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# 1 MayaArch3D Project Documentation

## 1.1 Admin User

### 1.1.1 Admin User Dokumentation- LDAP

#### 1.1.1.1 LDAP Management with GUI: phpLDAPadmin

Access <http://mayaarch3d.org/phpldapadmin/>

#### 1.1.1.2 LDAP Management with GUI: JXplorer

### 1.1.2 Geoserver Access

**1.1.2.1 What is Geoserver?** GeoServer is an open source server for sharing geospatial data. Designed for interoperability, it publishes data from any major spatial data source using open standards.

Geoserver Project Page: <http://geoserver.org/>

General Geoserver User Documentation: <http://docs.geoserver.org/2.6.x/en/user/>

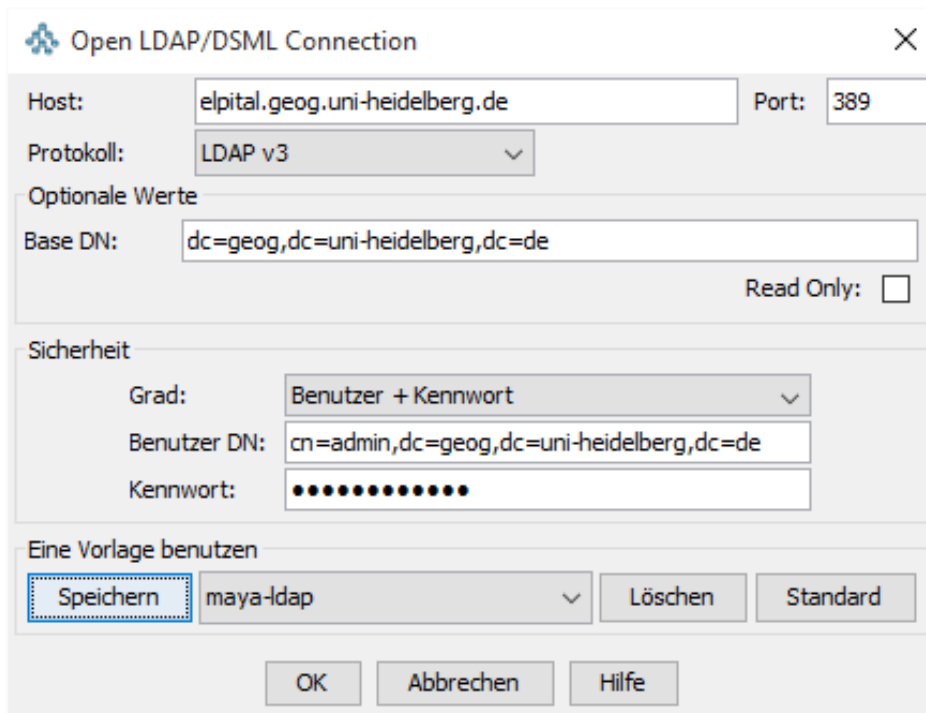


Figure 1: JXplorer Connection Settings

**1.1.2.2 The MayaArch3D Geoserver** In the MayaArch3D-project for the 2D and 3D WebGIS/Geobrowser, the data is retrieved from the Geoserver via OGC WMS and OGC WFS. Note: Some data is also retrieved from self implemented services: GeometryService, AttributeService and ImageService or is directly configured in the Geomajas Config to be loaded directly from the PostgreSQL/PostGIS Database or from Shapefiles/Geotiffs.

Installed Version on 2015-09-26 was: Geoserver 2.6.0 in an Apache Tomcat Servlet Container

#### Apache Tomcat Server Information

Tomcat Version	JVM Version	JVM Vendor	OS Name	OS Version
Apache Tomcat/7.0.26	1.7.0_79-b14	Oracle Corporation	Linux	3.13.0-73-g

#### Web Access:

##### Tomcat:

- <http://www.mayaarch3d.org:8080>
- Tomcat-Manager: <http://mayaarch3d.org:8080/manager/html> (tomcat-admin:TomCat7Admin)

### Geoserver:

- Web interface for Configuration and Data Management: <http://www.mayaarch3d.org:8080/geoserver/web>
- WMS Base URL: <http://www.mayaarch3d.org:8080/geoserver/wms>
- WMS Capabilities: <http://www.mayaarch3d.org:8080/geoserver/wms?REQUEST=GetCapabilities>
- Apache Web Server Rewrite Proxy URL: Instead of using the longer and ugly URL with port :8080 a short alias URL is defined in the Apache Service Config file (`\etc\init.d\apache2\sites-available\default`).

All URLs starting with <http://www.mayaarch3d.org:8080/geoserver> can be replaced by starting them with <http://www.mayaarch3d.org/geoserver>

**1.1.2.2.1 Authentication (How to log-in)** The Geoserver is configured to use either the default Username/Password-Authentication OR the MayaArch3D-LDAP Server for Authentication. Depending on the LDAP Role the Users have different possibilities to manage the Geoserver. To add, configure or delete Layers you must be member of the LDAP admin-group which is mapped to the Geoserver ADMIN-group. To have more possibilities than just managing the data in the geoserver, like the configuration of the Geoserver itself, its security policy, caching etc. you must have an extra default geoserver User/Password Account (see Geoserver general admin password).

#### **1.1.2.2.2 Geoserver general admin password**

**General Admin Password** `geoserver-admin` : `GeoSrvMayaAdmin`

**Geoserver Masterpassword (see Geoserver User Manual)** `$rrfd$4$!`

### **1.1.3 3D DB - Structure Hierarchy Viewer and Segmented Model Builder**

This is a web based tool which can retrieve tree structured data from the MayaArch3D 3D-database "structures"-table and visualized it as an interactive collapsable tree.

Further this tool can be used to create a THREE-JSON Scene file (version 3) by retrieving the hierarchy from the database while the user adds THREE-JSON-Object files which the tool integrates at the appropriate point. When finished with all steps the user can export (save) the THREE-Scene file to his

hard disk. This can then be further used for web display with the MayaArch3D-SingleObjectViewer.

WebAccess:

URL: <http://www.mayaarch3d.org/dev/ldaptest/singleObjectViewer/db-tree/>

#### **1.1.3.1 How to view the current hierarchy of structures stored in the MayaArch3D 3D database?**

1. Enter a structure name or if known enter directly a structure id.
2. Press "Show Structure Tree"
3. Explore the structure by clicking on the red/white circles to open or close child entities.
4. You can also pan the view by holding the left mouse button and zoom in/out using the scrollwheel.

#### **1.1.3.2 How to create a hierarchically segmented model to be shown in the MayaArch3D SingleObjectViewer?**

1. Define the model structure (hierarchy)
  - (a) Have a look at the classes table and the definition of possible hierarchies for the segmentation process.
  - (b) Define the segmentation hierarchy as new entries in the structure table in the 3D database and enter the `filemaker_ids` accordingly.
  - (c) Check the structure with this tool.
2. Prepare the data
  - (a) Segment your model into the smallest pieces of your previously defined structure (see 1.2)
  - (b) Save the segments with their `filemaker_id` as file names, for later association. If available (e.g Blender Plugin) save your Model in THREE-JSON Format 3.1. You can also save your models as OBJ-Files and use the python converter from `three.js convert_obj_three.py`.
3. Associate model segments to the hierarchy
  - (a) Open this tool and display your structure. Unfold all nodes. You will have to associate all "leaf"-nodes later with the file prepared earlier.

- (b) Click "Create Model" and choose all files from you local file system to associate the to the hierarchy.
- (c) Click "Save Model". Put the resulting model file and all textures of the segments into a location of a webserver.

If the webservers domain is not www.mayaarch3d.org, it should support "CORS" so that you can view the model under the following URL OR you have to install the SingleObjectViewer on your own domain:

<http://www.mayaarch3d.org/dev/examples/singleObjectViewer/sov.html?url=<<Enter Model URL here!!>>&format=scene&georef=false&verticalAxis=Y&segmented=true>

## 1.2 Developer

### 1.2.1 FM Copy Service, PostgreSQL/PostGIS

The FM Copy Service is actually a Java application that is run in a cronjob to regularly update the FilemakerCopy DB. It will find out about all existing tables in the FilemakerPro-based MayaArch3D archaeological database in DAIs iDAI.Field. After finding out all tables it will copy them to a Postgres DB named FMCopy, which is used for queries in the 2D Geobrowsers QueryBuilder.

### 1.2.2 System Architecture

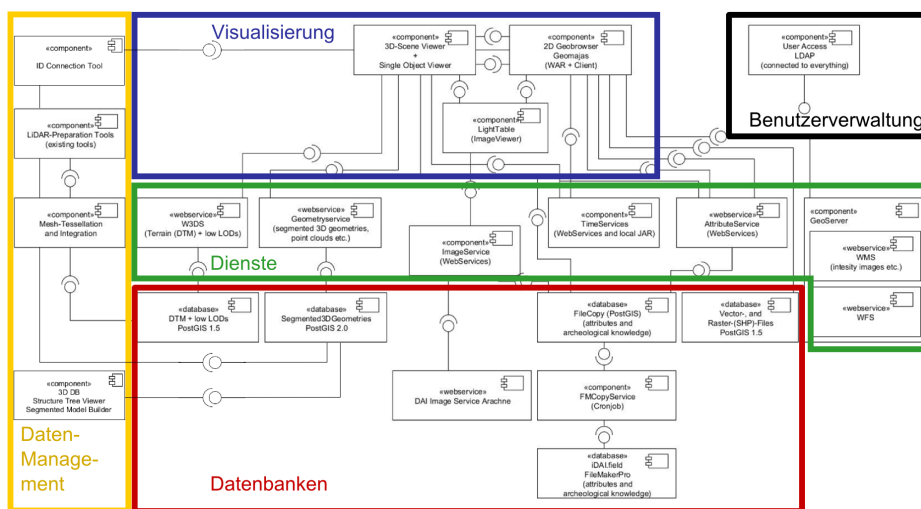


Figure 2: System architecture

#### 1.2.2.1 Overview

### 1.2.2.2 User Managment with LDAP Installation:

**Package** slapd (OpenLDAP-Server)

**Host** 195.37.175.47 (www.mayaarch3d.org)

**Port** 389

**Install Directories** /etc/ldap

**Access** see Admin User Dokumentation- LDAP

### 1.2.2.3 Databases

- All following databases run on the same database cluster with port 5432
- Existing login roles:
  - dsoeder
  - ffecher
  - gagugiaro
  - geometryservice
  - hrissetto
  - jschwerin
  - lloos
  - lstelson
  - maya POSTGRES SUPERUSER
  - maya\_reader Can be used for webservices that only need to read the database.
  - mayaw3dsadmin
  - mlyons
  - nbillen
  - postgres
  - sensoruser

#### 1.2.2.3.1 2D GeoDB for vector data (PostgreSQL/PostGIS)

**database name** maya2d

**schemata** public

**PostgreSQL version** "PostgreSQL 9.2.4 on x86\_64-unknown-linux-gnu, compiled by gcc (Ubuntu/Linaro 4.6.3-1ubuntu5) 4.6.3, 64-bit"

**PostGIS version** "POSTGIS="1.5.8" GEOS="3.4.2-CAPI-1.8.2 r3921" PROJ="Rel. 4.8.0, 6 March 2012" LIBXML="2.7.8" USE\_STATS"

### 1.2.2.3.2 3D GeoDB for Structures (PostgreSQL/PostGIS)

**database name** maya3d

#### **extensions**

- jdbc\_fdw postgres Foreign data wrapper for querying JDBC
- plpgsql postgres PL/pgSQL procedural language
- postgis postgres PostGIS geometry, geography, and raster spatial types and functions
- postgis\_topology postgres PostGIS topology spatial types and functions
- postgres\_fdw postgres foreign-data wrapper for remote PostgreSQL servers

#### **schemata**

- copan postgres
- copan\_new gagugiaro currently used
- ext\_tables postgres
- public postgres standard public schema
- temp postgres
- topology postgres
- worka gagugiaro

**PostgreSQL version** "PostgreSQL 9.2.4 on x86\_64-unknown-linux-gnu, compiled by gcc (Ubuntu/Linaro 4.6.3-1ubuntu5) 4.6.3, 64-bit"

**PostGIS version** "POSTGIS="2.1.0 r11822" GEOS="3.4.2-CAPI-1.8.2 r3921" PROJ="Rel. 4.8.0, 6 March 2012" GDAL="GDAL 1.10.0, released 2013/04/24" LIBXML="2.7.8" TOPOLOGY RASTER"

### 1.2.2.3.3 3D GeoDB for W3DS Terrain Tiles (PostgreSQL/PostGIS)

**database name** maya3d\_w3ds\_tiles

**schemata** public

**PostgreSQL version** "PostgreSQL 9.2.4 on x86\_64-unknown-linux-gnu, compiled by gcc (Ubuntu/Linaro 4.6.3-1ubuntu5) 4.6.3, 64-bit"

**PostGIS version** "POSTGIS="1.5.8" GEOS="3.4.2-CAPI-1.8.2 r3921" PROJ="Rel. 4.8.0, 6 March 2012" LIBXML="2.7.8" USE\_STATS"



#### 1.2.2.3.4 FilemakerCopy DB for archaeological data and attributes

database name FMCopy

schemata public

**PostgreSQL version** "PostgreSQL 9.2.4 on x86\_64-unknown-linux-gnu, compiled by gcc (Ubuntu/Linaro 4.6.3-1ubuntu5) 4.6.3, 64-bit"

**PostGIS version** "POSTGIS="1.5.8" GEOS="3.4.2-CAPI-1.8.2 r3921" PROJ="Rel. 4.8.0, 6 March 2012" LIBXML="2.7.8" USE\_STATS"

**1.2.2.3.5 iDAI.Field FilemakerPro** Archaeological DB of the DAI. Based on FilemakerPro. This is a database system used to maintain data from several DAI-projects. One of them is this MayaArch3D-projekt DB.

For access ask the DAI-IT stuff or Jennifer von Schwerin.

#### 1.2.2.4 Services

##### 1.2.2.4.1 Apache 2 Webserver General:

Serves as Proxy for several services to have nice URLs and also to use the same LDAP Authentication Realm. Implements CORS (cross-origin-resource-sharing) to share services from different domains. Secures data directories:

- /var/www/protected : access only with LDAP account (all groups/security levels)
- /var/www/published : free access, but restricted to be requested from the referer www.mayaarch3d.org

Installation:

**Package** apache2

**Port** 80

**Config** /etc/apache2/sites-available/default

Config text:

```
<VirtualHost *:80>
ServerAdmin webmaster@localhost

DocumentRoot /var/www
```

```

        #enable gzipped json delivery
AddOutputFilterByType DEFLATE application/json
AddOutputFilterByType DEFLATE application/javascript
AddOutputFilterByType DEFLATE text/plain
AddOutputFilterByType DEFLATE text/html
AddOutputFilterByType DEFLATE text/xml
AddOutputFilterByType DEFLATE text/css
AddOutputFilterByType DEFLATE model/threejs
<FilesMatch ".*\.(dds)$">
        SetOutputFilter DEFLATE
</FilesMatch>

        #enable CORS Cross origin resource sharing according to
#http://enable-cors.org 22.02.2012

#only if geometrieservice, w3ds or /dev folder is requested

        #SetEnvIf Request_URI ^(.*)(/gs/|/w3ds/)(.*)$ geometrieservice
        #Header set Access-Control-Allow-Origin * env=geometrieservice
#Header set Access-Control-Allow-Headers "Authorization, CONTENT-TYPE, x-re

        #Rewriterules
RewriteEngine on

        #RewriteRule ^/gs(.*)$ http://129.206.66.244:8081/geometrieservice-
RewriteRule ^/gs_new(.*)$ http://localhost:8084/geometryservice/geon
RewriteRule ^/gs(.*)$ http://localhost:8080/geometryservice/geometryservice
RewriteRule ^/as(.*)$ http://localhost:8084/attributeservice/attribu
# RewriteRule ^/w3ds(.*)$ http://rax.geog.uni-heidelberg.de/w3dsmayaarch3D/V
RewriteRule ^/w3ds(.*)$ http://baru.geog.uni-heidelberg.de:8080/w3ds
RewriteRule ^/geoserver(.*)$ http://localhost:8080/geoserver$1 [P]
RewriteRule ^/webgis(.*)$ http://localhost:9999$1 [P]
RewriteRule ^/imageservice(.*)$ http://elpital.geog.uni-heidelberg.de:8084/

#allow only acces if file is accessed via website (Header has Referer)
RewriteCond %{REQUEST_URI} ^(.*)/published/.*$
RewriteCond %{HTTP_REFERER} !^http://(www)?\.mayaarch3d\.org(/.*)?$
RewriteRule ^ - [F]

```

```

    <Proxy *>
        Order allow,deny
        Allow from all
        #Deny from 129.206.91.77 #Pascal
        #Deny from 193.196.64.2 #Karlsruhe
    </Proxy>

# Set CORS Headers for secured resources to be accessed with Authorization-Header
<LocationMatch "/(dev|gs|as|imageservice|w3ds|geoserver|protected)/">
SetEnvIf Origin "^(.*)$" ORIGIN=$1
<Limit GET POST OPTIONS HEAD>
Header unset Access-Control-Allow-Origin
Header always set Access-Control-Allow-Origin "%{ORIGIN}e" env=ORIGIN
Header unset Access-Control-Allow-Credentials
Header always set Access-Control-Allow-Credentials: true
#</Limit>
#<Limit OPTIONS>
Header unset Access-Control-Allow-Headers
Header always set Access-Control-Allow-Headers "Origin, Accept, Authorization"
Header unset Access-Control-Allow-Methods
Header always set Access-Control-Allow-Methods "OPTIONS, HEAD, GET, POST"
</Limit>
</LocationMatch>

# Set password for location /as (attributeservice) to avoid requesting password
    <LocationMatch "/as/*">
        # user attributeservicereader
        SetEnvIf Referer "^.*\/sov\.html.*$" singleObjectViewer
            RequestHeader set Authorization "Basic YXR0cmliZXJlc2VydmlkZWQ6MTIzNDU="
    </LocationMatch>

<Directory />
Options FollowSymLinks
AllowOverride None
</Directory>
<Directory /var/www/>
Options Indexes FollowSymLinks MultiViews
AllowOverride FileInfo
Order allow,deny

```

```
allow from all
</Directory>
```

```
    <Directory /var/www/tmp_download>
        Options Indexes FollowSymLinks MultiViews
        AllowOverride FileInfo Indexes Authconfig
    </Directory>
```

```
ScriptAlias /cgi-bin/ /usr/lib/cgi-bin/
<Directory "/usr/lib/cgi-bin">
AllowOverride None
Options +ExecCGI -MultiViews +SymLinksIfOwnerMatch
Order allow,deny
Allow from all
</Directory>
```

```
ErrorLog ${APACHE_LOG_DIR}/error.log
```

```
# Possible values include: debug, info, notice, warn, error, crit,
# alert, emerg.
LogLevel warn
```

```
CustomLog ${APACHE_LOG_DIR}/access.log combined
```

```
Alias /doc/ "/usr/share/doc/"
<Directory "/usr/share/doc/">
    Options Indexes MultiViews FollowSymLinks
    AllowOverride None
    Order deny,allow
    Deny from all
    Allow from 127.0.0.0/255.0.0.0 ::1/128
</Directory>
```

```
SetEnvIf Request_URI .*(/index.php.*|/resources/.*/.*\.(jpg|.*\.(JPG|/.*
```

```
# <Directory "/var/www/dev/ldaptest/">
#     AuthName "Use your mayaarch3d account."
#     AuthType Basic
#     AuthBasicProvider ldap
#     AuthLDAPURL "ldap://elpital.geog.uni-heidelberg.de:389/ou=users,dc=
```

```

#
# Order deny,allow
# Satisfy Any
# Deny from all
#     Require valid-user
# Allow from env=noauth
#     </Directory>

    <LocationMatch "/(w3ds|gs_new|gs|imageservice|ldaptest|protected|idconn
<LimitExcept OPTIONS>
    AuthName "Use your mayaarch3d account."
    AuthType Basic
    AuthBasicProvider ldap
    AuthLDAPURL "ldap://elpital.geog.uni-heidelberg.de:389/ou=users,dc=g
# AuthLDAPURL "ldap://elpital.geog.uni-heidelberg.de:389/ou=users,dc=geog,d
    Order deny,allow
    Satisfy Any
    Deny from all
    Require valid-user
# Require group cn=admin
    Allow from env=noauth
</LimitExcept>
    </LocationMatch>

</VirtualHost>

```

#### 1.2.2.4.2 Geoserver with 2D and 2.5D vector and raster data

**General information** The MayaArch3D Geoserver

**Installation** As WAR-Archive in a Tomcat 7 servlet container

**Package** tomcat7 tomcat7-admin

**Port** 8080

**GEOSERVER\_DATA\_DIR** /var/lib/geoserver260\_data\_dir (configured in /var/lib/tomcat7/webapps/geoserver/WEB-INF/web.xml)

**ProxyURL** configured in apache webserver /etc/apache2/sites-available/default

#### 1.2.2.4.3 Attributeservice

**General information** Attribute Service

**Installation** As WAR-Archive in a Tomcat 7 servlet container

**Package** second tomcat7 instance not as package installed, but as binaries in *home/nbillen/apache-tomcat-7.0.53*

**Port** 8084

**Tomcat Manager GUI** <http://elpital.geog.uni-heidelberg.de:8084/manager/> (tomcat-admin:TomCat7Admin)

#### 1.2.2.4.4 Timeservice

**General information** As Service not deployed. Used as Java JAR-library in geobrowser. Converts Maya Long Count into Gregorian Calendar and vice versa. See: Time Service

#### 1.2.2.4.5 Imageservice

**General information** Light table, Image Service, link to Arachne service

**Installation** As WAR-Archive in a Tomcat 7 servlet container

**Package** second tomcat7 instance not as package installed, but as binaries in *home/nbillen/apache-tomcat-7.0.53*

**Port** 8084

**Tomcat Manager GUI** <http://elpital.geog.uni-heidelberg.de:8084/manager/> (tomcat-admin:TomCat7Admin)

#### 1.2.2.4.6 Geometryservice

**General information** Geometry Service

**Installation** As WAR-Archive in a Tomcat 7 servlet container

**Package** second tomcat7 instance not as package installed, but as binaries in *home/nbillen/apache-tomcat-7.0.53*

**Port** 8084

**Tomcat Manager GUI** <http://elpital.geog.uni-heidelberg.de:8084/manager/> (tomcat-admin:TomCat7Admin)

#### 1.2.2.4.7 W3DS

**General information** Web3DService (W3DS) serves tiled LoD terrain made from LiDAR-data, and LoD1 Buildings. Installation on Windows server as WAR-Archive in tomcat 7 servlet container

**Host** 195.37.175.48 (Windows)

**Port** 8080

**Install directory** C:\MayaArch3D\apache-tomcat-7.0.67\webapps\w3dsmayaarch3D

Tomcat7 is installed as a windows service. Administration, START / STOP the service with the management-gui: C:\MayaArch3D\apache-tomcat-7.0.67\bin\tomcat7w.e

#### 1.2.2.5 Data Management

##### 1.2.2.5.1 ID Connection Tool

**General information** A web frontend to query and edit some parts of the maya3d database. Main purpose is to enter the corresponding id's from to archaeological database MayaArch3D in the iDAI.Field database from the German Archaeological Institute into the 3D database. This "id connection" is the key to create attribute queries on the iDAI.Field database triggered by 3d objects from the Postgres DB.

**Code** The PHP code for the web application has automatically built by the "PostgreSQL PHP Generator" of the SQL Maestro Group (see <http://www.sqlmaestro.com/products/postgresql/phpgenerator/>)

**Config** DB Connection Settings are stores in /var/www/idconnection/phpgen\_settings.php

Current setting:

```
function GetGlobalConnectionOptions()
{
    return array(
        'server' => '195.37.175.47',
        'port' => '5432',
        'username' => 'gagugiaro',
        'password' => 'naz77copan',
        'database' => 'maya3d'
    );
}
```

#### 1.2.2.5.2 3D DB Structure Tree Viewer and Segmented Model Builder

**General information** see 3D DB - Structure Hierarchy Viewer and Segmented Model Builder

**Code SVN repository:** <https://koenigstuhl.geog.uni-heidelberg.de/svn/mayaarch3d/ma3dViewer>

Needs access to the maya3d database. Uses `maya_reader` to retrieve data from the "Structure" table. The role `maya_reader` has restricted rights to read-only. Uses PHP to request the Postgres database. Uses the `d3.js` library for the hierarchy tree visualization.

**1.2.2.5.3 LiDAR and Mesh preparation tools** For the creation of the terrain data we used the following tools:

- QGIS
- CloudCompare
- MeshLab
- Tessellation tool See documentation in the SVN repository <https://koenigstuhl.geog.uni-heidelberg.de/svn/mayaarch3d/Tessellation>
  1. QGIS: Resample the DEM to 1m resolution, export as GeoTIFF
  2. CloudCompare: Convert Raster to Point Cloud, reduce to 10.000.000 points (random subsampling)
  3. CloudCompare: Convert pointcloud to Mesh (Delauney 2D axis aligned plane)
  4. MeshLab: Create various LoDs with Filter "Quadric Edge Collapse Decimation"
  5. Tessellation Tool: Cut LoDs into Tiles and write them into a W3DS database

#### 1.2.2.6 Visualization Components



**1.2.2.6.1 2D Geobrowser (Client) / Geomajas** Main application where everything is integrated. The 2D Geobrowser is based on the open-source WebGIS framework Geomajas (<http://www.geomajas.org/>).

The framework has been extended:

- Query Builder (space-time-attribute filtering)
- Integration of 3D SceneViewer
- Integration of ID Connection Tool
- Provides Security via LDAP Server

Code <https://koenigstuhl.geog.uni-heidelberg.de/svn/mayaarch3d/geobrowser>

URL [www.mayaarch3d.org:9999](http://www.mayaarch3d.org:9999) (Login with LDAP project Account)

**1.2.2.6.2 Light table (ImageViewer)** The Light table is implemented as a Plugin for the MA3D.js library. It depends on the Imageservice. It was authored by Nicolas Billen.

Find the code in the SVN: <https://koenigstuhl.geog.uni-heidelberg.de/svn/mayaarch3d/ma3dViewer/trunk/lib/MA3D/plugins>

**1.2.2.6.3 3D SceneViewer and 3D SingleObjectViewer** Both viewers use Giscene.js library and MA3D.js library. The SceneViewer depends on the W3DS and retrieves the data via an Apache proxy URL. Both Viewer use the GeometryService and the Imageservice via the Apache proxy.

- 3D SingleObjectViewer

– Install directory:

`/var/www/dev/ldaptest/singleObjectViewer/sov.html`

`/var/www/dev/examples/singleObjectViewer/sov.html`

– Web URLs:

`http://www.mayaarch3d.org/dev/ldaptest/singleObjectViewer/`

`sov.html` `http://www.mayaarch3d.org/dev/examples/singleObjectViewer/`  
`sov.html`

– Code:

see SVN: <https://koenigstuhl.geog.uni-heidelberg.de/svn/mayaarch3d/ma3dViewer>

- 3D SceneViewer

- Install directory:  
   /var/www/dev/ldaptest/singleObjectViewer/sceneViewer.html  
   /var/www/dev/examples/singleObjectViewer/sceneViewer.html
- Web URLs:  
<http://www.mayaarch3d.org/dev/ldaptest/singleObjectViewer/sceneViewer.html> <http://www.mayaarch3d.org/dev/examples/singleObjectViewer/sceneViewer.html>
- Code:  
   see SVN: <https://koenigstuhl.geog.uni-heidelberg.de/svn/mayaarch3d/ma3dViewer>

### 1.2.3 Light table, Image Service, link to Arachne service

The Light table displays images that are stored in the DAIs Arachne DB (<http://arachne.uni-koeln.de/drupal/>). To do this the Light table requests the ImageService which provides an API for getting Thumbnails etc. The ImageService then requests the Arachne DB.

See also in System architecture: Imageservice

**ImageService Code** <https://koenigstuhl.geog.uni-heidelberg.de/svn/mayaarch3d/imageservice>

**Light table Code** <https://koenigstuhl.geog.uni-heidelberg.de/svn/mayaarch3d/ma3dViewer/trunk/lib/MA3D/plugins/ImageViewer.js>

### 1.2.4 Time Service

See also in System architecture: Timeservice

**Code** <https://koenigstuhl.geog.uni-heidelberg.de/svn/mayaarch3d/timeservice-jar/trunk>

### 1.2.5 Attribute Service

The attribute service is used to get archaeological information belonging to structures. The geometry of the structures is stored in the maya3d DB while the attributes are maintained in a separate database at the DAI (iDAI.Field). Both databases are interconnected by an ID. You can request it with the following URL:

<http://www.mayaarch3d.org/as/2479>

//Response will look like this (JSON)

```
{"Kommentar": "Peter Biro", "Erhaltung_Grapheme_Logographisch": "26+",
"[Doku_Zeichnung_Anzahl]": "1", "DS_Bearbeitungsdatum": "2015-07-08",
"PS_InschriftID": "2479", "KurzbeschreibungInschrift": "Stela 11",
"Text_Uebersetzung": "At 8 Ajaw it came down at the House of the Tilt,
the Obsidian Face, the Flint Face Waxaklaju'n Ub'aah Chan arrived
and then K'i[h]nich Yax K'uk' Mo', the Divine Ch'uup? Lord was brought
forth by Yax Pa[h]s[aj] Chan Yopaat, 3 winikhaab' Lord, First on Earth.", "FS_Top
Erhaltung_Grapheme_Syllabisch": "27+", "Nummer_Inschrift": "60",
"Allgemein_Steinobjekttyp": "Stela", "Erhaltung_GlyphBlockNr":
"18", "[Doku_Foto_Anzahl]": "3", "Text_Lesbarkeit": "good", "Technik": "carving",
"ma3d_attribute_id": "2479", "DS_Bearbeiter": "Mike Lyons", "relevanteSeiteEins": "ba
Erhaltung_GraphemeNr": "53+", "Text_Edition":
"ti 8 ajaw jomoyi will te' naah huli taaj uut to'ok' uut waxaklaju'n
ub'aah chan ulok' k'i[h]nich yax k'uk' mo' k'uh[ul] ch'uup? ajaw yax
pa[h]s[aj] chan yopaat 3 winikhaab' ajaw b'aahkab'",
"Text_Transkription": "ti-8-AJAW jo-mo-yi WIL-TE'-NAH hu-li ta-ji
u-UT-ti TOK'-u-UT-ti 18-u-B'AH CHAN-na u-lo-k'o K'IN-ni-chi YAX-K'UK'-MO'
K'UH-ch'u?-pi-AJAW-wa YAX-PAS CHAN-na YOP-AT-ti 3-WINIKHAB' AJAW-wa B'AH-ka-b'a
```

See also in System architecture: Attributeservice

**Code** <https://koenigstuhl.geog.uni-heidelberg.de/svn/mayaarch3d/attributeservice>

### 1.2.6 Geometry Service

The geometry service is used to dynamically build a hierarchical Threejs-SCENE file (ver 3.2) from entries in the maya3d DB.

See also in the System architecture: Geometryservice

**Code** <https://koenigstuhl.geog.uni-heidelberg.de/svn/mayaarch3d/geometryservice>

The Service can be requested with the following URL:

[http://www.mayaarch3d.org/gs\\_new/json/1234/1418/children/lod/4/](http://www.mayaarch3d.org/gs_new/json/1234/1418/children/lod/4/)

<URL>/json/anynumber/geometryID/(children OR node)/lod/lodnumber{1..4}

### 1.2.7 PostGIS 1.5 and 2.0

- See: Databases

### 1.2.8 3D Scene Viewer/3D Single Object Viewer - Developer documentation

Both viewers are based on GIScene.js library (WebGL) and MA3D.js library for the User-Interface.

The SingleObjectViewer can be configured by JavaScript or via URL params:

```
//via JavaScript Constuctor
var sov = new MA3D.SingleObjectViewer(containerDiv, modelURL,
format, verticalAxis, georef, segmented);

/*
containerDiv - {HTMLDivElement} where the SingleObjectViewer will be shown
modelURL      - {String} local or external url of a model, which will be loaded
format        - {String} one of the following:
                - json : Three.js-JSON Format 3.1
                - scene: Three.js-Scene Format 3.2
                - ctm:   OpenCTM Format (can be created with MeshLab)
verticalAxis - {String} one of the following: Y (default) or Z
georef       - {Boolean} specify true or false to indicate whether the loaded
model has georeferenced coordiantes. If so a compass will be displayed.
segmented    - {Boolean} specify if the model is hierarchicalla ysegmented and
has special names with ids. This is used to activate the special unser
interface to retrieve information from the attribute service. Segment names
in the format follow the pattern:
(group|obejct)_{int}geometryId_{int}filemakerId_{int}_{int} ,
e.g. object_4308_56006_0_0
*/

//via URL params
http://www.mayaarch3d.org/dev/ldaptest/singleObjectViewer/sov.html?
url=http://www.mayaarch3d.org/protected/models/10L-18_segmented/
10L-18_segmented_CAD.json&format=scene&verticalAxis=Y&georef=false
&segmented=true
```

### 1.2.9 MayaArch3D OpenSource Code (tools, services, libraries)

- All PUBLIC Code from the MayaArch3D project can be found on GitHub

– <https://github.com/GIScience/MayaArch3D>

– <https://github.com/GIScience/GIScene.js>

- All internal code can be found in a Subversion repository (SVN) of the GIScience Research Group, Institute of Geography, Heidelberg University

**SVN URL** <https://koenigstuhl.geog.uni-heidelberg.de/svn/mayaarch3d>