

# *Data-Intelligence Training for Library Staff*

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**Abstract** - The course Data Intelligence 4 Librarians was developed by 3TU.Datacentrum at the end of 2011 to provide online resources and training for digital preservation practitioners, specifically for library staff. The course is intended to overcome the insecurity and perceived lack of knowledge about data management which prevents library staff from proactively providing support to research staff with the management, storage and sharing of their research data. The course objectives are: 1) to transfer and exchange knowledge about data management, and 2) to provide participants with the skills required to advise researchers or research groups on efficient and effective ways of adding value to their data. The course is an additional service provided by 3TU.Datacentrum<sup>44</sup> a digital repository for research data set up by the research libraries of the three Dutch Universities of Technology (3TU): Delft University of Technology, Eindhoven University of Technology, and the University of Twente. The paper describes the process of creating the course, the methodology, and the results of the two courses in 2012. There were three phases to creating the course: 1) an investigation of the training needs, 2) the design of the course and 3) the development of the training materials. The training needs could be divided into hard skills (such as data management basics, data citation and knowledge of the data browser interface) and soft skills (such as acquisition skills, advisory skills and a reflective attitude towards their profession). This has led to a course with a competency-based modular design, consisting of four modules. The project team consisted of 3TU.Datacentrum staff. The team designed a blended learning course, composed of a didactical mix of group meetings, online study and homework assignments, including the website Data Intelligence<sup>45</sup> that provides online reference material. By using a modern collaboration environment and social media, the course meets the needs of the modern scientific community. The training methodology proved effective in creating a solid base for digital preservation and a network of starting data librarians.

In the first half of 2012, 14 librarians participated in the pilot course and provided feedback. The feedback has been used to improve the next cycle of the course, which started in September 2012. In February 2013 the third cycle starts.

This paper demonstrates the choices made during the design process. Finally, future plans are discussed. They include expanding the course to make the materials also suitable to researchers and other data repositories in cooperation with organisations from The Netherlands.

**Keywords:** - *DataIntelligence; 3TU.Datacentrum; Verbeeldingskr8*

## I. INTRODUCTION

Attention for research data management (RDM) from funders, high level management of universities and research institutes as well as some data producers is increasing. To bridge the gaps and support eager researchers with RDM, well-trained support staff are urgently required.

In literature, emphasis lies on training researchers themselves in RDM (Lyon, 2007; Grim, Van der Heijden, De Smaele & Verbakel, 2011). To our knowledge, Data Intelligence 4 Librarians is the first course to specifically focus on support staff, particularly librarians. The mission of the course was formulated as follows: *Data Intelligence 4 Librarians wants to contribute to the professionalization and positioning of support staff as a trusted partner in the support of data-intensive science.*

## II. PROCESS

There were three phases to designing and delivering the course Data Intelligence 4 Librarians: 1) an investigation of the training needs, 2) the design of the course, and 3) the development of the training materials.

### A. Investigation of the training needs

The course Data Intelligence 4 Librarians was primarily intended for library staff from the three Universities of Technology in The Netherlands (3TU): Delft University of Technology, Eindhoven University of Technology, and the University of Twente. A recent white paper stressed the urgency of the development of RDM trainings for support staff and researchers (Grim, Van der Heijden, De Smaele & Verbakel, 2011). The white paper describes the results of a literature search on curation education and no examples existed

<sup>44</sup> 3TU.Datacentrum: <http://datacentrum.3tu.nl>

<sup>45</sup> Data intelligence: <http://dataintelligence.3tu.nl>

which could be transferred to the current situation in The Netherlands.

Sessions were organised with the information specialists or reference librarians of the 3TU universities. During break-out sessions training needs were identified. A Twitter account @datalibrarians<sup>46</sup> was set up to proactively look out for the latest developments in the field. To get in touch with relevant parties in The Netherlands the Onderzoeksdataforum [Research Data Forum], now the Special Interest Group Research Data<sup>47</sup> was visited, and in June 2011 a visit was paid to the ICE-forum<sup>48</sup>. Our pragmatic approach received confirmation: get the course running as soon as possible and let participants evaluate its content to improve it. Open Educational Resources on the subject were not yet available at that time.

### B. Design of the course

During the investigation of the training needs, librarians expressed a great need for more knowledge and ICT-skills before they would feel capable of establishing data services. Our course is designed and built as a competence-based modular course, combining online and face-to-face tuition (blended learning). From the inventory of learning goals, seven core competencies were defined for a data librarian:

Table Head	Table Column Head
Skilfully handles ICT	<ul style="list-style-type: none"> <li>• Uses the available Information Technology in an effective and efficient way.</li> <li>• Can use the 3TU.Databrowser to upload a dataset and make it available for (re)use</li> </ul>
Has specific library knowledge	<ul style="list-style-type: none"> <li>• Knows how to acquire specific knowledge about metadata standards.</li> <li>• Can explain how minting a DOI (Digital Object Identifier) and UUID (Universally Unique Identifier) enhances the visibility (citability) of a dataset.</li> </ul>
Develops entrepreneurship	<ul style="list-style-type: none"> <li>• Is committed to improve data services in response to changing needs in the field.</li> <li>• Keeps an eye on trends in the profession, knows where new knowledge may be found (networks) and spreads relevant information to key persons in the organisation.</li> <li>• Investigates needs in the field by means of questionnaires, interviews and so-called focus groups.</li> <li>• Actively contributes to developments in the field by visiting conferences and enrolling in courses and training.</li> </ul>
Develops a systemic view	<ul style="list-style-type: none"> <li>• Acknowledges that data are just one part of the scientific research cycle and is aware of the significance of data within that cycle.</li> <li>• Sees the library and its data and information services as part of a larger decision-making system.</li> </ul>
Develops advisory skills	<ul style="list-style-type: none"> <li>• Can advise researchers on RDM topics, like sustainable data formats, data models, intellectual property and the demands of research funders.</li> <li>• Knows when certain aspects of RDM do not fit his/her expertise and is able to refer questions to corresponding knowledge experts.</li> </ul>

<sup>46</sup> 3TU.Datacentrum on Twitter: <http://www.twitter.com/datalibrarians>

<sup>47</sup> Special Interest Group Research Data: <https://www.surfspace.nl/sig/28-research-data/29-over-de-sig/>

<sup>48</sup> International Curation Education Forum: <http://www.jisc.ac.uk/whatwedo/programmes/preservation/iceforum.aspx>

Table Head	Table Column Head
	<ul style="list-style-type: none"> <li>• Supports researchers in setting up a data management plan (DMP).</li> <li>• Can hold a so-called data interview and is aware of the possible use of data curation profiles (DCP) as a possible interview instrument.</li> <li>• Can connect to a researcher's perception on data management and data sharing.</li> <li>• Asks for feedback on his/her advisory skills and adjusts his/her behaviour accordingly.</li> </ul>
Develops collaboration skills	<ul style="list-style-type: none"> <li>• Investigates how collaborating with other employees, institutions, data centers and researchers may lead to a better provision of services.</li> <li>• Acknowledges the need for a forum of data professionals who may join forces in important data issues like copyright and (inter)national information infrastructure.</li> <li>• Takes responsibility for his/her role in partnerships.</li> </ul>
Develops training materials	<ul style="list-style-type: none"> <li>• Develops RDM training materials for end users.</li> <li>• Is able to translate the knowledge and skills acquired in the Data Intelligence 4 Librarians training into RDM training material for different target audiences.</li> </ul>

Using these competencies, a modular course was designed which consists of the following modules:

1. Current topics
2. Data management
3. Technical skills
4. Advisory skills

For the Current topics module, the homework assignment requires the students to use relevant (online) tools and sources for about a month to form an opinion on the current state of affairs in the field of data curation (services). In a short elevator pitch they then share their findings with their fellow students.

The premise of the course is that supporting researchers in data curation is teamwork. Therefore strong emphasis is placed on enabling networking within the student group.

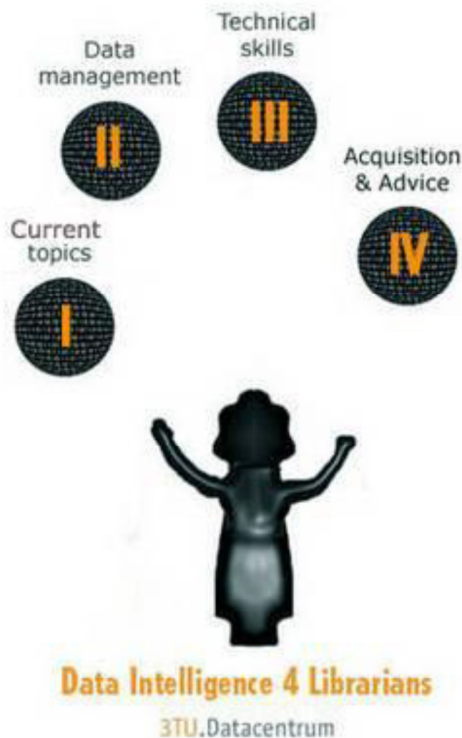


Figure 1. A graphic overview of the course: a data librarian juggling four balls. Retrieved from: <http://dataintelligence.3tu.nl/>

In the second module, students learn about research data management in general, such as formats, metadata, copyright, policy etc.

The third module is technical in nature. It explains what digital objects are, how data are to be cited, how research data are transformed to different formats during different phases in its lifecycle, how to search for data (depending on the data model used) and how to enhance publications. Students practice with searching for existing datasets and describing and uploading a dataset.

For the fourth module, students write an acquisition plan. They present their plan to fellow students and give feedback on each other's' plans, they try their advisory skills in role plays and, finally, put their acquisition plan into practice by actually carrying out the first steps described in their own plans. In this final module theory, skills and attitude come together.

### C. Development of training material

Once the training design was finished, the actual development of the course started. For each module a team of three to four experts on the topic came together for two to four iterating sessions of one or two hours. The content was written in between sessions. The design was fine-tuned with the feedback of the knowledge experts, texts were reviewed by the

experts and rewritten. The experts agreed on the final text on the course website and on the homework assignments. The whole process of developing the training material for all four modules took no more than three months. Even though the course was initially designed for Dutch participants, the course website was translated into English, in order to provide a possible source of inspiration for universities or other institutions abroad. The course material was illustrated with images.

Two coaches were selected for their didactical skills, following the belief that being an inspiring coach requires different skills than being a knowledge expert. The design of the course places much emphasis on learning by trying things yourself, without putting too much trust in an expert. Everyone is an expert in a certain area and data curation is teamwork where everyone should be valued for their specific contribution.

The coaches were provided with a global scenario for each training day, homework assignments, and some PowerPoint presentations not included in the course website.

### III. FINDINGS

Some important issues put forward by participants and coaches were:

Participants enjoyed and appreciated their discussions resulting from the homework assignments, seen as the most valuable element of the course.

Four days of face-to-face tuition were seen as a considerable time investment, but useful because of the relevant discussions and networking possibilities.

Participants were interested to hear from researchers themselves how they deal with data management issues, and about differences between disciplines.

Participants missed the opportunity to practice writing an actual Data Management Plan.

Participants urgently needed practical information about setting up a front office for data management services.

The participants appreciated the images included in the course material on the website, which they thought were a memorable way to clarify concepts.

In view of the evaluation results a collaboration with DANS (Data Archiving and Networked Services - archive of humanities, archaeology, geospatial sciences and behavioural and social sciences in The Netherlands) was set up. The course expanded to include information about non-technical disciplines as well as services provided by DANS. DANS also provided one of the coaches for the second cycle of the course, making it a truly joint undertaking. The course website is now providing reference materials from 3TU.Datacentrum as well as from DANS.

The first course was a pilot with mainly participants from the 3 technical universities. They know each other from various meetings, projects, seminars and so on. They still work together in 3TU.Datacentrum. The networking component of the course was less apparent than intended. The second cycle of the course took place between September and December 2012 with 16 participants from universities and research organisations throughout The Netherlands. In the evaluation Google+/Drive was more appreciated than in the first round. The networking component was highly ranked, all students came from different institutions, they learned from each other. The DigCurv game CURATE: The Digital Curator Game was played and provoked discussions. Most of the students went home with lots of plans to work on data management in their institutions. The technical module was too shallow for some students, too detailed for others. Their opinion is related to their prior knowledge and expectations about the course.

As information about the course *Data Intelligence 4 Librarians* has spread within and even outside The Netherlands, several parties have asked to share our experience and knowledge in other projects like RDMRose<sup>49</sup> and in exchanging experience and work with UK partners like DCC and JISC. Our course has also served as an inspiring example to developing the Liaison Librarian Training by EDINA & Data Library, University of Edinburgh (Macdonald, S., Donnelly, A., & Rice, R., 2012).

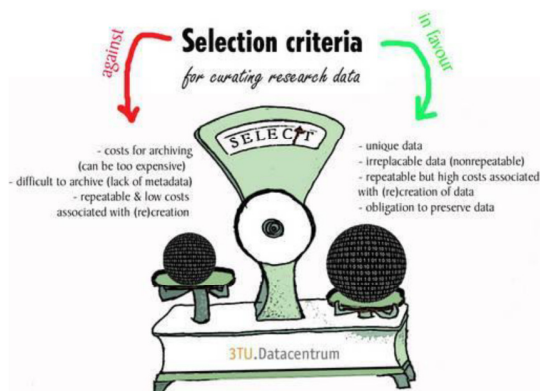


Figure 2. One of the illustrations used on the course website. Retrieved from <http://dataintelligence.3tu.nl/>

Participants in the course have expressed appreciation for the visual content on the course website, and adding more audio-visual content will greatly enhance the learning experience.

The development of the course *Data Intelligence 4 Librarians* was a leap into the unknown. No courses on this topic existed in The Netherlands and no easily reusable

courses on this topic existed abroad. But the need to get such a course running was obvious.

#### IV. FUTURE PLANS

A project just started for the design of a new, flexible and dynamic learning environment to make the course even more interactive and make collaboration easier. Simultaneously, an RDM training for researchers will be developed, initially for use at the three Universities of Technology in The Netherlands (3TU). The Data intelligence website will then cover the reference materials for the training for Support staff and the training for researchers.

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<sup>49</sup> The University of Sheffield Information School: <http://www.sheffield.ac.uk/is/research/projects>