

# 3 Interdisciplinary digital project design

Daniel Brodén  
University of Gothenburg

Mats Fridlund  
University of Gothenburg

Cecilia Lindhé  
University of Gothenburg

Jonathan Westin  
University of Gothenburg

While discussions in digital humanities increasingly emphasise the importance of reflecting on collaborative workflows for interdisciplinary research, attention to specific practical expertise remains lacking. This paper introduces the concept of *interdisciplinary digital project design* to highlight a professional practice that integrates collaboration between traditional Humanities and Social Science (HSS) researchers and technical experts in developing research projects, digital resources and more. We begin by addressing the need for *protocols* to support workflow-oriented approaches to interdisciplinary collaboration, while underscoring the role of embodied expertise in facilitating teamwork. Furthermore, we argue that *judgement* – a critical yet often overlooked element – is an integral aspect of the professionalism involved. The discussion is grounded in descriptions of our contribution to five digital HSS projects, each offering a different perspective on the integrative professionalism involved. The paper concludes by discussing ways to further advance the conceptual understanding of interdisciplinary digital project design, with particular attention to the expertise that underpins this practice.

## 1 Introduction

It is well-known that while Digital Humanities (DH) projects combine humanistic and technical expertise in various ways, interdisciplinary collaboration can be challenging due to differing disciplinary rationales. Computer scientists often focus on pushing methodological development, whereas researchers in the Humanities and Social Sciences (HSS) primarily aim to apply disciplinary methods to digital scholarship. However, it has also been argued that DH has cultivated the emergence of a “third culture” as originally described by C.P. Snow, where individuals from fundamentally different disciplinary traditions make significant strides toward collaborating

more organically (Snow 1959, Hunter 2014, Ingvarsson 2021). Moreover, there is a growing discussion within DH about the need to develop more integrative interdisciplinary workflows. For instance, the concept of “agile hermeneutics” describes a collaborative process where HSS scholars and data analysts engage in a continuous, dialogical and reflexive relationship (Rockwell & Sinclair 2016; c.f. Fickers et al. 2022).

Nevertheless, there remains a palpable lack of blueprints and considerations regarding the kind of expertise needed to develop interdisciplinary DH projects. As have been observed in a recent study, “new projects and initiatives expend a lot of energy in their start-up period trying to establish collaborative values and project management strategies, often reinventing the wheel in the process” (Ahnert et al. 2023: 4).

In response to Ted Underwood’s (2014) call for greater articulation and reflection on the partly tacit working methods within DH and building on an earlier short conference paper (Brodén, Fridlund, et al. 2024), the present chapter highlights our conceptual work at the Gothenburg Research Infrastructure in Digital Humanities (GRIDH, formerly Centre for Digital Humanities, CDH), at the University of Gothenburg. We focus on what we have chosen to call the practice of *interdisciplinary digital project design*, an evolving approach to outlining and integrating collaboration between technical expertise and “traditional” HSS researchers for projects involving multidisciplinary teamwork. By “projects”, we refer to research projects in the strict sense, but also project applications and the development of digital resources for researchers and cultural heritage institutions, such as tools, databases, corpora and archives, that call for interdisciplinary approaches to meet current field standards.

## 1.1 *Design – planning and doing*

The discussion in this chapter draws on our combined experiences as senior staff, project managers and project members at GRIDH, part of the Faculty of Humanities at the University of Gothenburg. Since 2015, our infrastructure has initiated and developed data-rich research projects, research applications and digital resources in collaboration with researchers from the Humanities and other faculties at the University as well as heritage professionals at Swedish GLAM (galleries, libraries, archives and museums) institutions. Additionally, our involvement as researchers in various DH projects and our work with national research infrastructures, such as Huminfra, InfraVis and Språkbanken and Swe-Clarín – the Swedish node of CLARIN (Common Language Resources and Technology Infrastructure) – have further informed and shaped the insights presented in this chapter.

In our efforts to mediate and translate across interdisciplinary fields, we have come to see our expertise, in part, as a form of “design” capability that encompasses both the realms of “planning” and “doing”. Etymologically, the word *design* originates from the Latin word *designere*, which means, among other things, to ‘mark out’, ‘point out’ or ‘devise’. The latter Italian verb *designare* acquired specific aesthetic connotations, such as to draw and to paint. These meanings were adopted into both French and English, with the English term *design* further developing to encompass ideas of “contriving”, “outlining” and more artistic forms of creative practice. Today, the term design is associated with a wide range of professional disciplines, including architecture, engineering, crafts, industrial design, fashion and art (Merriam-Webster n.d.). Moreover, the concept of *design thinking* refers to a set of procedures used in design and project organisation in a general sense as well as to the body of knowledge developed around design ability (Rowe 1987, Cross 2011).

The term design may seem somewhat grandiose, but we find it useful for delineating a specific form of practice that involves both planning and doing. More specifically, we propose the notion of *interdisciplinary digital project design* to highlight an emerging form of expertise in DH within the context of what has been described as the fractured trading zones of DH (Svensson 2012). This expertise shares similarities with what (Hunter 2014: 27) refers to as “bridge people”, individuals who are either fully competent in the “two cultures” or, at least, “bilingual” in the sense of being able to communicate effectively across the disciplinary boundaries (Berry & Fagerjord 2017). This chapter focuses primarily on the latter category, offering a broader perspective on the potential forms of bridging discussed. However, this form of expertise extends beyond just mediating between technical and humanistic fields. While it does not necessarily involve project management in the sense of “organising” others, it invariably engages with the spheres of “planning” and “doing” that are central to the practice of design.

To clarify, this chapter does not aim to discuss specific skills or best practices for project design. Instead, we focus on highlighting and conceptualising some core aspects of a particular interdisciplinary-oriented professionalism. This professionalism is centred on outlining and integrating collaboration between technical experts and HSS researchers, an area in need of being put into focus in discussions about workflows for interdisciplinary teamwork in DH. We argue that this perspective is important for better understanding the processes involved in collaborative work within the field and the expertise often necessary to achieve integrative interdisciplinarity.

## 1.2 *Disposition*

We begin our discussion by situating the concept of interdisciplinary digital project design within the context of theoretically oriented writings on integrative mixed methods approaches in DH. Engaging with Sarah Oberbichler et al.'s (2022) discussion of integrative approaches to multidisciplinary teamwork centred around historical data, we emphasise the importance of structuring collaborative workflows and adhering to some kind of *protocol*, procedures designed to enable consistency and quality in the collaborative efforts. However, we also contend that mixed-methods approaches should not be considered solely in abstract terms but must be grounded in embodied expertise. To this end, we draw on philosopher of education Gert Biesta's (2015) writing about *judgement* as an important but often overlooked part of professionalism. Specifically, we argue that the exercise of judgement is a critical part of interdisciplinary digital project design. Judgment is necessary to address collective needs, guide workflows and decide on "what needs to be done" at different points in a project.

Having outlined a conceptual framework for understanding the expertise involved, we ground the discussion by briefly describing our contribution to five digital projects, each offering a different perspective on the integrative professionalism involved. *First*, we comment on the project "The Role of Music and Sound in Audiovisually Mediated Conspiracy Theoretical Discourse" as an example of GRIDH's general approach to supporting researchers in the preparation of research project applications. *Second*, we discuss GRIDH's involvement in the political science project "The Benefits of Conflict" to illustrate how we contribute to the development of digital resources in external projects, providing more than just technical expertise. *Third*, we outline the iterative process involved in producing data for the project "Digital documentation of inscriptions in the Saint Sophia Cathedral in Kyiv". *Fourth*, we describe the early design phase of the large mixed-methods project "Terrorism in Swedish Politics", focusing on the effort to assemble a highly interdisciplinary research team. *Fifth*, we highlight the extensive interdisciplinary collaboration in the project "Tracing the Carvers on the Rocks", which integrates humanistic and AI expertise, emphasising the role of not only human but also machine agencies in the research process.

Taken together, these case studies provide an opportunity to explore the integrative professionalism involved from multiple perspectives, highlighting how it represents a form of expertise that is both distinct and highly context-dependent. We conclude with reflections on how to further think about the conceptualisation of interdisciplinary digital project design and the professionalism involved.

## 2 *Integrating interdisciplinary research*

In DH, there is a growing interest in critically reflecting on “what is happening” and “what should happen” at the intersections of data-driven and interpretative methods (Ahnert et al. 2023). However, much of the discussion has so far focused on the future potential of computational methods and productive approaches, rather than the nature of interdisciplinary syntheses and mixed methods (Brodén, Ingvarsson, et al. 2024; c.f. Shan 2021). While systematic theoretical reflection on the relationship between different interdisciplinary and methodological syntheses remain limited, there is an ongoing discussion in DH about the importance of context-sensitive approaches grounded in domain knowledge, emphasising the need to engage with the original contexts of archival data to produce both robust and nuanced results. Katherine Bode (2018), for example, critiques the reliance on data models that inadequately represent how historical texts generated meaning in their original contexts, while Jo Guldi (2023) warns against naïve assumptions about the relationship between data and the documentary record.

### 2.1 *Workflows and protocols*

In this context, Sarah Oberbichler et al. (2022) make an important distinction between “multidisciplinary collaboration” and “integrated interdisciplinary research” in DH. While the former seeks “to build something in between the disciplines so they share more than just the problem”, the latter involves “people from different scientific fields come together, collaborate, and study a common question or problem with the goal of reaching common conclusions” (Oberbichler et al. 2022: 226). It is worth noting the long-running and often contradictory debates within academia about the specific meaning of terms such as “multidisciplinarity” and “interdisciplinarity”. However, in our context, the focus lies less on the terminology and more on the character and quality of collaborative processes. Oberbichler et al. (2022: 226) emphasise that integrated interdisciplinary research “requires going deeper than just saying something about a phenomenon from different perspectives”. This entails understanding how different fields operate and identifying which approaches can be productively used for problem-solving. They further argue that successful collaboration and communication require recognising and addressing the differences and commonalities between disciplines: “Merging of applications, tasks, and traditions, involving mixed method approaches as well as increased interaction between the disciplines, has been identified as a possible common objective” (Oberbichler et al. 2022: 230).

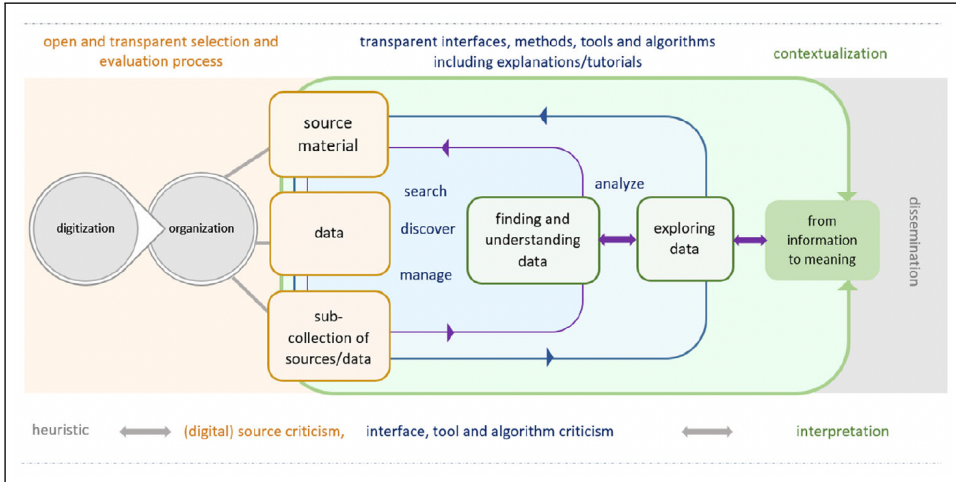


Figure 1: Interdisciplinary digital hermeneutics workflow by Oberbichler et al. (2022: 231).

To achieve an integrated interdisciplinary research process, Oberbichler et al. (2022: 231) propose a workflow (Figure 1) that highlights the importance of iterative collaborative steps between HSS researchers and data analysts. This approach facilitates a gradual deepening of understanding, exploration and analysis of the data, methods and tools in focus. In our own work developing project applications and digital resources at GRIDH, as well as within the frameworks of the research infrastructures Huminfra, InfraVis and Swe-Clarín, we have found that an integrative workflow centred on the data, largely aligned with the model proposed by Oberbichler et al., works well for cultivating dialogue between the involved parties, enabling deeper insights into the data and each other's concerns. We do not necessarily propose this model as an "all-purpose" solution. For instance, one might argue that the category of digitisation should also be included in the iterative steps of the workflow (Figure 1), as this is far from a static or fixed process (Smith & Whearty 2023). Rather, our point is to emphasise that following, or at least considering, some form of proven workflow or protocol is important in the practice of interdisciplinary digital project design. Such workflows provide a collaborative framework that helps establish common ground and a shared understanding of the various research perspectives and tasks involved.

Before proceeding, we however need to address the often overlooked issue of integrative expertise. Oberbichler et al. suggest that their model could serve as a starting point for planning future projects, describing it as

“a concept rather than a concrete architecture” (Oberbichler et al. 2022: 231). While they emphasise protocols and interdisciplinary skills – referred to as an “art of in-betweenness” – these elements are treated as “free-floating” rather than “embodied” and anchored to specific functions or roles within the model. This perspective invites a return to Andrea Hunter’s (2014) concept of bridge people, who, in the context of Oberbichler et al.’s discussion, can be understood as individuals proficient in the art of in-betweenness. From the standpoint of interdisciplinary digital project design, it seems reasonable to argue that involving bridge people in every project could save significant time and energy by facilitating cross-disciplinary communication. However, it is also worth noting the somewhat static nature of the bridge people concept, which implies that these individuals naturally manifest competence in both disciplinary cultures and are capable of unpacking all critical issues. To move beyond this static view, we emphasise the need to approach both the application of protocols and the art of in-betweenness as dynamic processes, as a constant “doing” rather than a fixed “being”.

## 2.2 *Professionalism and judgement*

To better understand the application of protocol and the art of in-betweenness in mediating different disciplinary rationales and facilitating collaboration in DH projects, we can turn briefly to the educational philosophy of renowned scholar Gert Biesta. Biesta critiques the dominant tendency in educational research to instrumentalise teaching as merely the “application of protocols”. He highlights the misconception that protocols and guidelines can tell teachers “what they should do on the assumption that particular forms of research can provide clear and unambiguous knowledge about “what works”” (Biesta 2015: 81). Instead, Biesta emphasises the critical role of judgement, arguing that teachers as individual professionals contribute something essential to the educational situation. He asserts that all desirable education requires instant and spontaneous judgement about “what to do”, both in general terms and in specific situations.

Applied to our context, we argue that interdisciplinary digital project design cannot be fully organised through protocol alone or based on the assumption that bridge people will naturally mediate convergence between the two cultures and facilitate integrative workflows. Instead, the process inherently relies on the enactment of a specific form of professionalism. Drawing on Biesta’s conception of teaching as an act of judgement and the enactment of acquired professionalism, we suggest that the application of protocol and the art of in-betweenness similarly depend on active acts of judgement by individuals. As Biesta reminds us, it is helpful to revisit a

“classic” definition of professionalism as an approach tied to specialised and exclusive knowledge and skills (Freidson 1994). In this light, and akin to Biesta’s observations on education, bridge people are continually “confronted with situations that, in some respects, are always new and hence call for judgement” (Biesta 2015: 81).

We should keep in mind that professionalism is tied to relationships of knowledge-based authority and trust. While authority can, of course, be questioned, particularly in the relationship between professionals and their “clients”, it nevertheless serves as a foundation for justifying the judgements made. In the context of an integrated interdisciplinary research process, such judgments may involve determining the balance between different steps in a workflow, identifying aligned goals and deciding what needs to be done (and not done) at certain stages. The art of in-betweenness, therefore, requires an acknowledgement of the role and responsibilities of the practitioner. As Biesta observes, the essence of professional practices lies not only in addressing the needs of their clients, but also in playing “a crucial role in the definition of those needs” (Biesta 2015: 82). This highlights the active nature of professionalism in shaping the processes and outcomes of interdisciplinary collaboration.

### 3 *In practice – case studies*

We now turn to five brief case studies that illustrate various aspects of what we term interdisciplinary digital project design. These examples focus primarily on the enactment of protocol and judgement during the early stages of different projects, offering different perspectives on the integrative professionalism involved.

#### 3.1 *Identifying research possibilities: Conspiracy soundtracks*

The “Role of Music and Sound in Audiovisually Mediated Conspiracy Theoretical Discourse” project (henceforth referred to as the Conspiracy Soundtracks project) illustrates how GRIDH contributes expertise to the development of research applications. Established in 2015 as the Centre for Digital Humanities (CDH), GRIDH was initially tasked with supporting research project applications at the Faculty of Humanities (later on, GRIDH expanded to a university-wide infrastructure). In this case, Musicology scholar Tobias Pontara (Department of Cultural Sciences, University of Gothenburg), the eventual principal investigator of the project, approached us for input on a project application to study the role of soundtrack elements – sound effects,

music, voice and silence – in conspiracy films distributed online. The “DH dimension” of the project was initially limited to analysing these elements qualitatively to uncover “hidden” discursive patterns.

During the initial meeting about the application between Pontara, a GRIDH research engineer (Victor Wählstrand Skärström) and two of the chapter co-authors (Brodén and Fridlund), we found a potential to extend the project with a quantitative dimension. This involved employing media visualisation techniques to display recurring sound effects and musical patterns within and across films, that is a form of “distant reading” of the material's aural elements. While this approach was merely tentative at the time, our discussion informed the methodological framework of the eventually approved application. Input from Brodén, drawing on a background in film studies and an interest in the works of digital media scholar Lev Manovich, proved useful, as [Manovich's \(2020\)](#) studies on visualising audio-visual data became part of the project's theoretical foundation. This example highlights how GRIDH's contributions extend beyond simply providing technical input for a project application to include translating and refining the client's research ideas into a developed project design.

The Conspiracy Soundtracks project also demonstrates how protocol and judgment frequently intertwine. As indicated by the development process, it is often challenging to distinguish between actions driven by protocol and those requiring judgment. This “impurity” in the process reflects the inherent complexity of interdisciplinary collaboration. For instance, our input on the methodological relevance of Manovich's work raises questions about whether it represents the art of in-betweenness or constitutes domain-specific expertise outside the scope of the specific professionalism discussed in this chapter.

### 3.2 “Big picture” meets domain expertise: INTRAPARTY

For another example of how we collaborate with researchers, this time in the development of digital resources, we turn to “The Benefits of Conflict” (INTRAPARTY) project, a European Research Council (ERC) Starting Grant project in Political Science focusing on ideological factions within European political parties. INTRAPARTY uses, among other things, text data of motions at party congresses in Germany, the Netherlands and the United Kingdom. Initially, the principal investigator Ann-Kristin Kölln (Dept of Political Science, University of Gothenburg) approached GRIDH for potential support in text mining these motions, but our discussions expanded into a broader collaboration.

During our (Brodén, Fridlund and research engineer Johan Åhlfeldt) first meetings with Kölln, it became clear that the text mining aspect of the project raised substantial issues that needed to be addressed, including issues related to digitisation, OCR quality, and annotation. This highlights a recurring aspect of interdisciplinary DH projects: addressing not only how to translate a research question into a DH context but also identifying the broader steps necessary for the research process. In this case, the complexity of the workflow exceeded initial expectations. For instance, our discussions revealed the need for an OCR quality review and the implementation of a separate annotation process, as the required text and metadata could not be easily extracted automatically in a satisfactory way. Recognising the importance of involving technical expertise early on, subsequent meetings focused on database issues. Eventually, GRIDH's role evolved into a contract-based development of two digital resources: a platform for storing and annotating party motions (titled "Factions") and a Python application ("Moxy", Motion Extraction with YAML Configurations) for extracting structured information from datasets for text analysis.

While the technical development of these resources was led by GRIDH research engineers (main developer David Alfter, with frontend contributions by Kristin Åkerlund), we remained involved in coordinating meetings and providing input on various issues. Among other things, having hands-on experience of annotation, we contributed to discussions on document handling and OCR challenges. Additionally, drawing on our work with parliamentary data in the SweTerror project (see below), we were able to provide input on how to approach and to structure the party motion data for immediate and future research needs. Similar to the Conspiracy Soundtracks project, our contributions extended beyond bridging roles to include some domain-specific insights. It is worth noting, however, that the INTRAPARTY project has not been an interdisciplinary endeavor in a more integrated sense, as the resources developed by GRIDH were primarily tools for use by the Political Science team. Nonetheless, this case illustrates how interdisciplinary digital project design encompasses something more than facilitating straightforward collaboration between HSS and technical expertise. The interdisciplinary element can take various forms, encompassing contributions shaped by interdisciplinary experience and, in some cases, aspects of our own research.

### 3.3 *Digitisation as a dialogical process: The inscriptions of Saint Sophia*

In 2023, GRIDH (Westin) was approached about putting together an expedition to Ukraine to digitise (or, in our terminology, "collect data from") the

inscriptions of Saint Sophia Cathedral in Kyiv. The first step involved assembling an interdisciplinary team of domain experts to define specifications for the data collection, drawing on an approach to digitisation and data collection that GRIDH has developed over time. For instance, in 2022, GRIDH led the project “Methods for Digital Diagnosis of Threatened Cultural Heritage”, funded by the Swedish National Heritage Board. Using the digital documentation of remains from the Swedish Antarctica Expedition (1901–1903) on the Antarctic Peninsula as a case study (part of the CHAQ2020 expedition), the project explored the need for cross-disciplinary documentation practices. Through workshops involving experts from Archaeology, Glaciology, Geology, Photography, Architecture, Conservation, Biology, Zoology and Physics, a set of principles and best practices was developed to guide future digitisation efforts (Westin & Almevik 2024).

The project emphasized that terms like “documentation” and “digitisation” can imply an unrealistic sense of completeness, ignoring the inherently selective and interpretive nature of these processes. Technologies and workflows shape what aspects of material are preserved or discarded, influencing future analyses and workflows (Westin 2021). Consequently, the team adopted the term “data collection” to better reflect the selective nature of acquiring digital material (cf. Dahlström 2010). This framing emphasises the need to critically assess what data to collect, the requirements of the disciplines it will serve, and the quality of the resulting data. This critical perspective also informs the workflow proposed by Oberbichler et al. (Figure 1), introducing an analytical feedback loop that connects the initial data collection with the subsequent analytical processes. This iterative approach ensures that the data collected is guided not only by digital methods but also by domain-specific knowledge. For instance, the Antarctic project incorporated expertise from over eight disciplines, each contributing distinct methods and analytical frameworks.

Applying these principles to The Inscriptions of Saint Sophia project, interdisciplinary dialogue helped identify several aspects of the inscriptions that would otherwise have been overlooked. These included spatial context, depth information for inscriptions invisible to the naked eye, capturing entire surfaces rather than isolated inscriptions, and employing layered, overlapping technologies to support diverse workflows of source evaluation. The process evolved through iterative improvements to both the data collection and the tools and interfaces being developed. After an initial, limited data collection in Ukraine, which tested various techniques and technologies, a series of workshops were held in Sweden and Ukraine. These workshops brought together heritage workers and researchers performing the data collection, research engineers developing tools and workflows, and domain

experts. The workshops evaluated the initial results, allowed domain experts to suggest refinements and facilitated collaboration with research engineers to set goals for the tools under development. This iterative process ensured that the collected data better aligned with the needs of the interdisciplinary team while advancing the tools to meet project goals.

#### 3.4 *Interdisciplinary team and research questions: SweTerror*

The “Terrorism in Swedish Politics” project (SweTerror, 2021–2026; [Edlund et al. 2022](#)) originated from a 2020 DIGARV (Digitisation and Accessibility to Cultural Heritage Collections) call for data-rich HSS research using digitised materials from Swedish GLAM institutions. SweTerror brings together an interdisciplinary team from DH, Terrorism Studies, History of Ideas, Linguistics, Political Science, and Speech and Language Technology to conduct a comprehensive mixed-methods study of political discourse on terrorism, using text transcripts and audio recordings of Swedish parliamentary debates (1968–2018). In its assessment, the Swedish Research Council emphasised the project’s “remarkably interdisciplinary team”.<sup>1</sup>

The interdisciplinary design of SweTerror began with core project partners (Brodén, Fridlund and Speech Technology scholar Jens Edlund, Division of Speech, Music and Hearing, KTH Royal Institute of Technology) collaboratively defining the project’s scope in relation to the parliamentary data, partly in line with the data-centered workflow in [Figure 1](#). However, as in other case studies, the enactment of protocol and judgment frequently overlapped. For instance, assembling an interdisciplinary team of HSS and Language Technology researchers required relying on judgment to determine the expertise necessary to address the research questions, rather than following any protocol.

A significant part of the project development involved negotiating research questions through iterative dialogue among team members. These questions emerged as a compromise between the analytical interests of HSS researchers and the technical feasibility of data analysis proposed by Speech and Language Technology researchers. As bridge people, we (Brodén and Fridlund) were able to mediate between these disciplinary perspectives. The aim was to prioritise problem-solving over disciplinary boundaries, creating a collegial atmosphere and building trust in collective decision-making. This approach influenced decisions about trade-offs, the use of domain-specific concepts and the precise framing of research questions.

1 Cited from the review panel’s statement for “Terrorism in Swedish politics (SweTerror): a multimodal study of the configuration of terrorism in parliamentary debates, legislation, and policy networks in Sweden 1968–2018”, Swedish Research Council, ref. nr. 2020-05052.

After the project's approval, further adjustments were required to align collaborative tasks with the evolving research questions. For instance, co-writing conference papers depended on the specific data that analysts could extract at different stages of curation. This necessitated ongoing interdisciplinary dialogue as well as judgments about the level of data refinement needed to meet the methodological standards of various disciplines. In some cases, this also involved recalibrating the research questions to align with the available data, ensuring valid conclusions about parliamentary discourse on terrorism.

### 3.5 *Multidisciplinary structures and computational collaborations: Carvers on the rocks*

The "Tracing the Carvers on the Rocks" project (2021–2026) also originated from the 2020 DIGARV call (see above) and aims to differentiate among carving techniques in Nordic Bronze Age rock art (1700–500 BC). It brings together scholars from Archaeology, Structural Geology, Cultural Heritage experts and DH researchers. The project builds on GRIDH's collaboration with the Swedish Rock Art Research Archive (SHFA), initiated when GRIDH sought to apply AI and image analysis but lacked relevant data. Fortunately, SHFA was keen to start a collaboration and had already begun considering similar questions.

Bronze Age rock art has been studied in relation to ideology, religion, long-distance trade, warfare, landscapes and social organisation, but the techniques used to create the art remain underexplored. The Tracing the Carvers project seeks to deepen our understanding of Bronze Age carving techniques by training AI algorithms to detect and analyse motifs, stylistic variations, superimpositions and the structures of granite rock and grain. The project also focuses on the tools, techniques and bedrock selection employed by the carvers. While the interdisciplinary approach has produced new insights (Liebl et al. 2023), the GRIDH team member (Lindhé) also encountered challenges in fostering integration across disciplines, not least for the two PhD candidates in the project. Questions arose about how to create an environment that accommodates diverse intellectual traditions while maintaining strong disciplinary foundations. Sustaining interdisciplinarity rather than siloed work highlighted the need for dedicated expertise and time to address these issues. To provide a reflexive perspective on these efforts, the project would also have been enhanced by establishing a protocol for workflow-oriented techniques at the outset.

Ideally, DH constitutes an "organic" collaboration between the Humanities and Computer Sciences. Willard McCarthy (2012) asserts that this

meeting place ought to be a “level ground” of reciprocal collaboration. However, in *Tracing the Carvers*, humanities scholars were sometimes limited by the way computational possibilities were presented. This underscored the importance of humanities researchers articulating their needs clearly to influence computational processes effectively. A robust disciplinary foundation is thus essential for advancing arguments to both the data scientist and, by extension, the capacity of the machine. The project also demonstrated the value of individuals with in-betweenness skills to bridge disciplinary divides and foster dialogue within the project team.

Given its broad scope, the project underscores the importance of individuals who can bridge different disciplines *as well as* individuals who have expertise in multiple areas. Moreover, it is imperative to think of “collaboration” in terms of not only joint efforts by individuals from various disciplines, but also between humans and machines in the sense that “an understanding of machines as collaborators in knowledge production, and an awareness of the impacts of materiality on such production, becomes a disciplinary as well as philosophical concern” (Griffin & Hayler 2018: 28). Building on this perspective, the team came to recognise how materials, algorithms and computational tools in a way serve as active “participants” in their workflows (Lindhé et al. 2016).

## 4 Conclusions

In this chapter we have outlined core elements of an interdisciplinary-oriented expertise that warrants greater attention in discussions about developing projects involving multidisciplinary teamwork. We proposed the concept of “interdisciplinary digital project design” to emphasise a professionalism focused on integrating collaboration between HSS researchers and technical experts when creating project applications, digital resources and more that meet the current standards in the field. We argued that this expertise involves adherence to protocols and established procedures, such as those discussed by Oberbichler et al. (2022), to ensure consistency and quality in collaborative efforts. At the same time, as argued by (Biesta 2015), it relies on the exercise of judgment of individuals deciding “what needs to be done and how” in specific contexts.

To illustrate the practice of interdisciplinary digital project design, we discussed five projects involving GRIDH, each showcasing different aspects of integrative professionalism, or the art of in-betweenness, and the interplay between protocol and judgment. The Conspiracy Soundtracks project demonstrated GRIDH’s approach to supporting DH project applications

at the Faculty of Humanities, highlighting the complexity of facilitating interdisciplinary communication beyond a narrow sense. The INTRAPARTY project underscored the importance of translating HSS research questions into DH contexts, seeing the “big picture” and identifying key steps in the research process but also offering insights based on prior work with similar data. In the Saint Sophia project, we emphasized how digitisation serves as a focal point for iterative collaboration between domain experts, researchers, and engineers, ensuring that data collection processes and tools align with disciplinary needs. The SweTerror project illustrated the importance of building trust in judgments, especially when balancing domain-specific interests among team members. Finally, the Tracing the Carvers project highlighted the complexities of maintaining interdisciplinary collaboration and the need to integrate both human and machine agencies into research processes.

While we have addressed some core elements of interdisciplinary digital project design through these examples, the understanding of the professionalism and the practice involved still needs to be further elaborated. For instance, since the notion of bridge people concerns both those who are either fully competent in the two cultures or only bilingual, more elaboration is required on how this relates to the workflows and professionalism discussed in this chapter. We have also used the term “technical expertise” in a rather monolithic way, whereas in practice this category is often inhabited by people with different interdisciplinary experiences and sensibilities. Just as we as Humanities researchers through our interdisciplinary expertise are more or less bilingual in the two cultures, the same applies to data analysts, who can be partly or fully “fluent” in HSS research concerns. Thus, there is, among other things, a need to deepen the discussion about the distribution of the professionalism that we have tried to describe among different individuals and institutions in the field of DH.

Moreover, we need to put further consideration into the notion of “research team”, since technical expertise sometimes contributes to DH projects primarily in the role of “computational facilitators” rather than researchers. The continuous possibility that, for instance, deadlines are not met or technical experts would leave for another position not only makes DH projects vulnerable in general, but also calls for conceiving interdisciplinary teamwork as something potentially less fixed, adding another forward looking factor and element of flexibility to the practice of interdisciplinary digital research design.

Finally, we must address the authority tied to the expertise discussed in this chapter. While our authority as professionals can and should be questioned, it nevertheless provides a basis for justifying judgments. The art of in-betweenness requires affirmation that it not only responds to the needs

of clients, but also helps define those needs. Drawing on [Biesta \(2015: 84\)](#), research design entails an inherent “risk”: clients may reject our expertise, challenging its necessity. Reducing this risk by presenting research design as purely protocol-driven would undermine its essence, reducing it to an instrumental practice. Accepting that our authority may always remain in flux is a risk we must be prepared to embrace.

### *Hands-on Practical Guidelines*

In addition to emphasising the value of further developing the concept of interdisciplinary digital project design, we would like to offer some general reflections on how to approach the associated professionalism in practice, aligning with the broader structure of this handbook. While it is not possible to provide detailed practical guidelines in the same way as other chapters focused on digital tools and resources, we aim to share a few key takeaways from our experience in cultivating the professionalism discussed in this chapter:

- **Cultivate interdisciplinarity:** actively seek to broaden your knowledge and engage with perspectives outside your discipline.
- **Embrace collaboration:** look for opportunities to work with scholars from other fields and disciplines.
- **Step beyond your “academic comfort zone”:** challenge yourself to engage with unfamiliar methodologies, theories, and frameworks.
- **Publish across disciplines:** share your research in venues beyond your primary field to engage with different academic traditions.
- **Foster open and humble dialogue:** approach conversations with scholars from other fields with humility, respect and a willingness to learn.
- **Think beyond technical aspects:** when dealing with digitisation and computation, focus not only on technical processes but also on the research questions the data can support.
- **Adopt a critical professionalism:** consider your bridging role between disciplines as a form of critical, reflective professionalism.
- **Follow protocol, but know when to break it:** adhere to established workflows where appropriate, but remain flexible and adapt when circumstances demand it.

- **Balance trust and skepticism in your judgment:** trust your expertise, but remain open to questioning your assumptions and decisions.
- **Be forward-looking and flexible:** anticipate unexpected challenges, including broken deadlines and deviations from plans and adapt accordingly.
- **Engage with interdisciplinary discourse:** participate in ongoing discussions about interdisciplinary collaboration and mixed methods in DH.

## *Acknowledgements*

This chapter extends a short paper presented at the Huminfra Conference 2024 (HiC 2024; Brodén, Fridlund, et al. 2024). Importantly, it draws on collaborative work conducted with our colleagues at GRIDH and the projects referenced throughout: Conspiracy Soundtracks, INTRAPARTY, The Inscriptions of Saint Sophia, SweTerror, and Tracing the Carvers on the Rocks. The chapter is also informed by our involvement in the national research infrastructures Huminfra (funded by VR, contract nos. 2021-00176, 2023-00171), InfraVis (funded by VR), and Swe-Clarín (funded by VR, contract no. 2017-00626).

## *References*

- Ahnert, Ruth, Emma Griffin, Mia Ridge & Giorgia Tolfo. 2023. *Collaborative historical research in the age of big data*. Cambridge: Cambridge University Press. DOI: [10.1017/9781009175548](https://doi.org/10.1017/9781009175548).
- Berry, David & Anders Fagerjord. 2017. *Digital humanities: Knowledge and critique in a digital age*. London: Polity. DOI: [10.5555/3161393](https://doi.org/10.5555/3161393).
- Biesta, Gert. 2015. What is education for? On good education, teacher judgement and educational professionalism. *European Journal of Education* 50(1). 75–87. DOI: [10.1111/ejed.12109](https://doi.org/10.1111/ejed.12109).
- Bode, Katherine. 2018. *A world of fiction. digital collections and the future of literary history*. Ann Arbor, MI: University of Michigan Press. <https://www.jstor.org/stable/j.ctvdtpj1d>.
- Brodén, Daniel, Mats Fridlund & Cecilia Lindhé. 2024. Designing digitally-driven integrative interdisciplinarity: Professionalism between protocol and judgement. In *Proceedings of the Huminfra conference (HiC2024)*. DOI: [10.3384/ecp205017](https://doi.org/10.3384/ecp205017).

- Brodén, Daniel, Jonas Ingvarsson, Lina Samuelsson & Victor Wählstrand Skärström. 2024. Visualization as defamiliarization: Mixed methods approaches to historical book reviews. *Journal of Computational Literary Studies* 3(1). 1–26. DOI: [10.48694/jcls.3926](https://doi.org/10.48694/jcls.3926).
- Cross, Nigel. 2011. *Design thinking: Understanding how designers think and work*. Oxford: Berg. DOI: [10.5040/9781474293884](https://doi.org/10.5040/9781474293884).
- Dahlström, Mats. 2010. Critical editing and critical digitisation. In Willem Peursen, Ernst Thoutenhoofd & Adriaan Weel (eds.), *Text comparison and digital creativity*, 79–97. Leiden: Brill. DOI: [10.1163/ej.9789004188655.i-328.29](https://doi.org/10.1163/ej.9789004188655.i-328.29).
- Edlund, Jens, Daniel Brodén, Mats Fridlund, Cecilia Lindhé, Leif-Jöran Olsson, Magnus P. Ängsal & Patrik Öhberg. 2022. A multimodal digital humanities study of terrorism in Swedish politics: An interdisciplinary mixed methods project on the configuration of terrorism in parliamentary debates, legislation, and policy networks 1968–2018. In Kohei Arai (ed.), *Intelligent systems and applications*, 435–449. Cham: Springer International Publishing. DOI: [10.1007/978-3-030-82196-8\\_32](https://doi.org/10.1007/978-3-030-82196-8_32).
- Fickers, Andreas, Juliane Tatarinov & Tim van der Heijden. 2022. Digital history and hermeneutics – between theory and practice: An introduction. In *Digital history and hermeneutics: Between theory and practice*. Andreas Fickers & Juliane Tatarinov (eds.). Berlin, Boston: De Gruyter Oldenbourg. 1–20. DOI: [10.1515/9783110723991-001](https://doi.org/10.1515/9783110723991-001).
- Freidson, Eliot. 1994. *Professionalism reborn: Theory, prophecy, and policy*. Chicago: University of Chicago Press.
- Griffin, Gabriele. & Matt Hayler. 2018. Collaboration in digital humanities research: Persisting silences. *Digital Humanities Quarterly* 12(1).
- Guldi, Jo. 2023. *The dangerous art of text mining: A methodology for digital history*. Cambridge: Cambridge University Press. DOI: [10.1017/9781009263016](https://doi.org/10.1017/9781009263016).
- Hunter, Andrea. 2014. Digital humanities as third culture. *MedieKultur* 57. 18–33.
- Ingvarsson, Jonas. 2021. *Towards a digital epistemology: Aesthetics and modes of thought in early modernity and the present age*. Cham: Palgrave Macmillan. DOI: [10.1007/978-3-030-78724-0](https://doi.org/10.1007/978-3-030-78724-0).
- Liebl, Carina, Mark Peternell, Johan Ling, Cecilia Lindhé, Christian Horn, Ellen Meijer & Julian Moyano. 2023. Tracing carvers on the rocks. *Adoranten* 54. 113–125.
- Lindhé, Cecilia, Ann-Catrine Eriksson, Jim Robertsson & Mattis Lindmark. 2016. Curating Mary digitally: Digital methodologies and representations of medieval material culture. In Matt Hayler & Gabriele Griffin (eds.), *Research methods for creating and curating data in the digital humanities*. Edinburgh: Edinburgh University Press. DOI: [10.1515/9781474409667-008](https://doi.org/10.1515/9781474409667-008).

- Manovich, Lev. 2020. *Cultural analytics*. Boston, Mass: MIT Press. DOI: [10.7551/mitpress/11214.001.0001](https://doi.org/10.7551/mitpress/11214.001.0001).
- McCarthy, Willard. 2012. Collaborative research in the humanities. In Marilyn Deegan & Willard McCarthy (eds.), *Collaborative research in the digital humanities*, 1–10. Farnham, Surrey.
- Merriam-Webster. N.d. Design. In *The merriam-webster.com dictionary*. <https://www.merriam-webster.com/dictionary/design>, consulted 9 May 2025.
- Oberbichler, Sarah, Emanuela Boroş, Antoine Doucet, Jani Marjanen, Eva Pfanzelter, Juha Rautiainen, Hannu Toivonen & Mikko Tolonen. 2022. Integrated interdisciplinary workflows for research on historical newspapers: Perspectives from humanities scholars, computer scientists, and librarians. *Journal of the Association for Information Science and Technology* 73(2). 225–239. DOI: [10.1002/asi.24565](https://doi.org/10.1002/asi.24565).
- Rockwell, Geoffrey. & Stéfan Sinclair. 2016. *Hermeneutica: Computer-assisted interpretation in the humanities*. Boston, Mass: MIT Press. DOI: [10.7551/mitpress/9522.001.0001](https://doi.org/10.7551/mitpress/9522.001.0001).
- Rowe, Peter. 1987. *Design thinking*. Cambridge, Mass: MIT Press.
- Shan, Yafeng. 2021. Philosophical foundations of mixed methods research. *Philosophy Compass* 17(1). DOI: [10.1111/phc3.12804](https://doi.org/10.1111/phc3.12804).
- Smith, Astrid. & Bridget. Whearty. 2023. All the work you do not see: Labor, digitizers and the foundations of digital humanities. In Matthew. Gold & Lauren. Klein (eds.), *Debates in the digital humanities*. Minneapolis: University of Minnesota Press.
- Snow, C.P. 1959. *The two cultures and the scientific revolution*. Cambridge University Press.
- Svensson, Patrik. 2012. The digital humanities as a humanities project. *Arts and Humanities in Higher Education* 11(1-2). 42–60. DOI: [10.1177/1474022211427367](https://doi.org/10.1177/1474022211427367).
- Underwood, Ted. 2014. Theorising research practices that we forgot to theorize twenty years ago. *Representations* 127(1). 64–72. DOI: [10.1525/rep.2014.127.1.64](https://doi.org/10.1525/rep.2014.127.1.64).
- Westin, Jonathan. 2021. Arosenius translated: Digitisation as a rephrasing of meaning. *The Journal of Nordic Museology* 13(1). 30–55. DOI: [10.5617/nm.8823](https://doi.org/10.5617/nm.8823).
- Westin, Jonathan & Gunnar Almevik. 2024. Digitising sensitive heritage monuments in Antarctica. *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences XLVIII-2/W4-2024*. 461–467. DOI: [10.5194/isprs-archives-XLVIII-2-W4-2024-461-2024](https://doi.org/10.5194/isprs-archives-XLVIII-2-W4-2024-461-2024).

*Corresponding authors*

Daniel Brodén  
Gothenburg Research  
Infrastructure in Digital  
Humanities  
University of Gothenburg  
[daniel.broden@lir.gu.se](mailto:daniel.broden@lir.gu.se)

Cecilia Lindhé  
Gothenburg Research  
Infrastructure in Digital  
Humanities  
University of Gothenburg  
[cecilia.lindhe@lir.gu.se](mailto:cecilia.lindhe@lir.gu.se)

Mats Fridlund  
Gothenburg Research  
Infrastructure in Digital  
Humanities  
University of Gothenburg  
[mats.fridlund@lir.gu.se](mailto:mats.fridlund@lir.gu.se)

Jonathan Westin  
Gothenburg Research  
Infrastructure in Digital  
Humanities  
University of Gothenburg  
[jonathan.westin@lir.gu.se](mailto:jonathan.westin@lir.gu.se)