Presentation for FLL in depth

SLIDE 1

Problems that archeologists face:

Artifact exposure:

Artifacts being exposed to oxygen and elements with the air can cause decaying and weathering of the found objects

(Ruben)

Damage upon excavation:

Invasive methods and harsh use of tools and equipment can cause cracking,scratching and chipping causing irreversible damage

(Pijus)

Damage during transportation:

Knocks,drops and even prolonged vibrations from vehicles can cause breakages particularly in brittle items e.g ceramics,bones

(Oscar)

Looting/stealing:

Looters/ thieves can cause potential damage to artifacts

(Ruben)

SLIDE2

Our problem is: damage during transportation ; insufficient storage causes irreversible loss of information, limiting archeologists' ability to accurately interpret the past

(Pijus)

SLIDE 3

The teracotta army-case study

The teracotta army is an archeological discovery in which consisted of over 8000 clay soldiers buried for over 2000 years.

(Oscar)

Upon exposure, delicate coloured pigments flaked off causing a major archeological tragedy and loss of context. This is detrimental to archeologists as loss of historical context limits our understanding and ability to interpret culture in early years leading to misinterpretation and presentism.

(Ruben)

Attempts to stop this loss of colour consisted of the use of HEMA a type of monomer which penetrates laquers pores then using electron beams to harden this into a strong adhesive permanently bonding the paint and laquer to the clay.

(Pijus)

SLIDE 4

How can damage be prevented?

Non invasive excavation:

Minimises physical contact: techniques such as Ground penetrating radar and magnetometry allow archeologists to locate artifacts without the need for digging reducing cracking,chipping and scratching caused by tools.

(Oscar)

Control of exposure:

Reduces damage and weathering of artifacts due to oxidation from the atmosphere by maintaining stable environment.

(Ruben)

Better handling through transport:

Damage during transport can be prevented by reducing shock and vibration, securely immobilising artifacts, and maintaining stable temperature and humidity conditions

(Pijus)

Better security measurements: By limiting its accessability to thieves we lessen the risk of the artifact becoming destroyed or damaged

(Ruben)

SLIDE 5

Our solution

A smart capsule which contains shock absorption systems as well as integrated sensors to monitor vibration, temperature and moisture levels within the capsule for an ideal environment for the artifact being transported

(Pijus )

We chose carbon fibre for the outer frame as a more rigid hard shell due to it being a fairly lighterweight material but high durability

(Oscar)

We also chose to add a biometrics system to authenticate people handling artifacts on site and reducing security threats

(Ruben)

Further, the use of sensors to regulate internal environments allows us to log data of how stable the environment of the capsule is for the artifact

Based on the readings, the system would actively regulate the internal environment to help maintain stable and safe conditions as well as send warnings to an external device in quick time

(Pijus)

This with the combination of non invasive excavation techniques ensures artifacts are held in a controlled and safe from damage preserving historical context and saving money due to mishandling.

(Oscar)

[Each member will present a sketch iteration of project in sequence of who is speaking next]

SLIDE 6

How will it benefit archeologists?

Artifacts being damaged causes expenses for restoration and with this solution the money, time and resources could be better spent towards other research and the improval of technologies used to find these artifacts.

(Ruben)

SLIDE 7

Contacted companies

This year we reached out to the same company as last year - the pisces vi submarine company which operates in the canary islands they provide services in underwater archeology and recovery and also provided us with another archeological contact aswell as feedback for our ideas.

(Pijus)

[Oscar will provide print out screenshots of emails between companies and feedback]

Everyone: Thank you for listening and any ?s