ARCHAEOLOGICAL SITE DATABASE
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Checkpoint I	2024 Feb 19
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Project Description

Archaeologists regularly attempt to balance two goals of the field: to learn more about humanity through material culture and physical traces left in the environment, and to protect and preserve cultural and historic resources, which includes forgoing excavation in the present to allow the possibility of more conscientious investigation with potentially more advanced technology in the future. It is critical, therefore, for archaeologists to record their observations of an archaeological site, whether as a result of field survey, geophysical investigation, shovel test pits, or excavation. Archaeologists also need the ability to deposit their findings in a central repository so that that information is (a) accessible to entities that need to use it (such as other archaeologists or governmental agencies who are voting on a development project) and also (b) protected from people who should not have it (such as bottle collectors or potential looters).

Information about archaeological sites in the state of California is housed in the California Historic Resources Information Service (CHRIS), which is overseen by the state Office of Historic Preservation (OHP). This data is then made available to qualified individuals via nine Information Centers, located at universities around the state (CSUs Bakersfield, Chico, Fullerton, Sacramento, and Stanislaus; Sonoma State University; the Santa Barbara Museum of Natural History; and UC Riverside).

I have extensive background in archaeology. I have a master's degree from San Francisco State in anthropology and archaeology. I also have years of experience in archaeology, collecting data in the field, preparing and submitting site record forms, and requesting and analyzing site records from Information Centers.

Although the structure of the CHRIS database system is not publicized, it is clear that the database records must contain fields that are part of the standardized site record forms, created and maintained by the Office of Historic Preservation (https://ohp.parks.ca.gov/?page_id=28351). These forms are typically referred to as "DPR forms" because they are published by the California Department of Parks and Recreation. The principal unit of the database is the site, denoted by a site identifier of the form P-XX-YYYYYY, where the two-digit number XX corresponds to the alphabetical order of the county in which the site is recorded. The second, six-digit number YYYYYY corresponds to the ordinal of the site's recording in that county.

Each site will have at least one corresponding site record, which is the most basic means of recording the site. Within the primary site record will be any other identifiers of the site (such as a site name or descriptor). The primary record also has a choice for whether the location of the site is "Not for Publication" or "Unrestricted": the latter category usually applies to well-known

structures such as the Golden Gate Bridge, the Stanford University Quad, or a city's historic district, while the former applies to the majority of archaeological deposits — from obsidian stone tool work areas to gold rush era trash pits to human burials, most archaeological site locations are not publicly available. The primary record also requires the location of the site (both identifying the county and the corresponding U.S. Geological Survey quadrangle map), as well as a text description of the resource. The resources present are listed by choosing corresponding codes from a list provided by OHP. The identity of the property owner is recorded, as is the name and affiliation of the recorder, the date recorded, the type of survey (for example, pedestrian survey, or excavation), and any reports associated with the current recordation.

Other DPR forms provide specialized fields that may or may not apply to any given site (such as rock art or historic districts). Each site is associated with a digital location, in the form of an ArcGIS shape file.

Functional Database Requirements

1. Site (Strong)
   1.1. A site shall be associated with at least one site record
   1.2. A site shall have a site identifier
   1.3. A site shall have one or more counties
   1.4. A site may consist of other sites (in a district)
   1.5.
2. Site record (Strong)
   2.1. A site record shall be associated with at least one site
   2.2. A site record shall be associated with at least one site identifier
   2.3. A site may have one or many alternate site identifiers
   2.4. A site record shall have a privacy setting
   2.5. A site record shall have one or more counties
   2.6. A site record shall have a USGS quad
   2.7. A site record shall have a site description
   2.8. A site record shall have one or more resource codes
   2.9. A site record shall have one or more resource types
   2.10. A site record shall have an age and source
   2.11. A site record shall have an owner
   2.12. A site record shall have a recorder
   2.13. A site record shall have one or more survey types
   2.14. A site record shall have one or more report citations
   2.15. A site record shall have one or more attachments
   2.16. A site record shall have one or more sketch maps
   2.17. A site record shall have a location map
   2.18. A site record shall have a shape file
   2.19. A site record may have one or more photos
3. Site identifier
   3.1. A site identifier shall pertain to a site
   3.2. A site identifier shall have at least one site record
   3.3. A site identifier shall be of the form “P-##-######”
4. Alternate site identifier
   4.1. An alternate site identifier shall pertain to a site record

5. County (Strong)
   5.1. A county shall have one or more sites
   5.2. A county shall have one or more site records
6. Privacy setting (Strong)
   6.1. A privacy setting shall pertain to one or many site records
   6.2. A privacy setting shall be either “Not for Publication” or “Unrestricted”
7. USGS quad (Strong)
   7.1. A USGS quad shall be the name of a valid USGS quad map
8. Site description
   8.1. A site description shall pertain to one site record
9. Resource code (Strong)
   9.1. A resource code may pertain to one or many site records
10. Resource type (Strong)
   10.1. A resource type shall pertain to one or many site records
11. Age and Source (Strong)
   11.1. An age and source shall pertain to one or many site records
   11.2. An age and source shall be “Historic”, “Prehistoric”, or “Both”
12. Owner (Strong)
   12.1. An owner may pertain to one or many site records
   12.2. An owner may have one or many addresses
13. Recorder (Strong)
   13.1. A recorder shall have one or many affiliations
   13.2. A recorder shall have one or many addresses
14. Affiliation (Strong)
   14.1. An affiliation may pertain to one or many recorders
   14.2. An affiliation may pertain to one or many users
15. Address (Strong)
   15.1. An address may pertain to one or many owners
   15.2. An address may pertain to one or many recorders
16. Survey type (Strong)
   16.1. A survey type shall pertain to one or more site records
17. Report citation (Strong)

17.1. A report citation may pertain to one or more site records
17.2. A report citation may be “None”
18. Attachments (Strong)
18.1. An attachment shall pertain to one or many site records
18.2. An attachment may be “None”
19. Sketch map
19.1. A sketch map shall pertain to one site record
20. Location map
20.1. A location map shall pertain to one site record
21. Shape file
21.1. A shape file shall pertain to one site record
22. Photo
22.1. A photo shall pertain to one site record

23. User (Strong)
23.1. A user shall have only one account
23.2. A user shall have a password
23.3. A user shall have one of many affiliations
23.4. A user may engage in at most one session at a time
24. Account
24.1. An account shall pertain to only one user
25. Password
25.1. A password may belong to a user
26. Session
26.1. A session shall belong to only one user

Non-functional Database Requirements

1. Performance
   1.1. The database system shall support concurrent queries.
   1.2. Because updates and queries can be scheduled so as not to overlap, support for concurrent updates is not a priority.
   1.3. The database system will need to deliver ArcGIS shape files and images reliably.
   1.4. The database shall be optimized for efficient queries.
   1.5. The system should be configured for reliability.

2. Security
   2.1. The database system shall allow access to authorized users.
   2.2. The database system shall not allow access to anyone who is not an authorized user.
   2.3. The database system shall support only encrypted passwords.
   2.4. The database system shall accept only data consistent with the corresponding domain.
   2.5. The database shall not support more than one session for a given user.

3. Scalability
   3.1. Because the number of authorized users, either at an Information Center or in a cultural resource management firm, is small, the system should begin small.
   3.2. Performance checks should be run to ensure throughput is sufficient.
   3.3. Horizontal scaling is possible if staffing increases.
   3.4. The likelihood of substantial horizontal scaling is miniscule.
   3.5. DPR forms were last updated in 1993. This stability means that functional scalability is not a high priority.

4. Capability
   4.1. The system shall offer acceptable responses when check boxes appear on DPR forms.
   4.2. The system shall check the format of the primary identifier field.
   4.3. The system shall validate formatting of date fields.
   4.4. The system shall inform the user of allowable file formats.
   4.5.The system shall inform the user of appropriate data formatting.

5. Environmental
   5.1. The system will be used in office settings.
   5.2. The system will be used on desktop computers.
   5.3. The system should not have a mobile interface.
   5.4. The system does not require touch-screen capability.
   5.5.The system should provide legible, useful data formatting.

6. Coding Standards
   6.1. The system should be compatible with major operating systems.
   6.2. If the system cannot be compatible with both Windows and Mac, it should be compatible with Windows.
   6.3. The system should support the current version of mySQL.
   6.4. The system should not be needlessly complicated, so that it can be compatible with more versions of mySQL.
   6.5. The system should be accompanied with documentation for usability.

7. Media Storage
   7.1. The system shall store ArcGIS shape files in an appropriate format.
   7.2. The system shall store images as JPG or TIF files.
   7.3. The system shall store digital versions of site records as PDF files.
   7.4. The system shall store digital versions of reports as PDF files.

7.5. The system shall not store files such as EXE files.

8. Privacy
   8.1. The database system shall not ask for sensitive personal information of users.
   8.2. The database shall maintain names and addresses of property owners.
   8.3. The database shall maintain names, addresses, and affiliations of site recorders.
   8.4.The database shall maintain the precise location of archaeologically sensitive areas, including sites that contain human remains.
   8.5. The database shall not release aforementioned data, except to an approved user.