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## Plan Overview

*A Data Management Plan created using DMPonline*

**Title:** PARADOX: Process Advancement and Readiness of AI for Dental Operational eXcellence

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**Funder:** Economic and Social Research Council (ESRC)

**Template:** ESRC Template

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### Project abstract:

This project aims to develop a maturity framework for implementing and sustaining AI-led innovation in dental healthcare organisations through improving processes, capabilities, and operational readiness. The wider vision is to bolster UK health resilience, future-proofing the dental profession. Participatory Action Research is to be used following evidence to suggest that technological innovation management is not merely about understanding challenges but working with those affected to develop practical and sustainable solutions.

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### Copyright information:

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# PARADOX: Process Advancement and Readiness of AI for Dental Operational eXcellence

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## Assessment of existing data

### Provide an explanation of the existing data sources that will be used by the research project, with references

The project will be generating new data as there are no suitable existing data sources for this purpose for re-use (determined through preliminary work and an early literature review).

### Provide an analysis of the gaps identified between the currently available and required data for the research

New data needs to be generated to build and test a maturity framework for implementing and sustaining AI-led innovation in dental healthcare organisations. Currently there is no such data available.

## Information on new data

### Provide information on the data that will be produced or accessed by the research project

Participatory Action Research methodology is chosen to prioritise the voices and experiences of those directly affected by the research topic. It is a collaborative and empowering method of inquiry that will enable participants to reflect on how their processes need to change whilst providing space for the co-creation of the innovation maturity framework, ensuring it's grounded in the realities of the dental healthcare context.

Data will be collected in the course of two collaborative, in-person, knowledge-exchange workshops: a) the first aims to test the outcomes of WP2 (factors and suggested model derived from the review) through using design thinking and techniques like mind mapping and sketching, to spur creative thinking and ideation. Workflow diagrams and storyboards are to be used to generate ideas for AI applications in dental care and create prototypes of improving patient experience through technology. This is key in gathering the right requirements for the successful implementation of the mobile software application; b) After the tool is developed and sent to the partners for use, a second workshop is to be carried out to gather user feedback and to collect views on policy changes and improvements needed in terms of successfully adopting new technology, improving innovation, and leveraging AI. This will help to identify patterns and commonalities in the responses to guide further development and refinement of the framework.

Workshops are to be held in Sheffield and Salford respectively to maximise audience reach, impact and coverage. They are designed to run as full-day events (10:00-16:00) to support stakeholder engagement and promote knowledge exchange and dissemination.

Data will be created in the following forms: 1) Written notes including quotes and key discussion points from workshop discussions and interviews; 2) Audio/video recording of workshop activities and interviews with the consent of all participants (e.g. using an encrypted audio/video recorder); 3) Source code written in programming language.

The formats of digital data are expected to be in mp4 and .doc, and the approximate volume of the data around 22.5GB.

## Quality assurance of data

### Describe the procedures for quality assurance that will be carried out on the data collected at the time of data collection, data entry, digitisation and data checking.

Workshop notes will be transcribed with identifying initials of speakers. These notes, along with the code produced and any identifiable data such as consent forms / pseudonymisation key will be stored on the University X: drive, where access is restricted to specified individuals.

The recording device used will be checked before workshops, and recordings will be transferred to a University drive as soon as possible, then checked before being deleted from the recorder.

## **Backup and security of data**

**Describe the data security and backup procedures you will adopt to ensure the data and metadata are securely stored during the lifetime of the project.**

In regard to storage of data during the project, the University Google Drive will be used for de-identified data and the University X: drive for identifiable data.

## **Management and curation of data**

**Outline your plans for preparing, organising and documenting data.**

Data will be stored in a logical file structure with appropriate metadata. Consideration is given to include details of our file structure and methodology in a README file with our data, and also to provide descriptive metadata with the data made available in ORDA. Personal data (e.g., workshop notes with initialised attribution of quotes and/or discussion points) will not be shared externally. Any notes and code will be archived for 3 years after publication/dissemination of project outputs. As this is a co-creation project, the team will work with the workshop participants and project partners to establish the best approach to distribute anonymised versions of workshop notes. At minimum, the journal article to be produced, which will summarise key takeaways from workshop discussions, will be freely deposited in ORDA. Materials placed in ORDA are assigned a DOI, which we can include in a data availability statement in publications. We will also make articles available in the White Rose Research Online Open Access repository, through the DOI link associated with each submission.

## **Difficulties in data sharing and measures to overcome these**

**Identify any potential obstacles to sharing your data, explain which and the possible measures you can apply to overcome these.**

Personal data will not be shared to protect anonymity and participants' identities.

## **Consent, anonymisation and strategies to enable further re-use of data**

**Make explicit mention of the planned procedures to handle consent for data sharing for data obtained from human participants, and/or how to anonymise data, to make sure that data can be made available and accessible for future scientific research.**

Data created may be beneficial for public benefit or other research purposes. The anonymised data sets from this study will be made available and accessible for future scientific research through the outputs produced. All partners are committed to open access and open data strategies, making research publications freely available online. Participant consent will be covering inclusion of quotes and ideas in openly shared outputs. Identifiable data, such as recordings, will be deleted by the end of the project.

## **Copyright and intellectual property ownership**

**State who will own the copyright and IPR of any new data that you will generate.**

The copyright and IPR will be held by the University of Sheffield.

## Responsibilities

### **Outline responsibilities for data management within research teams at all partner institutions**

The Project Lead (PL) and Project Co-Leads (PCLs) will take responsibility for the datasets, creation of metadata and placing data in ORDA. The PL will have overall responsibility for the quality of the data acquired, and its storage. The PL and PCLs will jointly collaborate over peer review and quality assurance of data.

## Preparation of data for sharing and archiving

### **Are the plans for preparing and documenting data for sharing and archiving with the UK Data Service appropriate?**

Anonymised versions of discussion notes will be stored on the institutional Google Drive space; based on content of notes the research team will explore opportunities for further public sharing of anonymised notes via the University of Sheffield data repository ORDA with the project partners and workshop participants. Project outputs, including a self-assessment guide for practitioners summarising the workshop process and main discussion points, will be posted on ORDA for long-term archival storage. The code and associated training material and documentation will also be made freely available. No long-term storage options are anticipated to incur financial costs.

Details of the data in ORDA will be provided to the UK Data Service as per ESRC's requirements.

### **Is there evidence that data will be well documented during research to provide highquality contextual information and/or structured metadata for secondary users?**

The methodology and process of data collection will be well-documented to provide high quality contextual information for secondary users.