Making It FAIR:

Understanding the lockdown 'digital divide' and the implications for the development of UK digital infrastructures

FINAL REPORT

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1 Introduction

1.1 Overview

Making It FAIR was supported by the Arts and Humanities Research Council's *Towards a National Collection* programme (TaNC) as part of UKRI's call for COVID-19 Urgency projects. The project responded to challenges faced by smaller museums struggling to engage online with audiences during lockdown, and beyond. These problems included low levels of basic digital literacy; poor understanding of audiences; uncertainty over how to transfer real-world interpretive practice to the digital realm; lack of guidance about technical solutions; barriers to future-proofing digital assets; and shoestring budgets.

It seemed to the project team that the difficulties faced by these smaller museums (and many larger ones too) mattered to AHRC's aspirations for the digital humanities, because they would leave a huge amount of potential source material simply unavailable to researchers. In the team's experience, too much museum activity relating to digitised collections was resulting in outputs that did not meet the FAIR data principles (data should be Findable, Accessible, Interoperable and Reusable).

Making it FAIR was framed as a research project wrapped around an action project. Between January and September 2021, the project team worked with a cohort of eight small museums as they navigated the challenges of staying connected with existing audiences, and reaching new audiences, through collections-focussed digital content (the Action Project). The cohort received training, mentoring and technical support to plan and carry out digital storytelling experiments.

Meanwhile, with the stark clarity that comes from considering digital practice in small museums rather than complex Independent Research Organisations (IROs), the Research Project provided a critical evaluation of the cohort's experiences and their implications for infrastructure planning by AHRC and others.

Above all, *Making it FAIR* points to the kind of collaboration between the digital humanities and the museum sector that would be of huge benefit to both, making available to future researchers museum-generated content that would not otherwise meet FAIR principles - or even survive at all.

1.2 Project team

The project team drew on academic researchers, museum sector support organisations and commercial IT practitioners, each bringing different skills and perspectives to bear on both the action and research sides of the work.

> **University of York**
>
> ***PI:*** *Prof Julian D Richards, Director, Archaeology Data Service, Department of Archaeology*

The Archaeology Data Service (ADS) has 25 years experience as a trusted digital repository and holds the Core Trust Seal. ADS aggregates over 1.4 million resources held by key UK heritage organisations of all sizes, archives over 1,800 complex data sets, participates in research and best practice guidance, and is the international leader in archaeological data management. ADS participation was supported by Dr Holly Wright, Research Projects Manager.

Co-I: *Dr Darren Reed, Senior Lecturer, Department of Sociology*

Darren Reed has extensive experience in online technologies and social interaction. He is part of the Science and Technology Studies Unit (SATSU), University of York.

Museum of London Archaeology

Co-I *Dr Sara Perry*

Sara Perry is Director of Research & Engagement at MOLA, a UKRI IRO holding one of the most extensive archives of historical and archaeological data in Britain, deposited in the MOLA Archives and MOL Repository.

Collaborating Organisations

Culture24 (Main Contact: Anra Kennedy)

Culture24 (C24) is an independent charity that helps arts and heritage people to develop the confidence, imagination and skills needed to build meaningful connections with their communities, in the UK and beyond. They support the sector in developing the necessary skills and literacies to use digital as a force for positive change, building resilience and capacity so that organisations and the people working in them can respond to the challenges and opportunities of the next decade.

Collections Trust (Main Contact: Kevin Gosling)

Collections Trust (CT) helps museums capture and share the information that gives objects meaning. Over four decades this sector support organisation has developed standards, resources and outreach used by almost all UK museums, giving it an unrivalled knowledge of the problems they face working with collections data.

The Audience Agency (Main Contact: Anne Torreggiani)

The Audience Agency (TAA) is a UK charity working alongside the cultural sector to provide research, insight and advice on cultural participation. It is funded to deliver “Audience Finder”, a world-first platform sharing visitor data between 1000 cultural organisations, offering analytics and wider engagement insight.

Intelligent Heritage (Main Contact: Adrian Cooper)

Intelligent Heritage (IH) specialises in technical strategy and digital product management for museums and cultural organisations. IH led the recent Data Harvesting pilot project on behalf of Art UK.

Knowledge Integration (Main Contact: Neil Smith)

Knowledge Integration (K-Int) is a long-established team of software development experts whose CIIM middleware is used by many leading UK cultural heritage organisations. K-Int collaborated with CT on the technical feasibility study Mapping Digitised Collections in England commissioned by DCMS in 2019.

1.3 Methodology

Making It FAIR was divided into two different sets of complementary activities: the Action Project and the Research Project. The Action Project focused on helping eight small museums carry out digital storytelling experiments that met objectives they set themselves, while the Research Project reflected on the implications of their experiences for TaNC and longer-term infrastructure planning.

1.3.1 The Action Project

The methodology for this was built around the *Let's Get Real* collaborative action research approach developed by C24 over a number of previous projects, but adapted for delivery online in a time of home-working and social distancing. The hallmarks of this approach are:

- Learning from others - including a variety of voices and perspectives from within and beyond the core team to inform, support, guide and reflect on the challenges at hand.
- Learning by doing - encouraging practical action research and supporting participants to experiment in the context of their everyday work, testing out hunches developed through collaborative discussions.
- Learning together - creating a community of supportive peers with a shared sense of purpose, turning them into invaluable sources of understanding for the wider cultural heritage sector.

1.3.2 The Research Project

As well as the core collaborative action research, the study included a socio-technical challenge: as the participants encountered difficulties along the way, the project team responded where possible and prototyped simple tools that demonstrate how a fully developed infrastructure might support the smallest and least resourced museums.

The methodology concluded with a critical evaluation of the experiences of all involved, reflecting on the implications for TANC and AHRC's longer-term planning of research infrastructure. By considering a fully-rounded picture of the digital problems faced by small museums, the project revealed insights into the scope and nature of the national infrastructure challenge, which may be missed with the current focus on well-resourced IROs.

1.3.3 Impact of remote working

Because the project took place entirely during the COVID-19 pandemic, all participation and interaction was remote. While technically challenging, the online interaction produced agile and responsive interactions. The adaptation of the face-to-face *Let's Get Real* methodology for online collaboration required a clear focus on the affordances of the communication technology, alongside the group dynamics. Similarly, assessment of the consequences and impact of the methodology required a form of reflective interactional analysis.

2 The Action Project

Making It FAIR successfully implemented an Action Project that supported digital storytelling experiments by a cohort of eight small museums. The project team provided a planned programme of training, mentoring and technical support.

2.1 Call for participants

On 1 March 2021, after input from all partners, CT launched a call to recruit around eight small museums as participants in the project. This was disseminated across the museum sector through the communications channels of CT, C24 and TAA and their networks.

> *We are looking for eight small museums to join an exciting new project which explores digital content and storytelling with collections. Our* Making it FAIR *project is funded through AHRC's Towards a National Collection (TaNC) programme and was developed in response to challenges faced by smaller museums struggling to engage online with audiences during lockdown, and beyond.*
>
> *This opportunity offers eight museum places and requires two people (staff and/or volunteers) from each museum to take part over a period of five months, beginning in early April 2021. The group will receive free training, mentoring and technical support to develop digital collections-focussed content, helping them to stay connected with existing audiences and to reach new audiences.*
>
> *With our support, participants will plan, carry out, track and analyse a simple digital content activity.* Making it FAIR *... will give the group a safe and supported space in which to try out new ideas and to develop the skills, approaches, processes and, where relevant, technical solutions they need to create engaging, relevant, fit-for-purpose digital content.*
>
> *The project partners ... bring a range of specialist expertise to help the group explore, develop and realise their digital collections content experiments. We will learn from the museums' challenges and successes as they go, drawing out insights and building prototypes for TaNC and the wider sector.*

The call was specific about the level of commitment that would be asked of participants. 'Small' museums were defined as having an operating budget of less than £250,000 in a normal year:

> *This opportunity is open to small, Accredited, UK-based museums, defined as those with an annual operating budget in a normal (ie pre-Covid) year of up to £250,000. We aim to gather a diverse group that represents a range of collection types and contexts. We are also happy to accept applications from museums that are working towards Accreditation.*
>
> *The programme will suit museums and people who are keen to explore and improve the way they work, with an open and enquiring mindset, and the motivation to learn*

and connect as part of a group. Participants do not need any particular level of digital skill or confidence; we will support them whatever their starting point.

Participants don't need to hold any particular role within the museum as we understand that, for most staff and volunteers in small museums, everyone wears many hats. However, they do need to be people who create digital content around collections within their role, and who have the remit to explore and develop the processes and approaches around that content creation.

Applicants were asked to send a 700-word expression of interest detailing:

- Why the museum would like to take part
- What (if anything) the museum had done to date with digital content
- Any ideas or plans they had for digital collections conten
- Why taking part would fit their current organisational priorities
- Who from the museum would be involved
- Which collections management system the museum used (if any)

2.2 Cohort selection

Fifty-three applications were received, demonstrating the very real need in the sector for this type of support opportunity. A selection panel was convened with representatives from the CT, UoY, MOLA and C24. Aiming to select a cohort containing a representative mix of museums, the panel took into account factors such as: evidence of organisational need and commitment: capacity and alignment with work already planned; geographical spread across the UK and collection type; size of museum and professional/volunteer mix; and the system(s) used (if any) to document the collections.

The following eight museums were selected to participate in the project:

- **Foxton Canal Museum**, Market Harborough, Leicestershire
- **Gawthorpe Textiles Collection**, Burnley, Lancashire
- **Museum of Military Medicine**, Aldershot, Hampshire
- **Museum of Scottish Railways**, Bo'ness, West Lothian
- **Somme Museum**, Newtownards, County Down
- **Spelthorne Museum**, Staines, Surrey
- **Tenby Museum**, Tenby, Pembrokeshire
- **Wiltshire Museum**, Devizes, Wiltshire

2.3 Workshops

C24 and TAA organised five online workshops that formed the core interaction between the participants as a group, and between the participants and the project team. To support and encourage other interaction between all involved, C24 created a shared communication space and resource hub for the project using the online platform Mighty Networks.

The workshops were all delivered online, using Zoom. The first and final workshops involved the cohort and the whole project team, whilst the three others were kept to the cohort and

relevant team members only, according to the topic. This approach (rather than an open, webinar-style programme) was intended to nurture the sense that the workshops were a collegial and safe space, a community of practice in which the participants could be open about challenges and skills gaps.

Each session was a mixture of presentations, activities and discussion, designed by C24 to make best use of the virtual setting and encourage connection with and between the cohort. Content elements of the workshops were recorded and after each session a summary was published on Mighty Networks, with slides, links to the video recordings and further reading.

The workshops covered the following topics:

Workshop 1, programme introduction: 31 March, 2021

- Welcome to all partners and participants.
- Why are we here? Understanding the project aims.
- Who is in the room? Getting to know each other.
- Framing ‘digital’. What digital activity and skills mean in museums.
- Working experimentally and journaling. Exploring the way we’ll work.
- Setting out our stalls. Project team specialisms and how they can support.

Workshop 2, human-centred design and 'making it FAIR': 1 April, 2021

- Intro to the FAIR principles. How they relate to these museums.
- Audience intentions. Why will people care about your collections?
- Intro to human-centred design. Applying it to your museum.
- Creating a persona. Who are you trying to reach and engage?
- Supply/demand and online behaviours. Understanding our audiences.

Workshop 3, digital storytelling: 20 April, 2021

- Ideas and examples of what works and what doesn’t. Why?
- Your museum’s digital storytelling. Mapping assets, ideas, starting points.

Workshop 4, data and measuring success: 6 May, 2021

- Thinking about data. Which data is relevant? Tracking and analysing.
- Evaluating your digital success. How do you know what’s working?

Workshop 5, sharing stories and insights: 15 September, 2021

- Cohort shares their stories, their experimentation and what they’ve learnt.
- Gathering of insights: personal, organisational, inclusion, audience, technical.
- Prototype curation tool. What it is, how it works, how to try it out.

2.4 Experiment design by cohort

As previously noted, a hallmark of the *Let’s Get Real* action research methodology is ‘learning by doing’. Devising and running specific digital storytelling ‘experiments’ provided the opportunity for participants to apply and test the theory covered in the workshops in the

practical context of their own organisations. Across the group they covered a range of collections content, target audiences, digital channels and formats.

Culture24's editorial and digital skills team supported the cohort in developing their digital storytelling skills and approaches. They supported the museums through a process of planning, experimenting, analysing and then iterating digital storytelling around their digital collections content.

The C24 team, with input from other project partners where needed, supported participants to conceive, plan, track and analyse these experiments using agile-based methodologies with a focus on clear objectives, user-centred design, a willingness to create and iterate and a culture of learning from failures. The experiments sought to uncover personal, organisational and audience-focussed opportunities and challenges. The planning and review used the *Let's Get Real* cards-based process, which encourages participants to be focussed and pragmatic as they plan, then open and reflective as they review and iterate.

The cohort's initial experiment cards are provided in full as Appendix 1 to this report. The aims of the experiments, which all developed iteratively under the project team's guidance, are summarised briefly in Table 1 below.

Museum Name	**Wanted to find out, try or test**
Foxton Canal Museum	● In regards to our online / digital presence, we wanted to understand how weak that presence was, where should we start, what necessary skills do we need and how do we engage with those that can teach, guide and both support and inspire us? ● What were our current and potential audiences - was it the 'family unit' that we wished to attract. ● What could we learn from a planned approach in a number of areas? Can we get ideas on what type of content makes an impression and with whom ● What could the figures (analytics) tell us about our content and our audience (and what does that data really mean?).
Gawthorpe Textiles Collection	● To better understand how audiences are engaging with the collection online ● Whether Pinterest was a good tool to use to reach target audiences ● To better understand which aspects of the collection were attracting the most interest so that we can create tailored content.
Museum of Military Medicine	● How we could increase the museums social media output ● What different platforms were open to us ● Who does this well? ● How could we stand out?

Museum of Scottish Railways	● How to successfully generate social media content ● How to maintain active engagement on social media ● About engaging with existing and new audiences digitally ● How to create and implement a digital strategy ● The potential of switching to collections-focused story-telling on social media
Somme Museum	● How to create a legacy that was reusable ● How to regain ownership of the museum's website ● How to create a digital brochure ● How to make our accession register more user friendly ● How best to use digitalisation for social media platforms and make our artifacts more accessible to our audiences
Spelthorne Museum	● Could we develop and use our digital skills to boost museum attendance, visitor experience and membership of the Spelthorne Archaeology and Local History Group? ● Along the way, it also became clear we needed to understand how to interact better with, and distribute digital material to, our local Primary Schools.
Tenby Museum	● How to more effectively use our social media platforms ● How to make the best use of our time and resources ● How to start a better collections based conversation with existing and new audiences
Wiltshire Museum	● Whether our non-specialist audiences found our collections database approachable/engaging ● Whether we can improve this without compromising its usefulness to academic researchers ● How we can best encourage our local audiences to engage with our archaeological collections online ● Whether this would actually lead to more visits to the museum

Table 1: Summary aims of the experiments.

2.5 Cohort mentoring and support

C24, TAA and the CT provided mentoring and other support to help the cohort scope, plan and deliver their experiments.

At the beginning and end of the project we benchmarked two aspects of the cohort's digital confidence, skills and understanding:

- Participant personal digital skills and understanding around several aspects of digital storytelling with collections, including FAIR data principles
- Participant perceptions of the approach of their museum to all aspects of digital, drawn from criteria set out in the Digital Culture Charter

The benchmarking process gave us a measure of project impact but more importantly, an audit of this kind was a vital starting point for conversations between the cohort and project team in support sessions, and was used to inform workshop plans. In addition, we encouraged the cohort to consider using the surveys as catalysts for conversations with the museum colleagues.

The benchmarking was carried out using an online, self-assessment survey. The questions are detailed in the summary results table in section 3.4.1. Participants from the core cohort and project team met together virtually at regular intervals to share progress and problems as they worked through their own content-creation projects.

In addition to the workshops, each museum received:

- **Six one-hour support sessions**, delivered over Zoom at monthly intervals between April and September. These were held with a range of project partners, according to their areas of specialism and the needs of the museum. These tailored sessions allowed us to support the museums in applying what was covered in workshops to their individual settings, and to understand more about those contexts, their challenges and their ways of working with data and digital storytelling.

- **Six half-hour mentoring check-ins**, delivered over Zoom by Anra Kennedy of C24 once a month from April to September. These shorter sessions focussed on ensuring the cohort were getting the specialist support they needed, that they were up to date with project progress and requirements. The check-ins helped us to ensure the cohort was coping with any personal challenges the process threw up and to build their personal digital confidence and skills. This felt particularly vital in a time of pandemic-related pressures.
- **Access to a closed online community space** on the 'Mighty Networks' platform. This enabled them to access resources, browse and post related content and to contact each other and the project team with direct and group messages. This supported the team's approach that the cohort was a community of practice, helping participants to realise the difficulties they were having dealing with data, reaching audiences and keeping up with changes in digital tools and channels were common to all.

2.6 One-to-one technical support

During the course of the Action Project, specific technical support of various kinds was given to those participants as needed. This ranged from retrieving the only copy of a collections database from a twenty-year-old computer and offering advice to those museums that wanted to procure new websites or collections management systems, to step-by-step help in managing social media privacy and data settings.

2.7 Experiment outputs

The level of commitment shown by each of the eight participating museums far exceeded expectations. Despite the challenges each faced dealing with the Covid-19 lockdown and its aftermath, every one of the museums followed through with their experiments and produced digital content along the way. These digital outputs are summarised in Table 2 below.

Museum Name	**Experiment outputs - what each museum did, in their own words**
Foxton Canal Museum	• Re-engaged with our existing Facebook audience (and linked the content to Instagram) • Tried to find new audiences with three key topics, using photos and encouraging comments: 1900s archive photos of the Inclined plane (USP), 1980s photos of the building of the Museum, one set of items in our collection 'lace plates/Measham ware' • We then set out evaluating the response.
Gawthorpe Textiles Collection	• Survey to target audience • Research into Pinterest to scope out a plan • Created a Pinterest account which included claiming content already on the app which had been pinned from our online Gallery • Created 3 sample boards on the themes of “Embroideries close up”, “Bags, Purses and Reticules”, "19th Century Printed Fabrics” • Promoted the boards to our audiences through social media (see Instagram example) and monitored the analytics.
Museum of Military Medicine	• Thought about the stories in our collection • Hired an additional volunteer • Spoke to mentors about ‘story writing’, ‘analytics’ and ‘technology’ • Started a social media serial – to tell a year long story (see (this example from Sept '21).
Museum of Scottish Railways	• Wrote a blog featuring one of our vehicles from the collection which we shared on social media channels • Continued to highlight the collection in social media posts.
Somme Museum	• We up-skilled and now have a new website using WordPress which is accessible and controllable • We have created a brochure with 100 articles/artifacts from the museum collection • Created a digital gallery of photographic images.

Spelthorne Museum	• Started Instagram and a business-style Facebook account, combining them with our existing Twitter account for scheduling via Hootsuite/Facebook – all new to us • We were already using Google for cloud backup and sharing Education Team documents internally, over which we layered a Google Site to provide a web interface for our schools.
Tenby Museum	• We experimented with selecting our content on Facebook, Twitter and Instagram to target specific audiences • We experimented with Instagram Reels, several different formatted podcasts (interviews, collections etc), hashtag and hashtag feeds • We explored analytics to get a better understanding of our audiences • We tried to use a content management system to organise our content.
Wiltshire Museum	• We made two slightly different versions of the same webpage, sharing information on the recent discovery of The Melksham Hoard: one was typical, and the other a bit more 'dynamic' with slightly less specialist text. This was then sent out as part of our monthly newsletter for people's opinions. • We also made two different Facebook posts, which you can find here and on our Facebook page here, both emphasising the local link and the narrative of its discovery, rather than the object itself.

Table 2: Summary of experiment outputs.

2.8 Cohort outcomes

Fundamental to the *Let's Get Real* approach adopted, the Action Project aimed to build the digital skills and confidence of the participants. Evaluating the outcomes of the project for the cohort therefore involved self-assessment by the participants on the organisational and individual learning acquired, as well as the extent to which they had met the aims of their experiments.

The cohort was supported in building effective impact measurements and data collection by TAA.

Several techniques were used to evaluate the outcomes of the Action Project perceived by the participants themselves and their museums:

- Benchmarking, as described in 2.5 above
- Experiment review cards - a simple framework to help participants understand the outcomes of their work
- Presentations in Workshop 5 - each museum presented their experiments and progress to the wider project group

- Final participant survey - this asked participants about their experiments, their learning, next steps and their evaluation of the Action Project's effectiveness from their perspective
- Reflective assessment (described in more detail as part of the Research Project below)

The key learning outcomes reported by the participants are summarised in Table 3 below.

Museum Name	**Organisational and individual learning**
Foxton Canal Museum	• We aren't the only museum, (local, national, or even international) that has a weak online presence. We have many wonderful stories to tell and 'things' to showcase. We feel better placed now to develop this journey in a multitude of ways (bit by bit). • There is no quick solution to effective online/digital presence. As we did with this experiment – try it, look at it, learn from it – adapt, adjust and try again.
Gawthorpe Textiles Collection	• Using Pinterest gave us a useful platform to reach different and broader audiences • We found the age category 25-34 (which is a non-traditional audience for the organisation) was being engaged • We gained a better understanding of where people were accessing content from geographically and were surprised at how international our audience was, with a particular concentration in India • Our target audience was South Asian women in their late 20s-early 30s. The statistics support that we are being successful in providing desirable content for this audience • Practically, we learned how to use image editing software with batch editing technology to streamline the process of uploading images to Pinterest.
Museum of Military Medicine	• What platforms exist and what they do • How to make a social media post (volunteers) • How to use in house tech (phones etc) • Understanding of what the analytics are telling us • What do we consider success? Quantitative vs Qualitative.
Museum of Scottish Railways	• Don't need to produce large numbers of blogs • Don't need a large number of posts • We should focus on quality over quantity • People are interested in what we are up to as staff/volunteers.

Somme Museum	• We learnt to use analytics more to know and target our audience • We learnt to use an array of new digital hardware and software • We learnt to use Buffer to help schedule our social content and better manage our time and resource.
Spelthorne Museum	• Posting material is easy, reaching and engaging with your target audience is not • If you are using Google for backup and sharing, layering a Google Site webpage over this for public access is very easy, here's a link to our Resource Hub. The beauty of this is that any changes to content the team make in Google Drive is immediately visible – no waiting for the web administrator to make changes and 'go live'. A bit of advice – be very careful with the permissions you define in Google Drive; whatever they are will be taken into the web page • At our request, we also had a session with Kevin Gosling to review our digital accessions record keeping, which is a summary of our paper originals. We received much valuable advice on changes to ensure we conform to Spectrum's expected standards.
Tenby Museum	• Time management! • How Instagram works • How to podcast and edit content, use music etc • Use different social media streams to target more specific audiences • Damascus moment – social media not as frightening as we first feared.
Wiltshire Museum	• Our members were split down the middle in terms of which webpage design they preferred: 57% opted for the more basic design, although there were requests for more surrounding information • 85% said that seeing an object online would make them more likely to search it out if visiting the museum physically • The Facebook post emphasising local connections and the discovery itself, rather than the object performed far better in every respect. • We don't need to change the presentation of our online database, as it is what we build around it that will drive wider engagement. • We need to ensure that our collections management database makes generating these kinds of posts quick and easy: WoK project already does this for research results, we now need to add detail for discovery & add in links to archival photos.

Table 3: Summary of key learning outcomes.

2.9 Other Action Project outputs

Culture24 has produced a series of eight case studies detailing the museum's experiments and learning, for an audience of their peers in museums across the UK. The case studies are all published in draft, on Culture24's Digital Pathways resource bank (please note that the drafts are hidden from site navigation and search engines until finalised).

Each museum is in the process of signing off their case study and final versions, including an accompanying contextualising resource by The Audience Agency. They will be promoted and disseminated across the UK museums and heritage sector in December 2021.

View a draft overview of the eight case studies and each museum's case study below:

- Foxton Canal Museum
- Gawthorpe Textiles Collection
- Museum of Military Medicine
- Museum of Scottish Railways
- Somme Museum
- Spelthorne Museum
- Tenby Museum
- Wiltshire Museum

3 The Research Project

Wrapped around *Making it FAIR's* Action Project was a Research Project, observing the progress of the cohort museums as they worked on their experiments, and reflecting on the implications of these experiences for the cultural heritage sector and wider digital humanities.

3.1 Research questions

Above all, there were two broad questions to be addressed:

- What needs to happen to ensure the Findability, Accessibility, Interoperability and Reusability of museums digital content now and long into the future (How do we make it FAIR)?

- How might a future infrastructure for digitised cultural heritage collections close the 'digital divide' between institutions with high capacity (both human and technical) and the rest? (How do we make it fair)?

3.1.1 Museums and the FAIR data principles

As CT and ADS have observed over many years of engagement with museums of all types and sizes, the sector has serious and widespread data-sharing and digital preservation problems. This matters to AHRC, because it means a huge amount of potential source material is not readily available to digital humanities researchers, nor likely to be in future, without changes to the way the museum sector works with data.

These problems are longstanding. In 1997, for example, Kevin Donovan invited the *Museums and the Web* conference to:

> *Consider for a moment the development of an exhibition and accompanying publication. Labels are written, texts are prepared, all sorts of graphic elements are created ... At the end of the day -- after tens or hundreds of thousands of dollars have been spent -- where is all that content? … The exhibition is now gone ... and the content elements created are scattered throughout the organization. Enormous financial and human resources are invested in creating this content, but the results are "one-off", an unmanaged asset that is largely unavailable for reuse. Imagine the value of accumulating this content over several years and being able to repurpose it on-line.*[8]

Nearly a quarter of a century later, no museum known to CT manages content created for exhibitions in the way that Donovan suggests: a way we could now describe as meeting the FAIR principles. Moreover, since the late 1990s, many museums have also created further content for websites that have waxed and waned. Despite the best efforts of the Internet Archive, little of this web content could be described as FAIR data.

[8] https://www.archimuse.com/mw97/speak/donovan.htm (with thanks to Dr Mike Jones for the reference).

Social media presents particular digital preservation challenges. As documented by ADS, it is difficult enough just to archive social media content as published.[9] It is even more difficult to deal with social media content in a way that meets FAIR principles. As most of the experiments devised for the Action Project involved the cohort museums posting new content on social media, this scenario became the focus of the technical challenge within the Research Project.

CT began to pave the way in its 2017 revision of Spectrum, the collection management standard used by all Accredited UK museums, and an increasing number of museums around the world.[10] Spectrum is a procedural standard, which encourages museums to develop collection management procedures appropriate to their own circumstances, provided these meet some minimum requirements. There are 21 procedures, one of which deals with the *Use of collections*, defined as 'managing and recording how your collections, including images and other reproductions of them, are used, whether by you or anyone else.'[11]

In the latest version (Spectrum 5.0), the minimum requirements for the *Use of collections* procedure include two that are relevant to this project:

- 'You note each use of an object or reproduction, and can access this information via the relevant object number or reproduction number...
- You add any knowledge gained and content created while using objects or reproductions to your catalogue.'[12]

Spectrum also defines over 500 'units of information' that cover all the concepts that might need to be recorded for all the procedures and all collection types. (In practice, most museums do not need anywhere near all of these concepts.) As detailed in section 3.3.4 below, several of Spectrum's units of information are useful when considering how to capture text about museum objects and link it back to the relevant object records within a collection management system. In short, recording this information allows chunks of digital text to have useful metadata associated with them in the same way that digital images do routinely, for example.

Spectrum is not a data standard, and the 'units of information' are not specifications for system fields, but in practice they have been used as such by the developers of collection management systems. Those collection management systems that have fields broadly corresponding to all the units of information can apply to be validated by CT as 'Spectrum Compliant', and many of the systems used by UK museums have gone through this process.[13]

Many UK museums therefore have fields in their collections databases ready and waiting to be populated with data and metadata that would make museum digital content re-usable - at least by the museums themselves. However, no museum found by CT's outreach team actually does this in a way that meets the Spectrum requirements.

[9] https://historicengland.org.uk/content/docs/research/social-media-case-study-archiving-social-mediapdf/
[10] https://collectionstrust.org.uk/spectrum/
[11] https://collectionstrust.org.uk/spectrum/procedures/use-of-collections-spectrum-5-0/
[12] Ibid.
[13] https://collectionstrust.org.uk/software/

The problem is that current collection management systems cannot easily cope with content generated by anyone who is not editing directly within the system. Typically, this shuts out many staff and volunteers within museums (such as interpretation and learning teams), let alone external collaborators. Part of the technical challenge was therefore how to mitigate this key limitation within collection management systems which, through user inertia, are likely to remain in widespread use for many years to come, even as the suppliers themselves innovate with new products.

3.1.2 The 'digital divide'

The *Making it FAIR* project was prompted by the stark 'digital divide' across the museum sector – as across society in general[14] - that became apparent during the 2020 Covid-19 lockdown.[15] This divide was not new, but it suddenly acquired a new urgency as museums scrambled to engage with their audiences the only way they could: online. Through their 'sector support' roles, project partners C24, CT and TAA had many, strikingly similar conversations with staff and volunteers from small museums struggling to determine what was best to do.

At the same time, AHRC had embarked the £19m TaNC programme:

> *The programme will take the first steps towards creating a unified virtual 'national collection' by dissolving barriers between different collections – opening UK heritage to the world. By seizing the opportunity presented by new digital technology, it will allow researchers to formulate radically new research questions, increase visitor numbers, dramatically expand and diversify virtual access to our heritage, and bring clear economic, social and health benefits to communities across the UK. The innovation driven by the programme will maintain the UK's world leadership in digital humanities and set global standards in the field.*[16]

As *Making it FAIR* was being conceived, TaNC's eight initial 'foundation' projects were underway and demonstrating, among other things, the potential for connecting object records through linking open data resources,[17] implementing practical applications of the International Image Interoperability Framework (IIIF),[18] and how the importance of persistent identifiers underpins it all.[19] Within the Making it FAIR Research Project, partners considered what would need to happen for these and other technological opportunities to be available to museums such as those making up our cohort.

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[14] Eg Robinson, L., Schulz, J., Khilnani, A., Ono, H., Cotten, S. R., McClain, N., Levine, L., Chen, W., Huang, G., Casilli, A. A., Tubaro, P., Dodel, M., Quan-Haase, A., Ruiu, M. L., Ragnedda, M., Aikat, D., & Tolentino, N. (2020). Digital inequalities in time of pandemic: COVID-19 exposure risk profiles and new forms of vulnerability. First Monday, 25(7). https://doi.org/10.5210/fm.v25i7.10845

[15] Eg https://collectionstrust.org.uk/blog/remotely-possible-access-to-collections-data-during-lockdown/ and https://pro.europeana.eu/post/the-digital-transformation-agenda-and-glams-culture24-findings-and-outcomes

[16] https://www.nationalcollection.org.uk/about

[17] https://www.sciencemuseumgroup.org.uk/project/heritage-connector/

[18] https://tanc-ahrc.github.io/IIIF-TNC/

[19] https://github.com/tanc-ahrc/HeritagePIDs

3.2 Initial assessment of FAIR conformance by the cohort

As noted above, CT and ADS have long sensed that most of the museums they dealt with did not manage their collections data, or content based on it, in a way likely to meet the FAIR data principles. As part of the Research Project, ADS analysed the extent to which the cohort of eight participating museums conformed to each of the specific requirements set out in the principles.

It should be stated from the start that the project team did not expect any of the museum participants to be aware of the FAIR data principles beforehand, nor to be especially interested in them during the project. The principles were introduced during the second workshop, and referred to at various points as the project progressed, but they were mainly of concern to the project team, particularly those working on the technical challenge described later. Nothing in the analysis that follows should be read as criticism of the participating museums, which in this respect are absolutely typical of the sector in general.

3.2.1 Perceived starting point

Each Making it FAIR applicant was asked to provide a brief overview of what they, as a museum, had done to date with digital content. The responses provide a narrative assessment of the perceived starting points with regard to engagement with digital content generally, as described by each of the museums.

Foxton Canal Museum

The Foxton Canal Museum stated ‘Limited to nominal web-site and Facebook use and inside museum digital displays (some interactive)’. Keeping digital museum displays to one side, as the focus of Making it FAIR is on online interaction, the Foxton Canal Museum references that they do have a web presence, and some interaction with a social media platform. Foxton indicates that their collections are only available through visiting the museum, so presumably this means the website has general information about the museum, but does not give digital access to any of the collection which means little or no engagement with the FAIR principles.

Gawthorpe Textiles Collection

Gawthorpe Textiles Collection was already working to both engage with social media and digitise their collections so they could be made available online, but stated that a “large percentage of our collection remains un-digitised or poorly digitised (e.g. old photos scanned in), something which is creating significant challenges for us in terms of being able to collaborate with others, broaden access to the collection or support opportunities for commercial development”. They had already begun to respond to the pandemic by “creating simple photo based “making” videos uploaded to Facebook and YouTube...increased social media posting and released access to downloadable stitch patterns from the collection which had our highest ever reach of over 21,000 people”. Gawthorpe had also introduced online talks via Zoom on the usefulness of viewing textiles using high definition photography, which were already proving very successful, including reaching a larger, international audience.

Gawthorpe undertook an artist-led digital project to gather stories and photos charting the impact of lockdown on textile makers. The Textiles in Lockdown project produced a podcast, e-book and the raw data is now part of their digital collection. This project represented a case study for a more holistic project model they would like to undertake in future. Gawthorpe currently uses Adlib software to manage its collections, which was in the process of being upgraded.

Museum of Military Medicine

The Museum of Military Medicine wanted to develop a greater focus on digital technology to develop existing audiences and engage new audiences, particularly within the local community in meaningful ways. They stated that they "have struggled to make a digital impact and engage with audiences online through a lack of technological skills and experience in producing digital content". Moving from a restricted access, supported regimental collection to a self-sustaining cultural enterprise is a key ambition. A stronger digital offering would help achieve this by improving access and public engagement via online lectures, workshops and family school activities, and therefore result in broader access to funding opportunities. The use of "Nightingale Hospitals" during the pandemic was seen as a potential opportunity to connect meaningfully with audiences.

The museum had some experience of working with digital projects, primarily in collaboration with the local community in Surrey, but as a data provider to other partners, rather than a data disseminator. They were already using Facebook and Twitter for social media outreach, and added Instagram during lockdown, to try to reach younger people. The museum uses MODES and CALM to manage their collections.

Museum of Scottish Railways

The Museum of Scottish Railways has a significant physical collection, centred on being a working heritage railway, with little or no digital provision. They stated that their "digital content is ad-hoc" and largely abandoned after 2019 due to staffing changes. In 2021 social media activity in the form of Twitter, Instagram and Facebook. Collections can be searched online via a website, but this was deemed to be outdated and not fit for purpose for users other than enthusiasts. Manual population of the database has also meant very little content is available.

Inclusion in the Go Industrial Collection[20] shows that some metadata mapping and interoperability is present however, including fields for Date, Object Number, Title, Object Name, Acquisition Number, Method (of acquisition), and Location. There are only about 10 records from the Museum of Scottish Railways in the Go Industrial Collection, but it's a good use-case for expansion. The collections software in use is Adlib.

[20] https://www.goindustrial.co.uk/

Somme Museum

The Somme Museum had created video tours of the museum and a series of short films with staff and volunteers speaking about their favourite artefacts in the collection. These were made available via a YouTube channel for wider access which were then promoted using Facebook, Twitter and Instagram. Digital resources for schools in the form of videos and PDFs were created for schools and community groups who would normally visit the Museum. The Museum was open to exploring more immersive technologies such as virtual and augmented reality. Their collections were managed using MS Access, but they were working to move to MODES.

Spelthorne Museum

Spelthorne Museum was already working to bring their collection online to make their educational services less dependent on physical visits, and to improve their collection management. As a volunteer-run museum the website has basic information but no access to digital collections. The museum operates a paper system for accessions, a summary of which was recently converted from a text-based document to a spreadsheet with over 7,000 entries. Collections management software had not been used. The museum had undertaken some photogrammetry which resulted in 17 3D models hosted via Sketchfab. The models were augmented with supporting materials.

Tenby Museum

Tenby Museum and Art Gallery had already been considering digitising some of their collections and transferring their card catalogue onto a digital collections management system. During lockdown the museum ran an online project entitled #MuseumFromHome via our social media. It included over 280 posts and was very successful. They also created podcasts (which include audio description) and short, homemade films about the collection and the history of the town as well as a couple of short homemade films using the collections.

Wiltshire Museum

The Wiltshire Museum began with the highest level of digital engagement within the Making It FAIR cohort. They undertook a Designation Development Fund project to catalogue the entire collections and put them online, making their Collections page one of the most visited on the museum website. A further ‘Wealth of Knowledge’ project incorporated the results of research into their collections management system. The museum uses MODES and WordPress.

The museum is also working with aggregators such as ArtUK and Watercolour World, FENSCORE and Cornucopia, which mean interoperable metadata mappings are being created. For example, the Wiltshire Museum collection in the ArtUK aggregator includes metadata for Date, Medium, Measurements, Accession number, Acquisition method and Work type, along with tags reflecting the visual content of the item using Tagger, but these are not based on controlled vocabularies.

Wiltshire Museum has digital content about their collections in the form of YouTube videos and 3D models, and communicate using Twitter and Facebook. They are also integrating collections records with Historic Environment Records such as the Stonehenge Barrow Map which links collections information, site records and archive records. The museum also acts as an aggregator for the 'Virtual Wessex Museums Collection' to bring together resources held by the four Wiltshire museums. The museum used MODES for collections management.

3.2.2 Assessment of the baseline FAIRness of the cohort

In Table 4 below, ADS considered the extent to which the practice of the cohort museums - at the start of the project - meets each of the FAIR principle requirements to any extent. The analysis is based on the information provided by the museums about their levels of prior digital experience in their application forms to the Making it FAIR project.

Y = Yes, N = No

FAIR Principle	Foxton Canal Museum	Gawthorpe Textile Collection	Museum of Military Medicine	Museum of Scottish Railways	Spelthorne Museum	Tenby Museum	Somme Museum	Wiltshire Museum
F1. (Meta)data are assigned a globally unique and persistent identifier	N	N	N	N	N	N	N	N
F2. Data are described with rich metadata (defined by R1 below)	N	N	N	N	N	N	N	N
F3. Metadata clearly and explicitly include the identifier of the data they describe	N	N	N	Y	N	N	N	Y
F4. (Meta)data are registered or indexed in a searchable resource	N	N	N	Y	N	N	N	Y

A1. (Meta)data are retrievable by their identifier using a standardised communica-tions protocol	N	N	N	N	N	N	N	N
A1.1 The protocol is open, free, and universally implementable	N	N	N	N	N	N	N	N
A1.2 The protocol allows for an authentication and authorisation procedure, where necessary	N	N	N	N	N	N	N	N
A2. Metadata are accessible, even when the data are no longer available	N	N	N	N	N	N	N	Y
I1. (Meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation	N	N	N	Y	N	N	N	Y
I2. (Meta)data use vocabularies that follow FAIR principles	N	N	N	N	N	N	N	N

I3. (Meta)data include qualified references to other (meta)data	N	N	N	N	N	N	N	N
R1. (Meta)data are richly described with a plurality of accurate and relevant attributes	N	N	N	N	N	N	N	N
R1.1. (Meta)data are released with a clear and accessible data usage licence	N	N	N	Y	N	N	N	N
R1.2. (Meta)data are associated with detailed provenance	N	N	N	Y	N	N	N	Y
R1.3. (Meta)data meet domain relevant community standards	N	N	N	N	N	N	N	N

Table 4: Assessment of the baseline FAIRness of the Making It FAIR cohort.

One of the fundamental questions about the results of this FAIR Conformance review is how applicable they are in an environment not driven by a pandemic lockdown. Was the focus on social media (rather than digitising collections and making them available online) the understandable response to museums under duress, or would the same museums have chosen different priorities under different circumstances?

Going forward, it would be useful to run the project again with a slightly more narrow remit, focussed specifically on small museums wishing to work on bringing their collections online, or making their existing collections more FAIR. As it was, most of the museums were not in a position to engage with the FAIR Principles during Making it FAIR, for entirely understandable reasons. This does illustrate the FAIR challenge for initiatives like Towards a

National Collection: support will be needed for small museums to even begin engaging with the FAIR principles. This may take the form of training and capacity building, but small museums should be allowed to focus on content creation and engagement with their audiences and stakeholders, not creating infrastructure that facilitates FAIR compliance.

3.2.3 End of project FAIR assessment

Where possible, a further assessment has been made of any progress in FAIR compliance, or potential for progress, during the course of the project.

Foxton Canal Museum

The Foxton Canal Museum plans to focus on expanding and refining its ability to use social media, showcase relevant content from 3rd party partners, and to create a website that is independent from the Foxton Inclined Plane Trust. While no progress was made in making their data practices more FAIR, their understanding of the amount of work that has gone into content creation increased, and shows the importance of an infrastructure that can build in the collection of robust metadata into a workflow that ensures this content is preserved and FAIR for the long term. The museum indicated they are managing their collections using MODES so they are presumably collecting some metadata about their physical collections.

Gawthorpe Textiles Collection

While presumably some metadata about physical objects in the collection is being input into Adlib, expanding it to include metadata for associated digital objects (e.g. a high resolution scan of a textile) wasn't the focus of the Gawthorpe experiment, nor was making the digital collections available online.

Museum of Military Medicine

Much like the Gawthorpe Textiles Collection, the Museum of Military Medicine is using collections management software (in this instance MODES and CALM) so presumably is gathering some metadata about their physical collections, but this wasn't the focus of their experiment, nor was making the digital collections available online.

Museum of Scottish Railways

As with the Gawthorpe Textiles Collection and the Museum of Military Medicine, the Museum of Scottish Railways uses collections management software (Adlib) so presumably is gathering some metadata about their physical collections, but this wasn't the focus of their experiment, nor was making the digital collections available online. Even so, based on the small collection aggregated as part of the Go Industrial Collection, it is possible to say that the Museum is engaging in the right direction to make their data more FAIR. The data is CC-BY-NC (FAIR Principle R1.1), but the time it takes to search the Go Industrial website to find this means the compliance is less effective.

Somme Museum

Like the majority of the previous museums, the Spelthorne Museum was focussed on using social media to boost engagement during a period of closure. Creating the spreadsheet-based inventory is a very good first step for moving towards a collections management system, and in turn the creation of searchable metadata that could be used as the basis of an online collection that could work towards FAIRness.

Spelthorne Museum

The Somme Museum set out a very ambitious plan which could make an excellent FAIR case study for their wider collection. Even using a blogging platform like WordPress, it is possible to create searchable interfaces, driven by metadata, attached to potentially interoperable controlled vocabularies which would increase FAIRness. The assessment in Table 4 reflects the baseline FAIRness of the museum, but this could easily change if the FAIR Principles are consulted during the creation of this WordPress site.

Tenby Museum

While the Tenby Museum and Art Gallery had already been thinking about digitising some of their collections and moving to a digital collections management system, they focussed on expanding their use of social media within Making it FAIR.

Wiltshire Museum

The Wiltshire Museum has many elements that show some progress in FAIR Principles (e.g. F3, F4, A2, I1, R1.2), such as mapping metadata to controlled vocabularies that are interoperable via aggregators (FAIR Principle I2), but this was not the focus of their work in the Making it FAIR project, so this is reflection of the FAIRness found on the Collections section of the Wiltshire Museum website, and the resources aggregated within the ArtUK website. Their About page states: *Copyright: Wiltshire Archaeological and Natural History Society*, but doesn't mention licensing for re-use which if remedied, could easily give them additional compliance in R1.1.

At Facebook, FAIR stands for Facebook AI Research, not engagement with the FAIR Principles. There does not appear to be any published literature about engagement with the FAIR Principles by any social media platform, which means going forward there will need to be careful analysis of how/if social media content can be exported, including understanding the type of data formats available, and most importantly, and how to mitigate the limitations of any attached metadata/supplemental metadata provided for use by a data infrastructure capturing social media metadata. As the vast majority of activities shown to be most appropriate for the members of the Making it FAIR cohort were centred on social media, this must be a top priority. That said, for the few museums that chose to engage with online collections as part of Making it FAIR (such as the Somme Museum) there was great potential for ensuring they are creating FAIR resources if given guidance during the process.

3.3 Reflective assessment of action research interactions

The research project included a reflective assessment of the action research interactions by the University of York (Department of Sociology), alongside benchmarking and a self-assessment questionnaire (C24) (3.4). This provided useful insight into online workshop design for use in future, so as to extend the current successful format and contents.

The reflective assessment was premised on a tailored methodology. Participants were encouraged to complete a ‘reflective journal’ and use this as the basis for discussion within their team and with the project members (including the social researcher). The social researcher undertook an ethnographic examination of the training and support through participant observation of workshop interactions, textual analysis of the Mighty Networks discussion forum, and organisation-based semi-structured interviews near the end of the project. Mentoring and technical support interactions were not studied as these were deemed ‘safe-spaces’ that required confidential interactions, although many participants spoke to these interactions in the interviews (see below). Twelve of the sixteen participants (two from each organisation) took part in a semi-structured interview, either separately or in pairs, near the end of the project. In total, eight hours of interview materials were recorded, transcribed and analysed using thematic analysis[21]. What follows is a summary of the four themes identified in the analysis [see Appendix 2 for the full interview report].

3.3.1 Theme 1: Professional and Unpaid Organisation Roles

Roles within museums can be separated by employment, either 'professional' or paid, and unpaid. Both involve varied motivations and responsibilities. For the professional, the number of staff members means that while titles such as 'curator' and 'director' are applied, the actual work practices are varied and complex. Even for those employed to undertake a specific job - such as a research assistant - their day-to-day practices invariably entail activities beyond their job description.

For the volunteer or trustee role the relationship to the museum is personal. Involvement centres around biography and local history. For some, this is an extension of their professional career, for others it is a matter of having lived in proximity to the museum. Key is a personal interest and commitment to the museum. For some professionals, this affinity through association combines with established positions; as the museum professionalised, so they progressed from unpaid to paid roles.

There is a central tension between the two roles. This tension plays out in relation to issues of change, particularly in relation to digitisation and data management. Traditional museum practices, underpinned by long volunteer membership, are sedimented and not easy to change. In relation to 'digitisation' this was expressed as 'reluctance' and 'fear' by professionals. However, there is not a simple distinction between motivated professionals and unmotivated amateurs. For some volunteer staff, issues of data management are important and digitisation is embraced and celebrated. This motivation emerges from the volunteer's interests and background, rather than as a prescribed responsibility.

[21] Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77 101.

Finally, there is a strong sense of a common role in relation to the ongoing development of the small museum. Aside from any formal designation or distinction, all programme participants - unsurprisingly - positioned themselves and their activities in relation to the development of the organisation, whether that be in relation to existing initiatives and funded projects, or strategic development through future planning. Fundamentally, their role was to move the museum forward and benefit the organisation.

3.3.2 Theme 2: Opportunistic Programme Involvement

As mentioned in the previous theme, all participants were motivated towards development. This was oriented to 'the digital' in some fashion. This rather vague definition is used precisely because it was expressed this way in the participant accounts. The digital was primarily attached to the organisation's social media use (See theme 4) as we will see, and hence the programme call was interpreted as offering skills development. This coincided with a 'pause' induced by the Covid-19 pandemic and the call was viewed as an opportunity and, for some, a necessity.

The programme met existing needs in relation to ongoing project initiatives as well as responsive efforts in relation to the pandemic. More broadly, the programme's apparent focus on social media provided a means to address long-standing issues in relation to attitudes towards social media use and the digitisation of collections. Programme involvement became an opportunity to pilot such use and provide evidence for its benefits.

Interestingly, given the actual focus of the FAIR principles on data handling, for a select few furthering such issues as good data management and appropriate accession record content was itself a motivating factor.

Another key aspect of the opportunity afforded by the programme was the fact that it was delivered online. While recognised as a necessary response to Covid, for many participants it was an important feature. The multiple demands of the professional role meant that the programme training could be attended without incurring the financial and time-based burden of a residential course. For some, this amounted to an issue of 'accessibility', in that such training would not have been possible by other means.

3.3.3 Theme 3: Benefits and Consequences

All of the participants were very positive about the programme, noting that they appreciated the structure of the course (workshops, mentoring and support sessions) and were genuinely surprised by the deep level of tailored technical support. They found reassurance in the positive feedback they received about their current efforts and a consistent message about not doing too much. This extended to the use of data analytics where a selective approach was inculcated.

More broadly, there were a number of individual benefits mentioned by the participants. These included the ability to generate conversations within the organisation, with volunteers and board members, for example, about digitisation. The course helped justify such conversations and support changes to role priorities. For one participant this involved a renewed focus on the collection, rather than the more general advertising of events.

The consequences and outcomes included the establishing of connections with other museums and organisations (such as Museum Crush), the potential funding of new roles, and the future development of a 'digital policy'. The majority of participants spoke to the positive consequence of being better able to use social media in a strategic and measured way.

3.3.4 Theme 4: Making FAIR local

The focus for most of the participants was to develop their social media practice around collections and to improve engagement. This necessarily entailed the development of digitisation practices, such as photography, and the practical improvement of accession content and organisation. It was in this sense that the FAIR principles became relevant. The necessity to access and order the collection, for a select few, was premised upon good data management principles, but for the majority this was a secondary concern. Indeed, for some organisations simply moving from a word document to an excel version of the collection database was a revelation. For others, having a Google cloud version of a spreadsheet version that enabled home working was a step forward.

The most referenced term was 'accessibility', but this was applied in context to particular local issues. For example, the accessibility of a collection artefact required knowing where it physically was, so as to make it available for digitisation. For others accessibility was related to personal access to ‘backroom’ collections and a re-evaluation of ‘lost’ items. Finally, accessibility was applied in general to the ability of local audiences to experience the museum's collection. In this sense ‘accessibility’ was used as a catch-all term. None of the participants applied accessibility (or the other principles) to research and national access to their collection.

When prompted, participants consistently positioned the FAIR principles as an 'ideal' and something to work towards, but countered this with accounts of local resourcing difficulties. Put simply they had local issues and local concerns to deal with and the national integration of their collections database was a distant priority.

3.3.5 Summary

Small museums are intensely aware of their resource issues. Low numbers of paid staff juggle competing priorities, while volunteer staff either support the organisation's development, as with participating members of the programme, or are seen as an impediment to change. Each organisation is working within a local context, which may involve reliance on museum groupings for resources such as websites, management boards, and nationally organised priorities and contingencies (The programme included participants from Scotland and Ireland). It may also involve issues of geography, wherein local demographic changes bring their own issues of (volunteer) resourcing and relevance. For many organisations simply staying open and remaining viable during a period of global upheaval was of primary concern. The FAIR Principles, when referenced at all, were selectively adapted and interpreted to reflect practical and contingent concerns.

The first issue is the relationship between the FAIR Principles as described and understood in guidance and policy and their *contextual relevance and meaning for small organisations*. In terms of relevance, it is clear from the reflective assessment of action research interactions that the FAIR Principles are a distant concern. They are either unfamiliar or they are seen as ‘ideals’ to strive towards. Finding ways to enhance the relevance of the FAIR principles for small organisations is therefore a priority. Without this, engagement with the principles are low on the list of practical priorities; many other issues are more important for the running of the organisation.

Any solution must engage with the second issue, the meaning of the Principles to members of the organisations. This is not simply a matter of restating the Principles, rather it is a matter of first understanding *how and in what ways the stated principles are already meaningful*. For example, the issue of ‘accessibility’ was contextualised in terms of collection access for the participants in the first instance. Having an ‘accessible’ collection meant that the members of the organisation could find artefacts in the first instance. Notably, the participants did not use 'findability' to express this need. An accessible artefact was then connected to the contents of the accession records in terms of the usability of the information for storytelling and social media presentation. Again, the terms 'reusable' or 'interoperability', which could just as easily have been used to describe the ability to move information from one system (the database) to another (the social media post) were not used. Clearly, terminology is an issue, but to expect small organisations to change their language misses the point. For members of small organisations, these ‘translations’ express important practical concerns, and hence the priority should be to engage them on their own terms. Only then can the broader meanings of the principles be addressed and extended.

3.4 Benchmarking and Questionnaire

3.4.1 Benchmarking

As described in section 2.5, in our benchmarking of the cohort, at the beginning and the end of the project, we asked the cohort to self-assess their levels of confidence, skills and understanding in two surveys. One focussed on their perception of their organisation’s approach to digital and the other on their personal digital skills and confidence. Participants were asked to score themselves against two sets of statements on a sliding scale from 0 to 10, where 10 denotes full agreement or confidence. It should be noted that, of the 16 participants, 14 completed the surveys at both times of asking and those missing were not the same people each time.

Across both benchmarking surveys, average scores rose across the cohort from June to September. Whilst this is a positive outcome of the project and demonstrates impact, in a sense the numbers are less important than the conversations and realisations that the surveys generated for the participants. Summaries of benchmarking results across the cohort are provided in the tables below.

Answer Choices	Average June 21	Min June 21	Max June 21	Average Sept 21	Min Sept 21	Max Sept 21
1. Our digital activities are all clearly aligned with our organisation's mission and purpose	5.21	2	8	7.21	5	9
2. Understanding people's needs, people within and beyond the organisation, informs every stage of our digital planning and activity	4.64	2	7	7	5	9
3. We understand that digital practice, technologies and culture are always evolving, so digital skills and literacies also keep evolving	7.07	3	10	8.07	5	10
4. We enable and support everyone in our organisation to gain digital skills and the confidence and opportunity to apply and share them, formally and informally	5.71	1	9	7.14	4	10
5. We strive to be accessible and inclusive for everyone, within and beyond the organisation, across all our digital work	6.64	1	9	8	6	10
6. Our digital strategy and practice is always evolving and improving in response to internal and external needs and drivers	5.43	2	9	7.36	4	10
7. We learn from our digital work and decisions, giving ourselves space to try things out and understanding how to measure success	5.71	1	9	7.93	6	10
8. Our decisions around digital activities, data and systems are all driven by ethical and legal considerations	6.57	1	10	7.86	5	10

9. Our decisions around digital activities, data and systems support environmental sustainability	5.29	1	8	6.79	4	10
10. We collaborate and communicate openly, sharing digital insights, good practice, tools, data and content	5.86	1	9	7.57	5	10

Table 5: Organisational approach to digital - statements and whole cohort results summary.

Answer Choices	Average June 21	Min June 21	Max June 21	Average Sept 21	Min Sept 21	Max Sept 21
My grasp of my organisation's mission	8.21	5	10	9.14	8	10
My grasp of my organisation's digital strategy or approach	5.5	1	10	7.86	4	10
My grasp of my organisation's current & target online audience	5.36	2	10	7.5	6	10
My grasp of my organisation's current & potential digital assets	6.57	3	10	7.71	3	10
My understanding of relevant online platforms and channels	5.93	2	9	7.21	4	9
My confidence in trying things out on digital platforms	6.5	2	9	7.29	4	10
My ability to shape online content in different ways	5.57	1	9	7	3	10
My ability to use social media effectively	5.5	2	9	6.86	3	9
My ability to track and analyse success of digital activities	4.14	1	10	6.14	1	10

My understanding of the FAIR data principles	6.29	1	9	7.43	5	10
My ability to work collaboratively	8.29	6	10	9	7	10
My ability to share learning & best practice with colleagues & peers	8.07	5	10	8.57	7	10
My confidence in sharing personal & organisational challenges with others	7.21	2	10	8.5	7	10
My confidence in acquiring & applying new digital skills effectively	7.14	4	10	7.79	5	10
My ability to influence change within my organisation	6.64	1	10	7.57	5	10
My digital confidence overall	6	1	8	7.64	5	10

Table 6: Personal digital skills and confidence - statements and results summary.

3.4.2 Questionnaire

At the end of the project, once the cohort had experienced the final workshop and heard in detail about each other's experiments and experiences, they completed an end of project questionnaire that covered the following elements:

- Final reflections on their digital storytelling experiments, including insights and tips to share with their peers in museums beyond the cohort
- Evaluation of the project processes, resources and approach
- Impact and experience of the project for them personally
- Impact and experience of the project for their museums, organisationally
- Views on the prototype tool and strategic learning from the project

Question	**Mean Score (out of 5)**	**Mode (most popular score)**
Please tell us how useful you found each of the following:		
Workshop sessions	**3.75**	**4**

Support / mentoring sessions	**4.625**	**5**
Working on an experiment	**4.5**	**4.5**
How far do the following statements describe your personal experience?		
The project increased my confidence	**3.875**	**5**
The project increased my skills or know-how	**3.875**	**5**
I developed new ideas I can use	**4.25**	**5**
I benefited from specialist support	**4.625**	**5**
How far do you think the following statements describe your organisation's experience?		
We will continue to develop the ideas and plans explored in our experiment	**4.375**	**5**
We will do more digital story-telling in future	**4.25**	**5**
What we learned is important to our future and strategies	**4.125**	**5**
The project was designed around carrying out a digital storytelling experiment, please rate the following aspects of this process:		
I found the process of working experimentally useful	**4.5**	**5**
It is likely we will do more experiments in future to help us plan or do new things	**3.875**	**5**
During the project, we created a prototype tool to save content (e.g. social media posts) as FAIR data, so it can be re-used in future. How might this affect your organisation?		
I understand what the prototype is and what it does	**3.75**	**4**
I can see how our organisation might use a fully-developed version of the tool if it were available	**4**	**4**

Table 7: 'Highlights' from the rated questionnaire responses.

3.5 Technical challenge: from 'content' to 'FAIR data'

An important aim of the Research Project was to demonstrate technical tools and services that might usefully form part of an eventual sector-wide infrastructure. Once the cohort participants had decided on their experiments, the project team considered the technical and digital infrastructure implications of the chosen activities. As a consequence, the demonstrator development followed a light, user-centred design process responsive to local concerns and needs.

The focus of nearly all the experiments was on making more effective use of social media platforms and blogging opportunities on third-party sites. As already noted, outputs such as social media posts present considerable digital preservation challenges. To take just one example from our cohort, the Somme Museum had put great effort over the years into creating Facebook content that really resonated with their audience. Yet there was no backup: if/when Facebook closes at some point in the future, that content will require a formidable amount of manual retrospective archiving, or be lost.

The project team identified a number of questions arising from the cohort's experiments:

- How might content intended for use on third-party platforms (or anywhere else) be created in a way that allows it to be treated as data conforming to FAIR principles, and meeting the Spectrum standard for *Use of collections*?
- How might such data interact with the social media tools already in widespread use (eg Hootsuite, etc)? And supplement it with additional metadata from the relevant social media platforms (post IDs,etc)?
- How might IIIF make it easier to manage, source and crop images from museums' own collections when creating content for social media/blogs?
- How might agencies such as TAA get access to analytics data about the resulting social media activity, for analysis at scale and benchmarking, as happens with data about in-person audiences?

3.5.1 Scope of the technical challenge

Following the 'framework for change' model described in section 3.3.2 below, the project team set itself the task of building a proof-of-concept digital ecosystem that could:

- Harvest test object records and images from the cohort museums' own databases (most of which were offline) into an online repository. ('**Connect and collect**')
- Allow participants to refer to these online records and images in order to create new content based on them, and to publish this new content to social media channels. ('**Use and enhance**')
- Without any extra effort by the participants, add metadata and save a copy of the new content to the repository as FAIR data. ('**Store and preserve**')

Project timeline and funding constraints necessitated an approach based (wherever possible) on the use of existing tools, services and open-source software. Nonetheless, the result successfully demonstrated the intended workflows.

3.5.2 Digital infrastructure assumptions

For the technical challenge, the project team adopted the 'framework for change' model proposed by CT in 2020-21 with support from the Open Data Institute.[22] This envisages an open, mixed ecosystem of tools and services covering three broad activities.

Activity	Description
Connect and collect	Gathering data from museums and making it available as the raw material for any potential use.
Use and enhance	Finding and selecting raw content and converting it to standard formats for use in research projects or digital publishing.
Store and preserve	Acquiring, storing and preserving all types of digital content and outputs (not just images) including interpretive text, research content etc.

Table 8: 'Framework for change' broad activities.

Using this model as a blueprint, the technical team developed a high level reference architecture, with the following assumptions about the kind of infrastructure being simulated in the demonstration.

Connect and collect

Providing access to collections data is a huge challenge for small museums. The combination of legacy databases, lack of technical resources or digitally skilled teams often means smaller museums cannot publish their own collections online or participate in collaborative projects with other museums.

External, collaborative projects normally put the onus on participants to transform and prepare metadata to a specific format or project-based schema. The lack of technical tools or skills to do this creates a barrier to participation for small museums.

In the assumed digital infrastructure, a 'connect and collect' service would offer a core enabling capability. The service would provide simple tools for smaller museums to deposit raw collections data (and associated digital assets where possible) into a central data repository. There would be no requirement to prepare, transform or enhance existing collections records. The service would simply ingest data as it is.

The 'connect and collect' service would comprise the following core components:

[22] https://collectionstrust.org.uk/tapping-our-collections-potential/getting-it-together/

Component	Description
Data harvesting	A range of data connectors (scripts) to harvest/ingest raw data from collections from key collections management systems (such as Modes or Axiell).
Data storage	A central data repository (or data lake) to store and manage data ingested from collections. Datasets from collections would be uniquely identifiable.
Collection profile	The ability to manage technical details about each collection data set.
Search service	An index of the collection datasets using Elasticsearch or similar to aid discovery of content in the repository.
API	A simple API to facilitate third-party access to content.

Table 9: The core components of the 'connect and collect' service.

The central data repository would need to be hosted and managed by a trusted third party in such a way as to guarantee ongoing access to the raw collections data. This approach would remove or significantly reduce existing barriers to providing data for onward use and/or enhancement, and offer a scalable solution.

Use and enhance

CT's 'framework for change' envisages a broad-based ecosystem of tools and services to help a wide range of users find and work with collections data for whatever end use. For the purposes of the technical challenge, two key 'use and enhance' services were assumed.

Component	Description
'Find and use' service	A simple web-based interface for searching the data repository and downloading content. Managing access to the API to allow authorised users to search, view and download content for integration with other systems.
Content curation tools	Tools to support the enhancement, publishing and sharing of data for a wide range of end uses (eg collection-based websites, crowdsourcing projects, integration with social media tools etc).

Table 10: The two key 'use and enhance' services.

Store and preserve

As already noted, a significant issue with many existing, fragmented (or project-based) approaches to creating and publishing collections-based data is low level data management and the absence of data preservation strategies. Valuable data and content (which was time-consuming and expensive to create and acquire) is all too easily lost or not easily available for use.

The third part of the assumed digital infrastructure embraces a more centralised approach to digital preservation of both raw collection data and enhanced content such as that created by our cohort museums. The approach assumes the central data repository will preserve both raw records and enhanced content according to FAIR data principles on behalf of any museum that lacks the capacity to do so under its own steam.

Component	Description
Digital preservation service	Tools to actively manage ongoing preservation of the raw collections data. Tools to actively manage ongoing preservation of digital assets (such as IIIF[23] images).
Enhanced data integration	Tools to support integration, storage and linking of enhanced content to the original (raw) collection records or datasets in line with the Spectrum *Use of collections* procedure.

Table 11: Tools to store and preserve the data.

3.5.4 Creating the technical demonstrator

Project partners K-Int and IH, together with external contractor The Museum Platform, created a proof-of-concept demonstration based on the assumptions set out above. The narrative description that follows is illustrated in an architecture diagram, along with screenshots showing sample content passing through the system. This is best viewed as a zoomable online document[24] rather than the screenshot shown below.

[23] https://iiif.io/
[24] https://whimsical.com/user-journeys-v2-JvW9RSWad1v2PHHxZEFitV

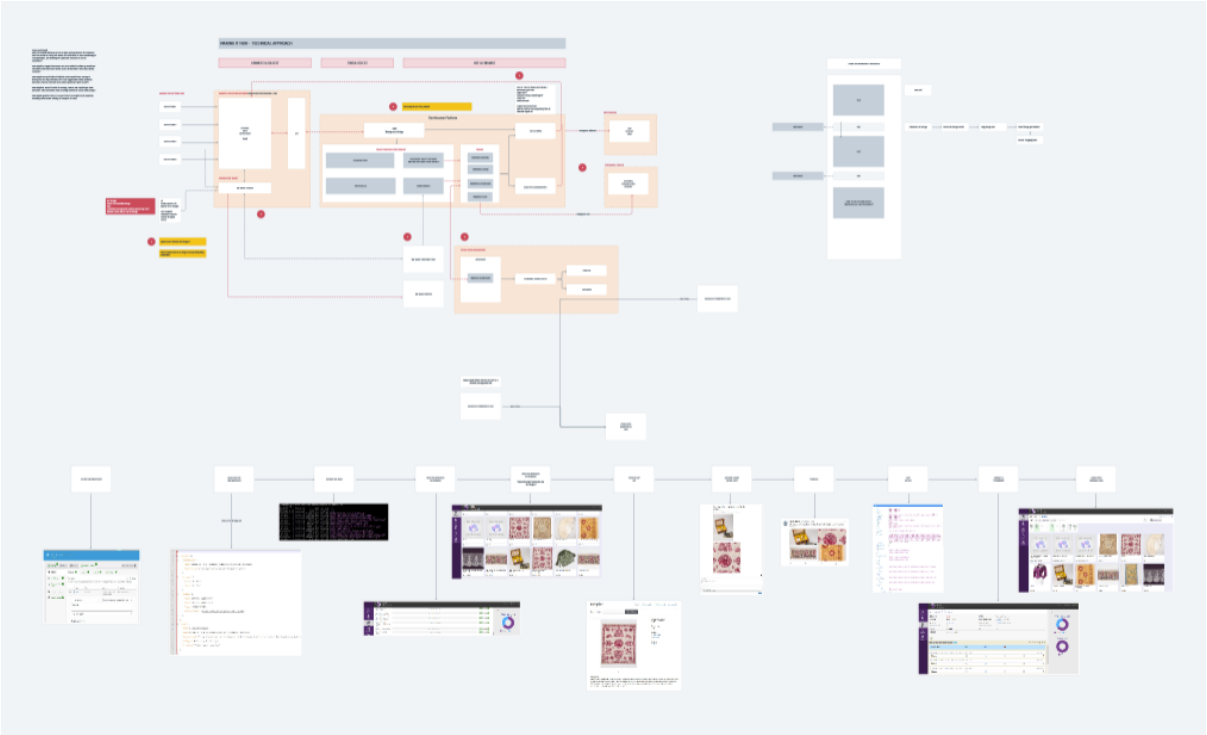

Image 1: Screenshot of the technical demonstrator architecture diagram, a zoomable version of which can be accessed at https://whimsical.com/user-journeys-v2-JvW9RSWad1v2PHHxZEFitV.

Connect and collect

K-Int's CIIM[25] middleware was used to simulate this aspect of the architecture. CIIM is widely used by large museums in the UK, as well as Jisc's Archives Hub[26] as a sector-wide aggregator. CIIM has been used in a number of similar proof-of-concept roles including Art UK's Data Harvesting Pilot project[27] and the technical feasibility study *Mapping digitised collections in England* for DCMS.[28] CIIM was configured to support the key components of the assumed 'connect and collect' service:

Component	Description
Data harvesting	Use of existing CIIM data connectors to ingest data from the cohort collections. As existing CIIM data connector scripts include generic mappings to the Modes and Axiell collection management systems used by some of the cohort museums, it was possible to extend the basic raw data ingest and map records to key elements of the Dublin Core metadata schema[29] (eg, Title, Description, Subject etc).

[25] https://www.k-int.com/products/ciim/
[26] https://archiveshub.jisc.ac.uk/
[27] https://artuk.org/about/data-harvesting
[28] https://www.gov.uk/government/publications/mapping-digitised-collections-in-england
[29] https://dublincore.org/

Data storage	Data ingested from the collections was stored in the CIIM database.
Collection profile	Basic profiles were established to identify the different collections within the CIIM database.
Search service	CIIM includes an Elasticsearch[30] index
API	CIIM has an existing API with a range of endpoints for discovery.

Table 12: Configuration of the CIIM to support the key components of the assumed 'connect and collect' service.

As this was a proof of concept project, rather than establishing pipelines to connect the individual collection databases to CIIM, it was decided that the participating collections should supply a set of collections records (and associated digital images where available) via email.

Each collection dataset was manually uploaded to CIIM and then processed using existing scripts (as described above). The advantage of this approach is that the stored data was more easily understandable for the 'use and enhance' stage.

The ingest approach adopted did deviate somewhat from the concept of a 'pure' data lake where the data is stored as-is. There are pros and cons to each approach (for example, the provisional mappings assume the museum is using the data elements of its collection management system user interface for their original purpose). It is recommended that this be investigated further in future projects.

Where supplied, images were uploaded along with the metadata. This made it possible to link the digital assets to the collection records. Once uploaded, the images were processed and saved as IIIF compatible images.

A key issue for the image processing pipeline is that raw data stored in the collections systems often provides URL or UNC path references to images on an internal network. In an operational environment, the ingest service would need to have access to the image stores to retrieve and process images. A related issue is the need to provide unique image filenames. Strategies for accessing and integrating images will need further investigation.

An aspect of image sharing that was not investigated was the integration of IIIF editing and publishing tools within the workflow. Whilst CIIM can provide a IIIF Image server for all referenced images, the software used for the 'use and enhance' component (The Museum Platform) is not currently capable of taking advantage of

[30] https://www.elastic.co/elastic-stack/

this directly for image manipulation. This is a technical enhancement, though, which would have been easy to implement had more time/ budget been available.

Use and enhance

The Museum Platform (TMP)[31] was selected to demonstrate the service components for the 'use and enhance' elements of the infrastructure. TMP is a cloud-based (Software as a Service) content management tool and built as a set of plugins to WordPress (a popular open-source content management system).

TMP was chosen for the project as it already includes an integration with CIIM for pulling data. Furthermore, most of the cohort participants were already familiar with WordPress.

Component	Description
Find and use service	Integrated CIIM component to search, select and retrieve collections data.
Content curation tool	Combines standard WordPress editor with additional components to integrate collection-based data and images directly into narrative content. TMP enhancements to support integration with social media scheduling tools.

Table 13: Use and enhance tools and services.

The majority of the museums involved in the project were specifically interested in creating social media posts about individual objects or groups of objects (and their associated images). TMP was therefore enhanced to include a basic user interface to create social media posts (and their associated metadata). The plugin WordPress-to-Hootsuite Pro[32] was used to send the newly-created content from TMP to the commonly-used social media scheduling tool Hootsuite[33], from where it was published to three test accounts:

- https://twitter.com/FairMaking (@FairMaking)
- https://www.facebook.com/Making-it-FAIR-project-135913398642250/
- https://www.pinterest.ca/makingitfairproject/

Integration of Instagram was theoretically possible, but not within the timeframe of the project. Future projects could investigate this and the potential of alternative, preferably open-source, tools to achieve the same functionality.

[31] https://themuseumplatform.com
[32] https://www.wpzinc.com/plugins/wordpress-to-hootsuite-pro/
[33] https://www.hootsuite.com/

Store and preserve

Having successfully used the proof of concept tool to demonstrate the ability to create, schedule and publish social media posts linked to collections data, the next stage was to preserve the enhanced content and link back to the original collections data (stored in the data lake). In other words, to show how 'content' might be turned into 'FAIR data' without any extra effort by the person creating the content.

The approach taken for the store and preserve components of the framework was as follows:

Component	Description
Digital preservation service	Using CIIM to ingest the enhanced content and store in the data lake with link to the original (raw) data.
Enhanced data integration	Using the TMP API to pull content and metadata from TMP.

Table 14: Store and preserve components and services.

The TMP API was enhanced to create an endpoint, which included a metadata set that drew on Dublin Core elements and Spectrum 'units of information' relevant to the procedures for *Use of collections*[34] and *Rights management*.[35]

Metadata element	Semantics	Content source	Repeat?	Required?
Dublin Core elements				
Project title (dc.title)	TItle of the overall project or activity	Auto generated from TMP URL	No	Yes
Tag (dc.subject)	Tags relating to the content of the project or activity	Dedicated field on input form	Yes	No
Source (dc.source)	Source project title	Auto generated from TMP URL	No	Yes

[34] https://collectionstrust.org.uk/resource/use-of-collections-suggested-procedure/
[35] https://collectionstrust.org.uk/resource/rights-management-suggested-procedure/

Spectrum: *Use of collections* units of information				
Use reference number	Unique reference to the project (e.g. URL of a project home page)	Auto generated from TMP URL	No	Yes
Text reference number	Reference to individual text entry (e.g a blog post, a story)	Dedicated field on input form	No	Yes
Object number	Reference to an individual item record	Auto generated from TMP URL	Yes	Yes
Reproduction number	Reference to image (e.g. a IIIF URI)	Hyperlink extracted from text	Yes	No
Text	The entire text content (e.g. the blog post or story content)	Main text field on input form	No	Yes
Text author		TMP login info	No	Yes
Text date		TMP login info	No	Yes
Spectrum: *Rights management* units of information				
Rights out reference #	External link to detailed rights info (e.g. the URL of a page on the museum site)	Dedicated field on input form	No	Yes
Rights out note	A predefined set of CC options with a default value (CC0?)	Combo box on input form	No	Yes

Table 15: The Metadata elements of the TMP API.

The next step in the process was to ingest the data generated via the TMP API back into CIIM. CIIM ingest mechanisms already included the ability to schedule polling of an API endpoint to pull back updates. It was also possible to configure the polling schedule. CIIM was configured to connect to the TMP API and import the content along with the associated metadata. The final stage was to link the ingested data to the original (raw) collection record using the object number as the key.

3.5.5 Testing the technical demonstrator

Overall, these components provided an end-to-end proof of concept demonstrator for the proposed architecture. Testing the demonstrator was mostly carried out by the technical members of the project team, but the cohort participants were also invited to try the demonstrator with the test data they supplied, and some did. The demonstrator was presented at the fifth and final workshop of the Action Project, and an illustrated user guide was posted in the Mighty Networks resource hub.

In the final survey of participants, they were asked about the demonstrator:

> *During the project, we created a prototype tool to save content (e.g. social media posts) as FAIR data, so it can be re-used in future. How might this affect your organisation?*

On a scale from 0-5, where 5 indicated 'very much', the mean average response of the 12 participants to the statement ' I understand what the prototype is and what it does' was 3.75 (median and mode both 4).

The mean, median and mode response to the statement 'I can see how our organisation might use a fully-developed version of the tool if it were available' was 4.

Participants added some useful comments to elaborate on these scores, which suggest that they understood the potential for tools like the demonstrator to help them within the context of a wider infrastructure:

> *Many small museums are vulnerable with digital content. They are also vulnerable with people - most are volunteers and over time for many reasons can leave the trust and take their skills with them. A centralised external data storage tool has considerable benefits for a smaller operation like ours.*
>
> *We use the scheduling tool in Facebook which does a good job of scheduling, but does not link posts to any catalogue information.*
>
> *It would be useful for there to be a function to tag master images which then transfers them into any subsequent post or the ability to save frequently used tags.*
>
> *The experiment highlighted the need to have better links between our archives, researcher records, and archaeological object databases. This wider context is vital both for our own purposes, but also for contextualising objects for a wider audience and developing systems that make this easier is a key priority moving forward.*

3.6 Data infrastructure gap analysis

The technical challenge successfully demonstrated how digital activity by small museums with limited capacity might - one day - be transformed into FAIR data. This gap analysis considers what needs to happen in order for the infrastructure modelled by the demonstrator to be scaled up to the extent that a future 'virtual national collection' might include FAIR data

from this project's cohort of eight museums - or many hundreds of similar ones. The insights here, which also draw on the human factors identified through the reflective assessment process identified above, are offered as a 'reality check' to those more familiar with well-resourced IROs, though many problems noted may strike a chord with them too.

3.6.1 Getting the raw material online in the first place

It may seem obvious, but a prerequisite for any 'virtual national collection' is that the content is available online in the first place. As CT is currently documenting digitised collections commissioned by the TaNC programme via an audit, this is not the case even for some very large museum services, especially ones run by hard-pressed local authorities. It was certainly true of most of the cohort museums.

Desired situation	The collections records and associated digitised assets of the cohort museums are available online in ways that meet the FAIR data principles.
Gaps	● Most of the cohort museums did not publish their collections records online. In some cases it was difficult for the participants themselves to access their own museum's data. The database of one was held on the hard drive of a single desktop computer of 1990s vintage. In others, not all volunteers had ready access to the collections database. ● For the technical challenge, the cohort museums were asked to provide some sample object records and a handful of images. Technical support via videocall was needed by most. For some, this was the first time they had ever tried to export records from their collections databases. One museum was unable to provide records due to its management committee's reluctance to share data 'before it's ready'. ● Of the museums that did publish collections records on their own websites, none did so with persistent identifiers, and none was satisfied with the user experience offered. ● None of the participants had much confidence in their museum's storage arrangements for images and other digital assets, which were mostly felt to be *ad hoc* and not well organised. Several struggled with managing multiple versions of images (ie, high-resolution archive copies and lower-resolution versions made for various purposes).

Potential actions	● Implement a scaled-up version of ‘connect and collect’ service outlined in section 3.4, complete with a central service to assign unique, persistent identifiers for collection records where needed and maximise the likelihood of their long-term resolvability. ● Fund support services to help museums set up their systems to export collections records to the ‘connect and collect’ service. ● To address the related, but distinct, problem of digital storage, use funding that is currently spread thinly across the sector to buy *ad hoc* solutions for individual museums to support more robust shared solutions that meet agreed standards for trustworthy digital repositories. The problem is not so much that these repositories do not exist, more that museums like those in the cohort cannot easily make use of them.

Table 16: Gaps and potential actions around content availability online.

3.6.2 From single-use content to FAIR data

As discussed already, in the experience of the project team, museums of all types and sizes are poor at preserving their digital assets. This is in large part because their documentation systems currently find it hard to deal with any content not generated by someone with editing rights to the collections database.

Desired situation	Users can create new content based on these collections records and digitised assets in ways that also conform to FAIR Principles.
Gaps	● No participants had workflows to archive content created for exhibitions, websites, academic research, blogs or social media channels to be reused by them in future. ● When creating social media posts, participants either created the content in a scheduling tool such as Hootsuite, or just wrote it directly within the relevant platform. ● As noted above, the process of creating online content often involved creating new versions of existing images (eg, with a lower resolution than the original, or cropped for a specific format), which compounded the museums’ digital asset management problems. ● Wiltshire Museum, as one of four organisations in the Wessex Museum Partnership, had a particular need to work collaboratively on, for example, a forthcoming Thomas Hardy exhibition, requiring easy access to the databases of the other three partner museums, and the ability to create new content that could be saved to (or accessed by) its own collection management system for future re-use.

Potential actions	• Scale up the technical demonstrator by encouraging a range of 'headless' content management systems to offer integration with the proposed 'connect and collect' service, so that new collections-based content can be saved as FAIR data by the service as a by-product, without any extra effort. Such systems might include a further development of TMP (which one of the cohort museums hopes to do with some other project funding) and the Storytelling platform currently being developed by Terentia on behalf of Microsoft.[36] • Include the use of such tools into sector programmes developing digital literacy and skills, not only to show people how to use them, but to embed the good policies and practice recommended in Spectrum's *Use of collections* procedure.

Table 17: Gaps and potential actions around content reusability.

3.6.3 Spreading the benefits of emerging technologies

As research programmes such as TaNC are demonstrating, emerging technologies such as AI have the potential to transform the way the national and larger university museums work with collections data. As the whole sector faces straightened times ahead post-pandemic, staff and volunteers at the cohort museums and many like them, need all the help they can get to close the digital divide.

Desired situation	The power of emerging technologies used by larger institutions is harnessed to deliver services at scale that ease many data management burdens currently falling on the cohort museums.
Gaps	• Several of the participants commented that their existing catalogue records were unsatisfactory, and also that they had limited capacity to improve the situation. This points to the potential for emerging technologies in machine learning and image tagging, etc, to help such museums enrich their existing records. • The technical challenge demonstrated how IIIF images could be used within the text content created, but none of the cohort museums used digital storage solutions that supported IIIF. Available tools for cropping IIIF images (eg, https://ncsu-libraries.github.io/iiif-crop-tool/) are currently clunky to use. • All the participants reported that they needed help to understand and interpret the analytics data resulting from their experiments. Several said it would be useful to benchmark their online audience data against similar museums.

[36] https://www.terentia.io/storytelling

Potential actions	● Within the open 'use and enhance' ecosystem proposed in section 3.4, the TaNC programme's projects could integrate the tools they are developing with the 'connect and collect' service. For example, the Heritage Connector could be used to automate the development of links to other datasets from the records of the cohort museums, and many others. ● The shared digital storage solutions proposed above could support IIIF, bringing the potential benefits of the tools and services being developed by that community to the cohort museums. The need to make the user experience of these tools as easy as possible for non-technical staff and volunteers would benefit the IIIF community too, which tends to assume a high level of technical knowledge and determination. ● The 'use and enhance' ecosystem could also support the development of centralised support services linked to the core 'connect and collect' service. For example, TAA could analyse and benchmark museums' online audience data in the same way they currently do for physical audience data through the Audiencefinder platform.[37]

Table 18: Gaps and potential actions around emerging technologies.

3.6.4 Building digital skills, literacy and confidence

Many staff and volunteers in museums lack digital confidence, literacy and skills with regard to digital storytelling with collections and FAIR data. Furthermore, this gap often applies across everything digital the museum needs to use, understand, create and manage. This skills gap can be exacerbated by people not knowing what they don't know (as digital things change so quickly) and sometimes having misplaced confidence.

Desired situation	Future investment in digital skills development is optimised, allowing people who work and volunteer in museums to use and understand digital tools and channels with more confidence and purpose.
Gaps	● Leadership in museums, at board and executive level, can often lack the digital literacy and confidence to make effective strategic decisions around digital issues and resourcing. Again, often they are unaware of the gaps in their knowledge which can make them resistant to change and hamper museums' digital transformation. ● Lack of time and resource to develop digital confidence and skills, or at least the perception that they lack this capacity, is a major challenge in many museums. It is

[37] https://original.audiencefinder.org/

	exacerbated by lack of understanding around what *not* to do, or which digital things to stop doing or do differently - precious time, effort and funds could often be better used. ● Future developments in digital infrastructure and data management can only be effective if museum people know what change has happened, understand why and learn how to value and implement those changes in their own contexts - this project has shown that messaging and skills development around best digital practice has not been cutting through to small museums like these. ● The digital divide within and between museums hampers the development of digital skills and confidence, particularly (but not exclusively) in smaller museums and amongst volunteers.
Potential actions	● Provide museum staff and volunteers with targeted, ongoing support in using, managing, creating with and understanding digital tools, channels and processes, from people and resources that are attuned to their particular context. Accompanying all technical, infrastructure or data-related development/funding with a layer of skills-building support like this would help to effect and embed change and encourage uptake of new (and old, effective but unknown or underused) digital solutions. ● Provide digital literacy training and development opportunities for more museum leaders and boards, helping them to make wise strategic digital decisions and to support their teams in implementing digital change. ● Build on the wide range of digital skills support and resources already provided by a range of sector support organisations (and others) across the UK, encouraging uptake and nurturing low cost ways of developing digital skills, for example nurturing existing and new communities of practice either regionally or around areas of practice.

Table 19: Gaps and potential actions around digital skills, literacy and confidence.

4 Conclusions

It is clear from the quantitative and qualitative data gathered from the participants before, during and after the Action Project that they all found it extremely valuable. Many positive outcomes were reported, both at the level of participating individuals and their organisations.

The online delivery meant that smaller organisations were able to take part despite many other competing demands on their capacity. The design of the course, which entailed information workshops, alongside mentoring and tailored technical support was viewed by participants as highly positive. The framing of the development exercises (or experiments) in terms of modest ambitions allowed participants to learn about their organisation in deep ways. For many participants this was the most important aspect of the training. By slowing down and reining in their objectives, they were able to focus far more on the details of the collection and individual resources, and recognise advances and benefits in a more qualitative fashion.

4.1 Project Recommendations

4.1.1 Person-centred development

The Making it FAIR programme benefited from small-scale action based training, premised upon responsive mentoring and support. As such it focused on the lived experience of the people in small organisations. **The first recommendation is that such 'person-centred' rationale be applied to future initiatives.** The focus should be on building 'digital confidence' through a combination of sympathetic understanding of need and tailored skills training, alongside user-centred design initiatives that complement the needs and competencies within small organisations. Such user-centred initiatives could be built on extended ethnographic research and should centre upon a range of elements including the design of training programmes, applications and systems, and policy communication [38].

This person-centred approach builds on the findings of the AHRC-funded, Building the Digital Literacies of UK Museums project (2017-2020), the first phase of University of Leicester's ongoing One by One initiative. The project found that the museum's sector's approach to understanding and building digital skills and literacies need to be person-centred; purposeful and values-led; nuanced and contextualised[39]. Beginning with the person whilst at the same time situating them in the context of their organisation, their networks, the sector and ultimately, wider society, as depicted in the diagram below, is the most effective way of creating lasting change and impact.

[38] For example, Power, C., Lewis, A., Petrie, H., Green, K., Richards, J. D., Eramian, M., Chan, B., Walia, E., Sijaranamual, I., & Rijke, M. D. (2017). Improving Archaeologists' Online Archive Experiences Through User-Centred Design. *Journal on Computing and Cultural Heritage (JOCCH)*, *10*(1), 1–20. https://doi.org/10.1145/2983917

[39] https://one-by-one.uk/2021/08/09/project-1-findings/

The person-centred framing was also adopted by the Digital Culture Charter, the set of principles developed as part of the ACE & NLHF-led work in 2020, in response to commitments made in 2018's Culture is Digital policy paper.

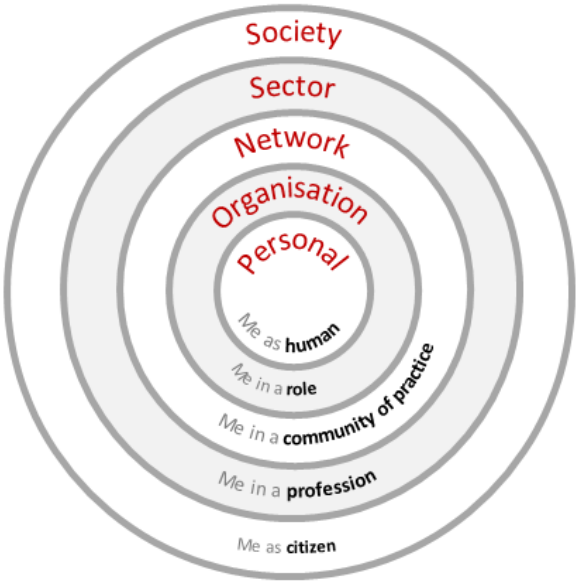

Image 2: The person-centred framing adopted by the Digital Culture Charter.

4.1.2 Capturing content

A key motivation behind this project was the awareness by the research team that over the past few decades large amounts of time, money and effort have gone into a wide range of collections-related activity by museums, researchers, sector bodies and users - often resulting in digital outputs. Yet the processes and tools involved have scarcely moved on over that period; standalone text documents and spreadsheets, etc., are still used for the task in hand, then soon gather digital dust or are lost altogether.

As the technical challenge demonstrated, it is possible to develop tools that mitigate the limitations of museums' own systems, and taking the person-centred approach recommended above, go with the grain of familiar and established workflows. **The second recommendation is that support is given to developing tools that, like the demonstrator, allow content to be captured along with appropriate metadata *at the time of creation and without the person creating it having to do anything extra*.** Once such tools are available, their use should be embedded into digital skills training of the kind exemplified in the Action Project.

Funders such as AHRC and others can help here, and it is in their interests to do so in order to future-proof their investment in content that is currently regarded as ephemeral, if not 'single use'.

4.1.3 Digital preservation

For content to become FAIR data, of course, requires more than simply capturing it as described above. In the technical challenge, it was assumed a digital repository was available to small museums like those in the cohort. While digital repositories that meet agreed standards for trustworthiness exist, as in the case of ADS, they are not routinely used by museums, certainly not at the smaller end of the sector.

The third recommendation is that in the planning of future infrastructure for the digital humanities, the needs of smaller museums should be kept in mind. Once again, this is in the interests of those who would use the content created by these museums. Rather than each of the UK's 1,700 museums making its own *ad hoc* digital storage arrangements, it would be far better to offer shared solutions that not only made life easier for staff and volunteers, but secured the long-term digital preservation of their digital assets as FAIR data.

4.3 Strategic Recommendations

Methodology

As originally conceived, based on pre-pandemic assumptions, the Making it FAIR project partners expected to engage with the cohort around making their collections and curated content more available online. These assumptions were informed by long partner experience in the museums sector which observed the large volume of resources that went into creating this content, which was then lost or left to languish upon completion of a project or exhibition. These assumptions were also based on the partners' long experience of working in digital preservation and dissemination, where the importance of making resources available online informed by the FAIR Principles from the start (rather than as an afterthought) has been recognised as imperative.

The Let's Get Real collaborative action research approach enabled participants to adapt their project locally. Informed by the workshops and the existing priorities of the museums, this approach seemed to lead naturally into interpretative storytelling delivered via media that were perceived to support such storytelling, primarily using social media. Utilising the research findings of Making it FAIR, it may now be possible to design a more realistic programme that enskill participants in FAIR in such a way that embeds the FAIR principles in their everyday collections practice, thereby supporting FAIR use outside of the context of social media production alone. The resulting infrastructure might consequently be widened or adjusted to account for more broad applications. **A Making it FAIR follow-on project is recommended, with tailored tools for FAIR capacity building and direct funding of small museums to allow their dedicated participation.**

Through their experiments, museums in the cohort developed a keener sense of the need to monitor and categorise the impact of their projects on audiences but reported considerable challenges in doing so. There is an opportunity to develop a collective approach to such analysis - the use of common tools, benchmarking and training - as TAA's Audience Finder data-sharing programme does for in-person visitors. **Further exploration of small museums' needs in this regard and potential solutions is recommended.**

The cohort's general focus on production of social media content suggests an interest in keeping in touch with their existing audiences, local communities and volunteers during the pandemic, and engaging with audiences who might not otherwise have been reachable during the pandemic, using 3rd party platforms with perceived extensive reach. During the same period, a minority of other heritage organisations also reported an interest in developing their own social media skills, with 1 in 4 respondents to the 2020 Digital Attitudes and Skills in Heritage (DASH) survey noting that they were in need of help with social media, marketing and collaborative content creation[40]. However, it is unclear how much this interest in digital social engagement is specifically linked to the conditions of the pandemic. **Further consideration of the unique impacts of the pandemic on this research is advised before TaNC assumes this is a priority area for investment in the long-term.**

That the Making it FAIR participants prioritised accessibility of content, including concern for their local audiences' abilities to access their collections, highlights the importance of reflecting on wider matters of digital inclusion and exclusion, including those borne of social media. The social media platforms that formed the focus of much of the content produced through Making it FAIR (Facebook, Twitter, Instagram, Pinterest) ostensibly have tremendous influencing power. However, the organic reach of any given post is generally no more than about 5% of followers, and this small reach is further compounded by the demographic of followers themselves, which varies based on the platform. In 2020 in the UK, 69% of 16-24 year-olds reported use of Facebook versus 90% or more of people aged 55 and above; while 78% of 16-24 year-olds reported use of Instagram versus 32% of 55-64 year-olds and even fewer (18%) of those 65 years or older[41]. These platform-specific age trends are especially notable for newer or more video-intensive social media (YouTube, Snapchat, TikTok), requiring caution and nuance in considering how accessible or not social media content actually is.

Some of the cohort focused on web or blog content, and here again caution is required regarding understanding of reach. The most recent UK-wide data from the arts and heritage sector (from the 2019/20 Taking Part survey) indicate just 28% of people seek out arts content online (via the web or apps) and 30% of people seek out heritage content online[42].

Coupled with the fact that these various media are linked to multiple forms of harm, which have increased during the pandemic[43], there is a need to ensure skills development and investment in infrastructure around social media take into account matters of exclusion and real-world impacts on people. **It is recommended that further research is undertaken into museums' understandings of reach and exclusion linked to online content/media, and to their perceptions of open data.** It is possible that the potentials of FAIR data in terms of their ability to fundamentally increase openness, reach and accessibility of collections are misunderstood, hence organisations opt for forms of online practice that appear more inclusive on the surface, even though in reality their reuse value and positive

[40] Newman, T., Beetham, H. and Church, S. (2020) DASH Survey Results 2020: Describing the digital attitudes, skills and organisational support of people working across the UK heritage sector. Timmus Research and the National Lottery Heritage Fund, https://www.heritagefund.org.uk/sites/default/files/media/attachments/DASH%20report%202020.pdf

[41] Ofcom (2021) Online Nation, 2021 Report, https://www.ofcom.org.uk/__data/assets/pdf_file/0013/220414/online-nation-2021-report.pdf

[42] Taking Part 2019/20: statistical release, https://www.gov.uk/government/statistics/taking-part-201920-statistical-release

[43] Neill, R.D., Blair, C., Best, P. et al. (2021) Media consumption and mental health during COVID-19 lockdown: a UK cross-sectional study across England, Wales, Scotland and Northern Ireland. J Public Health – online first https://doi.org/10.1007/s10389-021-01506-0

impacts on people and institutions are highly constrained. Shifting attitudes about, and enhancing understandings of, open and FAIR data are equally a part of longer-term digital capacity building in cultural organisations (of all sizes), as is investment in technical infrastructure itself.

Implementation

Making it FAIR foregrounded the experiences of small organisations whose needs and challenges are generally not fully understood, and hence not addressed via standard structures and solutions available to larger institutions. Medium-sized organisations (including IROs like MOLA with c.350 staff, funded through multiple revenue streams with varying requirements linked to diverse stakeholders and commercial, charitable and research funders) are aware of, and often confronted with, the same challenges of small organisations, including lack of resourcing, reliance on volunteers for different tasks, need for skills development amongst all members of the organisation, etc. These medium-sized organisations may, in some project-specific cases, have access to more support and infrastructure that occasionally can be leveraged to offer greater provision to under-resourced projects and collaborators. Learnings and insights from the operations of these medium-sized organisations are important to informing the future roll-out of the recommendations from Making it FAIR. **Further consultation with a representative selection of these medium-sized institutions is recommended.**

Equally, the IRO and HEI community has existing digital infrastructure that could be leveraged to support smaller institutions. Additional onus could be placed on HEI-based repositories and IROs to make such infrastructure available to these small organisations through grant funding requirements and assessment criteria, and through greater focus on hub-and-spoke (re)distribution models for UKRI funds and associated resourcing. Such requirements would necessarily require understanding the local needs of small organisations to ensure their potential to fully benefit (e.g., deadlines for these opportunities would need to be staggered and set based on recognising the existing obligations of small organisations; advertising of the opportunities would need to be tailored to the communications habits of these organisations). **An audit of existing IRO digital infrastructure and existing IRO practices of engagement with and redistribution to smaller organisations is suggested.** The current AHRC investment and scoping studies in digital infrastructure for the arts and humanities provides a further opportunity to ensure the needs of smaller organisations are addressed.

In the same vein, the Making it FAIR project partners have proposed here a centralised data repository approach. In light of global efforts to shift towards online decentralisation (Web 3.0), we may also consider the advantages of more distributed models that enable greater flexibility and co-ownership over the infrastructure, and/or infrastructure that is spread out in a fashion that supports region-specific or subject-specific priorities. **Further investigation into distributed digital infrastructure models is also advised.**

5 Acknowledgements

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6 Appendix 1: Experiment Cards

N.B. Names of individuals have been changed to initials by the report authors.

Museum of Scottish Railways

Culture24

Experiment Planner

Goal	Our experiment will test … The success of collections focused blogs on a partner website (Industrial Museums Scotland) to raise awareness of our collection. (This will allow us to see whether we should build capability of blogs into our website)
Action	To test this we will … Write a blog featuring one of our vehicles from the collection – 8f steam locomotive; share this on social media channels
When	We will start this on and complete it by … Research/blog writing – 10 May – 28th May. Post on IMS website – w/c 31st May. Social Media posts relating to blog up till 25th June
Who	This will be done by and with … BP & DM, other volunteers in conjunction with Industrial Museums Scotland
Success	If the experiment succeeds it will … Increase awareness of the locomotive and the collection; increase followers on social media
Evaluation	We will evaluate the experiment by … Collecting social media stats from Museum of Scottish Railways channels and Industrial Museums Scotland; website clicks/views for the blog on the Industrial Museums Scotland website; whether there has been an increase in donations for the restoration of this locomotive
Next steps	One practical next steps are … To develop a more detailed collection focused blog/social media story in the form of episodes

Somme Museum

Culture24

Experiment Planner

Goal	Our experiment will test … The creation of a useable /legacy archive that is not just available on social media but a new stand-alone webpage to host 100 photographs/artefacts relating to the 100th anniversary of the Ulster Memorial Tower. It will be a Digital Catalogue
Action	To test this we will … ● Source on Museum's ACCESS Database 100 photos/artefacts relating to Ulster Tower 100 ● Retrieve from store or displays ● Prepare for scanning or photographing ensuring Collection number is recorded. ● Research and prepare bio for each item ● Scan or photograph ● Training in WordPress to develop page layout
When	We will start this on and complete it by … 31st May 2021 to 2nd August 2021
Who	This will be done by and with … ● CW ● TR ● CM
Success	If the experiment succeeds it will … ● Continue to engage with existing social media followers ● Find new audiences ● Create a reusable archive and legacy ● Assist us in refreshing our website and developing a new revitalised website
Evaluation	We will evaluate the experiment by … ● Reviewing social media comments and interactions ● Tract visits to the website ● Google Analytics ● Continually reviewing our timetable

Next steps	One practical next steps are … ● Set out a timescale to begin research work ● Research WordPress ● Discuss with Mentor

Spelthorne Museum

Culture24

Experiment Planner

Goal	Our experiment will test … We will determine the impact of the museum's social media campaign for advertising the reopening of the museum.
Action	To test this we will … To achieve this we will use Facebook, Twitter and Instagram to coordinate a sequence of messages leading up to opening. We will monitor likes, shares, comments, retweets and have museum visitors complete a simple questionnaire. The questionnaire will necessarily be limited to those times volunteers are on duty so will capture only a small proportion of visitors.
When	We will start this on and complete it by … We will start this investigation on 1st May 2021 and complete it by 1st June.
Who	This will be done by and with … M will be responsible for Instagram messages, J for Twitter and S for Facebook. Graphics will be produced by Mike and text shared/edited to suite the platform.
Success	If the experiment succeeds it will … If the investigation succeeds it will show what impact our social media campaign had on visitor numbers. A valid outcome is none, which would lead us to question how we are using our social media.

Evaluation	We will evaluate the experiment by … We will evaluate this investigation by asking ourselves if we have sufficient data to determine the effect of our campaign on visitor numbers, or whether we need to engage in other ways to survey our visitors and potential visitors.
Next steps	One practical next steps are … Next steps are to prepare all the graphic material, the simple A5 survey form, agree the work distribution with the team, and the minor matter of getting approval from the committee!

Tenby Museum

Culture24

Experiment Planner

Goal	Our experiment will test … If we can create a workable schedule for using the three main social media platforms to help meet our goal of increasing online interaction with our audiences as a first step in a series of experiments.
Action	To test this we will … Create a posting schedule for Facebook, Instagram and Twitter, linking feeds where possible while also focussing content to fit the platform.
When	We will start this on and complete it by … Start 10th May 2021 Assess progress 7th June 2021
Who	This will be done by and with … ML & EC
Success	If the experiment succeeds it will … Increase our number of followers, create greater interaction with the collections, embed social media in our work schedules, make the process less time consuming and more efficient.

Evaluation	We will evaluate the experiment by … Looking at user figures, comments, likes and amount of meaningful interaction. Plus are we keeping on top of the schedule.
Next steps	One practical next steps are … Research themes and national days can tap into, create a schedule of content (based on combination of collection items we think will catch attention and those we would like feedback on), assign scheduled posts to ML & EC to create and upload.

Wiltshire Museum

Culture24

Experiment Planner

Goal	Our experiment will test … How to develop a page layout that encourages exploration of research outputs by an archaeology aware 'Time Team' web user.
Action	To test this we will … ● Develop 2 different page layouts ● Use Mailchimp A/B testing from our standard email list ● Online surveys ● Use Hotjar to review heatmaps of sample pages
When	We will start this on and complete it by … 1. Review MODES information – decide fields to display (May) 2. Wordpress training in developing page layout (in-house) (May) 3. Develop 4 rough ideas in PPT (May) 4. Develop static pages (June) 5. Develop survey methodology (June) 6. Send out survey using Mailchimp / Facebook groups (July) 7. Review (August)
Who	This will be done by and with … 1. WP / LB 2. Led by DD/NT – LB/WP 3. WP / NT 4. WP (support from DD/NT)

	5. NT 6. NT 7. ALL
Success	If the experiment succeeds it will … ● Increase dwell time on the page ● Increased engagement with research content ● Good feedback from surveys
Evaluation	We will evaluate the experiment by … ● Hotjar ● Google Analytics ● Survey (? Impact and Insight)
Next steps	One practical next steps are … ● Discuss with mentor ● Set dates in diaries

Gawthorpe Textiles Collection

Culture24

Experiment Planner

Goal	Our experiment will test … Target audience expectations and needs to test our assumptions and firm up direction of travel for the next steps.
Action	To test this we will … Develop an online survey for circulation to university students and tutors to be responded to by the end of the month.
When	We will start this on and complete it by … 4 May 2021 – 31 May 2021

Who	This will be done by and with … CS and RM, supported by local university contacts.
Success	If the experiment succeeds it will … Give us a clear understanding of what our target audience wants/needs from the collection to inform next steps and firm up planning for subsequent experiments / digital tools to be used.
Evaluation	We will evaluate the experiment by … Analysing the data to ensure that it reached the right people and that the information gained provides us with the level of content required to move to the next stage.
Next steps	One practical next steps are … Finalising survey questions and creating survey online, making contact with University networks to support distribution of the survey.

Museum of Military Medicine

Culture24

Experiment Planner

Goal	Our experiment will test … Digital storytelling – one man's story throughout his RAMC career
Action	To test this we will … Upload documents Look at statistical data (website traffic, social media follows/ likes/ comments / community engagement)
When	We will start this on and complete it by … Start May 2021 August 2021

Who	This will be done by and with … ● RM (Curator) ● DW (Assistant Curator) ● Volunteers – A / R
Success	If the experiment succeeds it will … ● Increase our online presence ● Social Media Follows ● Website traffic ● Community Engagement ● Publicise the museum for its potential relocation ● Staff gaining confidence in the use of social media / website hosting ● Collaborative working amongst staff and volunteers
Evaluation	We will evaluate the experiment by … ● Looking at social media / website analytics ● Have regular meetings with staff and volunteers ● Questionnaires / Surveys
Next steps	One practical next steps are … ● Discuss with the team / Director ● Look into investing /purchasing new technologies – Scanners etc ● In house training of the website and social media platforms

Foxton Canal Museum

Culture24

Experiment Planner

Goal	Our experiment will test … Re-engage with existing Facebook followers (and link to Instagram) and find new audience – on topic there is an element of trial & error
Action	To test this we will … We will have a 3 pronged approach – Photo's from the 1900's Inclined Archive (Our USP), Photo's from the building of the museum in the 1980's (40yrs of Trust history & people) onto the original back wall of the

	Boilerhouse. Photos from sets in our collections (Firstly - Measham ware, Lace Plates etc).
When	We will start this on and complete it by … Have started a 6 week plan where we will post 3 times a week onto Facebook, up to the re-opening of the museum on the 5th June.
Who	This will be done by and with … P, M and A
Success	If the experiment succeeds it will … Increase our presence on Facebook and Instagram. It will generate Museum visits and convert Digital to Physical.
Evaluation	We will evaluate the experiment by … Seeing the change in numbers of activity and by the amount of numbers of engagement.
Next steps	One practical next steps are … I have started a ‘Story behind the Photo’ spreadsheet. All the photo’s going on to Facebook need to have an accurate story behind them, so we can engage with people. At the moment, although archives have been correctly stored they are not easily accessible. We need to advertise specifically for a social media volunteer.

7 Appendix 2: Making it FAIR Interview Write-up

Author: Darren Reed
Date: 21st October, 2021

53 organisations applied to take part in the MiF programme. Participation was limited to 8 organisations, decided by a panel of programme members (both on the training and research side). This number of participants was judged to be the appropriate number given the resources and time available to the project.

In total 12 of the 16 programme participants took part in the interviews, representing all 8 organisations. 4 interviews were carried out with single members, the remaining 4 interviews were carried out with pairs of participants from a single organisation.

Methodology

Semi-structured interviews were carried out with MiF participants. These occurred near the end of the programme before a final workshop. The interview schedule was generated through a two stage process. The first stage involved a period of ethnographic involvement in the planning and delivery of the training contents, and then observation of training interactions and a group-based discussion forum. Zoom-based interactions were recorded and reviewed at the analysis stage. The second stage involved consultation with project partners, based upon the project needs and requirements. The resulting interview schedule was then applied in a conversational manner, with the prior common knowledge and experience of the training providing a grounding for an interaction based upon targeted issues and research concerns.

Citations to participant accounts are either presented in the format "Participant 1" or as numbers in parentheses.

Outcomes and Discussion

Organisation and role

1 - Chairperson of trustees, background in insurance, communication and logistics.
2 - Director
3 - Curator
4 - Assistant Curator, military museum. Does a bit of everything.
5 - Museum Director, industrial museum, sits on various boards, calls herself a 'dogsbody'
6 - Director
7- retired chemistry teacher, now working on database (excel), volunteer
8- retired primary school teacher, now in education team, volunteer
9 - Curator, worked up from volunteer
10 - part time museum assistant
11 - Curator, 16 years, background in archeology
12 - temporary post to update collections management system

(11, spoke to the other members of the team, including a Director and a Projects Manager - with responsibility for social media)

Participation in the organisation was spread across 'professional' roles, from Directors (2, 5), Curators (3, 4, 9, 11) and research staff (12), to unpaid roles such as the Chair of trustees (1) and general volunteers (7, 8). The volunteer role is complex and varied, and entailed personal motivation, skills' and at times a sense of ownership that became a problem for development, according to professional staff members. The second set of unpaid roles were closely connected to the person's biography, where they grew up and their interest in local attractions and the like. So, for one group, their involvement in the organisation was deeply personal, while for the other it was more oriented to professional career, while still maintaining a sense of local commitment.

Professional roles, while maintaining a formal title, were themselves complex and varied, with numerous participants commenting on this general - "do everything" - role. it has to be said that these complex roles were embraced positively, but did license concerns over new initiatives, time management (in relation to training attendance), and ambiguity about responsibilities.

While it is possible to define and detail organisational roles, there is another sense in which 'role' comes into play. That is, the person's role in relation to the development of the organisation and hence relevance to the MiF programme. For example, one participant was employed on a temporary contract as a Research Officer (Participant 12) oriented to collections management system development, another had only a year before lockdown been employed to improve database content (Participant 10).

In addition, any understanding of role was situated within the organisation's ongoing projects (whether funded or not). For example, a number of the participants spoke to how the MiF programme complemented and extended current initiatives (participants 11,5 and 1). Indeed, it could be said that most organisations that took part were actively engaged with ongoing development of their organisation through externally funded projects and training. Some organisations had prior contact with members of the training and support team.

It is notable that when asked about the organisation in which the person worked they often gave an historical account of the organisation, how it came about, its development over time, etc. This helped to situate their role in their organisation's history. This included projects and initiatives directed toward 'digitisation' (the use of interactive screens for example - Participant 5), which solved local growth issues and provided an alternative to material growth and development (Participant 1). These accounts included various personal and skills-based changes over time, and repeatedly, the notion of an ageing, and perhaps conservative, organisation membership (1).

For some, their biography and current professional role combine in the sense that they started as a volunteer and worked their way up to Curator (Participant 9), going through roles such as "Assistant Collections Manager, Assistant Director, Collections Manager and then Curator" (Participant 9). At times this dovetailed with the professionalisation of the organisation itself, as it moved from having only 'honorary' roles to paid roles (Participant 9).

The volunteer membership of the museums have a broad mix of motivations, histories, and backgrounds. Some, as with Participants 7 and 8 are retired teachers and they bring these professional backgrounds into their volunteering work in relation to prior professional skills and interests, such as schools outreach (8), education (7, 8), and the application of systematic data handling (8).

One gets a sense of the way that some museums operate from the description of one participant, who while later noting that there is a management committee who makes the final decision, commented that,

"P7: The volunteers at the museum. I should just add, we tend to do whatever we fancy and there's not really a full time curator theres not a single paid member of staff (so its) all by mutual agreement and consent that everything gets done.

R: Is is always by mutual agreement and consent?

P7: Mostly it is. Mostly it is. But you kind of. You kind of, decide, I think I could do this and it would be a good idea, and you put that forward and someone says, yeah, that would be a great idea, let's do that" (Participant 7).

This sometimes, as in this case, results in initiatives oriented to data management and the collections database, but not always. [quote available if needed - search 'robust way']

Relations between volunteers (and paid staff) can sometimes be at odds, leading one participant to comment,

"So it's been it's been very interesting, at times frustrating because a lot of the people who are part of the teams are a little bit reluctant to move forward digitally, and um it almost has to be in at their own terms" (Participant 8). You find these tensions, which involve individuals pulling in different directions.

In addition with medium sized small museum teams, where participants had differentiated roles (that is, clearly defined and distinctive), the MiF programme was not necessarily a good fit. For one organisation, that it became focused on social media was a problem because it was a different member of staff who would normally deal with this.

Programme Involvement motivation

A number of organisations relied on existing contacts within their organisation for receiving the project call (1, 12). For some, maintaining an eye on funding opportunities was part of their daily practice (4, 6). One mentioned a direct connection to other projects in the Towards a National Collection programme (12). For others, reviewing the call was an incidental conversation that required immediate action (1). Participant 1, for example, was told about the programme by a member of their local county council with whom they were talking about another project idea in relation to social isolation and COVID. Similarly, Participant 2 was working on a project with a university, and a member of that team forwarded the call. For Participant 1 this information came the day before the deadline for applications. It is a mark of the way that small museums work, that responses were rapid and quickly put together in this kind of way. Grasping opportunities, as they arise, is very much a working practice.

The most important motivator for application was the perceived need of organisations to develop the digital skills that the programme seem to offer (7). Broadly understood as relating to strategic social media use and digital storytelling, participant 1 said, "if we if we listed our top five things that we needed to address, that would be right near the top of that".

The perceived need to improve digital skills for the organisation as a whole was neatly encapsulated by participant 7,

"There was another half to the application we made, actually, which which came out of discussions with other members of the committee as to why we might want to do this course and what we hope to achieve. And what they were wanting us to think about was how to use

our I.T. and digital skills and y'no, reaching out into the community to make more people aware of the existence of our museum and for them to come and visit us" (Participant 7).

This notion of the pre-specified tasks and ambitions of an organisation, and how 'the digital' figured within them, was related to an ordered list of priorities in which the digital normally lost out. Put simply, many organisation said it was important but that they didn't have the time and resources to move it up their priority list.

The call also spoke to personal skills development, wherein individuals felt that there was a general requirement to improve their social media skillset (4). It was not simply a skills gap, however. A number of organisation members noted the perceived confidence boost that might accrue from participation in the programme, with Participant 2 noting the 'reassurance' that they felt the programme would bring, alongside access to expertise and a similar community of need. Another noted that it seemed that other museums were doing things, and they didn't want to be the only organisation not doing something in response to covid through social media (5).

One added motivator was the situation in which the museums found themselves in relation to the pandemic and lockdown. As one participant put it succinctly, "covid has actually given me opportunities that I wouldn't have had in a normal day to day environment" (6). This was due to time-pressure and the numerous responsibilities that this person had. For others, covid resulted in a shifting of priorities,

"During lockdown, we we really started using digital a lot more than what we have before because we always put things off thinking, oh, we can't afford to do it, it's going to take too much time, it's not our core business. And obviously with lockdown our priorities shifted overnight and we found that we were getting such a good response to the work that we were doing digitally that actually we needed the grounding to know how to do it better." (Participant 2).

For others it was more a redirection of effort than a wholesale change in priorities. A number of organisations were already preparing for more digitisation through earlier efforts to photograph exhibits. The pandemic then helped speed up these ongoing changes (4). Participant 4, positioned the lockdown as an opportunity to further ongoing initiatives oriented to digitisation,

"even before covid, there was lots of discussions, about, We understood there was a need to kind of drive our online presence. So. And I think covid gave us the opportunity to actually think, well, now we've got the time to actually make that a reality. So it afforded us that opportunity to do something" (Participant 4).

Visibility of artefacts was a generic motivation, but for some this was expressed in terms of the backroom collection which was not 'on display'. Social media has the benefit of putting on display publicly artefacts and collection elements that would not normally be seen (9).

"And a lot of it that we concentrated on is not actually on display either, so we're actually using our, you know, for want of a better word our reserve collection, to a more positive way as just being stuck in a cupboard" (Participant 9).

In this sense, visibility was oriented to the collection, rather than the organisation's relationship to a prospective audience. The digital enabled the expanding of the visible collection when physical space is at a premium.

For some participants the embracing of social media and visibility through communication technology more broadly had a local strategic imperative. Here, it was the organisation's relationships with parent and sibling organisations, institutions, etc. that drove them towards development. This was contextualised in term of the visibility and vitality of the participating museum in relation to a society or larger museum group (5), as well as the need to be audience-oriented as opposed to other strategic objectives (4).

Another motivation for prioritising social media was to change the internal dynamics of an institution as well as the 'thinking' of that organisation. Participant 5, who's organisation was comprised of a small six person team and 450 volunteer base noted that,

"the volunteers that we have of an older age range. They don't really engage in social media. And so another thing is how do you bring them along on that journey?"

But also, sometimes the make up of the collection itself lent weight to certain priorities over others. An organisation known for its large industrial vehicles, for example, tended to relegate smaller artefacts to inattention. Social media enabled a shift in mentality in the sense of scale so as to reprioritise single small artefacts and their individual histories (5).

For some, hands-on interaction with artefacts was central to their role and so an interesting side-effect of the pandemic was the releasing of time due to lack of physical access to the collection (2, 4). This also enabled a general pause in activity that resulted in reflection on issues and practices more generally (3).

For others, especially in the volunteer group, the programme provided an opportunity to further their own personal priorities and interests. Participant 7, after noting their own motivations towards improving the organisation's data management procedures, received the call through a tweet, and then, 'thought fantastic, that would be spot on. It's what we need to be doing y'no is thinking about and organising the way we, work digitally, much more robustly, and er carefully" (7). Similarly, Participant 8, who's interests were in relation to school liaison and resourcing, found that undertaking this activity during lockdown (which itself intensified need) was made difficult by poor accession records that either did not contain the physical location of an artefact, or was incorrect. Here, then, the apparent objectives of the MiF programme served a very practical purpose related to day to day practices and requirements. In addition, this issue was conceptualised as one of 'accessibility' by Participant 8, which perhaps contrasts with the broader understanding of accessible data in the programme definition - or at least functions at a more mundane and local level.

What is interesting here is the potential for different understandings and readings of the programme call. For some it spoke to social media communication skills, for others the learning of 'rigorous' (7) data management procedures and their benefits for individually motivated activities (8). For others there was the opportunity to develop quite sophisticated relationships between database contents and website materials, such that the relationship had the double focus of improving both (11).

Also, perhaps, a common underlying aspiration was to move social media use towards a more professional strategic purpose, rather than being on ad hoc manner based on perceived social pressure.

Online delivery

While it was a sub-question about participation motivation, the issue of online delivery and the structure of the resulting training course became an important topic for many participants. While it was initially positioned as a potentially negative by the researcher, it was routinely turned to a positive by the participants.

At worst, there were pro's and cons to online delivery, which meant that some social aspects were missing, while at the same time those social aspects did not become distracting (1). As one participant put it, there were less opportunities for networking,

"part of me did miss the, I know there was a few breakout opportunities, but I think, you know, part of the fun of going to a lot of these events is the ability to network" (Participant 4).

This extended to the positive aspects of sitting with another person and then recognising and accepting difference (6).

One positive benefit was 'safety'. Firstly in the medical sense of avoiding potential illness, but also the sense that people felt able to take part without concern or shyness (1).

The positives of online delivery were presented as a time and cost benefit by Participant 2,

"Digital has been good for me. I mean, the big issue sometimes is if you're doing a nationally focussed course, if if you've got to travel long distances to get to places that can be that can put you off in terms of the cost and the time element. Whereas if you can just jump in and in and out of zoom meetings, you could work around it. And it's a lot more accessible and obviously there's no cost associated with that" (Participant 2).

This sense of the 'overhead' a training course typical entails led one participant to explain the range of issues their organisation was facing, including involved in a large project and building works. Putting in stark terms, the person commented, "It has meant that I've been able to, we've been able to attend these meetings, whereas I think we probably would have had to bow out gracefully. Kind of like day two, because we couldn't have taken on that commitment" (Participant 5). This was echoed by another pair of participants who would have thought twice about an in person course (9, 10). Participant 12, who 'is trying to do a full time job on part time hours' compared online programme participation to a history of attending meetings in person and commented 'I really don't want to have to go back to that because it just takes so much extra time in travel' (Participant 12).

These comments bring to the fore the extreme pressure that some smaller organisations feel in their everyday working lives, especially when they are on a part-time contract or are voluntary workers.

This is another instance of 'accessible' being used in an alternative context. Here, it was the training course itself that became accessible through online delivery. Another participant, who admitted to liking 'online courses' in general noted that, "comparing it to courses I've been in general, I think the content was really accessible. I think it was done in a way that was easily accessible. (Participant 4)" This implied a further complement through comparison with other instances of online learning. Accessibility was also extended to having recordings of the workshops that could be re-watched and consulted (4).

For one participant the online offering was a move that had been seen in a series of courses that was to be celebrated. Not only did it address issues of time and money, but also a general propensity towards shyness,

"over the past 18 months, whatever. I've been on some amazing courses online and they've been absolutely brilliant. And I think they've opened up a whole new world ... I think, I think in a strange way, people are actually more open and less anxious about talking than they would necessarily be in a room full of people. And I think it's allowed, because I'm quite shy, I think it's quite nice to allow people to have the opportunity to either talk or not talk" (Participant 9).

While physical proximity might have brought some benefit, the lack of it was not detrimental (5, 10). Instead, the zoom-based 'breakout' rooms were a useful opportunity to engage with like-minded participants from organisations with similar collections and issues - in relation to an ageing volunteer base in industrial museums, for example (5).

One participant linked the online delivery to the structure of the course, which included individual organisation-based mentors and technical support sessions,

"the workshops have been, they've been good, well-structured and helpful, and then the follow up support sessions that we've had for individual meetings has been helpful, where we can just talk about our specific projects, because I think it's eight museums that are doing this in total. Yeah, we're all wanting something slightly different. So to be able to follow up individually has been really useful as well" (Participant 12).

This was clarified and furthered by the other member of Participant 12's organisation when they said,
"in terms of just us having sort of like specific tailored guidance it's probably being better than it would have been in person because people being able to focus specifically on us" (Participant 11).

One participant particularly like the individual support sessions because they allowed for interaction of a form that was more difficult in the group workshops in which the participant could show their understanding and ask questions (1). It also allowed for those leading the support session to show real examples and this inspired enthusiasm in the participants.

One negative related to the online delivery was the anticipated place and utility of a communication forum attached to the training programme. While the researcher fully expected this to fill a gap in terms of social interaction, the opposite was the case. As one participant put it "I felt myself using it less and less. And I was kind of going there more just to grab the resources. And that was it" (Participant 4). One 'theory' that emerged from the conversation with participants was that given the course was tailored to individual need and given that it was easy to attend within the normal activities of the day, there was no desire or time to use this facility for social interactions. As Participant 2 put it, "maybe, you know, the group hasn't necessarily built up a lot of awareness of each other and what they're doing and but, to be honest, that possibly wasn't necessary for us to get the outcomes we needed ... maybe if you were a group that met [in person], you would, whereas it's only a digital group, you don't build those same relationships" (Participant 2). This was echoed by Participant 4 who felt that covid had generated a desire to human faces, " probably if we had, if covid hadn't happened and this project had been maybe in person, maybe the online side of it would have been far more used because ... I think by the point we started this project, everyone was just wanted to see a face" (Participant 5).

This became most apparent when talking to volunteer participants, as Participant 7 put it, "but me with a life to run, other things to do. I do this a few hours a week here and there. You know, I just didn't have time" (Participant 7).

There is, then, a distinction to be made in terms of interest, motivation, and the place that the museum involvement played into people's lives that bore direct relation to how the course and its various component technologies were viewed and used. More broadly, we see a positive response to the online delivery of workshops, mentoring meetings, and support session, as they enabled participation for some, and for others fitted better with the pressures that came from their complex and varied roles. For other, it simply matched their personality better. While it was useful, and enjoyable, engaging with fellow organisations, this was an added bonus - which could be partly met through breakout session - rather than a necessary component of the course.

Expectations

The participants came to the project not knowing particularly what to expect. For many, the issue was less about what they expected from the project and more about the expectations on them, with a repeated comment being that they were initially over ambitious and through the programme they learned to slow down and focus (4).

In terms of the anticipated support, there were no disappointed participants, far from it. More typically, the participants expressed surprise and thankfulness for the support they received, especially in terms of responsive tailoring of support session which drew on a wide range of people. They were seen as 'incredibly useful' (4). Participant 3 said the project seemed to 'magic up' people and how they were not used to such targeted help,

"Yeah, I think so, it was actually strange almost, to, because, like I said, because we're such a small team it was actually very strange to sort of say, oh, it would be nice if, you know, I think probably us maybe speaking theoretically, saying it would be nice if we had a bit of help on this and then they would just magic up somebody that could talk to us and help us with that. And it was like, oh, we're not used to actually having people on hand to sort of help us out with things. So, yes, that was actually a really, I hadn't expected it to be that much, you know, kind of you know, I don't know, it's kind of, different personnel were kind of on hand if we needed them to kind of speak to different things. So that was great" (Participant 3).

For others, comparing to alternative training events they were pleasantly surprised,

"I didn't expect it to be quite so supportive. I didn't expect that to be quite so much ongoing, from my experience of training in the past, know, with projects, you get something at the beginning and then you get on with it and then you get something at the end. I was very surprised about how much sort of ongoing support we had through the whole thing, which I thought, y'no those chats with mentors were really, really beneficial as we went through. And the level of training at the beginning was very complete as well, you know, and there was a lot of it. I mean, it definitely exceeded what I had expected it to be" (Participant 10).

"the the level of commitment to the people doing it was was was brilliant, it's really good" (Participant 9).

Benefits

For participant 2 the course had provided useful feedback and reassurance,
"we often feel like we're quite reactive and we don't necessarily have digital strategies and things like that, that we're working to. We are quite, been quite responsive to things as they come up. So the fact that people have been saying, yes, you're on the right track, we were

impressed with what you've been doing, that that's been hugely, you know, helped us build our confidence" (Participant 9).

One part of that reassurance for many organisations is based on a selective approach to the analytic data available. Given the multiple roles that participants typical played, the message - you only need this much - was a reassuring way to encourage engagement with data, without the anxieties that might come from being overloaded

"it kind of almost gives you way too much, which I'm sure some places that have got a dedicated team just to kind of sift through those for information, they'll they'll want all that level of data. But for us, it was kind of like, well, I think we only need these few bits to kind of focus on, certainly in the early stages" (3).

For one participant (participant 5) simply taking part in the course enabled them to have a conversation with those around them, who had different expectations. This person answered to a board, which runs a number of organisation, and board members were used to there being a dedicated 'comms' person. The fact that the participant's role was highly varied meant that they had to justify spending time on such matters. The course enabled this and also provided an argument for the time to be spent on social media.

Participant 1 spoke in detail about the design of the programme (workshop, mentoring meeting, and technical support). This worked well because of the different aspects of each element, but in particular the mentoring interaction provided reassurance and helped keep the organisation on track,
"That little stepping stone almost, with Anra in between was was actually quite a safety little mat for us" (Participant 1).

In addition, these informal sessions provided a form of bachkchanneling in terms of the other museums and the issues they were facing and addressing (1). It also prompted the thought of establishing contact with those other organisations after the programme (1).

Other benefits included the connections made in the programme, and the encouragement and confidence it provided (Participant 9). This extends to being introduced to notions of data analytics and the potential to form a 'digital policy' (Participant 9).

For Participant 5 an interesting benefit came from being encouraged to focus on the collection rather than typical marketing content, such as information about events. By focussing on the collection and its stories, the person found their own role to be clarified in terms of the priorities placed on generating stories over more tradition marketing content.

The beneficial effects of the programme extend beyond the period of the project, with plans to apply for money to fund a dedicated social media person (5).

FAIR principles

As a set of ideas, as expressed in the FAIR principles, for some participants this was there first experience (2). Yet, all expressed a general orientation to issues of things like accessibility, although as mentioned earlier, the principles resonated locally, and as part of contingent practices (such as the ability to find items in the collection for digitisation).

For others, the FAIR principles were always in the background (5), but the project and the interview itself had prompted reflection on those principles, and how they were relevant to

the practices of the organisation (4). For Participant 4 this was primarily framed in terms of bringing stories to artefacts, rather than the explicit pursuit of the principles capture in the FAIR acronym, as well as a future move to a new building that was already prompting questions of data base organisation and content (4).

Similarly, Participant 3 linked the pursuing of FAIR principles in the future to local issues of artefact organisation,

"I was aware that ideally we should be doing some of the things, especially things about metadata for images and things like that. And, you know, just, we do, I think we do have this sort of problem as an organisation with kind of storing images in lots of different places. And that was always kind of something that we want at some point. We do want to kind of solve. And I think that would be a good time for us to start adding in those kind of principles to the images and things that we are using. So it's kind of reinforced that need to do that" (Participant 3).

For some, the principles were firmly embedded in the process and experience of the course. As participant 8 puts it, there was an expectation change in terms of what the course would do which turned out to be a positive change in terms of engagement and personalising the development to the organisation,

" Yeah, I mean, obviously, it was, I was thinking, well, this is interesting, these are the principles of, you know, I really agree with those making making the museum fair, which I think goes, not just in education, but for just our public, the whole museum thing, of, find, making things findable and accessible and interactable and can't remember what the other one was. And but, um, so I was quite keen. But like [Participant 7], I'm kind of thinking, OK, so tell me how to do this or how am I how do I do that? And being, so, in a way, of course, I was waiting to be spoon fed, but in fact, not being spoon fed made me think better. So I had to sort of think through what what we were doing and actually come up with things that were suitable for our museum rather than a prescriptive thing. So I think it was a good thing to do in terms of talking through and and listening to other people, about what they do" (Participant 8).

For others, the FAIR principles were an ideal, which would likely never be met,

"As an ideal, yes, I'm I'm all for theses ideals, it's like the ultimate point that you will never get to, but you strive for it ... For a small museum like ours, which has its vulnerabilities because of its numbers, its technology and everything else, having this great big mainframe that had our collection digitally on it and being able to put on and draw off and research in, research out and then use in a more controlled manner. You know, that is, museum heaven ... That, as an ideal, is wonderful" (Participant 1).

It should be noted that this wasn't said in a dismissive way. It wasn't that it was unrealistic. Rather striving for those ideals had very positive effects in the practices at a day to day context.

For some it was simply too early to be thinking about FAIR principles,

"For us, it's too early. we we're we're still learning and starting. iIf we had digitised several thousand photographs and they were all archived away and not visible in the outside world, and that's the job we had to do, then we'd be directly in there focussed on your fair principles. We don't even have the data yet" (participant 7).

For others, the principles had become part of their formal planning going forward, with Participant 5 saying that it had become part of their five year plan. Participant 6 noted that it was all about 'knowledge transfer' to her, primarily volunteer-based, membership. Here, the issue of IT skills and training came to the fore, and Participant 6 noted that with an ageing volunteer base, it was sometimes about fear of technology. These are fundamental barriers, no matter how valuable the principles and overarching aims and policy initiatives.

Participant 8 puts the issue clearly,

"there's so many facets to the digitisation of museums that and it's the discovery and the realisation that there is so much that could be done. And, but, obviously with our museum, you have to take it a little baby steps, ... because of people being, helping and volunteering in a museum for, some of them, 40 years or so. And then is to respect their, erm this is all so new to them, and that, I think for them is quite a scary thing. So I think it's accepting that people are not that keen on, you know, are fearful of digitisation" (Participant 8).

Participant 7 put this issue of digitisation in the context of the alternative priority of small museums,

"The key discussion we've got to have, I think, with the museum committee is around what is the role of this museum, because that committee, at the top of their list is the preservation of heritage artefacts, number one. True, that's number one and you must do that. But what they don't get onto the same page is, number two, making that available to the people of this borough and the public. And if you make it available only by walking in and seeing one percent of that material because it's on display in the museum then ...[the participant didn't finish this sentence]" (Participant 7).

Here then is a central dynamic within small museums. The primary objective is the preservation of heritage artefacts, but increasingly it is important to not only 'open up the backroom collection' but also make that collection publicly available.