

INTRODUCTION

Satellite Evidence for Heritage Monitoring

AUTHOR(S)

Michelle Fabiani

1-2 SENTENCE FRAMING

In geopolitically or economically unstable nations, cultural heritage quickly becomes a target for damage, destruction, and looting. This case identifies humanitarian satellites as an equitable way for these nations to receive reliable data to improve monitoring and response times for their cultural heritage.

TIMEFRAMES & URGENCY

Increases in the frequency and intensity of geopolitical and economic tensions around the world make cultural heritage protection critical. Resources for monitoring and protecting these sites are fixed and minimal, decreasing even further in times of stress, while the cost of commercial VHR imagery is prohibitively expensive. These situations require access to equitable, reliable data and imagery for monitoring and protection.

STAKEHOLDERS

Data Users: Police, civil servants, researchers (cultural heritage practitioners, archaeologists), advocates (local, diaspora, and neighboring communities).

Intermediaries: International organizations (UNESCO, ICOM, UN), regional research groups, nonprofit advocacy groups.

Decision Makers: National governments, cultural heritage practitioners, regional governments.

THE DECISION CHALLENGE

THE SITUATION

WHO IS AFFECTED?

Local communities, national governments, and the international community are all affected by damage and destruction of cultural heritage that in effect erases valuable human history. Local communities lose connection with their own tangible history and cultural memory. Nations reliant on cultural tourism become less economically resilient. Humanity loses out on important history and information on who we are and how we evolved.

WHAT ARE THE DATA NEEDS?

AOI: Archaeological and culturally relevant sites within a country. This can be as small as a tell or mound, or as large as a city.

Frequency & Resolution: Sub-meter VHR imagery with high-frequency revisit (< 7 days) to track changes at the ground-level in near real-time.

THE DECISION CHALLENGE

WHAT DECISIONS NEED TO BE MADE?

International Arbitrators: Determining who should have access to imagery, accounting for national security parameters and dual-use risk by looters and organized crime groups.

Local Intermediaries: Deciding how to authenticate and publish satellite evidence without exposing vulnerable sites to further damage and destruction.

WHY ARE THEY DIFFICULT WITHOUT THIS DATA?

Commercial VHR data is prohibitively expensive and resources available to allocate to heritage protection are minimal. Those who monitor sites have to patrol large regions, making deterrence impossible at the best of times. In times of stress, these resources become more scarce.

HOW WOULD SATELLITE IMAGERY BE USED?

Those working for national governments (civil servants, police), cultural heritage practitioners, and scholars would ingest imagery, establish baselines, and then proactively detect changes at the site level. Data-driven decision making will help allocate resources to proactively protect sites and prevent further damage.

IMPACT, RISKS & GOVERNANCE QUESTIONS

WHAT CHANGES

WITH OPEN IMAGERY

- **Systemic Shift:** Democratizes access to essential data and the resulting evidence. Shifts cultural heritage protection from reactionary to proactive, evidence-based protection and resource allocation.
- **Community Agency:** Provides new opportunities for local communities and nations to document efforts to protect cultural heritage, supporting repatriation efforts.
- **Environmental Impact:** Promotes better management the land and culturally relevant locations.

POTENTIAL RISKS

- **State-Led Censorship:** Nations may limit access to the sites by researchers and practitioners in the name of national security, preventing ground-truthing
- **State Surveillance:** Access to very high-resolution imagery can be used to surveil local populations as well as protect cultural heritage sites.
- **The Compute Divide:** Not all nations may have access to sufficient computer processing power or the skills to utilize the data effectively.
- **Dual Use Risk:** Corruption within nations may increase the damage and destruction to sites based on the increased access to high resolution imagery. This may be particularly problematic during active conflict.

GOVERNANCE QUESTIONS

- ? **Access Tiers:** Should raw tasking rights for transboundary conflict zones be restricted to vetted civil or international intermediaries to prevent state-sponsored surveillance?
- ? **Accountability & Liability:** What legal liability does Common Space assume if nations accuse those accessing the imagery of violating their national security laws?
- ? **The Compute Mandate:** How can Common Space structurally guarantee that nations requesting open data also have access to the resources needed to use the data effectively?
- ? **Dual Use Risk:** What legal liability does Common Space assume if imagery increases damage and destruction at sites?