Data Management Plan Recommendation
for
Social Science and Humanities Funding Agencies

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Context:

This recommendation document has been developed by the RDC Metrics Group (RMG) as part of a task laid out during the 2014 Digital Infrastructure Leadership Council summit. The overall goal of the RMG was to report on ways of evaluating research data management plans (DMPs) in order to encourage a culture of digital scholarly stewardship. In order to accomplish this, the group conducted a survey of best practices on how data management plans can be prepared and evaluated, while exploring how stewardship can be encouraged, including ways that it can be recognized academically so as to change the culture of research data management.

Recommendation:

Agencies that fund social science and humanities (SSH) research should move towards requiring a Data Management Plan (DMP) as part of their application processes in cases where research data will be gathered, generated, or curated. In developing policies, funding agencies should consult the community on the values of stewardship and research that would be strengthened by requiring DMPs. Funding agencies should also gather examples and data about reuse of archived data in the social sciences and humanities and encourage due diligence among researchers to make themselves aware of reusable data. Pilot projects are recommended to develop an understanding of how DMPs can meet the needs of multiple stakeholders. SSH funding agencies should collaborate with other national and international funding agencies in order to coordinate requirements so as to foster international collaboration in the stewardship of research.

In this recommendation document we make the case for moving towards requiring DMPs, discuss the need for a statement of values and principles, propose implementation steps, and provide a model for DMP requirements and evaluation.

Section One - Introduction:

In 2004, Canada and 33 other countries adopted the Organization for Economic Co-Operation and Development (OECD) *Declaration on Access to Research Data from Public Funding*[1]*,* which recognized the importance of access to, and stewardship of, publicly funded research data. In the *OECD Principles and Guidelines for Access to Research Data from Public Funding*[2] is a list of 13 principles that outline the importance of open access to public data, transparency, the protection of intellectual property, accountability, and the quality and security of data.

In June 2013, Canada and all other members of the G8 adopted the *Open Data Charter*[3] and agreed to implement a set of open data principles in order to lay the foundation for the release and reuse of government data before December 31, 2015. The charter outlines the following 5 principles considered "essential to establishing a foundation for open data:"

1) Open Data by Default: Foster expectations that government data be published openly while continuing to safeguard privacy;
2) Quality and Quantity: Release quality, timely, and well-described open data;
3) Useable by All: Release as much data in as many open formats as possible;
4) Releasing Data for Improved Governance: Share expertise and be transparent about data collection, standards, and publishing processes; and
5) Releasing Data for Innovation: Consult with users and empower future generations of innovators.

1 http://acts.oecd.org/Instruments/ShowInstrumentView.aspx?InstrumentID=157
2 http://acts.oecd.org/Instruments/ShowInstrumentView.aspx?InstrumentID=157
3 http://open.canada.ca/en/g8-open-data-charter-canadas-action-plan

Additionally, in 2014, the government of Canada released a science, technology, and innovation strategy guided by the principles of promoting world-leading excellence, focusing on priorities, fostering partnerships, and enhancing accountability. Section 6.2.3 of the report titled *Seizing Canada's Moment: Moving Forward in Science, Technology, and Innovation 2014*[4] outlines the importance of transformative infrastructure projects in the move toward enriching Canada's research landscape through initiatives that include:

> "Working with partners to develop a digital research infrastructure strategy to create a world-leading research and innovation ecosystem in Canada. This will also serve to advance Digital Canada 150 by positioning Canada as a leader in "big data." We will include new policies on research data management and storage, and a coordinated long-term approach to the funding and provision of high speed networking, high performance computing and software tools, to be developed by the Canada Foundation for Innovation, CANARIE, and Compute Canada." (39)

The strategy also places emphasis on the importance of promoting research excellence in post-secondary institutions and the value of open science.

The Summary Report of the Digital Infrastructure Summit 2014[5] outlined three underlying problems that are being faced in Canada in relation to the existing digital infrastructure framework:

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[4] https://www.ic.gc.ca/eic/site/icgc.nsf/vwapj/Seizing_Moment_ST_I-Report-2014-eng.pdf/$file/Seizing_Moment_ST_I-Report-2014-eng.pdf

[5] http://digitalleadership.ca/wp-content/uploads/2014/02/Summary-Report-of-Summit-2014-Final-March-2014.pdf

1) Research data are a national asset, but not treated as such.
2) Inadequate governance/coordination.
3) Lack of an overarching federal policy and planning framework.

As a solution to these problems, they propose the following key priorities for moving forward:

1) Develop government policy.
2) Align all key stakeholders.
3) The leadership council should continue to coordinate digital infrastructure.
4) Develop concrete pilots and demonstration projects.
5) Develop mechanisms and metrics that will foster positive change.

A key tool that can be utilized by funding agencies to fulfill the commitments outlined in the OECD declaration, the Open Data Charter, and the science, technology, and innovation strategy, is the Data Management Plan (DMP), which is a working document that formally lays out what will happen to research data both during and after a research project[6]. The DMP can be used to address problem 1 and priorities 4 and 5 from the Digital Infrastructure Summit 2014 report mentioned above.

Although nationally, and internationally, there does appear to be a general consensus around what sorts of key information should be included within a DMP, there is a lack of understanding and agreement around such issues as initial implementation, impact, cost-benefit, overall best practices, and the perception and reception by researchers and institutions.

[6] http://guides.library.ualberta.ca/content.php?pid=524929&sid=4318282

Working together to embed data management practices in all publicly funded research projects, agencies, researchers, and institutions can enable archiving and ongoing access to publicly funded social science and humanities research data[78].

Perhaps more importantly, the inclusion, and monitoring, of DMPs will build research capacity in the form of data archives which will encourage the advancement of cohesive and collective research, while simultaneously reducing the amount of inefficient data replication that occurs when data is produced in isolation. SSH scholars are starting to discuss digital scholarship; the inclusion of a DMP requirement in funding applications would bring data stewardship to the attention of scholars and encourage conversations between scholars and data archives. By developing and reinforcing policies and guidelines for the use of DMPs, funding agencies and research institutions will support a culture of data stewardship that legitimates and systematizes effective data management. As scholars become literate in stewardship issues and work with data librarians to develop DMPs we hope to see better stewardship and reuse of data by scholars. Ultimately we recommend that scholars treat the creation of well documented data archives as a form of scholarship that will not only promote more effective data management practices, but will also lead to academic recognition, increased citations, and have positive implications for promotion and tenure.

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7 Open access to Canadian, and international, government funded data is the central focus of *Canada's Action Plan on Open Government 2014-16* http://open.canada.ca/en/content/canadas-action-plan-open- government-2014-16#ch4-2

8 Data management and storage policies are mentioned in *Seizing Canada's Moment: Moving Forward in Science, Technology and Innovation 2014*. http://www.ic.gc.ca/eic/site/icgc.nsf/eng/h_07472.html

Section Two - Benefits of Research Data Management:

In 2010 the Canadian Association of Research Libraries (CARL) published a brochure[9] that answers some key questions surrounding the usefulness of data management practices by summarizing some important research in the area. Referencing 8 sources, they listed 7 major benefits of data management, sharing, and reuse.

In September of 2011, JISC, a registered charity that champions the use of digital technologies in UK research and education released a report called *Benefits from the Infrastructure Projects in the JISC Managing Research Data Programme*[10]. The report is a summary of eight JISC managing research data infrastructure pilot projects that completed benefit analysis case studies. The JISC report also found numerous benefits of research data management and the use of DMPs.

The key benefits from both the JISC and CARL reports are summarized in the following list:

1) Researchers gain inspiration for new research and rapid access to results data and derived data. This access to others' data allows for the acceleration of scientific progress through the reinterpretation and reuse of existing data. There is an improved quality of research through the use of relevant materials and by locating better, more relevant information. Collaboration is enhanced through the use of shared data sets, tools, and research environments.

9 http://www.carl-abrc.ca/uploads/pdfs/data_brochure-e.pdf

10 http://www.jisc.ac.uk/media/documents/programmes/mrd/RDM_Benefits_FinalReport-Sept.pdf

2) "Increases citation rates." CARL cites a study of citation rates for publications of cancer clinical trials which found that publications that shared their data were cited 70% more often than those that did not[11].
3) Effective data management avoids the duplication of research as the availability of publicly accessible datasets reduces "expensive and needless data collection/production activities[12]." Research support services develop better knowledge of the research data landscape and are able to reuse the developed infrastructure of other projects. There is also greater consistency and standards between projects to enable data reuse. Additionally, by allowing others to repeat the research and re-analyze previous findings, data management enables replication and verification of research results.
4) The sharing of publicly accessible data repositories increases the visibility and impact of research. Support is put in place for nationally important datasets.
5) Institutions benefit from the development of long-term road-maps for research data management, the stimulation of new networks and collaborations, and increased impact and knowledge transfer within and between institutions. Data management also allows for the protection of returns on earlier investments.

In summary, the evidence gathered thus far suggests that the use of data management practices has the potential to benefit the researchers (through increased citation and knowledge transfer), institutions (through increased quality of research and increased visibility and impact), and the funding agencies themselves (through cost effective research, the creation of nationally available data archives, and the development of a long-term digital scholarship infrastructure). As the amount, size, and complexity of datasets increases, we run the risk of becoming the first generation of researchers to leave behind no record due to inconsistent archiving and research

[11] http://www.carl-abrc.ca/uploads/pdfs/data_brochure-e.pdf
[12] CARL

sharing procedures. Reaching a consensus, and developing and implementing a strategy for the use of data management plans can help to alleviate this risk. Additionally, by providing concrete, long-term plans for data storage and access, DMPs can lead to an increase in reproducibility of results through open access to well documented data from previous research projects.

Section Three - Values and Principles Contributing to the Recommendation:

Based on discussions between the members of our policy team, and drawing on both the *G8 Open Data Charter* and the *OECD Principles and Guidelines for Access to Research Data from Public Funding* mentioned in the introduction to this recommendation, we find the following principles to be important to focus on when developing a DMP implementation plan[13]:

1) Build research capacity in the form of data archives.
2) Provide access to data for diachronic research.
3) Recognize the importance of the historical record and the archiving infrastructure that maintains it.
4) Recognize (in tenure and promotion and more generally in the field) the value of well curated research data.
5) Allow researchers to control access to sensitive information.
6) Allow researchers to control access before publication (for example, the protocols of archaeology).
7) Enable referencing and recognizing the data of others.
8) Integrate data management practices into publishing.
9) Satisfy Canada's commitments to data stewardship and infrastructure[14].

[13] While this document was being finalized a Draft Tri-Agency Statement of Principles on Digital Data Management was release for consultation at <http://www.science.gc.ca/default.asp?lang=En&n=83F7624E-1>. The Tri-Agency draft focuses more on expectations and responsibilities. These are the more the values which underlie data management planning.

[14] Those made in the OECD Declaration, the Open Data Charter, and the Science, Technology, and Innovation strategy mentioned in section one.

Section Four - Implementation Steps of the Recommendation:

We recommend that SSH funding agencies gradually move towards requiring DMPs, while promoting the benefits and acknowledging the challenges that will be experienced by the researchers, the institutions, and the agencies themselves. We believe that to be transformative, the introduction of stewardship needs to be a process that includes consultation with the research community. There are two primary objectives that need to be achieved. The first is the introduction of the DMP as an administrative tool to facilitate practices supporting data stewardship. The second is the development of a data stewardship culture that recognizes and embraces the multiplicity of research approaches within the SSH research community. It is important to note that while the two objectives will ideally be achieved simultaneously, the development of a supportive community will take time, while the introduction of the tool itself can happen relatively quickly. Acknowledging that the research community needs to provide input and have the opportunity to learn more about data management practices and processes before any changes with significant consequences are made, we propose the following process that will allow for the achievement of both of the above mentioned objectives:

1) Develop a values and principles statement with the SSH research community in order to clarify what is valued in the community surrounding data stewardship and DMPs - If such a statement is developed in consultation with the SSH community then it is more likely that later requirements will be understood. Understanding the values and principles that drive the creation of a DMP requirement, and basing the development of the policy on these values and principles, will allow for compliance and a focus on what is actually

important to the social sciences and humanities. We recommend utilizing the values and principles outlined in section three above, as a starting foundation.[15]

2) Educate the community about the issues - This is done in order to bring awareness of the importance of data stewardship in general and DMPs in particular to the public, researchers, and institutions. Ideally, this step should be conducted concurrently with step 1.

3) Develop a culture of data stewardship – In addition to a shared agreement about the values and principles that form the foundation of a community of data stewardship, there is a need to develop a culture of acceptance involving the use of DMPs and data management as a whole. The research community needs to accept and incorporate such a culture in order to gain the desired short-term and long-term benefits that this recommendation seeks to achieve. Fostering a strong culture of data stewardship will also promote enthusiastic participation and feedback from researchers allowing for efficient project evaluation and dedicated commitments to pilot projects. This step should be conducted concurrently with steps 1 and 2, while acknowledging that it is a long-term process that will extend through and beyond steps 4, 5, and 6.

4) Create a DMP model - Based on the values and principles statement, the feedback gathered from researchers and institutions, and a survey of existing DMP funding application requirements, funding agencies need to develop a model set of policies/requirements that can be tested through a series of pilot projects aimed at both education and the development of an effective long-term model. Templates and guidelines for such a model can be found through the University of Alberta library website.[16]

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[15] It should be noted that the Tri-Agency (CIHR, SSHRC, and NSERC) have issued a Draft Tri-Agency Statement of Principles on Digital Data Management for feedback. See <http://www.science.gc.ca/default.asp?lang=En&n=547652FB-1>.

[16] http://guides.library.ualberta.ca/content.php?pid=524929&sid=4318282

5) Develop an approach to assess data management plans and to establish the benefits of plan implementation[17] - There is a lack of solid cost-benefit analysis and outcome information. In order to justify a mandatory requirement, there needs to be examples, and where possible, evaluation data that provides reinforcement and motivation. This should be developed concurrently with step 4, focusing specifically on data stewardship.
6) Develop a set of specific SSH cases and pilot projects - This should occur over a 3-5 year period of time which will allow for feedback from institutions across Canada, while providing time for institutions and researchers to develop the required digital scholarship infrastructure to support the new policy, and allowing for the improvement of the model and evaluation procedures. Also, for this specific context, i.e. social science and humanities, there is a lack of real world usage of archived data. Most of the cases of research reuse we found come from the 'hard sciences' where data is something that is a bit more 'cut and dry'. Recognizing that SSH data take many forms, we encourage documentation of cases from across the SSH community that provide evidence of how stewardship makes a difference in the advancement of research and for the careers of the researchers. Evaluation of these cases and pilot projects would occur using the approach developed in step 5.
7) Continue to consult with other national and international agencies to ensure that the approach developed here is consistent with actions being taken in other jurisdictions.

[17] See the section titled Evaluation of DMP Projects below for more information.

Section Five - Model:

What would a requirement to submit a DMP look like and how would it be evaluated? We propose a model here that is based on a review of the DMP policies of Genome Canada[18], the National Science Foundation[19] (USA), the Arts and Humanities Research Council[20] (UK), the Biotechnology and Biological Sciences Research Council[21] (UK), and the Economic and Social Research Council[22] (UK)[23]. We suggest the following guidelines for the development of a DMP model:

1) The model DMP requirement would ask for a two to four page document with every funding application where data will be gathered, generated or curated. Applicants would be encouraged to answer the following questions in their DMP:
    a) What data will be generated, gathered or curated as part of this project?
    b) What conditions impact data management and archiving (ethical conditions, copyright conditions and so on)?
    c) What will be archived, in what formats, and with what documentation? How will metadata be used to describe these data? What steps will be taken to encourage that the data are discoverable by others?

18 http://www.genomecanada.ca/medias/PDF/EN/guidelines_genomics_research.pdf
19 http://www.nsf.gov/bfa/dias/policy/dmpfaqs.jsp
20 http://www.ahrc.ac.uk/Funding-Opportunities/Research-funding/RFG/Application-guidance/Pages/Technical-Plan.aspx
21 http://www.bbsrc.ac.uk/organisation/policies/position/policy/data-sharing-policy.aspx
22 http://www.esrc.ac.uk/_images/Research_Data_Policy_2010_tcm8-4595.pdf
23 See appendix one for a summary report that outlines the review of these 5 agencies.

d) At what point(s) in the project will data be made publicly available and by who? Will any data be withdrawn or removed and why or why not?
e) Where will data be archived and under what conditions? What institutional support is required to enable data archiving?
f) What are the costs of implementing the data management plan? Have they been clearly articulated in the project budget?
g) Have research data archiving experts been consulted and will they be involved in the stewardship process?
h) What existing data will inform this project?
i) Provide examples of where data was found but could not be used because of poor or absent data management techniques.

2) The DMP should be reviewed as a part of the overall project. This may require the use of peer-review teams that have at least one member who is trained in data management procedures. Alternatively, expert reviewers could be coordinated to evaluate just the DMP and to provide the peer-review team with a short evaluation and score.
3) The DMP should be evaluated loosely following the questions above while looking for the following information:
    a) Quality of the proposed data storage approach and of the metadata that describes what will be stored as well as the standards to be used for archived data and metadata.
    b) Long-term accessibility of the archived data if the plan is followed while taking into account privacy, confidentiality and intellectual property issues.
    c) Integration of data management into the research plan; timing of archiving; budget allocated to data management.

d) Status of proposed archive, policies and provisions for reuse; relationship to other existing archives; backup and security of data; expected difficulties in data sharing[24].

e) Involvement of data stewardship expertise and development of such expertise in the project; training of HQP in stewardship.

4) Ideally, the DMP describes how new data will be archived in trusted repositories[25], how it will be discoverable, and demonstrates that there will be ongoing consultation with data stewardship experts. The DMP should also describe activities and associated budget lines in the life of the project that will ensure that best practices are followed.

5) Support is needed for researchers and institutions to develop and implement data management plans. As a national approach to providing infrastructure for data management has not yet been developed, individual institutions supporting SSH applications may need to develop information technology and skills capacity to archive data locally, potentially through the creation of local repositories, as projects develop.

6) DMP compliance monitoring should be the responsibility of both the supporting institution and the funding agency. Funding agencies should determine how to best monitor compliance throughout the project. Data management practices and outcomes should be reported as part of the final project report to the granting agency, and to the supporting institution following local project reporting procedures.

7) Administrative responsibilities for the DMP should be organized as follows:

a) Researchers are responsible for gathering the project specific information, completing the DMP using due diligence, and reporting to the institution and funding agency as required.

[24] It is important to note that it will be difficult to assess all of these criteria in the early days of data management as long term staffing issues and details of how repositories will be operated over time are sorted through.

[25] One challenge that we currently face is the lack of clarity around what qualities a 'trusted' repository has.

b) Institutions should ideally have an internal data stewardship model in place that outlines the institutionally specific policies and procedures around the use of DMPs[26]. The institutional DMP should act as the foundation for any external DMP requirements. Institutions are encouraged to conduct peer reviewed examinations of DMPs, as a part of entire funding applications, before sending applications forward to the funding agency.

[26] For example, the University of Alberta has an internal DMP requirement and tool which can be found here: https://dmp.library.ualberta.ca/

Section Six - Evaluation of DMP Projects and Pilots:

As mentioned above, the 2011 JISC report provides lists of both metrics, and benefits from the implementation of DMPs, for institutions, researchers/research teams, research support services, and scholarly communication and access. While the information is very useful, even more useful is the explanations of the challenges faced by the various projects in defining metrics. Key challenges that social science and humanities funding agencies should seek to address include:

1) The timescale of the pilots/models - only 18 months[27] was allowed for the JISC projects and the author suggests that more time is needed to gain an accurate picture of the effectiveness.
2) Issues surrounding data citation - inconsistent citation practices result in a lack of communication and important information, as well as misleading (or a lack of) recognition.
3) Available resources and skills - researchers and institutions will need to learn about data management, and there needs to be time to allow for mass education and infrastructure implementation.

[27] According to the report "The projects are of short duration, typically only 18 months, and pilot services are brought on stream when well into the projects." (35)

4) Project scope and evaluation - pilot projects require collaboration between different projects and across institutions.

The Australian National Data Service (ANDS) seeks to transform Australia's research data environment with a focus on the management and accessibility of data. John Houghton, through Victoria University's centre for strategic economic studies, developed a cost/benefit analysis report related to data management and the move toward open access for public sector information (PSI)[28]. Using a framework that combined agency and user savings with increased returns, divided by agency and user costs, the author developed a measurable way to estimate the benefit/cost of the use of PSI. In the conclusion of the report, the author provides suggestions directed to the research sector, for how to conduct a similar analysis. He suggests combining "a template for data collection, a draft questionnaire outlining the questions required to elicit the necessary information, and a simple spreadsheet-based online model that people could use to perform a cost-benefit analysis." For the research sector, the models used should not only include quantitative costs and benefits, but also qualitative information directly related to academic research needs. In general, he argues that the benefits of implementing open access to data from publicly funded research greatly outweigh the costs. The inclusion of qualitative information (such as benefits to the researchers as far as time and quality of work) will likely support the strong case in favor of open access.

[28] http://ands.org.au/resource/houghton-cost-benefit-study.pdf

Section Seven – Challenges:

As highlighted throughout this recommendation, there are many challenges that must be addressed in working toward a mandatory DMP requirement. These challenges can be summarized as follows:

1) Lack of repository availability – data storage requires resources that are not universally available in all institutions or in the form of a national repository. As noted in section one however, Canada has made a commitment to improving data management infrastructure through the science, technology, and innovation strategy. It is yet to be determined if there should be a preference for local, institutionally based repositories or national, government or funding agency controlled repositories.
2) Lack of metadata standards – in order to reach a level of national and international consistency in research data management, a set of standards surrounding the use of metadata must be developed and implemented. These standards may take a form similar to current publication and book citation methods (such as APA and MLA) specific to certain disciplines or repositories, or may involve a single, nationally agreed upon format.
3) Lack of a culture of data stewardship – as discussed in section four, researchers need to value and understand DMPs, and data stewardship overall, if the goal of complete

incorporation into day to day scholarship is to be reached successfully. This is probably the biggest barrier to overcome.

4) Funding will be required to develop, deploy and maintain data management infrastructure, and to build capacity for data management in research institutions and among Canada's research community.

Section Eight - Acknowledgments:

We would like to thank the Graphics, Animation and New Media (GRAND) Network of Centres of Excellence. grand-nce.ca

We would also like to thank SSHRC staff for their input during collaborative discussions during the development of the recommendation[29].

[29] On July 14, 2014, Catherine Middleton and Sonja Sapach consulted with SSHRC staff to discuss the progress being made toward a DMP pilot project. From this discussion it became evident that an important step in the development of a national agreement surrounding the use of DMPs, is collaboration between major funding agencies. It was mentioned that both SSHRC and RDC were in the process of developing pilot programs to test the waters of data curation. The SSHRC pilot seemed to be starting in the right place by proposing to ask researchers to produce DMPs without consequence in order to determine the challenges that will be faced in the move toward mandatory inclusion in funding applications. This recommendation incorporates the research conducted by the RMG with the discussions between the policy team and SSHRC.

Appendix

DMP Evaluation Summary Report

July 21, 2014

Sonja C Sapach

Introduction:

This is an initial draft summary of my survey of various funding agencies that have existing policies around data management plans (DMPs). I have organized the summary into two sections for clarity. The first section explicitly answers five questions posed to me by Geoffrey Rockwell via email on July 15, 2014. Each funding agency is listed, with hyperlink to the central source of information used, followed by each question in italics and a brief paragraph or two answer. The second section is where the more detailed information surrounding each question is included. Similar to section one, each agency is listed, followed by key quotes, section references, and hyperlinks directly related to the answers from section one.

Section One (Questions and Answers):

Genome Canada (Canada)

Genome Canada Guidelines for Funding Large-Scale Genomics Research Projects: February 2009

www.genomecanada.ca/medias/PDF/EN/guidelines_genomics_research.pdf

What in the way of DMP is required by the funding agency?

The full application (which is only completed if the applicant has been successful during the pre-application process) requires a DMP. Certain aspects of a DMP are likely included in the pre-application, however they would be included as part of a short description of 'expected deliverables' or 'the potential social and/or economic benefits of the research'.

What does it call the DMP?

The Data and Resource Sharing Plan

What does it require in the grant application (or subsequent documents)?

A completed Data and Resource Sharing plan must be included with every application.

When, how and by who is the DMP evaluated?

During the application process, it is evaluated as a part of the whole application by Genome Canada and its review committees in order to ensure that it conforms to Genome Canada policy.

What does the agency say are the criteria DMPs will be judged on?

Data and resource types, timing and mechanism for sharing, quality, standards, ethical, privacy and confidentiality issues, intellectual property, and terms and conditions.

What sort of follow up is there?

There is an interim review conducted approximately two years after the notice of funding (if there is a lack of compliance at this point, the funding may be reduced or terminated).
Within three months of the completion of the project a final report that outlines the relevant accomplishments of the project as well as a financial report, must be submitted.

Does the agency check that you have followed the DMP?

Throughout the project, it is the responsibility of the project leader(s), the Scientific Advisory Board (SAB) and the Research Oversight Committee (ROC) to ensure that all of the agreements reached before the release of funds, are complied with.[30]

Are there special units set up to accession[31] the data?

At the end of the Data Release and Resource Sharing Policy, Genome Canada provides a list of examples of international data and resource repositories – it appears to be up to the project leader(s), working in conjunction with the local Genome Centres, the Scientific Advisory Board (SAB) and the Research Oversight Committee (ROC) to determine where data accession will occur.

National Science Foundation (NSF) (United States of America)

FAQ – www.nsf.gov/bfa/dias/policy/dmpfaqs.jsp

NSF Grant Guidelines – www.nsf.gov/pubs/policydocs/pappguide/nsf13001/gpg_2.jps#dmp

[30] Section 8.2 on pages 13-15 of the Guidelines document provides specific details on the agreements that must be reached, which appear to bind all participating parties in a legally binding agreement before funds are released.

[31] Accession = record the addition of new data to a collection/archive/repository.

What in the way of DMP is required by the funding agency?

A supplementary document of no more than two pages that describes how the proposal will conform to the NSF policy on the dissemination and sharing of research results as described in the awards and administration guide.[32]

What does it call the DMP?

Data Management Plan

What does it require in the grant application (or subsequent documents)?

Short, 2 page or less DMP. If the project does not need a detailed data management plan (e.g. It will not produce data) then the DMP may simply state that no detailed plan is required as long as the statement is accompanied by a clear justification.

When, how and by who is the DMP evaluated?

The DMP is considered to be an integral part of the proposal. Evaluation of the DMP falls under one of two merit review criteria, either 'intellectual merit' or 'broader impacts' as appropriate for the scientific community of relevance. This occurs as part of the larger proposal. Award recommendation occurs "after scientific, technical and programmatic review and consideration of appropriate factors."[33] The NSF Program Officer makes the recommendation to the cognizant [sic] Division Director who then determines if the proposal is to be declined or recommended for the award. The general impression is that members of the 'community of interest' review each application through peer review and program management.

What does the agency say are the criteria DMPs will be judged on?

The DMP "may" include the types of data, samples, physical collections, software, curriculum materials, other materials, the standards to be used for data and metadata format and content, policies for access and sharing including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements, policies and provision for re-use, re-distribution, and the production of derivatives, and plans for archiving data, samples, and other research projects, and for preservation of access to them.

What sort of follow up is there?

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[32] Www.nsf.gov/pubs/policydocs/pappguide/nsf11001.aag_6.jsp – section 4.a – 4.e

[33] Www.nsf.gov/pubs/policydocs/pappguide/nsf14001/gpg_3.jsp#IIIA2

Multi-year grants require the submission of yearly update reports. There is also a requirement for the submission of a final report upon project completion.

Does the agency check that you have followed the DMP?
The agency has the right (at any and all reasonable times) to send a representative to check on the status of the project to ensure compliance all around. Grantees are also required to retain all records considered to be pertinent to the grant for a period of three years following completion of the project for purposes of audit (if required).

Are there special units set up to accession the data?
These are to be determined by the 'community of interest'.
The NSF does automatically include any information about published data to the public as part of the "Project Outcomes Report for the General Public".

Arts and Humanities Research Council (AHRC) (UK)
Technical plan outlines – www.ahrc.au.uk/Funding-Opportunities/Research-funding/RFG/Application-guidance/Pages/Technical-Plan.aspx

What in the way of DMP is required by the funding agency?
An application requires a core "Case for Support (CfS)" that is typically 7 pages long. If the project is going to produce digital outputs or digital technologies, an additional DMP (Technical Plan) is required on top of the CfS.

What does it call the DMP?
Technical Plan (TechP)

What does it require in the grant application (or subsequent documents)?
According to section 4.2.7.5, "A Technical Plan should be no more than four pages long and provided for all applications where digital outputs or digital technologies[34] are an essential part to the planned research outcomes."

When, how and by who is the DMP evaluated?

[34] "defined as an activity which involves the creation, gathering, collection and/or processing of digital information."

The TechP will be reviewed as a part of the proposal as a whole when applying for funding. The application is reviewed using a peer-review process where at least two members of the "AHRC's Peer Review College" will be involved. The reviews are graded using a standardized grading scale which can be found here: www.ahrc.ac.uk/Funding-Opportunities/Research-funding/RFG/Peer-Review-grading-scale/Pages/Peer-Review-grading-scale.aspx
In the first stage of the response to the application, "Technical reviewers will comment specifically on the technical feasibility of your proposal and the technical review will also be forwarded to the Principal Investigator together with the peer reviews as part of the PI response stage, so assist the panel in arriving at its grading decisions."

What does the agency say are the criteria DMPs will be judged on?
As a whole, the applications will be assessed on the following broad criteria: Quality and Importance, People, Management of the Project, Value for Money, and Outputs, Dissemination, and Impact. The TechP likely falls most under multiple categories here, as it is not explicitly separated from the application as a whole. Key concepts include "appropriateness", "effectiveness", "highly valued and widely exploited", "justified", and "significance". The TechP must include all of the headings (as listed in the detailed notes section), requiring the explicit statement (and justification of) 'non-applicable' for sections that are not relevant to the application.

What sort of follow up is there?
"Where required a report on the conduct and outcome of the project must be submitted by the Research Organization within three months of the end of the grant." If the report is not filed, the Council will refuse any further applications from the grant holder while the report is overdue. Additionally, the Council may recover 20% of expenditure incurred on the grant if they do not receive timely documents.
According to GC18, however, instead of a final report, award holders are now expected to "update the Research Outcomes System (ROS) with details of the outputs, outcomes, and impacts of their research." The penalty for not following through appears to be the same as with a final report.

Does the agency check that you have followed the DMP?
The Research Organization (the institution supporting the application) is responsible for ensuring that the CfS (and in turn the TechP) is being followed throughout the project. The

research council "reserves the right to call for periodic information on the progress or to visit the project team." "The Research Councils reserve the right to impose financial sanctions where they identify areas of non compliance in relation to the terms and conditions of grants." Additionally, if the Research Council finds that the Research Organization (institution) has a high non-compliance rate, they have the right to restrict further applications and may exercise higher sanctions over non-compliant projects from that institution.

Are there special units set up to accession the data?
The AHRC makes it clear in their "Grant Conditions" that the Research Organization is ultimately responsible for ensuring that the grant holders/project leaders have the resources required to follow through with the TechP. The choice of where to submit/archive data should follow best practices according to the community of interest.

Biotechnology and Biological Sciences Research Council (BBSRC) (UK)
Data Sharing Policy – www.bbsrc.ac.uk/organisation/policies/position/policy/data-sharing-policy.aspx
www.bbsrc.au.uk/web/FILES/Policies/data-sharing-policy.pdf

What in the way of DMP is required by the funding agency?
A DMP must be included with the initial application if applicable. There are three main areas/cases where data-sharing is considered to be important and expected: "Data arising from high volume experimentation, Low throughput data arising from long time series or cumulative approaches, (and) Models generated using systems approaches."

What does it call the DMP?
Data Management Plan

What does it require in the grant application (or subsequent documents)?
The DMP is included as an attachment at the end of the application (alongside the CV, Head of Department Statement, etc.) The DMP can be "a maximum of one side of A4" and they explicitly state that this space must not be used for any other purpose.

When, how and by who is the DMP evaluated?

“An application's Data Management Plan will be assessed by reviewers and BBSRC Responsive Mode Committees or Assessment Panels. The plan will be considered separately from the scientific excellence of the proposed research; however, an application's credibility will suffer if peer review agrees the statement is inappropriate. In the case where a highly rated proposal has an inappropriate Data Management Plan Committees and Panels may choose to offer conditional awards and/or provide specific feedback to the applicants. Appropriate plans are expected to be those where the proposed data sharing activities are in-line with current best practice in the field and both the scientific and cost benefits are considered.”

What does the agency say are the criteria DMPs will be judged on?
The DMP may include the following details:
Data areas and data types, standards and metadata, relationship to other data available in public repositories, secondary use, methods for data sharing, proprietary data, timeframes, and format of the final dataset.

What sort of follow up is there?
“Adherence to the proposed data management and sharing strategies set out in a funded proposal will be monitored through the Final Report assessment procedure. Consideration of the data sharing activities will be built into the Final Report score.”

Does the agency check that you have followed the DMP?
Through the above mentioned use of the Final Report assessment.

Are there special units set up to accession the data?
“BBSRC expects applicants to utilise [sic] pre-existing data standards and resources for dissemination, where appropriate. Where justifiable, however, funding to support the management and sharing of research data...can be requested as part of the full economic cost of a research project. BBSRC also has specific funding mechanisms...which have key roles to play in supporting the Data Sharing Policy.”

Economic and Social Research Council (ESRC) (UK)
Research Data Policy – www.esrc.ac.uk/_images/Research_Data_Policy_2010_tem8-4595.pdf

What in the way of DMP is required by the funding agency?

A DMP is required in the application where the creation of new data is expected.

What does it call the DMP?

Data Management Plan and/or Data Management and Sharing Plan.

What does it require in the grant application (or subsequent documents)?

There are two parts to the application itself, on section on the application form that acts as a statement on data sharing (this is where applicants may provide explicit reason why data sharing is not possible or appropriate if required). The application also requires a stand alone "data management and sharing plan." The DMP is mandatory in all applications planning to generate data, except for those applying for studentships.

When, how and by who is the DMP evaluated?

The DMP is evaluated through a peer-review process. Guidelines for the process can be found at www.esrc.ac.uk/_images/Data-Management-Plans-Guidance-for-peer-reviewers_tcm8-15569.pdf

The DMP is considered to be an integral part of the application as a whole, and "should be considered in the context of information presented in the Case for Support and Justification for Resources."

Reviewers are directed to refer to the UKDS data management guidance (http://ukdataservice.ac.uk/manage-data.aspx) and the UK Data Archive's *Managing and Sharing Data* guide (www.data-archive.ac.uk/create-manage).

What does the agency say are the criteria DMPs will be judged on?

The following criteria are to be considered by the peer-review committee:

Assessment of existing data, information on new data, quality assurance of data, backup and security of data, expected difficulties in data sharing, copyright/intellectual property rights, and responsibilities.

What sort of follow up is there?

The ESRC assumes responsibility for data management after the award, so the follow up involves direct 'control' of the data post-award.

Does the agency check that you have followed the DMP?

The data must be made available for re-use and/or archiving within three months of the end of the award. Failure to do this results in the ESRC withholding the final payment of the award.

Are there special units set up to accession the data?
The ESRC assumes responsibility for "post-award data management and preservation via support from the ESRC data service providers."

Section Two (Additional Relevant Information):

Genome Canada (Canada)

Genome Canada Guidelines for Funding Large-Scale Genomics Research Projects: February 2009
www.genomecanada.ca/medias/PDF/EN/guidelines_genomics_research.pdf

Under section 8.2 "Conditions for Release of Genome Canada Funds", condition 9 stipulates that "The project must have a Data Release and Resource Sharing plan approved by Genome Canada. The project must remain current with the internationally accepted standards for data release and resource sharing." (pg 15)

The DMP for Genome Canada, then, is the **Data and Resource Sharing Plan** that must be included in every application. There does not appear to be a specific size or set of pages required for this portion of the application[35]. The plan must address the following issues:
"

- Data and resource types – what data and resources will be generated;
- Timing and mechanism for sharing – for each data and resource type, when, how and where will these be made available. Where there are recognised public databases and repositories these must be used, and if none are currently available, what are the plans for making the resource in question available to the community at large;
- Quality – what quality control/assurance mechanisms will be in place;

[35] Applicants must pass a 'pre-application' review before moving on to complete a full application, and it is possible that a more detailed page-count may be provided once the applicant has moved forward to the full application stage. The website does not make it clear where to find a specific application template.

- Standards – are there community standards for the data and/or resources being generated, how will the project conform to these. Genome Canada expects that data and resources generated will conform with the internationally accepted standards, and reference to these standards should be made when these are available;
- Ethical, privacy and confidentiality issues – if the data could be of potentially sensitive nature, how will this be handled? Where the research involves human subjects, how will the interests of the research participants be protected? How does the Data and Resource Sharing Plan comply with the terms of the consent;
- Intellectual Property (IP) – will there be any restrictions or delays on data and/or resource sharing to ensure protection of any IP or proprietary data and/or resources;
- Terms and Conditions – what terms and conditions, if any, of access and use of the data and/or resources will be implemented. Please note, when making data and resources available, researchers cannot place limits on questions posed or methods used, nor require co-authorship as a condition for receiving data or resources." (pg 2, Data Release and Resource Sharing Policy)[36]

The application will be reviewed by Genome Canada and its review committees to ensure that it conforms to Genome Canada policy. Funds are not released until an acceptable plan is approved and incorporated into the terms of the award. Confirmation that the plan is being followed is addressed in the interim review that takes place approximately 2 years after the notice of funding.

Each project requires at least one project leader as well as a Science Advisory Board (SAB) whose job it is to provide guidance and to ensure that the project achieves its stated goals and objectives. According to section 5.2, the "membership of the SAB[37] must be completely independent from the project, with no real or perceived conflicts of interest and should be composed of experts who will work with the project to maximize its successful outcome." (pg 8)

Section 8.4 "Accountability and Reporting" states that "Funded projects must submit to their lead Genome Centre on a regular basis, information and data as prescribed by the Centre in terms of timing, format and content, which will allow for the on-going assessment and monitoring of their

[36] Www.genomecanada.ca/medias/PDF/EN/DataReleaseandResourceSharingPolicy.pdf

[37] Guidelines for SAB membership can be found at www.genomecanada.ca/medias/PDF/EN/SAB_terms_reference.pdf

performance. It is the responsibility of the project leader(s) to participate in this process." (pg 16)

Additionally, section 6 "Interim Review" requires that each approved project is reviewed by Genome Canada withing approximately two years from the notice of award. The results of this review, which examines the project as a whole (including the 'management aspects of the program' and the 'progress towards ensuring the benefits for Canada are realized'), determines whether funding should be "continued, reduced or terminated." (pg 9)

Section 3.5.3 states that all projects must comply with the Data and Resource Sharing Policy. Additionally, "where the goal of the project is to produce data or resources for the wider scientific community, the project must follow the data release and resource sharing principles of a "Community Resource Project", defined as a "research project specifically devised and implemented to create a set of data, reagents or other material whose primary utility will be as a resource for the broad scientific community."[38] (pg 6)

Section 8.5 "Final Reports" requires a final report to be submitted within three months of the completion of the project, describing the accomplishments of the project relative to the approved objectives as well as a detailed financial report. (pg 16)

The 2014 competition information (www.genomecanada.ca/en/portfolio/research/2014-competition.aspx) describes the roles of the Project Managers and Research Oversight Committees in section 9. "All approved projects must have a dedicated project manager. Project managers coordinate administrative and reporting requirements and support the project's scientific enterprise." (9.1) "All Genome Canada funded projects will have a Research Oversight Committee (ROC) constituted by, and reporting to, the Genome Centre(s). The ROC reports to the Genome Centre on the progress being made by the project and makes recommendations to the funders regarding continued funding, as well as providing advice and guidance to the research team to help ensure that the project achieves its stated objectives and milestones. The membership of the ROC must be completely independent from the project, with no real or perceived conflicts of interest and should be composed of experts who will work

[38] There does not seem to be a lot of detail about the community resource project special requirements. The Data Release and Resource Sharing Policy does state that the associated definition and principles were developed during a meeting held in January 2003. They encourage the application of the principles of rapid, pre-publication data release...

with the Genome Centre and the funders to maximize the successful outcomes of the project." (9.2)

National Science Foundation (NSF) (United States of America)

FAQ – www.nsf.gov/bfa/dias/policy/dmpfaqs.jsp

NSF Grant Guidelines – *www.nsf.gov/pubs/policydocs/pappguide/nsf13001/gpg_2.jps#dmp*

From the FAQ – www.nsf.gov/bfa/dias/policy/dmpfaqs.jsp

- Determine what counts as "Data" "by the community of interest through the process of peer review and program management. This may include, but is not limited to: data, publications, samples, physical collections, software and models."
- Determine where data should be deposited "by the community of interest through the process of peer review and program management. In many cases, these standards already exist, but are likely to evolve as new technologies and resources become available."
- Q: "Should the budget and its justification specifically address the costs of implementing the Data Management Plan?" A: "Yes. As long as the costs are allowable in accordance with the applicable cost principles, and necessary to implement the Data Management Plan, such costs may be included...and justified in the budget justification."
- If the researchers institution requires that the data remain at the institution, that is considered to be one avenue of data preservation and management.
- "All researchers are expected to be able to explain and defend their results. Doing so usually entails maintaining complete records of how data were collected. The manner in which one maintains such records and makes them available to others will vary from project to project. What constitutes reasonable procedures will be determined by the community of interest through the process of peer review and program management. These standards are likely to evolve as new technologies and resources become available."
- How long data should be archived and made accessible is to be determined by the community of interest through peer review and program management.
- Data is expected to be made available in a reasonable amount of time to be determined by the community of interest through peer review and program management.
- Maintain confidentiality according to legal constraints and the community of interest.

- While there is an expectation to share data, there is a reasonable expectation that intellectual property (that which is profitable) still belongs to the researcher.
- Questions surrounding particular requirements for archiving, accessibility of samples, types of samples, physical collections and so forth are answered by the community of interest (peer review and program management).
- If researcher is participating in an international collaborative effort...then the rules/protocols of each institution must be followed as best as possible.

From the *NSF grant guidelines* –
www.nsf.gov/pubs/policydocs/pappguide/nsf13001/gpg_2.jsp#dmp

"Plans for data management and sharing of the products of research. Proposals must include a supplementary document of no more than two pages labeled [sic] "Data Management Plan". This supplement should describe how the proposal will conform to NSF policy on the dissemination and sharing of research results (See AGG Chapter IV.D.4) and may include:

1. the types of data, samples, physical collections, software, curriculum materials, and other materials to be produced in the course of the project;
2. the standards to be used for data and metadata format and content (where existing standards are absent or deemed inadequate, this should be documented along with any proposed solutions or remedies);
3. policies for access and sharing including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements;
4. policies and provisions for re-use, re-distribution, and the production of derivatives; and
5. plans for archiving data, samples, and other research products, and for preservation of access to them.

...A valid Data Management Plan may include only the statement that no detailed plan is needed, as long as the statement is accompanied by a clear justification...The Data Management Plan will be reviewed as an integral part of the proposal, coming under Intellectual Merit or Broader Impacts or both, as appropriate for the scientific community of relevance."

From *Grant Administration* – www.nsf.gov/pubs/policydocs/pappguide/nsf14001/aag_2.jsp

A. Monitoring Project Performance

1. Grantee Responsibilities

"a. A grantee has full responsibility for the conduct of the project or activity supported under an NSF grant and for the results achieved. The grantee should monitor the performance of the project to assure adherence to performance goals, time schedules or other requirements as appropriate to the project of the terms of the grant. In order to carry out these responsibilities, each grantee organization shall agree to comply with the applicable Federal requirements for grants and to the prudent management of all expenditures and actions affecting the grant." (Chapter II A.1.a)

"c. NSF, through authorized representatives, has the right, at all reasonable times, to make site visits to review project accomplishments, grantee management control systems and administration and management of the grant and to provide technical assistance as may be required." (Chapter II A.1.c)

Arts and Humanities Research Council (AHRC) (UK)

Technical plan outlines – www.ahrc.au.uk/Funding-Opportunities/Research-funding/RFG/Application-guidance/Pages/Technical-Plan.aspx

The following is a quote from the introduction to the Technical Plan (TechP):
"The purpose of the Technical Plan is to demonstrate to the AHRC that technical provisions within a research proposal have been adequately addressed in terms of:

(a) Delivering the planned digital output or the digital technology from a practical and methodological perspective;

(b) Doing so in a way which satisfies the AHRC's requirements for preservation and sustainability. The AHRC has a responsibility to ensure that the research which it funds is achievable and high-quality, and that the outputs of the research will wherever appropriate be accessible to the community over the longer term.

If your project involves the development of a digital output or digital technology as an essential part of the planned research outcomes, but which cannot or need not be preserved beyond the period of funding, you must still complete a Technical Plan, explaining the reasons for not preserving the object(s) in question. In general, as a matter of good practice, the AHRC expects the digital outputs or technologies produced by projects to be preserved for an appropriate period after the end of project funding (noting the different definitions of preservation and sustainability in

this context).

You do not need to complete a Technical Plan if your only proposed digital output or technology consists of web-pages containing information about the project (as opposed to data produced by the project).

The Technical Plan must be written as a single document and has a limit of four pages. The level of detail provided should be proportionate to the envisaged value and importance of the proposed digital output or technology and to the cost of developing it."

The headings of the TechP must be as follows:

- Section 1: Summary of Digital Outputs and Digital Technologies
- Section 2: Technical Methodology
  - 2a: Standards and Formats
  - 2b: Hardware and Software
  - 2c: Data Acquisition, Processing, Analysis and Use
- Section 3: Technical Support and Relevant Experience
- Section 4: Preservation, Sustainability and Use
  - 4a: Preserving Your Data
  - 4b: Ensuring Continued Access and Use of Your Digital Outputs

(A more detailed explanation of each heading can be found using the above link).

An example of a Technical Plan can be found here - http://data.bris.ac.uk/research/planning/files/2013/08/data.bris-AHRC-example-Technical-Plan-v2.pdf

GC5 Changes to the Research Project – technical aspects

"In addition to the restrictions outlined in the Terms and Conditions of Research Council Grants (GC5 Changes in Research Project), it is the Principle Investigator's responsibility to ensure that any output in electronic form is prepared in accordance with best practice.

Access to Data – deposit of resources or datasets

"Grant Holders should abide by the RCUK Common Principles on Data Policy. Grant Holders in all areas must make any significant electronic resources or datasets created as a result of research funded by the council available in an accessible and appropriate depository for at least three years after the end of their grant. The choice of depository should be appropriate to the nature of the project and accessible to the targeted audiences for the material produced."
www.ahrc.au.uk/Funding-Opportunities/Research-Funding/RFG/Annexes/Pages/Publication-and-acknowledgement.aspx

Biotechnology and Biological Sciences Research Council (BBSRC) (UK)

Data Sharing Policy – www.bbsrc.ac.uk/organisation/policies/position/policy/data-sharing-policy.aspx
www.bbsrc.au.uk/web/FILES/Policies/data-sharing-policy.pdf

Note – all relevant information is included in section one.

Economic and Social Research Council (ESRC) (UK)

Research Data Policy – www.esrc.ac.uk/_images/Research_Data_Policy_2010_tem8-4595.pdf

General Principles:
"Publicly-funded research data are a public good, produced in the public interest.
Publicly-funded research data should be openly available to the maximum extent possible."

"In cases where applications involved the creation of new data, we will:

- require that the applicants submit a statement on data sharing in the relevant section of the Je-S application form or provide explicit reason why data sharing is not possible or appropriate
- require that the applicants provide a data management and sharing plan as part of their application
- review the data management and sharing plan, including any costs for its implementation, as an integral part of the funding decision and based on this decision provide appropriate funding for data management
- require that the data must be made available for preparation for re-use and/or archiving with the ESRC data service providers within three months of the end of the award

- withhold the final payment of an award if data have not been offered for archiving to the required standard within three months of the end of the award
- reserve the right to grant waivers only where sufficient evidence has been given demonstrating that data cannot be archived
- be responsible for post-award data management and preservation (for data that have been accepted for archiving) via support form the ESRC data service providers."

"It is expected that an outline data management and sharing plan will include the following points:

- an explanation of the existing data sources that will be used by the research project with references
- an analysis of the gaps identified between the currently available and required data for the research
- information on the data that will be produced by the research project, including: data volume, data type, eg qualitative or quantitative data, data quality, formats, standards documentation and metadata, methodologies for data collections
- planned quality assurance and back up procedures [security/storage]
- plans for management and archiving of collected data-sharing
- expected difficulties in data sharing, along with and causes and possible measures to overcome these difficulties
- explicit mention of consent, confidentiality, anonymisation and other ethical considerations
- copyright and intellectual property ownership of the data
- responsibilities for data management and curation within research teams at all participating institutions."

Appendix:

From the Digital Scholarship Consultation (SSHRC) www.sshrc-crsh.gc.ca/about-au_sujet/publications/digital_scholarship_consultation_e.pdf

The proposed "core elements of an agency-based and focused data stewardship plan..." (8) are as follows:
"

a. a requirement that all grant applications include specific data management plans including identified costs of data collection/analysis and preservation of results and associated datasets;
b. definition of those specific elements of data plans that will be considered by reviewers in the assessment of funding applications;
c. guidelines indicating which data must be preserved and in what formats;
d. consolidated open access policies and guidelines (in concert with work already initiated by the TC3+);
e. guidelines for researchers in selecting suitable data repositories;
f. recognition of data repositories across Canada that meet global standards for such facilities; and
g. guidelines for ensuring informed consent for data use and protection of privacy and confidentiality." (8-9)

Information that SSHRC/TC3+ requires more knowledge about (according to the Statement of Work for the environmental scan on data management practices sent to Catherine Middleton on July 16, 2014 by Jeremy Geelen from SSHRC):
From Section 2.1 "Data management policies in Canada and internationally" found on page 1 of the document:

- Requirements (e.g. Differences by grant size, mandatory vs. Incentive-based policies)
- Roles and responsibilities
- Infrastructure
- Training
- Guidance for Applicants (e.g., on protecting privacy, data sharing, etc.)
- Standards
- Responsibility for Assessment of plans (e.g., staff and/or peer review)

- Criteria for assessment plans
- Use in peer review and impact on publication score
- Oversight/compliance mechanisms
- Levels of data access and implications for governance mechanisms
- Data embargo periods
- Recommended repositories
- Metadata management
- IP ownership and licensing
- Citation mechanisms
- Consistency between data management plan policies and research ethics review policies, etc.

Questions from Geoffrey Rockwell (July 15, 2014):

1. What in the way of DMP is required by the funding agency? What does it call the DMP? What does it require in the grant application (or subsequent documents)?
2. When, how and by who is the DMP evaluated? What does the agency say are the criteria DMPs will be judged on?
3. What sort of follow up is there? Does the agency check that you have followed the DMP? Are there special units set up to accession the data?