

Innovating with Limited Resources

Practical approaches from Egyptian museums

Mohamed Ismail Ibrahim

Vice Chairperson, ICOM-AVICOM & ICOM Egypt

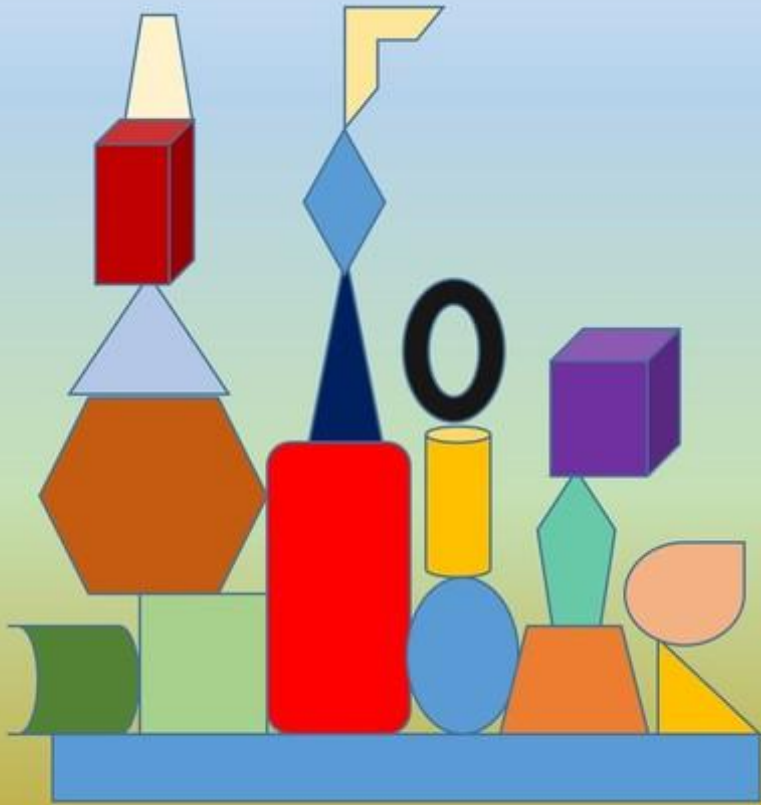
Ain Shams University



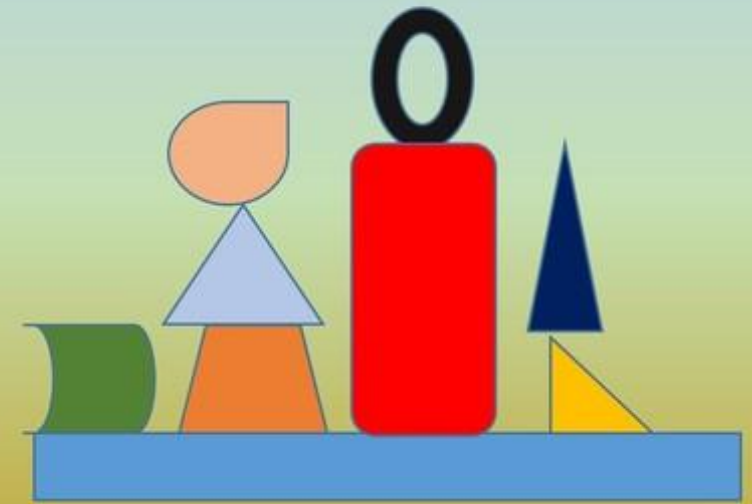
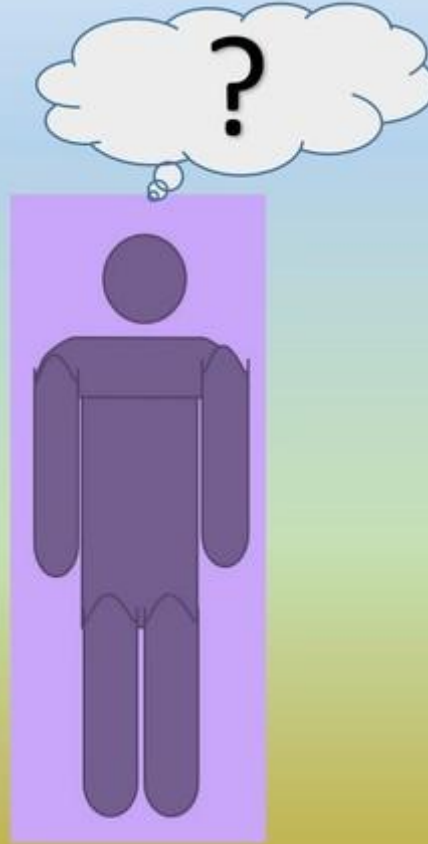




Available Resources

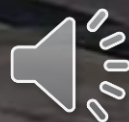


Utilized Resources





وَاعْتَصِمُوا بِحَبْلِ اللَّهِ جَمِيعًا وَلَا تَفَرَّقُوا





المصري القديم

قُبيل تكوين الجيش المصري
توحيد الشطرين (الدولة القديمة)
تكوين الجيش (الدولة الوسطى)
عصر المجد الحربي (الدولة الحديثة)
الانقسام والغزوات الأجنبية.

أبو الهول

الكرنك

المنيا

البحر





The Problem-First Approach

Start with the visitor and the objective

Choose the simplest technology that solves the problem

Buy only what makes sense

Build, reuse, and repurpose whenever possible



Zafaran Museum — Use the Space You Already Have

Limited exhibition space

The floor becomes an exhibition surface

Interactive archaeological-site plans

360° content extends the physical gallery





Inside the Digital Heritage Hall

A real view of the implemented exhibition

Digital heritage experiences inside the museum

Designed and developed with local resources

Video source supplied from the actual project



Digital Heritage Exhibitic
In
Zafaran Museum



Zafaran — Build Locally

Holographic structure produced in-house

Kiosk structure produced in-house

Interactive displays purchased as components

Integration and content developed internally













Zafaran — A Flexible Digital Infrastructure

NFC markers on the heritage map

QR codes as an alternative access method

Interactive map and 360° heritage content

VR and interactive kiosk experiences



Zafaran — Accessibility and Local Learning

3D-printed replica for visitors who are blind

Braille label + audio interpretation

Students trained in virtual heritage

Photogrammetry and virtual-tour production

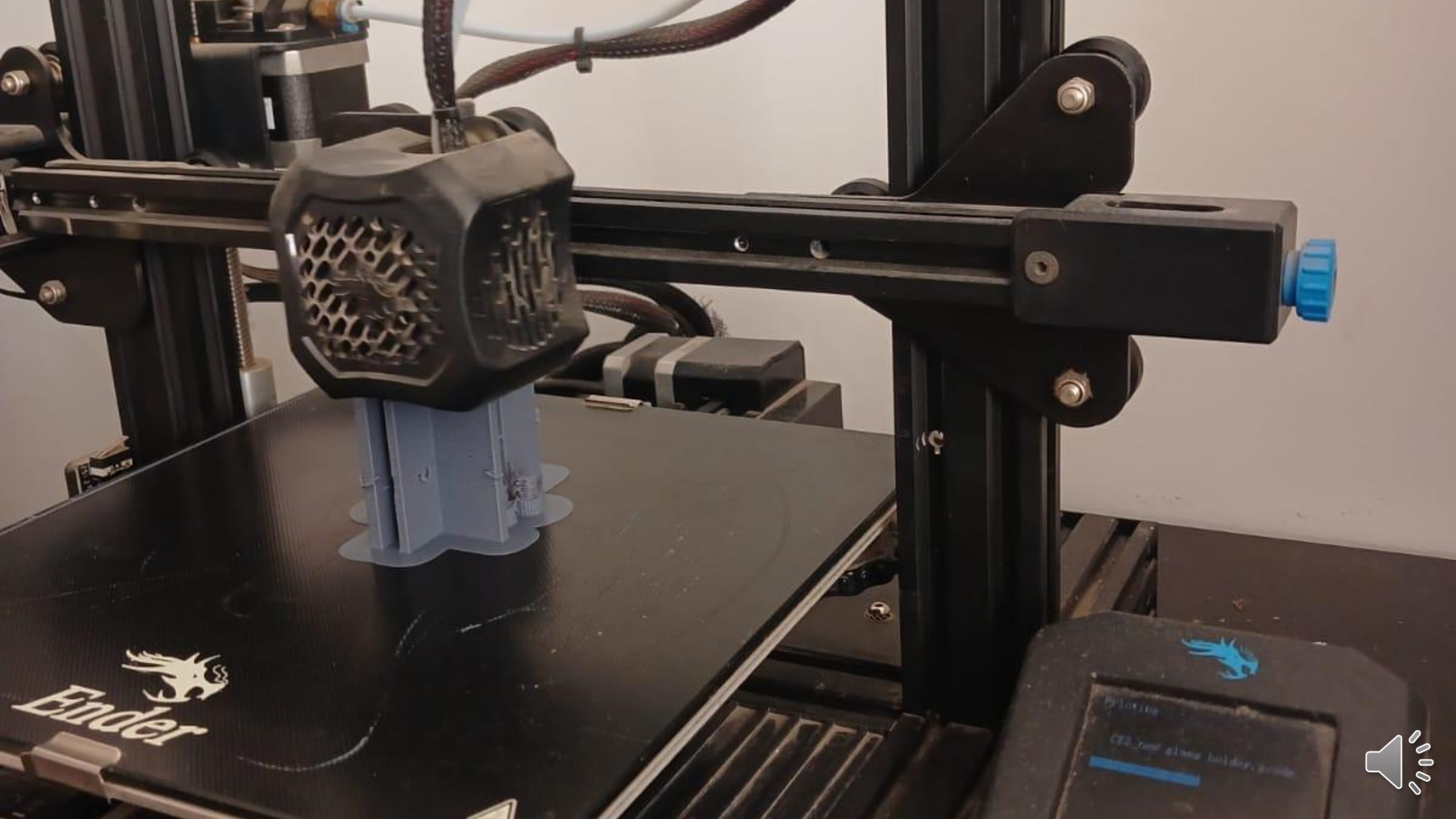


















Child Museum Science Center — 3D Printing

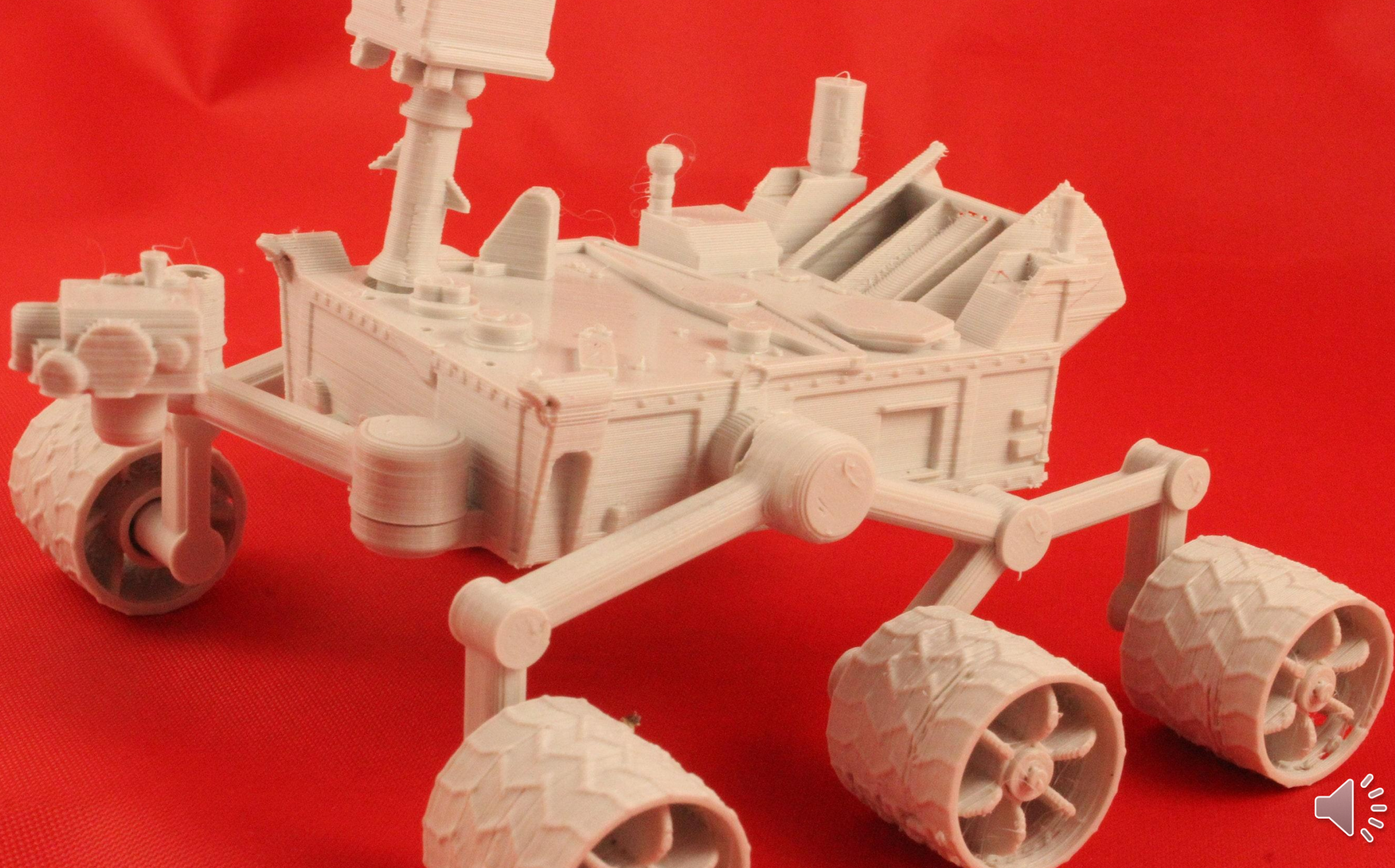
Purchase one 3D printer instead of outsourcing every print

Cairo landmark models

3D puzzles of the Rover

Experiment → modify → reprint

Open-source models used where appropriate





Science Center — Repurposing a Gym bike

Low-cost exercise bike

Existing speedometer used as input

Computer reads movement speed

Speed data drives the screen



160 kg

2,999

جنيه



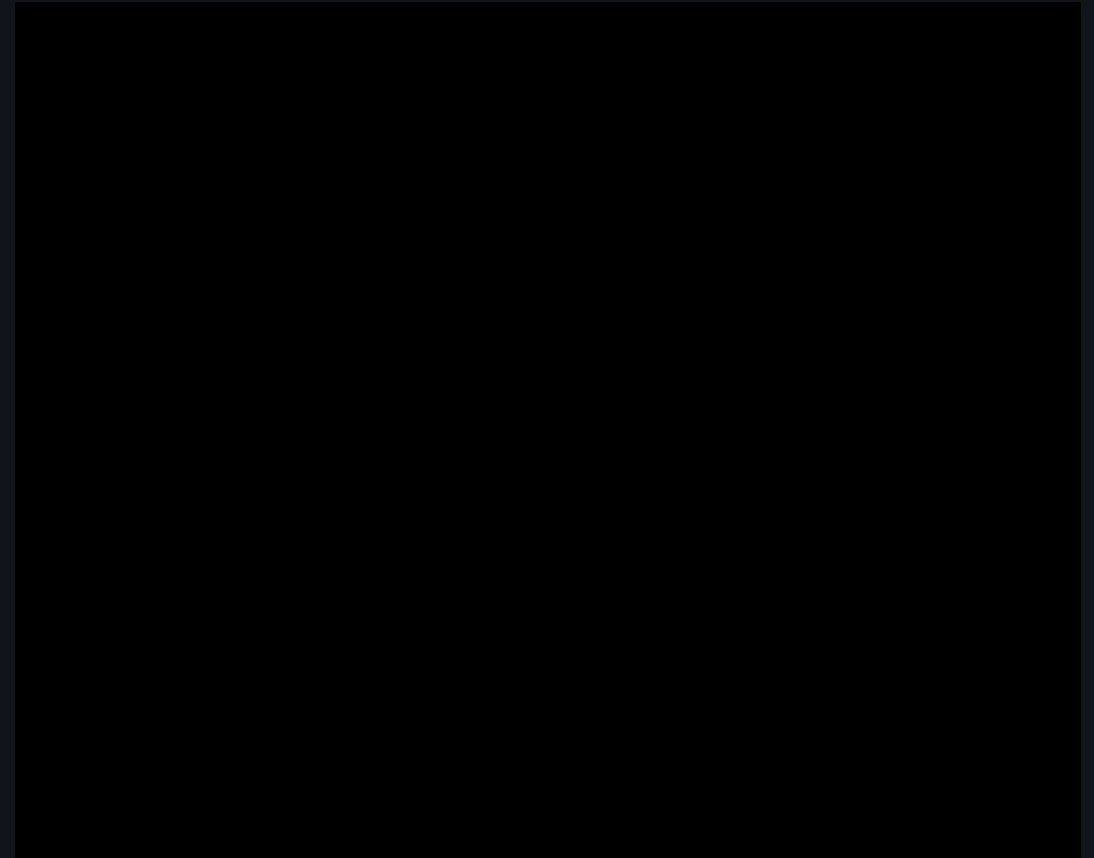
Science Center — Recycling Game

Physical recycling activity

RFID sensors as the interaction layer

Children learn through play

Simple technology serving a clear objective





Dinosaur Park — An Affordable Immersive Alternative

Smartphone mounted in a mobile VR viewer

Printed dinosaur image as a visual marker

Digital dinosaur at approximately natural scale

Sound + garden environment + other visitors



SIMPLE MATERIALS, HIGH IMPACT

Dinosaur Park — The Holographic Dinosaur Egg

Fiberglass dinosaur egg

Moving holographic dinosaur embryo

Locally produced experience

Cost far below a comparable ready-made solution



Suez Canal Museum — Simple Wireless Automation

Commercially available motion sensor

Simple software solution

Visitor enters → sensor detects movement

Audiovisual presentation starts automatically



The Common Framework

BUILD — local structures and systems

BUY — components that make economic sense

REUSE — open-source models and existing resources

REPURPOSE — commercial products for new functions



Beyond Low Cost — Sustainability

Preserve content, metadata and documentation

Plan for hardware and software obsolescence

Use systems local teams can maintain

Keep content adaptable where possible



Museums Connect Without Borders

Creativity is a resource

Local knowledge is a resource

Students and partnerships are resources

Share solutions, challenges and lessons learned



