

How did people live in Maastricht in 1750?

The scale model brought to life

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Keywords: *Houdini, 3D-scan, Citizen Science, Volumetric video, augmented reality*

CHNT Reference: How did people live in Maastricht in 1750, the scale model brought to life. Gilbert Soeters and Rob van Haarlem 2020. Proceedings of the 25th International Conference on Cultural Heritage and New Technologies.

How did people live in Maastricht in 1750?

The scale model brought to life

As Giorgio Verdiani and I, Gilbert Soeters, presented last year in the session to honour Willem Beex¹, a 3D scan is made of the famous Parisian model of Maastricht in 2018.

Now it is time to present and use the model with new storylines. We founded a little consortium with the Municipality of Maastricht, Centre Céramique, Tijdlab and Dutch Rose Media, and with money funded by the Dutch Stimuleringsfonds Digital Heritage and Public, we started to develop new ideas. Starting point is the story about everyday live in Maastricht in 1750, where the model provides the ideal scenery. Our final goal is an interactive presentation of the model in Centre Céramique, combined with historical and archaeological objects, which will illustrate the stories we want to tell. We would like to provide the visitors with historical information in a light and easy way. To tell the stories we will use volumetric video, gamification, old fashion films and audios, and citizen science platform focused on the 3D model as well as a GIS platform to obtain as much information as possible about every building on the model. In our lecture, we will present the results up to now and the problems that we faced.

Problem statement.

Stories

To realize a fitting 3D presentation of the 3D scan of the scale model there are two main problems that need solving. The first issue was additional content. How are we going to add a new dimension to the scale model for telling new and exciting stories that are interesting for different target groups, while using the 3D scan without making it a 2D presentation. We aim to give the public a certain amount of freedom to discover the model for them self. Not only should they view the scale model from above, but they need to be able to get inside the scale model.

¹ Maastricht, the city, the maquette and the collection at the Palais des Beaux-Arts in Lille (France) Giorgio VERDIANI, Gilbert SOETERS. 2019

For the additional content we created six storylines that take the user on a time travel to Maastricht in 1750. Using newly created 3D content, volumetric video and gamification the user discovers different stories on the scale model using augmented reality. The storylines focus on different target groups and use a variety of methods to tell the story. Thus we do not only provide a presentation for “everyone” but we were able to monitor the results and reactions of the public.

Citizen Science

The second issue was the usability of the existing 3D scan. Although the 3D scan is of a high quality, it was not made for a walkthrough of the city. The small alleys were distorted and due to the aging of the scale model different defects distorted the model even more. In addition, the different scans were too large to process directly within a game engine. This means that all the scans had to be smaller without compromising on detail and quality. However with the regular tools to reduce the poly count there is not too little control over how the reduction is done.

For the best result, we decided to classify every building individually. We created a CAD based map that separated every building from its neighbour. This map is the cornerstone for the digital reconstruction of the scale model. Not only did it contain the buildings but also vegetation, roads, fortifications, fences and other characteristics of the scale model. All the buildings were appointed a unique primary key, this made it possible to bring the data back from 3D to 1D. This way we had the scale model in a simple spreadsheet of only a few MB's instead of 3D model that went over 1 TB.

After creating the first basic dataset, we started rendering 6 frame images of all the buildings. Using the data that can be extracted from the scan like windows, doors, heights, vegetation, colours, chimneys, roads and so on, we are able to create a spreadsheet like scale model. By classifying all these different aspects and connecting them to parcel plan it was possible to recreate the scale model in a matter of minutes. This only left us with the problem of adding the data. Due to the distortions details and features on the buildings were lost. To recreate the scale model back to its former glory we needed to restore these distortions, but correcting this by hand would take years of our time. To gather all the data we started a citizen science project in which the public is asked to help us with classifying the data. The citizen science project is hosted on the Zooniverse platform. With the data from the citizen science project we reconstruct a high detail but low poly 3D model of the scale model of Maastricht with Houdini.²

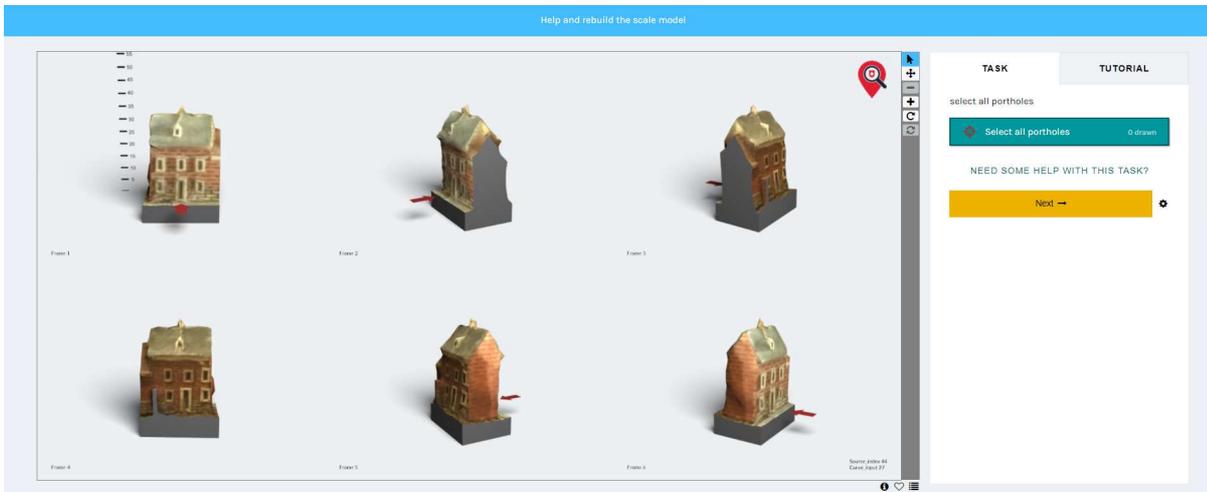


Figure 1. Screenshot of the citizen science platform Zooniverse containing the 6 framed image of building, citizen science platform

Within the citizen science project contributors will be asked some questions about characteristics of the building. These questions are mainly focused on gathering the primary data windows, doors, heights, colours, chimney's, and roof type's. In case the contributor has any question or believe that they have found an interesting building, they can directly open a new topic in the talk section. A team of moderators works together with historians and archaeologists to answer questions as quick as possible. Of course the contributors are also able to discuss the topics with each other.

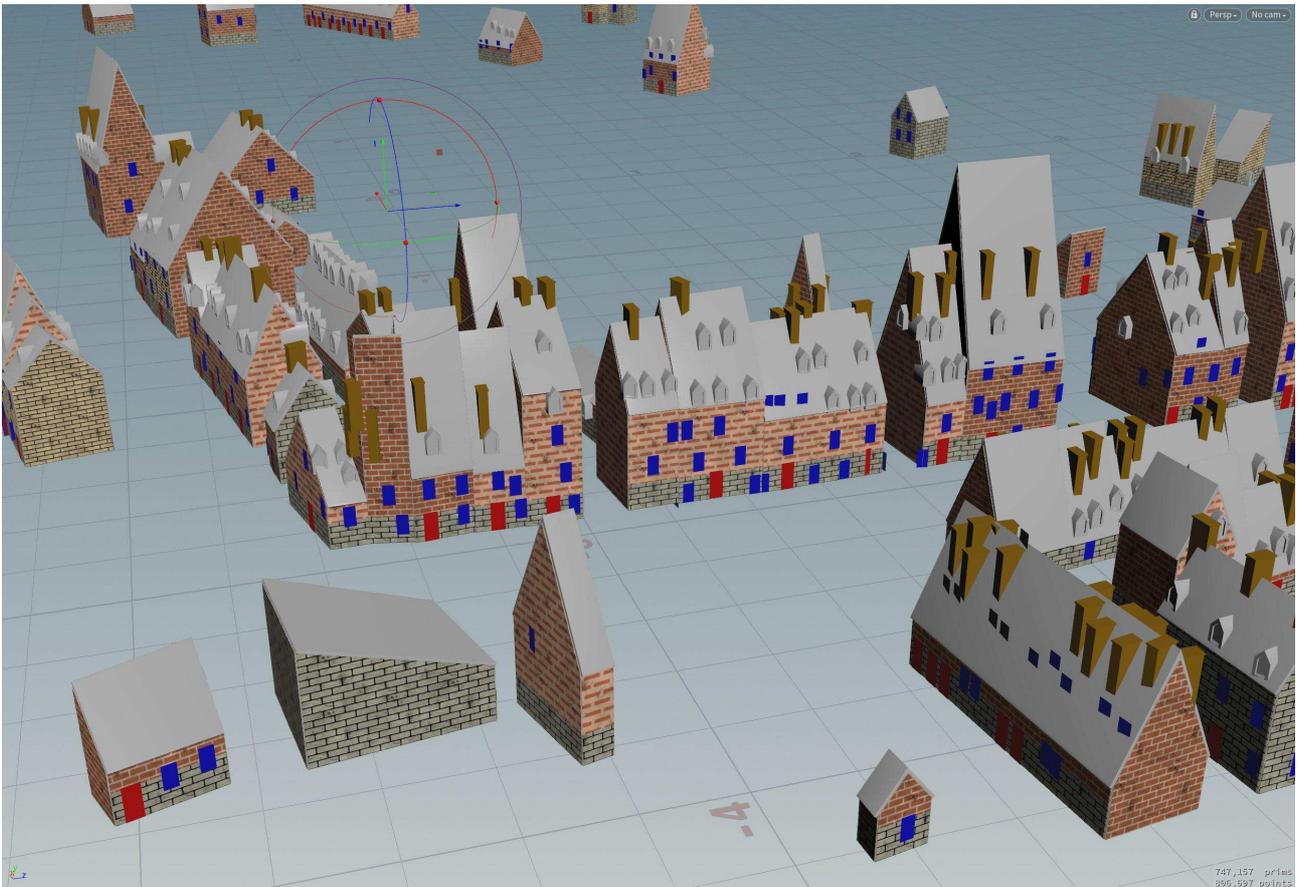


Figure 2: First result of implementing the extracted data

In this presentation we'll present our workflow for the new 3D model, the use of non visual data in 3D, the implementation of citizen science in our project and the results so far including the stories and the first volumetric videos.