Case Study

MAP Pilot
Machine Actionable Plans

The IMLS-funded MAP pilot, organized by the California Digital Library and the Association of Research Libraries, explored how machine-actionable data management plans (maDMPs) could streamline infrastructure, coordination, automation, and research data stewardship.

Generative AI to review DMPs and Facilitate Support Engagement

INTRODUCTION

Arizona State University (ASU) 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.

FROM CONCEPT TO PROTOTYPE

The ASU pilot project began with a broad goal of creating scalable, AI-driven infrastructure to assist researchers while also improving knowledge of best practices in research data management. Early work focused on integrating the DMP Tool with ASU's Enterprise Research Administration (ERA) system. However, due to technical and policy-related risks, such as the potential for setting unrealistic service expectations and concerns about exposing plans too early in the proposal process, the team decided to pilot the focused goal of a standalone AI-driven feedback client.

This tool would serve two purposes: to provide near-instant feedback on draft DMPs using large language models (LLMs), and to act as a notification bridge, alerting relevant support teams when certain keywords or needs appear in submitted plans. The team worked across ASU's Research Technology Office, ASU Library, and Knowledge Enterprise (KE), combining software developers, research data librarians, infrastructure experts, and administrators.

The working prototype leveraged both enterprise-licensed and open-source LLMs, ensuring data privacy and ethical use by avoiding public LLM models. ASU utilized the DART rubric to structure the evaluation criteria for their AI Review Assistant, ensuring that feedback on DMPs aligned with established expectations for completeness and quality across areas such as data types, metadata standards, and sharing policies. Because the actual submitted DMPs were inconsistent and often lacked key information, the DART framework helped the team identify service gaps and guide more consistent, standards-based AI-generated responses.

TECHNICAL DESIGN AND IMPLEMENTATION

The prototype was developed as a modular and open-source tool and designed to support future integrations with systems such as ORCID, Dataverse, and the DMP Tool. The interface was built to be user-friendly, supporting both internal and external contributors to the feedback loop.

ASU's internal architecture (see ASU Implementation diagram) enabled the tool to function as a bridge between the

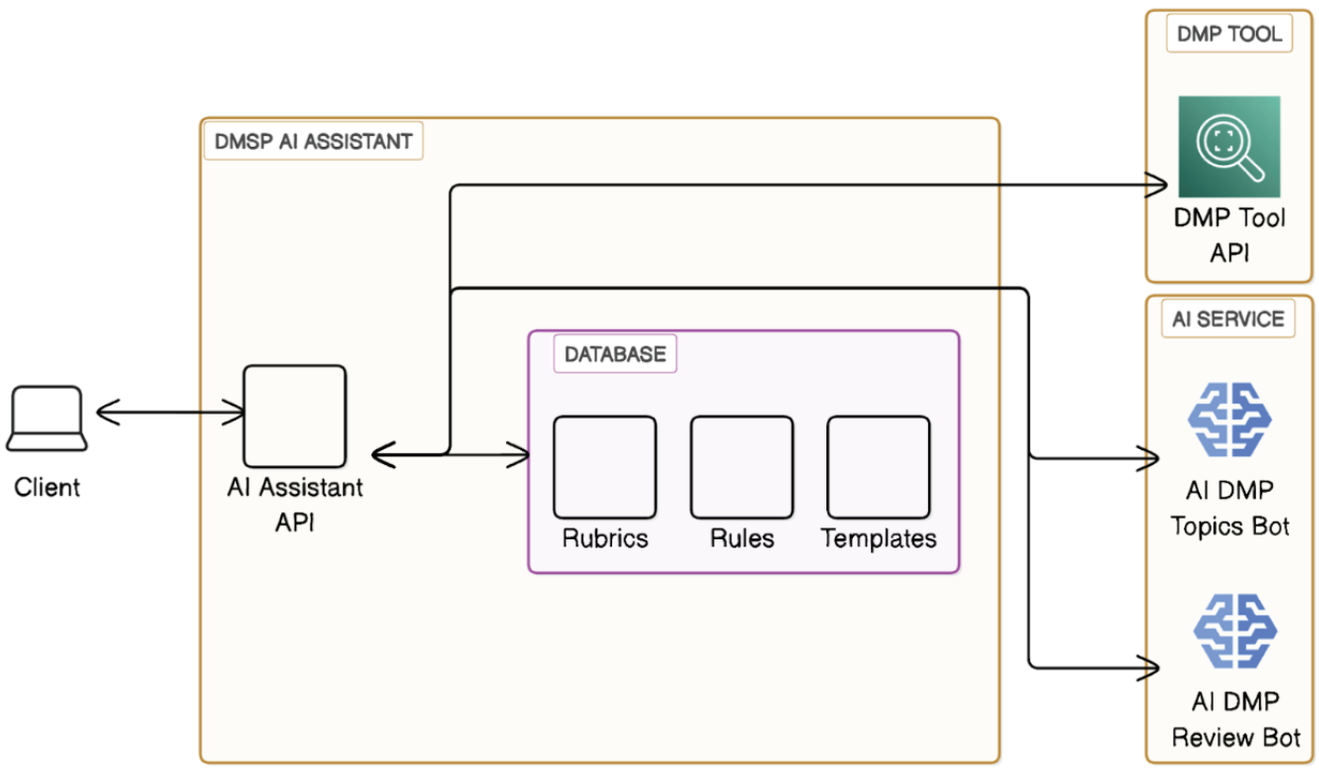

Figure 1: ASU implementation diagram

researcher and the administrative response. While not currently integrated into the DMP Tool, the team envisions a future where users can receive instant AI-generated feedback with a single click within the DMP Tool interface.

The most successful part of the project was not only the development of the prototype but also the way it fostered deep collaboration across roles and units. Technical developers and frontline research support staff aligned on a shared goal: using AI in a thoughtful and ethical way to enhance rather than replace, human review. This shared understanding underscored the importance of transparency, responsibility, and context in building AI tools for academic research environments. The project fostered lasting relationships across departments and demonstrated that thoughtful, cross-unit innovation is achievable even within a relatively short project window.

CHALLENGES AND LESSONS LEARNED

One of the biggest challenges in this undertaking was the fragmented nature of research workflows across the institution. Divergent workflows, siloed units, and inconsistent awareness of researchers' funding requirements made it difficult to establish a common view of DMP related activity and needs. Additionally, researchers were often hesitant to make their DMPs public, which limited the availability of real-world examples for training or testing AI responses. consistent, timely responses to DMP feedback requests and improve coordination amongst research support units.

The team also recognized that they initially focused too much on developing the tool itself and not enough on outreach and education. Without a foundation of researcher awareness and support, adoption of the tool will be difficult. The team now sees campus engagement through customized training and tailored messaging as essential to future maDMP initiatives.

Originally, the team thought they would need high quality DMPs to train the model before fine-tuning themselves, which is expensive, time-consuming, and requires a lot of data. Instead, they found success just using a prompt strategy that is much easier to use and replicate.

FUTURE DIRECTIONS

With the prototype built, ASU is preparing for internal user testing. The team plans to refine the tool's framing, test usability with researchers, and better connect feedback to available campus services. They also plan to develop educational resources, including workshops, webinars, and a potential one-credit course in data management.

They are also exploring additional funding opportunities and partnerships to support further development and expansion. One long-term goal is to integrate the AI Review Assistant directly into the DMP Tool, enabling ASU researchers to request feedback within their DMP workflow.

STRATEGIC RECOMMENDATIONS FOR INSTITUTIONS

ASU's experience shows that AI can meaningfully support research infrastructure when paired with strong institutional alignment and ethical design principles. The pilot highlighted the need for clear team structure, open communication, and a user-centered approach. It also emphasized that technical tools alone aren't enough and that successful adoption depends on trust, education, and shared values.

Institutions interested in pursuing similar efforts should assemble dedicated teams with both technical and outreach capacity, invest early in stakeholder engagement, and build flexibility into their implementation plans. ASU's experience offers a model for what's possible when innovation is rooted in collaboration and responsible practice.

TEAM

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