Digitization of cultural landscape in Castile and Leon (Spain)

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Castile and Leon, Spain
94.222 km²
2.495.000 inhabitants
Natural Places Network: more than 30 areas
The region of the world with more Unesco World Heritage Sites: 8
Regional natural and cultural heritage: public websites – maps locations

Mapa de la Red de Espacios Naturales en Castilla y León.  
http://www.patrimonionatural.org/espacios-naturales/listado

Visor Geográfico de Bienes Culturales de Castilla y León.  
http://www.idecyl.jcyl.es/VisorLigeroPACU/index2.html?

Portal de turismo de la Junta de Castilla y León.  
http://www.turismocastillayleon.com/es/destinos

Vías Romanas en Castilla y León. Junta de Castilla y León.  
http://www.viasromanas.net/
Regional natural and cultural heritage: **STP ITER PLATA project**
LABPAP UVa, 2009 - 2013

**Roman route from Merida to Astorga – 276 km. long Castile and León stretch.**

**Heritage Territorial System: Natural and cultural landscape**

Points of interest developed at different scales. Resources: IGN - National Geographic Institute and JCYL - Castile and Leon Government: SIG and CAD files, aerophotographies, historical cartographies...

**STP ITER PLATA DISPLAY**
http://www.jcyl.es/jcyl/patrimoniocultural/iterplata
3. Digitization with:

3.1. advertisement goals

- some examples

General Directorate Ministry of Culture and Tourism. Castile and Leon Government

Architectural Project:
LABPAP Research Group UVA
Architect Dr. Miguel A. de la Iglesia Dr. Darío Álvarez Álvarez, Flavia Zelli, Sagrario Fernández, Carlos Rodríguez

Archaeological monitoring:
IE University, Segovia
Cesáreo Pérez González (Coordinator) Emilio Gómez Illarregui Arribas Lobo Pablo

Topography:
Pablo Beltrán Rodríguez
Drone flight: 4k video and photograph

Advertisement goals: Informative video AR&PA 2016 Exhibition, Valladolid 2016
Photogrammetry 3D terrain
Resource: PNOA CYL public photographs
LABPAP – LFA, 2014

LABPAP Laboratorio de Paisaje Arquitectónico Patrimonial y Cultural
LFA Laboratorio de Fotogrametría Arquitectónica
University of Valladolid
Drone products: Planning flights
Drone product:
3D terrain model generated with Agisoft Photoscan Professional Edition
Aerial photographies, 1980-1990
Orthophotography public access PNOA CyL, 2010
Drone product: Orthophotography generated with 3D terrain Agisoft Photoscan
Archaeological site and its surroundings: Roman caves, necropolis and streams
2D drawings: plans
New resources + evolution of the representation (coding)
2D drawings: plans
New resources + evolution of the representation (coding)
2D drawings
Scientific goal + advertisement goals: info points/signals
2D drawings: plans
Scientific goal + advertisement goals: info points/signals
Drone product
3D terrain model generated with Agisoft Photoscan Professional Edition – PDF 3D

Domus of the Acqueduct 3D Model

LABPAP Laboratorio de Paisaje Arquitectónico Patrimonial y Cultural UVa
LFA Laboratorio de Fotogrametría Arquitectónica UVa.
3D Model generated with Agisoft Photoscan Professional Edition: **Virtual model**

Digitization ➞ 3D Photogrammetric Model ➞ Representation ➞ Codify ➞ 3D Final Model
3D Model generated with Agisoft Photoscan Professional Edition: **3D Printed Model**

Digitization → 3D Photogrammetric Model → Representation Codify → 3D Final Model
Colonia Clvnia Sulpicia: DEM (Digital Elevation Model) generated with PNOA public photographies

Colonia Clvnia Sulpicia: DEM (Digital Elevation Model) generated with PNOA photographies
Roman theatre of Clunia
Digitization and restauration works (1998-2017)
Roman theatre of Clunia: Digitization with Laser Scan: Points cloud 3D model – contour lines 3D model

Source: LABPAP – LFA UVa
Roman theatre of Clunia
Virtual reconstruction with Sketchup 3D Model – Architectural work, 2010
Roman Cave
Digitization with Laser Scan - 3D model - plan and sections

Source: Technology Group for Hostile Environments (GTE) of the Engineering Research Institute of Aragón (I3A). University of Zaragoza.
Future Challenges:
Clunia Master Plan (2015)
Thank you for attention!

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