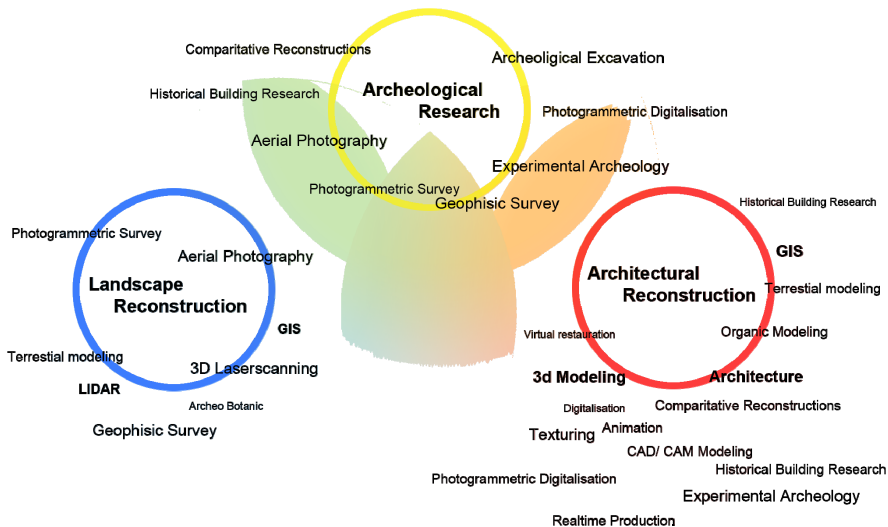


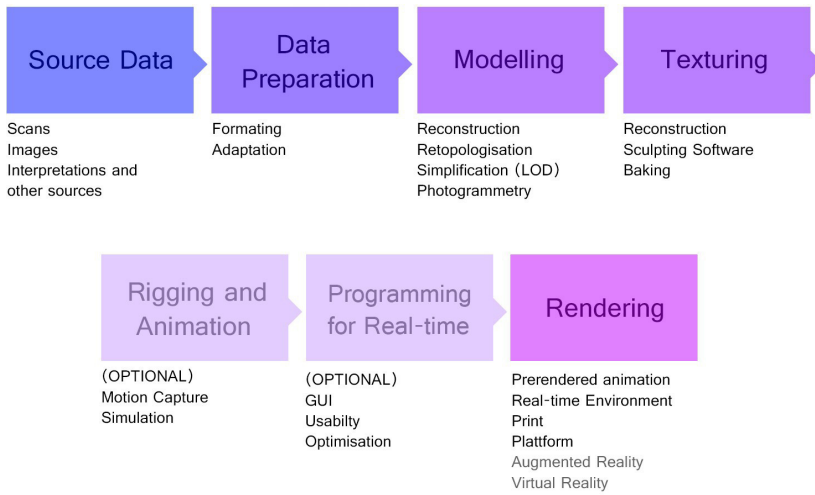
The 4D-CH Calw Project - Spatio-temporal Modelling of Photogrammetry and Computer Graphics

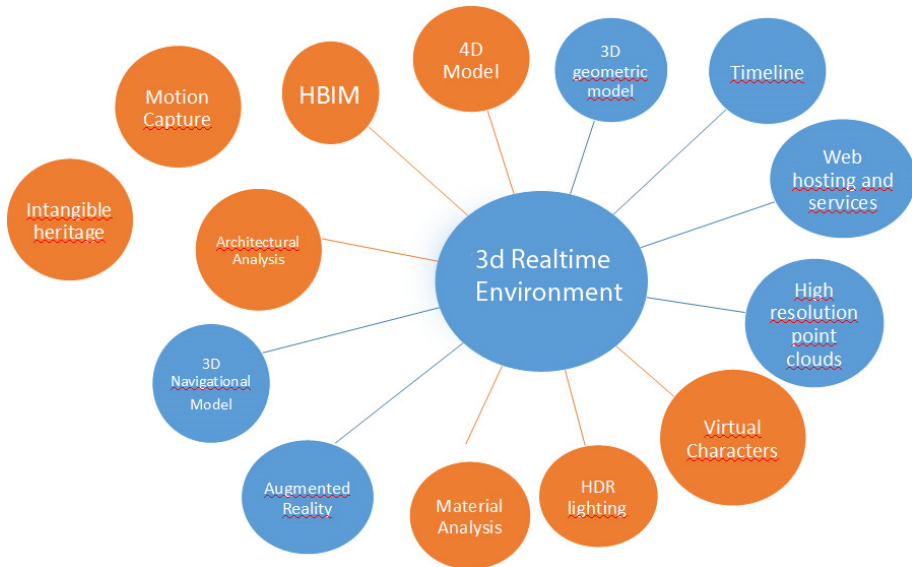


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The project 4D-CH-World aims to analyze, design, research, develop and validate an innovative system integrating the latest advances in computer vision and learning, as well as, 3D modeling and virtual reality for 3D /4D reconstruction in the wild, supporting the aim of our European Commons and the digital libraries EUROPEANA and UNESCO Memory of the World (MoW) to build a sense of a shared European cultural history and identity.



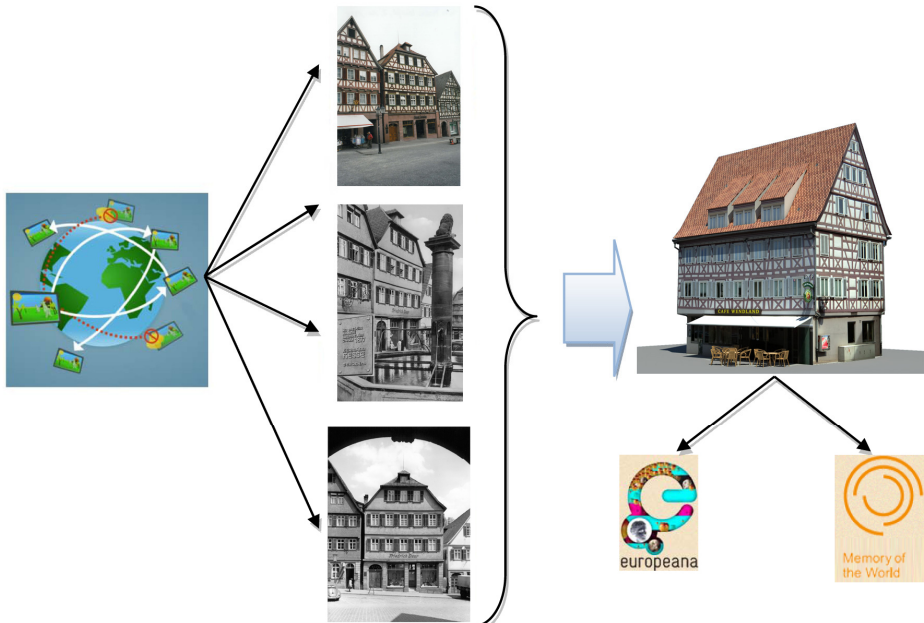
Technical University of Crete
7 Reasons Medien GmbH
Exus Software LTD

Institut für Photogrammetrie –
Universität Stuttgart
Fraunhofer IGD – Visual Computing

National Technical University of Athens
Cyprus University of Technology

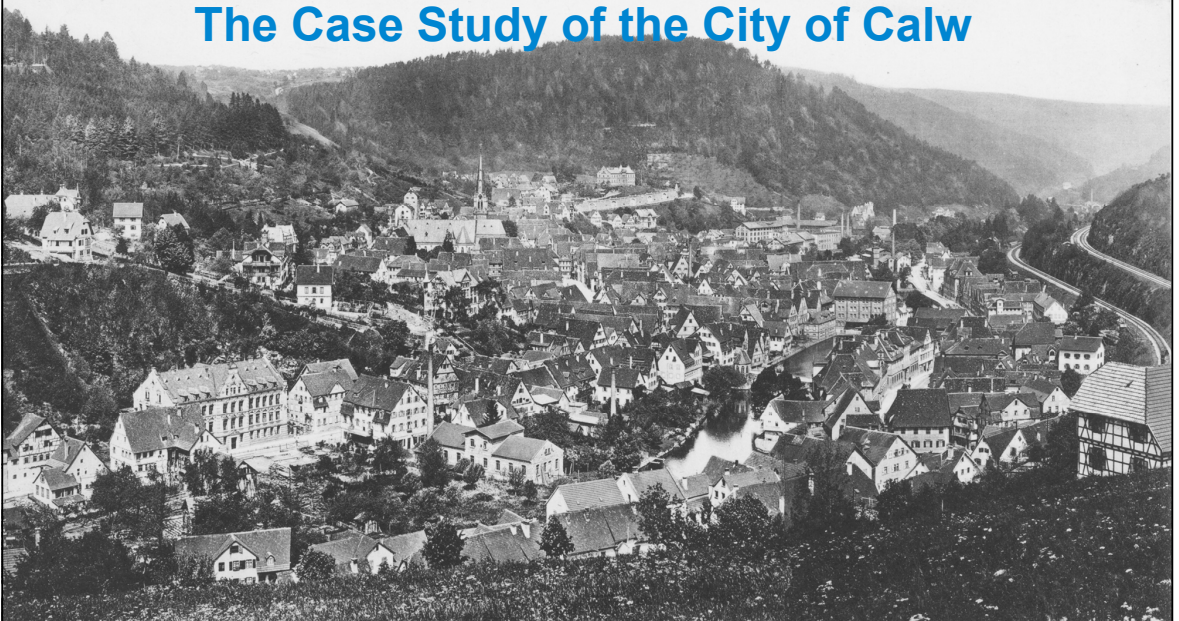


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The Case Study of the City of Calw



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The City of Calw around 1791



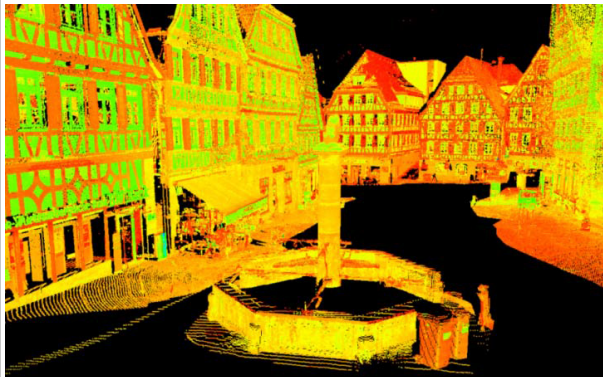
Early traces of the city date back to the Abbey of Hirsau near Calw founded 830 AD by the by Count of „Erlafried of Calw“ followed by the St. Peter and Paul Monastery in around 980-1020 AD.
In the 15th, 16th and 17th century this town was a commercial center of wood dissemination and processing, cloth production and salt trade. At this point in time it was much more important as a center of commerce than the city of Stuttgart.



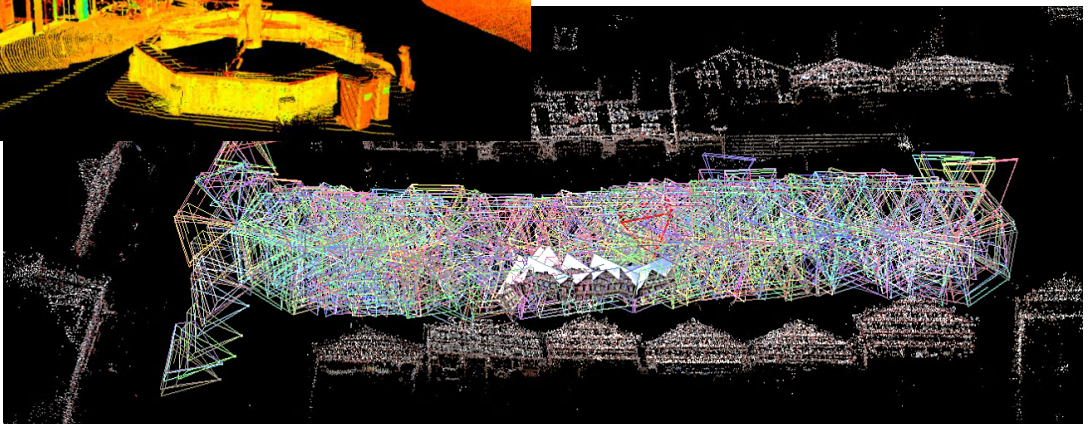
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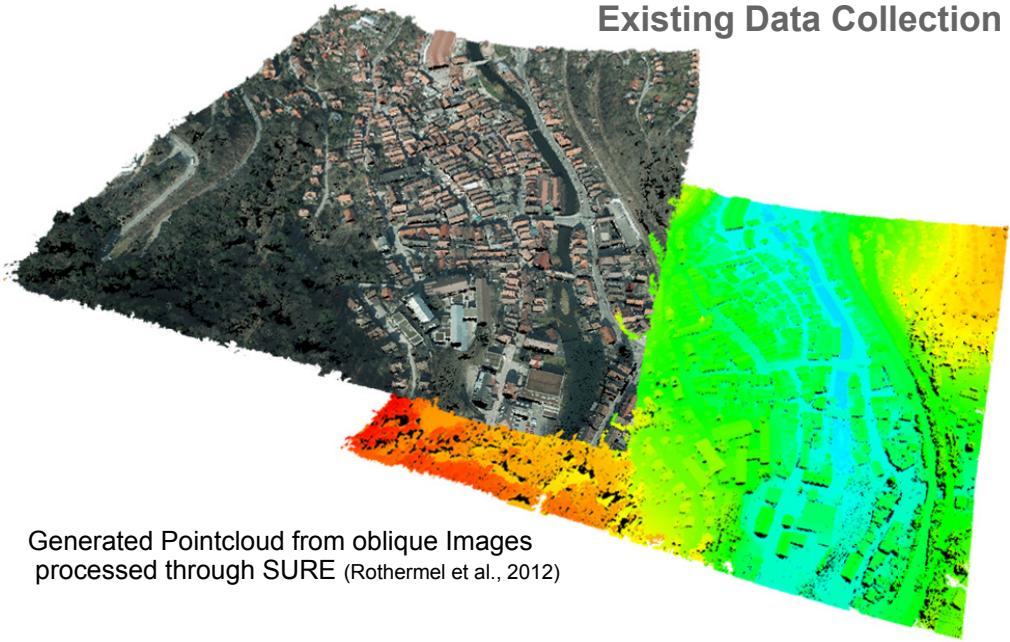
Famous Inhabitants of the City of Calw



Existing Data Collections

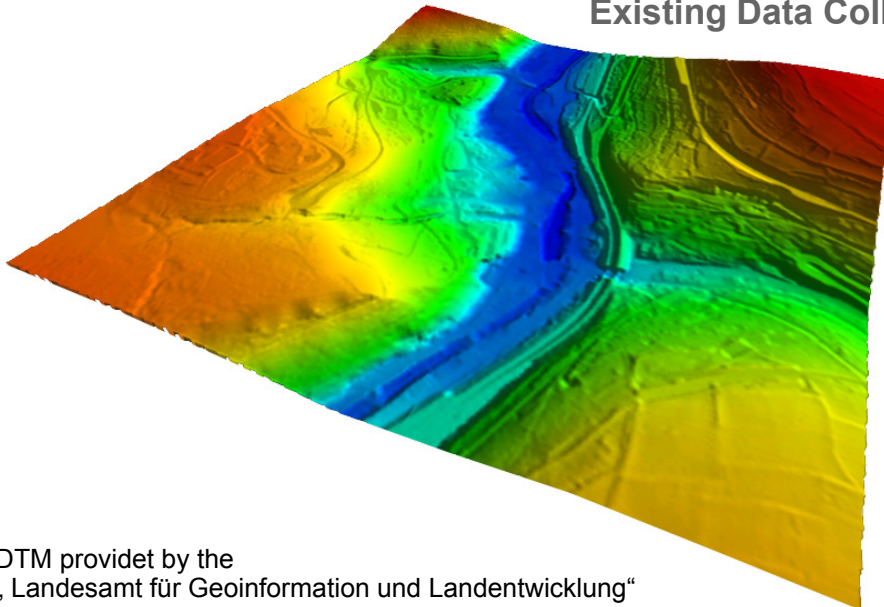


Existing Data Collection



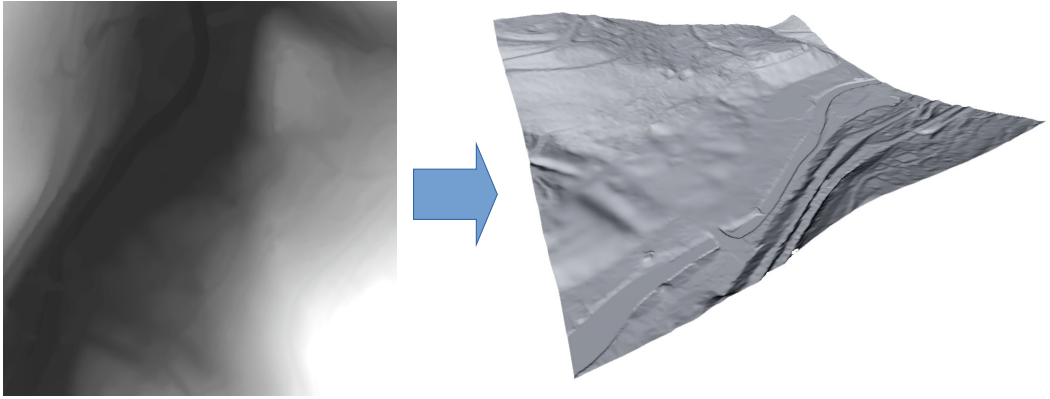
Generated Pointcloud from oblique Images
processed through SURE (Rothermel et al., 2012)

Existing Data Collection



DTM provided by the
„Landesamt für Geoinformation und Landentwicklung“

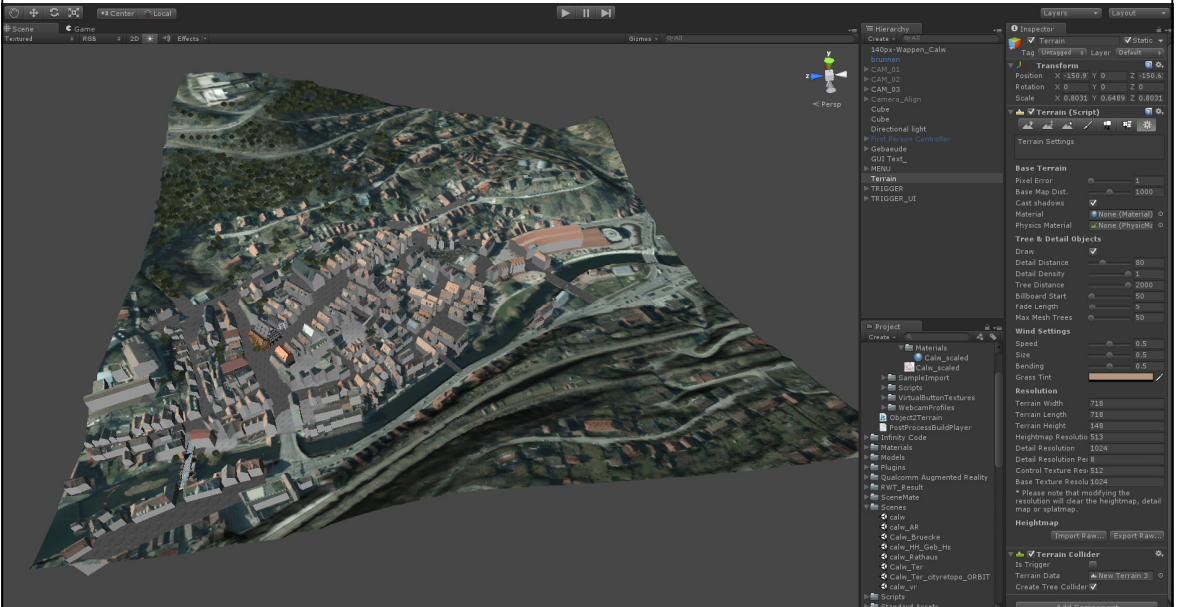
Data fusion and integration



Extracted 16 bit RAW Heightmap for the DTM generation inside the Realtime Engine



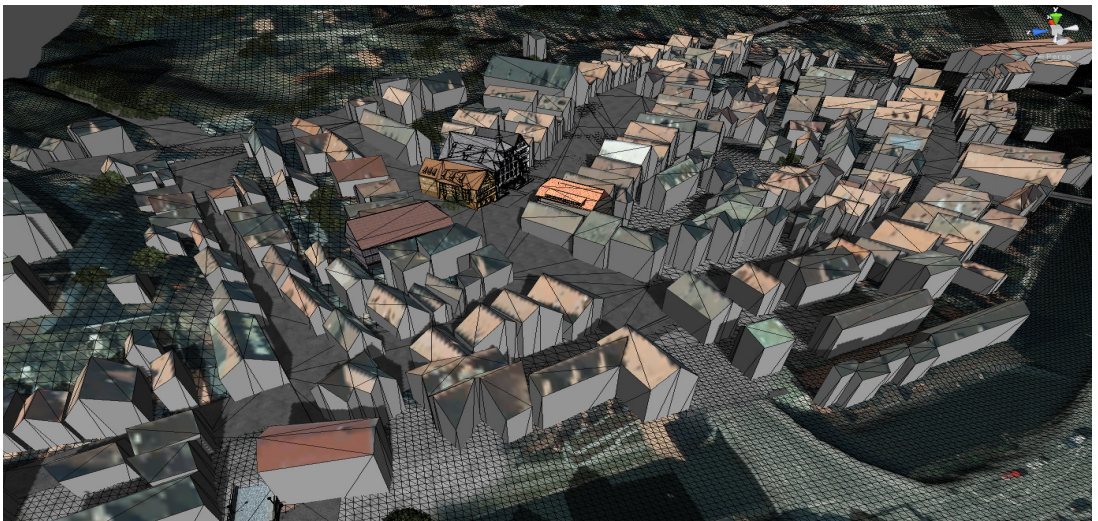
LOD -DTM inside
the Unity 3D Reality Engine



Textured Terrain and Roof Model inside the 3D realtime Editor Unity 3D



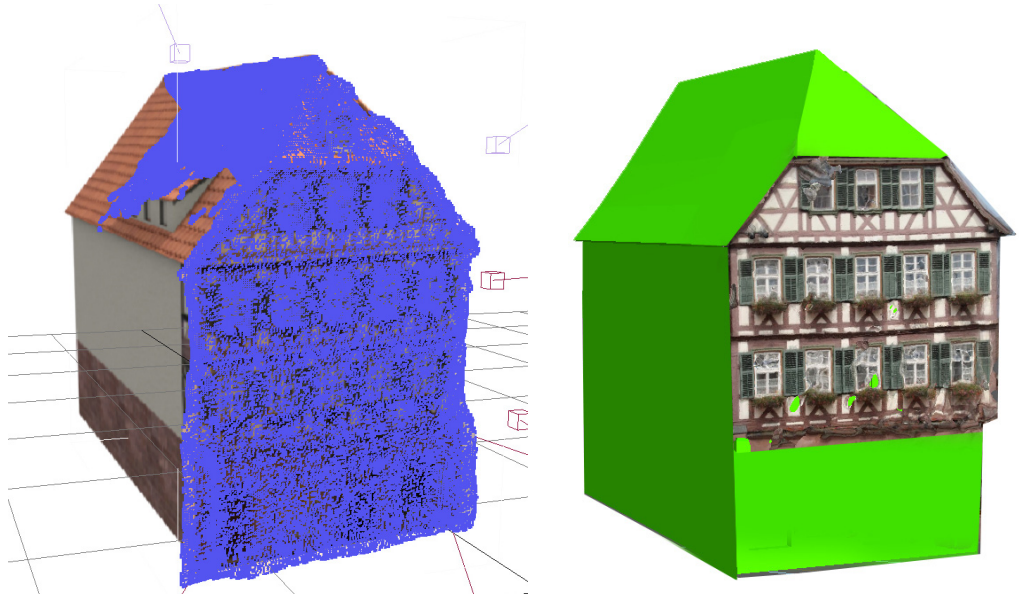
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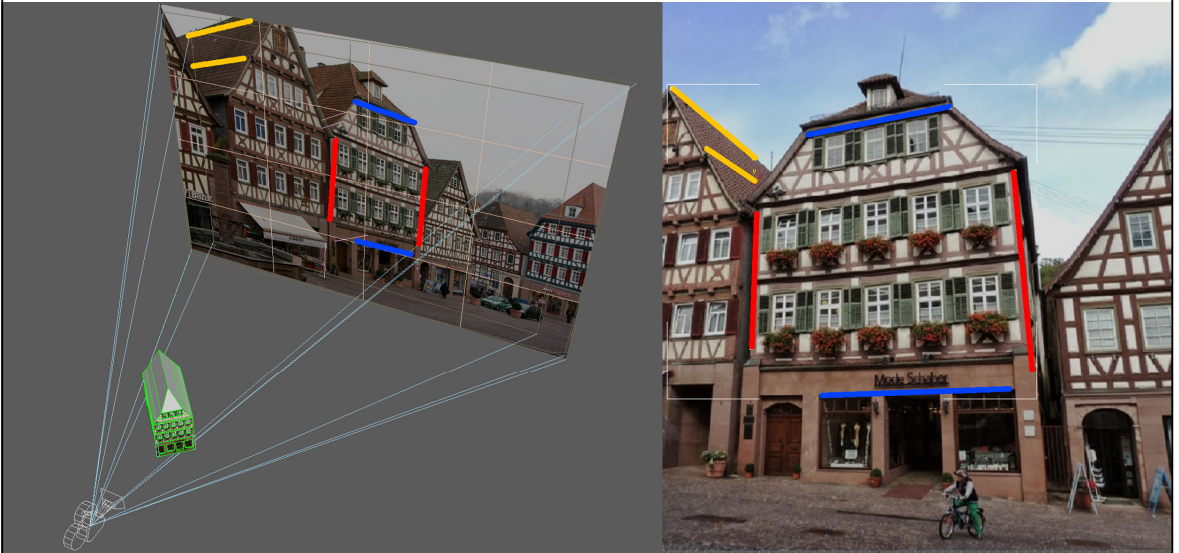
Roof extraction from the existing TIN Model



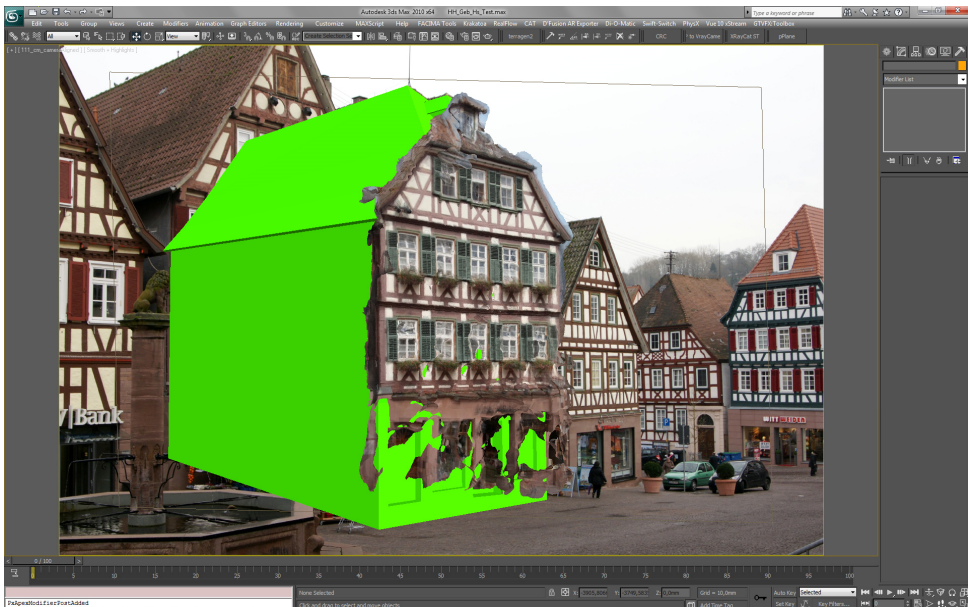
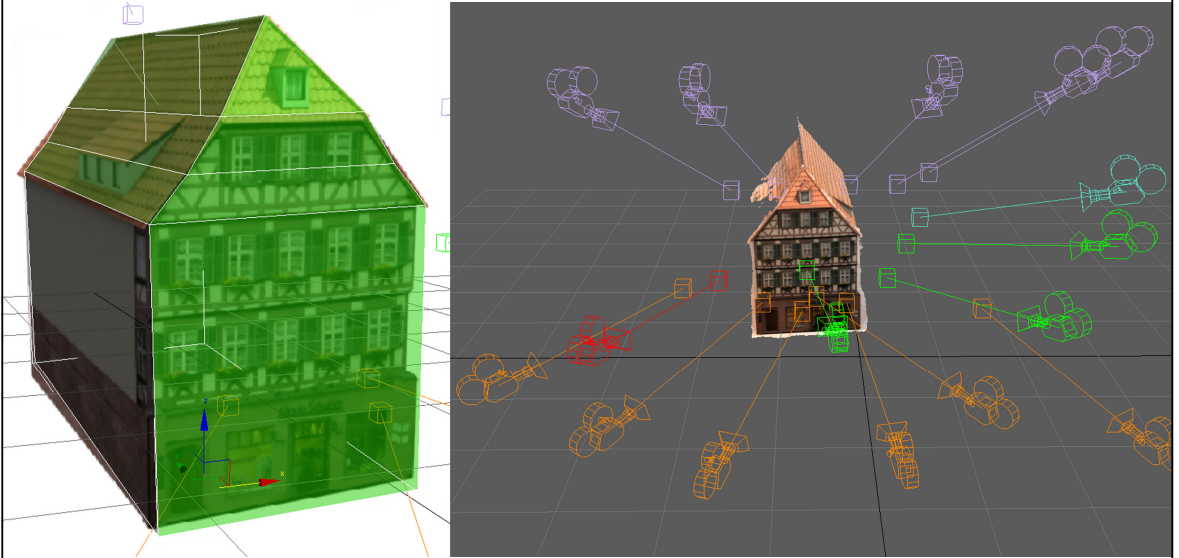
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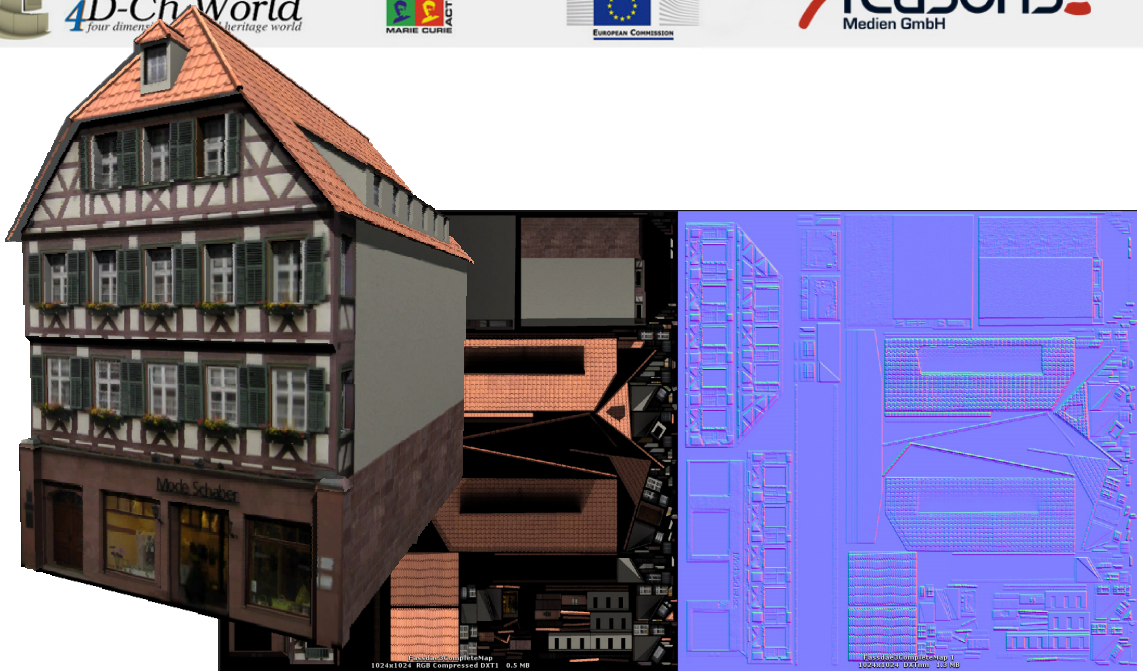
3D Poincloud generaed through the 4DCH-World Portals SFM Pipeline



Determination of the camera position using vanishing lines and points



Overlay of the Solid Geometry with the generated Pointcloud



UV Unwrapped diffuse and normal map texture



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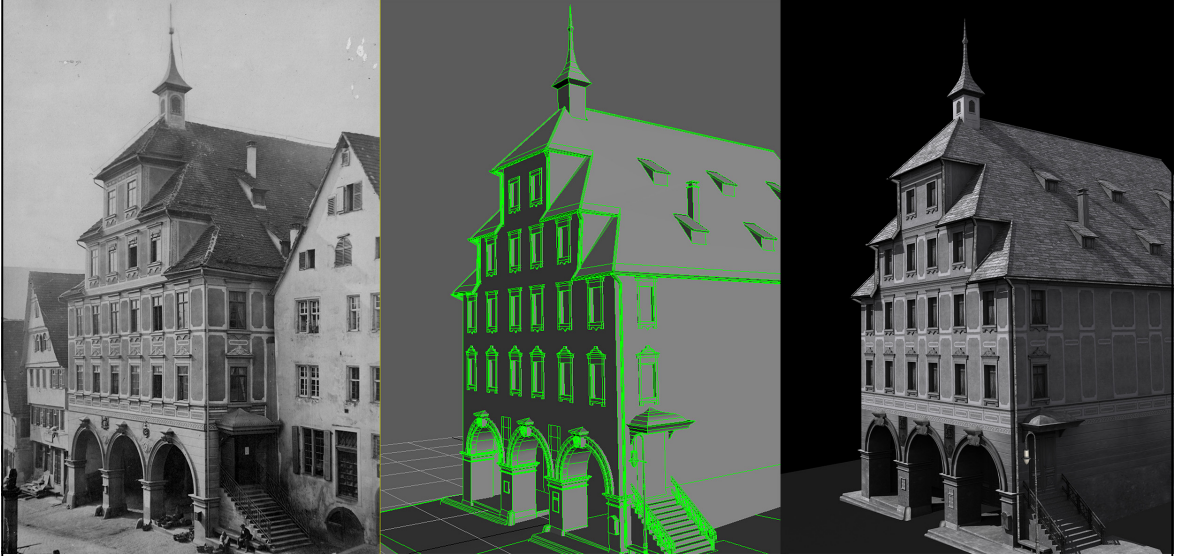
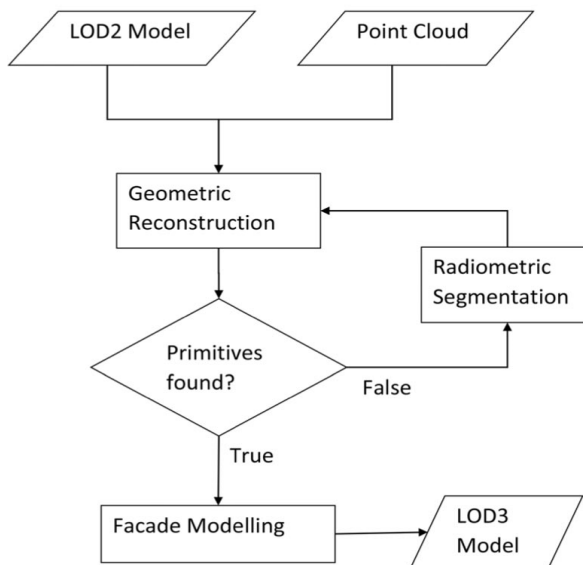
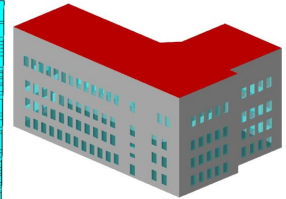
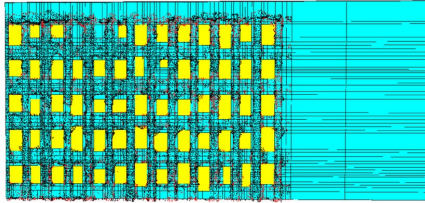
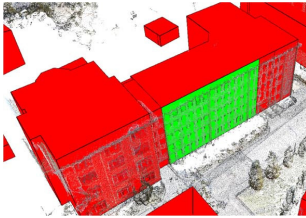


Photo -modelled Structure of the Town Hall of Calw (1901)

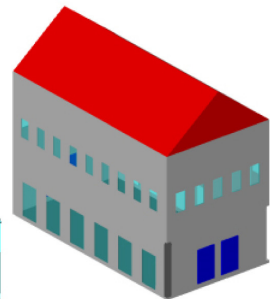
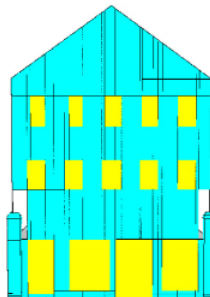
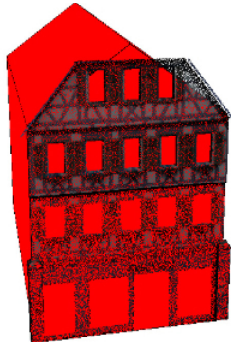
GRAMMAR BASED MODELLING

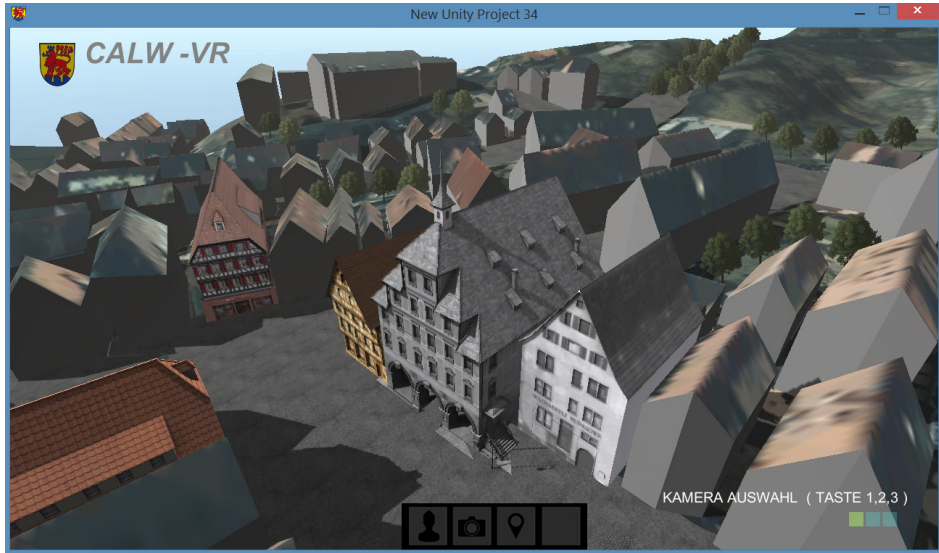


GRAMMAR BASED MODELLING



GRAMMAR BASED MODELLING





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CALW VR


Startseite Allgemein

im Kreis Calw **Pointcloud**

August 20 2014

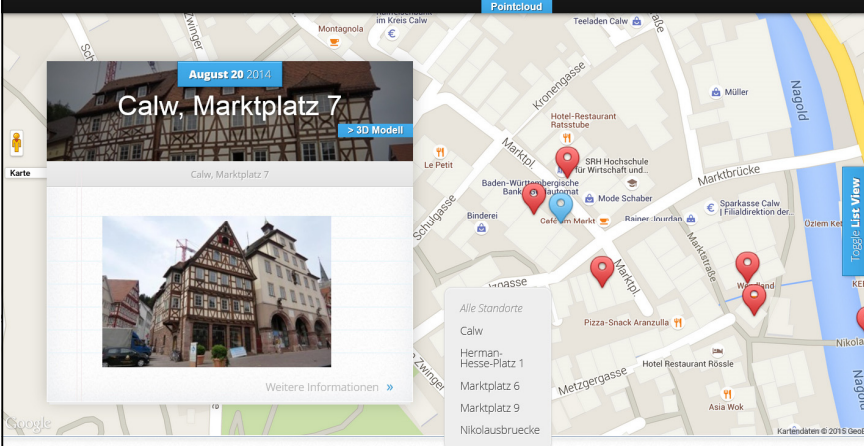
Calw, Marktplatz 7

> 3D Modell










Calw, Marktplatz 7

Weitere Informationen >



Listing Results

-  Calw, Marktplatz 7
-  Calw, Hermann-Hesse-Platz
-  Calw, Salzgasse
-  Calw, Marktstrasse
-  Calw, Nikolausbrücke
-  Hermann Hesse Geburtshaus
-  Calw Rathaus

Alle Listentypen ▾
Alle Standorte ▾
Eine Bewertung ▾
Filter



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CALW VR

Startseite Allgemein

Suchen...

Pointcloud

August 20 2014
Calw, Marktplatz 7
> 3D Modell

Teeladen Calw
place start place end
reset View

Alle Standorte
Calw
Herman-Hesse-Platz 1
Marktplatz 6
Marktplatz 9
Nikolausbruecke

Kartenädaten © 2015 GeoBasis-DE/BKG (©2009), Google Nutzungsbedingungen Fehler bei Google Maps melden

Alle Listentypen Alle Standorte Eine Bewertung Filter



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CALW VR

Startseite Allgemein

Suchen...

Pointcloud

August 20 2014
Calw, Marktplatz 7
> 3D Modell

Teeladen Calw

Visible nodes: 48
Visible points: 3,458,170

Other Files:
calw

LOD
Frontend
Grid Controls

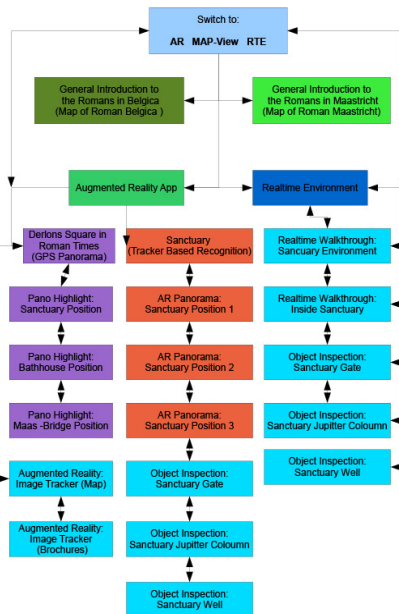
Marktplatz 9
Nikolausbruecke

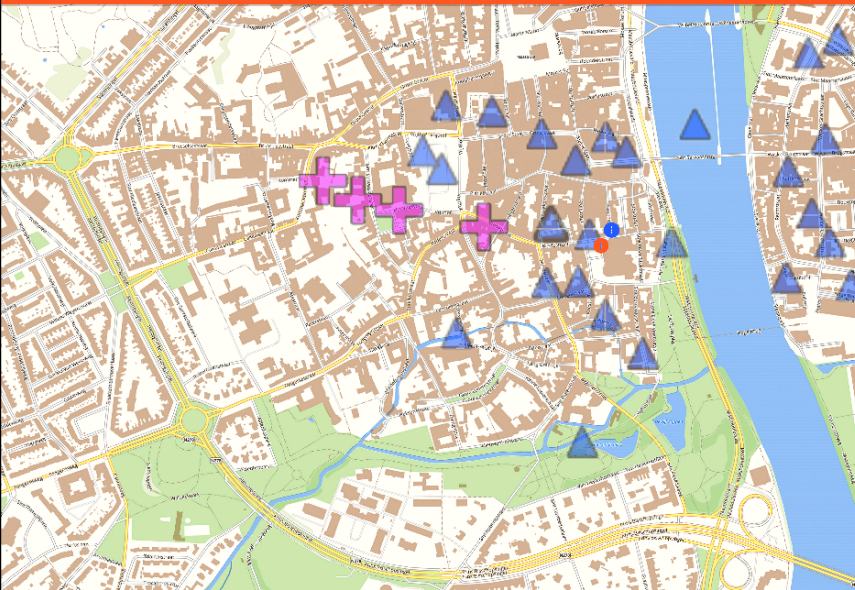
Kartenädaten © 2015 GeoBasis-DE/BKG (©2009), Google Nutzungsbedingungen Fehler bei Google Maps melden

Alle Listentypen Alle Standorte Eine Bewertung Filter



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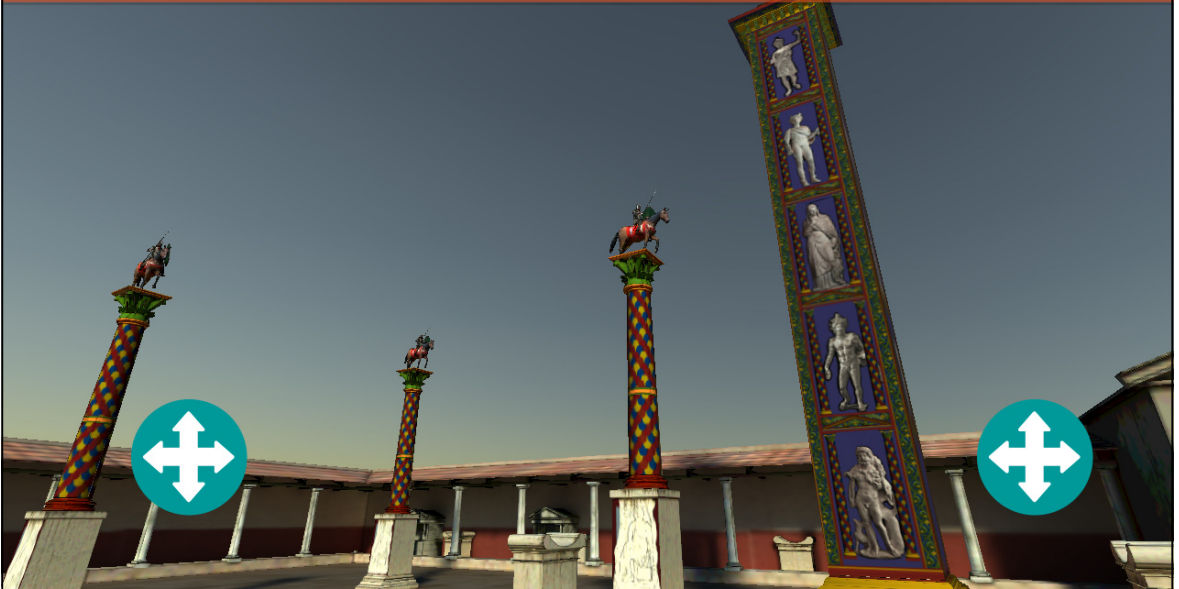




- Sanctuary
- Village
- Graves
- Roman Streets
- Settlements
- Single Finds



Detail View >



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Audio Guide

P1

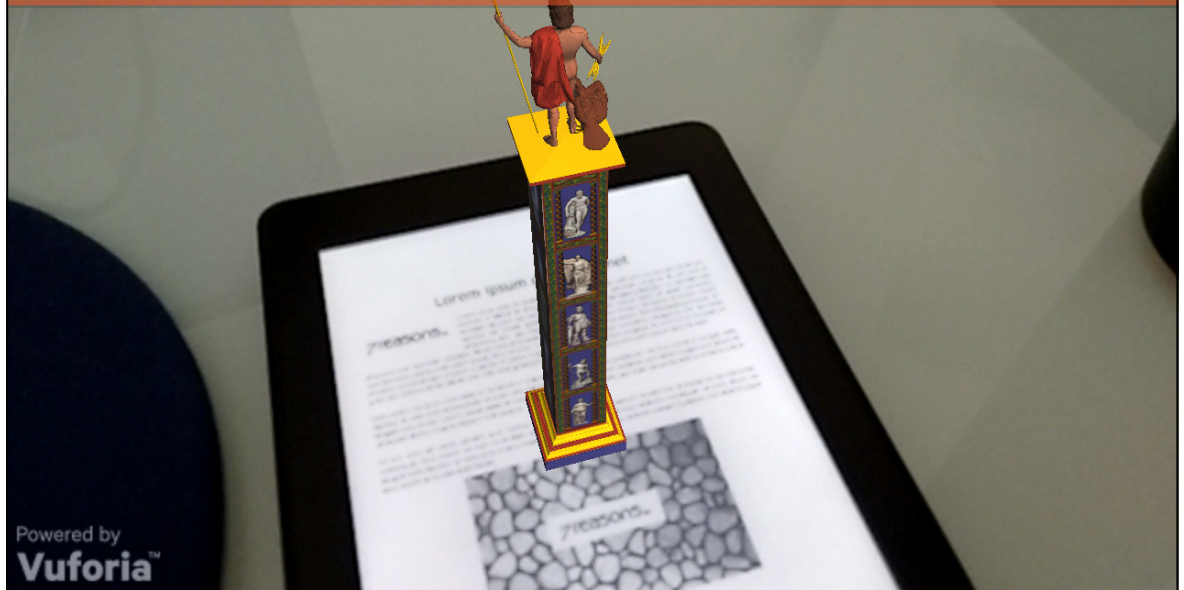
P2

P3

Roman
Bridge



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Conclusions

- Pointclouds were used and integrated to generate a DTM and a City model and could be used to reference singular buildings.
- Since only the prominent or visible architectural structures could be used for automated pointcloud generation, a manual approach had to be implemented to fill in missing building parts.
- The realtime-integration demands different model-structures to ensure operability on all platforms.



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Thank you for your Attention!