GeoRadar Division

GPR Configuration for Archeology and Cultural Heritage Application

GPR for Archeology and Cultural Heritage

Nowadays it is well known that the underground represent an important heritage for all the international community.

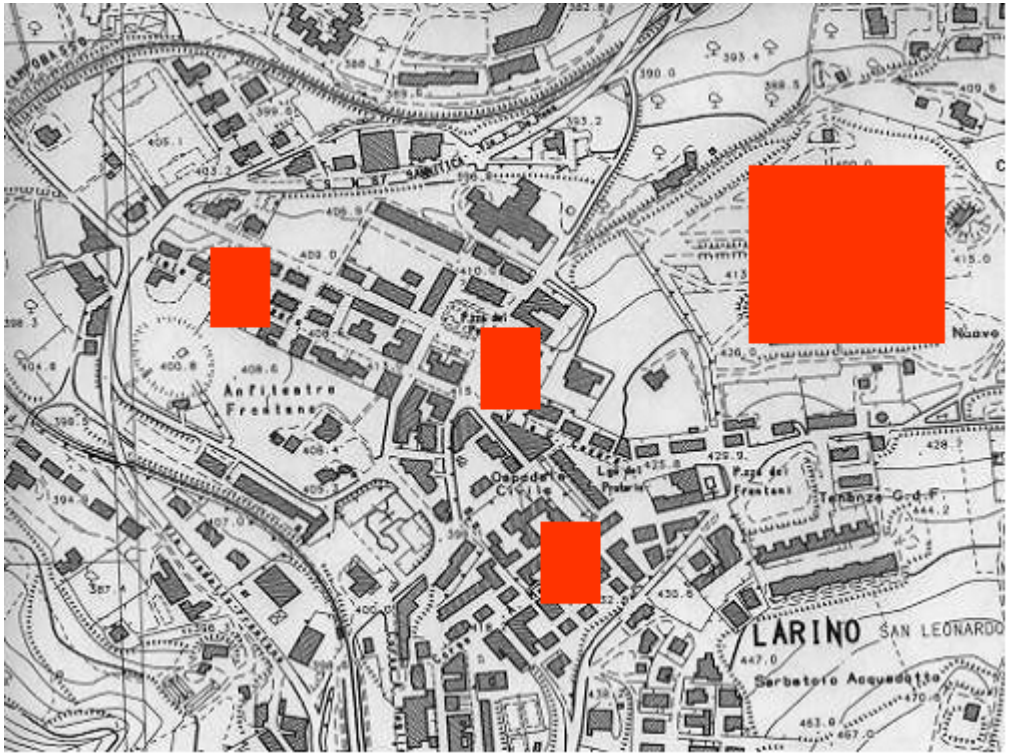
We believe that the Archaeological patrimony and the Cultural Heritage are one of the most important aspect of this patrimony.

The problems related to the research and the management of the Archaeological sites and Cultural Heritage sites are growing every day, especially in the big urban areas, today projected into constantly urban expansion.

GPR for Archeology and Cultural Heritage

Most of the cities are now developing in areas where, unfortunately, are located archaeological sites of relevant historic and artistic importance.

GPR for Archeology and Cultural Heritage



The future national and international orientation is to develop a not-destructive archaeological approach, to realize a mapping of the sites and structures present in the subsoil without excavations.

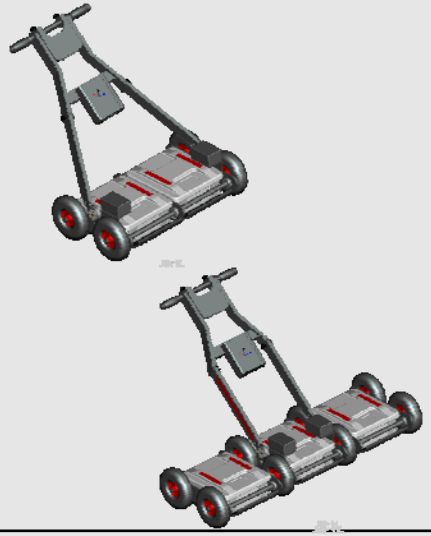
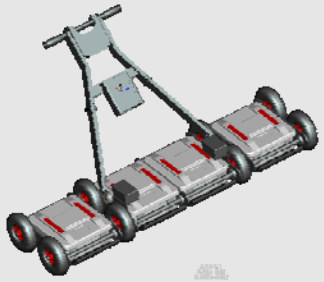
Configuration for Archeology research: RIS MF Hi-Mod

RIS MF Hi-Mod is a specialized system able to investigate big areas with a 3 D view of the subsoil with a high capability of resolution and penetration depth.

Thanks to the high capability of the radar and to the experience of the archaeologists is possible to know with very high level of confidence the buried underground objects and to plan the excavation activities.

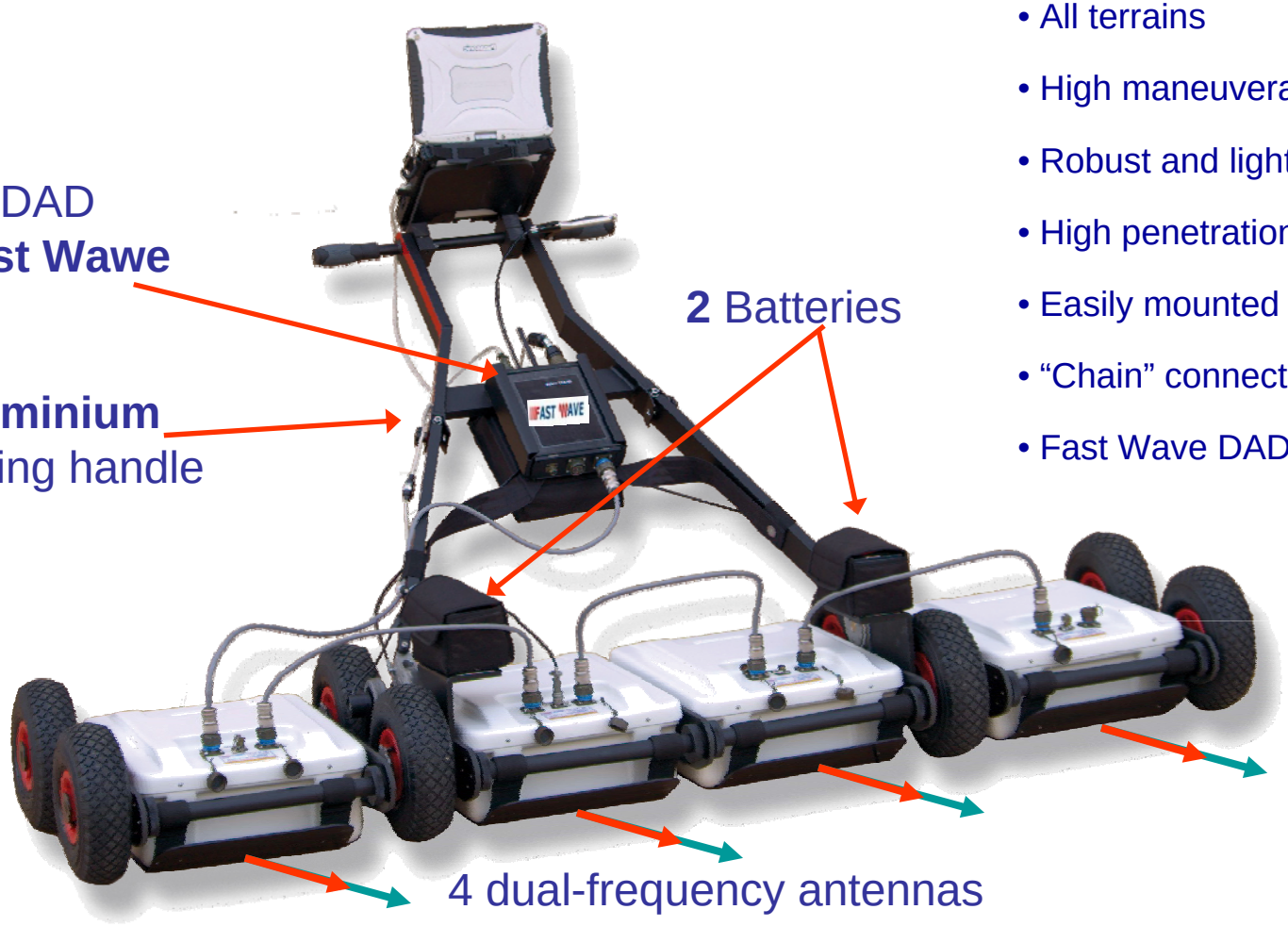
- 4 dual frequency antennas (200 MHz and 600 MHz)
- 2 m wide Antenna Array for 3D mapping
- Modular design suited to urban environment and narrow passages
- High productivity post-processing SW
- CAD/GIS automatic rendering
- Data Base for rational storage of large quantities of data

MODULAR COMPOSITION and UPGRADABILITY

CONFIGURATION MODEL	ANTENNAS	PICTURE	UPGRADABILITY
BASIC RIS MF Hi-Mod #1	1		
INTERMEDIATE RIS MF Hi-Mod #2 or RIS MF Hi-Mod #3	2 or 3		
FULL RIS MF Hi-Mod #4	4		

GPR for Archeology and Cultural Heritage

RIS MF I-MOD



- Reconfigurable array structure
- All terrains
- High maneuverability
- Robust and light
- High penetration depth
- Easily mounted and reconfigurable
- “Chain” connection “plug and play”
- Fast Wave DAD: high stacking factor

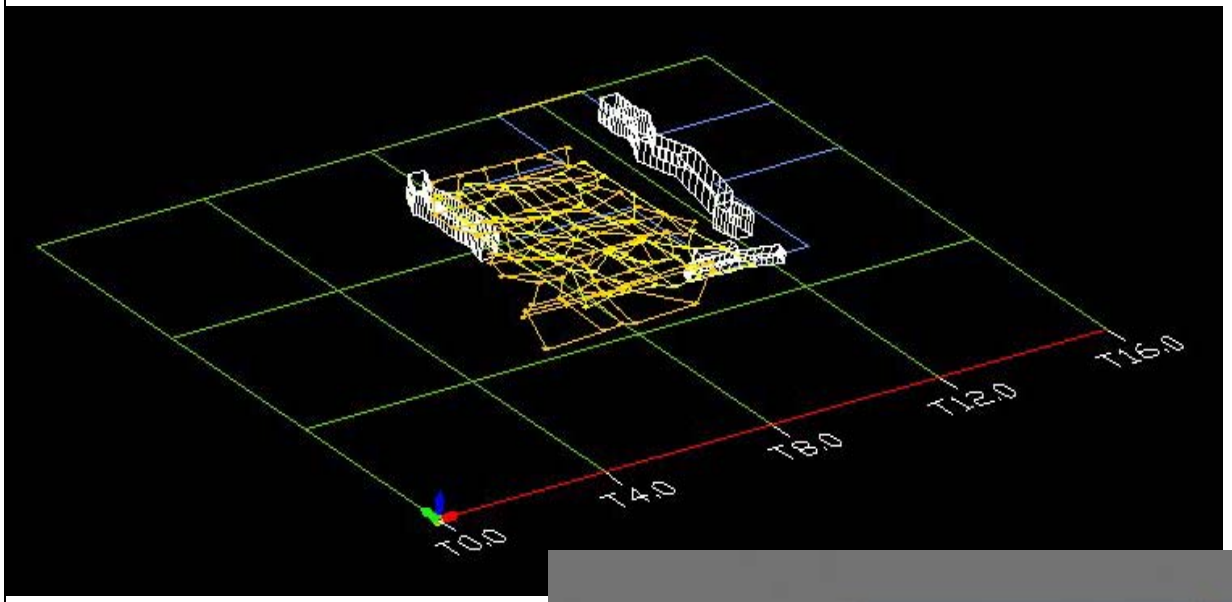

100 MHz antenna


2000 MHz antenna

IDS GPR

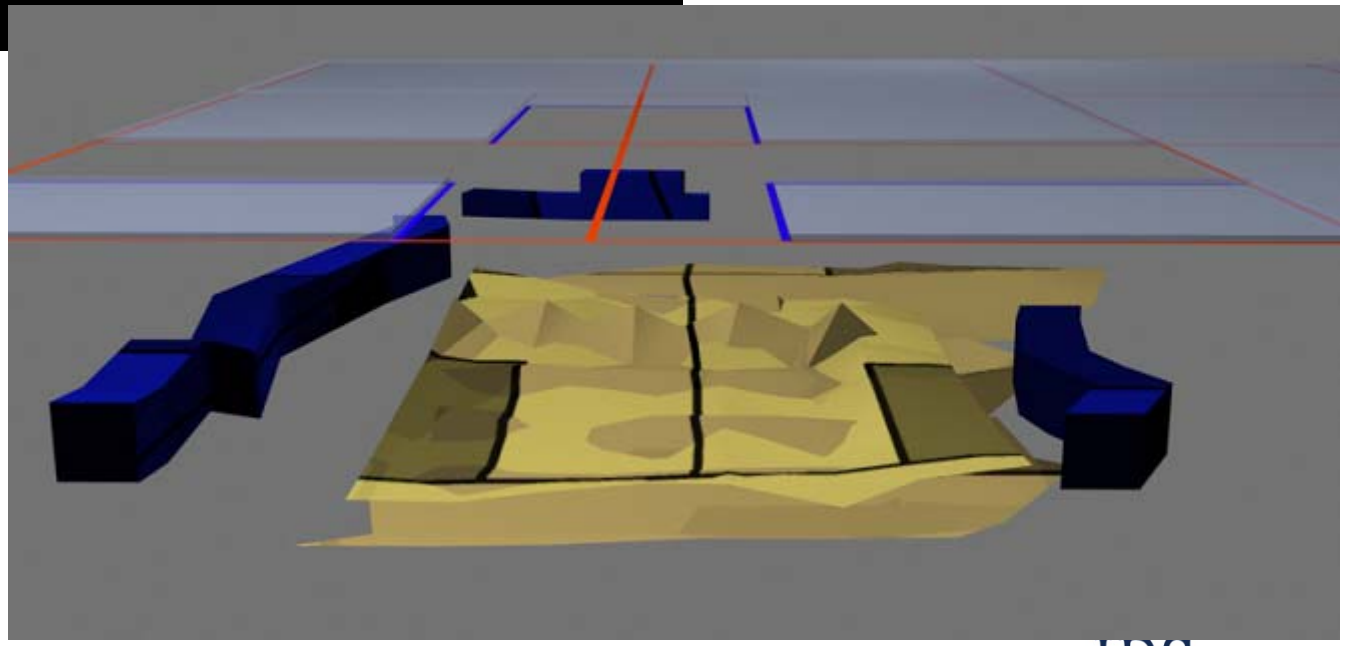
available antennas


25/40 MHz antenna



Post Processing Software:

end results



Configuration for high resolution survey: Aladdin System

ALADDIN

an advanced radar based sensor for Non-Destructive structural analysis

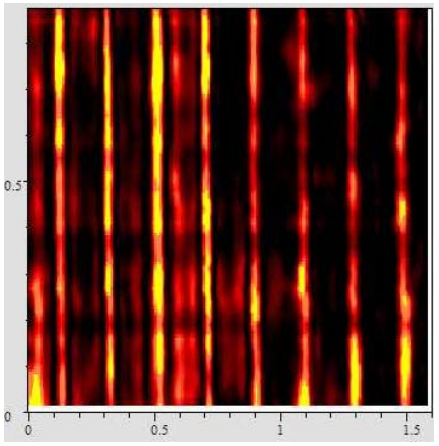
Civil engineering & Cultural heritage applications

- 3D imaging of shallow and deep rebars in concrete;
- Inspection of concrete for location of voids;
- Inspection of concrete thickness, integrity;
- 3D imaging of pre-tension and post-tension cables;
- Inspection and analysis of old structures and monuments;
- Inspection of walls and floors for the location of pipes, objects, caches, etc..

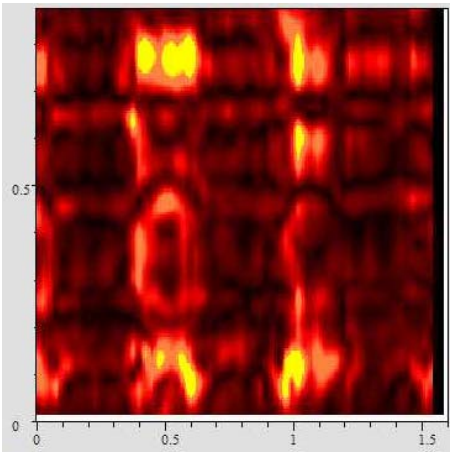
GPR for Archeology and Cultural Heritage

Standard Products

Depth: 0.10m



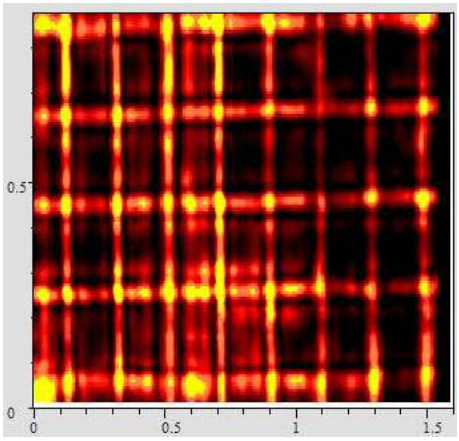
Depth: 0.40m



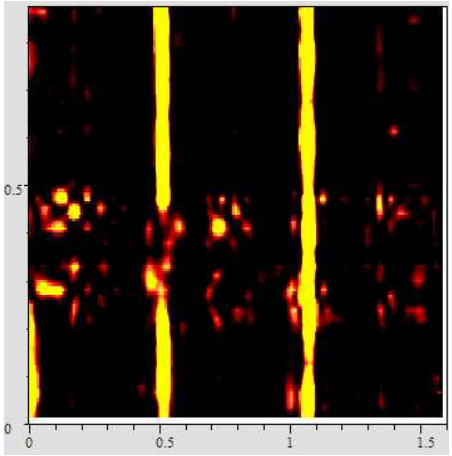
The standard antenna can read the shallow targets (rebars), but is not able to reveal the lower structures

ALADDIN

Depth: 0.10m

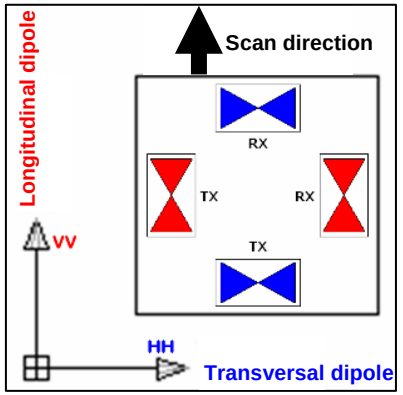


Depth: 0.40m



Instead, the FULL-POLAR antenna is able to identify both targets (shallow and deep) in just one scan.

The **SPECIAL FULL-POLAR** high-frequency (2 GHz) antenna combined with the **patented Pad Survey Guide (PSG)** permit joint orthogonally polarized scans to be acquired in a single pass, detecting shallow and deep structures and halving acquisition time compared to standard methods.



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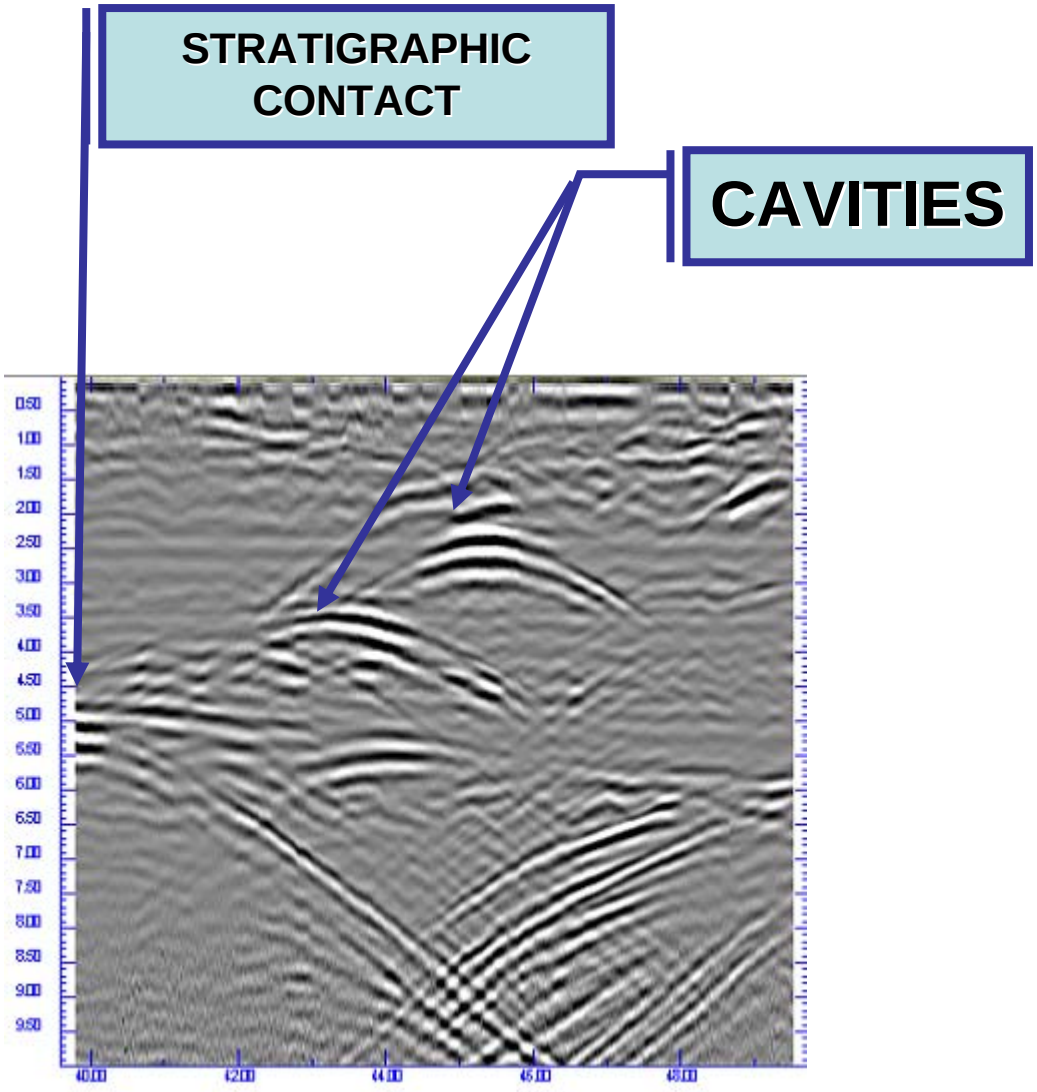
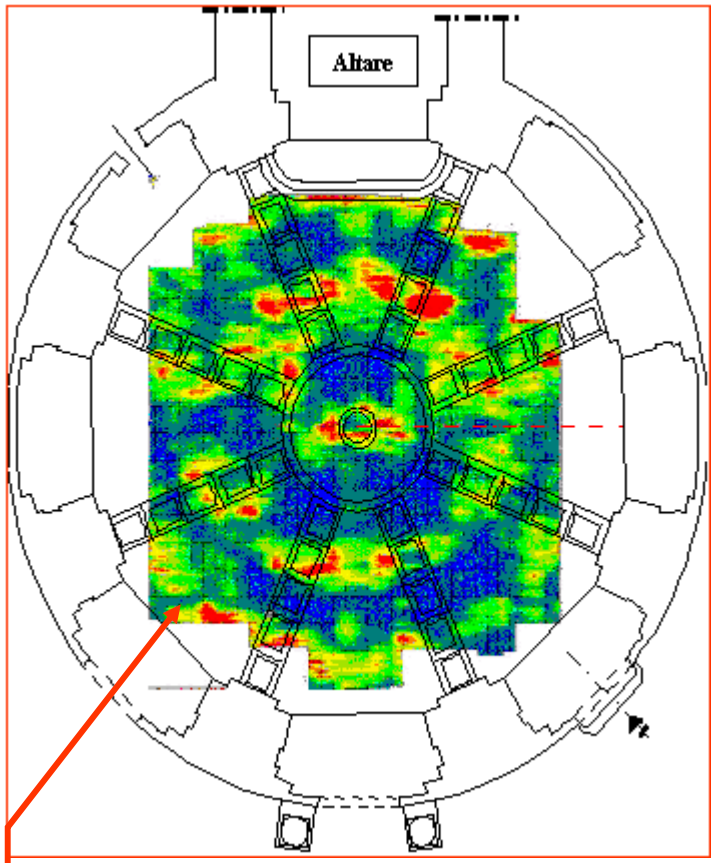
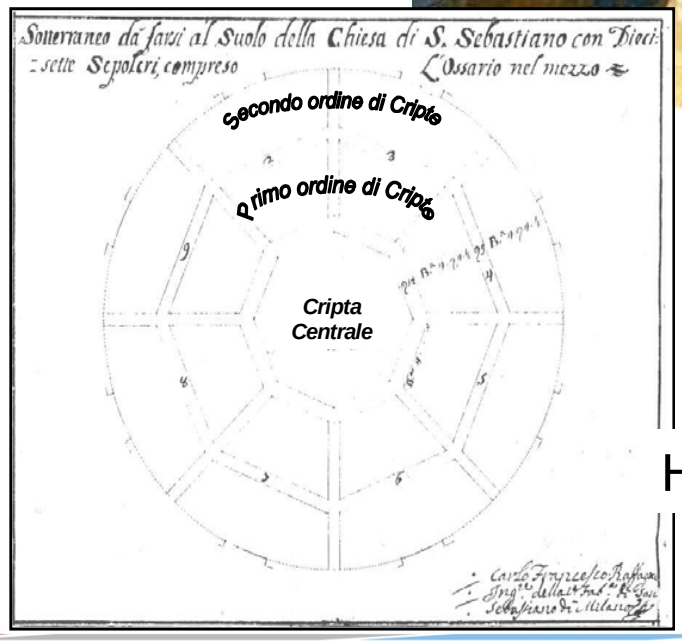
GPR archeological research in Israel: Hark Karkom



GPR archeological research in Italy: San Sebastiano church in Milan



TOMOGRAPHIC MAP



HYSTORICAL MAP

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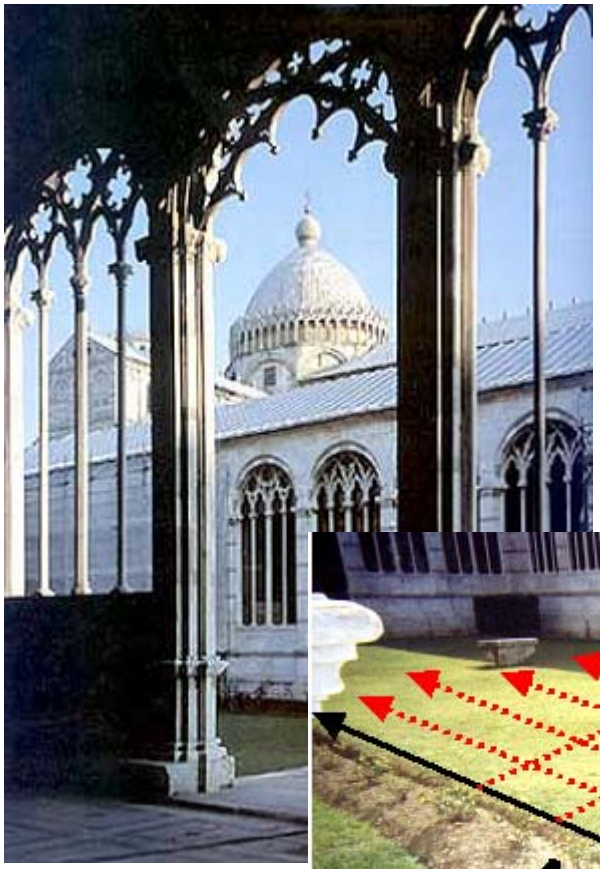
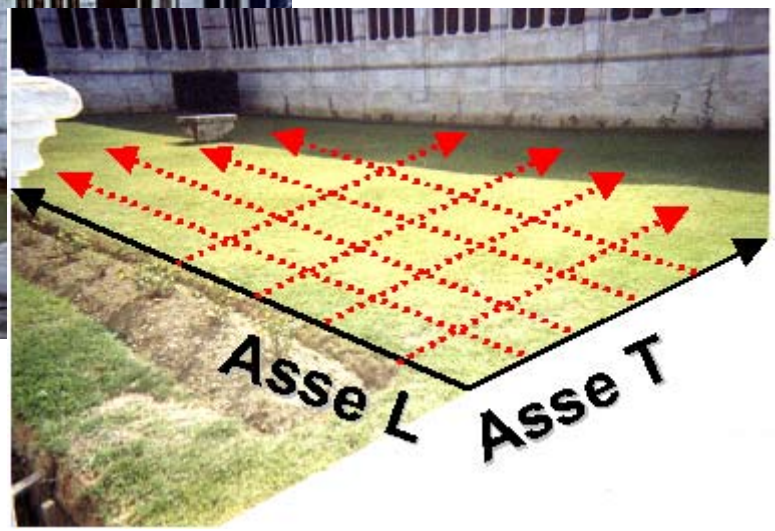
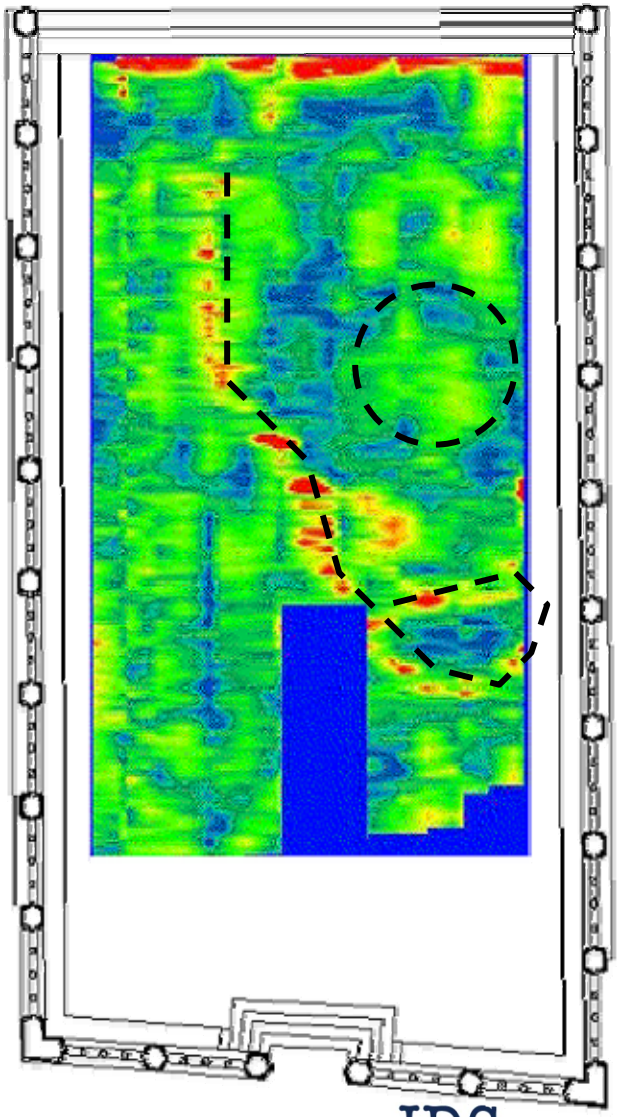
GPR archeological research in Italy (1/2): square of Miracles - Pisa



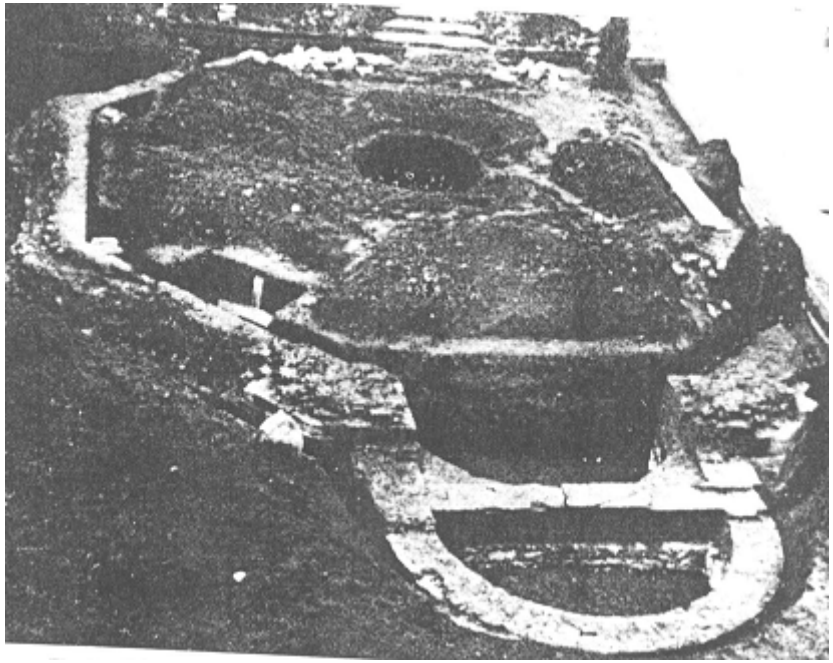


GPR archeological research in Italy (2/2): square of Miracles - Pisa

Tomographic map



An image of the hold excavation (1936).



GPR research in Italy (1/2): Saint Pieter's square - Rome

Aladdin

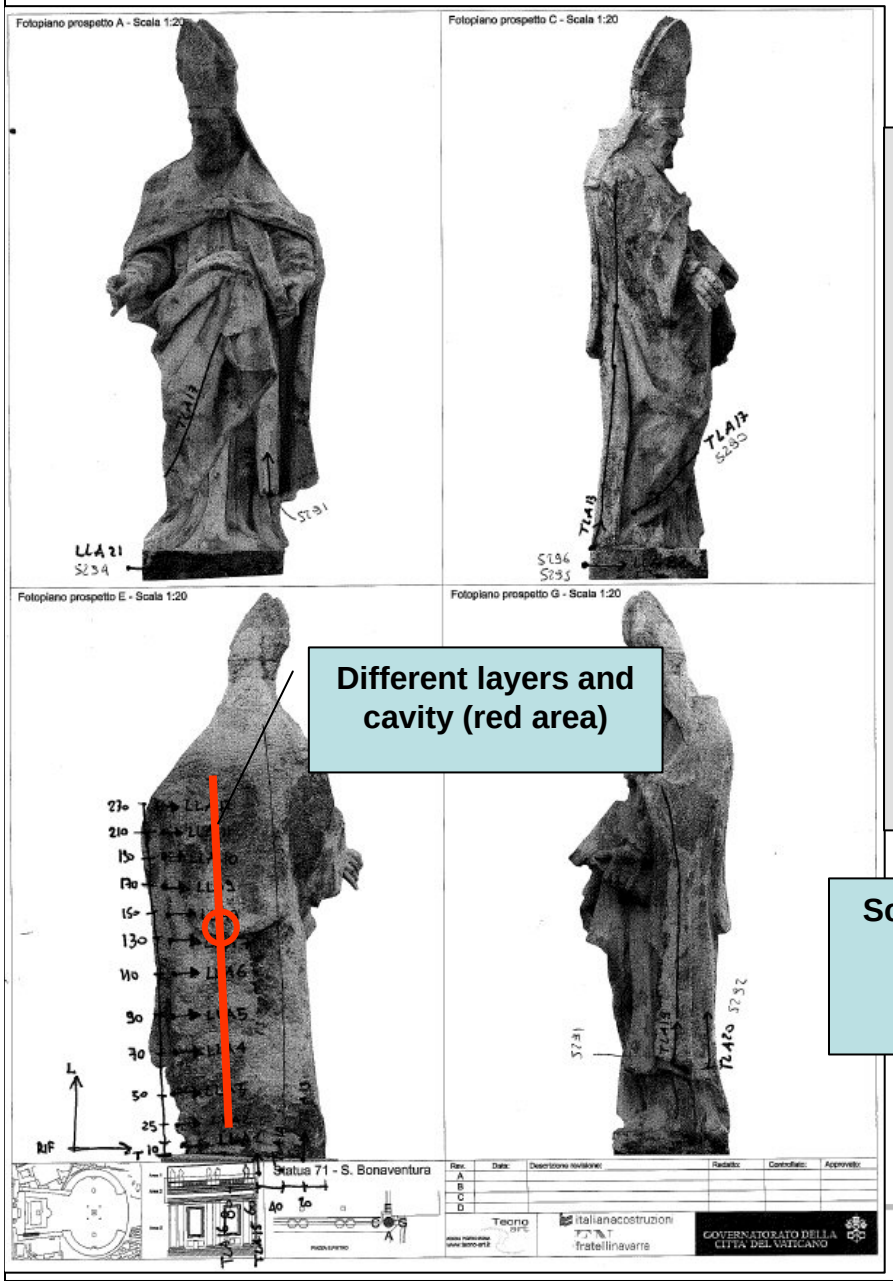
San Bonaventura statue

- 14 longitudinal scans and 8 transversal scans
- 6 longitudinal scans on the base each 10 cm

Transversal scans

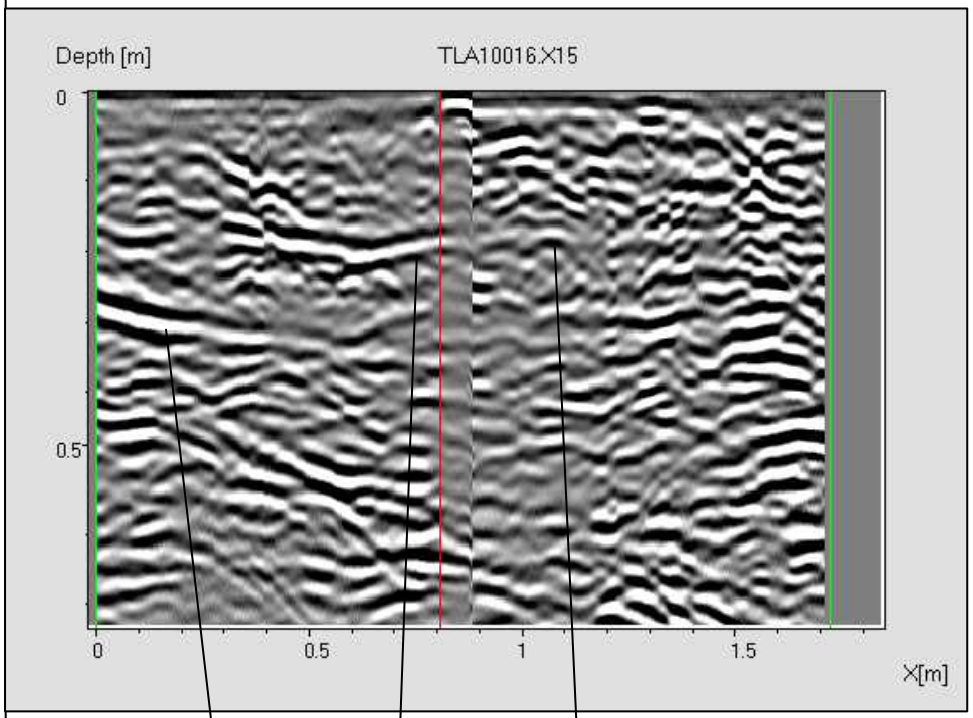
Longitudinal scans

GPR research in Italy (2/2): Saint Pieter's square - Rome



Different layers and cavity (red area)

San Bonaventura statue



Scan 16 – natural layers (depth: 25-30cm)

Scan 16 - Cavity (depth: 24cm)

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