SATCULT Project: Good Practice Documentation Template

The application of satellite data in cultural heritage (CH) protection is still in its early stages, predominantly utilised by archaeologists. However, the SATCULT consortium has begun exploring its potential future uses in the wider CH area.

As part of an upcoming vocational training programme for CH practitioners , the SATCULT initiative gathers examples of Good Practices which show how satellite data can be used for the protection of CH including the benefits of accessing and utilising this data, and required skills for effective use. We are specifically interested in Good Practices from CH beyond archaeology.

The primary focus will be on desk research, collecting examples from European and international contexts with the assistance of Geoinformation and CH protection experts and practitioners. These examples will be analysed to determine the training needs of professionals and practitioners in CH protection and compiled into a compendium.

Please note filling this template requires knowledge to address properly the fields described throughout the survey. Although it is not long, it might take around 15 – 20 minutes to complete it thoroughly and properly.

A selected number of Good Practices, representing the working areas in cultural heritage, will be published in a European brochure and all Good Practices will be published on the SATCULT homepage and presented in the SATCULT LinkedIn group.

SATCULT:
Closing a knowledge gap by vocational training about satellite-based services in cultural heritage preservation

Erasmus+

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Project number 2024-1-DE02-KA210-VET-000244931

Name/Title of the Good Practice *

TRIQUETRA

Name of the organisation *

Adam Mickiewicz University

Type of organisation in charge of the Good Practice *

- ○ Cultural Heritage organisation
- ○ Cultural Heritage site
- ○ Cultural Heritage -related public entity (Ministry, Prefecture, Municipality)
- ◉ University
- ○ Research Institute
- ○ Earth Observation -related organisation
- ○ Geo-Informatics (Geomatics) organisation/company
- ○ Private Company
- ○ Άλλο: .....

Domain of organisation's activities/expertise *

- ○ Cultural Heritage
- ◉ Archaeology
- ○ Earth Observation
- ○ Geo-Informatics
- ○ Άλλο: .....

Contact Information and Organisation's Logistics

Respondent's contact details

Full name of the contact person *

Włodzimierz Rączkowski

Email address *

wlodekra@amu.edu.pl

Telephone number *

+48618174069

Organisation's details

Country *

Poland

City *

Poznań

Address *

Ul. Uniwersytetu Poznańskiego 7

Information about the Good Practice

Please name below the *Country*, *City* and *District* where the Good Practice took place *

Poland, Smuszewo

Please provide below a *Google Maps link* or *GPS coordinates* to the Good Practice's location *

longitude: 17.404016080003
latitude: 52.89584852217739

Is this considered a sensitive* area ? *
*(protected, fragile, has restricted access, or located within a conflict zone, etc.).

Please elaborate further.

it is protected archaeological site

Who owns the cultural asset (ministry, other public body, private institution, none), on which the Good Practice was applied ? *

local authority

Date(s) or period the Good Practice took place *

Please insert below the period when the good practice held. (eg. 2019-2020, March 2020 – June 2021, etc.)

Januray 2023 - April 2025

Description of the Good Practice *

Please describe how the satellite data were collected (please mention the repositories or services where you acquired them); how they were used in your project; which were the aims of your study; and why these data were useful towards your research goals. (character limit: 1500)

Repositories: EarthExplorer (CORONA & HEXAGON; Landsat); Sentinel HUB (Sentinel-1, Seninel-2), Planet Lab.
Purposes: 1) Monitoring climate change on a global scale, detecting trends and changes in different geographical locations; 2) Monitoring land use changes, vegetation cover, and hydrology. Useful for analysis in historic perspective (in combination with other data, e.g. meteorological). Limitation of optical imagery – clouds, irregular, random acquisition of useful data.

Why is this considered a Good Practice for making satellite data beneficial for Cultural Heritage ? (character limit: 1500) *

In many countries, access to other high-quality data (orthophotos, DTM) is limited. Even in Poland, where we have high-quality data (DTM – 0.5x0.5 m; orthophotos every two/three years – 10-15 cm resolution), there are situations where data gaps exist. It is also important to monitor changes more frequently (near real-time).

Required skills section

Skills required to conduct the Good Practice *

Please reflect here which skills – e.g. technical, technological, social, heritage-related – are/were needed for the successful implementation of this Good Practice.

Users must be skilled and it is likely that a team is required. It is difficult for one person to demonstrate competence in all areas. First and foremost, it is essential to understand the needs of the project (formulating research questions) and to know the potential and limitations of individual datasets. Furthermore, knowledge of potential data resources, the ability to access them, acquire them, and perform necessary preliminary processing is required. The prepared data can be analyzed in various ways, but their selection must stem from the questions. Finally, the interpretation of the data in the context of the questions is crucial, but it should be done by experts in the given field (e.g., cultural heritage, agriculture, hydrology, geomorphology, etc.). There is no way for one person to do this, but each team member should understand the steps taken by others.

Are/were there any technical skills required for this Good Practice that were not initially available within your organisation and had to be acquired or outsourced? *

- (●) Yes
- ( ) No

Please list the specific skills acquired or outsourced and describe their purpose (e.g. “I learned Python to automate the downloading and preprocessing of collected satellite data.”) *

The technological aspects of data acquisition are rather beyond my competencies. I have learned to acquire data from EarthExplorer, Sentinel HUB, etc. However, more sophisticated processing and quality checking of data belong to other team members. I can work with data in GIS, but this mainly allows for the use of already partially processed data. My competencies are more related to the interpretation stage in the field of heritage-related and partially environmental changes.

Evidence of success *

Please describe the benefits they provide to the cultural heritage asset (e.g. a site can be protected from a hailstorm, looters can be deterred from illegal excavation, damage can be recorded online through international cooperation, etc.). (character limit: 1500)

The use of satellite data will not protect an archaeological site from destruction, looting, etc. Using such data only allows for assessing the scale of potential destruction (the collected data is always... after the event, rather sporadically recording the moment). The procedure of acquisition, processing, analysis, and interpretation means that responsible institutions will always have this information post factum. However, long series of data allow for analyzing change trends and, as far as possible, preventing them or minimizing their effects. For example, this may concern changes in water levels in a lake (Smuszewo case).

Available references for the Good Practice *

Please mention below if there are any derived publications, media reports or any other content that refers to the described Good Practice. Please include also a web link if available.

(character limit: 1500)

Graf R., Kaczmarek L., Królewicz S., Rączkowski W., Żuk L. 2025 (in press), Climate Change and Archaeological Heritage: risk identification, mapping and monitoring strategies for lakeshore archaeolgical sites. The case study of the fortified prehistoric settlement at Smuszewo (Poland) and its environment, Italian Journal of Engineering Geology and Environment

Please upload 2-3 images that concern the Good Practice. *
(each image cannot exceed the size limit of the 100 MB)

Smuszewo_1a - ... Smuszewo_2a - ...

Προσθήκη αρχείου

Do you own the copyrights for these images ? *

- (●) Yes
- ( ) No

Should any form of media or outreach material will be created in the future, can we use them to advertise your organization and the CH asset with proper acknowledgement? *

- (●) Yes
- ( ) No

Please provide below the credits for the picture(s): *

Smuszewo_1a: HEXAGON - 16.02.1975
Smuszewo_2a: Smuszewo fortified site in aerial and satellite images 1966-2024 (source: USGS – 2-6, GUGiK – 1, 7-10, 12-15, Google Earth – 13, 16, 17; authors' acquisition – 11, 19, 20). The orange section helps understand the phenomenon of variability of the range of shoreline vegetation. (Author: S. Królewicz)

Did you encounter any technical and/or technological challenges or issues associated with the implementation of this Good Practice? E.g. missing knowledge, doubts of colleagues, financial issues. *

This is an ongoing learning process, and it is sometimes difficult to predict the problems that may arise.

Is there any potential for transferring this Good Practice to other cultural heritage organisations ? If so, please share more details. *

The Smuszewo case study is precisely aimed at developing a procedural model that can be applied by governmental bodies in the context of other sites located on the lakeshore.

Additional Information. Please include below any other information or experience you wish to share.

The information provided will be used exclusively for the activities of the SATCULT project and within the rules and obligations defined by the GDPR rules. The EU General Data Protection Regulation (GDPR) regulates how personal data of individuals in the EU may be processed and transferred. *

- (●) I have taken note of this information and agree to the use of my responses within the SATCULT project.