



Boddingtons Power Controls

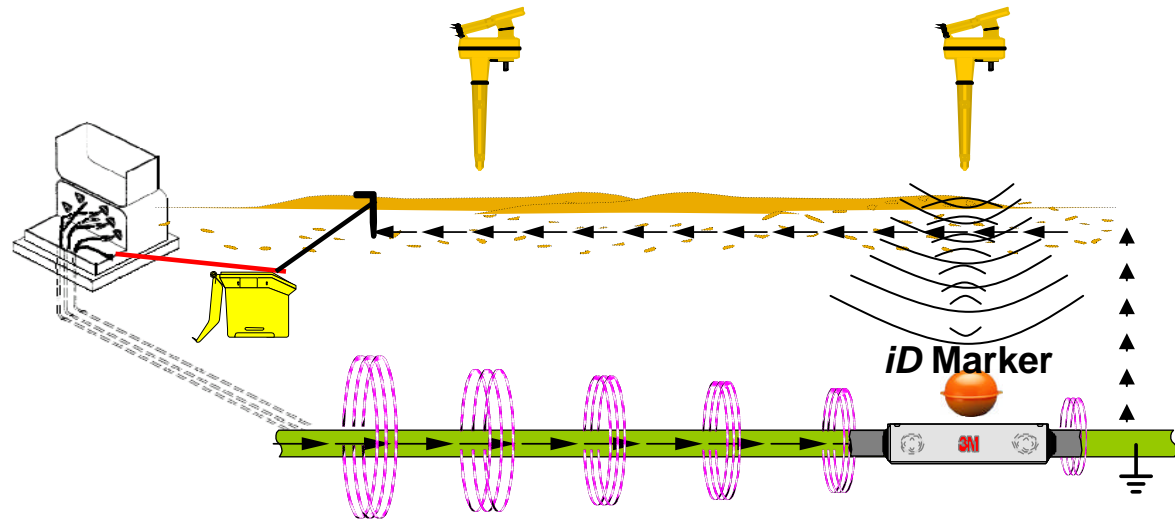


Buried Service Detection



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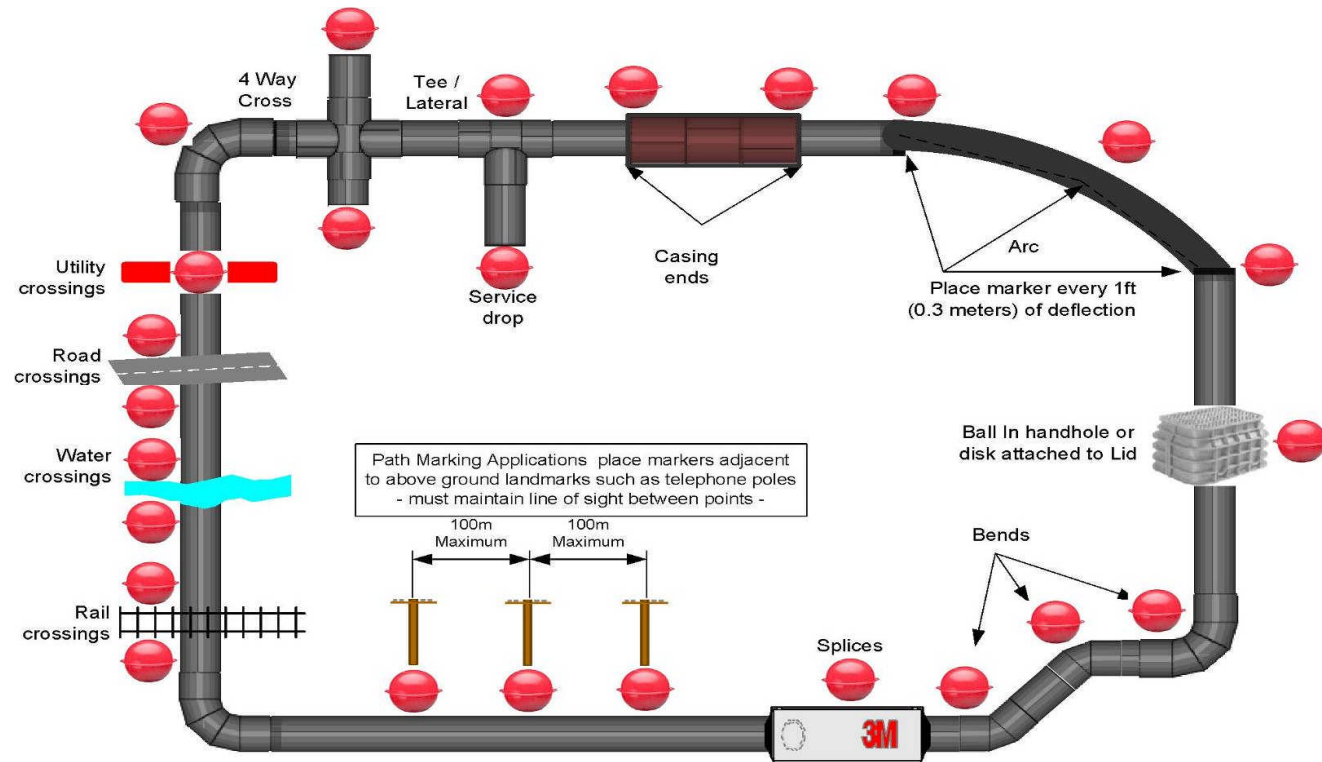
Marking allows for locating, fault finding, and accurate RFID marking of pipes/cables to ensure safety, quickly restore outages, minimize operating costs and efficiently manage buried assets.

Why Did People Begin Using Electronic Markers ?

Example: Splice or
Conduit-Joint
Statistically one of the
most common points of
failure, cannot be
pinpointed with an EM
locator signal



Power utility marking



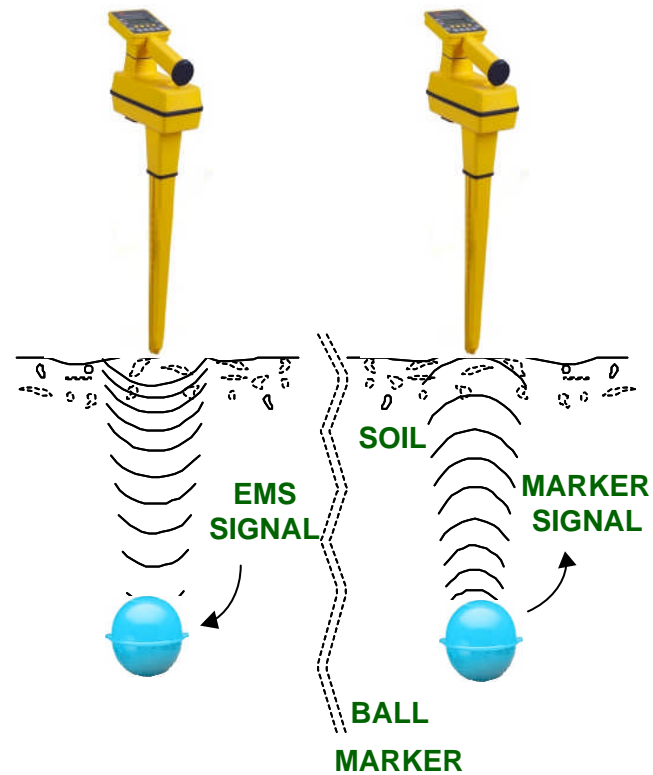
Crossings
 - Water
 - Major roads
 - Rail

Service Stubs & Drops
 All Types of Splices
 Repair Splices
 Transition Splices

Breakouts, Laterals & Tees
 Empty Conduit Banks & Openings
 Fiber Optic Lines
 Handholes and Manholes

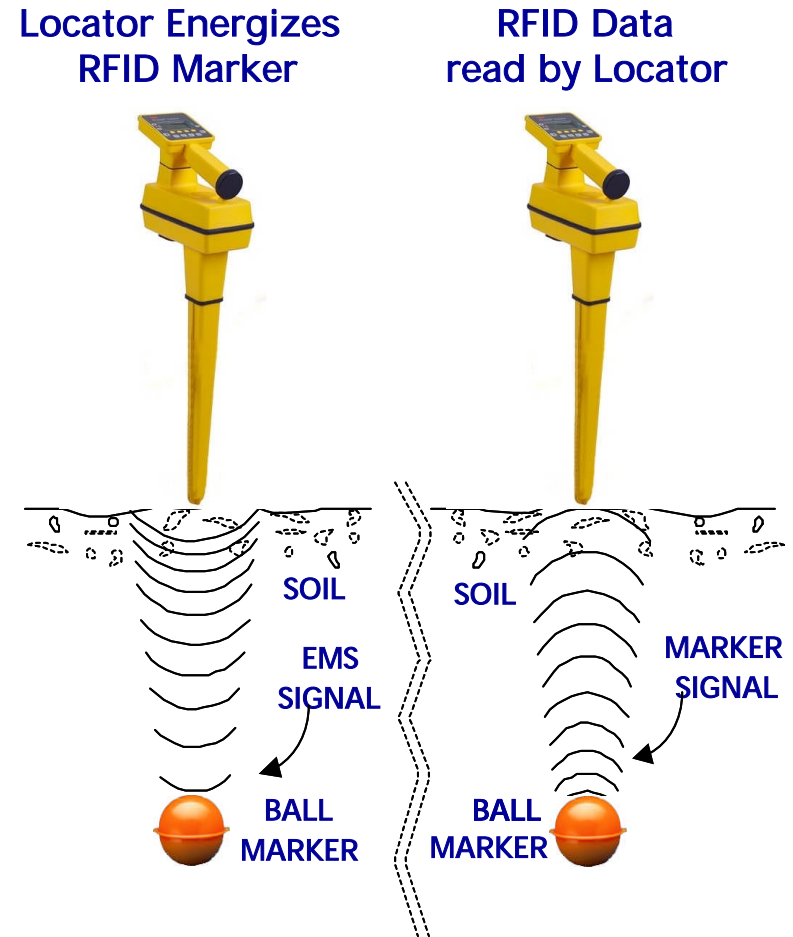
Electronic Marking – Facts

- ❑ 25 Million markers WW
- ❑ 30+ years of experience
- ❑ Independent from the Utility it marks
- ❑ RFID Marking
- ❑ No Battery needed
- ❑ Positive Identification
- ❑ Accurate Location
- ❑ 30+ Year Lifetime
- ❑ Enhanced Asset Mgt.



RFID Marking – Positive Identification

- ❑ User Input Data
- ❑ Facility information
- ❑ Owner information
- ❑ Location information – Lat & Long from GPS device can be written to the marker and the record stored in the GPS device.
- ❑ Mapping software / GPS interface allows for complete traceability and enterprise knowledge database
- ❑ Unique Serial No. pre-programmed



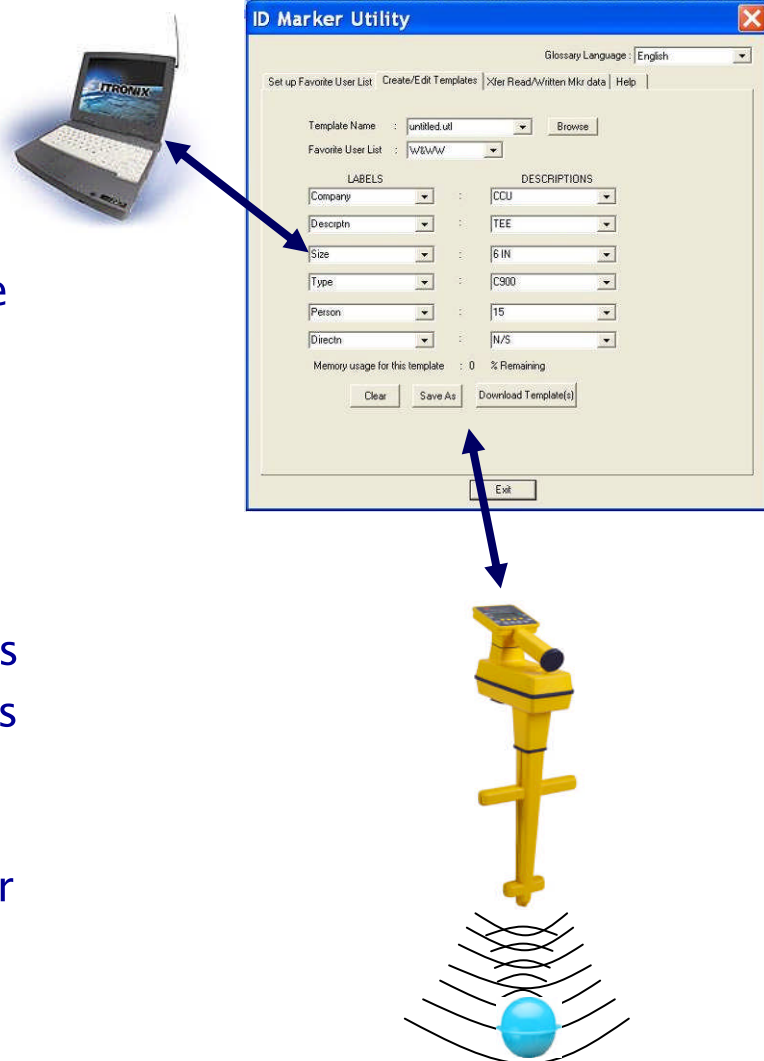
RFID Marker Capabilities

ID-Marker

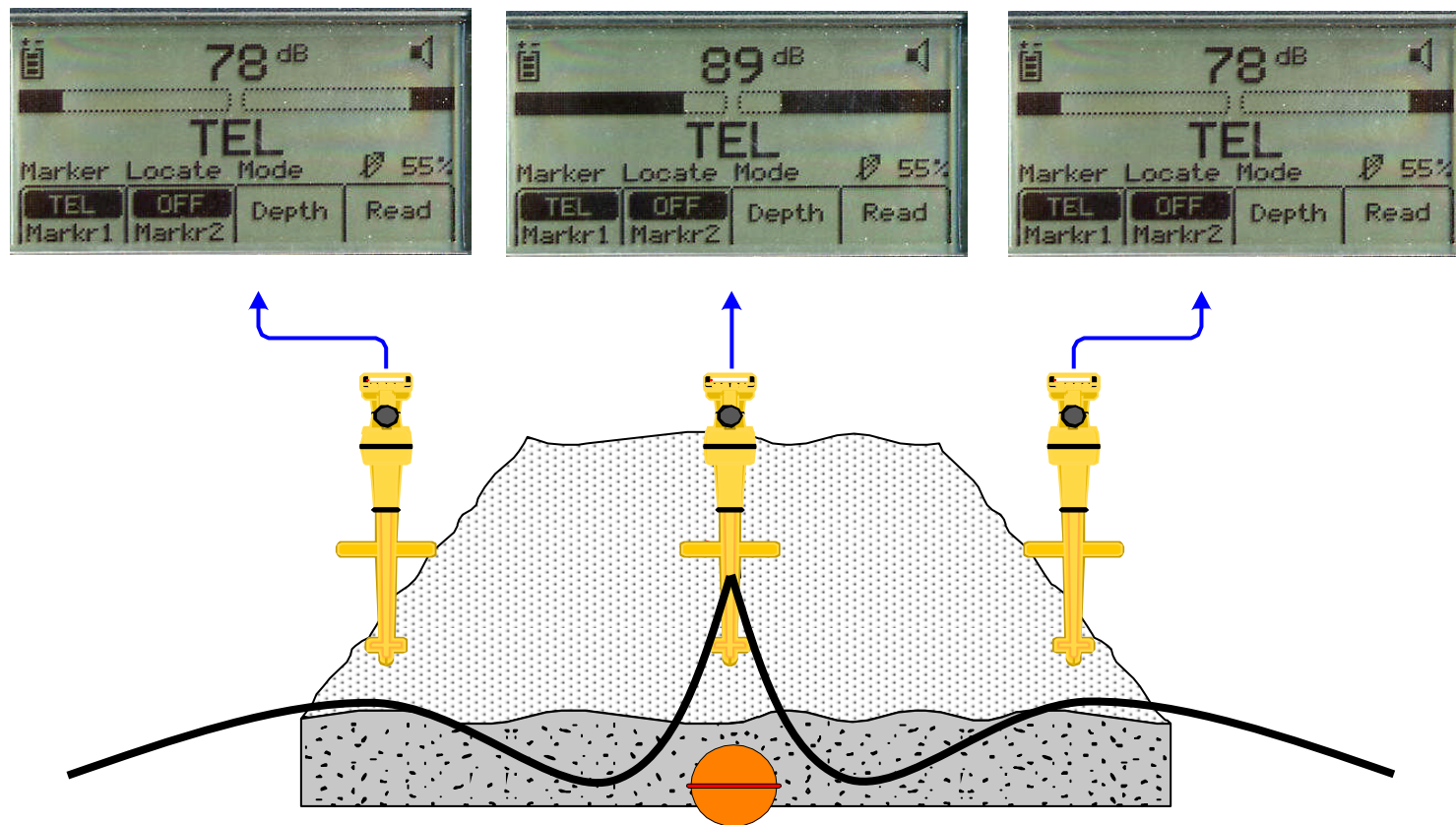
- ❑ 10 digit unique ID number
- ❑ User defined data – 6 lines
- ❑ 8 character label per line
- ❑ 14 character description per line
- ❑ Data locking option
- ❑ Detectable with existing marker locators

ID-Locator

- ❑ Memory capacity:
 - ❑ 100 each Read/Write records
 - ❑ 32 user defined ID templates
- ❑ PC software exports read/write history
- ❑ Path traces and scans for marker simultaneously



Signal response



1420E-ID Marker Locator

- Standalone Marker Locator
- Locate all Passive Markers
- Reads/Writes Capabilities
- Light weight
- Marker Depth Estimation
- Field Upgradeable Software
- Help menu
- GPS Interface

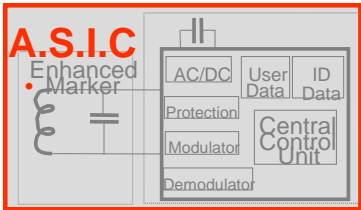
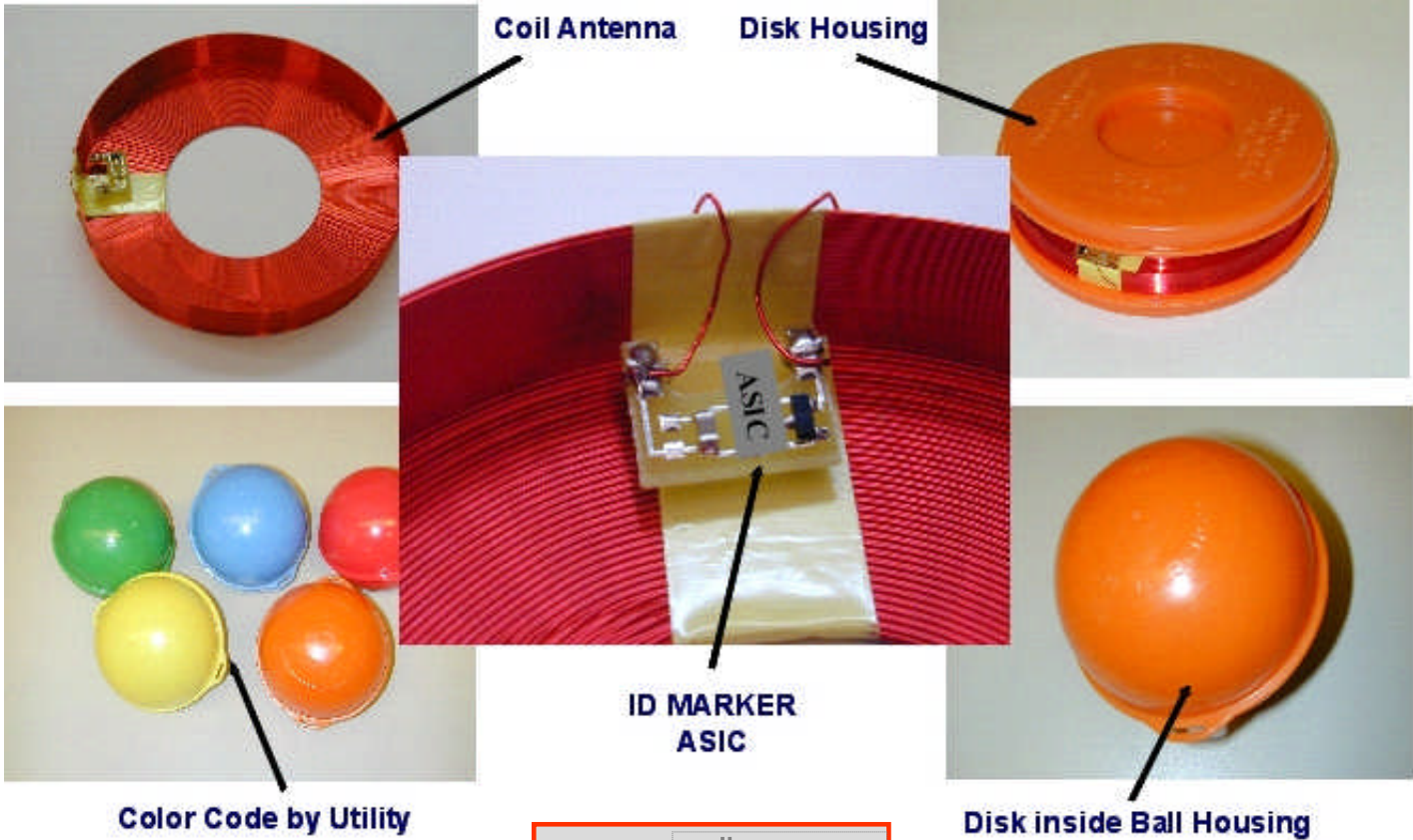


2250M/2273M-ID Locator

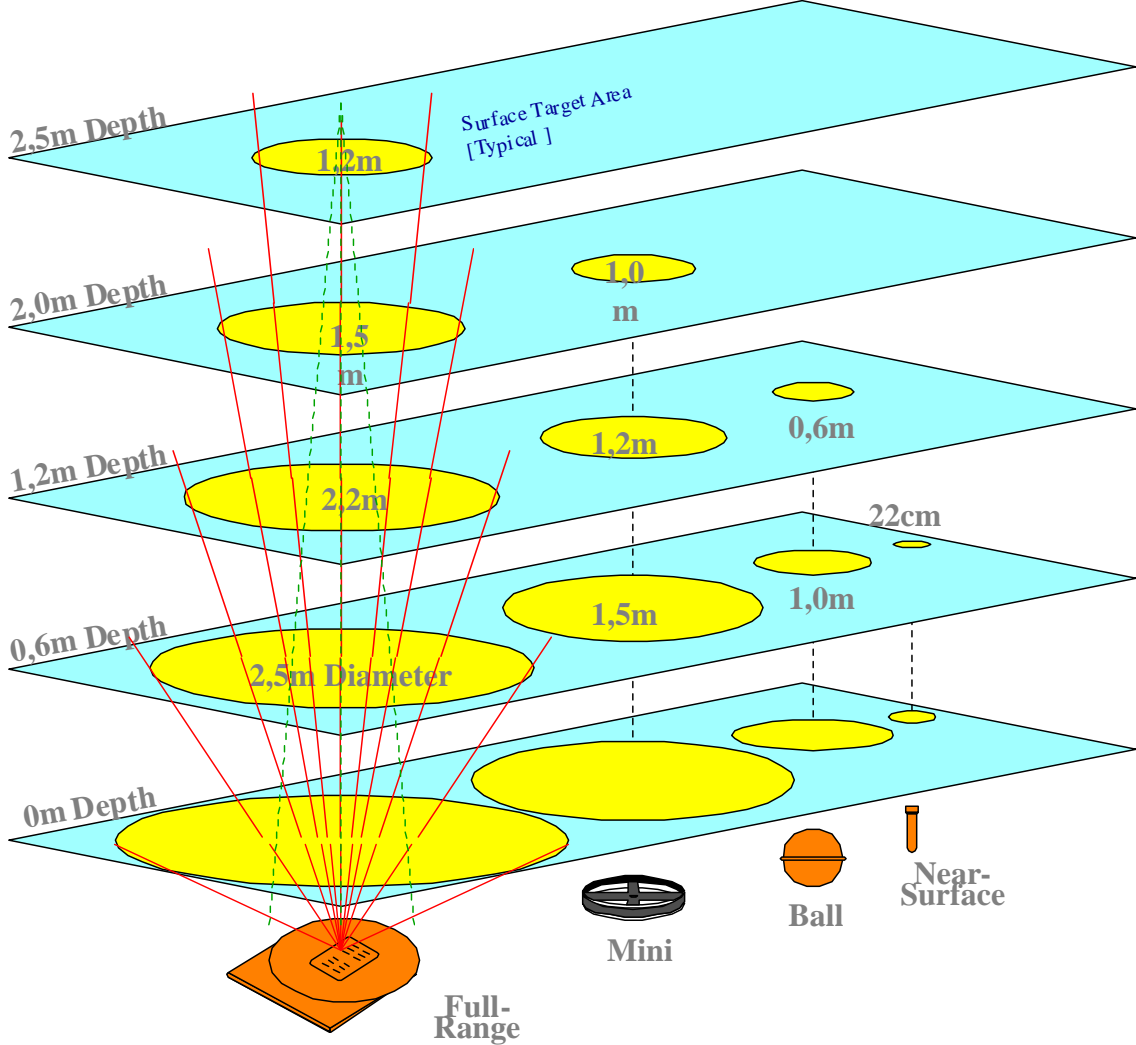
- Cable, Fault and Marker Locator
- Large High Resolution Display
- 6 Antenna Design
- Highest Sensitivity
- Great Depth Accuracy
- Field Upgradeable Software
- Help menu
- GPS Interface



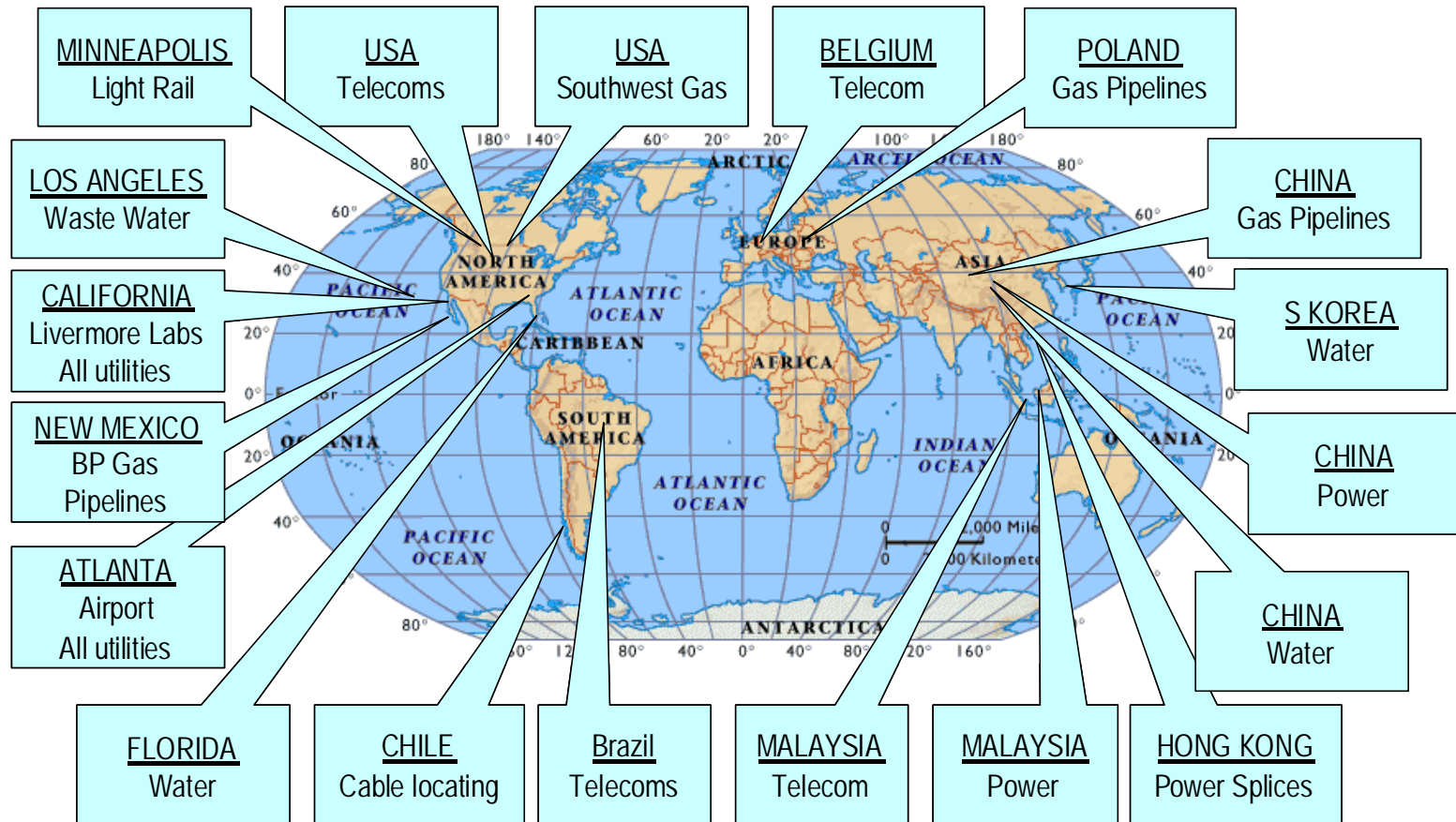
Ball Marker Technology



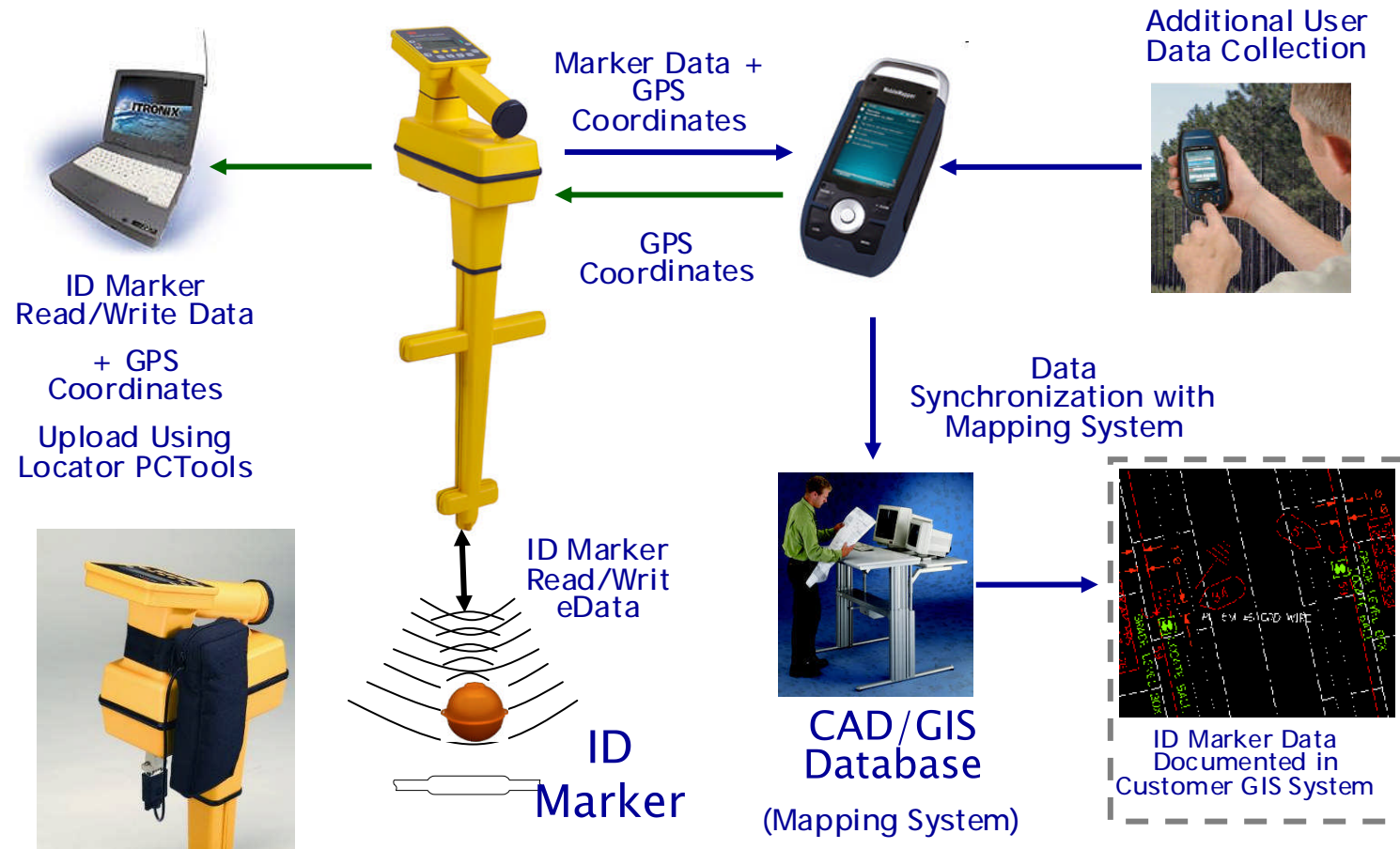
Marker Read Ranges



25 Million 3M Markers Worldwide Numerous Global Case Studies



GPS/GIS Implementation Overview



Compatible units

Type 1



Type 2



Type 1



PC Locator Tools software

The screenshot shows the 'BracknellLiner' application window. It features a data table with the following content:

Serial ID	Freq	Type	Date & Time	Comments	Latitude	Longitude	Company
000-000-7747	TEL	Ball	03/15/04 09:25:45...		10°29.10 N	012°06.12 E	Company:
000-000-9938	GP	Ball	03/15/04 09:27:22...		10°29.10 N	012°06.12 E	Company:
000-001-1174	TEL	Ball	03/28/00 18:19:25...				Company: Splice

An 'Edit Comments' dialog box is overlaid on the table, containing the text 'Enter the comments' and an empty text input field. Below the input field is an 'OK' button.

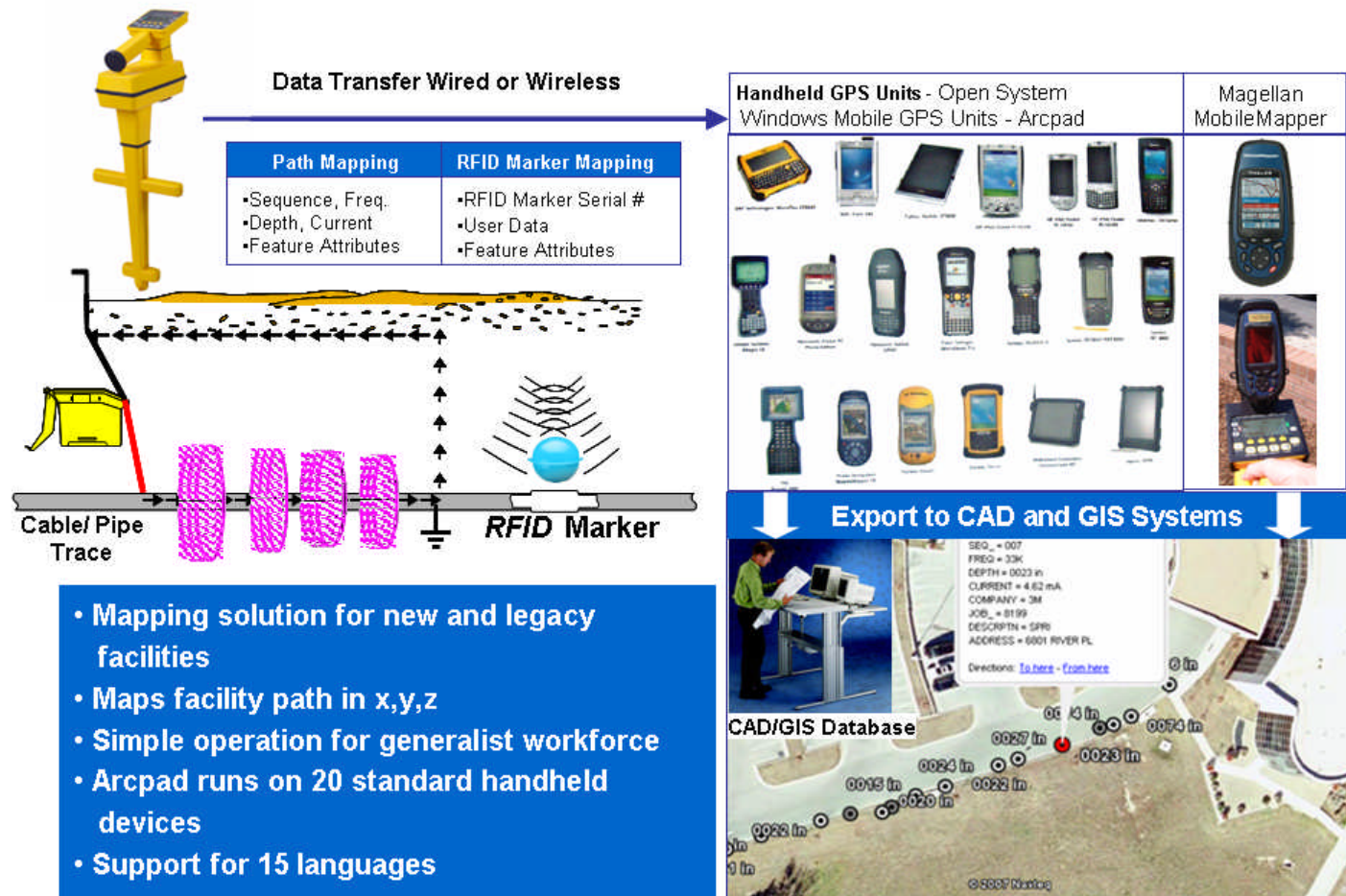
At the bottom of the application window, there are two groups of buttons:

- File Operations:** Copy Market Data to File, Export, Open, Save, Save As.
- Edit Operations:** Delete, Delete Dup, Soft, End.

Type 2

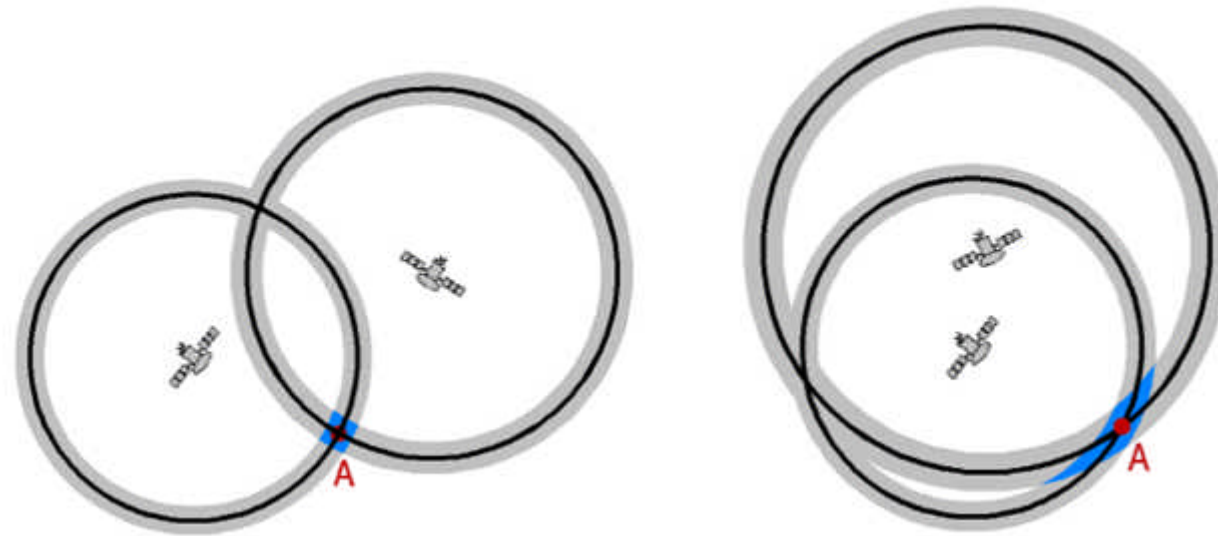


Arcpad and Path Marking Maps RFID Markers And Cable / Pipe Path (X,Y,Z)



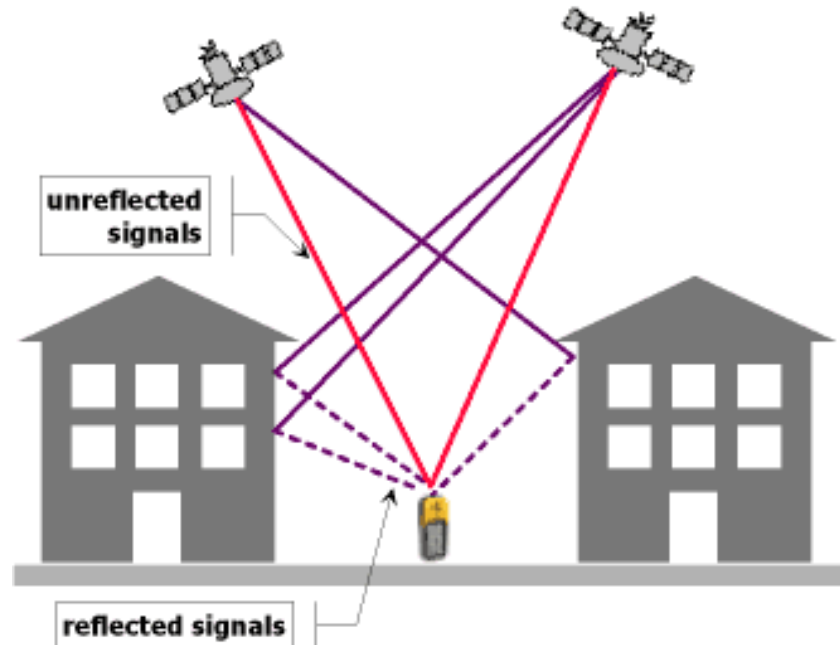
GPS Location challenges

- Many factors can affect GPS accuracy
 - Number AND location of satellites



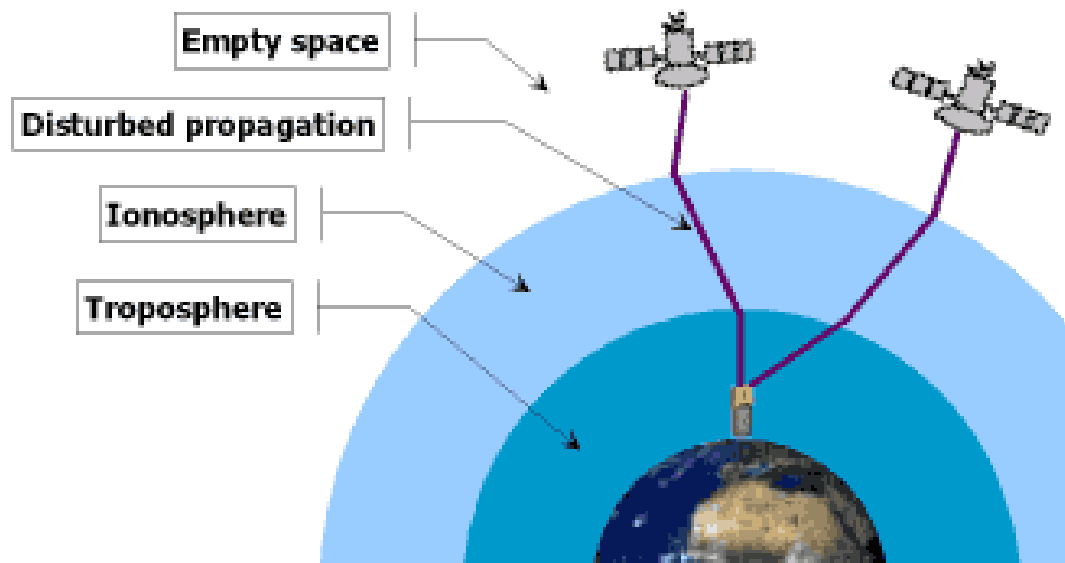
GPS Location challenges

- Many factors can affect GPS accuracy
 - Multi-path or “ghosting” (signal reflection)



GPS Location challenges

- Many factors can affect GPS accuracy
 - Varying atmospheric conditions



GPS is revolutionary for mapping but weak for locating buried facilities

- ❑ Many factors can affect GPS accuracy
 - Number AND location of satellites
 - Multi-path or “ghosting” (signal reflection)
 - Varying atmospheric conditions
- ❑ Typically operated by trained professionals
- ❑ Cold-starting and lock time on at least 4 satellites can be time consuming



Subdivision Development Pre Development





Subdivision Development Aerial Image with CAD Overlay





Subdivision Development CAD Overlay W/Electronic Markers

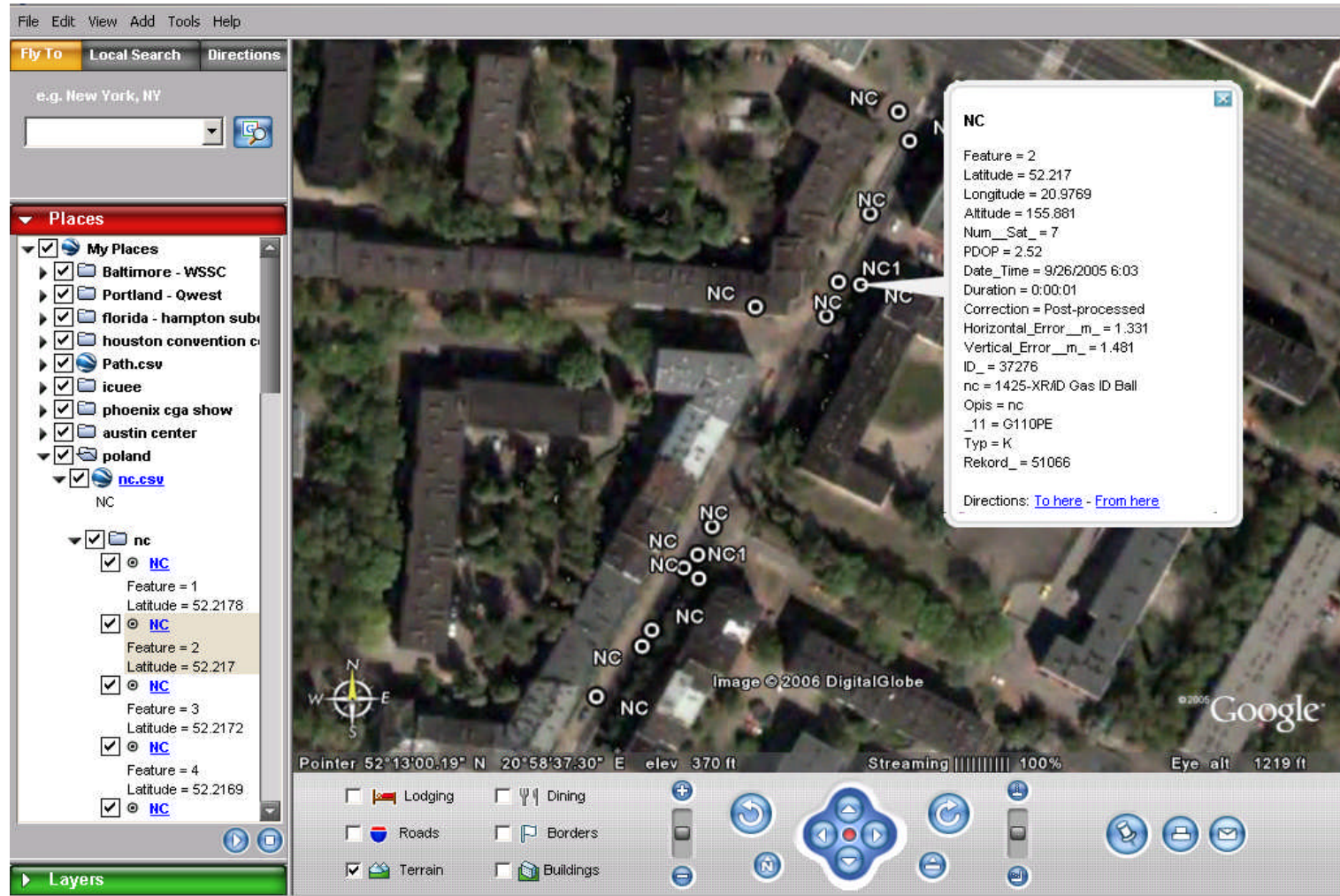


EMS-iD Marking System – Mobile Mapper Upload

The screenshot displays the MobileMapper Office interface. A map window shows a selected ID marker (ID# 0000016710) with a callout box labeled "Selected ID Marker". A callout box labeled "GPS Data" points to the marker's location. A callout box labeled "Marker GIS Data" points to the marker's ID number. An "Export GIS Data" dialog box is open, showing the "Look in:" folder as "Gismages" and the "To Folder:" as "Program Files\MobileMapper Office\Gismages\". The "Files of type:" dropdown is set to "Feature Library Files (*.mmf)", and a list of other GIS formats is visible below it. A callout box labeled "GIS Data can be Exported to Industry Standard GIS Formats" points to this list. The "Feature Properties" table on the right provides detailed information for the selected marker.

Property	Value
Feature	Marker
Geometry	Point
Observation	
Date/Time	08/02/2004 03:46:25 PM
Duration	00:00:01
Current Position	
Easting (m)	-763113.101
Northing (m)	-656976.246
Altitude (m)	342.196
Num. Sat.	5
PDOP	9.3
Correction	Uncorrected
Attributes	
ID#	0000016710
Label1	1425-XR/ID Gas ID Ball
Company	Gas
Descriptn	Stub
Type	Polyethylene
Size	2 IN
Address	60432
Label2	

GPS Export to Google Earth Pro



Thank you



Further information and contacts

Please call us on 01371 876 543 and ask for Chris or Robin Boddington if you would like to learn more about the buried service detection range and / or arrange for a demonstration.

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