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Digital Upscaler

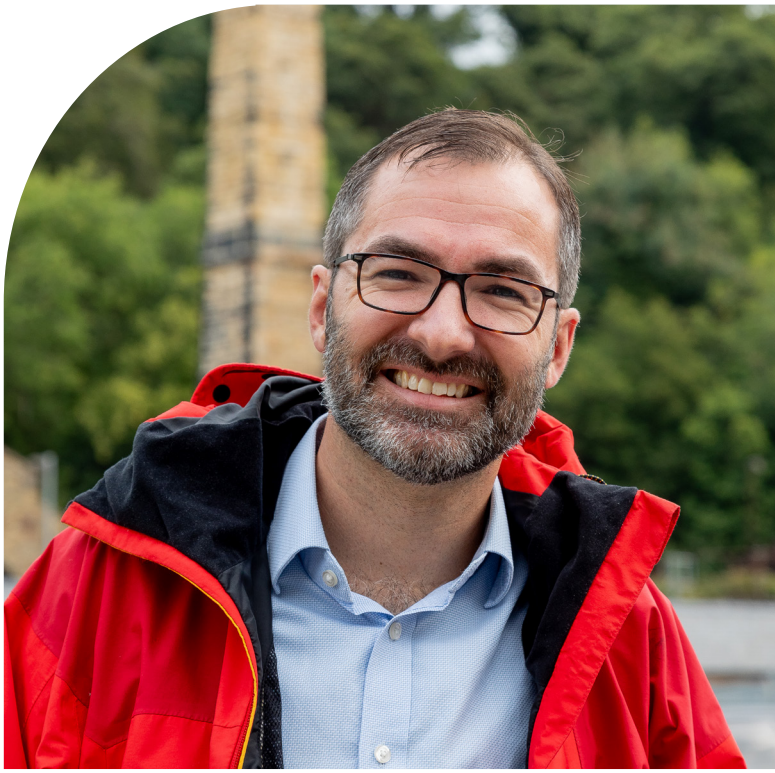
Case Study

Archaeological Research Services Ltd (ARS Ltd)

Sector: Archaeological contracting and consulting

District: Derbyshire

Support Accessed: £17,115.00 technology grant funding and one-to-one digital technology advice



Unearthing new growth potential: How the Digital Upscaler project helped Archaeological Research Services Ltd (ARS Ltd) to access funding to invest in innovative on-site soil-testing technology

When Chief Operating Officer Will Throssel and the rest of the senior leadership team at ARS Ltd embarked on the realisation of a ground-breaking, portable, in-field analysis solution to strengthen and improve the company's client offering, they engaged with the Digital Upscaler project for guidance and grant funding support.

Objectives

The result is a solution that enables the team at ARS Ltd to rapidly survey and report on the potential of deposits to host evidence of past human activity. It incorporates a rapid, high-frequency soil survey to aid in the identification and characterisation of archaeological deposits, which can then inform archaeological decision-making whilst in the field. Will told us this:

"Archaeology is a key consideration in the planning process as well as in several other commercial-development settings. The solution we've been able to bring to fruition, thanks to support from the Digital Upscaler project, helps manage the need for unnecessary excavation, whilst also facilitating the better targeting of excavation works. This is the first ever deployment of this device in commercial archaeology – it's made our proposition very exciting."

This revolutionary technique reduces the need to perform unnecessary excavation and improves the targeting of any necessary excavation works. It's an innovative approach that significantly improves safety and lowers a project's carbon footprint through the reduced requirement to have heavy plant on-site, as Digital Upscaler adviser Tom Conway explained:

"This was a relatively unusual scenario for the Digital Upscaler project as the grant applied for was to fund what was essentially a 'first of its kind' portable scientific/digital device designed for this purpose and linked to data systems. Having discussed the requirements in detail with Will, I conducted some research myself, and was able to help him articulate the details of the technology and the business case. Subsequently, I was able to pitch the application for funding successfully to the grant panel on behalf of the business."

Key outcomes at a glance…

- Technology grant funding was awarded, and a portable optically stimulated luminescence (OSL) scanner was developed for ARS Ltd (the OSL technique is used to characterise and help date geological sediments using ionised radiation to determine the last time a mineral was exposed to sunlight).
- Clients are no longer solely reliant on lab-based tests to characterise and date the soil; this innovation means ARS Ltd can analyse soil samples in the field, wherever that may be, giving its clients a reliable result without delay or disruption.

About the business

ARS Ltd is a commercial archaeological research company that was founded in 1999 by managing director Dr Clive Waddington whilst he was lecturing at Newcastle University. It provides heritage and archaeological services to a range of clients – including developers, civil engineering firms and archaeologists – working with businesses and local communities to reveal archaeology and mitigate the impacts on heritage/archaeology during any kind of development.

Headquartered in Bakewell, Derbyshire, the business is supported by a network of offices throughout the UK. Today, it employs over 80 staff members and in April 2023 ARS Ltd was awarded a King's Award for Enterprise for its innovation in geochemistry, making it one of only 148 organisations to have received the award this year.

Why did ARS Ltd engage with the Digital Upscaler project?

ARS Ltd's involvement with the Digital Upscaler project centred around finding a new way to assess soil in order to determine the best area to dig and maximise the likelihood of recovering archaeological material.

Will Throssel wanted to invest in leading-edge technology designed to provide a completely portable method for scanning the ground's surface. He could see that the guidance and funding available from the Digital Upscaler project would support ARS Ltd's vision to become the innovation leader in commercial archaeology through investment in technology that would give them a competitive edge by enabling them to 'dig smarter', as he explained:

"Innovation is very important to our business and our clients. The technology we planned to invest in provides relative soil aging on site and gives our clients (whether commercial or archaeological) the insight to be able to avoid potentially sensitive archaeological sites and potentially dig fewer holes. This offers obvious cost-efficiency benefits and has a positive impact in terms of the carbon footprint – both in terms of the emissions created by excavators and also by avoiding unnecessary soil carbon release. In the process of excavation, soil is disturbed, causing oxidisation with the air, releasing carbon into the atmosphere."

What was the primary challenge and how did the Digital Upscaler project's technology grant funding support ARS Ltd's innovation journey?

We asked Will Throssel to tell us more about the challenges that ARS Ltd was facing and explain how digital business adviser Tom Conway was able to help. Will told us this:

"Due to the nature of what we do, our industry can sometimes literally have one foot in the past, and it needs to innovate to move forward. The Digital Upscaler project has helped us turn this challenge into an opportunity. It's allowed us to find new and compelling ways to 'dig smarter, not harder'. We've only had the kit since January, but it's already adding value on existing projects.

"Tom Conway not only helped us to scope out our requirements, but he was also instrumental in articulating the benefits of the often-complex technology that would be deployed, to give us the best possible chance of a successful application."

Key outcomes

The project saw the bringing together of scientific disciplines and archaeology with digital technology to create a new tool for commercial archaeology, which included the following:

- A portable soil-dating instrument to facilitate geochronological soil analysis.
- A network solution for remote data analysis with an appropriate specification to give ARS Ltd the capability to support the collection, storage, analysis and reporting of the data, together with the facility to support the remote processing of this data.

Key impacts

- Improved efficiency, accuracy and speed, which will be demonstrated with faster results, reduced costs and a lowered risk of missing important discoveries.
- The replacement of traditional manual processes with a technological solution for the identification of cultural vs natural sediments in the field, enabling better targeting of archaeological interventions.
- The ability to conduct a rapid assessment of a site's potential – compared to existing, more manual methods – that will provide a cost-effective option for projects of all sizes in the future.

"I'm confident that the business and its clients will benefit from the funding secured. Working with Will and his team has been fascinating; from a personal perspective, I believe the potential to make discoveries – which could easily be overlooked when there is limited time and resources for fieldwork – is a very exciting proposition indeed. This new solution is likely to prove to be very attractive from a customer perspective, particularly considering the consequential impact on customer projects for construction, development, etc. once the archaeology is completed."

Tom Conway,
Digital Business Adviser

"I found Tom really helpful in guiding us through the process. He helped get the tender criteria together and helped us assess the quotes as they came in. This helped us establish that only one provider had the level of expertise required, and the unit was built to order by the Scottish Universities Environmental Research Centre (SUERC), a facility jointly founded by the Universities of Glasgow and Edinburgh and located in East Kilbride."

Will Throssel, Chief Operating Officer,
Archaeological Research Services Ltd

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