

## Ipaast-czo:

# interoperable precision agricultural and archaeological sensing technologies

### What is the ipaast-czo project about?

Remote and near-surface sensing technologies such as satellite imaging, UAV imaging, and geophysical survey are used in the practice of precision agriculture to support farmers and land managers to make data-driven management decisions. Archaeologists use many of these same sensing technologies to investigate the buried evidence for past human activities and make this evidence for the heritage of agricultural landscapes visible. Fundamentally, practitioners and researchers in both precision agriculture and archaeology are invested in developing a better understanding of soil conditions and their impacts on plant development by using advanced sensing technologies and related analytical methods. Consequently, there is a vast, untapped potential for sharing data and analytical approaches, enabling new research in both domains at an unprecedented scale and level of detail, leading to enhanced interpretations of the character of the agricultural landscape.



Image credit: Rachel Opitz

To develop mutually beneficial approaches to the agricultural landscape, the ipaast-czo project will engage members of the agricultural and archaeological communities to:

- develop a network around precision agriculture as a key emerging data source on topography, soils, and plants.
- identify potential means by which archaeological methods and insights can augment the knowledge created through precision agriculture.
- enable mutually beneficial, collaborative use of advanced sensing data through the development of compatible (meta)data structures, analytical and interpretive workflows.
- strengthen our understanding of practical challenges and barriers to interoperability of precision

agricultural and archaeology-based advanced sensing data collection practices.

- create a new conceptual understanding of agricultural landscapes, building interconnections between contemporary precision agriculture technologies, cultural heritage value, and sustainability, to develop knowledge about rural landscapes which is meaningful to all involved.

### Why is the ipaast-czo project important?

Rural landscapes are recognized as central to our natural and cultural heritage. They are places of great value for communities. Agricultural landscapes are integral parts of rural landscapes and play a critical role in the lives of rural communities, in food production, and sustainability. Today, rural agricultural landscapes are being fundamentally transformed by the introduction of advanced farming technologies in the form of precision agriculture. In parallel, new policies and incentives are being developed to address the climate crisis, environmental sustainability and food security. There is an urgent need to bring the communities studying the past and present of agricultural landscapes together, connecting stakeholders in heritage, archaeology, policy, farming communities, and precision agriculture to understand the impacts of and shape positive outcomes for this transformation, developing common ground and shared agendas. Concrete methods are needed to support a new transdisciplinary approach. The ipaast-czo project is beginning to develop these methods by focusing on the characterisation of data and analytical workflows to provide an operationalizable and nuanced basis for this work.

## Who is leading the ipaast-czo project?

The ipaast-czo is a collaboration between researchers in archaeology who are studying the evidence for long-term impacts of human activities on today's farmed landscapes and researchers in agronomy and precision agriculture who are studying how to best manage today's farmed landscapes sustainably. The project team is based in Spain, Italy, Belgium and the United Kingdom. You can read more about the team [here](#).

## How might I benefit from following or participating in the ipaast-czo project's work?

*If you are an archaeological researcher*, you will have the opportunity to learn about the potential of data created through precision agriculture for your studies of landscapes or regions. If you work directly with remote or near-surface sensing data, by participating you may benefit from new perspectives on the interpretation of your own data.

*If you are a heritage manager*, you will have the opportunity to learn about emerging data standards for remote and near surface prospection data, which may eventually impact on the character of the data you receive. By participating, you can contribute to shaping future standards and benefit from influencing this process.

*If you work in precision agriculture*, you will have the opportunity to learn new potential applications for your data in archaeology and heritage management. By participating, you may also benefit from learning new approaches to analysing and interpreting the data you collect.

*If you are a land manager*, you will have the opportunity to learn about how the same remote and near-surface sensing datasets can be used to support sustainable management of agricultural land and simultaneously add value to it by revealing its heritage.

*If you are working to promote the sustainability of agricultural landscapes and soils*, you can benefit by learning about how these remote and near-surface sensing data can be redeployed to support research in environmental and sustainability domains. By participating, you can contribute to shaping interoperability standards that may also support your research and management applications.

## How can I learn more about the project?

You can read more about the project and its activities on its [website](#). You can also sign up for the [mailing list](#) to receive updates on the project's activities.



Image Credit: Wessex Archaeology. CC license.



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## How can I participate in the project's activities?

If you are interested in participating in project workshops, being contacted as part of a future stakeholder survey, or discussing anything else with the project team, please email the PI at [Rachel.Opitz@glasgow.ac.uk](mailto:Rachel.Opitz@glasgow.ac.uk) with the subject line 'ipaast-czo participation'.

## Who is funding this project?

The ipaast-czo is funded by the [British Academy](#).



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