EUREKA3D XR

European Union's REKonstructed content in 3D to Impact XR experiences

3D Digitisation Guidelines

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Who we are

Who we are

MNEMOSYNE – The Goddess of Memory in ancient Greek Mythology

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MNEMOSYNE – The Goddess of Memory in ancient Greek Mythology

The name of their Temple was: Mouseion (Μουσεῖον)

THEREFORE, …

When we digitise in Cultural Heritage … It is all about …

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- **High Quality of results**

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Before you start digitising…

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Ask yourself: Who? What? Why? Where? When?

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The WHO?

- Who are you digitising for? (the stakeholder)
- Who is the primary intended user? (the audience)

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- What is it that will be digitised (the target)?
- What will it be used for (the use case)?

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STUDY ON QUALITY IN 3D DIGITISATION OF TANGIBLE CULTURAL

Planning

Fail to plan … Plan to fail

"A man who does not plan long ahead will find trouble at his door"

Confucius c. 551 – c. 479 BCE

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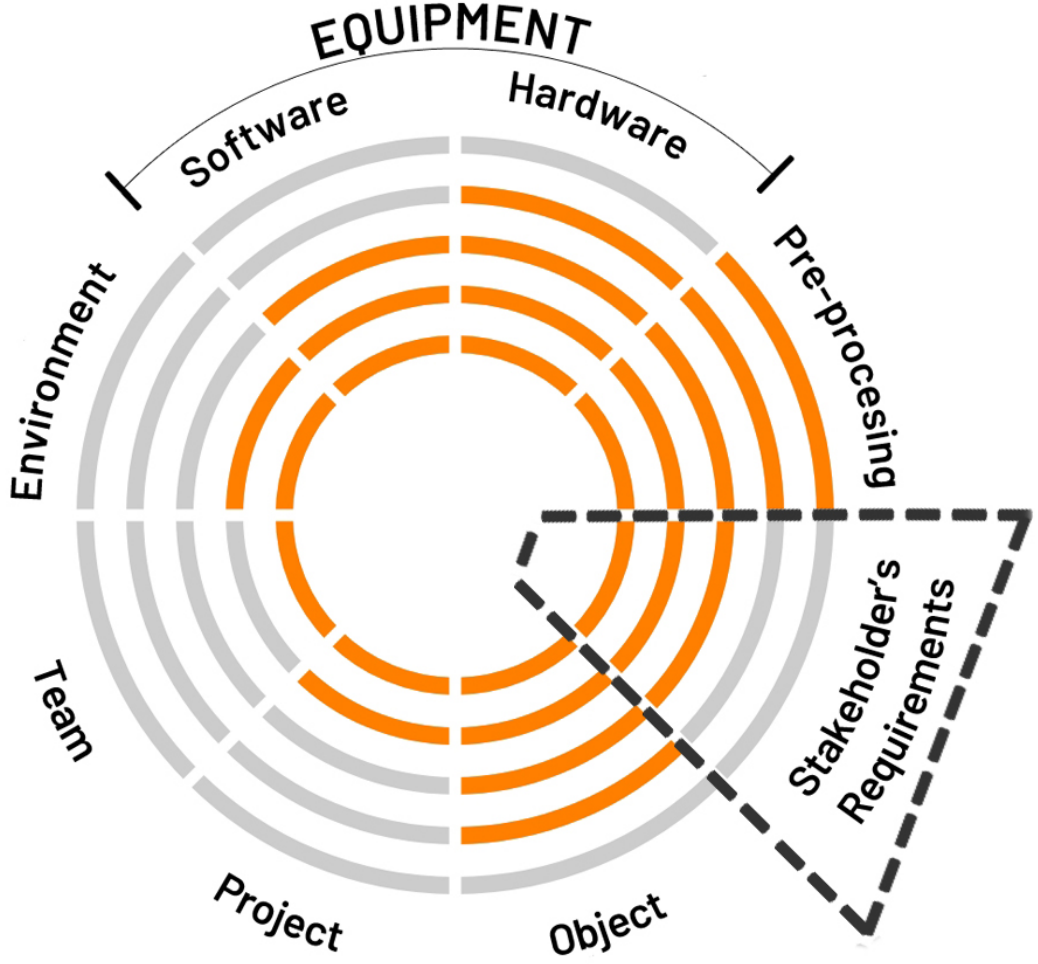
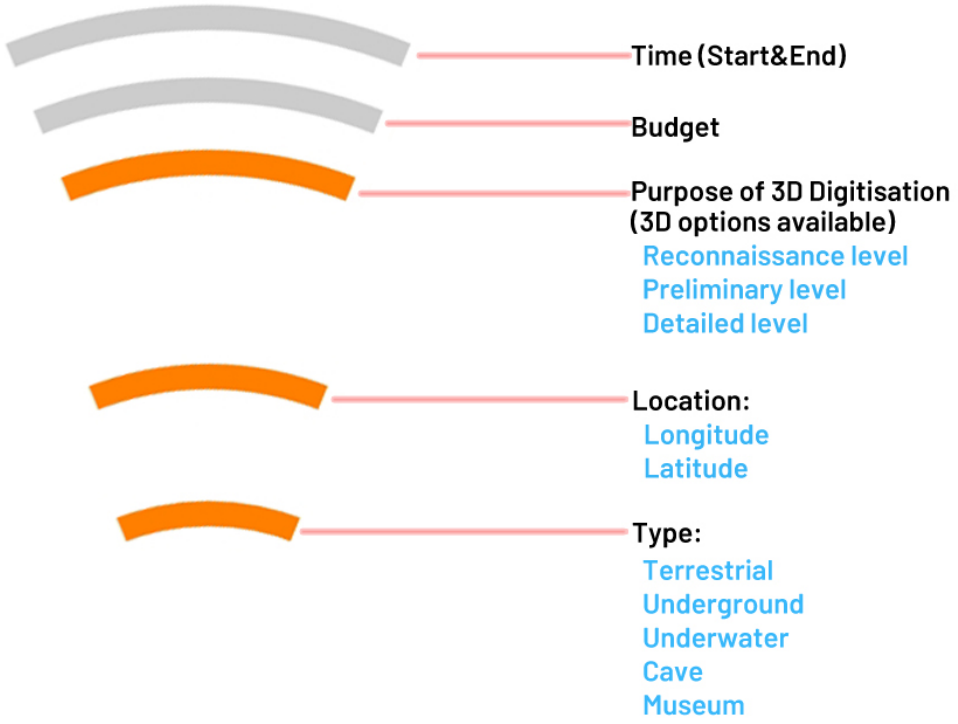
1. Expectations?
   - Realistic?
   - Well defined or vague?
   - Appropriate?
2. Deliverables?
   - Realistic?
   - Data or product?
   - Level of documentation required?
3. Deadlines?
   - Realistic?
   - Achievable?
   - Budget?

Planning


EQUIPMENT
Software
Hardware
Pre-processing
Stakeholder's Requirements
Object
Project
Team
Environment


Stakeholder's Requirements
Time (Start&End)
Budget
Purpose of 3D Digitisation (3D options available)
Reconnaissance level
Preliminary level
Detailed level
Location:
Longitude
Latitude
Type:
Terrestrial
Underground
Underwater
Cave
Museum

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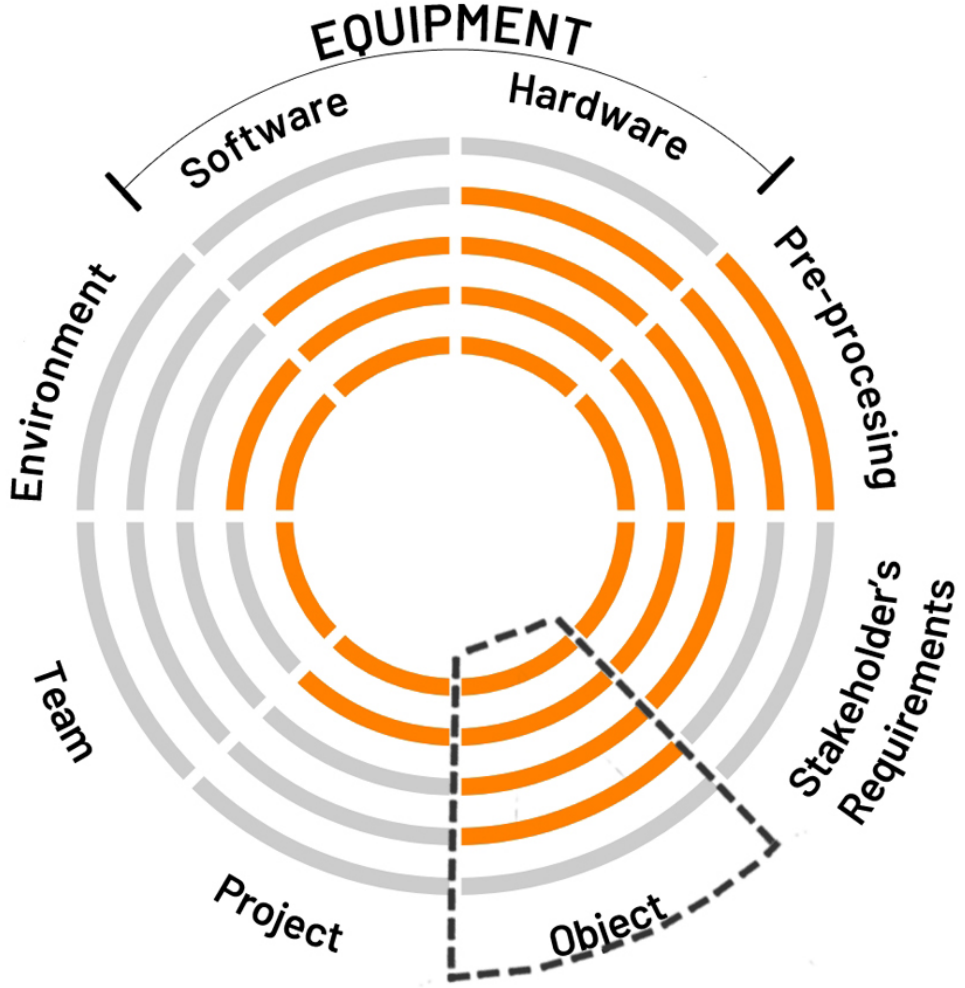
1. What are the digitisation conditions like?
   - Vegetation cover/clearance
   - Overhanging powerlines (UAV)
   - Public access/disturbance to work
   - Condition of object (fragile, reflective, etc.)
2. Are there Health & Safety concerns?
   - High visibility/Protective clothing?
   - Access to shade, water, food and facilities
   - Prevailing weather/environmental conditions
3. Logistics
   - Transportation to site
   - Electricity provision

Planning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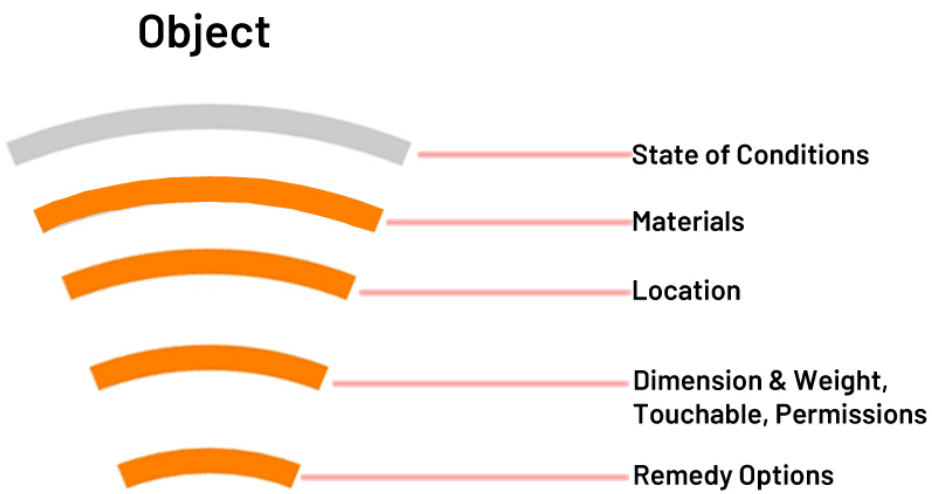
Object
State of Conditions
Materials
Location
Dimension & Weight,
Touchable, Permissions
Remedy Options

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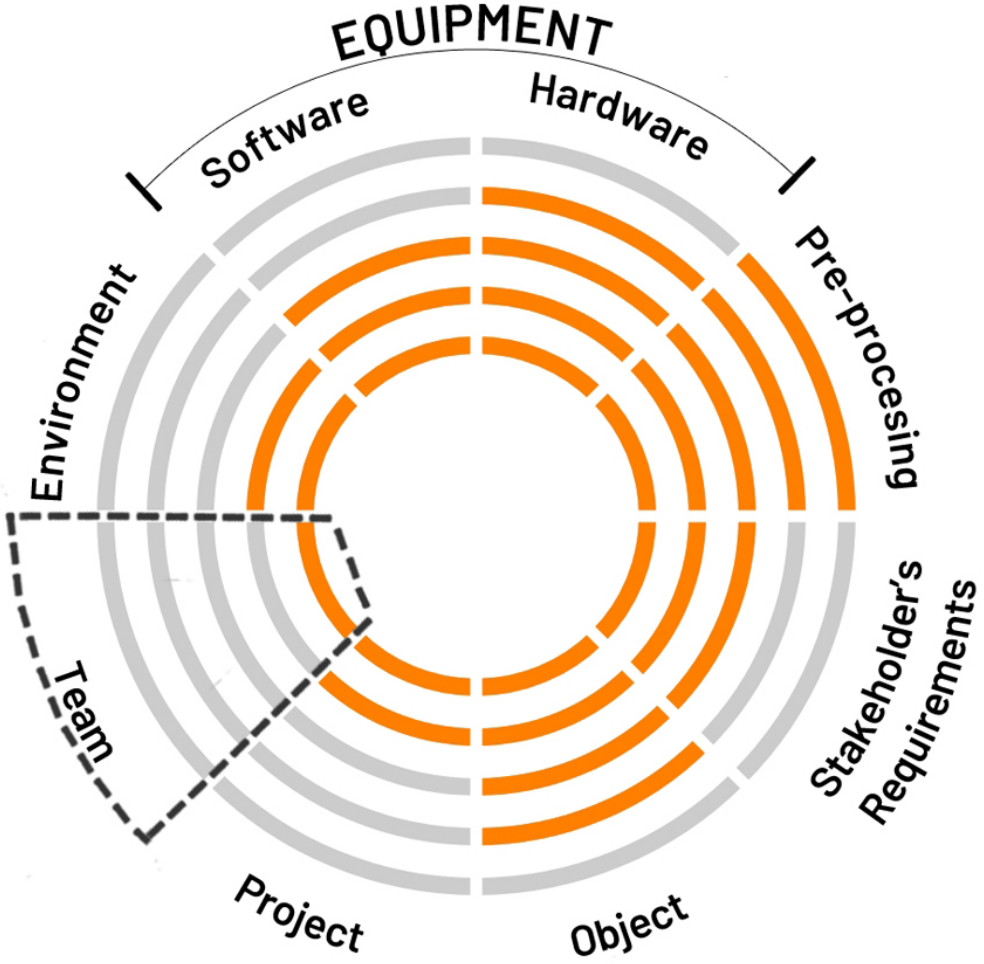
1. Who will do the work?
   - Internal staff?
   - External staff?
   - Contract staff?
2. What skills will be needed?
   - Level of experience?
   - Specialist licences?
   - Training requirement?
3. Who else is needed?
   - Human Resources?
   - Finance/accountants?
   - Specialist support staff?

Planning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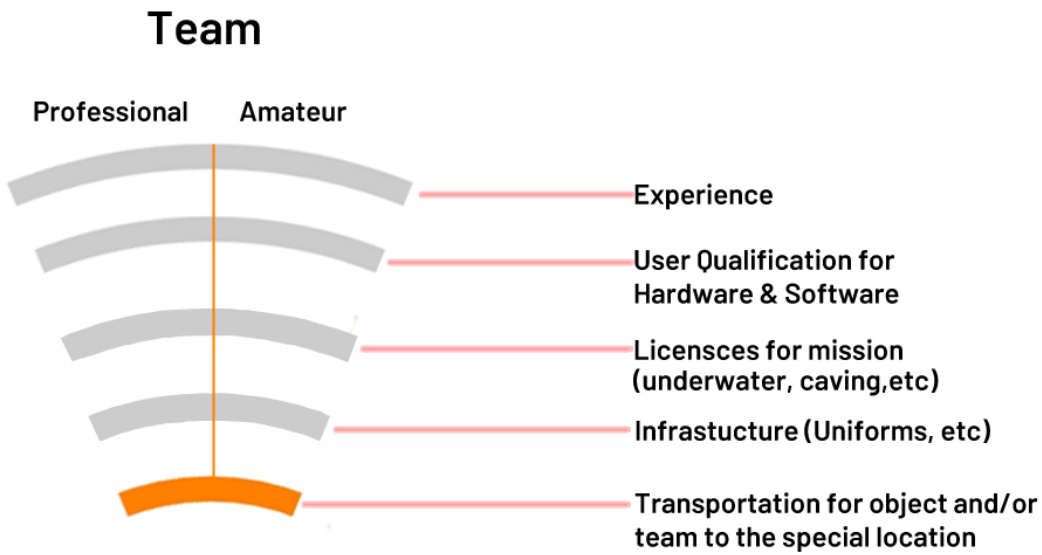
Team
Professional
Amateur
Experience
User Qualification for Hardware & Software
Licensces for mission (underwater, caving,etc)
Infrastucture (Uniforms, etc)
Transportation for object and/or team to the special location

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1. Who is funding the work?
   - Budget allocation
   - Single source or co-financed?
2. Who “owns” the object?
   - Ethical considerations
   - Permissions to digitise the object
   - Permits and access
3. Who will own the data?
   - Intellectual property rights
   - Open access data/CC licensing
   - Rights for end product/derivatives
   - GDPR compliance
   - Long term preservation planning

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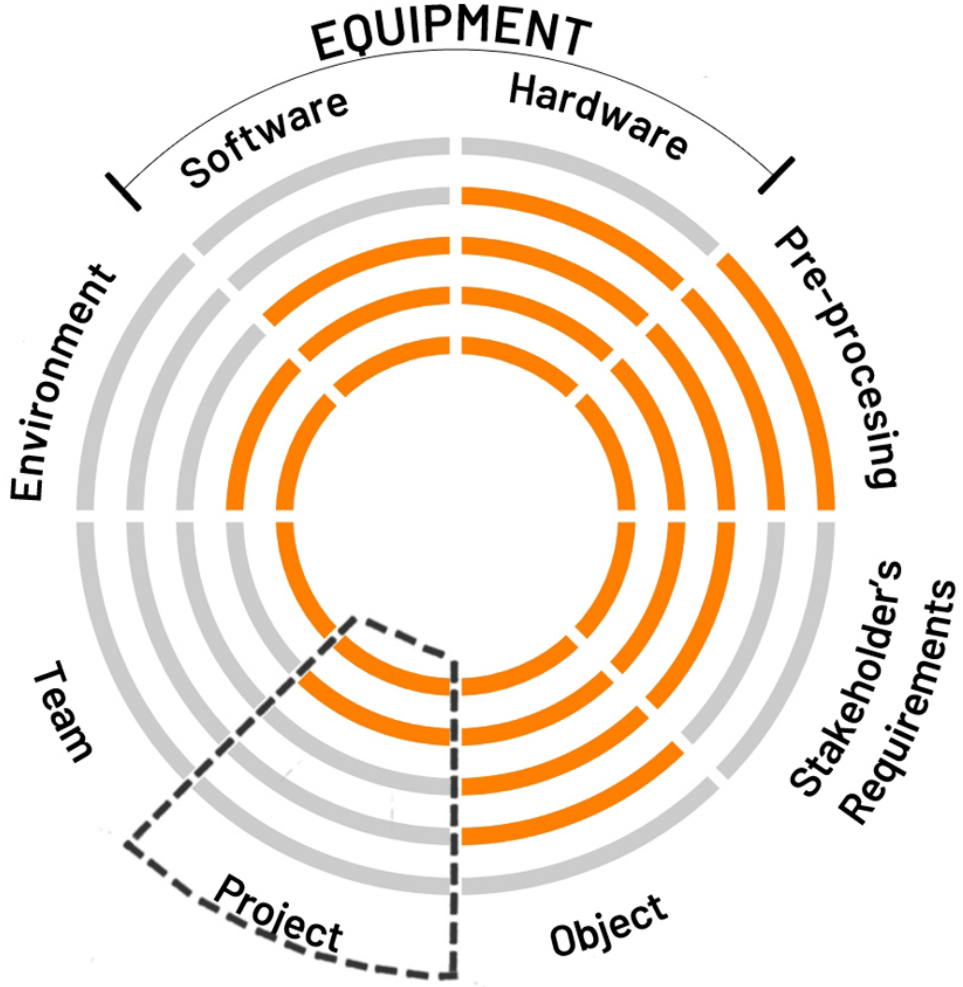
1. What is the scope of the digitisation?
   - Target object(s)
   - Types of data to be recorded?
2. What is the objective of the digitisation?
   - Digital documentation?
   - Creation of a product?
   - General or specific use case?
3. What needs to happen when?
   - Project timeline
   - Staff availability
   - Object access (opening times etc)
   - Deadlines, milestones and delivery dates

Planning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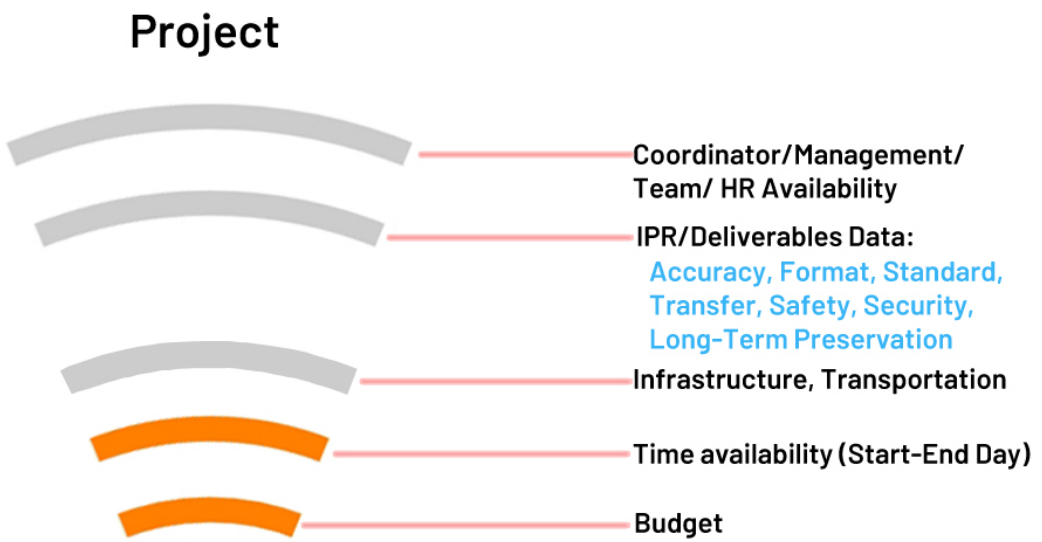
Project
Coordinator/Management/ Team/ HR Availability
IPR/Deliverables Data:
Accuracy, Format, Standard, Transfer, Safety, Security, Long-Term Preservation
Infrastructure, Transportation
Time availability (Start-End Day)
Budget

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1. Check method of digitisation
   - Is it “the right tool for the job”?
   - Appropriate?
   - Practical?
2. Check method matches requirements
   - Accuracy/resolution
   - Colour/Thermal/Hyper-spectral imagery?
   - Scale
3. Check equipment and software
   - Up to date (including firmware)
   - Licenced for use and use case
   - Preconditions (internet connection etc)
   - Device calibration

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1. Agree with stakeholder
   - Data file format
   - Metadata and paradata recording
   - Naming conventions
   - Common lexicon of terms
2. Inform team
   - Write it down!
   - Include refence copy in fieldwork folder

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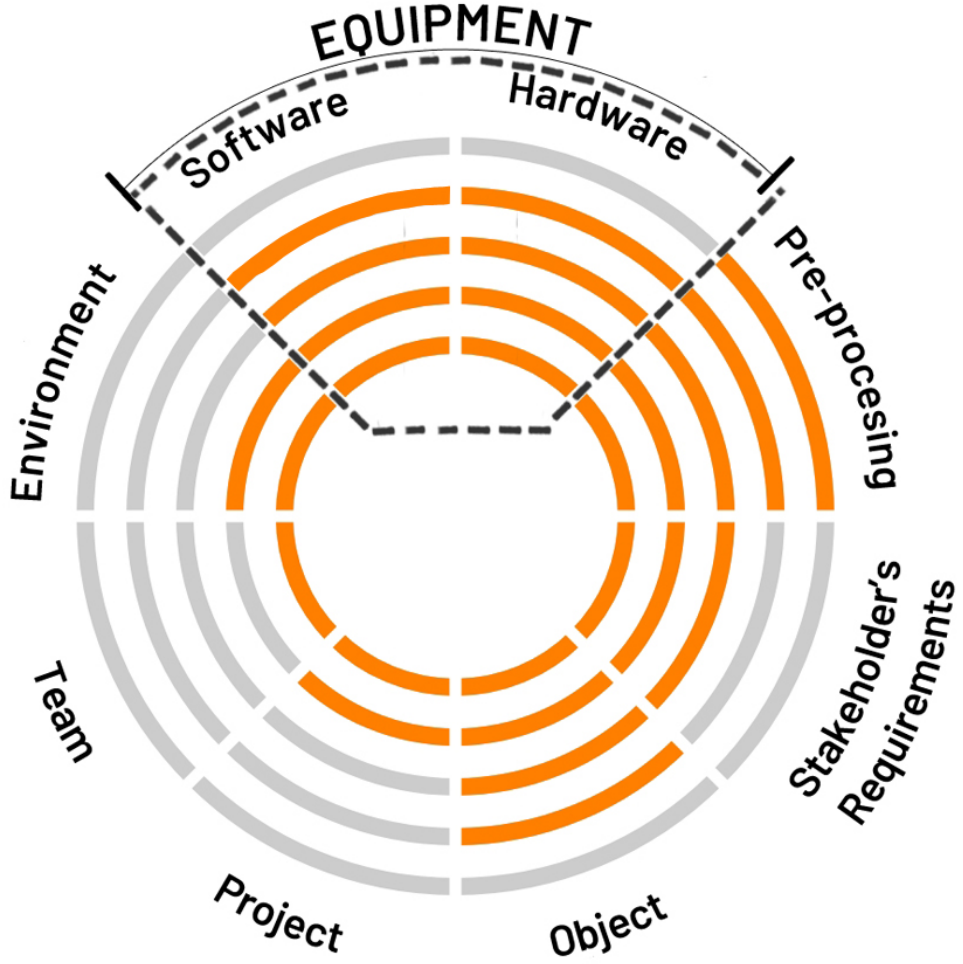
1. For digitisation
   - Physical media
   - Backup protocol
   - Cloud access
   - Data security
2. For post digitisation
   - Requirement for archiving?
   - FAIR and CARE data compliance
   - Digital preservation strategy document

Planning



Software & Hardware

- Licence for Hardware to be used (i.e. frequencies, interferences with other systems)
- Precision of multisensor system under different environment conditions
- Usability - Communication/Transfer of Data/ Battery/ Available Storage
- Efficiency - Speed of Data Acquisition in relation to Software & Hardware - Accuracy (Byte Resolution
- Sensor Integration

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Conduct a Complexity Assessment

- Aims to reduce complexity of the digitisation effort
- Identify risks
- Double check requirements
- Reassess timeframes
- Evaluates team and expertise
- Helps to manage costs
- Starts paradata record
- Produce a Complexity radial chart

A Complexity Assessment is your record showing due diligence and that the digitisation was undertaken in the best possible conditions presented

Complexity isn’t about difficulties it’s about understanding interrelations

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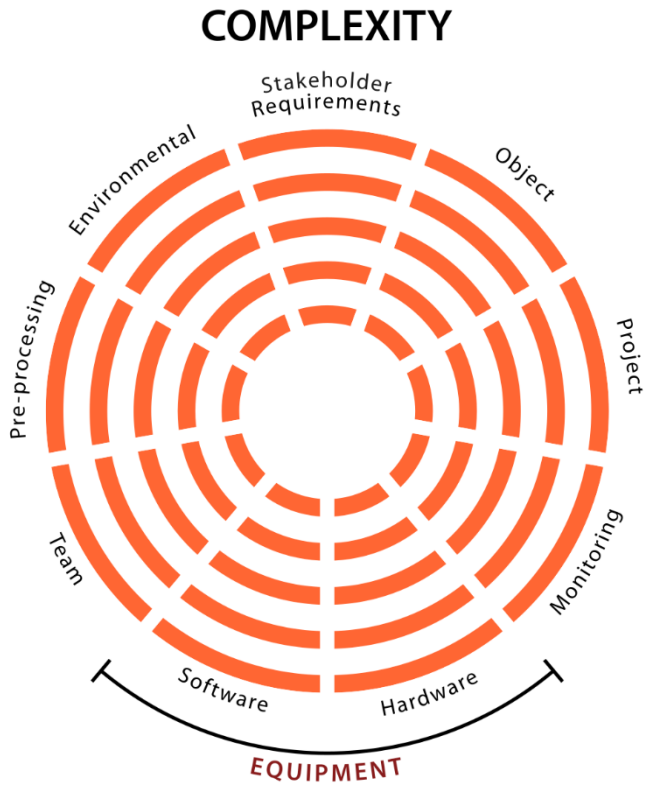
Complexity measures how complex the task of digitisation is not the complexity of the object itself

Complexity Assessment attempts to identify and reduce or mediate risks to a digitisation effort

The VIGIE 2020/654 Study extension identifies 45+ interrelated factors that may impact a digitisation effort

The aim of a Complexity Assessment is to record the conditions under which a digitisation took place

A Complexity Assessment sets out the boundaries and understanding of the digitisation for everyone involved before the work is undertaken and what can be expected



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Quality measures how the results of digitisation satisfies the specified set of requirements defined in project scope of work and ratified during the Complexity Assessment

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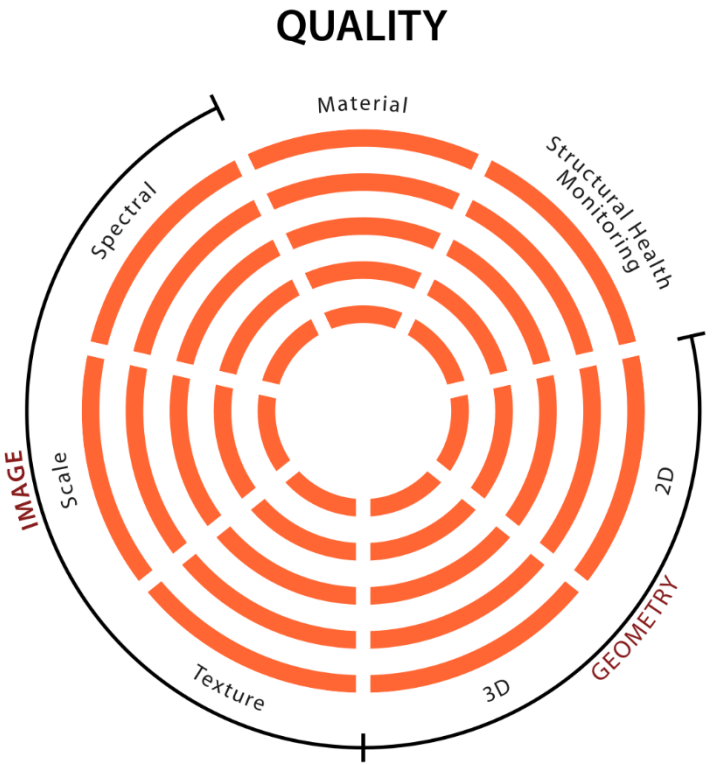
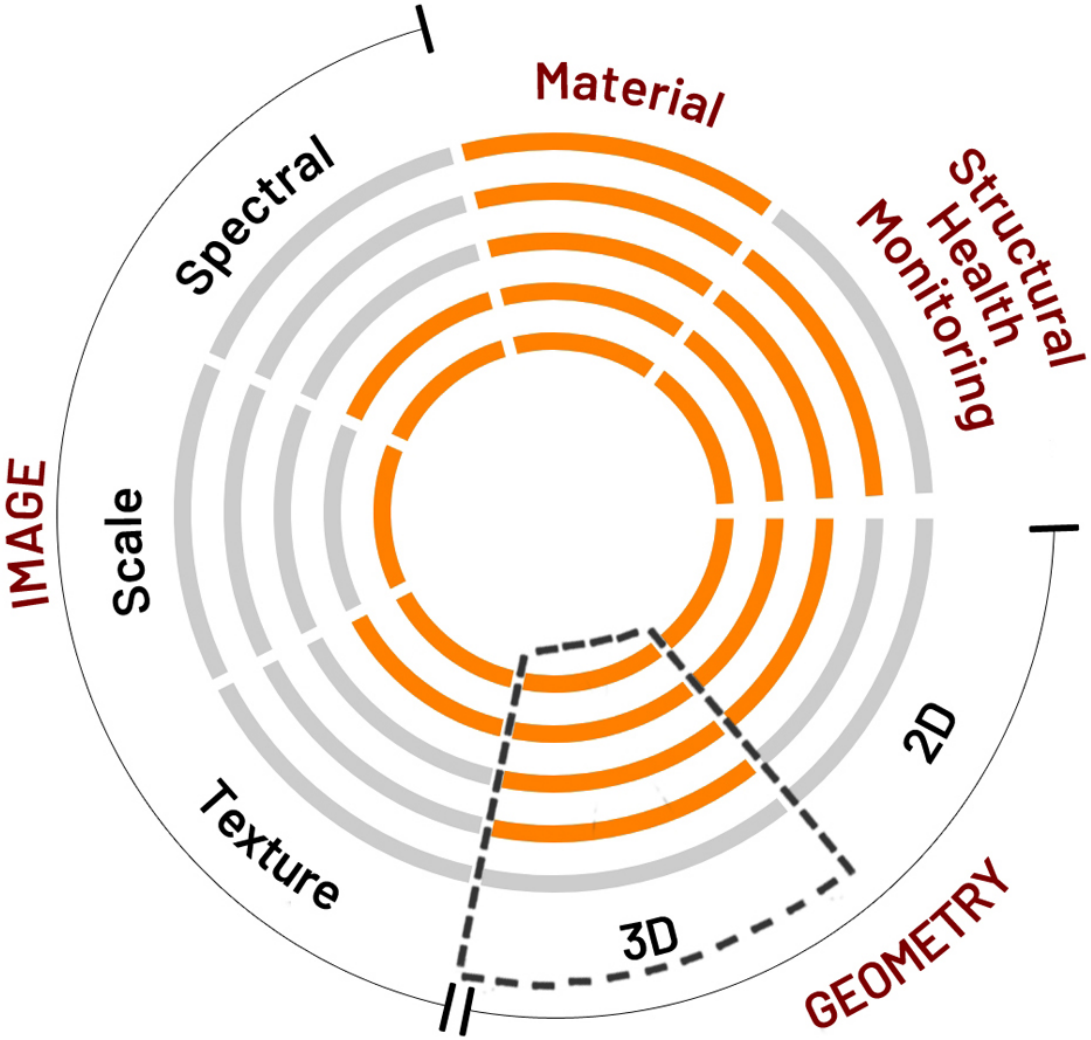
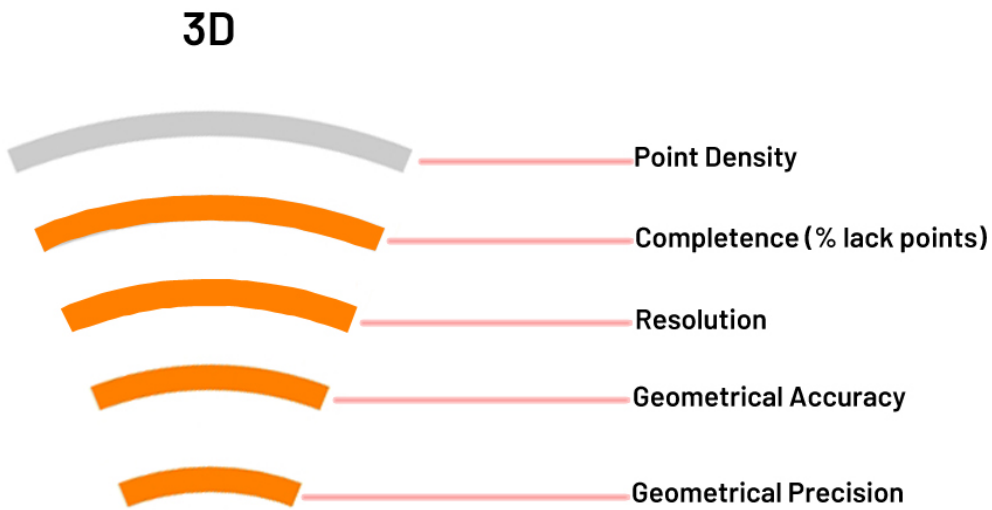


Assessing Quality





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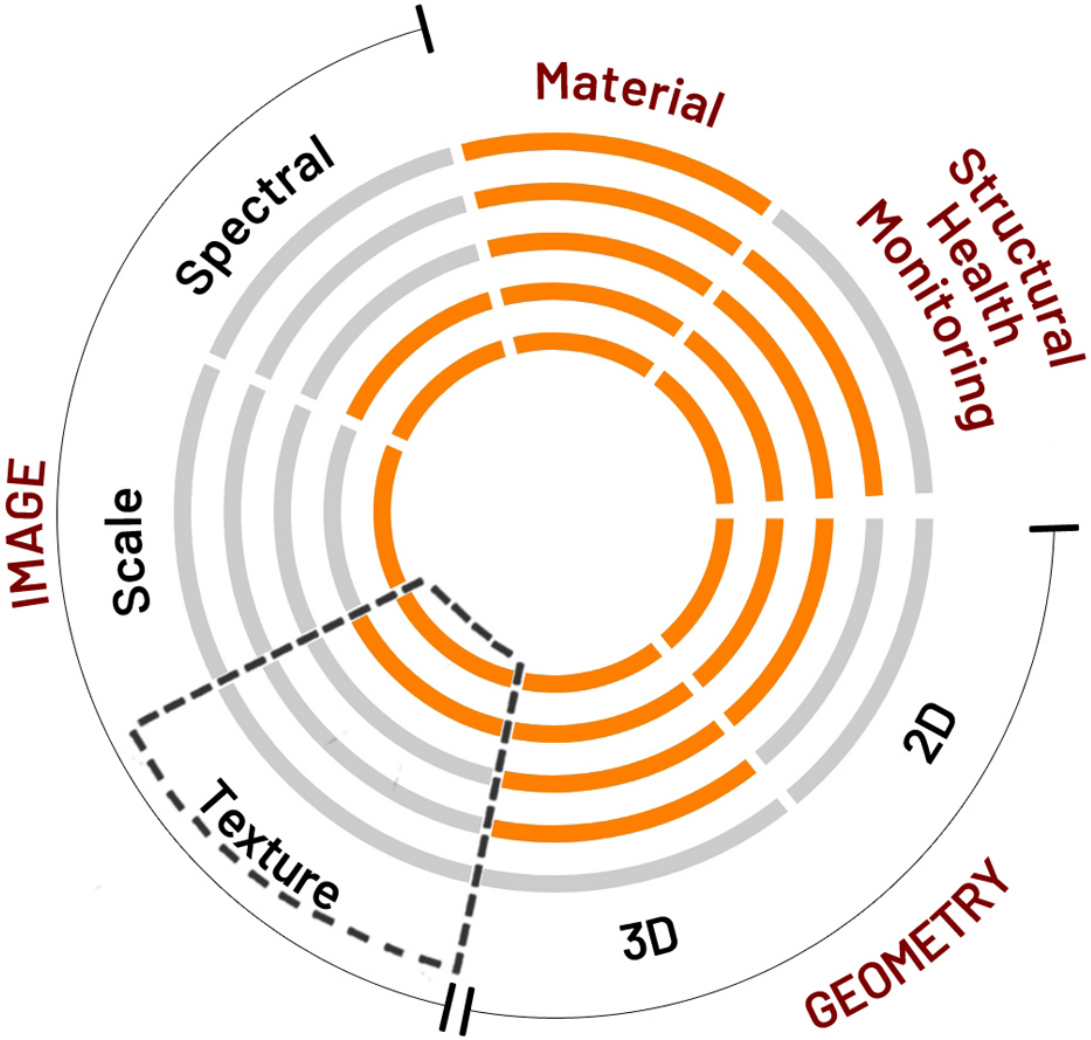
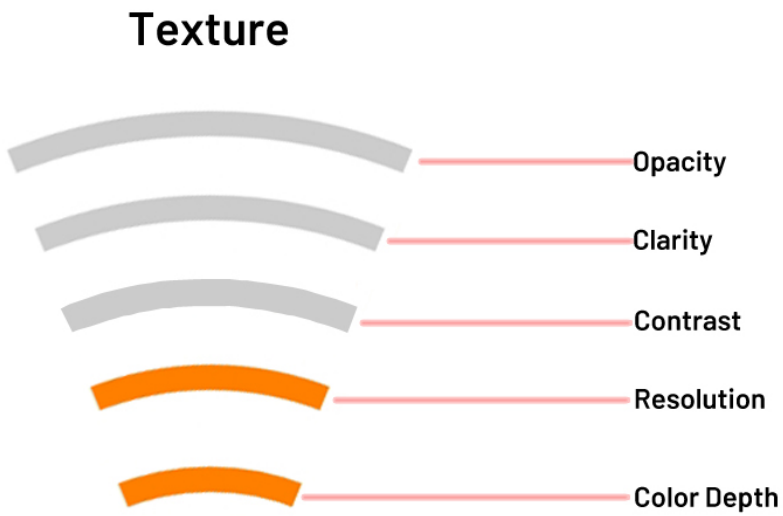
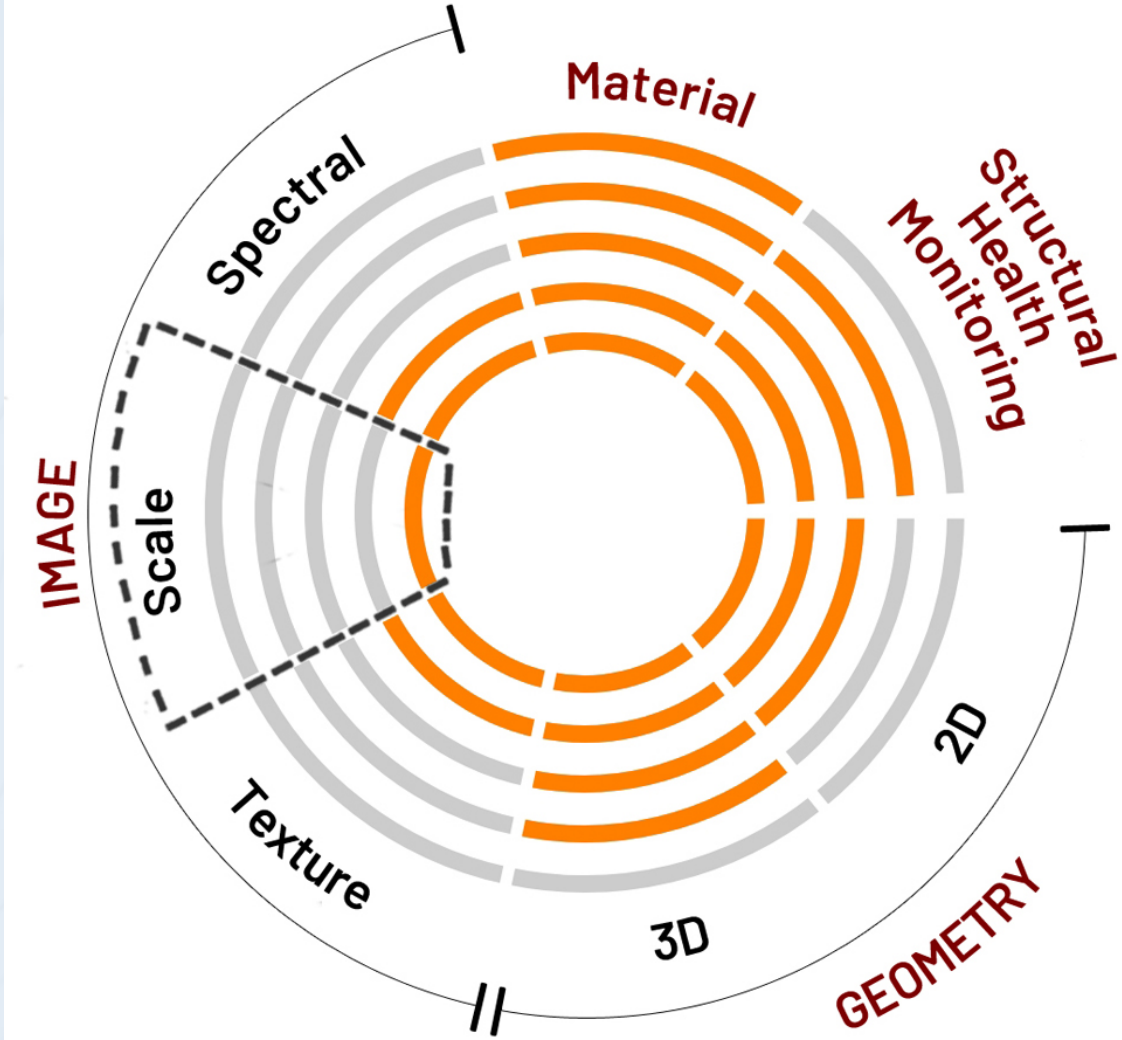
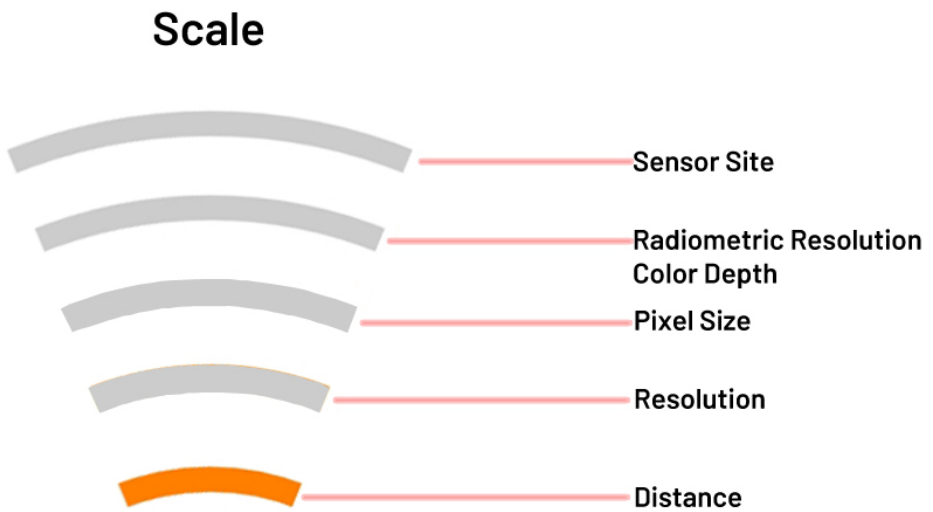




Assessing Quality





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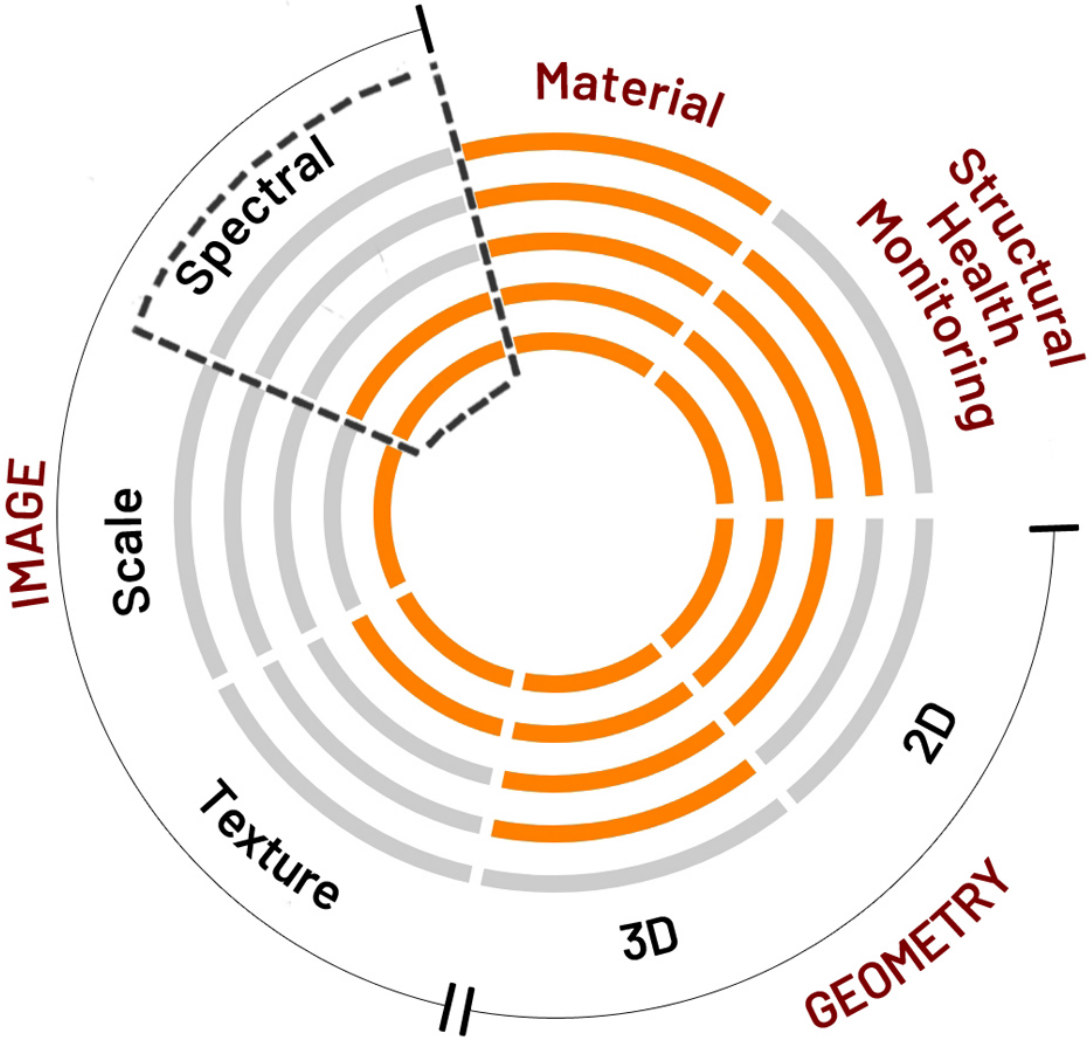

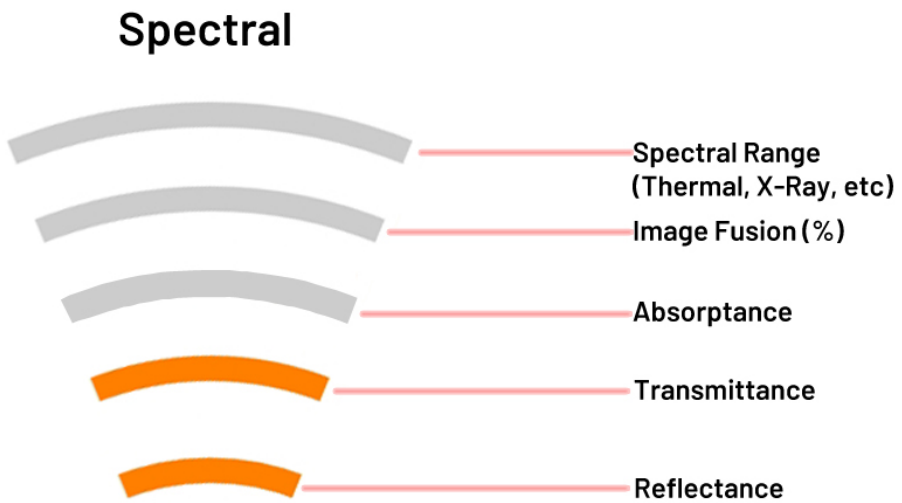

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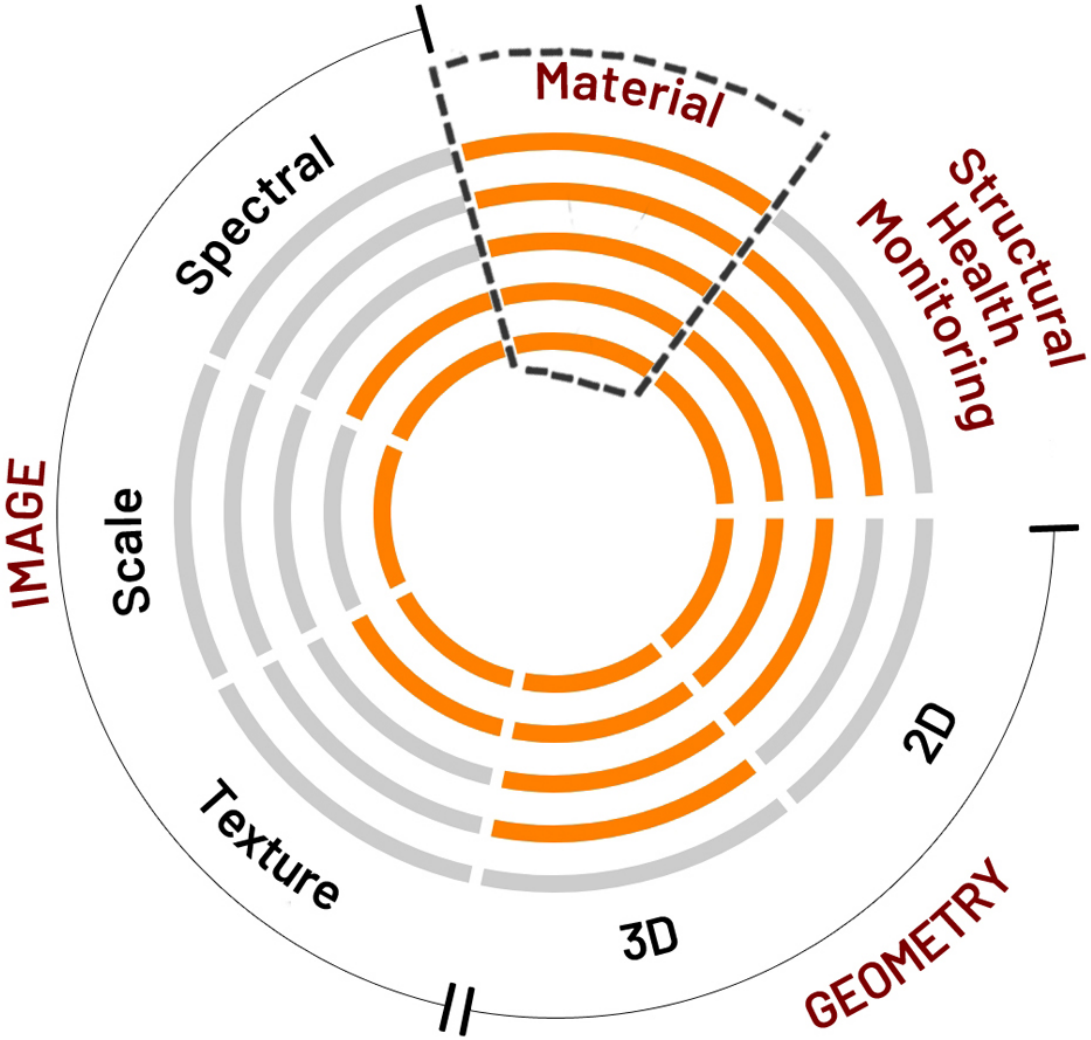

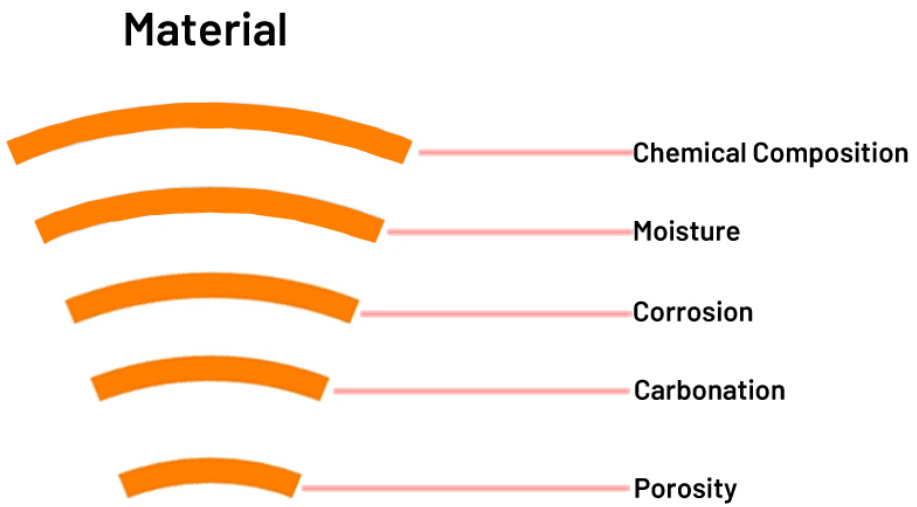

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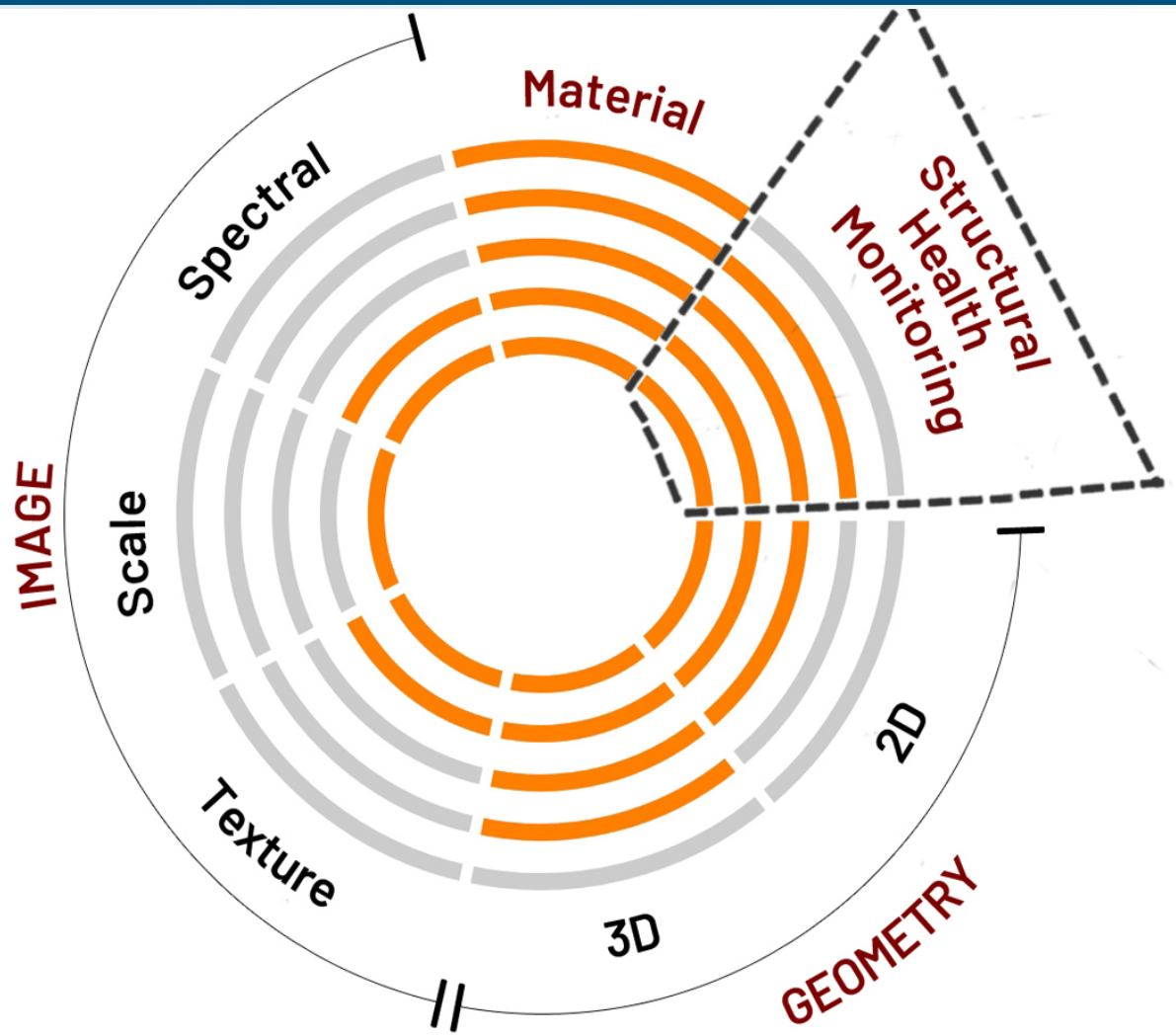

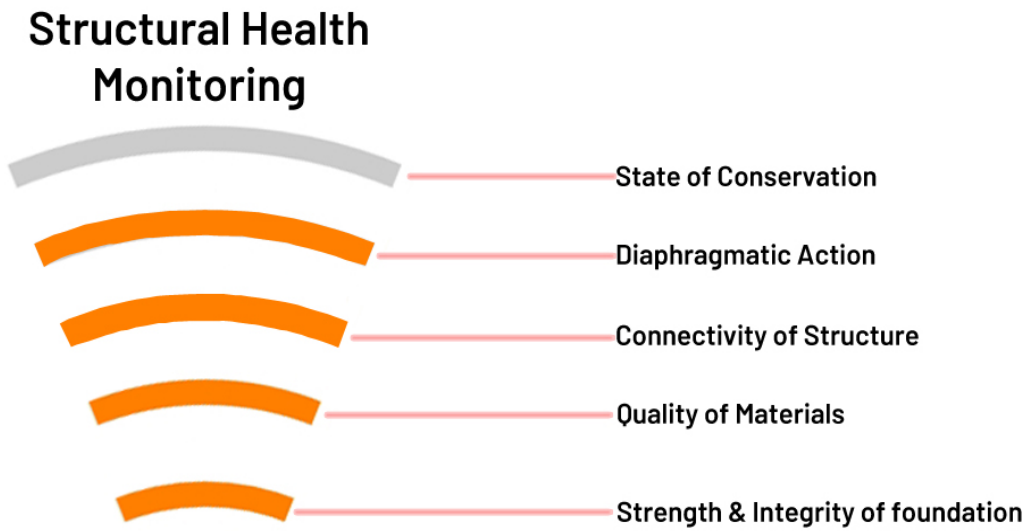

Digitisation

Just point and click, right? Right?

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1. Record detailed Paradata during the digital acquisition. Re-input exact values of any complexity measure previously estimated. Plus, any other information to describe the digitisation process.

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3. Assess/validate accuracy resolution and error of the Raw Data output in comparison to the Stakeholder requirements and the intended use before signing off.

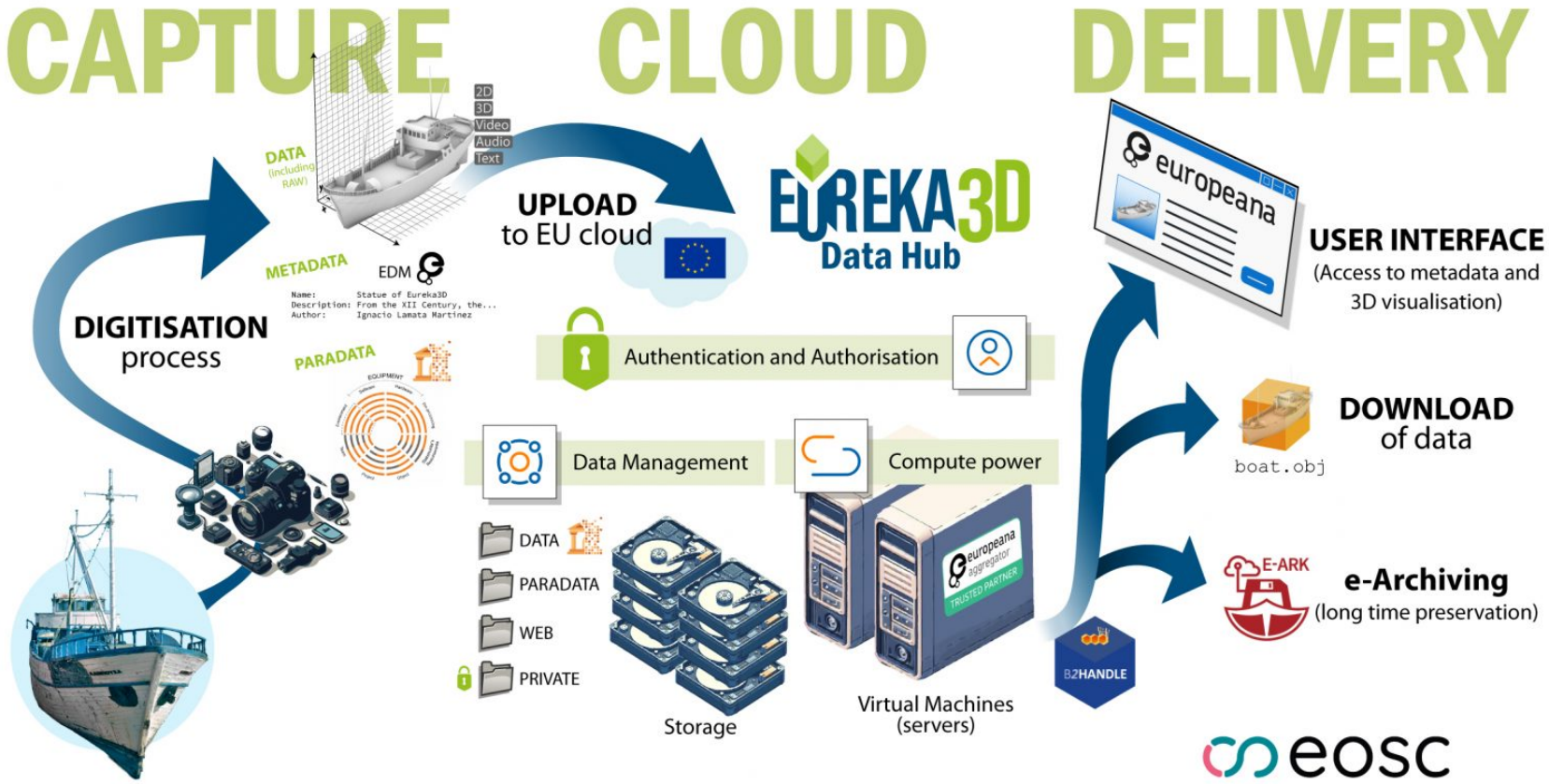
Post Digitisation

So far, so Good, so What?

1. Process your Raw Data into a workable 3D model. Remember you are likely to need a full resolution 3D Model and associated files stored offline for delivery to professionals, on request. Plus, an optimised 3D model that is flexible to display on a wide range of platforms (3D viewers/visualisers).
2. Create a Back-up of all your finalised Data. Remember to acquire consent if storing personal data.
3. Assign Rights Labelling to your 3D Models according to the permissions of relevant Stakeholders.
4. Publish your 3D models, Metadata and Paradata.
5. Disseminate your project to your target Stakeholders.

Post Digitisation

So far, so Good, so What?



EUREKA3D XR

EUreka3D – European Union's REKonstructed content in 3D to produce XR experiences

THANK YOU

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mnemosyne@cut.ac.cy

EUreka3D-XR project is co-financed by the Digital Europe Programme of the European Union, GA n. 101174054

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