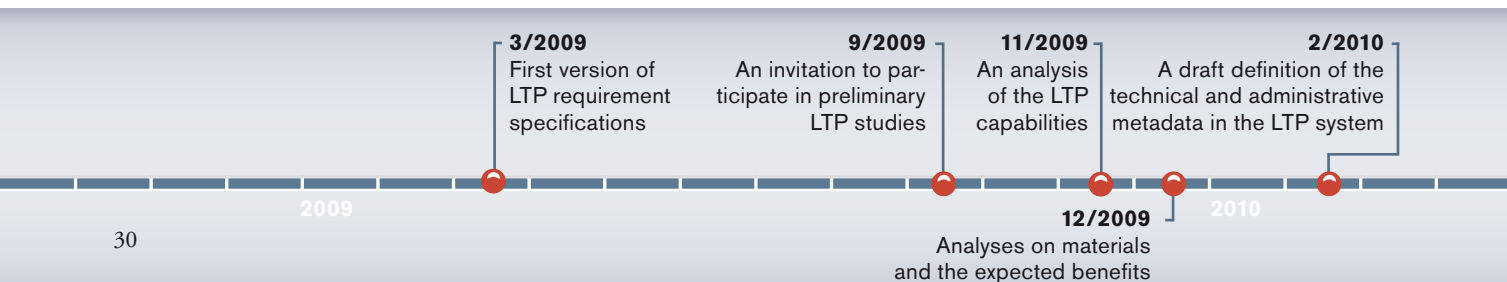
The first task in the LTP follow-up project will be to prepare an implementation plan for the LTP system. The plan helps to specify and bring more depth to the planning work led by the LTP section between 20 May 2008 and 30 May 2010.

A great number of specifications and descriptions were drawn up during the project, but another key contribution was the fact that we could have active dialogue, find similarities and develop a controllable model for dealing with dissimilarities.

Markus Merenmies, the National Archives

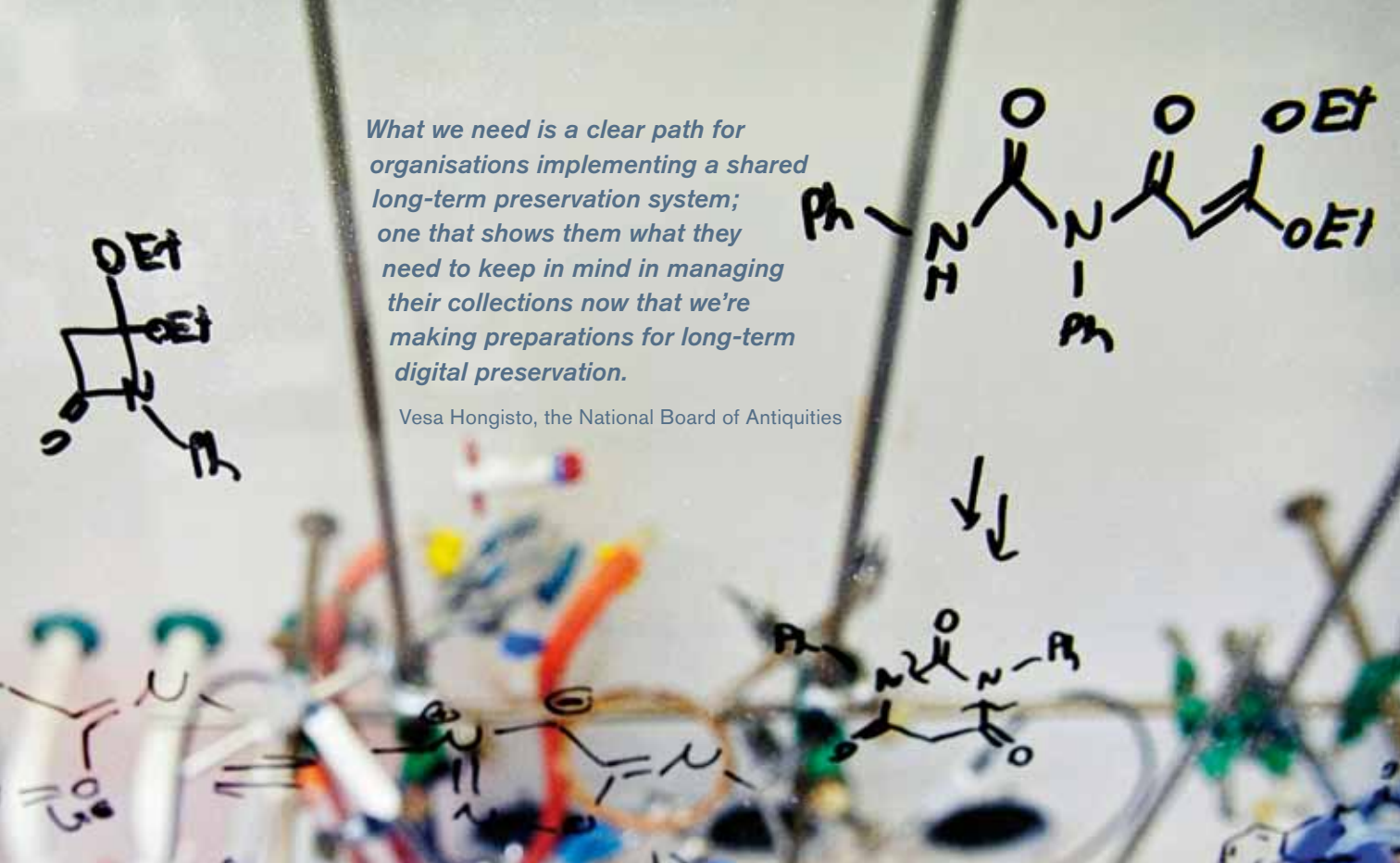
During the first implementation phase of the LTP system, it is expected that a solution will be found for arranging the permanent maintenance and development of the system and the necessary amendments to legislation will be made. The aim is to have the LTP system in use in 2016.

A shared LTP system can be scaled up when the volume of materials and the number of material types or user organisations increases. The system should be designed to allow for the preservation of research materials in the future.



What we need is a clear path for organisations implementing a shared long-term preservation system; one that shows them what they need to keep in mind in managing their collections now that we're making preparations for long-term digital preservation.

Vesa Hongisto, the National Board of Antiquities



6/2010

Final report of the LTP section

10/2010

A roadmap for the LTP follow-up project

2/2011

First interim report prior to the roadmap

6/2010

Beginning of the LTP follow-up project

2011

There have been discussions between us, the museum and the archive on joint digitisation projects and on a regional public interface with information on local cultural heritage for tourists, school children and other groups.

Birgitta Aurén, Vaasa City Library



Co-operation

The increase and intensification of co-operation between organisations has been discernible right from the beginning of the project. Convergence has taken place both between the library, archive and museum sectors and within each individual sector.

Co-operation between sectors has had its roots in the planning of joint services, on the one hand, and, on the other hand, in the added value for users when different materials have become accessible via a single service.

Intensifying co-operation within sectors is motivated by an easier and more efficient use of joint services, as systems, description rules and other practices become more uniform.

The NDL is the most extensive cooperation project between libraries, archives and museums so far in Finland. Its impact will be visible in many ways in the operation of these organisations. The development of the NDL requires commitment and partnership. As system services are developed jointly, it provides better justification for finding joint solutions even to other challenges in the operating environment.

Competence development

One of the key objectives of the NDL project was competence development. Methods applied were intensive team work, peer learning, active training and an exploration of services provided by libraries, archives and museums as well as international co-operation.

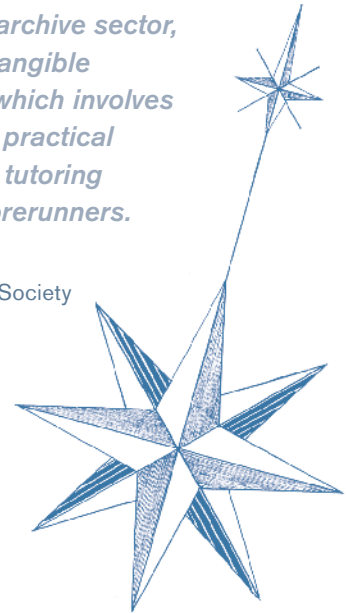
Dissemination of competence in libraries, archives and museums has taken place through training events and update meetings that have attracted thousands of participants in total. Training within the scope of the project has been related to the public interface and LTP projects as well as to awareness-raising on and adoption of recommended standards and operating principles within the organisations. Training events have often been arranged in co-operation with other organisations, such as the Finnish Museums Association and the Digiwiki network.

The main project event was the conference that took place in November 2010 under the heading “Yhdessä enemmän” (Together we achieve more). It helped to disseminate knowledge on the project results and opened up opportunities for discussion

and co-operation. The main speakers at the conference were David Nicholas from University College London and Stefan Gradmann from Humboldt University of Berlin. Conference presentations are available as video clips at <http://www.kdk.fi/fi/ajankohtaista/konferenssi/ohjelma>.

*In the private archive sector,
we have had tangible
co-operation which involves
discussion on practical
problems and tutoring
provided by forerunners.*

Heli Kautonen,
Finnish Literature Society



Europeana

Europeana, founded on the materials provided by national digital libraries in EU countries and joint portals of libraries, archives and museums, has rapidly developed into a service that encourages users to participate and extends its network broadly by means of open interfaces. At the end of 2010, there were 14 million retrievable objects in Europeana, and the volume is estimated to double by 2015.

The NDL project involved the development of a format converter for the transmission of metadata. The service maintained by the National Library allows the Finnish libraries, archives and museums make their materials available through Europeana. Testing of the system began in the spring 2011.

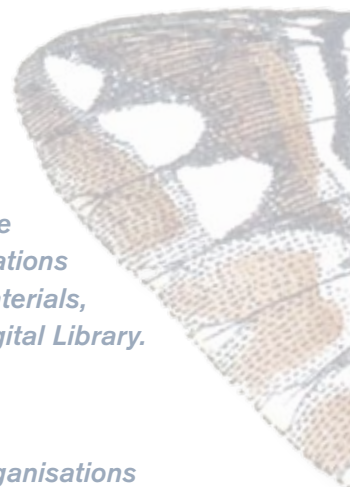
The Ministry of Education and Culture and the libraries, archives and museums that participated in the project organisations were actively involved in the development and administration of Europeana and the eight EU level co-operation projects in support of Europeana (Athena, Apenet, BHL for Europe, Dismarc, European Film Gateway, EuropeanaLocal, EuropeanaTravel and HOPE).

Europeana exists because of the huge co-operation with organisations that administer and transmit materials, such as the Finnish National Digital Library.

Jill Cousins, Director, Europeana

As there are no other similar organisations in Finland, we have found international networking partners in the European Film Gateway project that makes digitised film materials available in Europeana.

Mikko Kuutti, the National Audiovisual Archive





Administration

Project organisation 2008–2011

The project organisation for the NDL consisted of a monitoring group and a steering group as well as an availability section, an LTP section, a technical expert group and an LTP support team that operated under the steering group.

The task of the **monitoring group** was to monitor the implementation of the NDL project and to set guidelines for its development. The monitoring group was chaired by Harri Skog, Permanent Secretary at the Ministry of Education and Culture.

The tasks of the **steering group** were to steer the implementation of the NDL project, make proposals for updating its action plan and to coordinate the sections' activities. The steering group was chaired by Minna Karvonen, Secretary General at the Ministry of Education and Culture.

The task of the **availability section** was to plan and implement the development project for the joint public interface of libraries, archives and museums. The section was chaired by Kristiina Hormia-Poutanen, Director at the National Library of Finland.

The task of the **long term preservation section** was to steer the development project for the long-term preservation of digital cultural heritage. Until April 2009, the chairperson of the section was Markku Nenonen, Archives Counsellor, and thereafter Päivi Happonen, Development Director at the National Archives of Finland.

The task of the **technical expert group** was to prepare the technological policies with regard to the joint search system and long-term preservation and be responsible for necessary definitions and guidelines in accordance with distribution of work between the sections. The group was chaired by Juha Hakala, Special Adviser at the National Library.

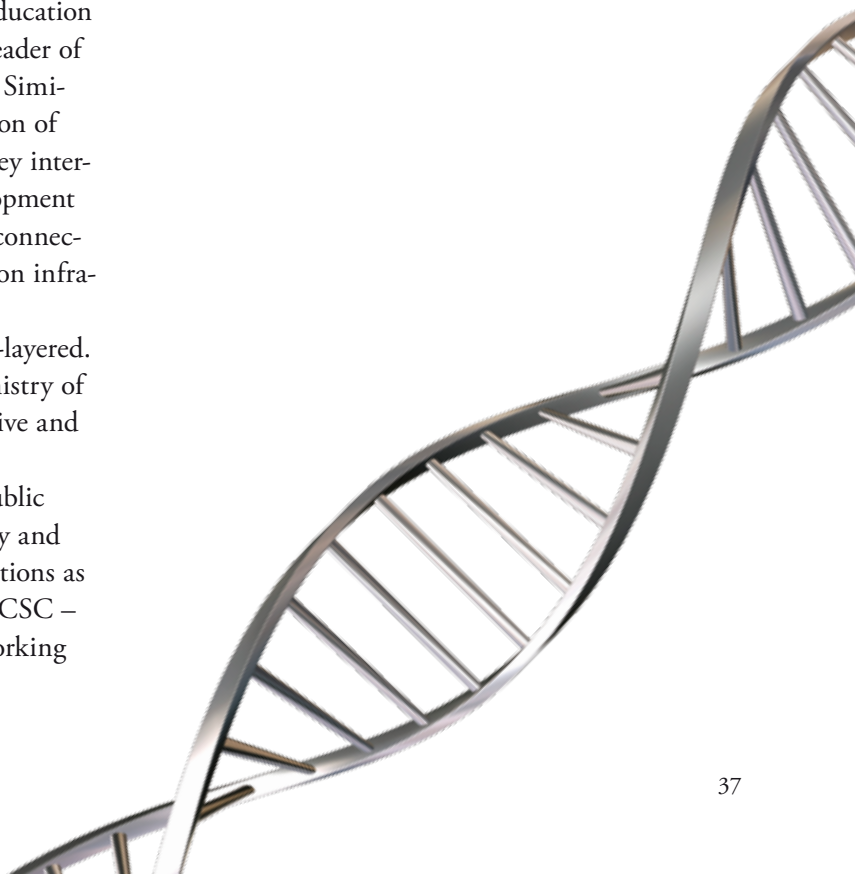
The tasks of the **support team of the follow-up LTP project** are to contribute to the preparation of plans concerning long-term preservation, to monitor the process of the project at an operative level, to exchange knowledge and experiences and to develop the co-operation network. The team is chaired by Kimmo Koivunen from CSC – IT Center for Science.

Future prospects

For the next phase of the NDL (2011–2013), plans have been made for an administration model that would support the role of the Ministry of Education and Culture as the strategic developer and leader of the sector and its information management. Similarly, the model would secure the participation of libraries, archives and museums and other key interest groups in the implementation and development of the NDL and take into account the interconnections with the development of the information infrastructure in research.

The planned administrative model is two-layered. The administration layer consists of the Ministry of Education and Culture as well as the executive and steering groups of the NDL.

The service system layer consists of the public interface maintained by the National Library and the consortium of the participating organisations as well as of the follow-up LTP project, led by CSC – IT Center for Science, and the associated working groups.



Reports and publications by the project in English:

Enterprise architecture work of the National digital library:
<http://www.kdk.fi/en/enterprisearchitecture>

End report of the long-term preservation section:
http://www.kdk.fi/images/stories/LTP_Final_Report_v_1_1.pdf

Functional and technical requirements of the public interface
<http://www.kdk.fi/en/public-interface/requirements-specification>

Other publications and national strategies

Digital Agenda for 2011–2020.

Productive and inventive Finland (2010)

www.arjentietyhteiskunta.fi/files/322/Digitaalinen_agenda_eng.pdf

Culture – Future Force; Report on the futures of culture (2010)
<http://www.minedu.fi/export/sites/default/OPM/Julkaisut/2010/liitteet/opm18.pdf?lang=en>

Links:

The National digital library:
<http://www.kdk.fi/en>

The Ministry of Education and Culture:
<http://www.minedu.fi/OPM/?lang=en>

The National library of Finland:
<http://www.nationallibrary.fi/index.html>

CSC – IT Center for Science:
<http://www.csc.fi/english>

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Dna structure: Rodeo.fi
Ferdinand von Wright, "The Fighting Capercaillies", detail. Finnish National Gallery. Central Art Archives.
Picture: Jouko Könönen.

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