

# Remote Sensing for Archaeology

## AARG/EAC/ISAP working party

Report 2022-2023 for the 24<sup>th</sup> EAC annual meeting, LVR LandesMuseum, Bonn, Germany 23-25 March 2023

*Report prepared by Rachel Opitz, Chris Gaffney, and Rebecca Bennett*

*21 February 2023*

### Activities

EAC Lidar Guidelines – Progress Report

*prepared by Rebecca Bennett*

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This short report is a summary of the progress on the development of new EAC guidelines for the use of lidar in heritage management across Europe. It covers the reporting period October 2022 to February 2023.

### **Establishing the Structure and Content of the Guidelines**

Following on from the survey and seminar in 2022, we brought all collaborators together in October and November for two lively round table discussions with 34 and 25 attendees respectively. In these we finalised the structure of the guidelines and drafted the critical points for each section of the guidelines to cover. Participants were also asked to confirm their willingness to co-author sections allowing us to establish working groups for each chapter.

The section headings are listed below with the full structure appended to this document.

Part 1: Acquiring Airborne Laser Scanning Survey (Approx Word Count: 7500)

Part 2: Data processing and Interpretation (Approx Word Count: 9000)

Part 3: Reporting and Archiving (Approx Word Count: 10,500)

Part 4: Applications and Management Considerations (Approx Word Count: 9000)

Part 5: Considerations for Specific Environments (Approx Word Count: 10,000)

At this stage the group also reviewed the contributors list identifying knowledge gaps and reaching out to individuals whose expertise was required to fill them. This resulted in 54 confirmed contributors.

### **Working Groups**

In December the collaborative workflows and shared drives were established for co-authors. These are structured as per the guideline sections and take the form of:

- a google email group for communications
- a google drive folder
- template documents for each subsection

- a Zotero library to collate references
- digital noteboard for meetings and idea sharing
- project program and deadlines

From January to June 2023 the co-authors are expected to meet at their convenience to flesh out the drafted contents into sub-sections of c.1500 words. The whole group is supported by monthly online checkins led by Rebecca Bennett to answer any questions and gather progress reports from the working groups. The deadline for draft chapters will be June 2023 with progress monitored closely throughout this period to ensure that the development of the guidelines stays on track. In March, the group will host their check-in as a hybrid in-person and online meeting to coincide with the EAC Conference in Bonn. It is anticipated that this will be particularly useful for drafting workflow diagrams to support various chapters. The continued engagement with this project by the network of professionals has been notable and the enthusiasm for co-working has been sustained through to the formulation of the working groups and commencement of drafting. These active contributions from a breath of specialists are critical to ensure the relevance and impact of the EAC Lidar Guidelines.

## **Appendix 1 – EAC Lidar Guidelines Final Structure**

### **Sections Subsections – Suggested Word Count**

#### **Part 1: Acquiring Airborne Laser Scanning Survey 1.1** Introduction 1500

Approx Word Count: 7500

##### **1.2** What is ALS 1500

##### **1.3** Justification and archaeological parameters for survey 1500

##### **1.4** Assessing existing lidar data 1500

##### **1.5** Commissioning new survey 1500

*Resource checklist*

#### **Part 2: Data processing and Interpretation 2.1** Data Treatment (processing) 1500

Approx Word Count: 9000

##### **2.2** Analysis 1500

##### **2.3** Archaeological Interpretation 1500

##### **2.4** Integrating Automation 1500

##### **2.6** Crowdsourcing and Citizen Science 1500

##### **2.5** Integration with Fieldwork 1500

##### **2.7** Competence of Personnel 1500

*Workflow documentation template*

#### **Part 3: Reporting and Archiving 3.1** Best practice for desk based reporting 1500

Approx Word Count: 10500

##### **3.2** Data presentation 1500

##### **3.3** Metadata and paradata 1500

##### **3.4** Data archiving 1500

##### **3.5** Standards for data interchange 1500

##### **3.6** Dissemination and Public outreach 1500

*Outputs checklist*

#### **Part 4: Applications and Management Considerations 4.1** Introduction - Lidar for landscape archaeology? 1500

Approx Word Count: 9000

##### **4.2** Lidar for feature detection 1500

##### **4.3** Lidar for feature monitoring for change and loss 1500

##### **4.4** Lidar for Geoarchaeological Applications 1500

##### **4.5** Integrating Lidar with Historic Environment Records 1500

##### **4.6** Lidar in the context of planning and development control 1500

**4.7** Lidar for landscape management 1500

**4.8** Challenges and Potential of multidisciplinary integration  
for heritage management 1500

**4.9** 3D Visualisation & Data Integration 1500

*Value added and limitations summary*

**Part 5: Considerations for specific environments 5.1** Agricultural 1000

Approx Word Count:10000 +

national case studies (if pursued)

**5.2** Coastal 1000

**5.3** Forest 1000

**5.4** Pasture 1000

**5.5** Urban 1000

**5.6** Uplands 1000

**5.7** Wetland 1000

**5.8** Macchia (Mediterranean) 1000

**5.9** Terraced (Mediterranean) 1000

**5.1** Karstic 1000

**Part 6: Thesauri of Terms**

**Part 7: References**

**Part 8: Appendices** Related National Standards, Codes and Guidance

List of Contributors

List of Consultees

ISAP Community Survey

*Prepared by Rachel Opitz*

In February 2022 EAC WP co-chair Opitz contacted ISAP chair Armin Schmidt with a query about the distribution of professionals specialising in archaeological geophysics across the heritage management, commercial, community and academic sectors. Because ISAP did not hold this data, their management committee determined to run a survey, which was open from March-May 2022. The results of the survey were published in ISAP Newsletter #65. The survey received 65 responses with 5137 reported projects from across Europe, with a majority from the UK (United Kingdom).

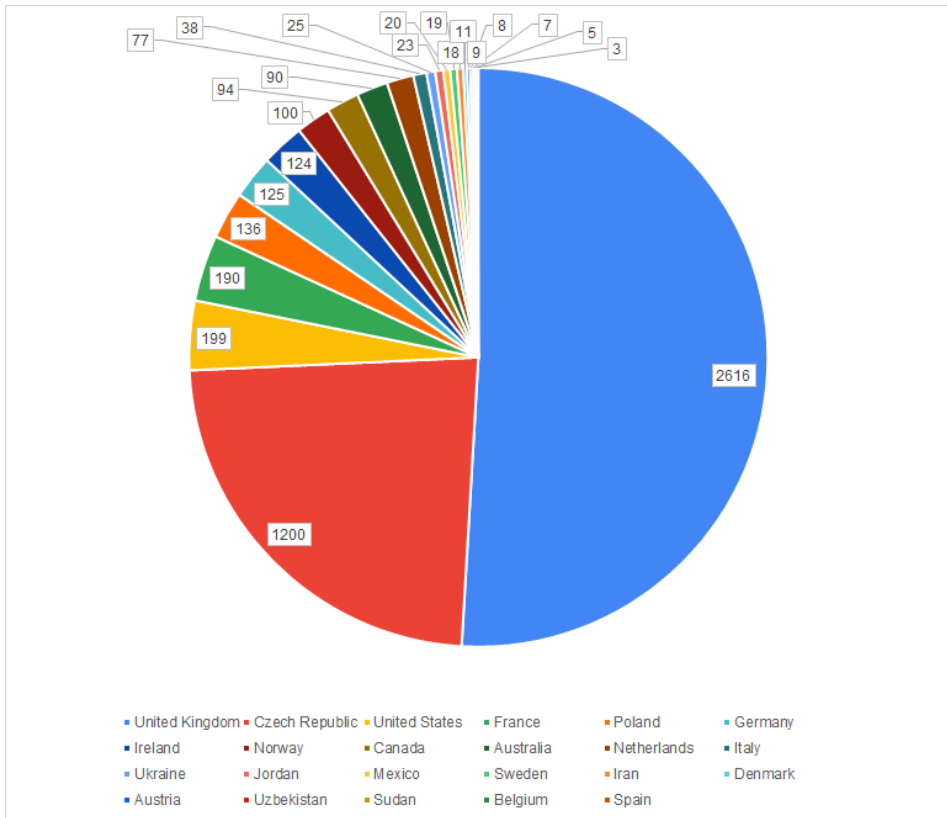
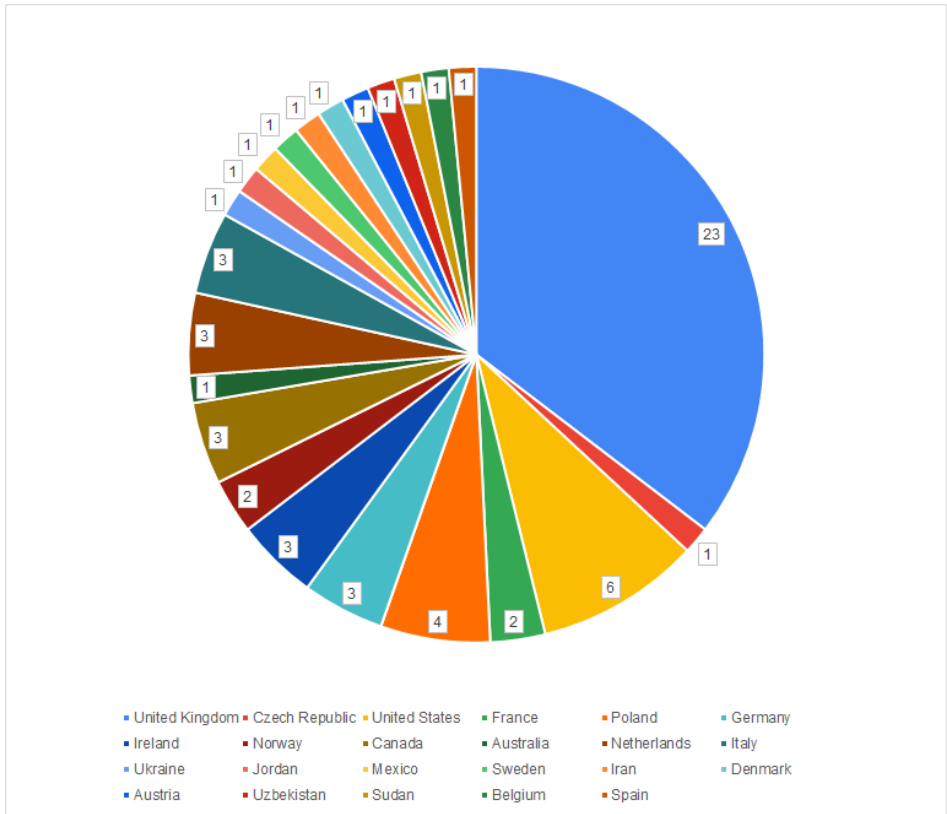


Figure 1: From ISAP Newsletter #65, p.17, number of responses and number of projects reported by country.

The report on the survey highlighted that “59% of projects were linked to the planning and development process, 34% to research (of which 19% from universities and 15% from community projects) and a fairly large proportion of 7% were outside of these categories. Rounding these figures broadly they can be summarised as 60/15/15. However, these ratios varied considerably between countries.” (ISAP news #65, p.18) Further free-text comments were also received from many respondents.

Following the reporting of the survey the EAC and ISAP chairs met to discuss running a modified version of the survey on a regular basis in the future, with the aim of building a picture of the role and contributions of geophysical specialists in the sector across the UK and Europe. This proposal will be considered by the ISAP management committee and membership at the next ISAP meeting.

The EAC WG provided a statement of the benefits to the ISAP community of responding to future surveys and polls:

- Documenting the contributions of specialist practitioners - Survey of the kinds of work undertaken, scale of data generated, skills and capabilities existing within the specialist archaeological geophysics community demonstrate the capacity of specialists to contribute to wider archaeological research, development-led, and heritage management projects and to integrated land management. Evidencing the scale and character of specialist contributions provides a basis for advocating for resources and the creation of new roles, for inclusion in decision making within larger organisations, and for consideration in the development of requirements, regulations and good practice affecting the wider archaeological and heritage management sectors.
- Documenting skills gaps and data requirements – Evidencing the unmet data needs of specialist practitioners and identifying skills gaps across the sector provides a basis on which to advocate for the acquisition of data resources and provision of new training courses within larger organisations. It will provide a basis for prioritising the development of new guidance or updates to existing guidance. Tracking changes in these factors over time will facilitate the demonstration of the impacts of new initiatives.

#### AARG (Aerial Archaeology Research Group) Community Survey planning

*Prepared by Rachel Opitz*

EAC WG co-chair Opitz contacted the AARG Committee to propose running a survey mirroring that sent to the ISAP community. This proposal was discussed and agreed in principle at an AARG committee meeting in January 2023.

Questions for an initial survey of the AARG community were drafted by the EAC RS (Remote Sensing) WP co-chairs in February 2023 and shared with the AARG committee for consideration.

#### **The proposed questions are:**

##### **For organisations:**

- Name (to be anonymised)
- Organisation or Group (to be anonymised)
- Role
- Approximate size of organisation (# employees)

- My organisation primarily operates in (commercial / development-led archaeology, heritage management, academic research, community engagement, mixed categories, other)
- Number of projects last year in each category (commercial contracts, heritage management, academic research, community-led, mixed categories, other)
  - If commercial (option to provide more detail):
    - % of projects that are related to development (whether private or government/infrastructure)
    - % of projects directly required by a conservator
    - % of projects that reported into the planning system
- What is the role of aerial archaeology and remote sensing in your organisation's work?
- What skills related to aerial archaeology and remote sensing does your organisation prioritise when recruiting staff and supporting ongoing professional development of current staff (at present, in 2023)?
- What resources relevant to aerial archaeology and remote sensing has your organisation invested in over the past 5 years (2018-present)?
- What resources relevant to aerial archaeology and remote sensing are prioritised for investment by your organisation over the next 5 years (2018-present)?

For Individuals:

- Name (to be anonymised)
- Career stage (student, apprentice, early career, mid-career, late career)
- I have worked in a professional capacity in organisations which primarily operate in (commercial / development-led archaeology, heritage management, academic research, community engagement, mixed categories, other) [checkbox, possible to select more than one]
- Describe your specialisation / expertise (options list + free text response)
- Are you an AARG member?
- In your view, what skills are most needed (valuable and in short supply) in the aerial archaeology and remote sensing sector in your country?
- In your view, what resources are most needed (valuable and in short supply) in the aerial archaeology and remote sensing sector in your country?
- Anything else you would like us to know about the state of the aerial archaeology and remote sensing profession in your country?

AARC/EAC/ISAP survey coordination planning

*Prepared by Rachel Opitz*

Following feedback from the ISAP and AARG committees and the EAC WG meeting in March 2023, the following are planned actions for 2023:

- Finalise questions to be asked for 2023 for AARG.
- Finalise questions to be proposed for 2024 for ISAP.
- Agree a shared venue for publication of results (e.g. Zenodo repository)
- Agree survey frequency and management responsibilities.

- Launch AARG Survey for summer 2023 in advance of the AARG conference, typically held in September.