JPI CHT² KICKOFF MEETING MINUTE

The JPI CHT² kick-off meeting, was held in Milan the 25th of January 2016, officially started the project. The participants to the meeting were: Gabriele Guidi, Sara Gonizzi Barsanti, Laura Loredana Micoli, Davide Angheleddu, Diana Canova, Vanessa Caterina Tritone from Politecnico di Milano (POLIMI); Jon Mills and Ian Haynes from Newcastle University (NCL); Diego Gonzàles Aguilera from University of Salamanca (USAL); Beata Hejmanowska form Scientific Stanisław Staszic Association (SSSA).

The project started at 9:00 as indicated in the following agenda circulated to the partners two weeks in advance of the actual meeting.

Cultural Heritage Through Time (CHT²)

Project Kick-Off Meeting Agenda

When **25 January 2016, 9:00 am**
Where **Mechanical Engineering Dept., Politecnico di Milano**
Building BL23 - Via La Masa, 1 – 20156, Milan (Italy)
Room "Aula Comunicante"; 1st floor

9:00 Welcome and CHT2 Introduction. Project overview, background, general goals. Presentation of project schedule and plan according to the accepted proposal. (Gabriele)

9:30 POLIMI partner presentation: background and expertise functional to the project. Confirmation or update of the case study indicated in the proposal, specifying the actual expected activity in detail (Gabriele)

9:45 NCL partner presentation: background and expertise functional to the project. Confirmation or update of the case study indicated in the proposal, specifying the actual expected activity in detail (Jon)

10:00 USAL partner presentation: background and expertise functional to the project. Confirmation or update of the case study indicated in the proposal, specifying the actual expected activity in detail (Diego)

10:15 SSSA partner presentation: background and expertise functional to the project. Confirmation or update of the case study indicated in the proposal, specifying the actual expected activity in detail (Beata)

10:30 Discussion about possible update/refinement of the project goals according to the expertise available (All)

11:00 Coffee Break

11:20 Introduction to the WP structure of the work plan (Gabriele)

11:30 WP2: Methodology definition – Identify specifications, needs and requirements of the Cultural Heritage community to understand the actual required levels of 4D model information; Determine the optimum material and technologies for the different Cultural Heritage scales; Develop

methodologies for addressing new ways of improving 4D reconstruction of Cultural Heritage through low-cost 3D and semantic information capture techniques; spatial-temporal analysis and simulation processes in immersive virtual environments. (Diego)

11:50   WP3: Data collection & 4D model creation - Collect actual and historical data related to the landscape/city/building to reconstruct for the 4 case studies chosen. Merge such data according to the strategies developed in WP2 for generating 3D models of the selected asset at different times. (Gabriele)

12:10   WP4: 4D model publication - Analysis of methodologies for an innovative interaction environments suitable for 4D models; Analysis of existing tools for 4D models web publications; Identification of needs and requirements of created models in the context of web publications; Web sharing of created in the project 4D models. (Beata)

12:30   WP5: Dissemination and Exploitation - Maximise dissemination and exploitation of the project outcomes by raising awareness among Cultural Heritage associations, institutions, and industrial end-user communities; enhance the value of the project's results to relevant research, professional and business communities. (Jon)

12:50   Discussion about possible improvements/refinements of this WP structure (All)

13:15   Lunch

14:30   General timing issues according EU and local authorities; General reporting issues: annual EU report requested within Feb 1st; review of the version circulated before the meeting (to be completed). Local authority reports. (Gabriele)

14:50   General Discussion about the following issues:
- Project interdependencies (14:50)
- Establish the Management Committee (voting), planning MC meeting schedule and modalities (15:00)
- Establish the project management standards (15:10)
- Establish project communication standards and how arrange reports reports about the status of advancement of each task (15:20)
- Agree amongst project teams to the definition of 'completed' work (15:30)
- Critical success factors (15:40)
- Distribute contact list (15:50)
- Risk identification, analysis, and management standards (16:00)
- File locations & data exchange standards (16:10)
- Metadata management (16:20)

16:30   Coffee Break

16:45   Meeting summary: i) to do list; ii) Define together an Issues list, if any; iii) next deadlines; iv) next meetings (Gabriele)

17:15   Questions and answer session (All)

18:00   End of meeting

Before the meeting start Sara Gonizzi has been nominated Secretary of the meeting, in charge of the preparation of the draft minute.

The meeting started with an overview of the project by the Project Leader, Gabriele Guidi, who summarized the main tasks of the project that are:

1. Safeguarding tangible Cultural Heritage and its associated intangible expressions;

2. Sustainable strategies for protecting and managing Cultural Heritage;

3. Use and re-use of all kinds of Cultural Heritage.

In the overview of the project it has been highlighted all the important points written in the proposal (Research aims, Research threads according to application scale – landscape, urban, architectural scale, State of the Art, time varying analysis hypothesized in the proposal), the work plan subdivision and the case studies, in more detail relevant buildings in the city centre of Milan, the Hadrian wall, the city walls of Avila and few relevant fortresses in Krakow. At the end of the presentation, a discussion regarding the case studies and the feasibility of the work started, taking into account the problems and difficulties encountered with the funding and the reception of the project by the Italian Ministry of Research. It has been stated that, in the period covered by the project, is mandatory to identify relevant structures or portion of them that can be an example of the complexity of the methodology proposed.

In the presentation it was stated that the official start of the project is 1 September 2015 and the end will be February 2018.

Subsequently, the description of the Working packages has been explained:

WP1 – management (POLIMI): Project coordination; IPR issues; consortium agreement and kick-off meeting (done)

WP2 – methodology definition (USAL): specifications and user needs; methodology for 4D, urban and architectural analysis (supposed to finish at MS1)

WP3 – data collection and 4D model creation (POLIMI+FBK): gathering reality-based 3D data (FBK); gathering maps, historical images, drawings, iconography; data processing and integration; validation

WP4 - 3D/4D model publication (SSSA): 3D based innovative and immersive environment for site management and end-user engagement; 3D models web publication; WebGIS implementation

WP5 – dissemination and exploitation (NCL): market analysis; knowledge transfer to non-academic stakeholders; open access scientific publication; website and social media, multimedia exhibition

According to the delay in the start of the project, the work plan and the Gantt schedule has to be changed in order to have a proper sequence of the Deliverables. In the project's proposal, after month 1, two Deliverables have been established:
- D1.1 – Project presentation: a public document, describing the objectives of the project and the planned RTD activities, released at the beginning of the project;
- D1.2 – Project management booklet, including guidelines;

Moreover, four Deliverables for month 2:
- D2.1. Definition of Cultural Heritage community needs and requirements;
- D2.2. Guidelines for 4D landscape analysis

- D2.3. Guidelines for 4D urban and architectural analysis
- D5.1. Exploitation plan for each partner and consortium as a whole.

The main problem is the different starting month among the four units. POLIMI and NCL started officially on September 2015 while USAL and SSSA after the signing of the Consortium Agreement, so January 2016. This phase shift in the start dates of the project forced the decision to change the Gantt and the months of the deliverables. Hence, it was decided to place the D2.1, on month 6 (so in June 2016) and D2.2, D2.3 and D5.1, from moth 6 to month 9 (so in September 2016).

The next presentations focused on the single partner presentation. POLIMI (G. Guidi) presented the background of the group, explaining what was done with three different case studies: S. Giovanni in Conca in Milan, Temple of MySon in Vietnam, Certosa di Pavia. The methodology used in the three examples could be a good starting point for the CHT^2 project. Then it was the presentation of the project's case study, highlighting the need to identify relevant buildings that can be studied, surveyed and time varying reconstructed.

The second presentation was the NCL team group and case study (J. Mills, I. Haynes). The team is assembled by both civil engineering (geomatics) and archaeologist and have a significant experience in the field, having defined the specification for subcontracting of 3D scanning activities for "English Heritage" (http://www.english-heritage.org.uk). They will deal with the structures of the Hadrian Wall, of which, small parts survive in the cities (in Newcastle, parts of the wall cross the city and the evidences are very close to the road) and landscape. Different projects have been done for the wall as FREDHI (The Frontiers of the Roman Empire Digital Humanities Initiative aims to create cutting-edge digital research tools for the humanities, using Hadrian's Wall and the other frontiers of the Roman Empire as the inspiration and data sources for the research. The project is interested in archaeological and heritage management research problems). As for POLIMI, it is mandatory to define specific areas to be investigated as for example the Beckfoot roman fort, one of the best for aero photos responses and that can be linked with other studies on changes in the territory.

The third presentation was about the USAL unit (D. Aguilera). Started as a research unit on CH, they reinvented themselves in different engineering topics. They do kite photogrammetry, have developed a specific software for the processing of these kind of images, UAVs surveys, integration and passage from 3D points cloud to CAD models. For the CHT^2 project, they are thinking about integration of data, data acquisition and 3D models integrated with databases and historical information, a kind of HBIM 4D smart analysis tool. The test object is the city walls of Avila: the 3D with laser scanner and photogrammetry is already existing as orthophotos and the 3D GIS - GEOWEB (3D models integrated in a GIS). The idea is to use open source environment (Cesium and Graphos library to openGeo Suite web apps – check the format allowed).

For the project and due to the low budget the USAL research group has to find the most emblematic part of the walls and focus on that for the 4D reconstruction.

The final presentation was the one of SSSA (B. Hejmanowska). Some previous projects have been described as cinque terre national park (GIS; orthophoto production, DTM, virtual trip for touristic tour); the visualization of the centre of Krakow, with photogrammetric and architecture documentation, with the implementation of a virtual tour using google maps. The creation of

panorama images and panoramic tours and a study regarding the development of paintings; study of DTM uncertainty; reconstruction from images of non-existing objects.

The idea developed for the CHT^2 project is, starting from maps, to show the idea of the fortresses and then concentrate to some objects or relevant buildings that have to be decided.

The final discussion after all the presentation regarded the idea of starting from general and then going into detail of few objects. It was also decided to highlight in the first year report to reschedule the Gantt, because methodology definition has to end at MS1 but the project started late, and delaying everything but the management of 2/3 months, so that the methodology definition could start on February 2016. If any changes of the Gantt are allowed by the proposal, it was decided to move the beginning of WP2 and WP4 (USAL and SSSA started officially the project in January 2016) and that the methodological definition of the project has to be overlapped with data collection, being progressively refined as new evidences for all monuments become available.

The presentation of the different WP was the second part of the meeting.

WP2 – USAL: Standardization of 3D models. Report on user needs: table of contents to circulate among all the partners and, depending on everyone's expertise, everyone will help in the identification of specific keywords. A questionnaire to end users should be prepared starting from a review of the State of the Art.

Task 2.1: Specifications and user needs and deliverable 2.1. on definition of Cultural Heritage community needs and requirements [supposed to be on month 2] can concern an overview of existing standards (point clouds, 3d models, HBIM;. Image-based and range-based OS reconstruction tools and visualization tools.

Task 2.2: Methodology for 4D landscape analysis and deliverable 2.2 on guidelines for 4D landscape analysis [supposed to be on month 6] will concern digital aerial photogrammetry, Airborne laser scanner and GIS tools.

Task 2.3: Methodology for urban and architectural 4D analysis and deliverable 2.3 on guidelines for 4D urban and architectural analysis [supposed to be on month 6] will concern Mapping Mobile System, Terrestrial Laser Scanner and Close Range Photo.

WP3 – POLIMI: FBK, as subcontractor, will help in the 3.1 task on gathering reality-based 3D data; regarding the data processing and integration (reality based and CAD models), it was decided to use both 3D models and point clouds even if points cloud were not included in the proposal. The 3.4 task regarding validation will start from the evaluation through questionnaires and interviews, taking into account the quality of the data. For sustainability, best practices on the methodology will be defined.

• T3.1 Gathering reality-based 3D data (actual data collection from the target sites, each partner responsible of its own case study, supply georeferenced topographic networks to all partners requiring this support; supervision and reporting the activity of all partners)

• T3.2 Gathering maps, historical images, drawings, iconography (historical document collection about the target sites with the support of the associate partners supporting the project, each partner responsible of its own case study, supervision and reporting the activity of all partners)

• T3.3 Data processing and integration (3D processing of TLS and photogrammetric data up to semantically-subdivided textured mesh models, each partner responsible of its own case study)

• T3.4 Validation (evaluation of the 3D products through questionnaires and interviews, in terms of performance, reliability (and quality), contribution in connection with project aims, usability, sustainability).

Regarding the deliverables: within month 15 everything has to be surveyed; within month 24 (the date was changed) a report on collection of data for the 4 case studies has to be written; within month 26 a report on final 4D results of the 4 case studies has been stated and within month 28 a report on validation (the date was changed).

WP4 – SSSA: depending on methodology, it regards the integration of the models from the other partner.

Task 4.1 regards archaeological databases and it has to be considered how technology is going to change (look at the future). It was hypothesised the use of Oculus + leap motion, all integrated in Unity.

Task 4.2 regards the models web publication.it has been supposed to use OGC (open geoservice consortium) and WCS (web sharing catalogue) for metadata.

Task 4.3, regarding WebGIS implementation, big data (talking about more than 1 TB considering all the kind of data) has to be taken into account. The deliverables will regards the state of the art, 4D models in www and application of GIS analysis through www access; predictive tool; separate visualisation and WebGIS.

WP5 – NCL: maximise dissemination and exploitation. Raise awareness; enhance the value of the project's results. Task 5.1 regards in-depth market analysis and goes in parallel with T2.1. Each partner will carry on exploitation plans and market analysis.

Task 5.2 regards knowledge transfer, considering also trans-European dissemination and non-academic stakeholders. Particular attention on the New Member States, information for public authorities and education of technical municipal staff are part of the task.

T5.3: open access scientific publications (minimum 4 in leading peer-reviewed journals, as remote sensing, photogrammetry journal, IEEE, also cultural heritage journals). It has been decided to send Jon a list of important journals. (JOC, JOCCH, etc.…) and to consider a publication regarding predictive future threats (Nature).

T5.4: website and social media. Project website. Website will held in Politecnico webserver (cht2-project.eu).

T5.5: multimedia exhibition and project exhibition. The option is or a physical place and then virtual access to other places (ask Triennale, or the Archaeological Museum of Milan, or the Sforza castle for physical installation). Another option is to have a moving installation in the different areas.

ANNUAL REPORT

POLIMI will propose the project's logo: different options will be presented and then the partners will decide which one to use.

For the writing of the first annual report, it was decided to emphasize the difficulties (different kind of documentation sent to the Italian Ministry of Research, no funding yet for the project leader), to indicate all the management done until the 31 of January (definition of the Consortium Agreement,

with a model completely different to any other models). Regarding the budget, the partners will fill in the table regarding the money spent (organization of kick-off meeting, trip to Milan, any other costs related to the project).

For the following meeting, the following dates and places have been decided:

1. July 2016: Prague (ISPRS congress)
2. Jan 2017: Avila
3. June/July 2017: through skype
4. April 2018: Newcastle (final one)