Recommendations to enable researchers to effectively utilise the emerging data infrastructure by ensuring that they have the knowledge, skills and support infrastructure necessary to adopt good research data management methodologies. These recommendations are the result of the European Landscape Study of Research Data Management, a study carried out by SURF part of the European SIM4RDM project.

**Funding organisations**
Funders are the main driver for institutions to establish Data Management Plans. It is recommended that funding organisations:

- Encourage researchers to create a data management plan at the stage of the definition of the project proposal;
- Allocate part of the research grant for data management purposes as funding may be an important incentive for data re-use;
- Help to advance research data management by designating data centres for physically storing research data;
- Issue instructions for writing the research plan and define clear deliverables for research projects;
- Consider and identify what elements of a Data Management Plan will actually assist researchers in their data management.

**National bodies**
A Code of Conduct is another driver for creating Data Management Plans. It is recommended that national bodies:

- Take the lead in drafting such a code. A Code of Conduct should outline responsibilities or proper practices. It may guide the decisions or procedures on the part of individual researchers or research institutes in the area of data management. A Code of Conduct could also initiate or structure debates about adequate practices and models in a broader European context;
- Suggest and supply appropriate tools and best practices. Appropriate tools that already exists in some European countries could be adapted to prevent other national bodies from re-inventing the wheel;
- Play an active role in standardising regulations and procedures and defining conventions for data citation;
- Are established with designated tasks regarding co-ordinating activities related to research data management. In cases this is not possible another option might be liaising with a pan-European research data management body;

**Research institutions**
It is recommended that research institutions:

- Develop data management policies that contain elements supporting scholars and scientists in their management. Institutions should ensure that the following elements are addressed: the responsibilities and roles involved in research data management, training and support, access and re-use, security, and long-term preservation/curation;
- Develop and provide a template or distribute examples of successful data management plans, in order to support researchers to produce a data management plan;
- Build a trustworthy research data infrastructure and create workflows for data publishing and archiving;
• Help researchers to decide on research data management tools and processes that best serve their research purposes by giving them information about tools and good practices available both at the national and at the European level;
• Help bridge the gap between data and publications by encouraging researchers to link their data with their publications and give them credit for this;
• Provide their staff with guidance on intellectual property issues and licensing of data, in order to raise awareness amongst their researchers regarding about important research data related aspects.

Publishers
Because of the limited response from the publishers valid conclusions about their dealings with data are hard to draw. Desk research showed that authors can submit underlying research data with their publication but that publishers stated authors are responsible for those data. Publishers stated that they don’t have arrangements in place to preserve the data. From the minimal responses it is clear that publishers are still in the beginning of formulating data policies.

It is recommended
• To establish a dialogue with publishers or publishers’ associations about establishing data policies. Possible elements of those policies could be creating incentives for depositing data, standardisation of persistent identifiers for citation of data, and requirements for trustworthy repositories to deposit the data.

Recommendations from workshop with stakeholders
A two-day workshop with relevant stakeholders made clear some of the definitions used in defining the roles within the environment of research data management are not unambiguous. To better clarify which stakeholders are meant it is suggested

• To settle on common definitions of the various roles as for example ‘data producer’, ‘young academics’ or ‘end-user’.

The outcome of the workshop also showed that the setting for research data management is broader than first thought. There are more actors involved than initially identified. Thus it is recommended

• To bring in other stakeholders in as well. Possible examples are international organisations and bodies, editorial boards of scientific journals, data centres and infrastructure providers.

It is further recommended that

• Interventions are tailor-made so as to make them more effective in enhancing researchers’ skills and knowledge regarding data management.

Different stakeholders need different interventions, hence the recommendation that stakeholders should look carefully which interventions they deploy. In particular it is recommended that

• Funders use a wide range of interventions;
• Researchers use a shareable licence;
• Research societies intervene with the development of common practices for citing data from articles or teaching young academics about data quality;
• Infrastructure providers intervene with common data formats for preservation and storage, tools and utilities.

Finally, an important recommendation is

• To use policies from funders, institutions and editorials boards to influence researchers to apply the principle of share and share alike. Data management and data citation should be part of regular scientific practice but awareness and understanding will first need to be raised.

These recommendations are the result of the European Landscape Study of Research Data Management, 2013. This overview is available on www.surf.nl/publications.