

SCANGEA ENGINEERING
GEORADAR SYSTEMS
IDS OPERA DUO



Opera Duo is the most robust and intuitive GPR for locating and mapping utilities. 100% manufactured by utility market leader IDS GeoRadar, the Opera Duo is a compact, easy to transport and deploy ground penetrating radar leveraging robustness, data quality and intuitiveness for unparalleled utility location and mapping. Opera Duo is available in two versions:

- Two-wheels: a compact and lightweight solution;
- Four-wheels: an adaptable solution for use on rough terrain.

Opera Duo is now available with the **new camera kit** whose aim is to reduce acquisition times, combine surface data with underground detection and allow a post-scanning analysis like you were on site!

During acquisition phase the grid on the camera guide you in the scanning to do **parallel scans!**

Furthermore the software generates **automatic and referenced documentation** to support the survey carried out.

Main features include:

- **Superior Maneuverability** – A large, comfortable handle to make pushing and pulling easier, large wheels for better control and a balanced weight distribution to offer minimum resistance.

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- **Robustness** – Engineered and built to withstand the harshest field conditions, the Opera Duo is suitable for heavy use in every type of terrain.
- **Data Quality** – Large bandwidth offering the highest resolution; the largest dynamic range for the best penetration depth; and dual-head sensor integrating ultra-wide band antennas (250MHz and 700MHz).
- **Intuitiveness** – Just click the start button to receive the best performance in every soil condition. No need to perform calibration or adjust any other manual settings.
- **Results Delivered On Site** – The system tracks the position of the radar and marks targets automatically. All of the acquired data can be exported to CAD and GIS, and reports can be produced directly on site.
- **Innovative in data processing** – Opera Duo leverages IQMaps, the post-processing software for faster and smarter GPR data analysis.
- **Remote Diagnostics Functionality** – Maximize troubleshooting efficiency by transparently sharing diagnostics data via Cloud: from the on-field device to the Customer Support's desktop.

UNEXT ADVANCED SOFTWARE PLATFORM

The uNext Advanced platform leverages all the functionality comprised in the uNext Basic software. Moreover, it offers:

- **Tomography** – to create an even more accurate, faster 3D reconstruction of the underground utility network and merge this information with any existing cartographies. On site processing of radar tomographies to ease the interpretation of results.
- **Assisted Pipe Tracker** – to detect a pipe or cable once and automatically have the software map the exact position of the utility over the surveyed area. Users can benefit from more accurate, reliable data and perform data acquisitions more productively, and in a shorter amount of time.
- **Data re-processing** – In addition to on-site data acquisition and processing features, users can re-process rough radar data to ultimately optimise data processing as well as customise data visualisation with filtering capabilities.
- **Cloud Software Integration** - Export, store, share and access data on major Cloud services providers for a streamlined workflow in utility detection.

The uNext platform is continually developed by our R&D department. More features will be available to everyone as part of new software releases.

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OPERA DUO	
TECHNICAL SPECIFICATIONS	
Overall Weight (PC and battery not included):	24 kg two wheels (53 lbs) 27 kg four wheels (59 lbs)
Recommended Laptop:	Panasonic FZ-G1
Max. Acquisition Speed:	more than 10 kph (6 mph)
Power Consumption:	13.3 W
Positioning:	2 integrated encoders and/or GPS - Total station
Scan Rate per Channel (@512 Samples/Scan):	381 scans/sec
Scan Interval:	42 scans/m
Power Supply:	SLA Battery 12VDC 12 AH
ANTENNA SPECIFICATIONS	
Environmental:	IP65
Antenna Footprint:	40 x 50 cm
Number of Hardware Channels:	2
Dual Head Antenna:	250 MHz and 700 MHz
Antenna Orientation:	Perpendicular, broadside
Equivalent Repetition Frequency:	800 kHz
SYSTEM SPECIFICATIONS	
Opera Duo Acquisition Software	Automatic calibration for an easy and quick start-up Metric and imperial units Visualization and storage of data from both antennas Capability to mark targets and pipes in the software and in the ground Available in more than 20 languages Connection for an NMEA positioning device Export to CAD and GIS Export job reports Advanced grid acquisition procedure



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FIG. 01
SPECIFICHE TECNICHE GEORADAR OPERA DUO

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Sistema Georadar OPERA DUO
Costruttore: IDS-EXAGON
Anno 2022



Max. Acquisition Speed	Greater than 10 kph (6 mph)
Power Consumption	13.3 W
Antenna Central Frequencies	250 and 700 MHz
Positioning	2 integrated encoders and/or GPS – Total Station
Scan Rate Per Channel	381 Scans/Sec @512 Samples/Scan
Scan Interval	42 Scans/m
Sampling Frequency	400 KHz
Antenna Orientation	Perpendicular, broadside
Weight	24 Kg – 2 Wheel, 27 Kg – 4 Wheel
Surface Footprint	40 cm x 50 cm
Power Supply	SLA Battery 12VDC 12 AH
Environment	IP65

FIG. 02
I DUE GEORADAR IDS OPERA DUO
ACQUISITI DA SCANGEA ENGINEERING NEL 2022

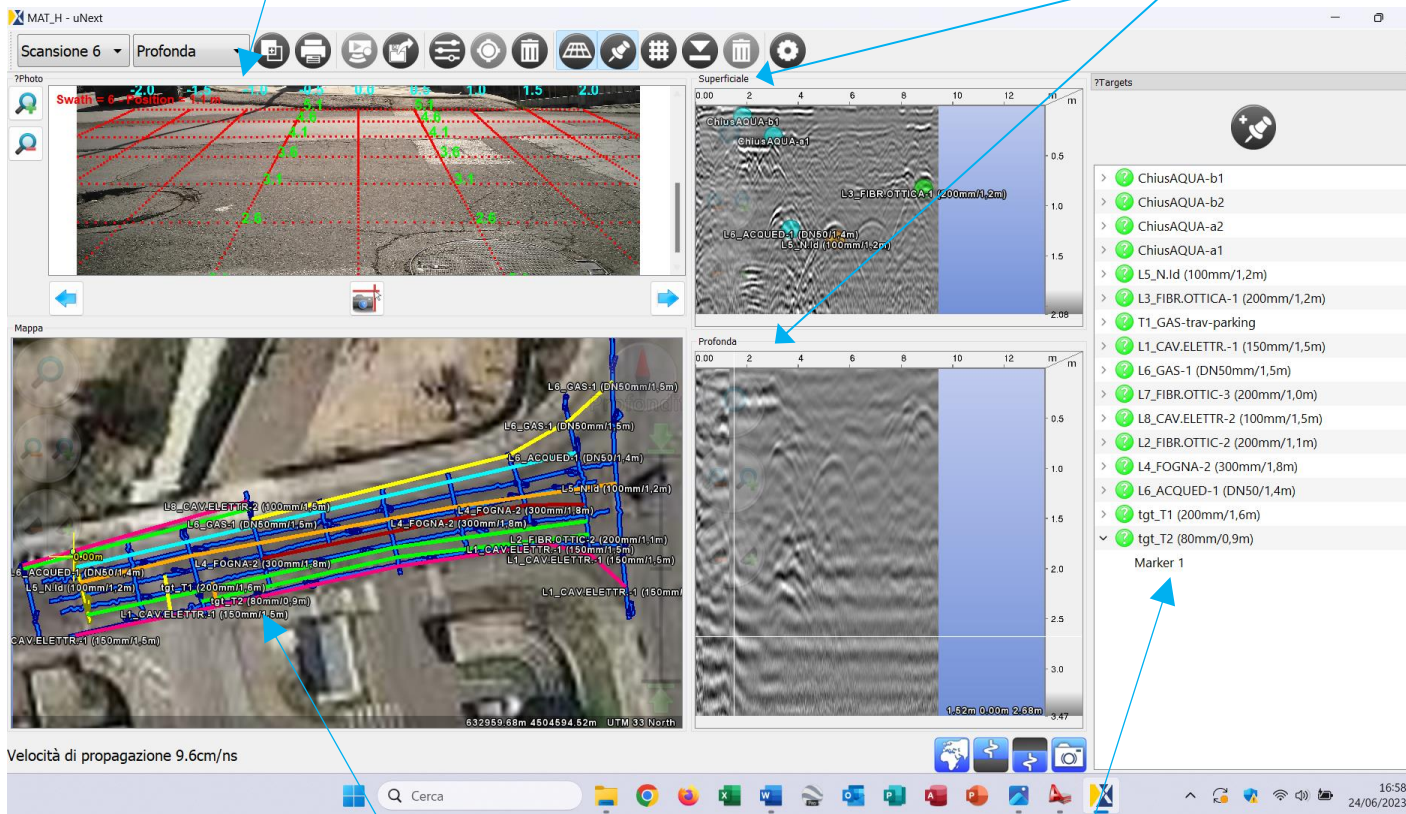
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Foto del percorso del georadar con reticolo distanziometrico per l'esatto posizionamento di tombini e altri riferimenti notevoli

Radargrammi della scansione mostrata in giallo nella visione planimetrica. Le altre scansioni sono mostrate in blu. Il radargramma è doppio: quello in alto è prodotto dall'antenna a 700 Hz, mentre quello in basso dall'antenna a 250 Hz.



SCREENSHOT DEL SOFTWARE U-NEXT

Planimetria di Google del sito georadar, con sovrapposte in blu le tracce delle scansioni che il GPS georeferenzia automaticamente. La scansione a cui appartengono i radargrammi visibili a destra è invece in giallo. Le linee colorate sono i servizi individuati, contraddistinti da un codice colori descritto in ciascun Site Report.

Elenco dei servizi rilevati. T1, T2, etc. sono servizi trasversali mentre L1, L2 etc sono servizi longitudinali. Sono anche riportati i chiusini ed eventuali altri oggetti notevoli riscontrati sulla superficie.

FIG. 03
ESEMPIO DI ELABORATI DI RESTITUZIONE DEL RILIEVO GEORADAR CON IDS OPERA DUO.
SCHERMATA TIPICA DEL SOFTWARE U-NEXT

ESTRATTO DA RELAZIONE TECNICA
 Cliente: TERNA – General Contractor: SCANGEA CONTRACTING –
 Georadar and Design Sub-Contractor: SCANGEA ENGINEERING
 Progetto: RILIEVO GEORADAR PER MAPPATURA DEI SOTTOSERVIZI E PROGETTO DI MASSIMA DELLA LINEA INTERRATA TERNA DA 150 KV “C.P. MATERA NORD-C.P. MATERA SUD”
 MATERA, 2022-2023

IMMAGINI DI LAVORI SVOLTI RECENTEMENTE

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IDS OPERA DUO 4 RUOTE

 Terna Rete Italia TERNA GROUP	Progetto di Massima Relazione indagini georadar.	 scangea.eu
Codifica Elaborato Tema: RV23737C1C2763668	Rev. 00	Codifica Elaborato <Fornitore>:

SITO ZF
VIA ANNIBALE MARIA DI FRANCIA - 26-27 Marzo 2023
FOTOGRAFIE DEL RILIEVO



FIG. 04
ESTRATTO DA RELAZIONE TECNICA
Cliente: TERNA – General Contractor: SCANGEA CONTRACTING –
Georadar and Design Sub-Contractor: SCANGEA ENGINEERING
Progetto: RILIEVO GEORADAR PER MAPPATURA DEI SOTTOSERVIZI E PROGETTO DI MASSIMA DELLA LINEA INTERRATA TERNA DA 150 kV “C.P. MATERA NORD-C.P. MATERA SUD”
MATERA, 2022-2023

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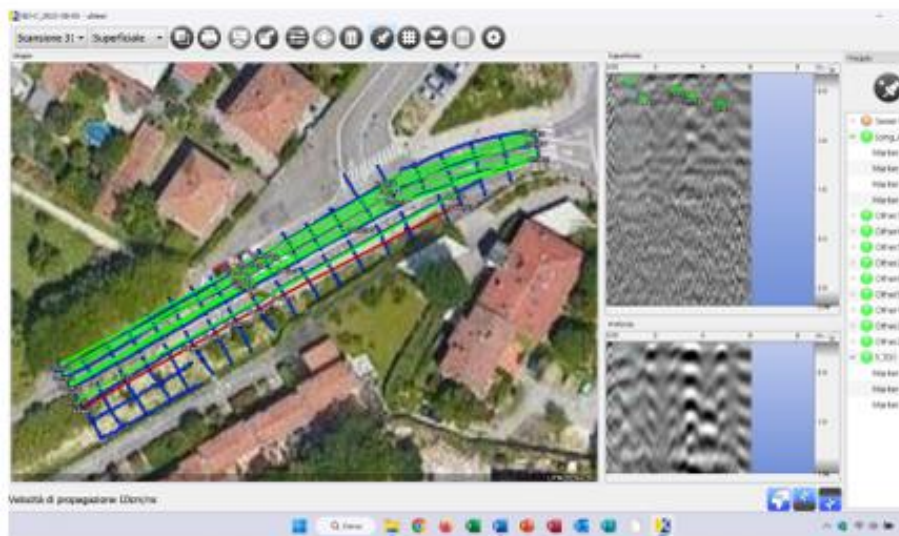
IDS OPERA DUO 2 RUOTE

	Progetto Esecutivo Relazione indagini georadar	
Codifica Elaborato Terna: RV23737C1C2763668	Rev.00	Codifica Elaborato <Fornitore>:

SITO GEORADAR A1

Via di Bertalio, scansione 31, Agosto 2022

Nota: Le linee blu sono le scansioni effettuate dal georadar, le linee verdi i servizi individuati



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FIG. 05

ESTRATTO DA RELAZIONE TECNICA

Cliente: TERNA – General Contractor: SCANGEA CONTRACTING

Georadar and Design Sub-Contractor: SCANGEA ENGINEERING

Progetto: RILIEVO GEORADAR PER MAPPATURA DEI SOTTOSERVIZI E PROGETTO ESECUTIVO

DELLA LINEA INTERRATA DI TERNA DA 132 kV IN DOPPIA TERNA DENOMINATA

“MARTIGNONE – BATTIFERRO” n.737/758

BOLOGNA, 2022-2023