



3D SURFACE SCANNING SERVICES

High-accuracy, non-contact digital capture for industry,
academia and collectors



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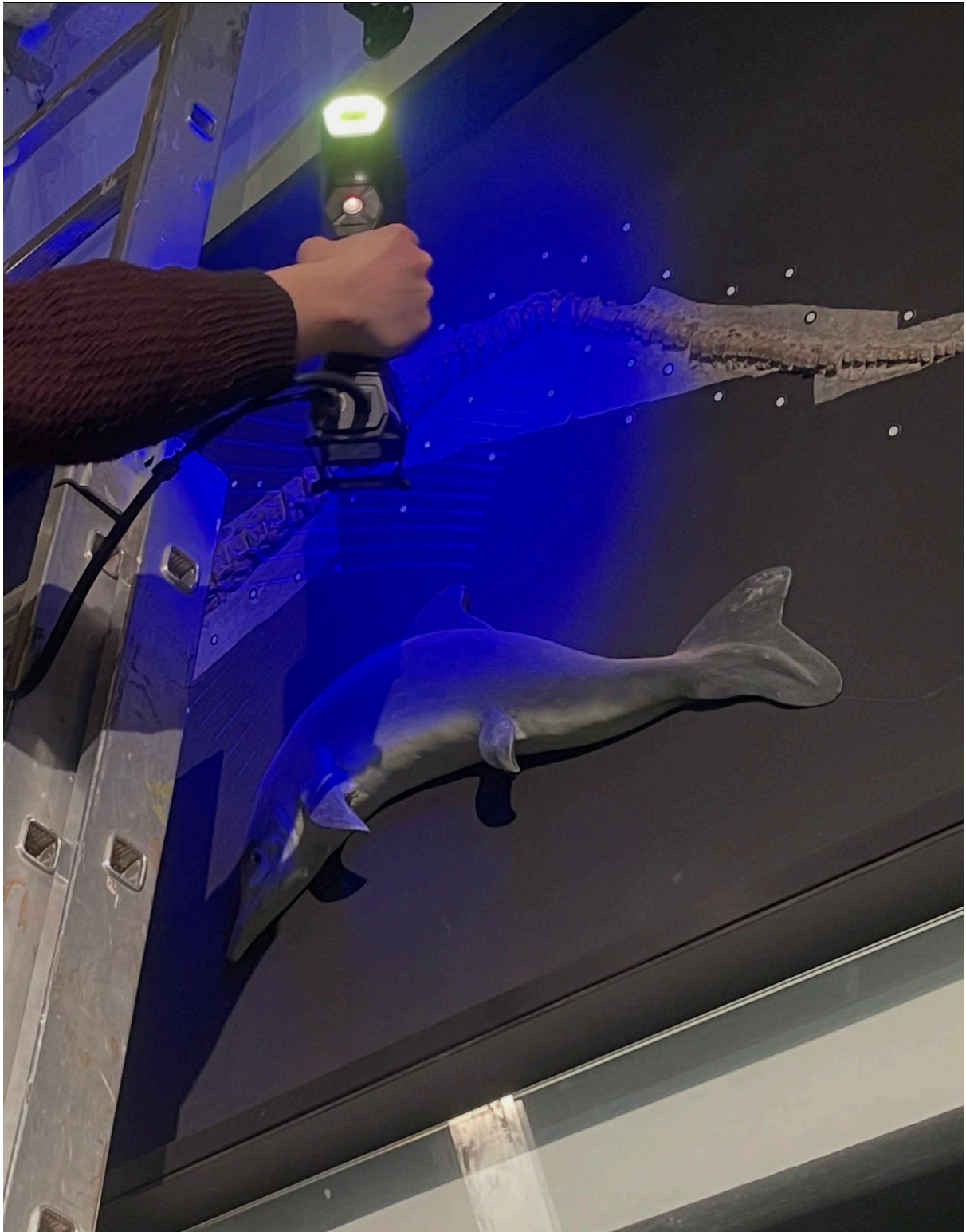
Capture detail — without contact, damage or destructive handling

3D surface scanning creates precise digital models of an object's external form. Using non-contact optical scanning methods, it captures complex geometry, fine surface detail and difficult shapes quickly and accurately, making it ideal for inspection, documentation, analysis and digital archiving.

At the Natural Sciences Museum, 3D scanning is delivered by experienced specialists with backgrounds in scientific imaging and university laboratory environments. Our approach prioritises accuracy, careful handling and practical outputs, so clients can move from physical object to usable digital model efficiently and confidently.

Who we work with

Industry • Universities and research groups • Museums and conservation teams • Private collectors and enthusiasts



What you can do with 3D surface scanning

3D surface scanning supports a wide range of applications across inspection, research, documentation and digital preservation.

For industry

- Carry out dimensional inspection and external geometry verification
- Support reverse engineering of complex or legacy parts
- Assist quality control and comparative assessment
- Document wear, deformation and surface condition
- Capture complex components for measurement, archiving or downstream design workflows

For academia

- Record external morphology for research and teaching
- Support comparative studies and research-led documentation
- Create digital archives of objects and specimens
- Generate publication-ready visual material and shareable 3D data

For collectors and enthusiasts

- Digitally preserve objects without altering or damaging them
- Record fine surface detail for personal documentation or display planning
- Create digital files for archiving, sharing or 3D printing
- Explore and preserve fossils, toys, models, natural history material and other valued objects

What you receive

Deliverables are agreed at quotation stage and may include:

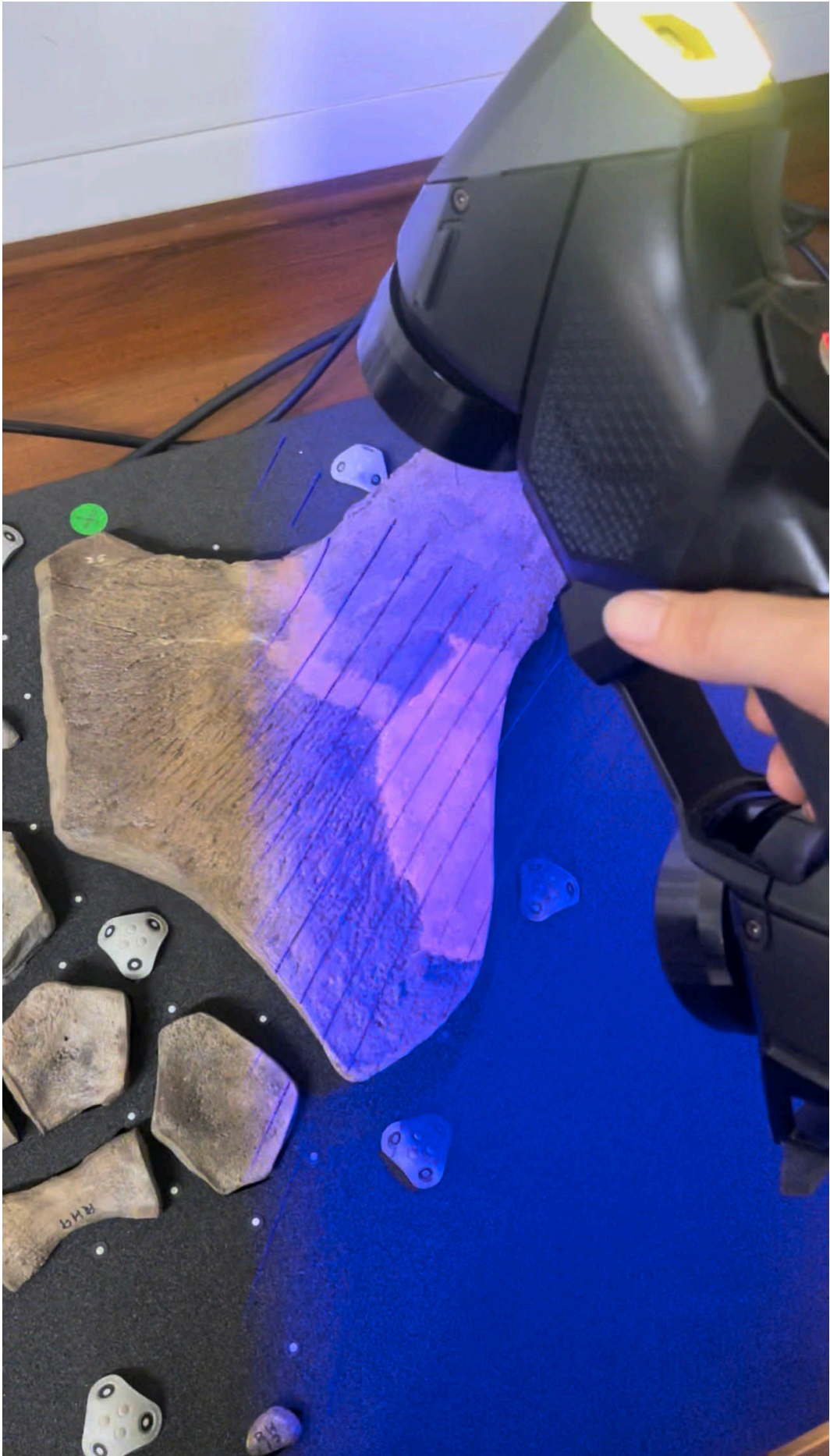
- Polygon mesh models for visualisation, inspection and archiving
- Point-cloud data for engineering, analysis or reconstruction workflows

- Cleaned and aligned scan datasets ready for use in common software environments
- Rendered images for reports, publications, presentations or records
- Prepared files for 3D printing where appropriate and agreed in advance

Common file types

Project requirements vary, but common outputs include mesh and point-cloud formats suitable for engineering, design and research workflows. File types may include STL, OBJ, PLY and other project-specific formats. If your workflow requires a particular export type, please let us know at enquiry stage.





Our services

3D surface scanning

High-accuracy, non-contact capture of external geometry using advanced handheld scanning systems.

We work with a wide range of materials and object types, selecting the most suitable scanner and capture method according to the object's size, surface characteristics and intended use. This helps ensure reliable data quality while balancing detail, efficiency and practical project needs.

Mesh cleaning, alignment and advanced data preparation

Post-processing converts raw scan captures into usable, well-prepared digital assets. Depending on the project, this may include cleaning stray data, aligning multiple scans, preparing watertight meshes and optimising models for analysis, display or manufacture.

Typical post-processing outputs include:

- Cleaned mesh files
- Aligned datasets from multi-part captures
- Prepared models for visualisation, publication or 3D printing

Consultancy and support

We provide practical support from planning through to delivery, including:

- Feasibility assessment to determine the most appropriate capture method
- Guidance on object handling, scanning strategy and expected outputs
- Advice on accuracy, resolution and surface limitations
- Support with data preparation for downstream engineering, research or display use
- Handover sessions to help clients use the final files confidently

Not sure whether your object is suitable?

Send photos, approximate dimensions, material details and what you need to achieve. We will advise on feasibility and the most efficient route to results.

Services for industry

The Natural Sciences Museum offers professional 3D surface scanning for industrial clients using a blue-laser handheld system. The service provides accurate, non-contact capture of external geometry, suitable for complex shapes, fine surface detail and challenging materials.

Surface scanning supports a wide range of industrial applications, including dimensional inspection, reverse engineering, quality control, wear analysis and documentation of complex or legacy components. The service is particularly useful where accurate external capture is required without physical contact or where traditional measurement methods are impractical.

All work is carried out by experienced specialists with backgrounds in scientific and university laboratory environments, following recognised ISO principles and best practice. Scan data is supplied in standard mesh or point-cloud formats compatible with common engineering and design software. Projects are delivered on a defined scope basis, with outputs agreed in advance to ensure reliable, high-quality results.

Services for academia

The Natural Sciences Museum offers 3D surface scanning services tailored to the needs of academic researchers, using a blue-laser handheld system. The service supports high-resolution, non-contact capture of external geometry for research, teaching and publication.

Surface scanning can be applied to a wide range of academic uses, including morphological analysis, comparative studies, digital archiving and research-led documentation of objects and specimens. The museum works with researchers who understand academic workflows, data

standards and publication requirements, helping to ensure outputs are appropriate for scholarly use.

Projects may be structured as service work or collaborative research, with discounted rates available for academic partnerships. Confidentiality can be maintained through non-disclosure agreements where required, allowing data to remain private until publication. Data is provided in standard formats compatible with common research and analysis software.

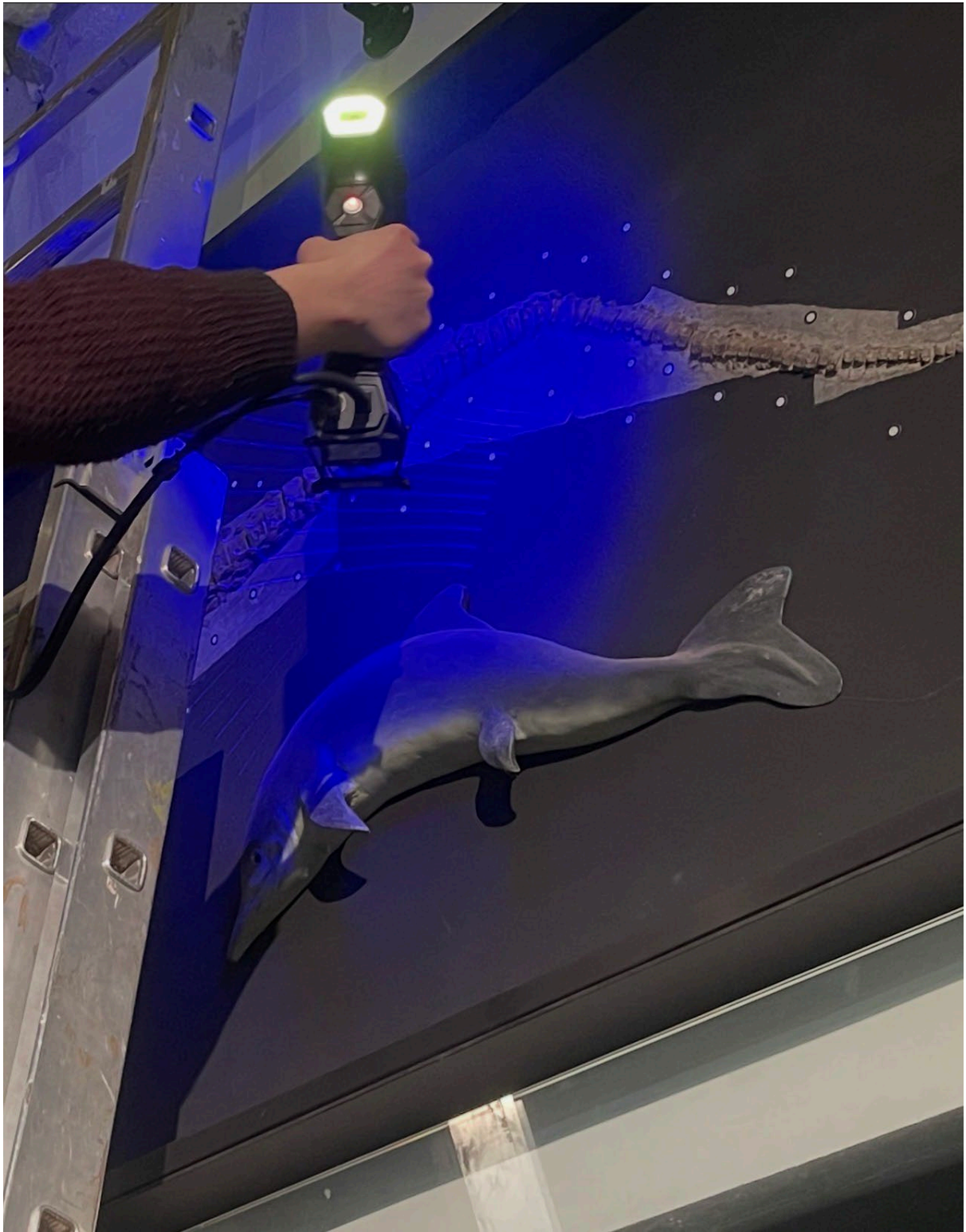
Our approach prioritises research integrity, data quality and effective collaboration, making the museum well suited to academics seeking dependable 3D scan data within a supportive research environment.

Services for collectors and enthusiasts

For collectors and individuals curious about the objects they own, 3D surface scanning offers a way to explore and preserve items digitally without altering or damaging them. Using handheld 3D scanners, the service can capture fine surface detail from a wide variety of objects, from fossils and natural history material to collectibles, toys, models and household items.

Surface scans can be used for personal documentation, digital archiving, display planning or simply to create files for 3D printing. Each item is treated with care and discretion, and the scanning approach is adapted to suit the object and the intended purpose.

Digital models are supplied in accessible formats, allowing collectors to view, store or share their objects in three dimensions while preserving the originals.



Our equipment

Blue-laser handheld scanner

Creaform HandySCAN BLACK Elite

A metrology-grade handheld scanner used for high-accuracy surface capture on complex parts and challenging finishes.

Key specifications:

- Accuracy: 0.025 mm
- Volumetric accuracy: 0.020 mm + 0.040 mm/m
- Enhanced workflows available using MaxSHOT-supported approaches where appropriate
- Measurement capability: suitable for detecting fine features such as small steps and holes, depending on the application

Structured-light scanner

3DMakerpro Seal Pro

A compact, high-detail scanner suited to smaller objects and controlled capture where fine surface fidelity matters.

Key specifications:

- Accuracy: 0.01 mm
- Resolution: 0.05 mm
- Typical object size range: approximately 10–300 mm
- Working distance: approximately 180–280 mm

Choosing the right system

Scanner selection depends on the object's size, material, surface finish and required outcome. Larger or more complex industrial objects may be better suited to the blue-laser handheld system, while smaller items requiring fine surface fidelity may benefit from structured-light capture.

Supporting scientific projects

Assisting your research

At the Natural Sciences Museum, we are committed to supporting researchers and helping bring scientific projects to life. Whether you are starting a new project or strengthening an existing one, our team can provide the technical support, consultation and documentation needed to help move work forward with confidence.

Engagement and consultation

The first step is to engage with us. We work with researchers to understand the aims, requirements and practical constraints of each project, helping identify how 3D scanning can be used effectively within a wider research plan.

Quoting and approval

Once project requirements are clear, we issue a detailed quotation. Where required, we can also provide a support or commitment statement to align with the conditions of a funding body or bid application. Open communication is encouraged throughout, and we are happy to discuss specific funding-related needs.

Support for internal researchers

For researchers within the museum, the process is designed to be efficient and straightforward. Internal researchers should complete the Facilities Quote Form for final approval. Once approved, the quote can be entered into the internal system for a smooth administrative process.

Support for external researchers

External academic and industrial researchers can also benefit from funding-related support. Following quotation and any required support statement, the documentation can be included within a research funding application. Our team can guide researchers through the required steps so the relevant information is in place.

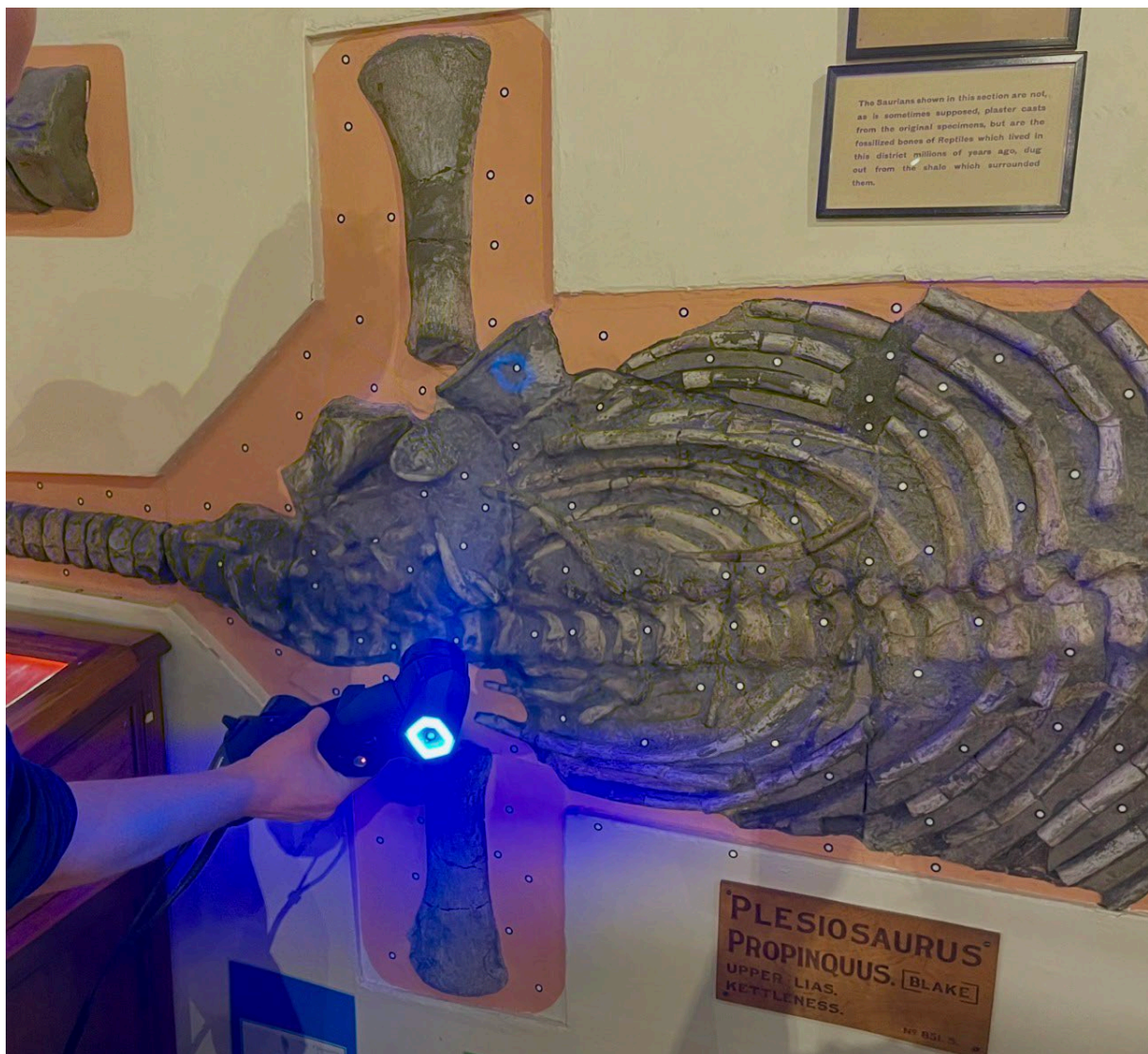
Exclusive support for innovation

To encourage innovation and early-stage project development, annual licences are available exclusively to Sheffield-based researchers, giving access to museum equipment at a reduced cost. Supported by subsidy from the Natural Sciences Group, these licences can be used to generate preliminary data and strengthen future funding applications.

Let us help bring your research to life

The Natural Sciences Museum is here to support the next generation of scientific discovery. Whether you need technical guidance, project consultation or access to specialist equipment, our team is ready to help at every stage.

For more information, please contact research@nsm-uk.org.



Pricing, turnaround, quality assurance and confidentiality

Pricing

3D surface scanning: £80 per hour

Mesh cleaning, alignment and advanced data preparation: £40 per hour

Reduced rates are available for charities and academic users. Pricing is provided on request depending on project scope and collaboration requirements. All pricing is discussed in advance to ensure clarity and transparency before work begins.

Indicative costing

Because objects and project aims vary, total cost depends on capture time and post-processing effort. As a guide:

- A straightforward scan with core deliverables may often require a small number of hours depending on object size and complexity
- More complex projects involving multiple objects, alignment or extensive mesh preparation will require additional processing time

Turnaround times

Turnaround is quoted per project and depends on scheduling, complexity and post-processing requirements. If you are working to a deadline, please tell us at enquiry stage and we will advise on the most realistic delivery route.

Quality assurance

All work is carried out by trained specialists using documented workflows aligned with recognised ISO principles and best practice. Our aim is consistent data quality, dependable outputs and clear documentation of what has been captured and delivered.

Data security and confidentiality

Optional non-disclosure agreements are available for industry, academic and collector projects. Data is handled professionally and discreetly. Data ownership, retention and permissions for promotional use of images are agreed in advance.



Book your scan

Step one: Enquire

Email imaging@nsm-uk.org with:

- A description of the object and its material, as far as known
- Approximate dimensions and weight
- What you need to achieve, such as inspection, reverse engineering, documentation or archiving
- Any confidentiality requirements
- Your deadline, if applicable

Step two: Feasibility and quote

We review feasibility, recommend the most suitable scanning approach and provide a written quotation.

Step three: Drop off or arrange access

We agree intake logistics, handling requirements and any practical details needed for scanning.

Step four: Scan, deliver, support

You receive the agreed deliverables and may also book a short handover session to help you use the final files confidently.

Contact

Imaging and Research Support
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3D scanning suitability depends on object size, material, surface finish and geometry. Some items may require a specific scanning approach or may not be suitable for every system. We will advise at feasibility stage.

