The DigCurV Review of Training Needs in the Field of Digital Preservation and Curation

An Overview of the Main Findings

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Abstract—**This paper presents the results of the DigCurV review of training needs in the field of digital preservation and curation. The project carried out three research activities during 2011 and in early 2012: an online survey, a series of focus groups, and an analysis of job advertisements. The results indicate a severe lack of qualified staff as well as a lack of appropriate training options for digital preservation and curation. Staff working in this area need to have a broad spectrum of skills and competences. These comprise both generic and digital preservation-specific and technical skills and competences. An urgent need for training was stated in terms of digital preservation-specific and technical as well as with regard to generic skills. When asked to set priorities and indicate the areas where the need for training was most pressing, respondents clearly assigned these to the digital preservation-specific and technical skills.**

Keywords: digital preservation; digital curation; training; qualification; vocational education; needs assessment; survey; questionnaire; focus groups; job advertisements; cultural heritage institutions

I. INTRODUCTION

As a basis for the development of the DigCurV Curriculum Framework for professional development in the field of digital curation and preservation, the EU funded project Digital Curator Vocational Education Europe (http://www.digcur-education.org) conducted research on both the existing training opportunities and the training needs with a focus on the cultural heritage sector. This paper is based on the "DigCurV Report and analysis of the survey of training needs" [1]. It presents the main findings of the DigCurV research on training needs which are described in more detail in the report [1]. The results of the survey on training opportunities are presented in a separate paper (see Kuprienė in this volume) or, in detail, in the respective report [2].

II. CONCEPTUAL DESIGN

The DigCurV review of training needs aimed at: (1) identifying the skills and competences needed in digital preservation and curation, and (2) identifying the need for training with regard to these skills and competences. It was comprised of three research activities: an online survey, a series of focus groups, and an analysis of job advertisements. The survey formed the main part of our research. The focus groups and the analysis of job advertisements were conducted to gather additional information to counter-check and enrich the survey results.

A. Online Survey

The online survey was conducted during July and August 2011. It was targeted at staff members of cultural heritage organisations such as libraries, archives and museums, but also of institutions in the scientific and educational sector, such as universities. The survey was structured into four parts:

1) *Basic information about the respondents and their organisations:* The questions in this part referred to the location (country), type and size of the institutions as well as their involvement in digital curation/ preservation activities and the associated staff situation. It also asked about the respondents' tasks with regard to digital preservation and curation.

2) *Training plans and preferences:* This part gathered information about the organisations' plans for training in digital preservation / curation as well as preferences with regard to the methods and time frames for training.

3) *Skills and competences needed in digital preservation and curation:* This part concentrated on the skills and competences that are required of staff working in the field. The respondents were presented with two lists of tasks and skills (with each item representing a task and the skills or competences needed to fulfil this task) and asked to assess the importance of each task / skill in terms of the work of staff involved in digital curation on a four-point scale (essential, important, not important, and non-essential). One list contained general or generic tasks and skills, such as communication or management, while the other consisted of digital preservation-specific and technical tasks and skills.

4) *Training needs in digital preservation and curation:* The final part focused on the need for training with regard to a number of skills and competences required in digital preservation and curation. Again, the respondents were presented with two lists: one containing generic skills and competences, the other digital preservation-specific and technical skills and competences. They were asked to assess the need for training with regard to each item on a four-point scale (great need, moderate need, hardly any need, no need). In addition, the last question asked respondents to indicate up to three areas in which they considered the need for training to be most pressing.

B. Focus groups

To gather additional information from stakeholders, a series of nine focus groups – structured group discussions on the topic – were held in the DigCurV partner countries (Germany, Italy, Ireland, Lithuania and the UK) between September and November 2011. In the focus groups, participants first talked about the challenges with regard to digital preservation they perceived in their everyday work. Then they were asked to indicate the skills and competences that they considered necessary for staff working in the field. Because the tasks and roles of people involved in digital curation are manifold, participants were also asked to develop a number of different ideal job profiles as well as the relevant task and skill sets for each profile. Afterward, they were asked to assess the need for training with regard to these skills and competences. At the end, participants indicated suitable training formats and talked about the relevance of certification and accreditation.

C. Analysis of job advertisements

From February 2011 to January 2012, DigCurV collected 48 job advertisements for positions related to digital preservation and curation. These were examined with respect to the tasks associated with the advertised jobs as well as the qualifications, skills, and competences that were required of the prospective job holders.

III. SURVEY RESULTS

A. General information about the respondents and their organisations

1) *Basic information:* The survey received 454 responses from 44 countries. Most of the responses were from Europe (81%). 14% of responses were from North America and 5% from other countries all over the world. The majority of respondents worked in cultural heritage institutions, of which libraries and archives were most frequently mentioned. There was also a large proportion of participants employed at scientific and educational organisations. Moreover, a considerable number of respondents said they were affiliated with other institutions, e.g. public administration, broadcasters, or companies. The survey population comprised of institutions of all sizes: small (1-100 FTEs: 45%),

medium (101-500 FTEs: 30%) and large (> 500 FTEs: 25%). In their everyday work, respondents were involved in a variety of activities related to digital preservation and curation, including management, hands-on tasks and research as well as education and training, providing a strong input of expertise and knowledge from many relevant areas.

2) *Involvement in digital preservation and curation activities:* The vast majority (96%) of institutions in the survey face the challenge of digital preservation and curation. About 76% of them already store digital assets for long-term preservation, and another 18% were planning to do so in the future. However, when looking at the staff situation, there is a mismatch. 12% of the organisations that already store digital assets had no staff in place who were assigned to the associated tasks. This particularly applied to smaller institutions. Moreover, 57% of the 335 respondents who answered this question stated that their organisation had no plans to hire new staff for digital preservation tasks. Several participants commented on this question, pointing out that budget constraints were one of the main reasons for this situation. Another factor that was mentioned in this regard was the difficulty of finding adequately skilled candidates on the labour market. Since about 96% of respondents' organisations will have to deal with digital preservation, but many of them lack qualified staff to fulfil the associated tasks and also do not intend to hire new staff, presumably the existing staff will have to cope with these new duties, many of whom will need training to acquire the necessary skills and competences.

B. Training plans and preferences

Although there were a considerable number of organisations (35%) that did not plan training for their staff, about two thirds of them did. 35% of respondents said their organisation was planning training for staff without previous experience in digital preservation/curation, and 31% indicated that there were plans to train staff who already had previous experience. Fortunately, 26% of the institutions in our survey already provided training for their staff. In terms of the training method considered most suitable for their organisation, respondents clearly indicated small group workshops, mentioned by 75%, as their favourite option.[33] 39% chose blended learning, which is a combination of face-to-face instruction and online components. The other options were less popular: written manuals (22%), supervised one-to-one training by a senior staff member (20%), online training (18%), large group workshops (13%) and other (1%) (see Fig. 1).

Respondents also expressed clear preferences with regard to the time frames. They overwhelmingly favoured short events.

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[33] Up to two answers were allowed for this and the following question.

55% stated one-time events of 1-2 days to be the most suitable time frame for their organisation, followed by one-time events of 3-5 days, which were chosen by 30%. The other options were selected far less frequently: a course of 1-4 hours a week for several semesters (19%), recurring block courses of one to two weeks for several semesters (14%), a course of 1-4 hours a week for two or more semesters (9%) and other (7%) (see Fig. 2). In their comments, several respondents explained their preference for short term options, pointing out that many staff members had to cope with heavy workloads. This made it difficult for their institutions to release them for training for more than a couple of days. In terms of certification or accreditation for training, the opinions were divided. About half of the respondents stated that certification or accreditation of training is important, while the other half found it not absolutely necessary.
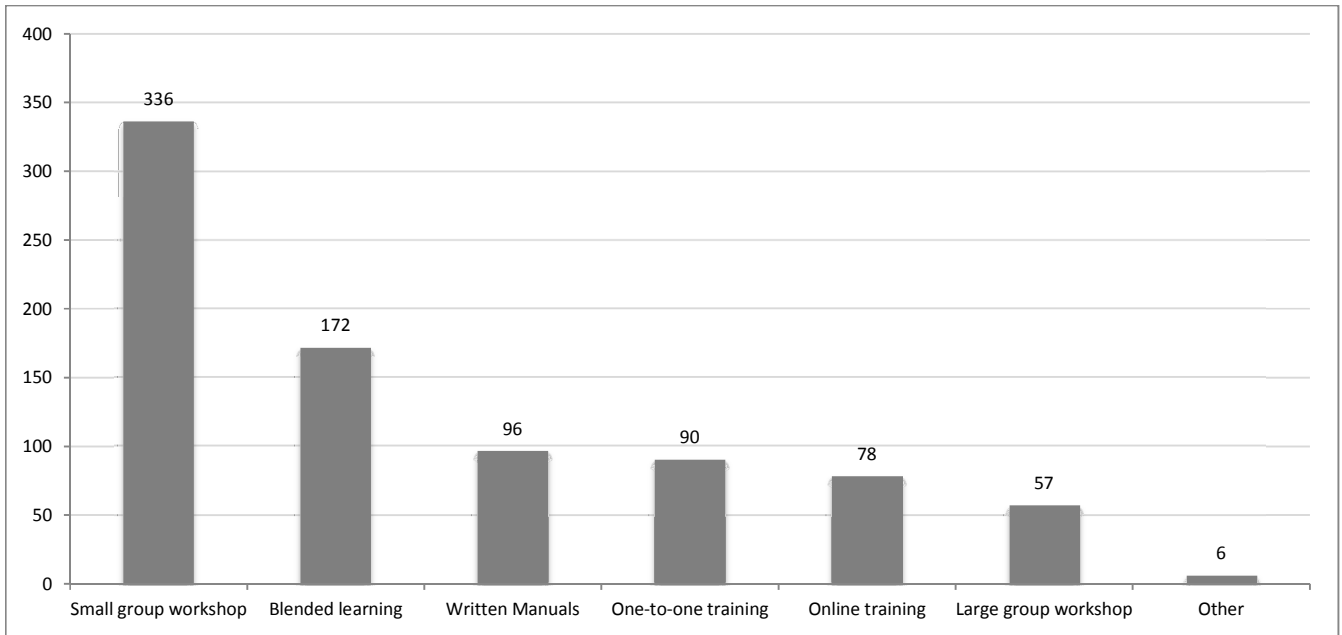

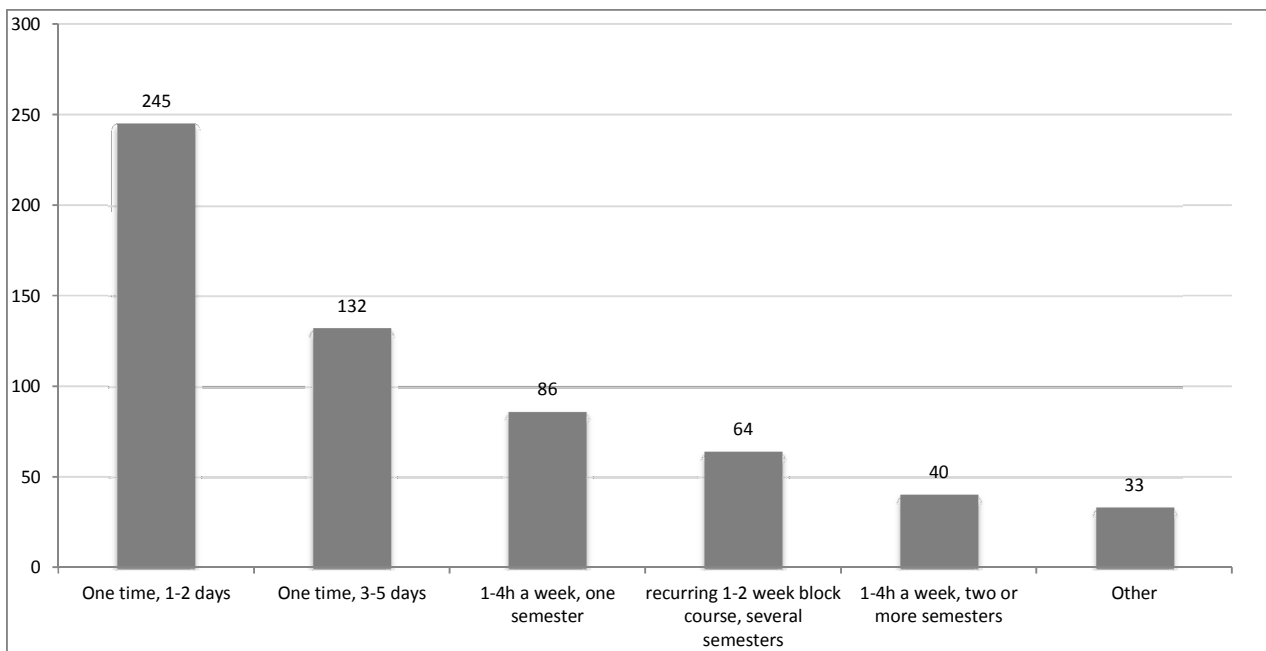Figure 1. Training methods considered most suitable

Figure 2. Time frames for training considered most suitable

C. Skills and competences needed in digital preservation and curation

Respondents were asked to assess the importance of a number of tasks and skills in terms of the work of staff involved in digital preservation and curation. These included general as well as digital preservation-specific and technical skills.

General or generic tasks and skills assessed were:
- Collaborating with others
- Communicating with others
- Affinity for technology
- Managing projects
- Training others
- Managing budgets
- Leading a department or team
- Organising conferences, workshops or other events

More than half of these were regarded as highly relevant. Collaborating with others, communicating with others, and affinity for technology were considered to be of particular importance. More than 95% of respondents indicated these to be either important or essential. For managing projects and training others, the proportions are also quite high: 84% and 77%, respectively. In terms of managing budgets, opinions

were divided. About half of the survey population (52%) perceived this item to be essential or important. Two skills – leading a department or team and organising conferences, workshops and other events – were seen as not as relevant. Nevertheless, the percentage of respondents considering them to be either essential or important were 41% and 35%, respectively (see Fig. 3).

The digital preservation-specific and technical skills assessed in the survey were:

- Preservation planning
- Ensuring access
- Managing data
- Evaluating and selecting data for long-term preservation
- Storing data
- Ingesting data
- Research, development and implementation of a digital preservation environment
- Administering the archive

The results show that, without exception, all of these skills were thought to be of extremely high relevance. Each of the given items was indicated to be either essential or important by more than 91% of respondents (see Fig. 4).
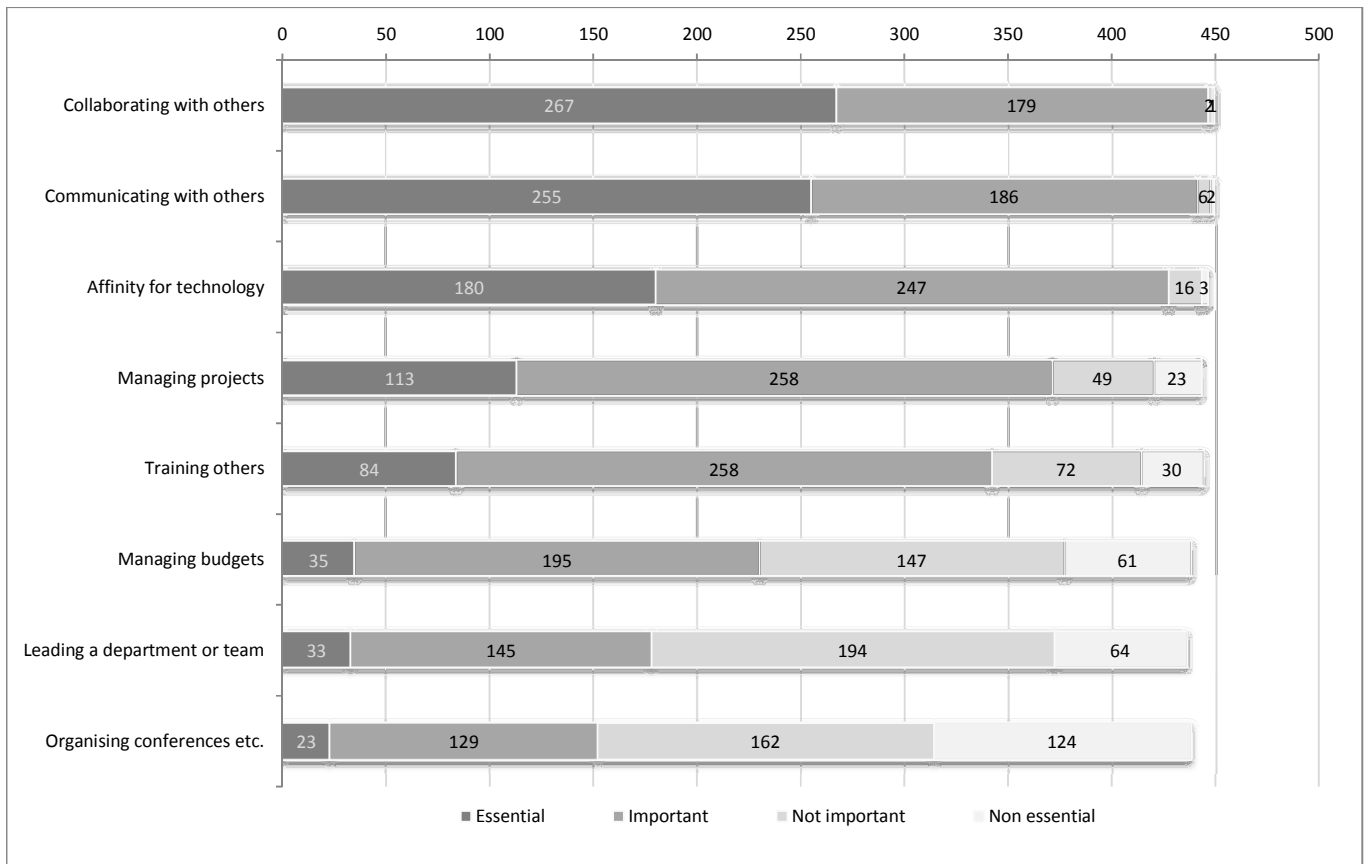

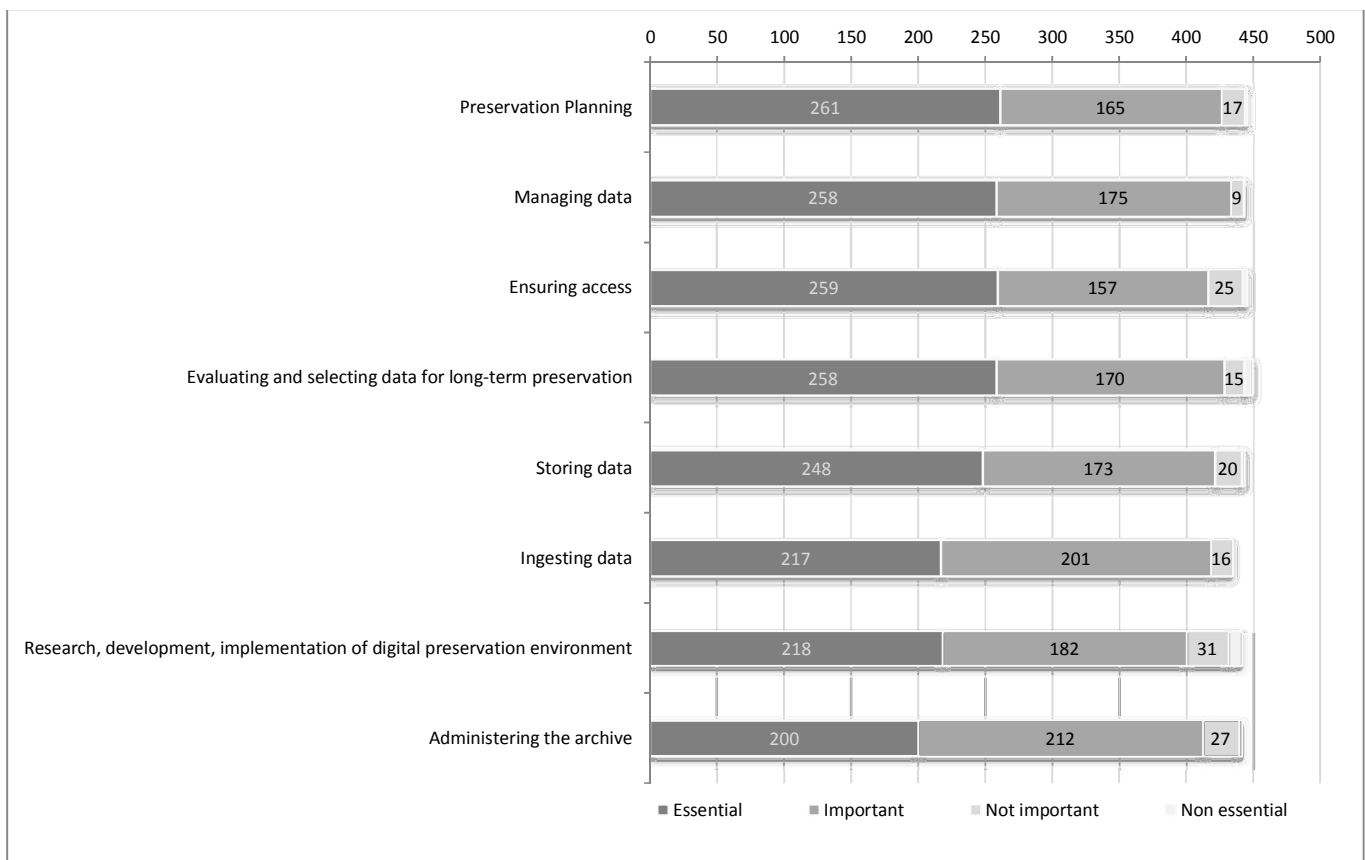Figure 3. Importance of general tasks and skills

Figure 4. Importance of digital preservation-specific and technical tasks and skills

D. Training needs in digital preservation and curation

The survey results indicated a substantial need for training, both for general and digital preservation-specific and technical skills.

In terms of general skills and competences, the items assessed were:

- Liaising between customers and information technology experts
- Communication
- Project Management
- Networking with people
- Training others
- Administration and finances

For four of these, more than 80% of respondents indicated either a great need or a moderate need: liaising between customers and information technology experts (85%), communication (84%), project management (82%), and networking with people (81%). In terms of training others, the respective percentage was also quite high: 73%. For administration and finances, the proportion was somewhat lower, but still considerable: 61% (see Fig. 5).

With regard to digital preservation-specific and technical skills and competences, respondents were asked to assess the need for training for the following items:

- General / basic knowledge of digital preservation issues
- Preservation and data management planning
- Preservation tools
- Information modelling and metadata
- Trusted repositories
- Strategic planning and policies
- Technical systems
- Legal aspects

The results clearly show that the degree of need for training indicated is extraordinarily high for virtually all of these skills and competences. The proportions of respondents who stated either a great need or a moderate need for training ranged from 86% to 96% (see Fig. 6).
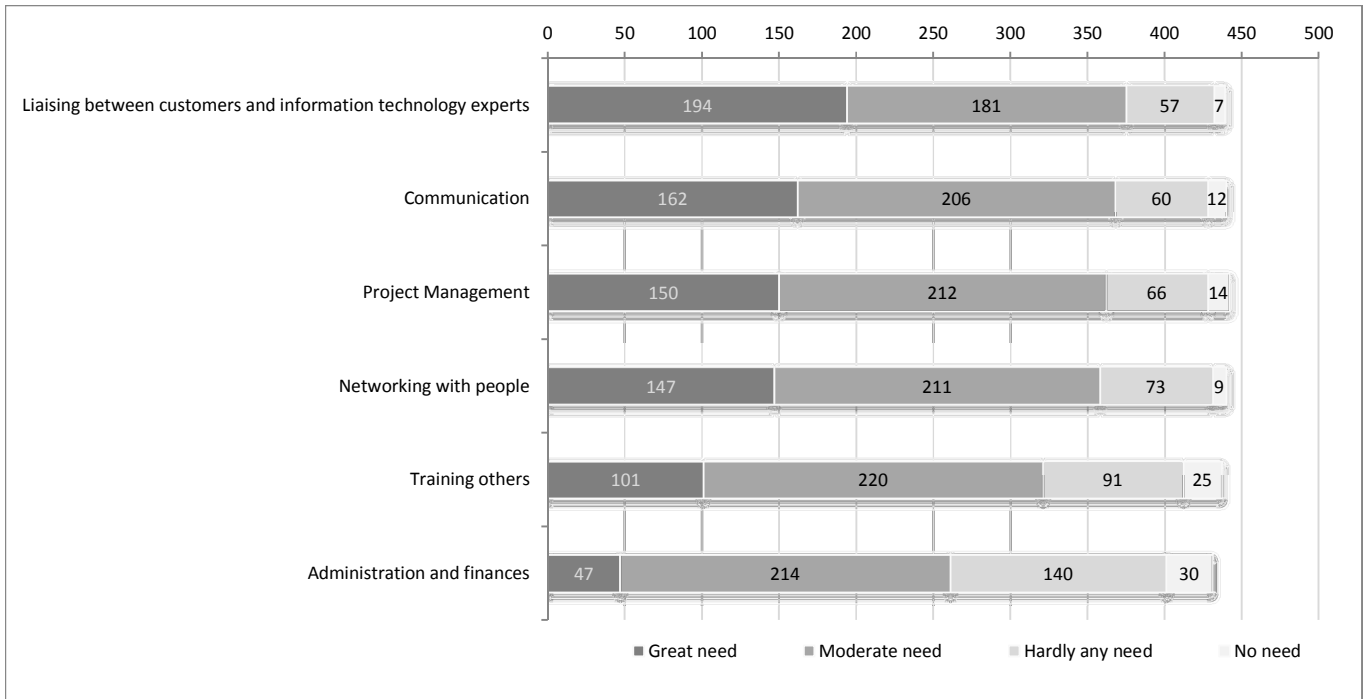
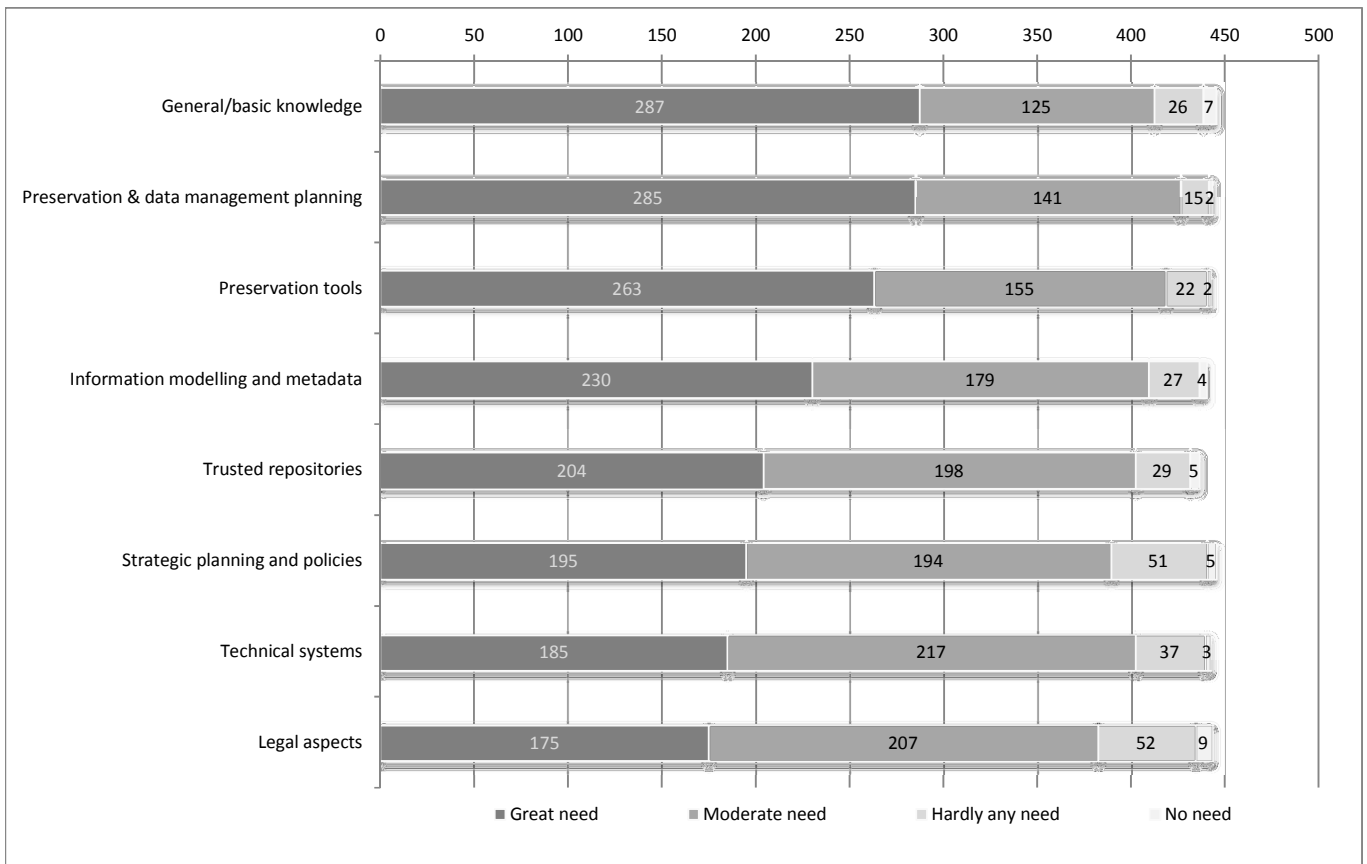Figure 5. Training needs with regard to general skills and competences

Figure 6. Training needs with regard to digital preservation-specific and technical skills

The last question of the needs assessment aimed at setting priorities by asking respondents to indicate up to three areas in which they believed the need for training to be most pressing. Here, the digital preservation-specific and technical skills clearly outnumber the general skills: all of them ranked higher than any of the general skills and competences. The need was expressed to be most urgent for general / basic knowledge of digital preservation issues, preservation and data management planning (both 49%), as well as preservation tools (38%) (see Fig. 7).
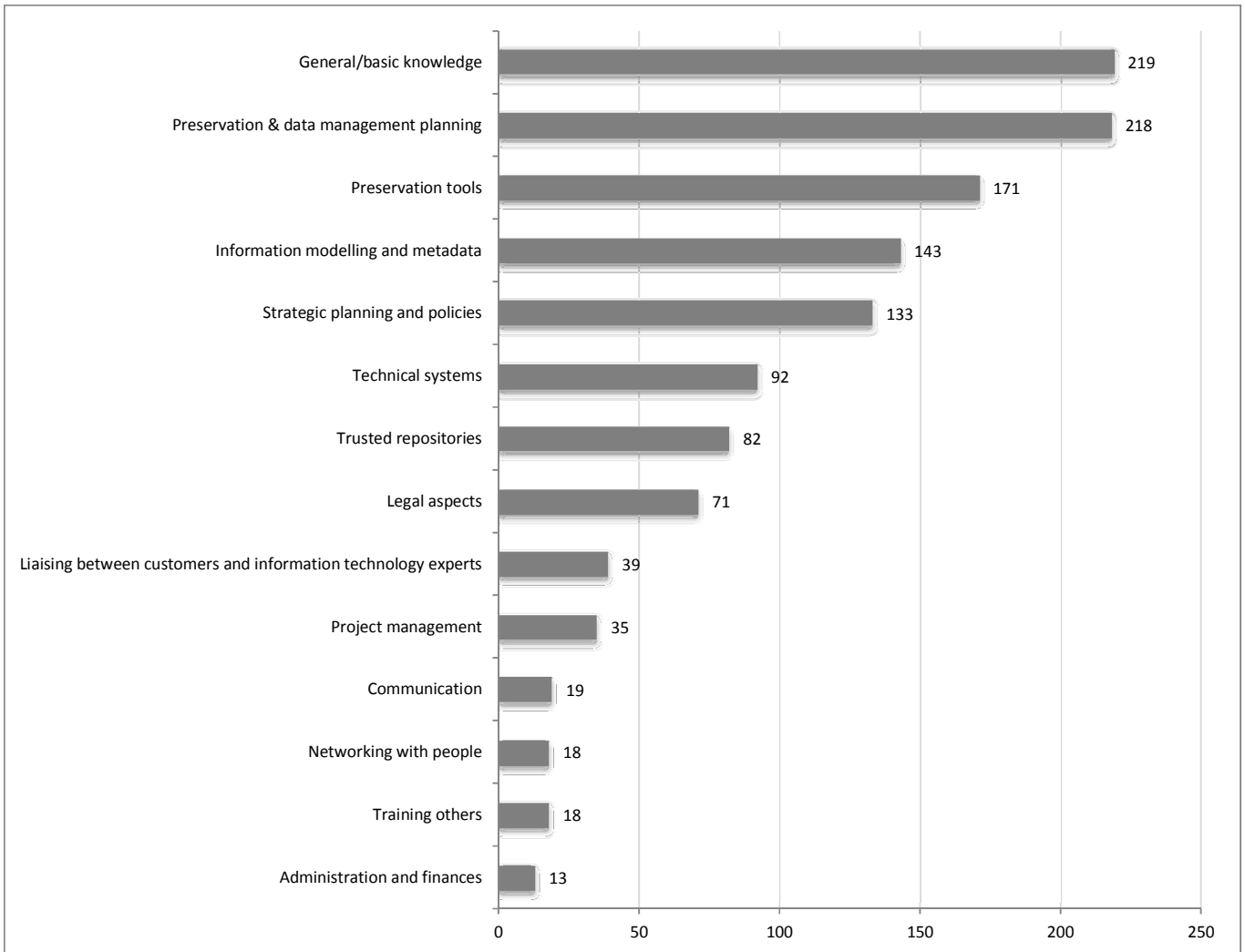

Figure 7. Most pressing needs

IV. FOCUS GROUP RESULTS

The results of the nine focus groups carried out in Germany, Ireland, Italy, Lithuania, and the UK in autumn 2011 underpinned the findings of the survey. One of the greatest challenges participants mentioned is the severe lack of professionals who are qualified for digital preservation and curation tasks. This refers to existing staff in the organisations as well as to potential staff on the labour market. The situation is exacerbated by a lack of appropriate training offers. Furthermore, participants stated a general lack of awareness for the importance of digital preservation and curation among many institutions.

In terms of the skills and competences required of staff working in the field of digital preservation and curation, focus group participants covered a broad spectrum ranging from digital preservation-specific skills, IT knowledge and technical

expertise to knowledge of the subject domain as well as of library, archival and information science, to social skills, management skills, and knowledge of one's own organisation. Participants stated an urgent need for training, particularly in terms of technical skills and IT knowledge. Other areas in which a considerable need for training was stated were communication skills, management skills, and the ability to train others. Participants in Ireland and Lithuania also expressed a great need for introductory training.

With regard to the methods and time frames for training, the findings are similar to the ones of the survey. The training methods and time frames regarded most appropriate by focus group participants were blended learning, short term courses of a few days as well as courses of one to two weeks in length, such as summer schools. In terms of short events of a few days, some participants pointed out that they were suitable for very limited or specific topics, but not as much for training that has a wider scope. However, similar to comments in the survey, it was also noted that it is difficult for organisations to release staff for training for longer time periods.

V. ANALYIS OF JOB ADVERTISEMENTS RESULTS

The 48 job advertisements for positions in the field of digital preservation and curation collected between February 2011 and January 2012 were analysed with respect to the task responsibilities as well as the required knowledge, skills, competences, and qualifications of the prospective job holders. The findings support the survey and focus group results.

The responsibilities of professionals comprise a broad spectrum of manifold tasks. They include digital preservation-specific and technical activities as well as general tasks. Among the general tasks, communication, outreach and liaison, project management, teaching and training as well as supervision and funding were frequently mentioned. The digital preservation-specific and technical tasks cover the whole digital lifecycle. Tasks often found were, for example, the development and establishment of workflows, data management, digital collection management, selection and appraisal, hands-on technical tasks, or the research, testing and implementation of digital preservation solutions in line with international standards and best practices.

Accordingly, the knowledge, skills and competences required of candidates are manifold as well. In terms of general skills, excellent communication skills were required or indicated as desirable in all but one job description. Collaboration and team work skills as well as project management skills were also frequently mentioned. The required digital preservation-specific and technical skills include areas such as digital archives and library collections management, data management, trusted repositories, metadata, information technology, programming, preservation tools as well as policies, standards and best practices. With respect to formal qualification, most job advertisements expressed a strong preference for an advanced degree (master's degree or equivalent) in the fields of Library and Information Science or Archival Studies or Science. However, many job descriptions

noted that a relevant academic field, e. g. Computer Science or in the Humanities, would also be acceptable.

VI. SUMMARY

During 2011, the DigCurV project carried out research on training needs in the field of digital preservation and curation. The main aims were to (1) identify the skills and competences that are required of staff working in the field, and (2) to assess the need for training with regard to these skills and competences. There were three research activities carried out: (1) an online survey, (2) a series of focus groups, and (3) an analysis of job advertisements. With 454 responses to the survey and nine focus groups with 6-10 stakeholders taking part, our research received strong input from the digital preservation and curation community, particularly from the cultural heritage, scientific and educational sectors.

The results of our research indicated a severe lack of professionals with the skills and competences necessary to deal with digital preservation tasks. This applies to existing staff in institutions as well as to potential staff on the labour market. The lack of qualified staff is accompanied by a lack of appropriate training options. Survey and focus group participants expressed clear preferences with regard to methods and time frames for training. With regard to the training methods considered most suitable, small group workshops stood out, followed by blended learning. The most preferred time frames were short options. The skills and competences needed for digital preservation and curation are manifold and comprise a broad spectrum ranging from digital preservation-specific skills, IT and technical skills to general skills as well as knowledge of the subject domain and information, library or archival science. There was a great need for training expressed for both general skills and digital preservation-specific and technical skills. The most pressing needs, however, were indicated in the area of the latter, with general / basic knowledge of digital preservation issues and research and data management planning being the most frequently mentioned.

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