



COST Action TU1208
“Civil Engineering Applications of Ground Penetrating Radar”

**Scientific Programme of the Third General Meeting
and Practical Information Guide**



Dates and Venue:

March 4-6, 2015
University of West London
St Mary's Road Building, St Mary's Road, Ealing,
London W5 5RF, United Kingdom

Chairs:

Prof. Amir Morteza Alani (TU1208 MC Member representing UK, University of West London), Dr. Lara Pajewski (TU1208 MC Chair, Roma Tre University)

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Introduction

Dear Participant,

It is our great pleasure to welcome you to the Third General Meeting of the COST (European COoperation in Science and Technology) Action TU1208 “Civil Engineering Applications of Ground Penetrating Radar,” and to London, one of the most beautiful and enchanting cities in the world. More than 90 Participants are attending this international event, coming from 25 COST Countries (Belgium, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom), 1 Cooperating State (Israel), and 3 Near Neighbour Countries (Albania, Egypt, Russia).

Overall, the programme of the Third General Meeting is very rich, spanning over three days. The event will start with the Early-Career Investigator (ECI) Day, including a half-day Training School followed by a Session dedicated to the GPR 2014 Awarded ECIs. The Third General Meeting will continue with a series of sessions, focusing on the condition assessment of transport infrastructure and mapping of the urban subsoil with Ground Penetrating Radar (GPR): GPR manufacturers, stakeholders, academic and private end-users, will discuss consolidated procedures as well as state-of-the-art results and challenging case studies, they will highlight the current needs of European cities, review and confer about the few available national and international standards and guidelines, and share ideas useful for the development of guidelines – the latter being the main objective of the Working Group 2 of the COST Action TU1208. Afterwards, a meeting devoted to the development of a European GPR Education Pack is foreseen. Subsequently, the meetings of the four Working Groups composing the general pattern of the scientific programme of the Action will take place. Finally, the Action’s Management Committee meeting will conclude the event.

We are delighted by the presence of Dr. Sebastian Thöns, Chair of the COST Action TU1402 “Quantifying the value of structural health monitoring,” who will present the Action he is chairing in order to explore with us potential synergies between TU1208 and TU1402.

We sincerely thank COST, for funding the COST Action TU1208 and the Third General Meeting. We are grateful to The University of West London, for hosting the event and providing facilities. We deeply thank the TU1208 Members for their active and enthusiastic participation to this event and for their continuous efforts to make our Action a COST Success Story. Finally, we are grateful to the numerous GPR end-users and researchers not involved in the Action TU1208 who decided to attend the event, for their interest in our initiatives and for actively contributing to the meeting: you all are welcome to join the COST Action TU1208 and participate to its projects.

We wish you a successful Third General Meeting and a pleasant stay in London!

Lara Pajewski, Chair of the COST Action TU1208
Amir Alani, MC Member representing UK in TU1208



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About COST

COST - European Cooperation in Science and Technology is an intergovernmental framework aimed at facilitating the collaboration and networking of scientists and researchers at European level. It was established in 1971 by 19 member countries and currently includes 35 member countries across Europe, and Israel as a cooperating state.

COST funds pan-European, bottom-up networks of scientists and researchers across all science and technology fields. These networks, called 'COST Actions', promote international coordination of nationally-funded research. By fostering the networking of researchers at an international level, COST enables break-through scientific developments leading to new concepts and products, thereby contributing to strengthening Europe's research and innovation capacities.

COST's mission focuses in particular on:

- building capacity by connecting high quality scientific communities throughout Europe and worldwide;
- providing networking opportunities for early career investigators;
- increasing the impact of research on policy makers, regulatory bodies and national decision makers as well as the private sector.

Through its inclusiveness, COST supports the integration of research communities, leverages national research investments and addresses issues of global relevance. Every year, thousands of European scientists benefit from being involved in COST Actions, allowing the pooling of national research funding to achieve common goals.

As a precursor of advanced multidisciplinary research, COST anticipates and complements the activities of EU Framework Programmes, constituting a "bridge" towards the scientific communities of emerging countries. In particular, COST Actions are also open to participation by non-European scientists coming from neighbour countries (for example Albania, Algeria, Armenia, Azerbaijan, Belarus, Egypt, Georgia, Jordan, Lebanon, Libya, Moldova, Montenegro, Morocco, the Palestinian Authority, Russia, Syria, Tunisia and Ukraine) and from a number of international partner countries. In addition, COST has signed Reciprocal Agreements with Argentina, New Zealand and South Africa as a pilot exercise to facilitate cooperation with researchers from these countries.

COST's nine key domains are: (i) Biomedicine and Molecular Biosciences; (ii) Food and Agriculture; (iii) Forests, their Products and Services; (iv) Materials, Physics and Nanosciences; (v) Chemistry and Molecular Sciences and Technologies; (vi) Earth System Science and Environmental Management; (vii) Information and Communication Technologies; (viii) Transport and Urban Development; (ix) Individuals, Societies, Cultures and Health. Trans-Domain Actions allow for multidisciplinary networks to strike across the nine scientific domains.

COST invites researchers throughout Europe to submit proposals for COST Actions through a continuous Open Call. The two collection dates a year are announced in the Official Journal of the European Union and on the COST website. Following a thorough evaluation and selection process, the decision for funding a proposal is taken by the COST Committee of Senior Officials (CSO), within eight months from the collection date. Successful proposals are approved to become COST Actions.

COST's budget for networking activities has traditionally been provided by successive EU RTD Framework Programmes. COST is currently executed by the European Science Foundation (ESF) through the COST Association on a mandate by the European Commission, and the framework is governed by a Committee of Senior Officials (CSO) representing all its 35 member countries; 2014 marked a turning point for COST, with the establishment of the new implementing structure, the COST Association, and the transition from FP7 to Horizon 2020. More information about COST is available at www.cost.eu.



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About COST Transport and Urban Development (TUD) Domain



The COST Transport and Urban Development (TUD) Domain fosters research coordination in the fields of transport and the built environment, which play a strategic role in the modern society and economy. The Domain is by definition cross-sectoral and multidisciplinary, encompassing a wide range of scientific expertise within the transport and land use planning, design, and management activities with a special emphasis on the strong interrelationships among the relevant policy fields as well on all aspects related to sustainable development.

The Science Officer of the TUD Domain is Dr. Mickael Pero (COST Office, Belgium).

The 31 running COST Actions within the TUD Domain are:

- TD1106** "UAE - Urban Agriculture Europe"
- TU1003** "MEGAPROJECT: The Effective Design and Delivery of Megaprojects in the EU Union"
- TU1004** "Modelling public transport passenger flows in the era of intelligent transport systems"
- TU1101** "Towards safer bicycling through optimization of bicycle helmets and usage"
- TU1102** "Towards Autonomic Road Transport Support Systems"
- TU1103** "Operation and safety of tramways in interaction with public space"
- TU1104** "Smart Energy Regions"
- TU1105** "NVH analysis techniques for design and optimization of hybrid and electric vehicles"
- TU1201** "Urban Allotment Gardens in European Cities - Future, Challenges and Lessons Learned"
- TU1202** "Impact of climate change on engineered slopes for infrastructure"
- TU1203** "Crime Prevention through Urban Design and Planning"
- TU1204** "People Friendly Cities in a Data Rich World"
- TU1205** "Building Integration of Solar Thermal Systems"
- TU1206** "SUB-URBAN – A European network to improve understanding and use of the ground beneath our cities"
- TU1207** "Next Generation Design Guidelines for Composites in Construction"
- TU1208** "Civil Engineering Applications of Ground Penetrating Radar"
- TU1209** "TEA – Transport Equity Analysis: assessment and integration of equity criteria in transportation planning"
- TU1301** "NORM for building materials"
- TU1302** "SaPPART – Satellite Positioning Performance Assessment for Road Transport"
- TU1303** "Novel Structural Skins: Improving Sustainability And Efficiency Through New Structural Textile Materials And Designs"
- TU1304** "Wind Energy Technology Reconsideration To Enhance The Concept Of Smart Cities (WINERCOST)"
- TU1305** "Social Networks And Travel Behaviour"
- TU1306** "Fostering knowledge about the relationship between Information and Communication Technologies and Public Spaces supported by strategies to improve their use and attractiveness (CYBERPARKS)"
- TU1401** "Renewable energy and landscape quality (RELY)"
- TU1402** "Quantifying the value of structural health monitoring"
- TU1403** "Adaptive Facades Network"
- TU1404** "Towards the next generation of standards for service life of cement-based materials and structures"
- TU1405** "European network for shallow geothermal energy applications in buildings and infrastructures (GABI)"
- TU1406** "Quality specifications for roadway bridges, standardization at a European level (BridgeSpec)"
- TU1407** "Scientific and technical innovations for safer Powered Two Wheelers (PTW)"
- TU1408** "Air Transport and Regional Development (ATARD)"

More information about COST TUD is available at www.cost.eu/tud.



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About COST Action TU1208

“Civil Engineering Applications of Ground Penetrating Radar”

A COST Success Story



The COST Action TU1208 focuses on the exchange of scientific-technical knowledge and experience of Ground Penetrating Radar (GPR) techniques in civil engineering, aiming as well at promoting a wider and more effective use of this inspection method throughout the Europe. The scientific activities of the Action are being developed within the frame of a unique approach based on the integrated contribution of University researchers, software developers, geophysics experts, Non-Destructive Testing equipment designers and producers, end users from private companies and public agencies.

In this interdisciplinary Action, advantages and limitations of GPR are being highlighted, leading to the identification of gaps in knowledge and technology. Protocols and guidelines for EU Standards are being developed, for an effective application of GPR in civil engineering. Novel GPR equipment is being designed and realised. Advanced electromagnetic-modelling and data-processing techniques are being developed. The understanding of relationships between geophysical parameters and civil engineering needs is being improved. Freeware software will be released at the end of the Action, useful for the monitoring of structures and infrastructures, shape reconstruction and estimation of electromagnetic parameters. A high level training program is being organised. Mobility of early career researchers is being encouraged. The project has already received the interest of key end users and excellent EU Institutions.

Four Working Groups (WGs) carry out the research activities: WG1 focuses on the design of innovative GPR equipment, on the building of prototypes, as well as on the testing and optimization of new systems; WG2 focuses on the GPR surveying of pavement, bridges, tunnels and buildings, as well as on the sensing of underground utilities and voids; WG3 deals with the development of electromagnetic forward and inverse scattering methods and of advanced data processing algorithms; and WG4 explores the use of GPR in fields different from civil engineering and the integration of GPR with other non-destructive testing techniques.

The Chair of the Action is Dr. Lara Pajewski (“Roma Tre” University, Italy), the Vice-Chair is Prof. Andreas Loizos (National Technical University of Athens, Greece). The Science Officer is Dr. Mickael Pero (COST Association, Belgium), the Administrative Officer is Ms. Carmencita Malimban (COST Association, Belgium). About 150 Institutions from 28 COST Countries (Austria, Belgium, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Italy, Latvia, Malta, Macedonia, The Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom) have joined the Action. Institutions from Albania, Armenia, Australia, Egypt, Israel, Jordan, Russia, Rwanda, Ukraine, and United States of America have joined the Action, too. An application from Palestine is under examination. The COST Action TU1208 is still open to new parties! For more information, please visit www.GPRadar.eu and www.cost.eu/domains_actions/tud/Actions/TU1208.

In September 2014, TU1208 has been recognised among the running Actions as a “COST Success Story” and praised with the following statement: “TU1208 ‘Civil engineering applications of Ground Penetrating Radar’ (Chair: Lara Pajewski, Roma Tre University, IT) is an interdisciplinary Action and represents a milestone in GPR research, being the first European network ever existed in this field, in line with the spirit and goals of the ERA. In June 2014, it co-organised the 15th International Conference on Ground Penetrating Radar, the premier forum on GPR” (“The Cities of Tomorrow: The Challenges of Horizon 2020,” September 17-19, 2014, Torino, IT - A COST strategic workshop on the development and needs of the European cities).

About The University of West London



The University of West London is a leading modern university located in West London, United Kingdom. The origins of the University date back to 1860 when Lady Byron established an educational institution which focused on the use of modern approaches to learning.

Since its inception, the University's mission has been to provide practical education that is closely connected to the world of work.

The University's programmes are directly linked to key sectors that positively impact the growth of the nation. The University is committed to developing professionals that meet the critical needs of the society; from nurses and midwives, to the increasingly important creative industries, hospitality, law and business professionals.

The University has one of the best employment rates in the country with 95% of students in work within six months of graduating. Currently the University provides high quality, career focused education to nearly 12,000 students.

The University seek to provide an environment that enables students to reach their full potential irrespective of their financial background.

The University has eight academic schools: Ealing School of Art, Design and Media, College of Nursing, Midwifery and Healthcare, Claude Littner Business School, London College of Music, School of Psychology, Social Work and Human Sciences, School of Computing and Technology and Ealing Law School.



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Programme at a Glance

Wednesday, March 4, 2015 – ECI Day & WG Meeting

Location and time	Activity
9.00 – 9.30, Ground Floor, Savoy Suite, St Mary’s Building	Tea & Coffee and Registration
09:30 – 13:30, Savoy Suite	Half-Day Training School for Early-Career Investigators (ECI)
13:30 – 14:30, Pillars	Lunch
14:30 – 16:30, William Barry Lecture Theatre	Opening Session of the Third General Meeting Talks by GPR 2014 Awarded Early-Career Investigators
16:30 – 17:00, Pillars	Tea & Coffee Break
17:00 – 19:00, William Barry Lecture Theatre	WG Meeting "Condition assessment of transport infrastructure and mapping of the urban subsoil with GPR" – Session 1: "Challenges and guidelines – The point of view of manufacturers and private end-users" & Roundtable 1
20:00, Persian Restaurant in Ealing	Common Dinner

Thursday, March 5, 2015 – WG Meeting

Location and time	Activity
09:30 – 10:30, Lecture Room TC138	WG Meeting "Condition assessment of transport infrastructure and mapping of the urban subsoil with GPR" – Session 2: "The needs of the European cities – The perspective of the stakeholders" & Roundtable 2
10:30 – 11:00, Lecture Room TC138	Special Session on Available Standards and Guidelines for the use of Ground Penetrating Radar in civil engineering – Part I
11:00 – 11:30, Pillars	Tea & Coffee Break
11:30 – 13:00, Lecture Room TC138	Special Session on Available Standards and Guidelines for the use of Ground Penetrating Radar in civil engineering – Part II
13:00 – 14:00, Pillars	Lunch
14:00 – 16:00, William Barry Lecture Theatre	WG Meeting "Condition assessment of transport infrastructure and mapping of the urban subsoil with GPR" – Session 3: "Challenges and guidelines – The point of view of academic end-users" Roundtable 3
16:00 – 16:30, Pillars	Tea & Coffee Break



16:30 – 17:10, William Barry Lecture Theatre	COST Action TU1402 “Quantifying the value of structural health monitoring”
17:10 – 18:00, William Barry Lecture Theatre	WG Meeting "Condition assessment of transport infrastructure and mapping of the urban subsoil with GPR" - Session 4: "The vision of Meeting" & Final discussion
18:00 – 19:00, Savoy Suite	Meeting about the Education Pack
20:00, Pillars	The Third General Meeting Social Dinner

Friday, March 6, 2015 – WG & MC Meetings

Location and time	Activity
09:00 – 09:45, TC 140 Lecture Room	Presentation of new Members
09:45 – 11:00, Savoy Suite TC 140 Lecture Room	WG1 & WG3 Meetings – Part I WG2 & WG4 Meetings – Part I
11:00 – 11:30, Pillars	Tea & Coffee Break
11:30 – 13:00, Savoy Suite TC 140 Lecture Room	WG1 & WG3 Meetings – Part II WG2 & WG4 Meetings – Part II
13:00 – 14:00, Pillars	Lunch
14:00 – 15:00, TC 140 Lecture Room	GPR activities in [Country]
15:00 – 15:30, TC 140 Lecture Room	Talk by Rapporteur of the Education-Pack Meeting resuming the meeting Talks by WG1, WG2, WG3, and WG4 Leaders, resuming the parallel WG meetings held in the morning
15:30 – 16:00 Savoy Suite	Management Committee Meeting – Part I
16:00– 16:30, Pillars	Tea & Coffee Break
16:00 – 18:30 Savoy Suite	Management Committee Meeting – Part II
20:00, A Restaurant in Ealing (Italian/Indian/Chinese)	Common Dinner



Detailed Programme - Wednesday, March 4, 2015

Location and time	Activity
9.00 – 9.30 Savoy Suite – Ground Floor, St Mary’s Building	Tea & Coffee and Registration
Savoy Suite 9:30 – 10:20	<p>Half-Day Training for Early-Career Investigators</p> <p>Lesson 1 – “The importance of wavelengths to GPR” – Vincent Utsi, Utsi Electronics, United Kingdom.</p> <p><i>All GPR applications are influenced by the wavelength of the transmitted waveform. The reason for this is that the ground attenuation is a function of the loss in power per wavelength. This fractional loss per wavelength, $1/Q$, is a function of the dielectric constant, dielectric loss and conductivity. In practice, for most GPR system this gives a depth range of up to 20 wavelengths (except in ice and fresh water). This means that if a great depth is required, the wavelength has to be long, resulting in a low frequency. At the same time, the “resolution” of a system can be approximated to be 1/10th of the wavelength, so to get very high resolution, a short wavelength is required, meaning a high frequency. From an antenna design point of view, it is the frequency and bandwidth that determines the antenna size. As a starting rule, an antenna is $\frac{1}{2}$ a wavelength long, modified by the exact design, bandwidth and ground coupling. The design techniques for the transmitter and receiver depend very much on the frequency of the transmitted and received signals. Low frequencies with high powers are more easily generated than with high frequencies. Applications and design criteria will be presented, for systems having depths capabilities greater than 100m and resolutions better than 1mm.</i></p>
10:20 – 11:10	Lesson 2 – This lesson will focus on GPR regulation and licensing in Europe. It will be provided by Raffaele Persico, CNR, Italy, on behalf of the EuroGPR Association.
11:10 – 11:30	Break
11:30 – 12:20	<p>Lesson 3 – “GPR Utility Mapping, industry standards and Training” –Colin Tickle, Drilline Products, United Kingdom.</p> <p><i>The presentation covers and focuses on, why we use GPR for utility mapping, what standards and training has the industry put in place for a better deliverable to the client.</i></p>
12:20 – 13:10	<p>Lesson 4 – “The 5 P's of GPR: some challenging case studies” – Kevin Banks, GPR Pro Consultancy and Training, United Kingdom.</p> <p><i>This presentation underpins how proper planning affects the survey out come and it is based around a number of case studies. The main focus of the presentation is on the practical side of GPR surveys but also will include discussion of case study results obtained recently.</i></p> <p><i>Rapporteurs of the Training Session: Dragos Ene (ECI, Romania), Silvestar Sestic (ECI, Croatia), Kadri Vilumaa (ECI, Estonia)</i></p>



13:10 – 14:30, Pillars	Lunch and Registration
William Barry Lecture Theatre	Opening Session of the Third General Meeting Chair: Amir Alani, United Kingdom
14:30 – 14:50	Welcome to the Meeting by Local Authorities: Professor Peter John, Vice Chancellor of the University of West London Professor Kath Mitchell, Deputy Vice Chancellor Professor Nick Braisby, Pro-Vice Chancellor Professor Amir Alani, Head of the School of Computing and Technology
14:50 – 15:10	On COST and the Action TU1208 – Lara Pajewski, Italy
	Talks by GPR 2014 Awarded Early-Career Investigators Chairs: Sébastien Lambot, Belgium & Lara Pajewski, Italy
15:10 – 15:30	“An approach to detect active and inactive subterranean watercourses by using the central frequency oscillation in GPR signals” – Sonia Santos Assuncao (ECI), Spain (15 min talk + 5 min discussion)
15:30 – 15:50	“Realistic modelling of GPR for landmine detection using FDTD” – Iraklis Giannakis (ECI), United Kingdom (15 min talk + 5 min discussion)
15:50 – 16:10	“Validation of interferometry applied to GPR” – Ralph Feld (ECI), The Netherlands (15 min talk + 5 min discussion)
16:10 – 16:30	“Fundamental analyses on layered media reconstruction using full-wave inversion in near-field conditions” – Albéric De Coster (ECI), Belgium (15 min talk + 5 min discussion)
	<i>Rapporteurs of the GPR2014 Session:</i> Daniel Novak (PhD Student, Slovakia), Jana Jezova (PhD Student, Belgium), Patrizio Simeoni (PhD Student, Ireland)
16:30 – 17:00, Pillars	Tea & Coffee Break
William Barry Lecture Theatre	WG Meeting "Condition assessment of transport infrastructure and mapping of the urban subsoil with GPR." Session 1: "Challenges and guidelines – The point of view of manufacturers and private end-users" Chairs: Jaana Gustafsson, Sweden & Fabio Tosti (ECI), Italy
17:00 – 17:20	“Large scale 3D GPR mapping of layer thicknesses in a new motorway crossing for as-built documentation” – Jørgen Ringgard & Roger Wisen, (Ramboll), Denmark (15 min talk + 5 min discussion)
17:20 – 17:40	“Pavement and bridge deck inspection using high density GPR arrays” – Egil Eide (3d-radar), Norway (15 min talk + 5 min discussion)
17:40 – 18:00	“Current status of German guidelines on GPR and challenges addressed by road engineers” – Joerg Endom (DMT GmbH & Co.KG), Germany (15 min talk + 5 min discussion)
18:00 – 18:20	“GPR contribution in the preservation of cultural heritage” – Klisthenis Dimitriadis (GEOSERVICE), Greece (15 min talk + 5 min discussion)
18:20 – 19:00	Roundtable 1
	<i>Rapporteurs of Session 1:</i> Radek Matula (PhD Student, Czech Republic), Laurence Mertens (PhD Student, Belgium), Sebastian Stan (ECI, Romania)
20:00, A Persian Restaurant in Ealing	Common Dinner



Detailed Programme - Thursday, March 5, 2015

Location and time	Activity
Lecture Room TC138	WG Meeting "Condition assessment of transport infrastructure and mapping of the urban subsoil with GPR." Session 2: "The needs of the European cities - The perspective of the stakeholders" Chairs: Amir Alani, United Kingdom & Kadri Vilumaa (ECI), Estonia
09:30 - 09:50	"Performed and future planned Railway Procurement Agency Activities involving GPR carried in the Dublin Area" - Patrizio Simeoni (PhD Student, Railway Procurement Agency of Ireland), Ireland (15 min talk + 5 min discussion)
09:50 - 10:10	"Danish approach in the mapping and protection of water resources" - Jorgen Ringgaard (Ramboll), Denmark (15 min talk + 5 min discussion)
10:10 - 10:30	Roundtable 2 <i>Rapporteurs of Session 2:</i> Sonia Santos Assuncao (ECI, Spain), Albéric De Coster (ECI, Belgium), Iraklis Giannakis (ECI, United Kingdom)
Lecture Room TC138	Special Session on Available Standards and Guidelines for the use of Ground Penetrating Radar in civil engineering - Part I Chair: Christina Plati, Greece & Hannes Tonisson (ECI), Estonia
10:30 - 10:35	ASTM D6432-11 (2011), Standard Guide for Using the Surface Ground Penetrating Radar Method for Subsurface Investigation - Fabio Tosti (ECI), Italy
10:35 - 10:40	ASTM D6087-08 (2008), Standard Test Method for Evaluating Asphalt-Covered Concrete Bridge Decks Using Ground Penetrating Radar - Fabio Tosti (ECI), Italy
10:40 - 10:45	ASTM D4748-10 (2010), Standard Test Method for Determining the Thickness of Bound Pavement Layers Using Short-Pulse Radar, Radar - Fabio Tosti (ECI), Italy
10:45 - 11:00	Discussion <i>Rapporteurs of Session on Standards&Guidelines:</i> Ralph Feld (PhD Student, Netherlands), Maria G. Huici (ECI, Germany), Nicolas Pinel (ECI, France)
11:00 - 11:30, Pillars	Tea & Coffee Break
Lecture Room TC138	Special Session on Available Standards and Guidelines for the use of Ground Penetrating Radar in civil engineering - Part II Chair: Christina Plati, Greece & Hannes Tonisson (ECI), Estonia
11:30 - 11:35	DGZfP e.V. (German Society for Non-Destructive Testing) fact sheet "Merkblatt B10" (2008) on the Radar Method for Non-Destructive Testing in Civil Engineering - Christiane Trela, Germany
11:35 - 11:40	BAST (Federal Highway Administration) instruction sheet on the use of GPR to gain inventory data of road structure (2003) - Christiane Trela, Germany



11:40 – 11:45	French National standard NF S 70-003, Parts 1-3, concerning the use of GPR to detect buried utilities – Xavier Derobert, France
11:45 – 11:50	Cerema/Ifsttar produced protocols for road inspection – Xavier Derobert, France
11:50 – 11:55	GPR guideline issued by the Scandinavian Mara Nord project for Asphalt Quality Control Surveys – Sonia Santos Assuncao (ECI), Spain
11:55 – 12:00	GPR guideline issued by the Scandinavian Mara Nord project for Site Investigations – Sonia Santos Assuncao (ECI), Spain
12:00 – 12:05	GPR guideline issued by the Scandinavian Mara Nord project for Construction & Quality Control Surveys – Mercedes Solla (ECI), Spain
12:05 – 12:10	GPR guideline issued by the Scandinavian Mara Nord project for Rehabilitation Surveys – Mercedes Solla (ECI), Spain
12:10 – 12:15	GPR guideline issued by the Scandinavian Mara Nord project for Bridge Decks surveys – Mercedes Solla (ECI), Spain
12:15 – 12:40	Discussion
12:40 – 13:00	Additional Talk from Session 1, which could not be given on Wednesday: “Recent activities carried out by IDS Ingegneria dei Sistemi and Roma Tre University” – Francesco Benedetto (ECI), Italy (15 min talk + 5 min discussion) <i>Rapporteurs of Session on Standards&Guidelines:</i> Ralph Feld (PhD Student, Netherlands), Maria G. Huici (ECI, Germany), Nicolas Pinel (ECI, France)
13:00 – 14:00, Pillars	Lunch
William Barry Lecture Theatre	WG Meeting "Condition assessment of transport infrastructure and mapping of the urban subsoil with GPR." Session 3: "Challenges and guidelines – The point of view of academic end-users" Chairs: Jorge Pais, Portugal & Sonia Santos Assuncao (ECI), Spain
14:00 – 14:20	“Thickness evaluation of road layers by GPR” – Carl Van Geem, Belgium (15 min talk + 5 min discussion)
14:20 – 14:40	“A comparison of GPR and self-potential data for the assessment of a bridge deck” – Johannes Hugenschmidt, Switzerland (15 min talk + 5 min discussion)
14:40 – 15:00	“Performing GPR tests on railways” – Simona Fontul, Portugal (15 min talk + 5 min discussion)
15:00 – 15:20	“Radar measurements on concrete: field experiences at BAM” – Christiane Trela, Germany (15 min talk + 5 min discussion)
15:20 – 15:40	“Georadar development and activities at IZMIRAN” – Alexander Popov, Russia (15 min talk + 5 min discussion)
15:40 – 16:00	Roundtable 3 Rapporteurs of Session 3: Fabio Tosti (ECI, Italy), Mercedes Solla (ECI, Spain), Hannes Tonisson (ECI, Estonia)



16:00 – 16:30, Pillars	Tea & Coffee Break
William Barry Lecture Theatre	Cooperation with other COST Actions Chair: Lara Pajewski
16:30 – 17:00	COST Action TU1402 “Quantifying the value of structural health monitoring” - Sebastian Thöns, TU1402 MC Chair
17:00 – 17:10	Discussion
William Barry Lecture Theatre	WG Meeting "Condition assessment of transport infrastructure and mapping of the urban subsoil with GPR." Session 4: "The vision of the Meeting" Chairs: Amir Alani, United Kingdom & Lara Pajewski, Italy
17:10 – 17:20	Rapporteurs Training
17:20 – 17:30	Rapporteurs Session on Standards & Guidelines
17:30 – 17:40	Rapporteurs Session 1
17:40 – 17:50	Rapporteurs Session 2
17:50 – 18:00	Rapporteurs Session 3
	Final Discussion
18:00 – 19:00, Savoy Suite	Meeting about the Education Pack Chairs: Gracia Vega-Perez, Spain & Sonia Santos Assuncao (ECI, Spain)
20:00, Pillars	The Third General Meeting Social Dinner



Detailed Programme - Friday, March 6, 2015

Location and time	Activity
<p>TC 140 Lecture Room</p> <p>09:00 – 09:45 (about 3 min talks)</p> <p>Savoy Suite, 09:45 – 11:00</p>	<p>Presentation of new Members (<i>only new Members from new Institutions!</i>) Chairs: Laurence Mertens (PhD Student, Belgium) & Dragos Ene (ECI, Romania)</p> <p>Hamza Reci, Albania - Magdy Atya, Egypt - Sebastien Lallechere, France - Maria Gonzalez Huici, Germany - Mario Pauli, Germany - Patrizio Simeoni, Ireland - Boris Levin, Israel - Ralph Feld, Netherlands - Alexei Popov, Russia - Dusan Kocur, Slovakia - Andrej Gosar, Slovenia - Jaana Gustafsson, Sweden</p> <p>WG1 & WG3 Meetings – Part I Chairs: Antonis Giannopoulos, United Kingdom & Lara Pajewski, Italy</p> <ul style="list-style-type: none"> ✓ Ongoing activities on the electromagnetic modelling of GPR antennas and on the improvement of the GprMax software, in The University of Edinburgh – Craig Warren (ECI), United Kingdom (15 min, including discussion) – <i>Projects 1.3 & 3.1</i> ✓ Laboratory of Sensor and Wireless Communication Technologies (SeWiTechLab) in the Technical University of Košice: research activities in the field of UWB radars and their relations to COST Action TU1208 – Dusan Kocur, Slovakia (15 min, including discussion) – <i>Projects 1.1 & 1.3</i> ✓ Ongoing research activities in the Karlsruhe Institute of Technology, on the design of UWB antennas – Mario Pauli (ECI), Germany (10 min, including discussion) – <i>Project 1.3</i> ✓ Ongoing activities on antennas & on underground radio communication and disclosure, in the Holon Institute of Technology – Boris Levin, Israel (10 min, including discussion) – <i>Projects 1.1 & 1.3</i> ✓ Ongoing activities on the inertial and GPS data integration for positioning and tracking of GPR and on the electromagnetic modelling of buried objects, in Sapienza University of Rome – Fabrizio Frezza, Italy (10 min, including discussion) – <i>Projects 1.1 & 3.1</i> ✓ Development of E²GPR in Roma Tre University – Daniele Pirrone (Student), Italy (15 min, including discussion) – <i>Project 3.1</i> <p>WG2 & WG4 Meetings – Part I Chairs: Christina Plati, Greece & Andreas Loizos, Greece</p> <ul style="list-style-type: none"> ✓ Time devoted to Project 2.1, transport infrastructure (15 min) – Project Leader: Joseph Stryk, Czech Republic ✓ Time devoted to Project 2.2, buildings (15 min) – Project Leader: Gracia Vega-Perez, Spain ✓ Time devoted to Project 2.3, buried utilities and voids in urban areas (15 min) – Project Leader: Xavier Derobert, France
<p>TC 140 Lecture Room, 09:45 – 11:00</p>	<p>WG2 & WG4 Meetings – Part I Chairs: Christina Plati, Greece & Andreas Loizos, Greece</p> <ul style="list-style-type: none"> ✓ Time devoted to Project 2.1, transport infrastructure (15 min) – Project Leader: Joseph Stryk, Czech Republic ✓ Time devoted to Project 2.2, buildings (15 min) – Project Leader: Gracia Vega-Perez, Spain ✓ Time devoted to Project 2.3, buried utilities and voids in urban areas (15 min) – Project Leader: Xavier Derobert, France



	<ul style="list-style-type: none"> ✓ Time devoted to Project 2.4, construction materials (15 min) – Project Leader: Lech Kryszynski, Poland (not attending the meeting) ✓ Time devoted to Project 2.5, water content (15 min) – Project Leader: Fabio Tosti (ECI), Italy
11:00 – 11:30	Tea & Coffee Break
Savoy Suite, 11:30 – 13:00	<p>WG1 & WG3 Meetings – Part II Chairs: Antonis Giannopoulos & Lara Pajewski</p> <ul style="list-style-type: none"> ✓ Research activities on GPR resulting from the collaboration of the University of Split in Croatia and the Blaise Pascal University in France. A series of talks will be provided, as follows: <ul style="list-style-type: none"> 1) D. Poljak*, S.Sesnic, V.Doric: Transmitted field in the lossy ground from ground penetrating radar (GPR) dipole antenna; Frequency and time domain analysis; 2) S. Lallechere*, S. Antonijevic, K. Drissi, D. Poljak: Optimized deterministic and stochastic numerical models of thin wire above an imperfect and lossy ground"; 3) S. Sesnic*, S. Lallechere, D.Poljak, P.Bonnet, K. Drissi: Stochastic collocation analysis of the transient current induced along the wire buried in a lossy medium (total time: about 20 min, including discussion) – <i>Project 3.1</i> ✓ Ongoing activities on the development of intrinsic models for describing near-field antenna effects, including antenna-medium coupling, for improved radar data processing using full-wave inversion, Sébastien Lambot, Belgium (15 min, including discussion) – <i>Project 3.3</i> ✓ Modelling and measuring the effect of soil roughness on the inversion of UWB off-ground monostatic GPR signal (STSM Report), Nicolas Pinel (ECI), France (15 min, including discussion) – <i>Project 3.3</i> ✓ Short update by Marian Marciniak, Poland, on the STSM recently carried out by Hovik Baghdasaryan in the National Institute of Telecommunications (Poland) - <i>Project 3.1</i> & short update by Jan van der Kruk, Germany, on the STSM recently carried out by Mehdi Sbartaï in the Research Center Jülich (Germany) - <i>Project 3.2</i> (total time: about 10 min, including discussion) ✓ Update by Jan van der Kruk on the “TU1208 database initiative” – <i>Working Group 3</i> (15 min) ✓ Time for discussions (15 min)
TC 140 Lecture Room, 11:30 – 13:00	<p>WG2 & WG4 Meetings – Part II Chairs: Christina Plati, Greece & Mercedes Solla, Spain</p> <ul style="list-style-type: none"> ✓ Time devoted to the Catalogue of European Test Sites (15 min) ✓ Time devoted to the TU1208 database of GPR experimental data (15 min)

	<ul style="list-style-type: none"> ✓ Time devoted to the applications of GPR and other non-destructive testing methods in archaeological prospecting and cultural heritage diagnostics (15 min) – <i>Project 4.1</i> ✓ Time devoted to the applications of GPR in association with other non-destructive testing methods in surveying of transport infrastructures (15 min) – <i>Project 4.3</i> ✓ Applications of GPR in association with other non-destructive testing methods in the management and protection of water resources – State of the art report by the Project Leader, Alberic De Coster (ECI), Belgium (15 min) – <i>Project 4.6</i> ✓ 15 min still available for final discussion
13:00 – 14:00	Lunch
14:00 – 15:00 TC 140 Lecture Room	<p>GPR activities in [Country] Chair: Marian Marciniak, Poland</p> <p>Hamza Reci, GPR activities in Albania (10 min) Patrizio Simeoni, GPR activities in Ireland (10 min) Alexei Popov, GPR activities in Russia (10 min) Andrej Gosar, GPR activities in Slovenia (10 min) Jaana Gustafsson, GPR activities in Sweden (10 min) Johannes Hugenschmidt, GPR activities in Switzerland (10 min)</p>
15:00 – 15:30 TC 140 Lecture Room	<p>Closing Session Chair: Amir Alani</p> <p>15:00 – 15:10 15:10 – 15:20 15:20 – 15:30</p> <p>Gracia Vega-Perez resuming the Education-Pack Meeting Antonis Giannopoulos & Jan van der Kruk resuming WG1 & WG3 Meetings Christina Plati, Xavier Derobert & Mercedes Solla resuming WG2 & WG4 Meetings</p>
15:30 – 16:00, Savoy Suite	<p>Management Committee Meeting – I Part Chair: Lara Pajewski</p>
16:00– 16:30	Tea & Coffee Break
16:00 – 18:30, Savoy Suite	<p>Management Committee Meeting – II Part Chair: Lara Pajewski</p>
20:00, A Restaurant in Ealing (Italian/Indian/Chinese)	Common Dinner



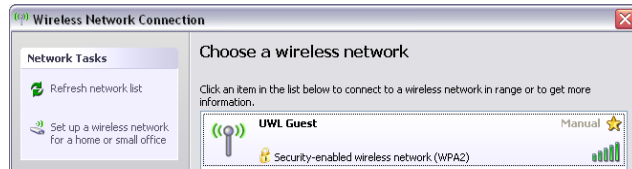
Agenda of the 5th Management Committee Meeting – March 6th, 2015

1. Welcome to participants
2. Adoption of agenda
3. Approval of minutes and matters arising of last meeting
4. Review of decisions taken by e-vote
5. Update from the Action Chair & Grant Holder
 - a. Status of Action, including participating countries
 - b. Action budget status, Year 2
 - c. STSM status, new applications and list of STSM proposals
6. Promotion of gender balance and of Early-Career Investigators (ECI)
7. Promotion of less research-intensive Countries
8. Cooperation with other COST Actions
9. Update from the COST Association
10. Monitoring of Actions in H2020
11. Follow-up of MoU objectives: progress report of working groups
12. Scientific planning
 - a. Scientific strategy
 - b. Long-term planning (including locations and dates of future activities)
 - c. Action Budget Planning, Year 3
 - d. Dissemination planning (publications and outreach activities)
13. Requests for new members
14. Non-COST applications to the Actions
15. AOB
16. Location and date of next meeting
17. Summary of MC decisions
18. Closing

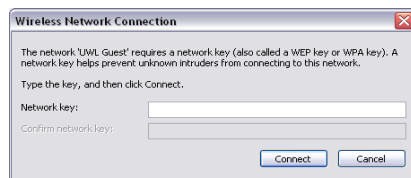


Internet Connection

Please follow the instructions below to connect to Guest Wi-Fi
 Please join the UWL Guest Wireless network from your Wi-Fi network options



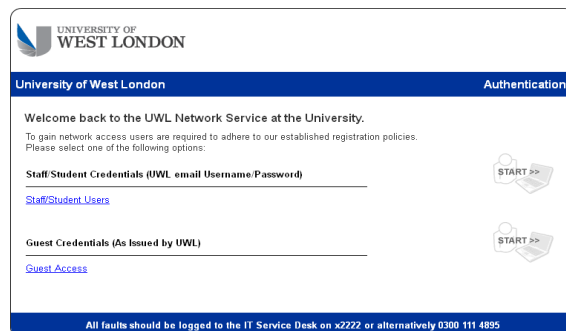
The network key is the word conference



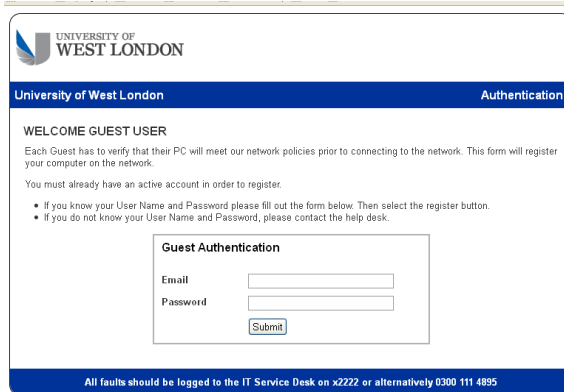
You will then be connected the guest wifi



Once connected. Please open up a web browser page. This should take you to the uwl login site.
 Please select Guest



You will be presented with a login box. Please enter the login details given to you.



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University of West London Authentication

WELCOME GUEST USER

Each Guest has to verify that their PC will meet our network policies prior to connecting to the network. This form will register your computer on the network.

You must already have an active account in order to register.

- If you know your User Name and Password please fill out the form below. Then select the register button.
- If you do not know your User Name and Password, please contact the help desk.

Guest Authentication

Email:

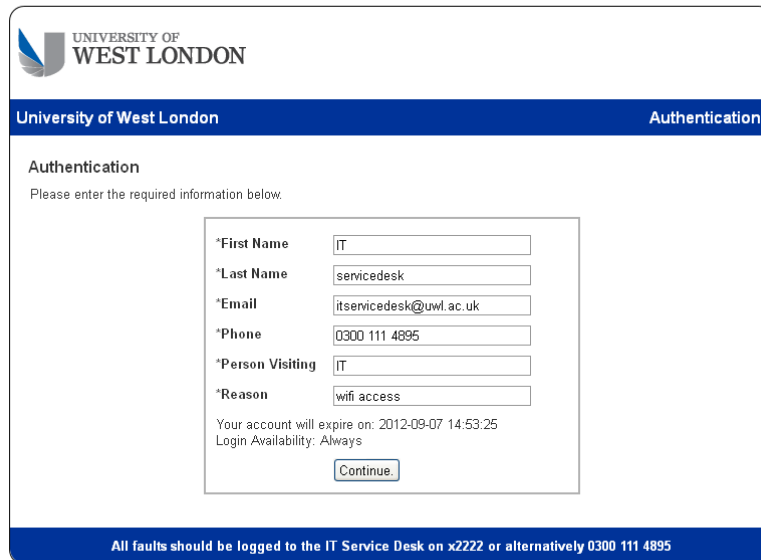
Password:

All faults should be logged to the IT Service Desk on x2222 or alternatively 0300 111 4895

Username: Cost

Password: Cost2186

Please register your details at the authentication page



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University of West London Authentication

Authentication

Please enter the required information below.

*First Name:

*Last Name:

*Email:

*Phone:

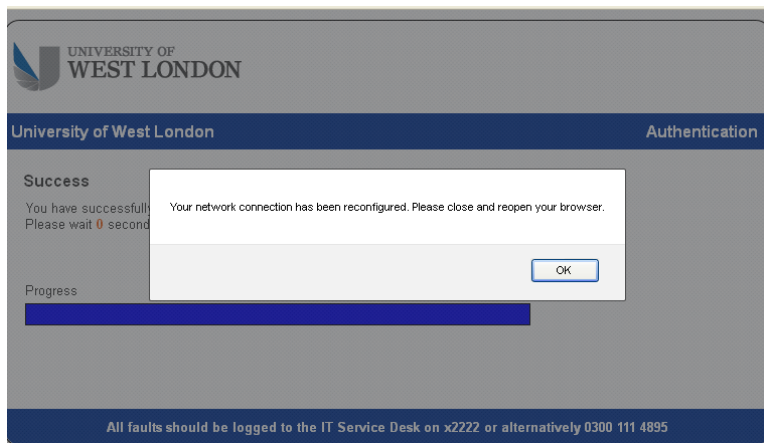
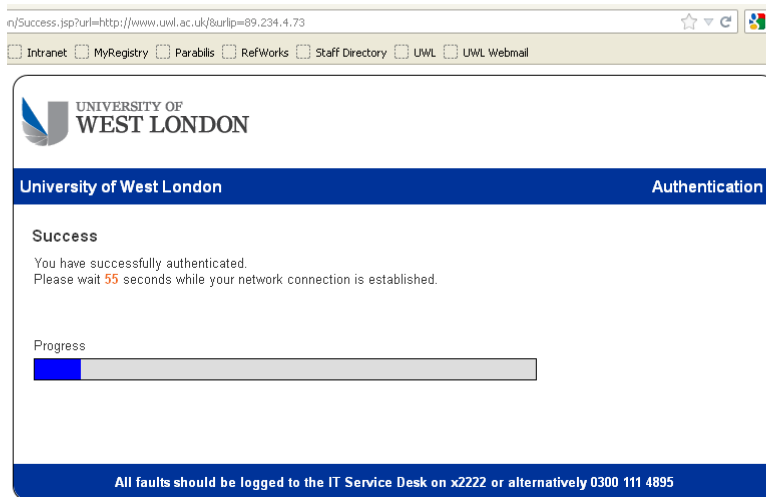
*Person Visiting:

*Reason:

Your account will expire on: 2012-09-07 14:53:25
Login Availability: Always

All faults should be logged to the IT Service Desk on x2222 or alternatively 0300 111 4895

A progress bar will appear showing you that the system is being connected



Please close all internet browser pages and then open up a new web page and this should take you to your home page



COST is supported by the EU RTD Framework Programme Horizon 2020



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