



## Project management as information management in interdisciplinary research: “Lots of different pieces working together”



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### ARTICLE INFO

#### Keywords:

Project management  
Information management  
Publicly funded research

### ABSTRACT

Project Management (PM)<sup>1</sup> in publicly funded interdisciplinary research (IDR)<sup>2</sup> is an emerging practice for academic scholars, one that derives from PM's origins in the industrial sector. The naturalistic paradigm that guided this case study of the third Digging Into Data Challenge (2014–2016) relied upon qualitative methods, a case study reporting mode, purposive sampling, and inductive, grounded data analysis. Fifty-three researchers representing eleven projects were interviewed. Results suggest that the grant's PM requirement provided researchers with a mechanism of information management. Project managers, whether externally hired or internally designated, were instrumental in coordinating project resources in light of governance issues, data handling, and data sharing across international boundaries. In conclusion, optimizing PM documentation from project inception through closure is recommended to facilitate communications among funders, researchers, and stakeholders. PM documentation is a mechanism for ensuring data integrity and its readiness for valuation metrics at project's end. Future research may explore the merits of mandating formally trained project managers versus supporting academic mentoring trends for project-based training, which apply domain-specific expertise to the role and enable IDR teams to exercise autonomy.

### 1. Introduction

Digital humanities involves “the application of computational or digital methods to humanities research, or...the application of humanities methods to research into digital objects or phenomena” (Warwick, Terras, & Nyhan, 2012, pp. xiv–xv). It involves addressing research questions that transcend genres, media, disciplines, and institutions (Burdick, Drucker, & Lunenfeld, 2012) and “involves representation, analysis, manipulation, interpretation, and investigation of humanistic knowledge while using computational media ranging from databases and digital archives in literature, visualization or sonification in art of music history, or GPS in archaeology” (Davidson, 2017, p. 207).

Work in digital humanities has been propelled by such path-breaking initiatives as the Digging Into Data Challenges (DID), an international e-research initiative that began in 2009. Its goal is a “coherent amalgam” of the networked sciences and humanities (Williford & Henry, 2012, pp. 1–2). Awarding a total of \$5.1 million, DID's third challenge (2014–2016) featured ten funding organizations based in the United States, United Kingdom, Canada, and the Netherlands

(Appendix A). The 14 awardees proposed to harness large corpora of existing, combined, or newly created data to develop innovative tools for sophisticated Digital Humanities research. A further challenge for teams, as in the first two rounds, was to refine these tools for open access and sustainability in the networked environment.

The expansion of IDR projects across the social scientific and humanities disciplines suggests that project management as well as data management plans facilitate IDR research (Williford & Henry, 2012). Indeed, the computationally intensive DID3 grant mandated both (Digging Into Data Challenge, 2012). Furthermore, DID organizers strongly encouraged researchers to collaborate with Information & Library Science professionals, while also recommending that research libraries become active partners in IDR projects (Williford, Henry, & Friedlander, 2012, p. 3). The range of expertise anticipated for DID3 projects, across domain, computation, and information science, attests to the important role of soft skills such as collaboration in IDR initiatives.

This qualitative case study of 53 researchers who participated in 11 of the 14 DID3 projects proposes the following three research questions. First, what is the role of project management (PM)<sup>3</sup> in IDR? Second,

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<sup>1</sup> Project Management is abbreviated as PM.

<sup>2</sup> Interdisciplinary Research is abbreviated as IDR.

<sup>3</sup> In the case study, “PM” refers to “project management,” while “the PM” or “PMs” indicates “project manager(s).”

how did researchers and PMs fulfill the project management requirement in their work? Third, can project management facilitate long-term sustainability of publicly funded research? These questions highlight the interplay of the grant's PM requirement and researchers' articulation of its three phases, from the planning stage to work plan implementation and finally packaging deliverables for sustainable open access over the long term. The article considers these questions in light of PM literature and IDR.

Three perspectives derive from the source data: that of the PIs interpreting the grant's PM requirement for the proposal; that of the researchers implementing PM during the active research lifecycle; and that of scholars post-project assessing PM as an integrative mechanism for collaboration and, potentially, for project sustainability. In exploring these perspectives, the case study illuminates the PM requirement's influence on researchers' options and strategies, on one hand, and how researchers' actual practice of PM propelled collaborations toward deliverables, on the other.

A theory section explores how the field of Information & Library Science (ILS)<sup>4</sup> adapted PM's methodologies to information management and knowledge production, with particular attention to the emergence of PM in data-driven IDR collaborations. A methods section describes the rationale for a qualitative study situated in the naturalistic paradigm based on interviews with 53 DID3 researchers. Points on limitations in this section treat the study's boundaries and qualifications. Results are grouped in three subsections that tie to the PM requirement: first, the project planning phase in which PIs and key staff outlined the project goals, assembled staff expertise, and proposed a work plan; second, the implementation phase in which team members leveraged PM techniques during the active research lifecycle; and third, the project completion phase, in which researchers commented on the role of PM in packaging and disseminating project deliverables. The discussion section explores four points that connect theory and results: first, PM in the ILS setting; second, the question of formal training versus academic mentoring or ad hoc learning for PM; third, the dual utility of PM for coordination and documentation of IDR projects; and fourth, the potential for PM documentation to facilitate long-term sustainability of research outcomes. The conclusion presents a summary and suggests directions for future research.

## 2. Theory

### 2.1. IDR Research as Project-based Initiatives

#### 2.1.1. What is IDR research?

IDR's emergence may be traced in literature that explored interdisciplinary, computationally intensive scientific research during the 2000s using terms such as "e-Research" and "cyberinfrastructure" (Friedlander, 2006; Lawrence, 2006; Ray, 2012; Steinhart, 2006). Collaborative practices, data sharing techniques, and data repositories necessary to e-Research gained momentum (Choudhury, 2008; Gold, 2007; Higgins, 2007; Nielsen & Hjørland, 2014; Lee & Tibbo, 2011; Ray, 2012). Concomitantly, international funders' expectations for data management plans (DMPs) became increasingly stringent, and were mandated in the US in 2011 (Parham & Doty, 2012; Sallans & Donnelly, 2012). In line with IDR's instantiation as a new mechanism of knowledge production (Knorr-Cetina, 1999), the Digging Into Data Challenge (launched in 2009) proposed that collaborative research based on combinatorial data sets exploded disciplinary silos and converged in "one culture" of knowledge (Williford & Henry, 2012, p. 7).

The vantage point of DID3 projects as a "coherent amalgam" of the humanities and sciences thus opened a wide field for researchers to explore (Williford et al., 2012, pp. 1–2). Interdisciplinary domains that coalesced in the case study were indeed unprecedented. Yet as IDR

research, they shared a common origin as DID3 grants. The melding of international funding sources and institutional governance resulted in unique management procedures for each project. These complexities constituted a preeminent rationale for the PM requirement in DID3 grants.

#### 2.1.2. What is a project?

Note (2015) defines "project" as "a series of unique, multifaceted, and related activities with a purpose that must be accomplished at a particular time, within cost constraints, and according to specifications" (Note, 2015, p. 1). Projects accomplish specific objectives in environments of rapid change (Note, 2015, p. xii). In such an environment, a flattened hierarchical structure permits communication and decision-making techniques that conform to a project's unique constraints (Note, 2015, p. 9). The flexibility for shared authority also distinguishes projects from vertical management procedures that are optimal for routine, ongoing operations (Note, 2015; Strauss, 1988). Flexible decision-making allows teams to balance resources and constraints as contingencies arise (Note, 2015, pp. xii–xvi).

#### 2.1.3. What is project management?

In ILS literature, PM entails planning, tracking, and evaluating the key phases of discrete projects that contribute to organizational goals (Winston & Hoffman, 2005, p. 52). Those key project phases may be partitioned four or more ways (Feeney & Sult, 2011; Leon, 2017; Maron & Pickle, 2014). Note (2015) articulated five "Project Life-Cycle Phases," namely "Initiating, Planning, Executing, Monitoring, and Closing" the project. Because PM techniques oriented toward organizational goals, per Winston and Hoffman (2005), may be categorically different from project-based research, the introduction of PM to the library setting and refinement of its techniques for IDR merits further discussion.

### 2.2. Project management in industry and in the library environment

Initially modeled on Taylor's scientific analysis of early 20th century manufacturing processes, PM in industry acquired greater sophistication by mid-century (Winston & Hoffman, 2005). The Project Management Institute, established in 1965 as means to promote standards and confer certifications of expertise, exemplified the pervasive utility of PM for the industrial sector (Note, 2015, p. xviii). More recently, PM's application in business and industry has been associated with information systems development (ISD) techniques that integrate the computational dimension of ISD tools with a firm's research and development objectives (Windeler, Maruping, & Venkatesh, 2017).

By contrast, PM entered the library environment via IT systems during the latter part of the 20th century (Winston & Hoffman, 2005). Interestingly, information professionals already employed PM principles and tools, and refined them while conducting digitization projects over a period of two decades (Note, 2015; Nowvskie, n.d.). Applied to library operations and research services, PM techniques introduced resource accountability as part of project documentation (Feeney & Sult, 2011; Jahnke, Asher, Keralis, & Henry, 2012; Note, 2015). PM documentation thus provided a vehicle for recording funds expended throughout a project, so that valuation formulas could be applied *in medias res* as well as on the occasion of a project's closing (Note, 2015, p. 115). This has propitious implications for the role of PM in IDR.

### 2.3. Interdisciplinary research and project management

Given the size of data in DID3 projects, in tandem with team collaborations on the international level, the literature on project management most relevant to the case study concerns IDR. The DID Challenge's aims ride on the presumption that IDR drives innovation (Williford & Henry, 2012). However, distributed collaborations demand a high degree of communication and coordination (Lawrence, 2006;

<sup>4</sup> "Information and Library Science" is hereafter abbreviated as ILS.

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