Training Data Management Plan (DMP) - This DMP is for illustrative purposes only

Brief description of the study/research:

- *Design, development, and construction of a robotic arm to assist and measure rehabilitation.*
- *Design and development of software to control the robotic arm and capture performance data.*
- *Participant experience and response to using the robotic arm.*

1. What data will be produced?

Robotic arm with Interconnections to computer that drives the robotic arm and collects performance data

Digital data to be produced

1. *CAD files for robotic arm design*
2. *Control and data collection software*
3. *Raw data spreadsheets showing test results from lab experiments*
4. *Digitised lab notebooks*
5. *Audio recordings of participant interviews including transcripts*
6. *Images of the physical prototype and arrangement in use*
7. *A WordPress hosted website for the study to promote and report on project activities and publicise events*

File formats and software

Data type	*File format*			*Software*	*No of files*	*File size*
Workbooks	**.jpg*	**.xlsx*	**.txt*		*100*	*10 GB*
Design files	**.sldprt*	**.igs*		*Solidworks*	*25*	*10 GB*
Control software	**.m*			*Matlab*	*10*	
Interview audio files	**.MP3*				*75*	*70 GB*
Interview transcription files	**.pdf-a*				*75*	
Images	**.jpg*				*100*	
Qualitative data analysis files	**.nvp*			*Nvivo*	*2*	

At project end the data appraised for retention will be converted to appropriate formats before being submitted to a repository. The above file formats have been chosen because they are accepted standards and in widespread use.

2. How will data be documented and described?

NB: Metadata: The term metadata is often used when referring to data descriptions and documentation.

1. *Data collection protocols will be fully documented and applied consistently by all members of the research team.*
2. *Quality control will be applied to data being collected e.g. check table and spreadsheet values are unambiguously labelled, check interviews have been transcribed and coded using the agreed approach.*
3. *Any data of long term value deposited in a trusted repository will be accompanied by a metadata record and supporting documentation in the form of a read.me file or data guide sufficient to allow the re-users discover, understand, reuse and cite the data.*

3. How will data be structured and stored?

Back up and data security procedures

Electronic data will be stored on our local University provisioned (collaborative) storage (e.g. N Drive) which is backed up regularly. All portable devices will be encrypted and files will be transferred to University storage at the first opportunity. Storage requirements have been discussed with the Faculty IT Manager; It is likely the overall volume of data will be less than 100 GB.

File naming convention and directory structure

1. *Files will be systematically named. The established file versioning convention in the lab will be used.*
2. *The directory structure for the project will be agreed and documented.*
3. *There will be a separate folder for each area of testing*

4. Are there any 'special' requirements for your data?

The project will handle sensitive data and will be subject to data protection requirements.

Ethics and consent

The University's Informed Consent Protocol will be applied. The participant consent form and information sheet will explain potential uses of the data and include the wording: "I agree for the research data collected from me to be stored and used for future research in a non-identifying form". Where possible, data will be made openly available but it is anticipated some will have access restrictions. Some data will need to be destroyed.

Anonymisation

Our anonymisation approach will be informed by the ICO Anonymisation Code of Practice (Acode). We will classify our data using the University's Information Protection Policy / Suite of Data Safeguards and ensure data access and restrictions are appropriate to the level of confidentiality.

5. What are the plans for data sharing and access in the short and long term?

Collaborative partners and data sharing: *To support our collaboration activities we plan to:*

1. *Agree and document our research data ownership and dissemination actions*
2. *Agree data copyright and license requirements*
3. *Contact RIS Legal Services team to formalise these agreements into a data sharing agreement*
4. *Highlight collaborative research partner(s) and data sharing agreements in our Ethical Review application.*

Active /short term

5. *A list of types of data with anticipated retention period will be maintained including what happens at the end of the period (destruction, deposit in a repository) and who is responsible.*
6. *The primary data store will be the project N: drive folder; access to the N drive for partners outside the University will be organised with the IT Team.*
7. *Access to any non-public data from personal devices will be via Desktop Anywhere only unless they are encrypted to FIPS 140-2 and only accessible by the research team.*

Longer term

8. *Data of long term value will be deposited in a trusted repository such as the institutional research data repository (Research Data Leeds) in accordance with the University Research Data Management Policy (http://library.leeds.ac.uk/research-data-policies**).***

6. What are your main data challenges? Who can help?

It is anticipated some of the data will be sensitive; appropriate access restrictions will be applied in line with the University's Suite of Data Safeguards. This will include taking advice on appropriate training to support project delivery by the research team. Advice will be sought from the Research Data Leeds team.

7. Who is responsible for managing the data? What resources will you need?

The PhD student under supervision is responsible for managing the data at different stages in its lifecycle. The Supervisor will sign-off on the data management activity stated alongside advice and support to be sought from the RDL team to ensure sufficient data management resources ie (skills, people, storage, technology) are allocated / costed for and recorded.