The main obstacles to better research data management and sharing are cultural. But change is in our hands

*Recommendations on how to better support researchers in good data management and sharing practices are typically focused on developing new tools or improving infrastructure. Yet research shows the most common obstacles are actually cultural, not technological. **Marta Teperek** and **Alastair Dunning** outline how appointing data stewards and data champions can be key to improving research data management through positive cultural change.*

This blog post is a summary of Marta Teperek's presentation at today's [Better Science through Better Data 2018](#) event.

By now, it's probably difficult to find a researcher who hasn't heard of journal requirements for sharing research data supporting publications. Or a researcher who hasn't heard of funder requirements for data management plans. Or of institutional policies for data management and sharing. That's a lot of requirements! Especially considering data management is just one set of guidelines researchers need to comply with (on top of doing their own competitive research, of course).

All of these requirements are in place for good reasons. Those who are familiar with the [research reproducibility crisis](#) and understand that missing data and code is one of the main reasons for it need no convincing of this. Still, complying with the various data policies is not easy; it requires time and effort from researchers. And not all researchers have the knowledge and skills to professionally manage and share their research data. Some might even wonder what exactly their research data is (or how to find it).

Therefore, it is crucial for institutions to provide their researchers with a helping hand in meeting these policy requirements. This is also important in ensuring policies are actually adhered to and aren't allowed to become dry documents which demonstrate institutional compliance and goodwill but are of no actual consequence to day-to-day research practice.

The main obstacles to data management and sharing are cultural

But how to best support researchers in good data management and sharing practices? The typical answers to these questions are "let's build some new tools" or "let's improve our infrastructure". When thinking how to provide data management support to researchers at Delft University of Technology (TU Delft), we decided to resist this initial temptation and do some research first.

Several surveys asking researchers about barriers to data sharing indicated that the main obstacles are cultural, not technological. For example, in a recent survey by [Houtkoop at el. (2018)](#), psychology researchers were given a list of 15 different barriers to data sharing and asked which ones they agreed with. The top three reasons preventing researchers from sharing their data were:

1. "Sharing data is not a common practice in my field."
2. "I prefer to share data upon request."
3. "Preparing data is too time-consuming."

Interestingly, the only two technological barriers – "My dataset is too big" and "There is no suitable repository to share my data" – were among three at the very bottom of the list. Similar observations can be made based on survey results from [Van den Eynden et al. (2016)](#) (life sciences, social sciences, and humanities disciplines) and [Johnson et al. (2016)](#) (all disciplines).

At TU Delft, we already have infrastructure and tools for data management in place. The ICT department provides safe storage solutions for data (with regular backups at different locations), while the library offers dedicated support and templates for data management plans and hosts 4TU.Centre for Research Data, a certified and trusted archive for research data. In addition, dedicated funds are made available for researchers wishing to deposit their data into the archive. This being the case, we thought researchers may already receive adequate data management support and no additional resources were required.

To test this, we conducted a survey among the research community at TU Delft. To our surprise, the results indicated that despite all the services and tools already available to support researchers in data management and sharing activities, their practices needed improvement. For example, only around 40% of researchers at TU Delft backed up their data automatically. This was striking, given the fact that all data storage solutions offered by TU Delft ICT are automatically backed up. Responses to open questions provided some explanation for this:

- "People don't tell us anything, we don't know the options, we just do it ourselves."
- "I think data management support, if it exists, is not well-known among the researchers."
- "I think I miss out on a lot of possibilities within the university that I have not heard of. There is too much sparsely distributed information available and one needs to search for highly specific terminology to find manuals."

It turns out, again, that the main obstacles preventing people from using existing institutional tools and infrastructure are cultural – data management is not embedded in researchers' everyday practice.

How to change data management culture?

We believe the best way to help researchers improve data management practices is to invest in people. We have therefore initiated the Data Stewardship project at TU Delft. We appointed dedicated, subject-specific data stewards in each faculty at TU Delft. To ensure the support offered by the data stewards is relevant and specific to the actual problems encountered by researchers, data stewards have (at least) a PhD qualification (or equivalent) in a subject area relevant to the faculty. We also reasoned that it was preferable to hire data stewards with a research background, as this allows them to better relate to researchers and their various pain points as they are likely to have similar experiences from their own research practice.

Vision for data stewardship

There are two main principles of this project. Crucially, the research must stay central. Data stewards are not there to educate researchers on how to do research, but to understand their research processes and workflows and help identify small, incremental improvements in their daily data management practices.

Consequently, data stewards act as consultants, not as police (the objective of the project is to improve cultures, not compliance). The main role of the data stewards is to talk with researchers: to act as the first contact point for any data-related questions researchers might have (be it storage solutions, tools for data management, data archiving options, data management plans, advice on data sharing, budgeting for data management in grant proposals, etc.).

Data stewards should be able to answer around 80% of questions. For the remaining 20%, they ask internal or external experts for advice. But most importantly, researchers no longer need to wonder where to look for answers or who to speak with – they have a dedicated, local contact point for any questions they might have.

Data Champions are leading the way

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So has the cultural change happened? This is, and most probably always be, a work in progress. However, allowing data stewards to get to know their research communities has already had a major positive effect. They were able to identify researchers who are particularly interested in data management and sharing issues. Inspired by the [University of Cambridge initiative](), we asked these researchers if they would like to become [Data Champions]() – local advocates for good data management and sharing practices. To our surprise, more than 20 researchers have already volunteered as Data Champions, and this number is steadily growing. Having Data Champions teaming up with the data stewards allows for the incorporation of peer-to-peer learning strategies into our data management programme and also offers the possibility to create tailored data management workflows, specific to individual research groups.

Technology or people?

Our case at TU Delft might be quite special, as we were privileged to already have the infrastructure and tools in place which allowed us to focus our resources on investing in the right people. At other institutions circumstances may be different. Nonetheless, it's always worth keeping in mind that even the best tools and infrastructures, without the right people to support them (and to communicate about them!), may fail to be widely adopted by the research community.

The [Better Science through Better Data 2018]() event takes place today. You can follow discussions using the hashtag [#scidata18]().

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Note: This article gives the views of the authors, and not the position of the LSE Impact Blog, nor of the London School of Economics. Please review our [comments policy]() if you have any concerns on posting a comment below.

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