Building a Future for our Digital Memory
A National Approach to Digital Preservation in The Netherlands

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ABSTRACT
In 2015 the national Network for Digital Heritage was established. This network is based on three pillars: to make the digital heritage wider visible, better usable and more sustainable preserved. A series of collaborative projects are in progress since Summer 2015, framed within three working programs, all with their own but integrated set of dedicated actions in order to create a national infrastructure in the Netherlands, based on an optimal use of existing facilities. In this paper the focus is on the activities related to the sustainable preservation of the Dutch national digital heritage. What are the developments and where are we now, with the program running for a year and the first results are delivered.

Keywords
Digital Preservation, Dutch Coalition on Digital Preservation, national infrastructure, collaboration, national collaboration

1. INTRODUCTION
Collaboration in digital preservation has a long-standing tradition as partners within the same domain are working together for a long time (libraries, archives, data centers). Facing the rapid technological developments, the growing amount of digital material and the growing complexity of digital objects, it seems clear that no one institution can do digital preservation on its own. So close collaboration between the organizations involved in digital preservation is required. And organizations were aware of this very early.

Collaborations had a firm basis in research and development issues and were framed within large-scale national and international projects delivering usable results for organizations. An additional deliverable of these intensive projects was the growth of a common understanding of each other's issues and positions. You could say that we learned to know each other much better then before.

In 2002, the DPC [1] was founded as a "collaborative effort to get digital preservation on the agenda of key decision-makers and funders". Similar intentions led to the foundation of nestor [2], NCDD [3], and NDSA [4]. OPF [5] and Presto Center [6] were set up as international competence centers. Overall, these organizations serve as platforms for training, knowledge exchange and the study of specific preservation related issues.

Examples of collaborative efforts were already presented at previous conferences. At the 2014 iPRES conference the national digital repository of Ireland was discussed [7]. Darryl Mead from the National Library of Scotland described the effort to create a national preservation infrastructure in Scotland [8]. And in Finland the national library, archives and museums share already an infrastructure. [9] This development is also reflected in Recommendation 3 in the Roadmap of the European 4C Project (Collaboration to Clarify the Costs of Curation), stating, "Develop scalable services and infrastructure", with the explicit benefit of enabling "the realization of further cost reductions by improving efficiency of the workflows necessary to undertake digital curation" [10]. And finally, at the 2015 iPRES conference the first steps in creating a national infrastructure for digital preservation in The Netherlands was presented [11].

2. DUTCH COALITION ON DIGITAL PRESERVATION (NCDD)
On May 21st 2007 a group of organisations took the initiative to set up a coalition to address the problem of digital preservation in The Netherland in a collaborative way. This coalition of the willing became a foundation in 2008 with its mission to establish an infrastructure (organisational and technical) to guarantee long-term access to digital information in The Netherlands. NCDD acts as the national platform for exchange of knowledge and expertise and has a role in coordinating and facilitating the establishment of a national network in which long term access to digital information which is of crucial importance for science, culture and society is guaranteed.

Cross-domain collaboration and agreement are key to realizing high-quality, effective and efficient digital information management. The NCDD partners are advancing this collaborative approach by searching for the best solutions across the board of the public domain. This explicitly includes the interests of smaller organizations which, due to a lack of technical facilities, organization and knowledge, are not capable of ensuring reliable digital management on their own. In 2013 NCDD made it part of her strategy to work on this collaborative model that should result in a distributed national infrastructure.

Following on a national survey [12], the NCDD in 2010 formulated a strategic agenda [13]. This agenda consisted of a description of the major steps to be taken on a national level in the Netherlands in order to address the issues described in the survey. The strategy is centred on four themes: (1) knowledge-sharing; (2) development of a scalable and usable infrastructure for long-term management of digital information; (3) cost management; and (4) development of co-ordination in collection development policies. NCDD partners are working on realizing these themes by conducting collaborative projects. Project teams are made up of experts from various organizations (coalition members as well as other collection managing institutions) and are led by a representative of one of the NCDD partners. In this way, we can pool our resources and expertise to expand our knowledge and attain shared solutions.

It was also thought necessary to create a sense of urgency towards policy makers on all levels, with the message that we had to act, and act on a national level, to ensure long-term access of digital information. Within the sense of urgency the focal point was the development towards a national infrastructure. Therefore NCDD and especially the partners within the NCDD took the lead in addressing the problem on a policy level, but also on a practical level. It was decided that under the umbrella of the NCDD coalition, the large heritage institutes in The Netherlands would work out a "collaborative model", setting up collaborative facilities or share facilities where possible. Which in reality would not always be the case.

The first series of NCDD projects started in 2014 [14]. Apart from the collaborative projects, the NCDD carried out a survey into a national infrastructure for sustained access to digital information, which was commissioned and financed by the Ministry of Education, Culture and Science [15]. The results of this investigation, combined with the collaborative projects, are the puzzle pieces from which this national infrastructure is to be created. They effectively realized first results of the goals set out in the NCDD's strategic agenda. The next steps will be worked out in the Work program three of the NDE (Preservable Digital Heritage), where the current situation will be turned into a networked future.

3. DIGITAL PRESERVATION AS A NATIONAL PROGRAM

The objective of this Work Program is to create, through cross-domain collaboration, a shared infrastructure that guarantees sustainable access to digital information. The assumption is that this cooperation will lead to an increased effectiveness, greater efficiency and cost reductions. Most of the activities in this work program have been started and scheduled within the NCDD strategic agenda.

Initiated by the Ministry of Education, Culture and Science, the Digital Heritage Network (NDE) was set up in 2014. This network consists of a number of large organizations occupying key positions in the field of digital heritage, including the NCDD partners. Together, these organizations aim to improve the visibility, usability and sustainability of digital heritage materials from every domain. To this end, the Digital Heritage Network has developed a three-pronged strategy covering Visible, Usable and Sustainable Digital Heritage, respectively. A work package has been established for each of these aspects, outlining the projects necessary to achieve its central goals [16]. The NCDD partners have assumed responsibility for the

Sustainable Digital Heritage work package. The aims of this section of the DHN's strategy plan correspond with the NCDD's mission: to ensure the long-term accessibility of digital information through the establishment of a national network of facilities.

As mentioned before, the third work programme will focus on preservation an issue, following the lines alongside the NCDD was used to work. The work programme consists of eight projects centered on three themes: (1) Scalable and usable facilities; (2) Transparent cost structure; and (3) Roles and responsibilities in collection building. A number of projects also involve the use of case studies. Each of these projects contributes to the goals of the programme, and consequently the overall mission of the Dutch Coalition on Digital Preservation. The projects will be conducted from mid-2015 to late 2016.

4. THE PROJECTS

The objective of the preservation programme is to create, through cross-domain collaboration, a shared infrastructure that guarantees sustainable access to digital information. The assumption is that this cooperation will lead to an increased effectiveness, greater efficiency and cost reductions. The programme consists of a set of eight projects and five case studies, all bringing in the bits and pieces of the jigsaw puzzle of a national distributed infrastructure. This distributed infrastructure is the focal point of the programme and all other projects add to this. To sum up some of the projects with the main results.

4.1 A network of Distributed Facilities

The Distributed facilities project builds on the results and recommendations of the Survey into a national infrastructure for sustained access to digital information [15]. Starting point are the preservation facilities already in place at the large cultural heritage institutes in The Netherlands. The project intends to create a catalogue of services, which is based on a model developed in the above-mentioned survey. In this model a distributed network of nationwide facilities is described, involving all infrastructural elements needed for preservation purposes. As we hope that these existing facilities will find used usage, they need to be catalogued and to be pointed to, so more institutions in the same sector, or by institutions in different sectors could find their way towards these facilities. However, the existing facilities are not sufficient and the project supports the establishment of new ones. These are facilities in specific areas as Architecture, digital Arts and Photography. This part of the projects represents the supply side of a national infrastructure. On the other side is the demand. Organizations of smaller scale with digital collections to be preserved. Not able to develop their own preservation systems and infrastructures. These organizations should be using the infrastructures in place. To be able to do so they need to have a wider understanding of greater needs regarding digital preservation. Within the project tools will be developed which help organizations in finding their way in the large forest of systems and services. That means checklists, guidelines and finding aids. For many organizations this will be a huge step towards maturity. Many organizations are just not aware yet at what point in their own development they are. What is their maturity level and are they capable to deal with preservation questions? In order to help and monitor the level of maturity of individual organizations a tool is developed with which institutions can evaluate themselves using the Digital sustainability score model. This model is based on a range of

questions regarding issues as policy, collection development, staff knowledge, costs, and preservation levels.

This Digital sustainability score model will help organizations not only in finding out at what point in their professional development they are, but it will help them indicate the issues they need to address and the steps they need to take.

4.2 Trust

Professional development and maturity development is closely related to another topic and project in the program, that of being a trustworthiness digital repository.

Archives, museums and libraries manage a growing number of our society's digital products in their e-depots. All stakeholders must be able to place their trust in the managers of these digital collections, including those in the field of digital heritage. Managers must ensure that digital heritage collections are secured and being kept accessible for the long term. In order to provide a measure for this necessary trust, a number of certification instruments for e-depots have been developed.

Within the Certification project we will stimulate, promote and support the certification of long-term digital repositories in the Netherlands. The project will deliver a roadmap for certification of Dutch repositories. This roadmap is based on the three main instruments for certification: DSA [17], DIN [18] and ISO16363 [19]. We believe that organizations should start with the basic level, the Data Seal of Approval as a first step towards trustworthiness. Not only the usual suspects involved already in preserving digital collections should be aware of certification steps, also the smaller institutes should notice the aspects of dealing with trustworthiness solutions. So we explicitly focus our attention to the commercial players in the Dutch digital preservation field. Companies offering preservation solutions are part of the roadmap. But the large Cultural Heritage institutes as the National Library and the National Archives should lead the way.

4.3 Persistent Identifiers

A third project to highlight deal with the sustainability of the accessibility of digital information. So this project focuses on persistent identifiers. The main goals of the project are firstly to raise awareness among cultural heritage institutions on the subject of persistent identifiers, secondly to develop a business model for a persistent identifier service especially for smaller cultural heritage organizations, and lastly to set up some show cases. Within this project a strategy for communications is developed in which steps and instruments are defined to raise awareness on the topic. The project also resulted in a decision tree for cultural heritage organizations to guide them through the process of selecting a particular type of Persistent Identifier (Handle, DOI or NBN:URN). With this so called PID-helper tool cultural heritage institutes learn more on the topic and are helped with finding solutions which fit their needs [20].

Created more awareness and having a helper tool is only a first, but important, step. Next step will be the implementation of services providing cultural heritage institutes with persistent identifiers. The approach of the project is a national approach, following the strategic lines of the NCDD. So, implementing persistent identifiers is not an individual implementation on organisational level, but scalable implementation. So a vendor oriented approach is chosen. This means that we will stimulate vendors building in facilities for the different PID solutions. There are several good examples of the implementation already available on this level. The National Museum of World

Cultures [21] has an agreement with the developer of The Museum System (TMS) to build in a persistent identifier solution in the collection management system they are currently using. By means of this single agreement also other TMS users are able to use this service.

Also other vendors are discussing the development of PID services in their collection- and document management systems. Within the framework of the project we are discussing this with a group of Dutch vendors. This should result in the development of persistent identifier facilities to be built in into the main systems in use in Dutch heritage organizations (archives and museums).

4.4 Costs

We want cultural heritage organizations to connect to a network of preservation services, we want them to use persistent identifiers, and we want them to become more mature regarding digital preservation. But this comes with a cost. The desirability of sustained access to digital collections is obvious. The exact costs of achieving this goal, however, are as yet unclear. This lack of insight into the costs, benefits and the business case complicates the realization of sustained access within an organization.

This project builds on the conclusions of the investigation into a national infrastructure for sustained access on the results of the European 4C project, including the roadmap for cost-effective sustained access and the Curation Cost Exchange tool [22].

The project aims to get more clarification on the costs involved in making digital collections more sustainable and provide permanent access to them. To this end, the project is working on a list of indicators, gathered using the 4C project's Cost Exchange Tool. With at least 40 institutions from various domains providing cost figures, a benchmark is being created, allowing institutions to compare their costs and expenses at different stages. In addition, the project will produce recommendations and guidelines for institutions occupying key positions within the Digital Heritage Network, supporting them in including digital preservation costs in their budgets as well as coordinating these budgets amongst each other.

5. RESULTS

These are some examples of the projects carried out with the preservation program. The program at large consists of eight projects and five case studies. These case studies feed into the main goals of the program and projects in a way that they are proof of concept cases or cases focusing on very specific topics. One of the cases is a case on Digital Archaeology, digging up the "Digitale stad" which was one of the first examples of community building on the web [23]. Within another case study a research on emulation of digital art stored on cd-roms is carried out. Within the project different emulation tools are tested on a collection of cd-roms containing works of digital art.

The presentation of a national strategy and the establishment of three Work Programs are an important development, which brings many existing initiatives and plans together. This is a start of an integrated approach for access to and preservation of Dutch digital heritage. The timing is perfect as there is a growing community of professionals involved in digital preservation. The level of knowledge exchange and the willingness to collaborate is growing too. The program on

sustainable digital heritage is facilitating and stimulating knowledge exchange and collaboration by means of the development of a network of professionals. This is a network of people working in the field of digital preservation and willing to share their expertise with others. As there is a growing amount of professionals, but also many others still in need of knowledge, we have to organize this within a more formalized network. One of the instruments within this network will be a digital learning environment. This is an online training environment to be used by professionals to learn and institutes to become more mature. So they will be able for the next steps to be taken.

6. ACKNOWLEDGMENTS

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