Context for the DDI Vision Document

Global digital research infrastructure is changing the way in which research is conducted. This digital environment consists of services operating on high-speed research networks, high performance computing, online research software, and research data. Such services tend to support different activities across the research lifecycle through specific configurations of resources across these four infrastructure components. These services are often characterised as research cloud services, expressing the distributed nature of this infrastructure. Physical location of such resources typically does not matter to the user of the service. However, a variety of stakeholders are required to organise these infrastructure-based services, which is often characterised as an ecosystem because of the interrelatedness and dependency of services with one another. Symbiotic relationships exist among the parts constituting an identifiable research ecosystem. The dynamic nature of this environment enables new opportunities nationally and internationally for organising research services, often involving a multitude of contributing stakeholders.

It is within this context that we are now examining the future develop of DDI and its role in supporting the documentation, management, discovery, preservation, and reuse of observational data on human activity. In particular, we are exploring how DDI-Model can become a significant metadata resource for connecting infrastructure services. Furthermore, we are strategising how best to engage with other stakeholders in this ecosystem to solve common data-related problems. DDI must become an integral resource within digital research infrastructure to remain relevant to the research community.

Information and its management is core to research and it is only through the extensive information technology underlying these operations that the sheer volume of research activity conducted today is even possible. The management and flow of research information within digital research infrastructure adds a new level of complexity with a corresponding set of problems. Common research problems for which DDI is particularly relevant are those related to the information and its flow as it pertains to research data throughout the research process. This aspect of research is DDI’s strong suite. The development of platforms and tools with other stakeholders in digital research infrastructure that capitalise on DDI strengths is seen as essential to moving forward.

Overall, we envision the DDI community embracing a strategic direction to integrate high quality metadata from a lifecycle perspective into the operation of digital research infrastructure platforms, tools, and services. Furthermore, we see the DDI community engaging the wider realm of stakeholders with whom we share common problems in the co-development of infrastructure services that effectively use DDI to inform machine processes and services as well as human activities in research. In particular, we are looking to collaborate in the development of registries, protocols, and interfaces that facilitate the interoperability of DDI products with relevant services to researchers.

Development typically comes in stages; this document discusses an overview of the functionality provided by the integration of DDI products within digital research infrastructure services and connects the dots from instrument development to data collection to data management to archiving to analysis to publication in the ecosystem of digital research infrastructure. The outcomes of these developments will result in DDI doing things that were possible in the past but much more efficiently now; doing things that we wish could be done in the past and are now possible; and doing things that were not anticipated prior to the introductions of these services.