I serve as University Librarian at University College Dublin and have responsibility for UCD Library, which comprises five library facilities in Dublin and Blackrock, including three major heritage collections (UCD Library Special Collections, UCD Archives, and the National Folklore Collection UCD). I have been engaged with research data management in research and library contexts for a long time — actively addressing the key RDM challenges has been an important part of my career.

What I believe has been transformative in the past decade is the recognition that the most intractable challenges facing mankind are those that are characterised by complexity and that cross disciplinary boundaries. The complex dynamics of the natural and the social worlds is the best example, as human activity poses an existential threat globally. It follows, then, that to optimally address such issues, data needs to be openly accessible and it needs to be useable across research communities that have often made use of proprietary or discipline-specific practices and data standards. Interoperability in all its dimensions is critical to enable integration of diverse kinds of data that relate to complex systems.

Open Science emerges from these circumstances and there has been especially significant recent uptake from research funders. Its importance is in its potential to pervasively transform the research landscape. We are seeing this in new requirements from funders with regard to the dissemination of research outcomes, including research data.

We are confronting this in libraries with regard to funder and public policy expectations concerning the openness of the scholarly literature. Research-performing organisations are grappling with Open Science and funder requirements insofar as RDM expertise and technical solutions to support these requirements require new institutional investment. There are other challenges as well, such as research assessment.

Open Science as a collaborative effort

At UCD Library we work closely with UCD Research and IT Services in addressing the emerging needs associated with Open Science. Some relate to policy, and we have contributed to the formation of RDM policy for the university as well as to planning for investment required to maintain our research competitiveness. We have also engaged practically in providing guidance to researchers in our libguides (see https://www.ucd.ie/library/researchers/), as well as RDM-specific training and workshops, some of which are offered in collaboration with IT Services; these are complemented by our higher-level workshops that target post-graduate students, postdocs and faculty. Demand currently outstrips capacity.
The Challenges

In general I feel that the biggest challenge to research universities in particular is the cultural shift that Open Science expects in the conduct of science and in how scientific outcomes are made available, but also in academic and research assessment. It follows that, if science is to advance through increased openness of scientific outcomes, then assessment should place value on the full gamut of research outputs; it should also shift its focus from bibliometric indicators of quality and value to qualitative factors. Universities apply assessment in many contexts, ranging from hiring and promotion to organisational performance and competitiveness; the latter are also reinforced by the international ranking frameworks. A pervasive shift in how we structure assessment represents a deep cultural change, and requires movement toward consensus across many tiers of academic society.

Sharing lessons learnt

I have worked at environments where changing the research culture was driven by the academic leadership, as well as environments where change has been driven from the outside or from the grassroots within the organisation — researchers and the staff who support them. Regardless, cultural change does not happen quickly. Tenacity is needed. I always recall the advice of a past mentor, “You’re talking to a parade,” which here means that messaging about Open Science and its benefits is one that requires frequent repetition to a large, diverse and ever-changing group of stakeholders.

Open Science in Ireland and Europe

I do not see Open Science as being about consolidation, I see it as about a process whereby the widely distributed scientific resources on the web become accessible and useable through the adoption of FAIR principles, with regard to both data and data platforms. Beyond the concept and application of FAIR principles, interoperability depends on protocols that enable interlinking of systems that reside on the web, whether these be Internet Protocol or the APIs deployed on individual distributed systems, as well as frameworks to enable data interchange. Consolidation of data (or metadata) in centralised systems can be a boon to discovery, whether this be on a national basis or, for example, in the European Open Science Cloud (EOSC). What I think would add significantly more value, however, are systems that facilitate data integration: issues of semantic interoperability and data representation represent true barriers to Open Science, and a locus such as EOSC would seem, to me, to be the ideal environment to offer such services. Not surprisingly, then, I believe that interlinking RDM management systems with the EOSC would be the optimal type of “consolidation” in the current European research environment. We contribute by participation in international groups that are deeply engaged with European RDM planning. UCD hosts the Irish Social Science Data Archive (ISSDA), which is a Service Provider in the Consortium of European Social Science Data Archives (CESSDA). CESSDA is an ERIC (European Research Infrastructure Consortium) and is focused on establishing common practices and interoperability among national archives of social science data. It is currently involved in projects to establish interoperability among the various “nodes” in the CESSDA network as well as the EOSC. We participate in working groups fostered by the National Open Research Forum (NORF), the EOSC, and participate in activities sponsored by the Research Data Alliance and the Coalition for Networked Information, among others.

While international engagement is necessary to advancing Open Science, the major work for us at UCD begins at home. UCD is Ireland’s largest university and has a rapidly growing professoriate. Supporting researchers in their efforts to excel in the age of Open Science is really our biggest responsibility, as well as our biggest challenge.