Excavations at Tel Kabri, Israel: A Case Study in Data Management for Archaeological Research

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EXCAVATIONS AT TEL KABRI, ISRAEL
A CASE STUDY IN DATA MANAGEMENT FOR ARCHAEOLOGICAL RESEARCH
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• OBJECTIVE
This case study aims to identify data management needs in archaeological research by examining one project’s current practices.

• CONTEXT
Tel Kabri was a Middle Bronze Age palace near the Mediterranean coast. Excavations started in the 1980s, and apply a range of technologies and methods to gain a holistic understanding of daily life and trade at Kabri.

• MODULES FOR RESEARCH DATA

• Types, Formats, and Storage of Data
  • Data stored in paper notebooks, databases, and spreadsheets
  • Extremely large quantities of raw and processed data

• Data Storage, Backup, and Security
  • Strict long-term data storage requirements from Israel Antiquities Authority, which pose access issues

• Data Sharing & Reuse Policies
  • Use of cloud-based applications for data sharing

• Repositories, Archiving, and Preservation
  • Need to digitize data from 30+ years and standardize formats
  • Material will be permanently held by foreign government agency

• METHODS
An interview instrument, based on the Digital Curation Centre’s Checklist for a Data Management Plan 4.0, was developed and used in an interview with lead staff to focus on understanding the project’s data workflow throughout the data lifecycle.

• ARCHAEOLOGICAL RESEARCH PRODUCTS

• Documents
  • Field reports
  • Articles and presentations
  • Lab notes

• Data Sets
  • Artifact catalogs
  • Locus sheets
  • C-14 dating results
  • Chemical analysis results

• Images
  • Photographs & orthophotographs
  • Technical drawings
  • Artifact illustrations

• Virtual Archaeology
  • Remote sensing data (e.g., LiDAR)
  • 3D scans and models
  • GIS datasets

• Cultural Material
  • Pottery sherds
  • Mosaics
  • Reconstructed vessels

• RECOMMENDED DATA MANAGEMENT PLAN

• Types, Formats, and Stages of Data
  • Data will be imported to software that can manage multiple file types, assign metadata, and provide versioning control

• Data Storage, Backup, and Security
  • All data will be duplicated and stored in a U.S.-based repository or cloud-based storage service

• Data Sharing & Reuse Policies
  • Re-use is subject to approval of the PIs and may be requested by contacting the PIs or the Israel Antiquities Authority

• Repositories, Archiving & Preservation
  • Data in paper notebooks will be digitized
  • Data will be stored in open-source formats where possible
  • Israel Antiquities Authority will be responsible for storing, archiving, and preserving all materials

• CONCLUSIONS
Archaeology as a discipline is centered on the importance of context and data preservation. Partnering with archaeologists may allow LIS professionals to pursue a model for global data services that addresses the complexities of collecting data in foreign countries, incorporating legacy data, and preserving multiple data types.

• ACKNOWLEDGEMENTS
• Alex Ratzlaff & the Tel Kabri Archaeological Project
• Elaine Martin, Regina Fisher Raboin & Julie Goldman, Simmons LIS 432G Fall 2015

• ARCHAEOLOGICAL DATA WORKFLOW

Data Collection In the Field
• Locus data recorded in Excel, accessed on a tablet and stored in the cloud
• Architectural features are excavated, numbered, and drawn to scale
• Files are synced twice per day using mobiles as hotspots for offsite collaborators to use
• High-resolution images (up to 1,000/day) are taken and later transferred to portable hard drives
• Artifacts are collected, labeled, and sent to onsite lab
• Samples for residue analysis, floatation, and dating are collected, labeled, transported to the onsite lab

In the Onsite Lab
• Graduate students build excel spreadsheets to catalog artifacts
• Artifacts pre-processed for laboratory analysis

Post-Excavation
• Artifacts processed; packed for storage and preservation
• Selected vessels reconstructed
• Data from across seasons is reviewed, compared, and analyzed

Consultation
Specialists produce additional data from remote sensing, chemical analysis, 3D modeling, and dating.

Publication
• Preliminary field report written and published on institutional website
• Season reports and copies of collected data submitted to Israel Antiquities Authority as required by permit
• Articles written and submitted for publication
• Data made available to other researchers upon request
• Funding applications for the next season submitted