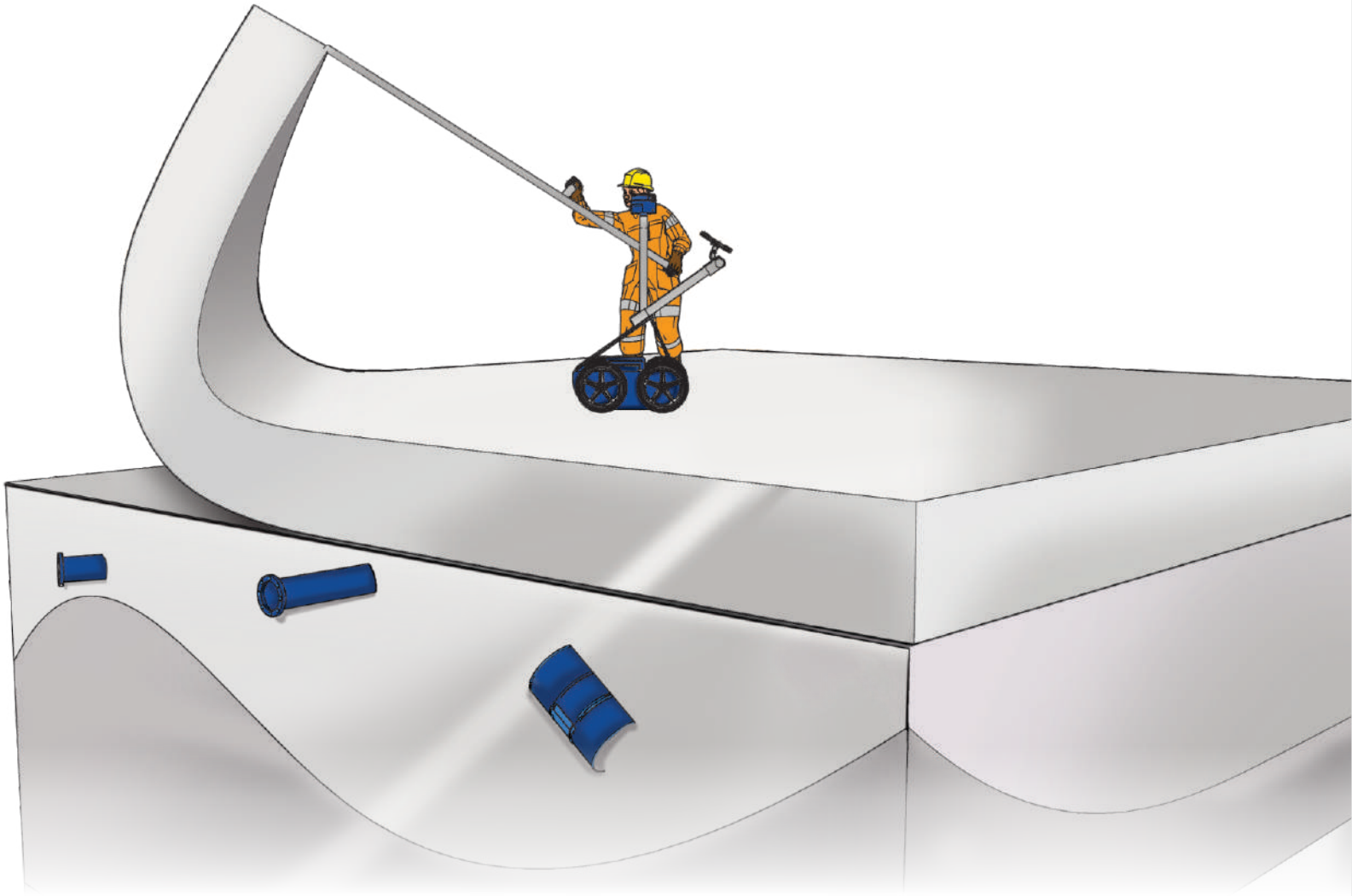
1st Indian Ground Penetrating Radar Symposium

(Expert led sessions with Equipment Demonstration, Live Field Work & Live Processing)



Date: April 24 - 25, 2024

Venue: Hotel The Suryaa, New Friends Colony,
New Delhi - 110025 (India)

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www.gpr-training.com

Organised by

AF Academy

Introduction:

The incorrect and inappropriate use of GPR has over the years caused a great deal of damage to its reputation as a bona fide and reliable technology. The objective of the symposium on ground penetrating radar is to make the participants familiar with basic and advanced data acquisition, data processing and interpretation techniques, to derive the maximum amount of information from the method. The participants should be able to collect the GPR data, carry out basic as well as advanced data processing of data and interpret the results in a range of application areas.

Today GPR is being used for various applications like utility mapping, concrete inspection, archaeology, void detection etc., with very little understanding of technical aspects of this technique, leading to errors and misconceptions. The expert led sessions will cover utility mapping, concrete inspection, archaeology, void detection etc. These sessions are meant for new as well as experienced users of GPR, and for professionals outsourcing the GPR work to contractors (to get best value for their money).

Objectives:

The program will enable the participant to derive the maximum information from GPR data and help them design the right GPR investigation program for a particular project requirement. It will also enable them to choose the right combination of antennas for varied geological conditions and resolution requirements. The minimum outcome of the program will be:

- Learn how to determine whether GPR will be suitable for a particular project objective.
- Learn how to design GPR survey to get maximum information.
- Learn how to choose various parameters during data acquisition.
- Learn how to carry out simple in-field processing of data.
- Learn how to carry out advanced processing to minimise noise and extract maximum information from GPR data.
- Learn use and theoretical aspects of various filters, migration, corrections etc.
- Learn how to carry out 3D processing of data.
- Learn to conduct QC checks on GPR data and results obtained through GPR contractors
- Application specific training on:
  - Utility detection and mapping
  - Concrete inspection (voids, delamination, rebar etc.)
  - Pavement inspection (thickness of various layers etc.)
  - Void detection
  - Archaeology
  - Any other topic/ application of interest of participants.
- Numerous practical tips for effective GPR utilization based on 3 decades of experience.

Learning Focus:

This program is meticulously designed to provide a comprehensive learning experience that blends theory with practical application. The focus will be on:

Refreshing Knowledgebase: The workshop will help you refresh your understanding of ground penetrating radar and latest developments in the field, ensuring that you're up to date with the current best practices in the field.

Acquiring New Knowledge: You will gain understanding of advanced data processing tools, including 3D processing. This will expand your toolbox of processing techniques and help you approach problems with a broader perspective.

Understanding Processing: It's not enough to just know the processing tools; it's crucial to understand the pros and cons of each, and when to use them. This workshop will help you gain an understanding of various processing steps and how to create an effective processing flow.

Hands-On Experience: Learning by doing is one of the most effective ways to understand and remember new concepts. The program will include mock field investigation procedures and live processing of data, allowing you to apply what you've learned in a practical context.

By the end of this program, you will have enhanced your knowledge, broadened your skill set, and gained valuable hands-on experience, all of which will help you to better manage your projects.

Who Should Attend:

This program will help professionals, engineers and geo-scientists dealing with shallow sub-surface investigation. The program is designed for new as well as experienced users of GPR equipment. The program will also help project owners hiring services of GPR surveys, enabling them understand capabilities and limitations of the method and derive maximum return on their investment on a GPR survey. The program is useful for individuals, organizations, and professionals from following fields:

- Water, electrical, telecom, gas, and other utility companies
- Construction/ Infrastructure organizations
- Trenchless companies
- Environment consultants/ contractors
- Army, Police, Para-Military forces, and other law enforcement/ investigation agencies
- Concrete inspection agencies/ consultants/ contractors
- Road inspection authorities, vigilance officials
- Archaeological survey organizations
- Geologists, Hydrogeologists, Geophysicists and Civil Engineers
- Existing GPR users
- Fresh geophysicists/ engineers planning to pursue career in the field of GPR.

Key Elements:

❖ **Introduction to Ground Penetrating Radar Method**
- EM Waves Propagation
- Wavelength/ attenuation/ dispersion
- Scattering, reflection, refraction and diffraction
- Velocity of EM Waves
- Geological Heterogeneity, Anisotropy and scale
- Near Field, Far Field, Multi-pathing, interferences

❖ **Types of GPR Equipment**
- Stepped frequency and impulse?
- Multi-frequency?
- Polarizations
- What's real time sampling?
- Array systems.

❖ **Busting GPR Myths**
- What is possible.
- Busting salesmen promises
- What is not possible.

❖ **Field Procedure and Approaches for GPR Surveys**
- Antenna selection, frequency v/s depth
- Data acquisition, data handling
- Setting up the survey for grids or GPS
- GPS surveys
- Why post-processing is important and easy
- Various Antenna Configurations in various applications
- Selecting the right equipment
- Traditional grid surveys
- Ideal line spacing and the time/confidence compromise
- Collecting data with post-processing in mind

❖ **Data Processing**
- Principals of GPR processing
- Grid surveys (positioning)
- Trace manipulations.
- Using data that can be sliced in the first place.
- The risks of slicing
- Bit depth and why it matters.
- Time manipulations
- Gains and risks (normalisation)
- The power of slicing
- How some software creates misleading artifacts

❖ **3D Processing of GPR Data**
❖ **Live data collection**
❖ **Live Processing**
❖ **Case studies from:**
- Utility Detection
- Archaeology
- Ground water & geology.
- Concrete inspection
- Pavement inspection
- Cavity Detection

Facilitators:

Dr. Jan Francke

Dr. Francke is amongst the world's most experienced GPR specialists, with over 33 years' of experience spanning 109 countries and every continent. He designs custom GPR instrumentations for deep applications and has founded Geolitix, a cloud-based platform for GPR and near-surface geophysical data processing. He frequently lectures globally on GPR applications, data processing and managing expectations around GPR performance.

Dr. Sanjay Rana

Dr. Rana is a geophysics expert with 34 years of experience of working with most of the available GPR models like GSSI, Mala, Sensor & Software, Pipe Hawk, Cobra, and Zond. His geographic GPR experience includes India, Canada, Singapore, Afghanistan, Saudi Arabia, Oman, Kuwait, Qatar, UAE and Bahrain. Till date he has conducted more than 900 GPR projects for various applications. He has used Ground Penetrating Radar for a wide range of applications including utility mapping, archaeology, cavity detection, concrete scanning, pavement analysis, vadose zone study, water resources, landmine detection, contaminant study etc.

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Date:

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Fee Structure:

Early Bird Rates (1 delegate) till 31st March 2024 :	INR 12,500	|	USD 250
Standard Rates (1 delegate) After 31st March 2024 :	INR 15,500	|	USD 300

*GST 18% shall be levied as applicable

*10% discount on a group of 4 or more delegates nominated from a single organization is applicable.

*20% discount for students and full time research scholars.

Registration Process:

- Prior registration is must by sending email to **praggya@aquafoundation.in and info@aquafoundation.in**.
- Online Registration can also be done at www.gpr-training.com/register.
- Fee can also be paid through DD/Cheque in favor of Aqua Foundation payable at Delhi. It can also be deposited in following account:

Name of the Bank: ICICI Bank Ltd
Address of the Bank: ICICI Bank, 9 A, Phelps Building, Connaught Place, New Delhi- 110001
Name of the Account holder: AQUA FOUNDATION
A/C no : 000701260885; **IFSC Code:** ICIC0000007; **Swift code:** ICICI NBB CTS

Organised by

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