What future for the publication of lidar data? Current trends and discussion

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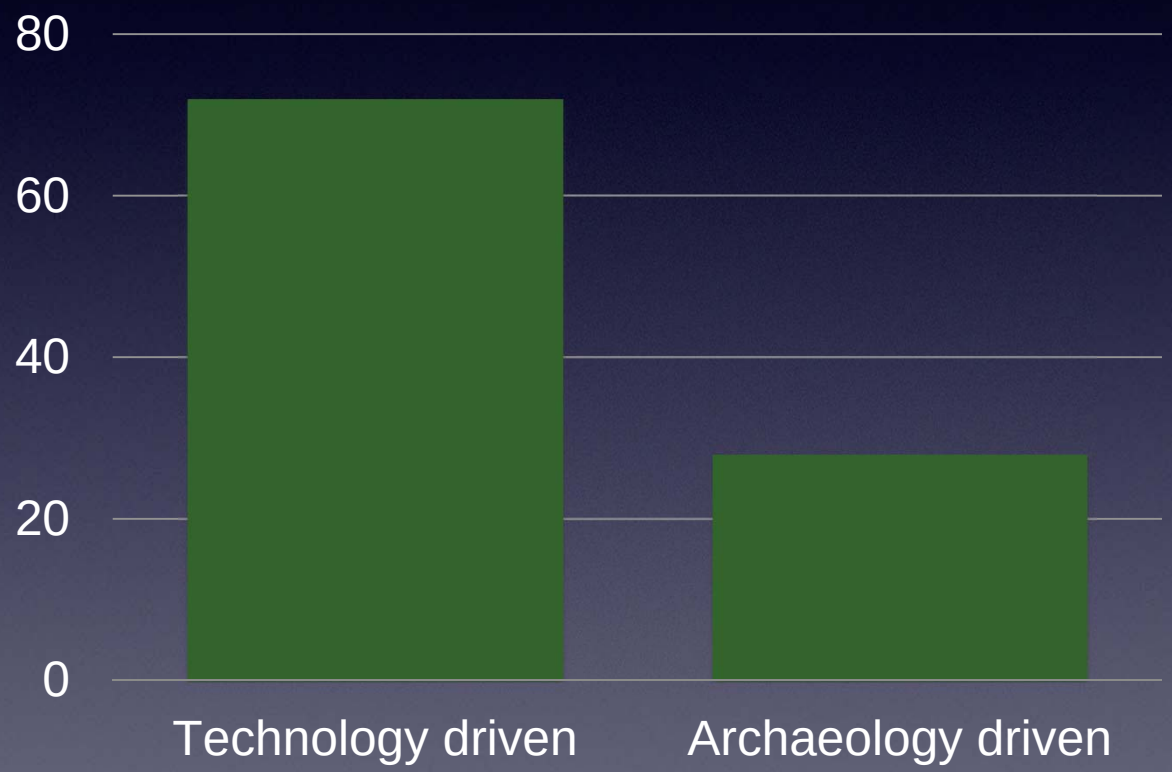
Preamble

- After more than a decade the use of ALS/lidar data in archaeology is entering its mature stage
- Case in point: the development of TRAIL

Publications 2014-2016



–source: Google Scholar

Observation

- In most “lidar” projects huge amounts of archaeological data and/or interpretations are produced
- Rarely huge amounts of archaeological data and/or interpretations are published
- Conversely, the most common obstacle is the lack of time/resources for the “full publication”

“Full publication”

- History of research
- Methodology (data processing)
- New data (catalogue of features/sites)
- Archaeological context (scientific problem)
- Archaeological interpretation

“Full publication”

- Solution 1: work in teams of specialists
- Solution 2: break down the publication in smaller chunks

“Partial publication”

- History of research
- **Methodology (data processing)**
- **New data (catalogue of features/sites)**
- Archaeological context (scientific problem)
- Archaeological interpretation

“Partial publication”

- Short articles / Scientific Reports / Grey literature
- Data sharing

However

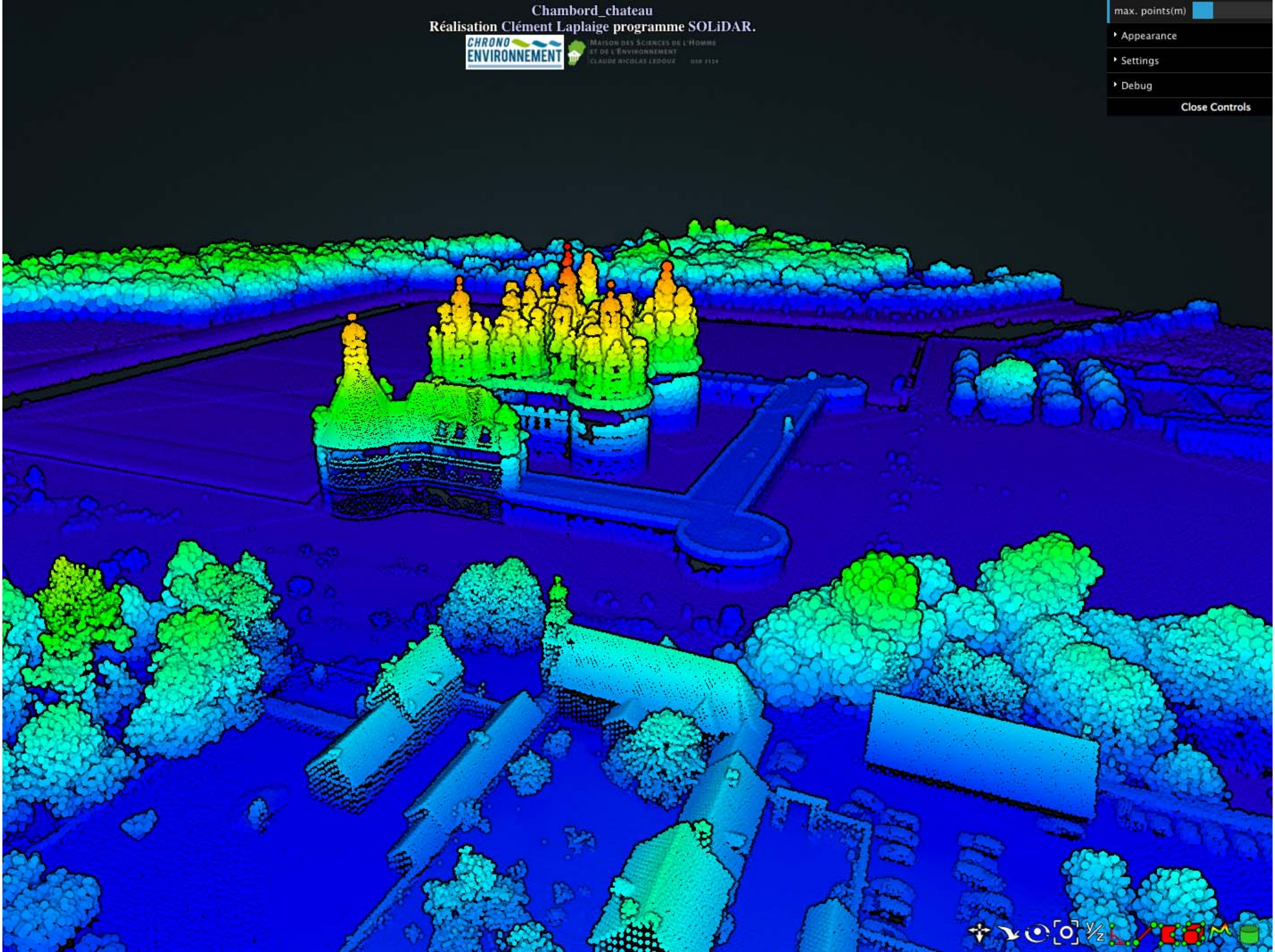
Three main challenges were identified for sharing data:

- Lack of professional recognition and reward,
- The work effort required to prepare data for deposit in a repository,
- In some cases there is a lack of available technology.

–source: ARIADNE report on Users' Needs

Technology

- Potree, a WebGL based viewer for large point clouds
- Potree software is distributed together with the LAStools package and offers a one-click solution
- Already used successfuly in combination with QR codes in printed reports in “programme SOLiDAR”


Chambord_chateau
Réalisation Clément Laplaige programme SOLiDAR.
CHRONO ENVIRONNEMENT
Maison des Sciences de l'Homme et de l'Environnement Claude Nicolas Ledoux
max. points(m)
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Debug
Close Controls

Technology

- Ariadne Media Services: High-resolution images

http://visual.ariadne-infrastructure.eu

Ariadne media service Browse Upload Help Contacts

ARIADNE visual media service

Create your online showcase for 3d models, images and RTI.

Upload » Browse »

The ARIADNE Visual Media Service provides easy publication and presentation on the web of complex visual media assets. It is an automatic service that allows to upload visual media files on an ARIADNE server and to transform them into an efficient web format, making them ready for web-based visualization.

3D models

3D representations produced with 3D scanners or photogrammetry are extremely high-resolution and hard to visualize at interactive rate. This service produces a web page that supports interactive visualization of your data, after converting it into an efficient multiresolution encoding.

View details » Demo

RTI images

Relightable images (called Reflection Transformation Images, RTI, or Polynomial Texture Maps, PTM) are becoming an increasingly used media. This service closes a current gap, giving support for easy publication on the web and interactive visualization of RTI images.

View details » Demo

High-resolution images

High-resolution images are a commodity resource in archaeology. Unfortunately, they are most often disseminated and published on the web by using low-resolution versions (a single 40Mpixel images is 120MB in uncompressed format and around 10MB when lossy compressed).

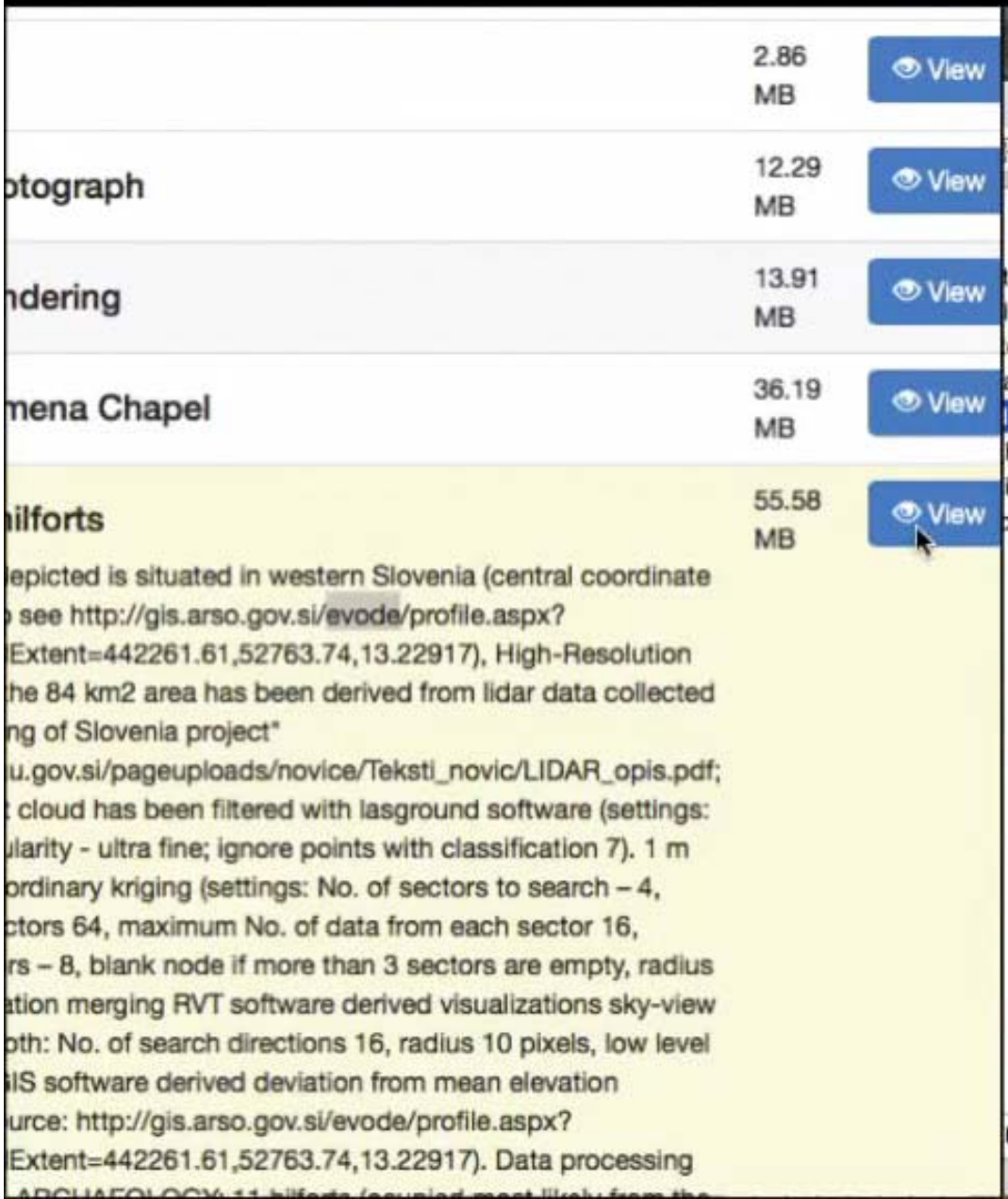
View details » Demo

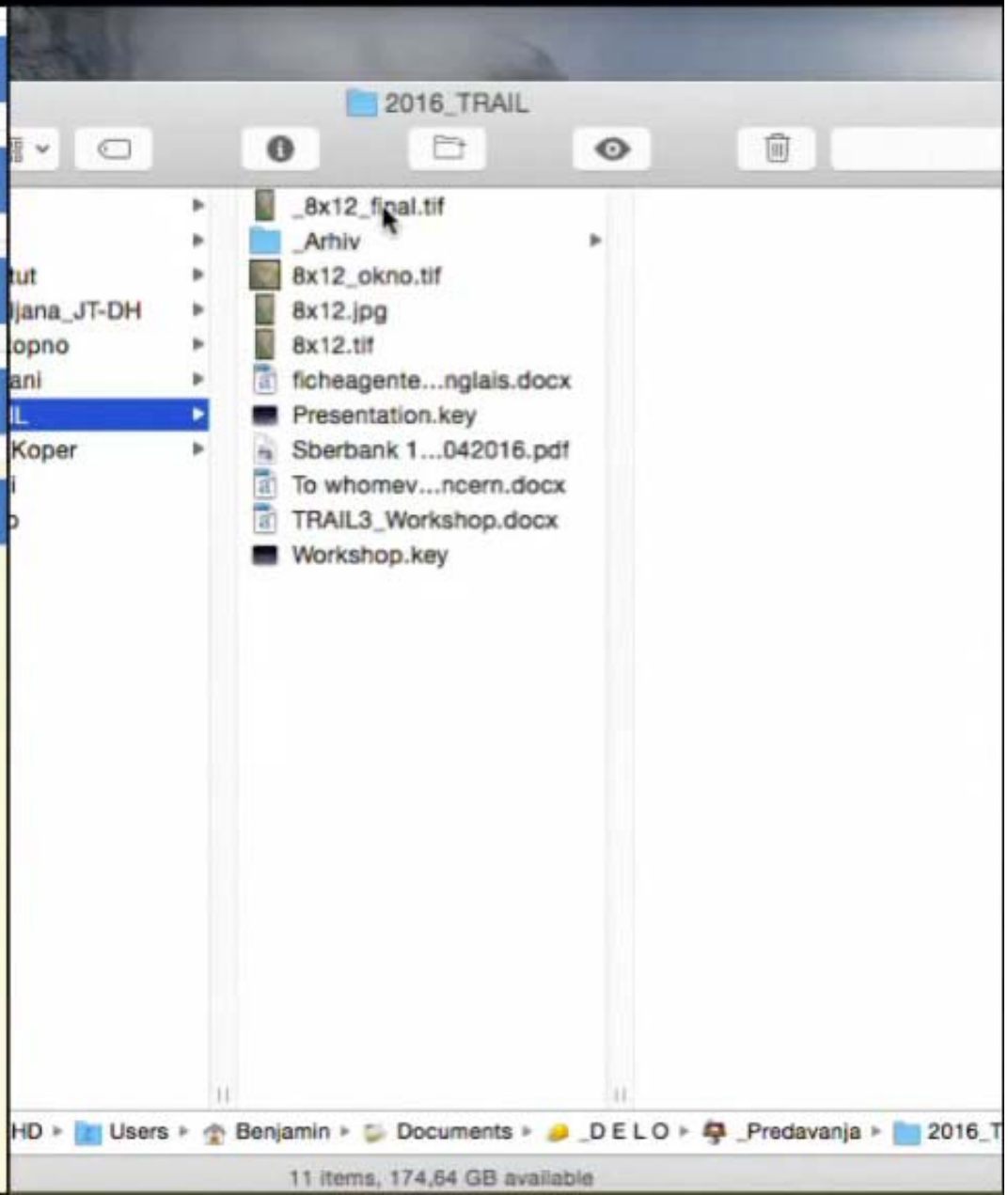
Test

- 84 km^2 of lidar data, 1 m DEM (visualized)
- 138,2 MB TIFF (7001 x 12001 px)
- iMac 2011 (2,7 GHz Core i5, SSD, 32 GB RAM)

Online

Desktop





However

Three main challenges were identified for depositing and sharing data:

- Lack of professional recognition and reward;
- The work effort required to prepare data for deposit in a repository;
- In some cases there is a lack of suitable available **repositories**.

–source: ARIADNE report on Users' Needs

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–source: ARIADNE report on Users' Needs

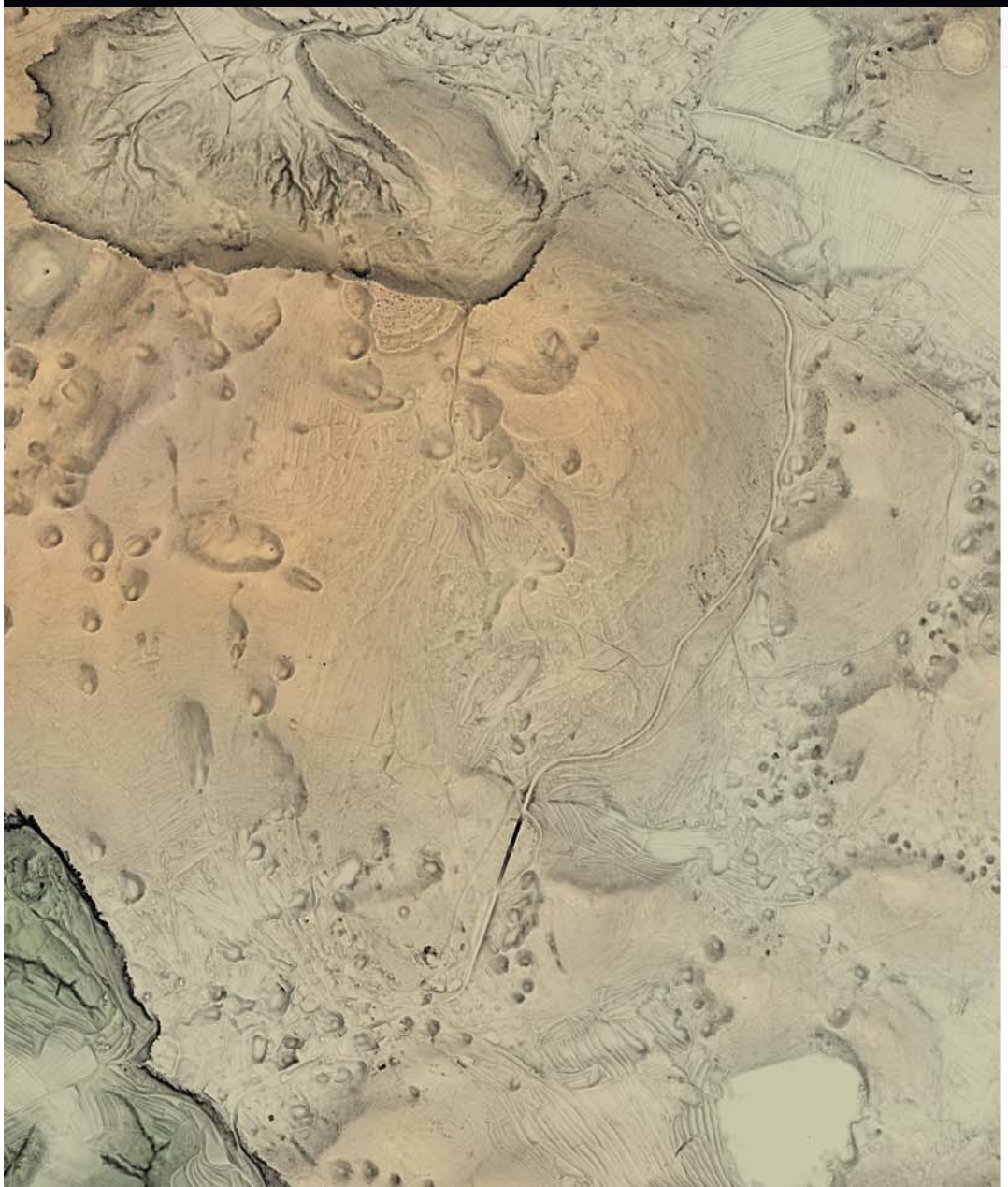
Solution?

New publication format:

- based on demonstrated technology
- focused on presenting archaeological features (incl. methodology/metadata)
- peer reviewed and recognized as scientific publication*
- ranked similar to scientific reports / short articles

* In my mind archaeological interpretation of individual features is a scientific process.

ARIADNE visual media service



Ariadne media service Browse Upload Help Contacts

Lidar image of Iron Age hilforts success

Link to online presentation: http://ariadne1.isti.cnr.it/img/lidar

Download whole presentation

Information about you

Email bstular@zrc-sazu.si

Name Benjamin Štular

Institution ZRC SAZU

Information about the digital object

Label lidar

Title Lidar image of Iron Age hilforts

Description The "Ridge of the Hilforts" area depicted is situated in western Slovenia (central coordinate Lon: 14°14'19", lat 45°37'7"; also see http://gis.arso.gov.si/evode/profile.aspx?id=atlas_voda_Lidar@Arso&initialExtent=442261.61,52763.74,13.22917),
High-Resolution digital elevation model (DEM) of the 84 km2 area has been derived from lidar data collected during the "Airborne laser scanning of Slovenia project"

Tags Archaeology x Lidar x ALS x Iron Age x Hilforts x Knežak x Ulaka x
A list of relevant tags.

Web resource An url for a web page about the object.

Copyright owner ZRC SAZU and Edisa Lozić

Collection ZRC SAZU digital archive

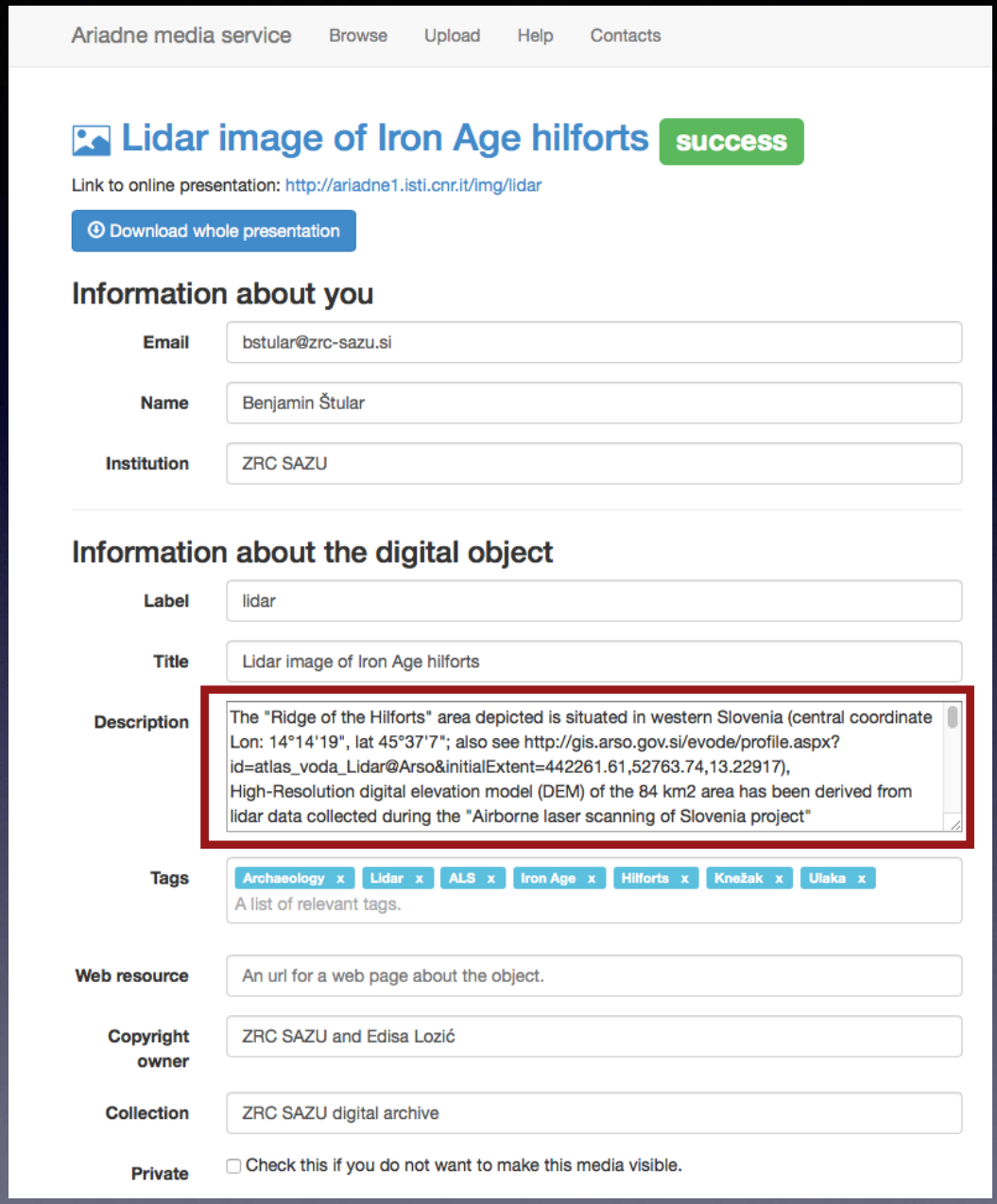
Private Check this if you do not want to make this media visible.

Method:

- lidar data
- processing
- visualization

Features catalogue:

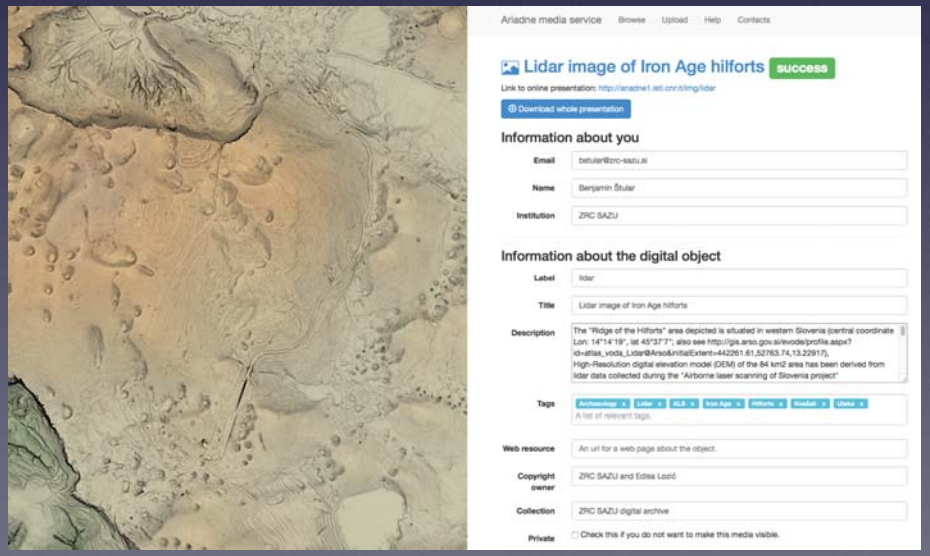
- source
- type
- confidence (type)
- dating
- confidence (dating)
- …
- archaeological interpretation



Solution?

Metadata rich
online publication
based on Hi-Res Image

Auto-generated
report*



*Very important for bibliographic reasons, i.e. in order to be recognized as a scientific publication.

Solution = New Publication Format?

+

- focused on presenting methodology/metadata and archaeological features (w/ interpretation)
- recognized as scientific publication
- ranked similar to scientific reports / short articles

Discussion

- Do we need/want a new publication format?
- If yes, does a Hi-Res Image based format makes sense?
- If no, what are the alternatives: GIS based, 3D based, data dump / repositories, ..?

Do we need/want a new publication format?

If yes, does a Hi-Res Image based format makes sense?

What are the alternatives:
GIS based,
3D based
data repositories,
other?