出國報告（出國類別：國際會議）

出席國際學術會議報告

服務機關：國立金門大學
姓名職稱：吳宗江 助理教授
派赴國家：法國
出國期間：2013/08/31~2013/09/07
報告日期：2013/10/08

摘要

2013 年 CIPA 國際研討會於 2013 年 9 月 2 日~9 月 6 日於法國史特拉斯堡舉行。本人於會中發表以精進臺灣傳統建築施工紀錄方法之探討爲主軸，整合三維雷射掃瞄技術及歷史建築資訊模型概念，達到 3D 擬真紀錄施工前、施工中及施工後傳統建築空間位置與尺寸的紀錄。擬真的 3D 數位模型的紀錄、比對分析的功能，實質上賦予施工紀錄品質監控的內涵，此模式可以提高施工過程之施工品質。會議上達成學術外交的成就，同時吸取國際上對於文化資產保存、維護及應用之經驗，有助於未來臺灣文化資產的相關研究與應用上與國際接軌，並且實質落實。

目次

壹、 目的 1
貳、 過程 2
參、 心得及建議 8
附錄 9

壹、目的

建築攝影測量組織（CIPA）是國際文化紀念物與歷史場所委員會（ICOMOS）中，歷史最悠久的國際科學委員會之分會之一。CIPA成立始於1968年7月4日至6日在法國巴黎所舉行的國際研討會議中，由國際攝影測量與遙感學會（ISPRS）組織、Maurice Carbonnell （CIPA榮譽理事長）及來自11個國家36名會員及共同倡議，以建築爲核心的攝影測量應用學術會議（CIPA：Colloquium on the Applications of Photogrammetry to Architecture），共同建立遺產的文件和記錄學科，成爲文物檔案的生產者，提供各學門之間的檔案橋樑，促進測量科學技術的轉讓，並支持和鼓勵此類研究的專業工具和技術發展。CIPA專業領域涵蓋多項，至少包括：古蹟建檔（site documentation）、紀念物保護（monument conservation）、景觀模擬（landscape modelling）、考古勘探（archaeological exploration）、資料庫系統（data base systems）、水下紀錄（underwater recording）、資訊系統（information systems）、三維建模（3d modelling）、野外測量（field surveying）、雷射掃瞄（laser scanning）、建築測量（building surveying）、近景攝影測量（close-range photogrammetry）、老照片的分析（analysis of old photographs）、多媒體與虛擬實境展示（multimedia and virtual reality displays）、岩雕和象形文字（petroglyph and pictograph documentation）等。

建築攝影測量組織國際研討會（CIPA，International CIPA Symposium）爲每兩年定期舉辦之國際重要會議。2009 年首次參加在日本京都舉行之二年一度會議。2013 年研討之主題爲國際上文化資產的保存、記錄、維護與應用方法之探討，所涉獵之領域包含「法令制度」、「科學方法」與「教育傳承」等研究議題與現況探討，相關研討主題對於臺灣文化資產的管理具有實質的參考價值，因此參與此研討會之意義至爲重大。其次對於瞭解國際間建築數位科技最新研發動向、建築數位的創新趨勢及找尋適合我國古蹟保存研究發展之數位科技爲另一重要目的。該會議來自世界各國關於建築數位方面之研究成果，已可明顯看出未來古蹟保存維護之數位科技研究發展。藉由參加此國際會議可以增進了解各國一流學者與研究人員對於個人或未來的研究方向並與之交流，藉由聽取別人的觀念、見解與意見來增進研究領域內涵。由於此研討會非每年舉辦，因此吸引國際上相當多有關於文化資產領域之專家學者與會，提供最新之科學技術、設備與研究成果進行發表與交流。參與此會之論文發表與探討，對於臺灣文化資產的現況可以提供更多的國際經驗與資訊，不但有助於文化資產議題的學術研究發展，亦有助於臺灣在此國際學術舞台上發聲，進而提升臺灣國際學術之聲望。

貳、過程

2013 CIPA 國際研討會以「Recording, Documentation and Cooperation for Cultural Heritage」爲主軸，2013/09/02~2013/09/06 於法國史特拉斯堡舉行。本人申請出國參與的時間爲於 2013/08/31~2013/09/07，相關之行程詳述如下。

8月31日星期六晚間21：30自臺灣桃園國際機場出發，搭乘中華航空CI0061班機飛往德國法蘭克福機場，並於當地時間9月1日上午07：00抵達，接續搭乘火車及地鐵等交通工具前往會議地點－法國史特拉斯堡。抵達史特拉斯堡後隨即前往2013年CIPA國際研討會之會場－史特拉斯堡大學旁之國立應用科學院INSA機構（The Institut National des Sciences Appliquées, INSA, National Institute of Applied Sciences），藉此熟悉交通動線及會場狀況，以利次日參加會議時之行程安排。

2013CIPA國際研討會自9月02日至9月06日爲期五天。開幕當天的開幕儀式及專題演講則選擇在距離會議場地約四公里之哥倫布廣場旁的Grande sale de I’Aubette歷史建築之大廳舉行，由大會主席Dr.Pierre Grussenmeyer致歡迎詞，並且宣佈會議未來之議程。會中邀請兩位專家學者進行專題演講，分別爲Fabio Remondino就當前3D影像測量技術於古蹟保存維護最新發展”3D Imaging and ranging for Cultural Heritage recording-latest developments”爲題進行介紹；另一位爲Stefano De Caro以”Documentation technologies and training：a perspective from ICCROM”爲題介紹ICCROM（International Centre for the Study of the Preservation and Restoration of Cultural Property）機構對於文物影像的保存技術進行介紹。會後並有歡迎茶會，藉此與各國參予會議之專家學者進行交流，了解其他國家於古蹟建築相關維護保存之數位科技的發展及現況。

會議的第二天9月3日上午08：00至國立應用科學院會場報到後，即在測量儀器教室現場參觀目前世界上應用於古蹟建築測繪紀錄最先進的軟硬體及技術之陳列展示，包括3D雷射掃瞄系統、3D地理資訊系統、建築資訊模型（Building Information Modeling, BIM）平台及攝影測量技術等。08：30舉行Opening, Welcome message, Keynote speech，會議邀請David Myers & Yiannis Avramides以”Arches：An Open Source Inventory and Management System for the International Heritage Field”爲題，介紹應用於古蹟建築管理系統之免費資源”Arches”的平台架構與功能展示，由此可以發現，現今之古蹟建築的文化資產的保存與維護已走向資訊管理平台的模式，此點非常值得國內相關公部門及專家學者的關注與嘗試。自10：30至18：00開始進入各個場次的論文發表，基於本人之專長與研究便參與SR1（Terrestrial laser scanning and 3D imaging）場次，綜覽本日SR1場次之發表內容可以發現，3D雷射掃瞄設備的引進、發展與應用在現階段已經成爲古蹟建築在3D數位資料取得上不可獲缺的重要工具，而取得之3D點雲（PointCloud）之應用亦已跨越展示爲主的功能，朝向提供建築管理資訊平台資料庫更多元的空間資訊的來源；另外整合3D雷射掃瞄技術與其他建築與都市計劃相關專業，如結構、構造、地域與地景均成爲一跨領域的重要方向。

會議的第三天9月4日參與大會安排的「技術與文化的參訪－Guided tour n°3 in Strasbourg」活動，於上午08：30集合，步行至Cathedrale of Strasbourg及史特拉

斯堡舊城區；午餐後，下午14：30出發搭船至舊城區中心及歐洲議會區域參觀；最後步行至Petite France區域參觀。此趟參訪對於正在維修之Cathedrale of Strasbourg留下深刻印象，尤其對於石作及石材的維修技術可以作爲國內古蹟建築重要的參考來源；而舊市區及Petite France的維護、活化機制與規劃模式則可以提供國內相關機關的突破傳統思維與決策制定的參考；歐洲議會區的現代建築則標榜”節能減碳”設計爲風格，雖然多處的設計如氣流、日照等特殊設計能夠達到上述之目的，但是全玻璃帷幕的設計仍處於環保不足的窘境。

會議第四天9月5日10：30~12：00參與SG2－SG3（BIM,scene analysis and 3D reconstruction）場次的聆聽及論文的發表。本場次由Dr. Steve Fai主持，相關論文均針對古蹟建築於BIM之建置規劃、方法及分析應用上的介紹。由於古蹟建築已BIM的方式進行管理平台的建置仍屬於發展階段，因此多數的發表文章均爲首次以實驗性質進行相關研究，研究成果具有開創性及延續性，因此對於國內古蹟建築在數位保存、調查與研究、修護規劃設計、營建施工紀錄、修護施工過程及竣工後的管理維護後續階段均有著未來性與革命性的影響。本人亦與此場次發表”Improving Traditional Building Repair Construction Quality Using Historic Building Information Modeling Concept”之研究論文成果，此論文爲國內及國際上首次將BIM的概念應用於古蹟維護的施工紀錄之研究，獲得在場會議主持人的肯定，同時回答相關專家學者所提出的問題，達到彰顯國內相關領域之研究與創新之目的。

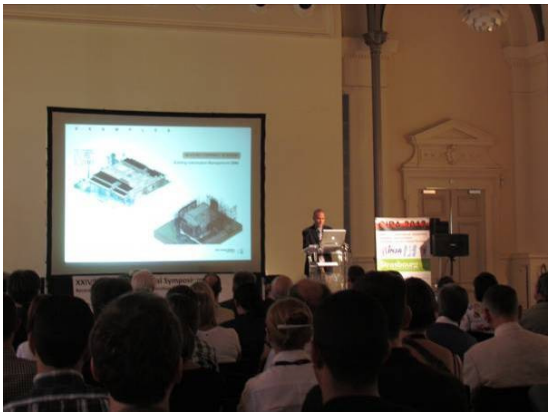
由於德國地區工人罷工事件頻傳，鐵路交通經常無預警停駛，爲能確保9月6日13：30飛機航班之搭乘，因此於9月5日完成論文發表後即於下午搭乘地鐵及火車前往德國法蘭克福，約於下午17：00抵達。並於9月6日搭乘華航CI0062班機返台。

2013/08/31 23：30 搭乘華航 CI0061 臺灣桃園→德國法蘭克福（到達之當地時間 2013/09/01 07：00）
2013/09/01 前往法國史特拉斯堡（圖 1），於 MERCURE STARSBOURG PALAIS DESCONGRES（圖 2）辦理住宿，並前往國際研討會會場，熟悉交通狀況及會場狀況（圖 3）
2013/09/02 參與研討會開幕及會議（圖 4）
2013/09/03 參與研討會會議（圖 5）
2013/09/04 參與研討會安排之參訪（圖 6）
2013/09/05 參與研討會及論文發表（圖 7）
2013/09/06~2013/09/07 13：30 搭乘華航 CI0062 德國法蘭克福→臺灣桃園（到達之當地時間 2013/09/07 07：00）

	
圖 1（左）德國法蘭克福機場至法國史特拉斯堡之路線（摘自 Google earth）	圖 1（右）法國史特拉斯堡街景（摘自可樂旅遊網）
搭乘華航直飛德國法蘭克福機場後再搭乘火車至法國史特拉斯堡火車站，得果法蘭克福機場爲歐洲交通之樞紐，機場至爲忙碌，但是仍然可以有條不紊地紓解人潮，除了德國傳統的辦事高效率外，匯集於機場之地鐵、高速鐵路及公路等大眾運輸設施亦提供重要的貢獻。	此爲法國史特拉斯堡大教堂廣場附近的街景，由於史特拉斯堡爲歐洲議會所在地，同時位於法德邊境，居重要的地理位置，此處有許多歐洲中古世紀重要的建築被保留，因此爲彰顯歐洲文化資產之重地。本次文化資產之國際會議在此召開，別具指標與內涵。

	
圖 2（左）史特拉斯堡火車站至 MERCURE STARSBOURG PALAIS DESCONGRES 之地鐵（摘自 www.geocities.jp）	圖 2（右）MERCURE STARSBOURG PALAIS DESCONGRES 飯店（摘自雄獅旅遊網）
由德國法蘭克福搭乘火車至法國史特拉斯堡火車站後，可於站前搭乘該地之地鐵至居住的飯店，交通相當便利，此種兼具觀光及運輸的交通工具（輕軌）值得作爲台灣都會區之借鏡，尤其建造成本遠低於捷運系統。	此飯店爲法國史特拉斯堡評價之飯店，不過四周環境及視野均佳，住房率亦高。國內之觀光飯店或是商務飯店若能營造出此種平價優質的居住環境，必定能吸引許多觀光及商務人士的進住。

	
圖 3（左）CIPA 國際研討會會場（會場外、自行拍攝）	圖 3（右）CIPA 國際研討會會場（會場內、自行拍攝）
本次 2013 CIPA 國際國際研討會之會場位於史特拉斯堡大學旁之國家應用科學院之建築與環境中心。會場外即爲地鐵車站，並且充分感受其綠化的優雅環境。與史特拉斯堡大學形成一大學城區，具有濃厚的學術氣息。	研討會之會場內除了安排三處論文發表的場地外，還有一處提供餐飲之處所及該中心的測量儀器教室，展示自古至今之測量儀器，同時提供 3D 雷射掃瞄、GIS 及攝影測量之廠商作爲最新相關軟硬體之展示。

	
圖 4（左）CIPA 國際研討會開幕（主席致詞、自行拍攝）	圖 4（右）CIPA 國際研討會開幕（專題演說、自行拍攝）
本次國際研討會之開幕處特別選在具有歷史的哥倫布廣場大樓（Grande sale de l’Aubette）舉行，由大會主席 Pierre Grussenmeyer 主持開幕致詞。	開幕典禮邀請 Fabio Remondino 就當前 3D 影像測量技術於古蹟保存維護最新發展（3D Imaging and ranging for Cultural Heritage recording-latest developments）進行專題演說。

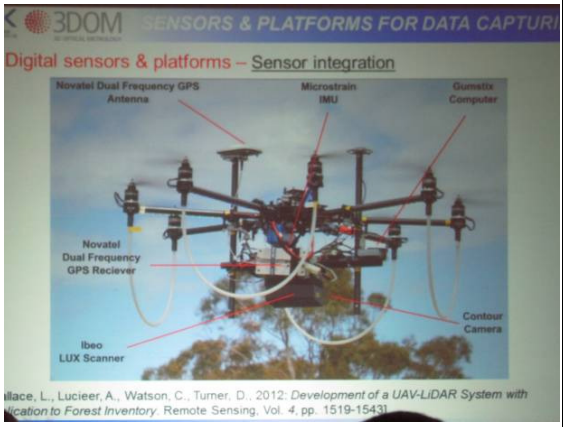


圖 5（左）CIPA 國際研討會（論文發表、自行拍攝）	圖 5（右）CIPA 國際研討會（儀器設備展示、自行拍攝）
此爲會議論文發表情形，該論文以無人駕駛飛行載具進行空間影像擷取，此技術可應用於大規模的文化遺址的資料擷取，對於文化遺址之空間分析提供全面且正確性更高的資料來源。	廠商儀器展示區之 FARO 廠商提供結合三維量測懸臂及雷射掃瞄裝置之設備，可以提供單點的三維坐標量測，亦可以以面狀掃描方式取得物品表面之三維座標點雲資訊。

	
圖 6（左）CIPA 國際研討會參訪-1（自行拍攝）	圖 6（右）CIPA 國際研討會參訪-2（自行拍攝）
此爲法國史特拉斯堡之運河，此運河於中古世紀便已建造，穿越史特拉斯堡市區，提供該市區之航運及治洪之使用，由於年代已久，目前該政府已展開修繕工程，防止核水之滲漏。值得一提是兩岸生態維護的相當好，可以看見水獺悠游於運河中。	此處參訪爲歐洲議會，歐盟地區的會員國假此處做爲歐洲議會開會的場所。全棟爲玻璃帷幕式建築，設計上亦考慮減緩陽光照射之節能設計，圓形建築象徵歐盟團結一致的精神。室內提供歐盟國家不同語言之介紹，及各國象徵性的影像圖片。

	
圖 7（左）本人 CIPA 國際研討會論文發表-1（自行拍攝）	圖 7（右）本人 CIPA 國際研討會論文發表-2（自行拍攝）
本人之論文發表時間爲 2013/09/05，爲第二發表處發表，題目爲” Improving Traditional Building Repair Construction Quality Using Historic Building Information Modeling Concept”。	本人發表之論文爲文化資產領域中，以科學方法進行記錄與管理之模式研究，爲目前國際上正在發展的科技與方法，會中幾會專家學者出問題與建議，均獲得良好之回應。本文並獲選收錄於專書中（**T. C. Wu**, Y. C. Lin, M. F. Hsu, N. W. Zheng, and W. L. Chen, International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences , XL-5/W2, 691-694, 2013）

參、心得及建議

文化資產的維護與永續是一個國家及國民延續的根本，各國均有其維護的法令制度及維護方法。隨著科技的進步，有許多更爲可靠及有效率的文化資產維護措施被發明，並且於國際重要的會議中發表。積極參與此類的國際會議進行相關議題的交流，對於本國發展文化資產維護的工作上具有前瞻性及與國際接軌的優點，未來有機會連接聯合國教科文組織的世界遺產申請，亦可以提供本國符合國際維護作業的文化資產維護方法，有機會爲申遺的計畫加分。參與本次 2013 年 CIPA 國際研討會之建議如下：

一、此項會議爲國際重量級的文化資產國際研討會，舉辦之城市本身就是具有悠久歷史及遍布文化資產的地區，如 2013 年的法國史特拉斯堡、2011 年捷克布拉格。2015 即將由臺灣台北主辦，因此可視爲重要的城市文化行銷及臺灣文化推介的機會，縱然是由民間單位（中國科技大學）主辦，建議官方相關單位應竭力協助。

二、每兩年所舉性的 CIPA 文化資產國際研討會，會議內容涉及全球各國最新的文化資產保護方法與法令制度，除了學術單位於學術上的交流外，建議文化部應列爲重點參與項目，積極派員參與此研討會，並且與專家學者合作探討合適之議題，以作爲本國文化資產維護的參考，並落實於實際之文化資產維護工作；並積極於下一次之會議上發表成果，提供國際專家學者之參考，並且聽取建議。如此不但可以宣傳行銷本國對於文化資產維護之決心，同時以文化資產作爲拓展外交之內容，更可以突顯臺灣文化在全球文化中扮演的角色與地位。

三、此項國際研討會所安排的各個研討場次與主題，幾乎涵蓋文化資產維護之工作項目，婉如整合世界各過於文化資產維護領域中的專家學者，進行一場文化資產維護的饗宴，對於參與人員的專業交流及心靈激盪均產生深遠的影響。最重要的是，參與的專家學者均能藉由國際專家的發表，反思自己國內文化資產維護的現況，並且亟思改善之道，這是一場國際型的研討會所帶來的衝擊與進步。國內於文化資產維護的學術機構與相關專家爲數眾多（以臺灣的文化資產項目與內容而定），並且相關專家學者之學術地位與成就亦崇高。若能藉由相關主管機關的整合，爲本國的文化資產維護與管理進行統籌性及長遠性的政策建言，對於臺灣文化資產的傳承與永續必能提供巨大的貢獻。

附錄

一、 論文全文

International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Volume XL-5/W2, 2013
XXIV International CIPA Symposium, 2 – 6 September 2013, Strasbourg, France

IMPROVING TRADITIONAL BUILDING REPAIR CONSTRUCTION QUALITY USING HISTORIC BUILDING INFORMATION MODELING CONCEPT

T. C. Wu[a *], Y.C. Lin[b], M. F. Hsu[c], N. W. Zheng[a], W. L. Chen[a]

[a] Department of Civil and Engineering Management, National Quemoy University,1, University Rd., Jinning Township, Kinmen, Taiwan； +886-82-313518；
E-mail：tsung_chiang@nqu.edu.tw

[b] Assistant researcher, College of Planning and Design, National Cheng Kung University,1, University Rd., Tainan, Taiwan； +886-6-2757575；
E-mail：hsiao_na@hotmail.com

[c] Professor, Department of Architecture, National Cheng Kung University, Tainan, Taiwan;
E-mail：minfu@ncku.edu.com

KEY WORDS: historic building information modeling, construction records, 3D laser scanning technology, 3DGIS

ABSTRACT:

In addition to the repair construction project following the repair principles contemplated by heritage experts, the construction process should be recorded and measured at any time for monitoring to ensure the quality of repair. The conventional construction record methods mostly depend on the localized shooting of 2D digital images coupled with text and table for illustration to achieve the purpose of monitoring. Such methods cannot fully and comprehensively record the 3D spatial relationships in the real world. Therefore, the construction records of traditional buildings are very important but cannot function due to technical limitations. This study applied the 3D laser scanning technology to establish a 3D point cloud model for the repair construction of historical buildings. It also broke down the detailed components of the 3D point cloud model by using the concept of the historic building information modeling, and established the 3D models of various components and their attribute data in the 3DGIS platform database. In the construction process, according to the time of completion of each stage as developed on the construction project, this study conducted the 3D laser scanning and database establishment for each stage, also applied 3DGIS spatial information and attribute information comparison and analysis to propose the analysis of differences in completion of various stages for improving the traditional building repair construction quality. This method helps to improve the quality of repair construction work of tangible cultural assets of the world. The established 3DGIS platform can be used as a power tool for subsequent management and maintenance.

1. INTRODUCTION

In Taiwan, the process of historic building restoration is recorded in the construction records, covering working procedures, materials, and methods. Those recorded also ensure the construction quality meeting the design requirements. In practice, the construction records have only slight influence on guaranteeing the construction quality because the 3D (three-dimensional) spatial information of the building before, during, and after restoration is replaced to make comparative analysis impossible. The feasible solution to this problem is proposed after the popularization of 3D laser scanning technology and the application of BIM (Building Information Modeling) concept. The 3D laser scanning technology can obtain the 3D coordinates and color information of high density and super-high accuracy of the building façade. It provides an important tool to preserve the conditions of the building at different stages of the construction process. The concept of BIM is applied to decompose the 3D digital components of the historical building, and attributes data are assigned to various components, thus obtaining the cross-analysis results of spatial information and attribute data. The proposed model can enhance the capabilities of the construction records of traditional buildings to monitor the construction quality. Meanwhile, the comprehensive 3D digitalized records have potentials and values for data storage and future management applications.

BIM is the integrated 3D database on the basis of 2D architectural drawings of the building. Through the conflict analysis on the 3D data established according to the drawings, the reasonable architectural design can be developed for the planning and control during the construction process. However, as to historic buildings, the main difference in the establishment of the 3D database by applying the BIM concept is that the building should be digitalized first to obtain BIM in a "reverse" way. The 3D building database established in this way is known as HBIM (Historical Building Information Modeling). Since the purpose of this study is to improve the traditional construction record model of historic buildings, 3D laser scanning technology is applied in the relevant 3D building model to develop the 3D point cloud model. The attribute descriptions of relevant component models are obtained by the investigation and research procedures of traditional buildings (Murphy et al, 2011). Among the various methods to acquire the BIM and HBIM 3D digital models, this study uses 3D GIS platform (ArcScene) as the database system for the historic building 3D model as well as its corresponding drawings, attribute

descriptions, images, videos and text data (Berlo et al, 2010), and performs the 3D layer-based management of historic buildings by using the concept of "sub-layer". The purpose is to monitor the milestones in the course of historic building construction process. With the National Historic Sites of the Guan-ao Longfeng Temple and Qiu Lian-gung's Mother Chastity Arch in Kinmen as the targets, this study attempts to establish Taiwan's historic BIM model as the operational reference of the construction records of restoration projects in the future.

2. RESEARCH METHOD

This study referred to C. Dore, M. Murphy (2012) who mentioned the implementation of the restoration project of the historic street of Henrietta by Dublin Institute of Technology, Ireland, using 3D GIS and HBIM technology. By integrating 3D laser scanning technology, Sketchup and 3D GIS technology, the method preliminarily establishes HBIM platform. According to Fai (2011), this study integrated 3D laser scanning technology, AutoCAD, Civil 3D, SketchUp and Revit technology for the preservation of historic buildings and surrounding landscape. The past, present and future landscape is simulated as the basis for the preservation and repair of cultural assets. This concept offers an important reference for the record and analysis of 3D results of the phased restoration construction.

Based on the above research purposes, this study used BIM as the concept, and integrated 3D laser scanning technology, 3D point cloud modeling technology, historical documents, historical buildings on-site survey data, and 3D GIS platform to study the establishment of HBIM management system. The difference between this study and previous works is that no commercial BIM software platform has been used for 3D modeling. Instead, classified and segmented 3D point cloud models and components are input into the software of SketchUp for 3D modeling, and the corresponding attribute data are acquired using the XML grammar and Excel sheets. Besides avoiding the loss of 3D building model in data format conversion process, the research procedure is as shown in Figure 1.

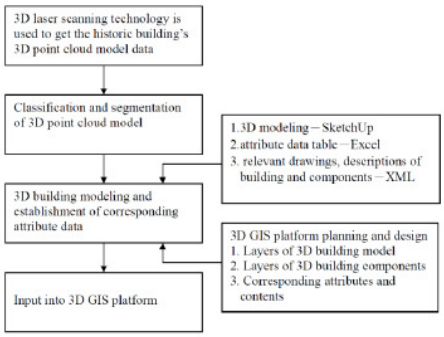


Figure 1. Research procedure

2.1 Research Subjects

Considering the convenience of location selection, this study chose a residential house in Jinning Town, Kinmen County as the target (Figure 2). Simulation was conducted to establish of 3D data for the conditions of the residential house before the restoration project using the proposed HBIM operational model. The residential house is a traditional Minnan style building commonly seen in Kinmen County, and is a representative of the local architecture style.

Figure 2. Residential house in Jinning Town, Kinmen County

2.2 Establishment of 3D Spatial Information

HBIM is different from the BIM 3D digital models. According to the relevant design diagram models, this study applied 3D laser scanning technology to obtain the 3D point cloud model data of the research target. To meet the requirements of the scanning of buildings as the subjects and take into consideration of the effective scanning distance of 3D laser scanner, as well as the relationship between the point accuracy of point cloud data and point density, this study used FARO Photon 120 3D laser scanner as the scanning tool (Figure 3).

The effective scanning distance of the equipment is 0.6~120 m; the error is 2cm when the scanning accuracy is 25 meters, the scanning speed is up to 796,000 coordinates per second. The above configuration can obtain the 3D point cloud data of high density and high accuracy, and is appropriate for the scanning and digitalization of buildings.

Figure 3. FARO Photon 120 3D laser scanner

2.3 Modeling of 3D Building Components and Establishment of Corresponding Attribute Data

The relevant 3D point cloud models of the building before restoration is reviewed in terms of point cloud model overlay accuracy to ensure the model accuracy. Regarding the 3D point cloud models that meet the accuracy requirements, according to the classification and segmentation of building history scholars, this study established the 3D digital models of the building and relevant detailed components. Google SketchUp and its modeling plug-in Pointools Plug were used because the tools can simplify the 3D modeling process of the 3D point cloud data, and considerably reduce file conversion time. Meanwhile, it can keep high quality visual image and accuracy, and rapidly increase the 3D modeling speed. In addition, the relevant attribute data are recorded in XML format.

2.4 3D GIS Platform Planning and Design

This study did not use the commercial BIM commercial software (AutoCAD Revit, Bentley Architecture, ArchCAD, Graphisoft), but adopted the BIM construction concept. The 3D building model data were directly input into the 3D GIS platform to establish the convenient and low-cost HBIM construction model. However, the 3D GIS system as the platform of information relating to 3D building model should be planned and designed according to the specific background and maintenance management model. To comply with the characteristics of "layered" storage and management of the spatial information and attribute information of the 3D GIS platform, the major components and detailed components of the classified 3D building model after modeling as well as the corresponding attribute data are input into the 3D GIS database in a "layered" architecture. This can achieve the purposes of saving storage space, fast accessing to data, overlay spatial analysis and 3D visual demonstration.

3. RESEARCH RESULTS

This study applied 3D laser scanner in the digitalized operation of the research target. Through "conjugate ball overall mode", the multi-station 3D point cloud data are combined into the 3D point cloud model, and the relevant overlay accuracy meets the requirements of the building scanning specifications.

Through the point cloud classification and segmentation process of the 3D point cloud model, this study applied the 3D modeling technology of the software of SketchUp in the construction of the component 3D digital models of the research subjects. The 3D spatial information model and relevant attribute data of relevant components were input into the 3D GIS platform process by the layered storage and editing method. The BIM concept was applied to construct the 3D digital building component models of the research target into a database platform of HBIM. This study followed the traditional building component classification principles upon the layered storage and demonstration function provided by 3D GIS (Fig. 4). In the future, it can be applied in the construction and updating of achievements of various stages or the spatial overlay differential analysis of different image layers and achievements of different stages.

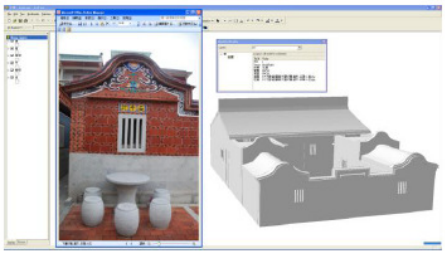


Figure 4. 3D GIS-based HBIM database platform

4. CONCLUSION AND SUGGESTIONS

This study proposed that the integration of BIM concept, 3D GIS platform and 3D laser scanning technology can construct the 3D spatial information and attribute data of the historical buildings to be restored and repaired. It can be a multi-functional platform of storage, editing, analysis and demonstration. For historic buildings, the proposed method can provide 3D conditions before, during and after restoration, and help the digitalization of construction records as well as monitor the construction quality. After the construction, the construction process recorded in the platform can be used for the follow-up management and maintenance of the historic building.

REFERENCES

Murphy M, McGovern E & Pavia, S 2011, 'Historic Building Information Modeling - Adding Intelligence to Laser and Image

Based Surveys', paper presented to 4th ISPRS International Workshop, 3DARCH 2011: "3D Virtual Reconstruction and Visualization of Complex Architectures" Trento, Italy, 2-4 March 2011.

Berlo, Lv & Laat, Rd 2010, 'Integration of BIM and GIS: The Development of the CityGML GeobBIM Extension', paper presented to 5th International 3D GeoInfo Conference, November 3-4, 2010,, Berlin, Germany, Berlin, Germany.

Dore, C., Murphy, M., 2012, 'Integration of Historic Building Information Modeling and 3D GIS for Recording and Managing Cultural Heritage Sites', 18th International Conference on Virtual Systems and Multimedia: "Virtual Systems in the Information Society", 2-5 September, 2012, Milan, Italy, pp. 369-376.

Fai, S, Graham, K, Duckworth, T, Wood, N & Attar, R 2011, 'Building Information Modeling and Heritage Documentation', paper presented to XXIII CIPA International Symposium, Prague, Czech Republic, 12th-16th September.

二、 會議手冊

FINAL PROGRAM
XXIVth CIPA
International Symposium
Recording, documentation and cooperation for Cultural Heritage
Strasbourg, France
2-6 September 2013
www.cipa2013.org
UNDER THE AUSPICES OF
isprs
ICOMOS
ORGANIZED BY
INSA STRASBOURG
SFPT
CIPA Heritage Documentation
CIPA 2013 Strasbourg
www.CIPA2013.org
INSA STRASBOURG

CONTENTS

Internet access	2
CIPA 2013 Sponsors	2
Welcome to Strasbourg	3
Local Organizing Committee	4
International Scientific Committee	4
Agenda	5
Summary of the program	6-9
Keynote Speakers	10
Sessions program	11-25
Tuesday	11-17
Thursday	17-21
Friday	21-25
Technical Excursions	26
Notes	27-30
Tram network map	31

INTERNET access

Internet access via Eduroam is possible. Connection parameters for Wifi access are available at the registration desk.

CIPA 2013 Sponsors

WELCOME to Strasbourg

The **CIPA,** International Committee for Documentation of Cultural Heritage is a dynamic international organization that has twin responsibilities: keeping up with technology and ensuring its usefulness for cultural heritage conservation, education and dissemination. This dual role linking Culture and Science is exhibited in our parent organizations :

- ICOMOS, a non-governmental international organisation dedicated to the conservation of the world's monuments and sites, and
- ISPRS, a non-governmental international organisation devoted to the development of international cooperation for the advancement of knowledge, research, development and education in the Photogrammetry, Remote Sensing and Spatial Information Sciences.

CIPA's bi-annual congress provides a platform for the exchange of ideas, best practices as well as scientific research and application papers.

The theme of the Symposium:

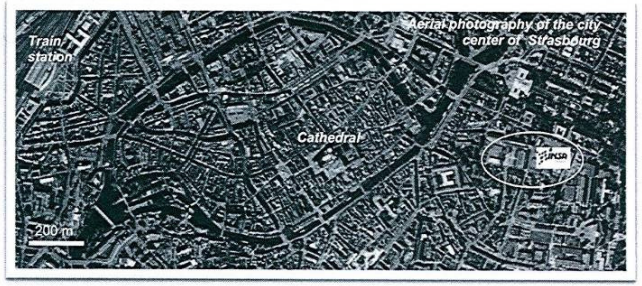
Recording, Documentation and Cooperation for Cultural Heritage

covers a broad spectrum of topics, tasks and methods. We are delighted to welcome the delegates and attendees from 40 countries to Strasbourg, representing different disciplines in a scientific program of 30 sessions, sharing their knowledge about a great variety of practical experiences and theoretical achievements.

With its « Grande Ile » (Great Island) which is listed as World Heritage by UNESCO since 1988, Strasbourg has an unmistakable atmosphere. The historical Petite France district, the narrow streets, the cathedral towering over the city from its 142m height, the banks of the river Ill, the museums, the « European district » and the friendly « winstubs » are waiting to be discovered.

It is our pleasure to welcome you to the XXIVth CIPA International Symposium in Strasbourg on behalf of the CIPA Executive Board, and to celebrate CIPA's 45th anniversary.

Pierre Grussenmeyer, Symposium Director
and the Organizing Committee



LOCAL ORGANIZING COMMITTEE

Pierre GRUSSENMEYER (INSA Strasbourg)
Samuel GUILLEMIN (INSA Strasbourg)
Tania LANDES (INSA Strasbourg)
Isabelle GRUJARD (SFPT)
Emmanuel ALBY (INSA Strasbourg)
Mathieu KOEHL (INSA Strasbourg
Eddie SMIGIEL (INSA Strasbourg)
Bernard GRANDMOUGIN (INSA Strasbourg)

INTERNATIONAL SCIENTIFIC COMMITTEE

ALBY Emmanuel, INSA Strasbourg, France
ALMAGRO Ana, Foundation Caja Madrid, Spain
BRYAN Paul, English Heritage, UK
CHARBONNIER Pierre, CETE de l'Est Strasbourg, France
COX Peter, ICOMOS Ireland
DE LUCA Livio, CNRS MAP Laboratory, France
DE MASI Alessandro, Politecnico di Milano, Italy
DENARD Hugh, Trinity College Dublin, Ireland
DONEUS Michael, University of Vienna, Austria
DRAP Pierre, CNRS LSIS Laboratory, France
EPPICH Rand, Tecnalia Technology Corporation, Spain
FANGI Gabriele, University of Ancona, Italy
FAI Stephen, Carleton University, Canada
FRITSCH Dieter, University of Stuttgart, Germany
GEORGOPOULOS Andreas, Nat. Tech. University of Athens, Greece
GRUSSENMEYER Pierre, Editor
HANKE Klaus, University of Innsbruck, Austria
HENO Raphaele, ENSG-IGN, Marne la Vallée, France
HESS Mona, University College of London, UK
IOANNIDIS Marinos, Cyprus University of Technology, Cyprus
JIGYASU Rohit, ICORP Icomos, India
KERSTEN Thomas, HafenCity University Hamburg, Germany
KOEHL Mathieu, INSA Strasbourg, France
LANDES Tania, INSA Strasbourg, France
LERMA José Luis, University of Valencia, Spain
LONNQVIST Minna, University of Helsinki, Finland
MURPHY Maurice, Ireland
MYERS David, The Getty Conservation Institute, USA
OGLEBY Cliff, The university of Melbourne, Australia
OUIMET Christian, Heritage Conservation Directorate , Canada
PAVELKA Karel, University of Prague, Czech Republic
PATIAS Petros, Aristotle University of Thessaloniki, Greece
POLIDORI Laurent, CNAM-ESGT, Le Mans, France
QUAK Ewald, University of Oslo, Norway
REMONDINO Fabio, Bruno Kessler Foundation Trento, Italy
RINAUDO Fulvio, Politechnico di Torino, Italy
RUETHER Heinz, Universty of Cape Town, South Africa
SANTANA Mario, Carleton University, Ottawa
SCAIONI Marco, Tongji University Shanghai, China
SIMON Stefan, ICOMOS Stone Committee, Germany
SMARS Pierre, National Yunlin University, Taiwan
SMIGIEL Eddie, INSA Strasbourg, France
VALLET Jean-Marc, ICOMOS Stone Com., CICRP Marseille, France
VERON Philippe, ENSAM Aix-en-Provence, France
WALDHAEUSL Peter, Vienna, Austria
YEN Ya-Ning, China University of Technology, Taipei, Taiwan

AGENDA

XXIVth CIPA INTERNATIONAL SYMPOSIUM
2-6 September 2013
INSA Strasbourg (France)
www.cipa2013.org

Monday 2nd	Tuesday 3rd	Wednesday 4th	Thursday 5th	Friday 6th
	EXHIBITION 8:30am -18:00		EXHIBITION 8:30am -18:00	
	Keynote Speakers		Keynote Speakers	PARALLEL SESSIONS
INSA: TUTORIAL & REGISTRATION	PARALLEL SESSIONS	Technical and Cultural Visits	PARALLEL SESSIONS	
	Lunch		Lunch	Lunch
	PARALLEL SESSIONS		PARALLEL SESSIONS	PARALLEL SESSIONS
GRANDE SALLE DE L'AUBETTE: OPENING CEREMONY and KEYNOTES				CLOSING CEREMONY
FREE	RECEPTION AT THE CITY HALL	FREE	GALA DINNER at PAVILLON JOSEPHINE	

10:30 ~ 12:00 **Oral sessions** (details on pp. 17-18)

10:30 ~ 12:00	10:30 ~ 12:00	10:30 ~ 12:00
SS4 Documentation of World Heritage Sites	**SG2-SG3 BIM, Scene analysis and 3D reconstruction**	**SR1 Terrestrial laser scanning and 3D imaging**
Lecture Room 1 Chair: Ona Vileikis	Lecture Room 2 Chair: Stephen Fai	Lecture Room 3 Chair: José Luis Lerma

12:00 ~ 13:30 **Lunch & Coffee**

13:30 ~ 14:00 **Group Photo** (main entrance INSA) and **Poster Session 2** (p.12-14)

14:00 ~ 15:30 **Oral sessions** (details on pp. 19-20)

14:00 ~ 15:30	14:00 ~ 15:30	14:00 ~ 15:30
SS10 Digital Heritage Inventories	**SS8 3D Digital Libraries**	**SS3 Stone Conservation**
Lecture Room 1 Chair: David Myers	Lecture Room 2 Chair: Marinos Ioannides	Lecture Room 3 Chair: Jean-Marc Vallet

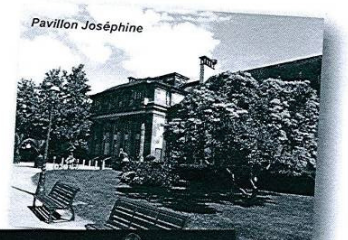
15:30 ~ 16:15 **Coffee break**

16:15 ~ 17:45 **Oral sessions** (details on pp. 20-21)

16:15 ~ 17:45	16:15 ~ 17:45	16:15 ~ 17:45
SR7 Recording applications	**SG4 Modelling methods for architecture and archaeology**	**SE Education**
Lecture Room 1 Chair: Klaus Hanke	Lecture Room 2 Chair: Mathieu Koehl	Lecture Room 3 Chair: Ana Almagro

19:30 ~ 23:30 **Gala Dinner**
at **Pavillon Joséphine**

Venue: Avenue de l'Europe, Parc de l'Orangerie, Strasbourg
(Tram station *Droits de l'Homme*).



Friday, 6 September 2013

Venue: INSA Strasbourg, 24 Boulevard de la Victoire, Strasbourg (Tram station *Université*)

9:00 ~ 10:30 **Oral sessions** (details on pp. 21-22)

9:00 ~ 10:30	9:00 ~ 10:30	9:00 ~ 10:30
SR3 Low-cost sensors and open-source algorithms	**SR7 Recording applications**	**SR2-SR4-SR5 UAV, mobile and aerial imaging**
Lecture Room 1 Chair: Mario Santana	Lecture Room 2 Chair: Eddie Smigiel	Lecture Room 3 Chair: Fulvio Rinaudo

10:30 ~ 11:00 **Coffee break**

11:00 ~ 12:30 **Oral sessions** (details on pp. 23-24)

11:00 ~ 12:30	11:00 ~ 12:30	11:00 ~ 12:30
SS4 Documentation of World Heritage Sites	**SR7 Recording applications**	**SC-SG5 Animations and communication for Cultural Heritage**
Lecture Room 1 Chair: Laurent Polidori	Lecture Room 2 Chair: Gabriele Fangi	Lecture Room 3 Chair: José Luis Lerma

12:30~ 14:00 **Lunch & Coffee**

14:00 ~ 15:30 **Oral sessions** (details on pp. 24-25)

14:00 ~ 15:30	14:00 ~ 15:30	14:00 ~ 15:30
SG2-SG3 BIM, scene analysis and 3D reconstruction	**ST Training**	**SS1-SS2 Energy Efficiency in Heritage Buildings and Risk Preparedness**
Lecture Room 1 Chair: Pierre Drap	Lecture Room 2 Chair: Andreas Georgopoulos	Lecture Room 3 Chairs: Mario Santana/Peter Cox

15:30 ~ 17:00 **Closing Ceremony** (Lecture Room 1)
Closing Adresses, Best Poster Awards
XXVth CIPA-ICOMOS 2015 Symposium in Taiwan
CIPA-ICOMOS 2014 Workshop in Beijing, ISPRS Congress in Prague in 2016

17:00 **Closing Cocktail**

KEYNOTE Speakers

The CIPA symposium 2013 is a unique opportunity to listen to international key figures in the Cultural Heritage documentation and conservation fields.

Monday, September 2nd (Opening ceremony, PLENARY 1): 16:00~18:00

- Dr. Fabio Remondino, ISPRS Technical Commission 5 President (http://www2.isprs.org/commissions/comm5.html), will give a keynote about developments and technology advances in 3D imaging and ranging for 3D recording and modeling Cultural Heritage.
- The International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM) will be represented by Dr. Stefano De Caro, who is the Director General of this important intergovernmental organization (http://www.iccrom.org). Dr. De Caro's presentation will underline the need for training in the field of conservation and the major role of documentation.

Tuesday, September 3rd (PLENARY 2): 8:30~10:00

- David Myers, from the Getty Conservation Institute and **Yiannis Avramides**, from World Monuments Fund will present the ARCHES system (http://archesproject.org/), which the partners have developed to provide the international heritage field with an open source, web-based geospatial information system purpose-built to help inventory and manage all types of immovable heritage.

Thursday, September 5th (PLENARY 3): 8:30~10:00

- Ramtin Attar, Principal Research Scientist, CTO- Autodesk Research (Canada) will contribute with an overview of the latest development in information technology that could assist conservation experts in documenting our endangered heritage resources around the world (http://www.autodeskresearch.com/people/ramtin).

CODES for SESSIONS

Special Sessions

SS1. Energy Efficiency in Heritage and Traditional Buildings
SS2. Risk Preparedness
SS3. Stone Conservation
SS4. Documentation of World Heritage Sites
SS5. International Cooperation in Cultural Heritage Documentation
SS6. Semantic in Cultural Heritage Documentation
SS7. 4D historical city models
SS8. 3D Digital Libraries
SS10. Digital Heritage Inventories

Sessions on Recording Cultural Heritage

SR1. Terrestrial laser scanning and 3D imaging
SR2. Aerial laser scanning and 3D imaging
SR3. Low-cost sensors and open-source algorithms
SR4. UAV applications
SR5. Mobile Mapping Applications
SR7. Recording applications

Sessions on GIS and information management for Cultural Heritage

SG1. Open-source GIS tools and applications
SG2. Scene analysis and 3D reconstruction
SG3. Applications of BIM
SG4. Modelling methods for architecture and archaeology
SG5. Animations
SG6. Cloud and Cultural Heritage

Sessions on Education, Training and Communication for Cultural Heritage

SE. Education
ST. Training
SC. Communication

SESSIONS PROGRAM

Tuesday, 3 September 2013

SR1 Terrestrial laser scanning and 3D imaging
Room: Lecture Room 1 // Chairperson: Klaus Hanke

10:30–10:48	CIPA2013-124 **3D surveying and modelling of archaeological sites - some critical issues -** S. Gonizzi Barsanti, F. Remondino, and D. Visintini
10:48–11:06	CIPA2013-42 **On-site Semantic Mapping of Archaeological Excavation Areas** H. Houshiar, D. Borrmann, J. Elseberg, A. Nuechter, F. Näth, and S. Winkler
11:06–11:24	CIPA2013-84 **A 3D information system for the documentation of archaeological excavations** P. Ardissonne, L. Bornaz, G. Degattis, and R. Domaine
11:24–11:42	CIPA2013-119 **3D survey of pre-Hispanic wall painting with high resolution photogrammetry** G. Lucet
11:42–12:00	CIPA2013-87 **Archaeological rescue excavation and digitalization of cultural heritage** S. Varea and J.-B. Lemerle

SG1-SG6 Open-source tools, Cloud and Cultural Heritage
Room: Lecture Room 2 // Chairperson: Raphaële Héno

10:30–10:48	CIPA2013-33 **A Cultural Landscape Information System Developed With Open Source Tools** M. Uhler, H. Müller, C. Chudyk, and F. Würriehausen
10:48–11:06	CIPA2013-47 **The volunteered geographic information in archaeology** S. Sylaiou, S. Basiouka, P. Patias, and E. Stylianidis
11:06–11:24	CIPA2013-81 **Cloud GIS and 3D modelling to enhance Sardinian late gothic architectural heritage** C. Pisu and P. Casu
11:24–11:42	CIPA2013-240 **Development of an algorithmic procedure for the detection of conjugate fragments** D. Filippas and A. Georgopoulos
11:42–12:00	CIPA2013-190 **Recording and Analysis of the Recreation Yard at Alcatraz Island** R. Warden, T. Komas, M. Everett, T. DeSmet, A. Billingsley, and J. Hagin

SR3 Low-cost sensors and open-source algorithms
Room: Lecture Room 3 // Chairperson: José Luis Lerma

10:30–10:45	CIPA2013-151 **Software tools for in-situ Documentation of Built Heritage** P. Smars
10:45–11:00	CIPA2013-21 **Validation tests of open-source procedures for digital camera calibration and 3D image-based modelling** I. Toschi, R. Rivola, E. Bertacchini, C. Castagnetti, M. Dubbini, and A. Capra
11:00–11:15	CIPA2013-202 **Positioning in Time and Space - Cost-effective Exterior Orientation for Airborne Archaeological Photographs** G. Verhoeven, M. Wieser, C. Briese, and M. Doneus
11:15–11:30	CIPA2013-196 **From panoramic photos to a low-cost photogrammetric workflow for cultural heritage 3D documentation** E. d'Annibale, A. N. Tassetti, and E. S. Malinverni

11:30–11:45	CIPA2013-131 **Experiments with Metadata-derived Initial Values and Linesearch Bundle Adjustment in Architectural Photogrammetry** N. Börlin and P. Grussenmeyer
11:45–12:00	CIPA2013-141 **Validating photogrammetric orientation steps by the use of relevant theoretical models. Implementation in the "arpenteur" framework** A. Mahiddine, J. Seinturier, D. Peloso, H. Boulaassal, J Boï, D. Merad, and P. Drap

12:00 ~ 13:30 Lunch & Coffee

13:30 ~ 14:15 **Poster Session 1** (and also **Thursday 13:30-14:00**, for **Poster session 2**
Room: Exhibition Room // Chairpersons: Emmanuel Alby, Mathieu Koehl, Rand Eppich

P1 - CIPA2013-24 **The Restoration and Conservation of Egyptian Alabaster vessels from The Early era in Atfiyah Museum store - Helwan – Egypt,** R. Radi Abdel Kader and S. Sayed Mohamed
P2 - CIPA2013-85 **Visual documentation process of historic building refurbishment. Improving energy efficiency by insulating wall cavity.** A. Bennadji
P3 - CIPA2013-143 **Cultural Heritage and Floods - Risk Preparedness** K. Nedvedova and R. Pergl
P4 - CIPA2013-164 **Ruins and urban context: analysis towards conservation and enhancement** E. Romeo and R. Rudiero
P5 - CIPA2013-191 **Contours based approach for thermal image and terrestrial point cloud registration** A. Bennis, V. Bombardier, P. Thiriet, and D. Brie
P6 - CIPA2013-213 **Map of Nasca Geoglyphs** K. Hanzalová and K. Pavelka
P7 - CIPA2013-7 **Jeddah Historical Building Information Modeling "JHBIM" Old Jeddah - Saudia Arabia** A. Baik, J. Boehm, and S. Robson
P8 - CIPA2013-9 **Wooden Bay Window (Rowshan) in Saudi-Hejazi Heritage Buildings** A. Adas
P9 - CIPA2013-10 **Semi-automatic & Versatile point cloud segmentation by region growing based on normal estimation** F. Poux and R. Billen
P10 - CIPA2013-15 **Implementation of a low cost structured light scanner** M. Pashaei and S.M. Mousavi

P11 - CIPA2013-36 **The application of survey in Er Wang Temple restituting** W. Shuai and Z Rong
P12 - CIPA2013-39 **The Application of 3D Laser Scanning Technology in the Protection of Grottoes and Carvings in China** L. Yumin, Z Rong, and Z Yu
P13 - CIPA2013-50 **3D Reconstruction of Ancient Egyptian Rock-Cut Tombs: The Case of M.I.D.A.N.05.** M. Nabil, M. Betrò, and M. Metwally
P14 - CIPA2013-53 **A Research on Digital Technology's Application in Preservation Planning of Wenming Historical and Cultural Block in Kunming** X.W. Huo, Y.C. Liu, G. Zhang, and H.Y. Yang
P15 - CIPA2013-62 **Calibrating and evaluating a range camera for Cultural Heritage metric survey** F. Rinaudo and F. Chiabrando
P16 - CIPA2013-66 **A Circleless "2D/3D Total Station"** M. Scherer
P17 - CIPA2013-94 **Range and panoramic image fusion into a textured range image for culture heritage documentation** Z. Bila, J. Reznicek, and K. Pavelka
P18 - CIPA2013-97 **Non-invasive survey of old paintings using VNIR hyperspectral sensor** E. Matouskova, K. Pavelka, and **Z. Svadlenkova**
P20 - CIPA2013-126 **Accuracy assessment of a canal-tunnel 3D model by comparing photogrammetry and laserscanning recording techniques** P. Charbonnier, P. Chavant, P. Foucher, V. Muzet, D. Prybyla, T. Perrin, P Grussenmeyer, and S. Guillemin
P21 - CIPA2013-128 **Compressive sampling for Terrestrial Laser Scanners** E. Smigiel, E. Alby, and P. Grussenmeyer
P22 - CIPA2013-144 **TLS data for architectural 2d representation and 3d modeling. Different approaches tested in the case of San Giovanni in Saluzzo (Cn) Italy** F. Chiabrando, C. Bonfanti, and F. Rinaudo
P23 - CIPA2013-153 **Documenting a complex modern heritage building using Multi image Close Range Photogrammetry and 3D Laser Scanned Point Clouds** M.L. Vianna Baptista
P24 - CIPA2013-160 **Integration of geomatic techniques for the urban cavity survey** M. Deidda and G. Sanna

14:33–14:51	CIPA2013-235 **Multi-wavelength airborne laser scanning for archaeological prospection** C. Briese, M. Pfennigbauer, A. Ullrich, and M. Doneus
14:51–15:09	CIPA2013-98 **Using vertical panoramic images to record a historic cemetery** A. Tommaselli, L. Polidori, J.K. Hasegawa, P.O. Camargo, H. Hirao, M.V.A. Moraes, E.A. Rissate Jr., G.R. Henrique, P.A.G. Abreu, A. Berveglieri, and J. Marcato Jr.
15:09–15:27	CIPA2013-125 **Oblique aerial images and their use in cultural heritage documentation** J. Höhle
15:27–15:45	CIPA2013-237 **Terrestrial and aerial ground-penetrating radar in use for the architectural researches: ancient 16th century water supply and drainage at the monastery of El Escorial (Madrid, Spain)** P. Chias, T. Abad, and E. Echeverría

15:45 ~ 16:30 Coffee break

SS5 International Cooperation in Cultural Heritage Documentation
Room: Lecture Room 1 // Chairpersons: Dieter Fristch, Stratos Stylianidis

16:30–16:48	CIPA2013-102 **Documentation for emergency stabilisation and the integrated conservation planning of earthen architecture settlements: the Kasbah of Taourirt (ourzazate, Morocco)** Z. Ekim, M. Santana Quintero, K. Percy, S. Ward, S. Fai, J. Gregg, C. Ouimet, C. Cancino, and M. Bousalh
16:48–17:06	CIPA2013-45 **Towards Optimal Spectral and Spatial Documentation of Cultural Heritage. COSCH - an interdisciplinary action in the COST framework** F. Boochs, A. Bentkowska-Kafel, C Degrigny, M. Hauta-Kasari, S. Rizvic, R. Sitnik, and A. Tremeau
17:06–17:24	CIPA2013-115 **Ancient Rome Worldwide Links:sharing knowledge to preserve the roots** P. Paolini, F. Allegrini Simonetti, G. Forti, and A. Corrao
17:24–17:42	CIPA2013-230 **Recording earthen architecture at the Peruvian Andes: the case of Kuño Tambo church's historic wall paintings** K. Percy, C. Hanley, M. Santana Quintero, S. Fai, C. Ouimet, C. Cancino, L. Rainer, and L. Villacorta-Santamato
17:42–18:00	CIPA2013-120 **Documenting Living Monuments in Indonesia** F. Suryaningsih and N. Purwestri

SR1 Terrestrial laser scanning and 3D imaging
Room: Lecture Room 2 // Chairperson: Fabio Remondino

16:30–16:48	CIPA2013-46 **Recording Cultural Heritage using terrestrial Laserscanning - Dealing with the system, the huge Datasets they create and ways to extract the necessary deliverables you can work with** E. Christofori and J. Bierwagen
16:48–17:06	CIPA2013-172 **Survey methods for earthquake damages in the "Camera degli Sposi" of Mantegna (Mantova)** E. Fratus de Balestrini, M. Ballarin, C. Balletti, V. Buttolo, C. Gottardi, F. Guerra, S. Mander, L. Pilot, and P. Vernier
17:06–17:24	CIPA2013-176 **T.O.F. Laser Scanner For The Surveying Of Statues: A Test On A Real Case** G. Artese, L. De Napoli, and S. Artese

17:24–17:42	CIPA2013-194 **Efficient 3D Documentation of Neptune Fountain in the Park of Schönbrunn Palace at Millimeter Scale** P. Dorninger, C. Nothegger, and S. Rasztovits
17:42–18:00	CIPA2013-104 **3d documentation of a historical monument using terrestrial laser scanning case study: Byzantine water cistern, Istanbul** T. Temizer, G. Nemli, E. Ekizce, A. Ekizce, S. Demir, B. Bayram, F. H. Askin, A. V. Cobanoglu, and H. F. Yilmaz

SR7 Recording applications
Room: Lecture Room 3 // Chairperson: Tania Landes

16:30–16:45	CIPA2013-218 **Acquire High Quality Meshes Of Scale Models For An Automatic Modelling Process** F. Giraud, K. Jacquot, C. Chevrier, and G. Halin
16:45–17:00	CIPA2013-59 **The metric documentation of Cham towers in Vietnam by spherical photogrammetry** G. Fangi, E. S. Malinverni, and A. N. Tassetti
17:00–17:15	CIPA2013-8 **3D Photographs in Cultural Heritage** W. Schuhr, J. D. Lee, and St. Kiel
17:15–17:30	CIPA2013-210 **Virtual Heritage Archives: Building a Centralized Australian Rock Art Archive** R. A. Haubt
17:30–17:45	CIPA2013-5 **Three Dimensional Modeling Via Photographs For Documentation Of A Village Bath** H. B. Balta, M. Hamamcioglu-Turan, and O. Ocali
17:45–18:00	CIPA2013-173 **Documenting architectural heritage in Bahia, Brazil, using spherical photogrammetry** A. L. Amorim, G. Fangi, and E. S. Malinverni

Thursday, 5 September 2013

SS4 Documentation of World Heritage Sites
Room: Lecture Room 1 // Chairperson: Ona Vileikis

10:30–10:48	CIPA2013-220 **3D digitization and mapping of heritage monuments and comparison with historical drawings** F. Fiorillo, F. Remondino, S. Barba, A. Santoriello, C. B. De Vita, and A. Casellato
10:48–11:06	CIPA2013-6 **Surveying World Heritage Islamic Monuments in North Africa: Experiences with Simple Photogrammetric Tools and No Previous Planning** A. Almagro
11:06–11:24	CIPA2013-161 **The Documentation of Historic Maps of World Heritage Site City Suzhou** Z. Guangwei
11:24–11:42	CIPA2013-159 **Documentation project for the historical garden complex of Mofakham in Bojnourd - Iran** S. Mehralizadeh
11:42–12:00	CIPA2013-199 **The Scottish Ten Project: Collaborative Heritage Documentation** L. Wilson, A. Rawlinson, D. S. Mitchell, H. C. McGregor, and R. Parsons

SG2-SG3 BIM, scene analysis and 3D reconstruction
Room: Lecture Room 2 // Chairperson: Steve Fai

10:30–10:45	CIPA2013-231 **Parametric Modelling (BIM) for the Documentation of Vernacular Construction Methods: a BIM model for the Commissariat Building, Ottawa, Canada.** S. Fai, M. Filippi, and S. Paliaga
10:45–11:00	CIPA2013-181 **Evaluation of GIS and BIM Roles for the Information Management of Historical Buildings** G. Saygi, G. Agugiaro, M. Hamamcioglu-Turan, and F. Remondino
11:00–11:15	CIPA2013-221 **From point cloud to BIM: a survey of existing approaches** N. Hichri, C. Stefani, L. De Luca, P. Veron, and G. Hamon
11:15–11:30	CIPA2013-109 **HBIM for conservation and management of built heritage: towards a library of vaults and wooden beam floors** D. Oreni, R. Brumana, A. Georgopoulos, and B. Cuca
11:30–11:45	CIPA2013-91 **BIM for cultural heritage** M. Del Giudice and A. Osello
11:45–12:00	CIPA2013-44 **Improving Traditional Building Repair Construction Quality Using Historic Building Information Modeling Concept** T. C. Wu, Y. C. Lin, M. F. Hsu, N. W. Zheng, and W. L. Chen

SR1 Terrestrial laser scanning and 3D imaging
Room: Lecture Room 3 // Chairperson: José Luis Lerma

10:30–10:45	CIPA2013-215 **Points clouds generation using TLS and dense-matching techniques. A test on approachable accuracies of different tools.** F. Chiabrando and A. Spanò
10:45–11:00	CIPA2013-239 **Photogrammetric exploitation of HDR images for cultural heritage documentation** A. Ntregka, A. Georgopoulos, and M. Santana Quintero
11:00–11:15	CIPA2013-40 **Laas Geel (Somaliland): 5000 year-old paintings captured in 3D** L. Grenier, P. Antoniotti, G. Hamon, and D. Happe
11:15–11:30	CIPA2013-52 **3D Digital Simulation of Minnan Temple Architecture Caisson's Craft Techniques** Y.-C. Lin, T.-C. Wu, and M.-F. Hsu
11:30–11:45	CIPA2013-195 **Applications of integrated survey for historical heritage's knowledge: digital modeling of the Villa Rufolo's Moorish cloister in Ravello** V. Iannizzaro, B. Messina, and M. R. Cundari
11:45–12:00	CIPA2013-222 **Large structures : which solutions for health monitoring?** G. Camp, P. Carreaud, and H. Lançon

12:00 ~ 13:30 Lunch & Coffee

13:30 ~ 14:00 **Group Photo** and **Poster Session 2** (Exhibition Room) – see the list of posters at **Poster Session 1**, pp. 12-14.

SS10 Digital Heritage Inventories
Room: Lecture Room 1 // Chairperson: David Myers

14:00–14:18	CIPA2013-57 **Voluntary activities and online education for digital heritage inventory development after the Great East Japan Earthquake** Y. Kondo, T. Uozu, Y. Seino, T. Ako, Y. Goda, Y. Fujimoto, and H. Yamaguchi
14:18–14:36	CIPA2013-76 **Bringing it all together: Networking Heritage Inventories in England** P. K. Carlisle and E.S. Lee
14:36–14:54	CIPA2013-20 **The Qatar National Historic Environment Record: A Platform For The Development Of A Fully-Integrated Cultural Heritage Management Application** R. T. H. Cuttler, T. W. W. Tonner, F. A. Al-Naimai, L Dingwall, and N. K Al-Hemaidi
14:54–15:12	CIPA2013-41 **Shared Web Information Systems for Heritage in Scotland and Wales - Flexibility in Partnership.** D. Thomas and P. McKeague
15:12–15:30	CIPA2013-58 **The use of SAHRIS as a state sponsored digital heritage repository and management system in South Africa** N. G. Wiltshire

SS8 3D Digital Libraries
Room: Lecture Room 2 // Chairperson: Marinos Ioannides

14:00–14:15	CIPA2013-11 **Study on information management for the conservation of Traditional Chinese Architecture Heritage - 3D Modelling and Metadata representation** Y.N. Yen, K.H. Weng, and H.Y. Huang
14:15–14:30	CIPA2013-12 **The PALLADIOlibrary geo-models: an open 3D archive to manage and visualize information-communication resources about Palladio** F.I. Apollonio, S. Baldissini, P. Clini, M. Gaiani, C. Palestini, and C. Trevisan
14:30–14:45	CIPA2013-43 **Enriching the content provided by cultural catalogues with data from institutional repositories** Á. Rodríguez Miranda, J.M. Valle Melón, and M.C. Porcal-Gonzalo
14:45–15:00	CIPA2013-188 **3D digitization museum content within the 3Dicons project** S. Gonizzi Barsanti and G. Guidi
15:00–15:15	CIPA2013-203 **Implementation of 3D tools and immersive experience interaction for supporting learning in a library-archive environment. Visions and challenges.** A. Angeletaki, M. Carrozzino, and S. Johansen
15:15–15:30	CIPA2013-211 **Facts and Narrative- The concept of 4d Capturing of Heritage Building; A case study of Sompur Mahavihara, Bangladesh** M. Rashid and H. Rahaman

SS3 Stone Conservation
Room: Lecture Room 3 // Chairperson: Jean-Marc Vallet

14:00–14:18	CIPA2013-145 **Interdisciplinary study for knowledge and dating of the San Francesco Convent in Stampace, Cagliari - Italy (XIII-XXI century)** G. Vacca, C. Giannattasio, and S.M. Grillo

14:18–14:36	CIPA2013-3 **Stabilization of endangered part of structures by building dry brunt brick buttressing, critical case study of plane wall in DKG-North Area, Mohenjo daro** J. Shaikh and J. S. Park
14:36–14:54	CIPA2013-1 **Conservation of stone cladding on the facade of royal palace in caserta** I. Titomanlio
14:54–15:12	CIPA2013-88 **An interdisciplinary conservation module for condition survey on cultural heritages with a 3D information system** C. Pedeli
15:12–15:30	CIPA2013-17 **Qualitative and quantitative evaluation of the luminance of laser scanner radiation for the classification of materials** D. Costantino and M. G. Angelini

15:30 ~ 16:15 Coffee break

SR7 Recording applications
Room: Lecture Room 1 // Chairperson: Klaus Hanke

16:15–16:33	CIPA2013-72 **Image-based Surveying and Modeling of the Unprotected Architectural Heritage - St. Rudolf's Church in Banostor** V. Stojakovic and I. Bajsanski
16:33–16:51	CIPA2013-82 **A new tool for facilitating the retrieval and recording of the place name cultural heritage** C. Bozzini, M. Conedera, and P. Krebs
16:51–17:09	CIPA2013-78 **Unwrapping Highly-Detailed 3D Meshes of Rotationally Symmetric Man-Made Objects** B. Rieck, H. Mara, and S. Krömker
17:09–17:27	CIPA2013-80 **Photo-Plan Creation of Cylindrical Objects** K. Pavelka, S. Ruzicka, and Z. Bila
17:27–17:45	CIPA2013-73 **Devising a visual inspection system for canal tunnels: preliminary studies** J.L. Albert, P. Charbonnier, P. Chavant, P. Foucher, V. Muzet, D. Prybyla, T. Perrin, P. Grussenmeyer, S. Guillemin, and M. Koehl

SG4 Modelling methods for architecture and archaeology
Room: Lecture Room 2 // Chairperson: Mathieu Koehl

16:15–16:33	CIPA2013-130 **Concepts and technologies for a comprehensive information system for historical research and heritage documentation** F. Henze, N. Magdalinski, F. Schwarzbach, A. Schulze, Ph. Gerth, and F. Schäfer
16:33–16:51	CIPA2013-34 **3D Modeling and Data Enrichment in Digital Reconstruction of Architectural Heritage** F.I. Apollonio, M. Gaiani, and Z. Sun
16:51–17:09	CIPA2013-29 **Segmentation of heritage building by means of geometric and radiometric components from terrestrial laser scanning** K. Aitelkadi, D. Tahiri, E. Simonetto, I. Sebari, and L. Polidori
17:09–17:27	CIPA2013-156 **A procedural solution to model roman masonry structures** V. Cappellini, R. Saleri, C. Stefani, N. Nony, and L. De Luca

17:27–17:45	CIPA2013-89 **Presenting Cultural Heritage Landscapes - From GIS via 3D Models to Interactive Presentation Frameworks** N. Prechtel, S. Münster, C. Kröber, C. Schubert, and C. Schietzold

SE Education
Room: Lecture Room 3 // Chairperson: Ana Almagro

16:15–16:33	CIPA2013-13 **Web-Based learning for Cultural Heritage: first experienced with students of the Private University of Technology in Northern Taiwan** Y. N. Yen, K. H. Weng, and Y. W. Wu
16:33–16:51	CIPA2013-69 **The University of Alcala de Henares (Madrid, Spain), as a dynamic example and laboratory of the recovery, rehabilitation, and conservation of heritage** E. Echeverria Valiente, F. da Casa Martin, F. Celis D'amico, and P. Chias Navarro
16:51–17:09	CIPA2013-118 **Possibility to use Mobile Learning to promote World Heritage Site preservation awareness in Luang Prabang, Lao PDR: A readiness study** Y. S. Poong, S. Yamaguchi, and J. Takada
17:09–17:27	CIPA2013-178 **Enhancing the reuse of digital resources for integrated systems to represent, understand and dynamize complex interactions in architectural Cultural Heritage environments** F. J. Delgado, R. Martinez, J. Finat, J. Martinez, J. C. Puche, and F. J. Finat
17:27–17:45	CIPA2013-236 **Re-using of the historical buildings in the context of sustainability: an architectural design studio study on old girls teacher training school** M. Ulusoy, E. Erdogan, H.A. Erdogan, and M. Oral

Friday, 6 September 2013

SR3 Low-cost sensors and open-source algorithms
Room: Lecture Room 1 // Chairperson: Mario Santana

09:00–09:15	CIPA2013-23 **The 3D Documentation of Projected Wooden Windows (The Roshans) in The Old City of Jeddah (Saudi Arabia) Using Image-based Techniques** A. Alitany, E. Redondo, and A. Adas
09:15–09:30	CIPA2013-238 **Comparison of 3D reconstruction services and terrestrial laser scanning for cultural heritage documentation** S. Rasztovits and P. Dorninger
09:30–09:45	CIPA2013-35 **Monitoring the Deterioration of Stone at Mindener Museum's Lapidarium** G. Pomaska
09:45–10:00	CIPA2013-152 **Image-based modeling techniques for architectural heritage 3d digitalization: limits and potentialities** C. Santagati, L. Inzerillo, and F. Di Paola
10:00–10:15	CIPA2013-169 **Automatic Camera Calibration for Cultural Heritage Applications using Unstructured Planar Objects** K. Adam, I. Kalisperakis, L. Grammatikopoulos, G. Karras, and E. Petsa

10:15– 10:30	CIPA2013-71 **Mobile applications as tool for exploiting cultural heritage in the region of Turin and Milan** A. Rolando and A. Scandiffio

SR7 Recording applications
Room: Lecture Room 2 // Chairperson: Eddie Smigiel

09:00– 09:18	CIPA2013-121 **Photogrammetric Techniques for 3-D Underwater Record of the Antique Time Ship from Phanagoria** M.O. Zhukovsky, V.D. Kuznetsov, and S.V. Olkhovsky
09:18– 09:36	CIPA2013-140 **Automating the measurement of red coral in situ using underwater photogrammetry and coded targets** P. Drap, D. Merad, A. Mahiddine, J. Seinturier, P. Gerenton, D. Peloso, J.M. Boï, O. Bianchimani, and J. Garrabou
09:36– 09:54	CIPA2013-180 **3D reconstruction and modeling of subterranean landscapes in collaborative mining archeology projects: techniques, applications and experiences** A. Arles, P. Clerc, G. Sarah, T. Téreygeol, G. Bonnamour, J. Heckes, and A. Klein
09:54– 10:12	CIPA2013-224 **From the questioning of the archaeologists to the builders'. The example of the mediaeval quarry of Sol de Roques** V. Vachon and M. Vacca-Goutoulli
10:12– 10:30	CIPA2013-179 **Documentation and Monitoring of Built Heritage in Abu Dhabi, U.A.E.** S. Muhammad

SR2-SR4-SR5 UAV, mobile and aerial imaging
Room: Lecture Room 3 // Chairperson: Fulvio Rinaudo

09:00– 09:18	CIPA2013-226 **Accuracy and block deformation analysis in automatic UAV and terrestrial photogrammetry - lesson learnt -** E. Nocerino, F. Menna, F. Remondino, and R. Saleri
09:18– 09:36	CIPA2013-116 **Combined geometric and thermal analysis from UAV platforms for archaeological heritage documentation** R. Brumana, D. Oreni, L. Van Hecke, L. Barazzetti, M. Previtali, F. Roncoroni, and R. Valente
09:36– 09:54	CIPA2013-146 **Photo Realistic 3D Modeling With UAV: Gedik Ahmet Pasha Mosque In Afyonkarahisar** M. Uysal, A. S. Toprak, and N. Polat
09:54– 10:12	CIPA2013-163 **Integrated surveying techniques for sensitive areas: San Felice sul Panaro** M. Ballarin, V. Buttolo, F. Guerra, and P. Vernier
10:12- 10:30	CIPA2013-48 **3D mapping of cultural heritage: special problems and best practices in extreme case-studies** P. Patias, D. Kaimaris, Ch. Georgiadis, A. Stamnas, D. Antoniadis, and D. Papadimitrakis

10:30 ~ 11:00 Coffee break

SS4 Documentation of World Heritage Sites
Room: Lecture Room 1 // Chairperson: Laurent Polidori

11:00– 11:18	CIPA2013-93 **Connecting World Heritage nominations and monitoring with the support of the Silk Roads Cultural Heritage Resource Information System** O. Vileikis, B. Dumont, E. Serruys, K. Van Balen, V. Tigny, and P De Maeyer
11:18– 11:36	CIPA2013-86 **Revealing the secrets of Stonehenge through the application of laser scanning, photogrammetry and visualization techniques** P. G. Bryan, M. Abbott, and A. J. Dodson
11:36– 11:54	CIPA2013-103 **Methodological Developments In 3D Scanning And Modelling Of Archaeological French Heritage Site: The Bronze Age Painted Cave Of « Les Fraux », Dordogne (France)** A. Burens, P. Grussenmeyer, S. Guillemin, L. Carozza, F. Lévêque, and V. Mathé
11:54– 12:12	CIPA2013-134 **'Irep en Kemet' Wine of Ancient Egypt: Documenting the Viticulture and Winemaking Scenes in the Egyptian Tombs** M. R. Guasch Jané, S. Fonseca, and M. Ibrahim
12:12– 12:30	CIPA2013-51 **The National Commitment Towards Conserving the Heritage (Documentation of Historical and Cultural sites in GCC Countries)** F. AlSulaiti

SR7 Recording applications
Room: Lecture Room 2 // Chairperson: Gabriele Fangi

11:00– 11:18	CIPA2013-139 **Towards a 3D based platform for cultural heritage site survey and virtual exploration** J. Seinturier, C. Riedinger, A. Mahiddine, D. Peloso, J. M. Boï, D. Merad, and P. Drap
11:18– 11:36	CIPA2013-234 **Records - reaching recording data technologies** G. Gresik, S. Siebe, and R. Drewello
11:36– 11:54	CIPA2013-147 **3D Modeling of Historical Doger Caravansaries by Digital Photogrammetry** M. Yakar, M. Uysal, A. S. Toprak, and N. Polat
11:54– 12:12	CIPA2013-79 **The ILAC-Project: Supporting Ancient Coin Classification by Means of Image Analysis** A. Kavelar, S. Zambanini, M. Kampel, K. Vondrovec, and K. Siegl

SC-SG5 Animations and communication for Cultural Heritage
Room: Lecture Room 3 // Chairperson: José Luis Lerma

11:00– 11:15	CIPA2013-68 **Workflows and the role of images for virtual 3D reconstruction of no longer extant historic objects** S. Münster
11:15– 11:30	CIPA2013-83 **User-Appropriate Viewer for High Resolution Interactive Engagement with 3D Digital Cultural Heritage Artefacts** D. Gillespie, A. La Pensée, and M. Cooper
11:30– 11:45	CIPA2013-132 **Valorisation of culturage heritage through virtual visit and augmented reality: the case of the abbey of Epau (France)** E. Simonetto, C. Froment, E. Labergerie, G. Ferré, B. Séchet, H. Chédorge, J. Cali, and L. Polidori

11:45–12:00	CIPA2013-135 **A Mobile Application for Virtual Heritage and UGC Public Sharing** G. Li, J. Shang, and H. Chen
12:00–12:15	CIPA2013-198 **3DVEM software modules for efficient management of point clouds and photorealistic 3D models** S. Fabado, A. E. Seguí, M. Cabrelles, S. Navarro, D. García-De-San-Miguel, and J.L Lerma
12:15–12:30	CIPA2013-208 **Effective Communication with Cultural Heritage using Virtual Technologies** R. M. Reffat and E. M. Nofal

12:30~ 14:00 Lunch & Coffee

SG2-SG3 BIM, scene analysis and 3D reconstruction
Room: Lecture Room 1 // Chairperson: Pierre Drap

14:00–14:15	CIPA2013-106 **Hybrid representation of digital mockup for heritage buildings management** G. Nicolas, J. Landrieu, Y. Nugraha, and C. Père
14:15–14:30	CIPA2013-101 **A method for virtual anastylosis: the case of the Arch of Titus at the Circus Maximus in Rome** M. Canciani, C. Falcolini, M. Buonfiglio, S. Pergola, M. Saccone, B. Mammi, and G. Romito
14:30–14:45	CIPA2013-166 **Automatic Tool Mark Identification and Comparison with known Bronze Age Hand Tool Replicas** K. Kovacs and K. Hanke
14:45–15:00	CIPA2013-154 **The Niha sites (Lebanon) cultural landscape: a 3D model of sanctuaries and their context** J. Yasmine
15:00–15:15	CIPA2013-92 **A database for the architectural heritage recovery between Italy and Switzerland** I. Bianco, M. Del Giudice, and M. Zerbinatti
15:15–15:30	CIPA2013-25 **3D Digital Model Database Applied to Conservation and Research of Wooden Construction in CHINA** Y. Zheng

ST Training
Room: Lecture Room 2 // Chairperson: Andreas Georgopoulos

14:00–14:22	CIPA2013-95 **Challenges, strategies and techniques for international training in technology for cultural heritage conservation** R. Eppich and A. Almagro Vidal
14:22–14:44	CIPA2013-165 **Photographer-friendly work-flows for image-based modelling of heritage artefacts** N. Martin-Beaumont, N. Nony, B. Deshayes, M. Pierrot-Deseilligny, and L. De Luca
14:44–15:06	CIPA2013-233 **Experiencing the "spirit of place" as a design task: the street of Hamra in the heart of Beirut** N. El-Khoury
15:06–15:28	CIPA2013-219 **TRABASA - Traditional Architecture Rercorded by Means of Building Archaeology in Saudi Arabia: Workshop in Jeddah** U. Herbig, C. Jäger-Klein, I. Mayer, H. Mortada, and G. Styhler-Aydın

SS1-SS2 Energy Efficiency in Heritage Buildings and Risk Preparedness
Room: Lecture Room 3 // Chairpersons: Mario Santana, Peter Cox

14:00–14:22	CIPA2013-65 **A risk based methodology to assess the energy efficiency improvements in traditionally constructed buildings** D. Herrera Gutierrez-Avellanosa and A. Bennadji
14:22–14:44	CIPA2013-186 **Documentation protocols to generate risk indicators regarding degradation processes for cultural heritage risk evaluation** A. Kioussi, M. Karoglou, A. Bakolas, K. Labropoulos, and A. Moropoulou
14:44–15:06	CIPA2013-192 **Protection of cultural heritage in urban areas during peace and conflict times from threats to risk preparedness as a shared responsibility** C. Cimino
15:06–15:28	CIPA2013-100 **Impact of stylistic features, architectural and urban rules of the algiers architectural heritage dating between 1830 and 1930 on the strength of its buildings during the earthquake** M. A. Souami

全文完

TECHNICAL EXCURSIONS

During the registration at INSA 24 Boulevard de la Victoire in Strasbourg (Venue of the Symposium), 3 tours will be proposed to the participants for the **technical visit of Wednesday, September 4.**

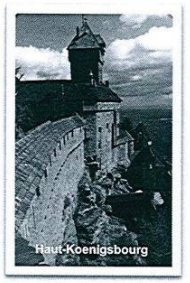
Tours 1 and 2 are limited to 70 participants, on the basis of first registered first in :

1. **Guided tour n°1 by BUS (8:30 –19:00)**
   (limited to 70 persons)

   Strasbourg – Haut-Koenigsbourg Castle – Wine tasting in Roedern and typical Alsacian Sauerkraut for lunch - Visit of the city of Riquewihr. Return to Strasbourg via the typical wine road.

2. **Guided tour n°2 by BUS (8:30 –19:00)**
   (limited to 70 persons)

   Strasbourg- visit of the city of Obernai - Wine tasting in Barr and typical Alsacian Sauerkraut for lunch – Visit of the Haut-Koenigsbourg Castle. Return to Strasbourg via the typical wine road.



3. **Guided tour n°3 in Strasbourg**
   Morning (8:30): walking tour of the Cathedrale and the Old city of Strasbourg - Lunch in a typical Alsacian Restaurant. Afternoon: Tour by boat at 14:30 (Old city centre and European District) - walking tour of the "Petite France" area.