

MCGPR and its applications

For the last two decades Ground Penetrating Radar (GPR) has been increasingly used as part of an arsenal of tools to locate and map buried utilities. In North America, still the conventional approach consists in the use of single GPR antennas together with the lifting of inspection covers and deployment of radio frequency locators to mark the position of utilities on the floor in near real-time. The other currently accepted methodology involves the collection of a closely spaced orthogonal grid of GPR measurements over the search area and then in post-acquisition, each individual GPR measurement is analyzed for the presence of pipe like features which are then compared to each other to highlight trends throughout a data set. These trends, or consistently detected features, mostly represent buried utilities; however, their identification is solely reliant on picking like targets from the individual GPR profiles. When other commonly found buried objects such as tree roots, constructions features, cavities etc. are taken into consideration, the game of 'joining the dots' to determine a utilities route through the search area, becomes subjective. 3D imaging of high density Multi-Channel GPR data provides a solution to the above problem, as it literally produces a plan image of what is buried beneath the survey area. Recent developments have created compacted hardware, fast software and a streamlined working methodology to accurately and quickly map a variety of shallow objects (including buried utilities, old railroad tracks, tree roots, trenches or archaeological remains) over highways, footpaths and unpaved areas. These solutions deliver a fast and effective imaging tool of the shallow subsurface that can cover thousands of square meters in a single day.