ESR 3

Name: Diego Bellido Castañeda

Your credentials: Geomatic Engineer / MsC in Geodesy and Cartography Engineering

Start day: 01/02/2015 **End day:** 15/04/2017

Involved in WP: WP2, WP3 Hosting Institution: ArcTron 3D

My Research Training Activity in ITN-DCH

A. Summary of the Career Development Plan:

The main goal of the early stage researcher is the study of the current 3D high resolution techniques applicable to cultural heritage.
The long term objectivities of the research are:

- to study 3D digitizing techniques applied in Cultural Heritage
- to build a solid network in the field of Cultural Heritage and
- to acquire enough experience to start the PhD within the next year

In order to achieve these goals a constant development of the research capabilities is required. One part of the training will be provided by ArcTron3D, using the regular internal training courses, the integration in different study fields of ArcTron3D, the opportunity to have first-hand experience with different kind of newly developed technologies, etc. Other parts of training will be done during the secondments. These have been and will be chosen to fit the needs of the development of the early stage researcher.
Furthermore ArcTron3D does encourage the early stage researcher to go to different conferences, meeting and fairs in his field of interest. ArcTron3D has and will take the early stage researcher to different international fairs and congresses the company presents itself.

As short term objective, it means in 1 year, the goal is to be able to present at least 4 publications in the research field of the early stage researcher. These include journals, poster presentations, lectures, etc

B. Core Research Training Activity:

In the first year of this training at ArcTron3D, the fellow will learn the different 3D digitizing techniques available at ArcTron3D. To learn these techniques and to understand the methods from button up, ArcTron3D has provided the early stage researcher with different training studies in structured-light scanning, photogrammetry, surveying instruments and surveying techniques. These trainings studies have been evaluated by ArcTron3D experts. The early stage researcher is involved in the planning, execution and completion of different CH projects at ArcTron3D (as a bystander) to understand the different phases of a CH

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 608013.

digitalization project. All this training is required to gain knowledge for the different study cases of the ITN-DCH project, from the planning of data acquisition to the final products.

The main focus of the research is on photogrammetry, laser scanning and light structured lighting methods in cultural heritage digitization for high resolution surveys. The research will be developed mainly in the case studies, in order to produce results in combination with the different capacities of the fellows who are involved in the ITN-DCH project. A research goal cannot be set in this stage of the project. It is in the interest of ArcTron3D to let the early stage researcher find his area of interest to get the best results in researcher. However at the moment the company's most interest is in the field of photogrammetry and therefore it would be a good field of study.

C. **Secondments:**

The fellow has not participated in any secondment at the moment, but the following secondments are planning for 2015:

1. Warwick
2. FBK

D. Dissemination & Outreach:

During the CAA conference which took place from 30-03-2015 to 03-04-2015, the fellow presented his work in an oral presentation titled: "UAV on the geometric documentation of archaeological sites: technology approach and analysis of products' accuracy, Mleiha (UAE)". In addition, the fellow participated in the stand of ArcTron3D where some 3D devices were shown, as well as the photogrammetric software aSPECT 3D. There he had the opportunity to make the ITN-DCH public to the interested visitor in more detail.

For this year some events have been fixed in order to present the research work and the ITN-DCH project. These are shown in the following table. Some more events, especially fairs such as the Intergeo can be a place for the fellow to spread the news about the ITN-DCH project as well. The participation of the fellow will however depend on the time schedule of the early stage researcher and the space that ArcTron3D has available.

DATE	*EVENT*	*PARTICIPATION*
08/07/2015	AGIT (geoinformatic)	Poster
31/08/2015	CIPA	ITN-DCH Workshop
25/09/2015	Researches night (Braunschweig)	ITN-DCH stand organization

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 608013.

E. Added Value to my Future Research Career:

As well as the information exposed in the first section of this midterm report, ITN-DCH project allows me to improve my research skills. The opportunity to work with new technologies and methods in laser scanning, light structured scanning and photogrammetry using different platforms and sensors as UAV or hyperspectral cameras encourage me for further works and researches.

In addition, other important communication skills in a research and planning can be developed. The opportunity to learn a new language, in this case German, and to improve the English language is a big advantage for my further career. Furthermore I am gaining more knowledge in different skills, such as programming knowledge
But also, some skills closely related with the research expertise as the oral presentation, report writing and preparing academic papers and books and to be able to defend research outcomes at international seminars or conferences.

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 608013.