

# D4.2 INITIAL VERSIONS OF THE SOFTWARE ALGORITHMS FOR 3D MODELS

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*WP4:MODELLING FOR 3D REPRESENTATION*

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## DOCUMENT DESCRIPTION

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## SUMMARY

The aim of report 4.2 is to document the software implementation and documentation of the algorithms that will be used for the creation of 3D models. DigiArt is concerned with the acquisition of 3D models of both large archaeological sites as well as cultural heritage objects. These require different challenges for the 3D modelling software. Developments of the software and 3D registration are closely linked with other developments in WP3, WP4 and WP5.

## ARCHAEOLOGICAL SITES

The archaeological sites selected for the demonstrators offer diverse settings: Scladina Cave is a dark, humid underground cave; Aigai is an ancient open air site that stretches over a whole valley. These offer different challenges for the acquisition of suitable data for the creation of the 3D models.

The change of consortium partner from AutoDesk to Pix4D has meant that DigiArt has been able to rely on the existing Pix4D software. Pix4D is a SME and has been working for years to develop advanced photogrammetry software using images to create professional orthomosaics, point clouds, models and more. It relies mostly on drones to acquire the images but can equally be applied to images taken by hand.

The reliance on the existing software for the capture of 3D models of the User Group Demonstrator sites has been a great benefit for the project. The challenges of acquiring the images in such diverse settings, has been further described in deliverable D3.2.

## SMALL OBJECT 3D MODELLING

In order to address the challenges of small cultural heritage object registration to populate the virtual museums, Pix4D has been further developing its software to enable faster and easier 3D modelling. Below we describe the software and user interface.

### SOFTWARE

Pix4D release the first version of its turntable application In Dec 2016 together with the Pix4Dmapper 3.1 release to the public. An additional software called Pix4dtagger allows the users to optimize their workflow on turntable applications to scan small objects.

#### Workflow

1. Print the provided pdf file of the tags and glue it on your turntable

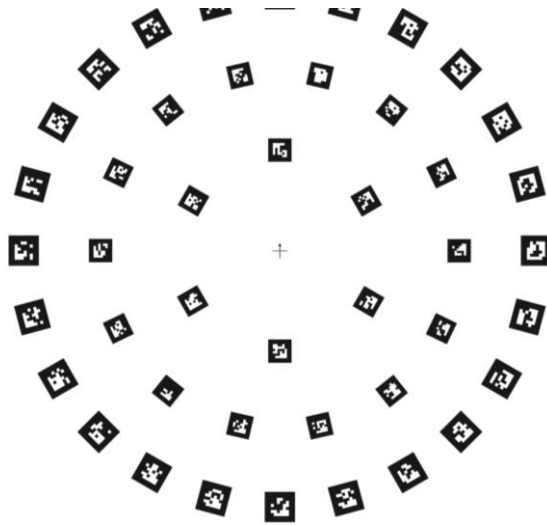


FIGURE 1: PDF OF THE TAGS TO BE GLUED ON THE TURNTABLE

2. Put the object in the turntable
3. Capture the object from different poses of the turntable
4. Take the images out of the SD card
5. Open Pix4dtagger and process

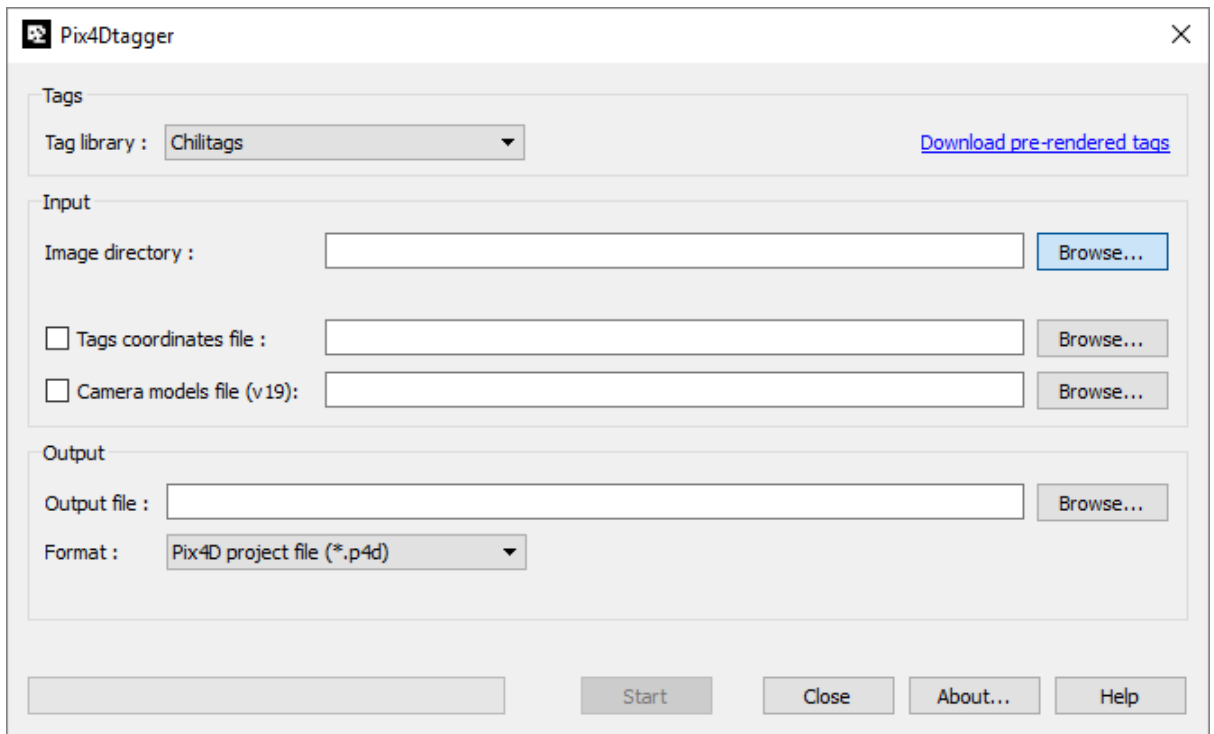


FIGURE 2: PIX4DTAGGER INTERFACE TO PRE-PROCESS IMAGES FROM A TURNTABLE

6. The results of the processing is a project file that can be opened in Pix4dmapper, a software developed by Pix4D prior to the DigiART project, and in which all camera are already exactly positioned by the use of the detected tags.
7. Process the project in pix4dmapper
8. Done!

## PIX4DTAGGER SOFTWARE DOCUMENTATION

The software is documented on Pix4D's "knowledge-base" (<https://support.pix4d.com/hc/en-us/articles/218022823#gsc.tab=0>) and we started collecting the user response.

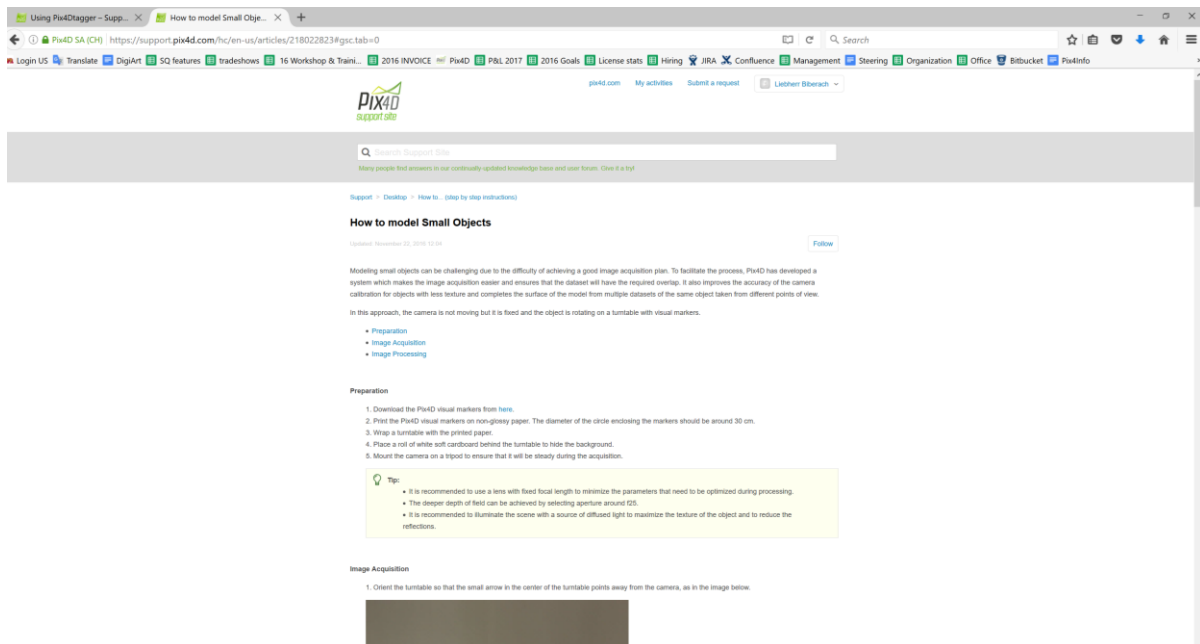


FIGURE 3: SCREENSHOT OF PIX4D'S KNOWLEDGE BASE

## PIX4DTAGGER SOFTWARE DISTRIBUTION AND USER EXPERIENCE

The pix4dtagger software has been distributed to the general public for free and is available also for DigiArt partners. From next year on we will collect valuable user feedback that will allow to develop the software according to the user needs and to find the suitable business value.