maDMPs Pilot Report

A collaboration between the Association of Research Libraries and California Digital Library. Funded by the Institute of Museum and Library Services.

MAP Pilot

Machine Actionable Plans

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Introduction

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Introduction

Background

Project Origins

Academic institutions are being asked to support increasingly complex research data requirements, yet often lack insight into what researchers need and when. Data management plans (DMPs) are capable of capturing researchers' needs and the requirements of funded research; however, in their current static format, their institutional value is limited. Machine-actionable DMPs (maDMPs) offer a potential vehicle for change by transforming DMPs into living, structured documents that serve as bridges between researchers and services. The Machine-Actionable Plans (MAP) project explored what it would take to move from this vision of maDMP to implementation.

In 2023, the California Digital Library (CDL) and the Association of Research Libraries (ARL) partnered to enhance digital research management infrastructures and services. The 'Building a Scalable Data-Management Infrastructure for Strategic Institutional Coordination' project, funded by the Institute of Museum and Library Services (IMLS), was designed to address the urgent needs of academic and research libraries of varying sizes and budgets to respond to increasing requirements to make data management plans machine-actionable and share federally funded research data. The MAP pilot Project, as it became known, included both a technical component and a community-development initiative.

The technical component involved the DMP Tool, a free, open-source, web-based application for creating funder-compliant DMPs managed by CDL. This application emerged in response to U.S. federal agencies' 2011 requirement for the creation and submission of DMPs with funding applications and is now widely adopted across the U.S. and internationally, with more than 400 participating institutions and hundreds of thousands of plans created to date. Prior to the MAP pilot project's inception, the DMP Tool supported the creation of basic maDMPs; however, the use of maDMPs was in a very early stage with minimal adoption, and the application did not support all the machine-actionability desired by potential partners.

The MAP pilot was established to examine the potential of machine-actionable data management plans to connect with existing university infrastructure and people. While many within the library community are familiar with existing tools, guidance, and best practices for developing DMPs, maDMPs offer new opportunities for creating more efficiencies in the provisioning of University resources and coordinating services to support the critical research underway by researchers on University campuses. Given the complexity of this coordination, few institutions have been able to advance these integrations, restricted by resource and time limitations for needed planning and development, complex, collaborative workflow mapping, and the cultural changes required broader for researcher adoption.

This project addressed that gap by piloting maDMP technical integrations, surfacing key challenges and use cases, and providing concrete examples to inform broader adoption across the research data management community.

What is an maDMP?

A machine actionable data management and sharing plan is a structured, machine-readable version of the traditional data management and sharing plan. Machine-actionability enables automation and integration with administrative and research workflows and enables the DMP to be a living, versioned document that is updatable over time.

Background of machine-actionable Data Management Plans (maDMPs)

Machine-actionable DMPs support the FAIR principles (Findable, Accessible, Interoperable, Reusable) by enabling research data and related information to be shared seamlessly across stakeholder groups. They reduce the administrative burden on researchers, staff, and grant managers; allow dynamic integrations with other research infrastructures; and make research outputs easier to discover while still respecting privacy and security requirements.

The DMP Tool API allows users to access machine-readable versions of DMPs and enables external systems to interact directly with those plans. Through the API, external services can write a new DMP and register it for a DMP ID (a persistent identifier for a DMP), update an existing plan, or fetch information from a plan already in the system. As part of the pilot, participating institutions were invited to explore these capabilities by building local integrations.

Pilot project overview

Project construction

After a competitive application process with over twenty applications, ten institutions were selected to participate in the pilot. These partners committed to both testing a new feature to identify research outputs connected to DMPs and to explore ways in which maDMPs could be integrated across existing research infrastructure to automate and improve data management processes and workflows on their campuses.

Five institutions received IMLS funding for their projects to facilitate developments. As so many strong applications were received, an additional five were also invited to participate in development and meetings, but without funding or site visits as thought partners. IMLS-funded partners included:

- Arizona State University
- Northwestern University
- Penn State University
- University of Colorado Boulder
- University of California, Riverside

Each institution designed projects with consideration of its strategic priorities alongside its specific data management challenges and opportunities. Some institutions focused on technical developments using API integrations, including automation and tool prototypes, while others focused on collaboration and relationship-building across departments in support of research data management. Detailed case studies of several partners are available on the project website.

In the final months of the project, the MAP team visited IMLS funded partner institutions, where they carried out interviews with administrative and operational staff members from different departments across campuses. These interviews helped institutions engage the right stakeholders in focused discussions about the challenges and opportunities in research data management, often breaking down communication silos around these critical issues. Insights from these conversations also shaped the pilot projects' key observations and informed recommendations for other institutions navigating similar challenges.

"The pilot program was very useful in identifying interest and use cases (both current and potential) in maDMPs and related efforts across campus. The site visit was especially informative in getting to hear various campus stakeholders' in-depth perspectives on maDMPs, public access to research data, and other related topics."

Andrew Johnson, University of Colorado Boulder

Project goals

Gather real-life case studies

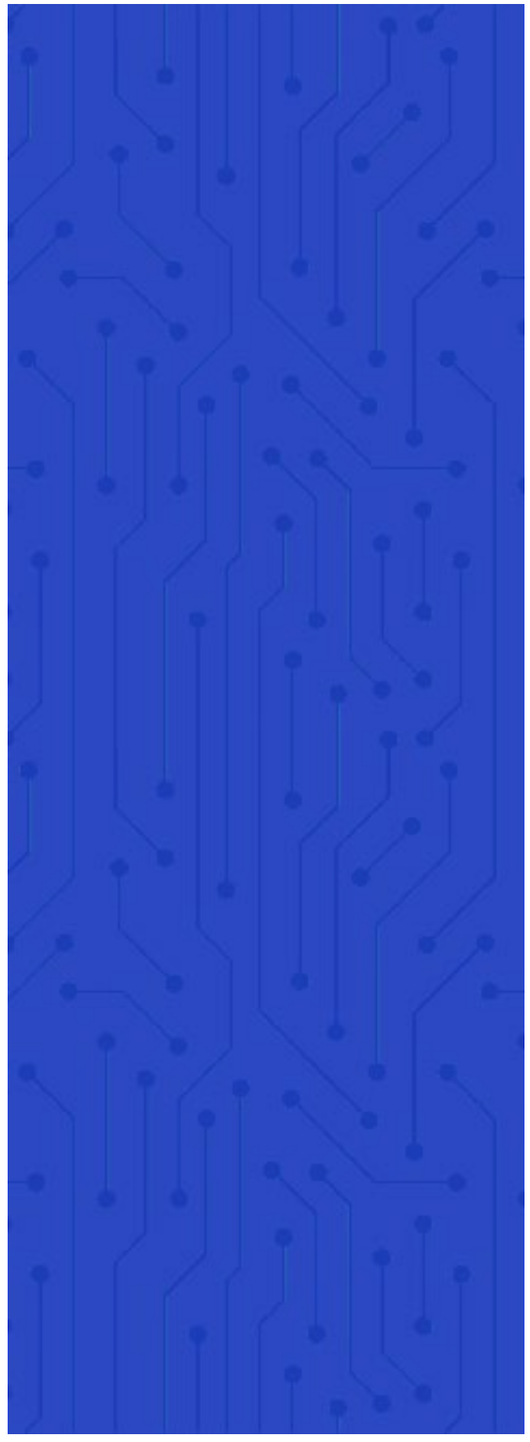
- Collect case studies from pilot institutions integrating maDMP into their workflows.
- Demonstrate diverse applications of the maDMSP in different institutional settings

Develop new maDMP features based on pilot partner feedback

- Solicit feedback from users on existing features and potential future enhancements.
- Align maDMSP development with community needs and expectations.

Produce and disseminate maDMP resources

- Develop and disseminate reports, case studies, and strategies based on the lessons learned during the pilot.
- Share knowledge and experiences, fostering a community of practice and guiding future adopters.



Pilot Summary

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Pilot Summary

Pilot partner integrations and developments

Partner institutions formed cross-departmental teams that worked closely with the MAP project team to prototype new integrations. Some focused on developing notification triggers to alert staff about key activities, such as resource allocation or plan feedback, ensuring stakeholders received timely updates throughout the research planning process. Generative AI also emerged as a major area of interest. Pilot projects in this space explored using AI systems to review and summarize DMPs, offering consistent, rapid feedback for both researchers and administrators. These AI-driven approaches were designed to reduce the workload of traditional review processes and accelerate the support researchers receive.

At the same time, many institutions carried out campus-wide analyses to map all research data touchpoints, documenting stakeholder needs, tools, and workflows. This process revealed gaps and inefficiencies in existing workflows while also highlighting opportunities for new collaborations. By clarifying institutional data management practices and strengthening interdepartmental connections, these activities enhanced communication across campus. Participants emphasized that this kind of cooperative effort not only advanced their pilot projects but also helped break down silos and foster longer-term partnerships.

"At California Digital Library (CDL), we collaborate with UC campus Libraries and other partners to amplify the academy's capacity for innovation, knowledge creation and research breakthroughs. The MAP pilot project is an excellent example of this being realized. We've seen so many examples of collaboration, innovation, and expertise resulting in impressive tangible solutions for institutions in the face of increasing challenges and opportunities. Even in cases in which institutions were unable to advance a solution within the span of the pilot, they were able to explore new paths to doing so in the future, all whilst building meaningful connections across campus and obtaining clarity on paths forward to advance on institutional strategic priorities. This work has been strongly representative of the kinds of innovation CDL strives to facilitate."

Maria Praetzellis, California Digital Library*

* *California Digital Library's 'vision' statement.*

DMP Tool technical developments

One key aim of the MAP pilot was to gather feedback to inform improvements to the DMP Tool. This feedback focused on workflows for uploading existing plans, automatic linking of plans to related outputs, enhancing API integrations, and improving the overall user experience. The input from the pilot institutions was crucial for identifying gaps and shaping the design of new DMP Tool features.

Uploading existing DMPs and matching them to related outputs

The first step of this component of the pilot was for participating institutions to upload existing DMPs from funded projects and convert them into maDMPs within the tool. These plans, tied to grants from U.S. agencies such as the National Science Foundation (NSF), National Institutes of Health (NIH), Department of Energy (DOE), and NASA, served as the foundation for testing a new DMP Tool feature that links plans to their related research outputs, including datasets and publications.

The initial approach matched structured metadata from the DMP Tool, such as project titles, persistent identifiers (PIDs) such as ORCID (for people), and ROR (for institutional affiliations) against outputs available through the DataCite API. PIDs play a central role in this work by enabling standardized machine-readable connections between people, institutions, grants, and scholarly works. However, the team discovered that metadata alone was often insufficient to distinguish outputs from similar projects led by more prolific researchers. Some researchers had numerous research outputs on the same topic, making it difficult to determine which were from which grant. Additionally, this direct matching missed many potential matches that used different wording or had incomplete metadata. To address this, we partnered with the Curtin Open Knowledge Initiative (COKI) to incorporate richer, contextual data from OpenAlex, Crossref, and the Make Data Count Data Citation Corpus. COKI's team applied advanced machine-learning techniques, utilizing embeddings and vector similarity searches to compare the descriptive text from DMPs against abstracts and titles of datasets and publications, significantly improving the breadth and accuracy of our matching process.

Pilot partner institutions were actively involved in validating and refining this matching process. They reviewed preliminary matches provided by the system, verifying which outputs were correctly linked to specific DMPs. These interactions not only improved immediate match accuracy but also provided crucial training data for enhancing our predictive models. Challenges highlighted by the DMP Tool developers included inconsistencies in data normalization, such as variations in DOI formatting and discrepancies in metadata quality between datasets and publications. Moving forward, partner feedback continues to inform CDL's efforts to streamline data cleanup processes and integrate additional comprehensive data sources. CDL engages members of the pilot project and broader community in user research sessions to test new developments of the tools, surveys of community needs, and conference and workshop sessions to share to and learn from other service providers.

Ultimately, this collaborative effort will culminate in the full integration of enhanced matching functionality within the rebuilt DMP Tool, empowering researchers to easily review and confirm linked outputs, thereby enriching the scholarly record and promoting greater transparency in research outcomes.*

Based on the insights from this project, there are several updates to make within the DMP Tool before this feature to connect plans to outputs is released:

- Better filtering of duplicate outputs to save time on confirmations
- Using funder databases to add more known matches that include outputs published from specific grants to add more known matches
- Improving data cleanup efforts in our data sources
- Searching for references to datasets within papers to find more possible matches not found in the initial pass

Using the DMP Tool API

Pilot partners also provided valuable feedback on using the API and the tool's web interface. The DMP Tool is undergoing a rebuild to incorporate new machine-actionable features, and the work of the pilot informed the development as the new site was being designed.

For the API, the following key gaps were identified by pilot partners for what users need to get the most out of integrations:

1. Working with unpublished DMPs, not just those registered for a DMP ID. This would allow integrations that help in the drafting stage, rather than just after the DMP is finalized.

2. Accessing the whole narrative in a structured format, not just the metadata. Currently, the narrative part of the DMP is available as a PDF, which is insufficient to facilitate easy transformation of the work into other systems without requiring a separate step of having a computer read and parse the PDF.

3. Having a built-in notification system that supports emails or other actions based on conditions. For example, some have requested that an email be sent when a new DMP is initiated at their institution.

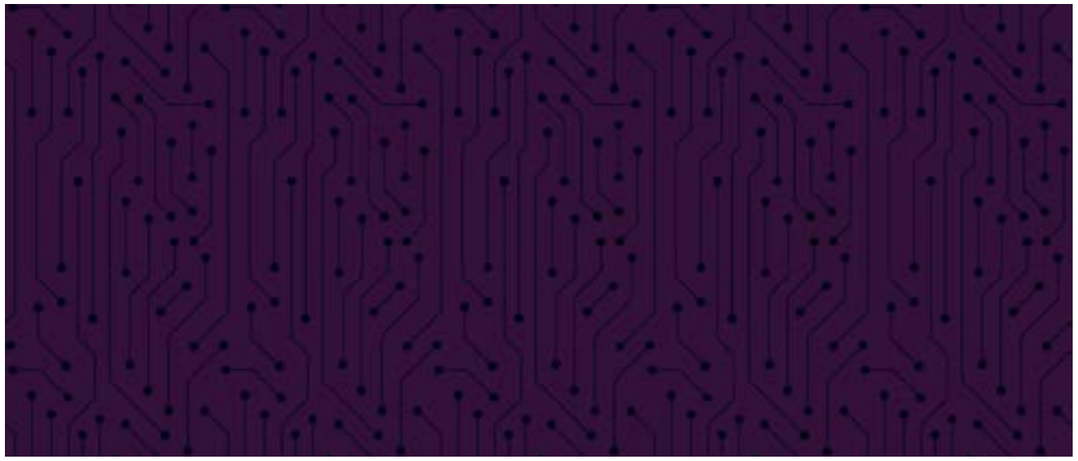
These were the most significant limitations in allowing institutions to build the full integrations that fit their needs. The first two gaps are now being addressed through the development of the new DMP Tool API, which will enable this. The third is not yet inherently part of the new system, but the development team is exploring how to support this functionality by offering tools and webhooks to facilitate a university-built notification system. Additionally, the development team has identified areas for improvement in documentation and onboarding, making it easier for new integrations to get started.

CDL has been collaborating with international partners through the Research Data Alliance (RDA) to develop a standardized API format for maDMPs. This emerging standard aims to streamline integration, allowing external systems to connect with different DMP authoring tools (such as the DMP Tool) without requiring extensive custom development. The goal is to enable consistent, scalable connections across platforms, making it easier for institutions to incorporate structured DMPs into their existing research and IT workflows. The first version of this standard is expected to be released in late 2025 or early 2026.

> "Receiving feedback on the DMP Tool user interface and API during the course of the pilot was incredibly useful for its development. Our pilot partners provided important perspectives on their experience using the tool and the API, which informed key developments in our user interface redesign. The DMP Tool team feels more confident in our direction for continued development, now with greater clarity on the priorities to provide the biggest benefits for researchers and institutions."
>
> Becky Grady, California Digital Library

** More details about the initial process and the updated matching are available on the DMP Tool blog.*

Case Studies



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Case Studies

The 5 IMLS-funded pilot partner institutions engaged in a variety of activities with different focuses in alignment with their institution's strategic priorities. Detailed case studies including summary activity, key observations, future directions and strategic recommendations for institutions are linked to in the report's appendix.

Generative AI to review DMPs and facilitate support

Arizona State University

Arizona State University explored how generative AI could be used to strengthen institutional support for research data management and accelerate the adoption of maDMPs. The team developed a working prototype of an automated feedback system designed to offer consistent, timely responses to DMP feedback requests and improve coordination amongst research support units.

Using maDMPs for collaboration and coordination

Northwestern University

Northwestern University launched its maDMP pilot to examine the institutional roles, infrastructure, and collaboration required for effective implementation of machine-actionable data management and sharing plans. The pilot aimed to improve coordination across research services, develop shared tools to support researcher workflows, and identify ways to reduce duplicated effort across the campus.

Deepening understanding of institutional processes

Pennsylvania State University

Pennsylvania State University explored how leveraging information within maDMPs could improve communication across campus units and strengthen institutional research data workflows. The project aimed to surface broad challenges in data stewardship and to identify opportunities for collaboration and coordination across departments.effective implementation of machine-actionable data management and sharing plans. The pilot aimed to improve coordination across research services, develop shared tools to support researcher workflows, and identify ways to reduce duplicated effort across the campus.

DMP notification for efficiency and coordination

University of California, Riverside

UC Riverside explored AI-driven automation for campus-based computational resource deployment, relying on the maDMP as the central reference for resource needs. Additionally, they tested workflows to simplify how data moved between repositories by enabling cloud storage re-provisioning and managing high-performance computing (HPC) clusters.

Developing maDMP-centered workflows and automations to streamline processes

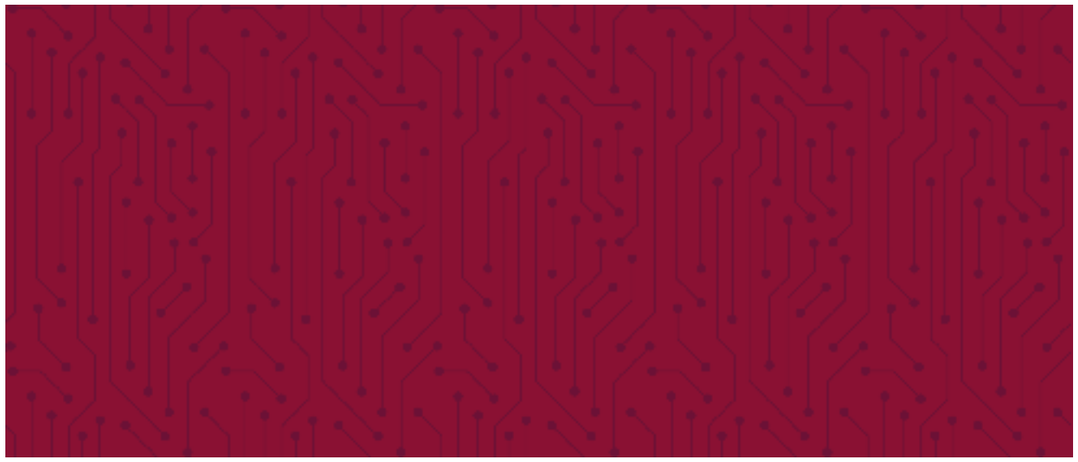
University of Colorado, Boulder

Developing maDMP-centered workflows and automations to streamline processes

The University of Colorado Boulder used its maDMP pilot to explore how machine-actionable DMPs could support infrastructure planning, automate research support workflows, and connect research data systems across the institution. The project team collaborated with campus-wide stakeholders to evaluate existing tools, map integration opportunities, and identify scalable strategies for automation, with a specific focus on post-award data workflows.

> “At the Association of Research Libraries (ARL) we are thrilled to see how much value the pilot institutions found in working with each other, pooling perspectives and sharing insights, coming together to face large-scale common challenges and respond to new opportunities. In our MAP pilot Webinar Series, pilot institutions demonstrated library leadership and the positive effects of multiple units working together across campus.”
>
> Judy Ruttenberg, Association of Research Libraries

Pilot Observations



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Several common themes emerged from pilot activities and institutional interviews, highlighting opportunities and challenges in adopting maDMP workflows and integrations.

Efficency

Efficiency emerged as a critical goal. Limited staffing, tight budgets, and duplicated efforts across campus silos slow research workflows and strain already constrained resources. Centralized maDMP integrations and automation offer substantial efficiency gains by reducing repetitive tasks, minimizing errors, and streamlining processes across departments. These positive experiences fostered enthusiasm for continued cross-unit collaboration. For example, Northwestern University's mapping of services for a central resource portal has led to high interest in additional collaboration and development across units. Some aspects of maDMPs require additional API development to achieve the desired efficiency gains, but the mapping, prototyping, and planning from this project helped organizations prepare for future integration possibilities.

Researcher adoption

Developing effective maDMP integrations required access to a collection of complete, detailed, and open DMPs, which many institutions lacked. Researchers frequently default to keeping their plans closed, limiting opportunities for testing, learning, and cross-campus collaboration. Because most DMPs were not made in an maDMP tool, some pilot partners encountered significant challenges simply gaining access to DMPs, which restricted their ability to fully participate in pilot activities. In parallel, librarians were reluctant to take on enforcement roles or require usage of specific platforms or systems, such as the DMP Tool. While this project did not directly address the issue of making DMPs publicly available, the ability to expose DMP content (either publicly or to internal, trusted systems) is necessary for enabling integrations and subsequent automations. Draft guidance from the RDA Exposing DMPs Working Group recommends treating DMPs as FAIR outputs in their own right to balance transparency, ethical considerations, and technical needs for interoperability*. Future work could explore institutional policies, researcher concerns, and technical methods for supporting systematic, careful sharing of DMP content.

** Exposing DMPs Working Group (2021). Exposing DMPs: Recommendations from the RDA Exposing DMP Working Group, Version 0.4 (draft). Recommendation 1.1. Retrieved from https://www.rd-alliance.org*

Institutions that developed integrations demonstrated time and cost-saving benefits and provided concrete examples that could be used to encourage wider adoption. The prototype communication tool from UC Riverside cut down on the review and messaging time needed to go from a DMP to allocated storage space, increasing efficiency of what can be a long process. Collaborative efforts across departments helped clarify shared incentives and foster alignment among units that had not previously worked closely together. Training, messaging, and support materials helped researchers and administrators understand the practical value of maDMPs.

Many institutions noted that broader adoption by researchers would likely follow from clear requirements and expectations issued by funders. Feedback from institutions on the usability of the tool will help guide feature development to prioritize and add features that benefit researchers, making the value proposition of the tool clearer.

"In my decade of working with RDM, researchers often didn't see the value of DMPs because they lacked detail and specificity to be useful for them. DMPs were just a checkbox. This pilot program allowed our team to address that and concentrate on how MADMPs can provide value to researchers and the organization. That question, how can this be of value, was discussed at nearly every UCR team meeting - it was the heart of our project."

Katherine E. Koziar, formerly at the University of California, Riverside, now at California State University, Fresno

Campus policies and priorities

"It's no secret that organic uptake of maDMPs has been limited so far. While driving researcher adoption was not one of our immediate goals, the work carried out at MAP pilot institutions has 'set the table' for culture change that makes maDMP use by researchers not only possible, but easy, normative, and rewarding. Understanding how maDMPs, paired with other good data management practices, can benefit researchers' own work as well as that of their peers is key to advancing the discoverability, accessibility, and reusability of research data. We hope other institutions will use the resources created by the pilot to engage researchers around the concrete benefits that maDMPs can unlock."

Marcel LaFlamme, Association of Research Libraries

In executing their pilot projects, the partners found that institutional coordination around data policies was often fragmented. Departments operated with separate and at times conflicting policies. This created silos that made cross-unit collaboration and integration difficult. Few institutions had clear ownership of data management requirements, resulting in ad hoc decision-making and confusion about administrative responsibilities. While most partners agreed on the need for institutional alignment, limited staffing and budgets hindered capacity for sustained coordination. For many institutions, especially those with defense or government contracts, data security has been prioritized over data sharing. High profile examples of cybersecurity incidents at other universities* caused fear over being the target of a similar suit, leading many to err on the side of data being more protected than potentially required, rather than defaulting to open.

Key Recommendations

Technical Foundations

PIDs, such as DOIs, ORCIDs, RORs, and DMP IDs, are essential for linking research outputs and enabling workflow integrations, but they are not consistently used across systems. For example, grant information was often missing from dataset metadata, and identifiers were applied inconsistently or entered incorrectly, such as mixing up the project ID with the Opportunity number. The lack of standardization created challenges during the pilot, making it typical to accurately match DMPs to related research outputs and limiting the effectiveness of integrations and automated workflows.

Better adoption of PIDs would enable more accurate linking between DMPs, their associated grants, and outputs resulting from research and sporting integration with systems such as data security plans.

Interest in AI was strong across pilot institutions, but concerns about quality control and cost were widespread. Librarians were worried that researchers might rely heavily on unchecked AI-generated content. Editing or validating those outputs was not always straightforward, and usage-based pricing models made it difficult for institutions to experiment at scale. However, as ASU demonstrated, AI tools can also show promise when implemented with human oversight. They explored using generative AI to assist with DMP reviews, helping to flag incomplete sections or policy inaccuracies. When guided by clear prompts, these tools demonstrated the potential for improved efficiency and consistency. As many researchers were already experimenting with AI in other parts of their work, integrating it into DMP workflows with transparency and human support offered a balanced path forward.

Some campuses had introduced mandatory “data security plans” that asked how researchers would restrict access to data, often without addressing openness or reuse of the data, to meet this increased priority and scrutiny.

Pilot institutions saw potential for maDMPs to align more directly with campus priorities, such as improving funding success rates or demonstrating compliance in high-risk research areas. For example, custom-built systems integrating maDMPs could allocate resources centrally, track commitments, and support internal audits. In some cases, maDMPs could even complement or inform required Data Security Plans by identifying sensitive data, storage needs, and access protocols earlier in the research process. By surfacing these needs up front, maDMPs can help reduce duplication between compliance documents and ensure consistency across institutional systems. Several institutions reported improved collaboration during the pilot, with departments discovering shared challenges and forming new connections. This coordination built momentum for ongoing work and positioned maDMPs as a strategic tool to support both compliance and institutional goals.

> “[Participation in this pilot program] allowed us to engage and build trust with campus partners around data management services, to demonstrate the potential value of the DMP Tool and maDMPs to partners in their workflow, to create a more complete picture of the DMS services landscape at NU, and to identify opportunities for improvement.”
>
> Matt Carson, Northwestern University

** Sarah Motley Stone, Tara N. Cho, Taylor Ey, and Christoper L Lockwood, “Recent FCA Investigations at Universities: A Closer Look at Cybersecurity Compliance” from Womble Bond Dickenson, Nov 04 2024*

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Key Recommendations*

Institutional Collaboration & Coordination

Build Cross-Campus Partnerships Early

Initiate partnerships across libraries, research offices, IT, Information Security, and grant administration early. Pilot institutions found that when stakeholders worked together from the outset, they uncovered unexpected efficiencies, built durable relationships, and better aligned their vision. This was true for Penn State University, which held a two-day cross-departmental workshop to share processes, create a stronger network among stakeholders, and explore how maDMPs could enhance communication, streamline workflows, and support scalable infrastructure. Connections made during the workshop enabled the team to continue cross-unit collaboration and initiate pilot activity in a more streamlined way.

Use DMPs to Uncover Shared Needs

DMP content can reveal service gaps, redundancies, and other pain points across the research support ecosystem. Facilitated workflow-mapping sessions, anchored in DMP data, can help identify inefficiencies, inform service improvements, and uncover shared infrastructure needs. Northwestern University conducted a landscape analysis exploring how DMPs could be integrated into research services workflow, which uncovered a strong need for increased infrastructure, IT security, and data governance to support campus-wide maDMP adoption.

Make the Case to Administrators

Position maDMPs as solutions to pressing institutional challenges: reducing administrative burden, improving service coordination, and enabling efficient resource allocation. Use pilot examples to show alignment with campus priorities for strategic growth such as research excellence, resource efficiency, grant compliance, increased insight into research activity, support for researchers and time-savings, increased visibility and impact of research, the promotion and discovery of new research, and responsible data stewardship.

> "The project was significant to our team and brought considerable awareness of our services, expertise, and efforts to a greater audience at the university, particularly within our library leadership and the Office of the Vice President of Research. The pilot program gave our partnership team a real-world project to work on that went beyond our day-to-day work and connected us with other institutions who navigate the same challenges as us. The project demonstrated that we do not have to work in isolation and should work with other institutions to solve these large-scale problems."
>
> Jim Taylor, Arizona State University

**Detailed recommendation guides specific to Libraries, IT and Information Security departments, and Grant Offices are available and hosted with all other resources on the MAP pilot webpage.*

Technical Integration & Development

Configure DMP Tool Templates to Support Planning

Ensure your DMP templates include structured fields for project-specific needs, such as file size estimates, security concerns, or the use of high-performance computing. Well-structured fields enable workflows, including automated notifications and resource provisioning.

Explore Shared Infrastructure Models

Develop or participate in platforms that coordinate campus-wide research data management (RDM) services. Some pilots, including University of California, Riverside created pilot centralized portals with links to services from research, IT, and library units, enhancing communication and support, with early tests yielding promising results for the longevity of the system. Others are in the wireframing process for a similar central service.

Interoperability with Local Systems

Evaluate DMP API capabilities, metadata schemas, and system compatibility to enable integration with internal platforms such as enterprise research systems, CRIS tools, or compliance dashboards. Explore ways these integrations can reduce duplicative data entry and enable automation across departments.

Strategic Planning & Governance

Begin with a Landscape Assessment

Before launching technical integrations, map your institution's research support ecosystem. Identify pain points, gaps, and opportunities for collaboration and improvement. Several pilot partners used this approach to identify targeted projects and ensure alignment with strategic priorities, including University of Colorado Boulder, and Penn State University.

Coordinate Stewardship Strategy

Collaborate with Information Security, Research IT, libraries, and academic units to co-develop a campus-wide research data stewardship strategy. This partnership should define roles and responsibilities across the data lifecycle, including planning, storage, access, security, sharing, and long-term preservation.

> "The pilot brought attention to maDMPs among higher administration and fostered meaningful collaboration and engagement among key stakeholders. Additionally, this pilot reinforced the value of continued knowledge-sharing. Gaining insights into how other universities are tackling similar challenges and identifying best practices that could inform our own strategies was highly valuable."
>
> Briana Ezray, Penn State University

Implementation & Iteration

Prioritize What's Practical

Don't expect a single solution to fit every use case. Pilots saw value in small, specific automations, even when broader integrations proved challenging, such as University of Riverside pivoting to a tool that provides notification and information sharing as opposed to the initial proposal to fully automate electronic resource allocation. Starting small with focused, practical automation is often the most effective way to build momentum and support.

Evaluate Workflows Beyond Grant Proposals

Researchers conducting unfunded work or internal projects still need support with data management. maDMPs can help institutions track needs and provide services even when no grant is attached. Ensure that maDMP strategies address non-funded research as well.

Plan for Post-Award Engagement

Since DMPs are often created long before project funding is secured, develop mechanisms to revisit them once funding is confirmed. For example, notify the relevant teams once a grant is awarded to begin provisioning support based on the plan's content.

Communication & Outreach

Integrate maDMP information into training

Incorporate information about maDMPs and the DMP Tool into existing training, consultations, and resources, rather than focus only on training about maDMPs alone. Consider embedding guidance in applications, education materials and policy documents to share information and reach people where they already receive grant and data management information.

Communicate benefits to researchers

Share information about the benefits that matter most to researchers, such as saving them time, securing funding, and increasing publications and citations. Discuss how using maDMP tools and updating them over time can help meet ever-evolving funder requirements. Demonstrate how registering and publishing DMPs can be counted as a publication on their ORCID profile, thereby increasing the visibility of their eventual outputs, such as papers and datasets, and ultimately leading to increased citations.

Stay informed on community developments

The capabilities and benefits of maDMPs are increasing over time. Keeping abreast of developments from the DMP Tool and similar providers, and community groups like RDA working groups, can inform you of new developments and capabilities that increase the integrations possible with service APIs. Participating in groups and feedback sessions can help ensure that your needs and users' needs are prioritized so that desired

Final Thoughts

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Final thoughts from the MAP pilot Team

“Regardless of how academia and support for libraries changes over the coming months and years, it is likely that institutions will continue to face resource restrictions, researchers will contend with huge workloads, and data security teams face increasing challenges in the context of the drive towards open data. The MAP pilot was designed to address the urgent needs of academic and research libraries of varying sizes and budgets to respond to increasing requirements to make their data management plans machine-actionable and share federally funded research data. The work undertaken has proven that in addition to meeting funder requirements, using and leveraging maDMPs can help institutions find solutions to streamline communications and workflows, ensure adequate and timely consultation on plans for all relevant campus units, and save researchers time by reducing repetitive data-entry.”

Appendix

MAP Project Team

- Maria Praetzellis, Associate Director, University of California Curation Center (UC3), California Digital Library, PI
- John Chodacki, Director, University of California Curation Center (UC3), California Digital Library
- Becky Grady, Senior Product Manager for Data Management Planning, California Digital Library
- Cynthia Hudson Vitale, Association of Research Libraries & Johns Hopkins University
- Judy Ruttenberg, Senior Director of Scholarship, Policy, and Engagement Strategy, Association of Research Libraries
- Marcel LaFlamme, Director of Research Policy and Scholarship, Association of Research Libraries

This report and other pilot outputs were compiled by outreach consultant Clare Dean.

Pilot Institutions

Institution partners* included:

- Arizona State University
- Northwestern University Feinberg School of Medicine
- Pennsylvania State University
- University of California, Riverside
- University of Colorado, Boulder
- New York University Langone Health
- Stanford University
- University of California, Berkeley
- University of California, San Diego
- University of California, Santa Barbara

*The former five received funding for their projects to facilitate developments, while due to receiving so many strong applications, the latter five were also invited to participate in development and meetings, but without funding or site visits in the collaboration as thought partners.

Blog Posts, Presentations, and Project Updates

Conference Materials

"Piloting maDMPs for Streamlined Research Data Management Workflows," (presentation at the 19th edition of the International Digital Curation Conference, The Hague, February 19, 2025), https://doi.org/10.5281/zenodo.14969693.

Site Visit Blog Posts

"Insights from Arizona State University: Advancing Research Support Through Open Science, Data Sovereignty, and Machine-Actionable Plans," ARL Views, January 9, 2025.

"UC Riverside Machine Actionable Plans (MAP) Team Builds Promising Communication Prototype," ARL Views, January 8, 2025.

"ARL/CDL Machine Actionable Plans (MAP) Pilot Team Visits University of Colorado Boulder," ARL Views, November 26, 2024.

"Machine Actionable Plans (MAP) Pilot Team Visits Penn State University," ARL Views, October 24, 2024.

"ARL and California Digital Library Kick Off Machine Actionable Plans (MAP) Pilot Site Visits at Northwestern University," ARL Views, October 18, 2024.

Partner Institution Report

Johnson, A., Lindquist, T., Murray, M., Ranganath, A., Freeborn, L., Knuth, S., Schnell, B., Klopsch, S. O., Sabeti, V., Wittenberg, J., Lindholm, D., Regan, K., Elsborg, D., & Viggio, A. (2025). University of Colorado Boulder - Machine Actionable Plans (MAP) Pilot Project Report. University of Colorado Boulder. DOI: /10.25810/TKNV-JT07

Technical Updates from CDL

"Progress Update: Matching Related Works to Data Management Plans," DMP Tool Blog, December 20, 2024.

"Behind the Scenes: Insights from User Testing the New DMP Tool Designs," DMP Tool Blog, October 30, 2024.

"Announcing the DMP Tool Rebuild," DMP Tool Blog, October 23, 2024..

Other Project Updates

"Connecting DMSPs to Research Outputs," University of California Curation Center (UC3) blog, April 26, 2024.

"Association of Research Libraries and California Digital Library Receive Grant to Advance Data Management and Sharing," ARL News (news release), August 4, 2023.

Recruitment webinar for pilot institutions with project details—"Harnessing the Power of maDMSPs: Where Are We Now and Piloting the Future," November 2, 2023.

Call for Institutions to Pilot Development of Scalable Data-Management Infrastructure (October 2–November 10, 2023). Expressions of Interest are now closed.

Webinars

"Webinar 1: Streamlining Research Support: Lessons from maDMP Pilots" May 6, 2025.

"Webinar 2: Creative Approaches for Seamless and Efficient Resource Allocation" May 20, 2025.

"Webinar 3: Five Technological Advancements in DMPs to Benefit Your Organization" June 3, 2025.

"Webinar 4: How to Implement Machine-Actionable DMPs at your Institution" June 17, 2025.

Case Studies

- "DMP Notification for Efficiency and Coordination", University of California, Riverside maDMP Pilot Case Study, August 2025.
- "Deepening Understanding of Institutional Processes", Pennsylvania State University maDMP Pilot Case Study, August 2025.
- "Using maDMPS for collaboration and coordination", Northwestern University maDMP Pilot Case Study, August 2025.
- "Developing maDMPS-centered workflows and automations to streamline processes", University of Colorado, Boulder maDMP Pilot Case Study, August 2025.
- "Generative AI to review DMPs and Facilitate Support Engagement", Arizona State University Case Study, August 2025.

Key Recommendations

- "A guide for researchers," August 2025.
- "A guide for libraries," August 2025.
- "A guide for IT and information security departments," August 2025.
- "A guide for grant offices," August 2025.

2025

https://bit.ly/mappilot

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