

# AugVU

---

Augmented Reality for  
Underground Assets



# Features

- Allows GIS / Mapped data to be overlaid on live video.
- References its position and orientation from high precision GPS and Gravity based Inclinometer
- Professional grade equipment
- Direct import of GIS data

# Features

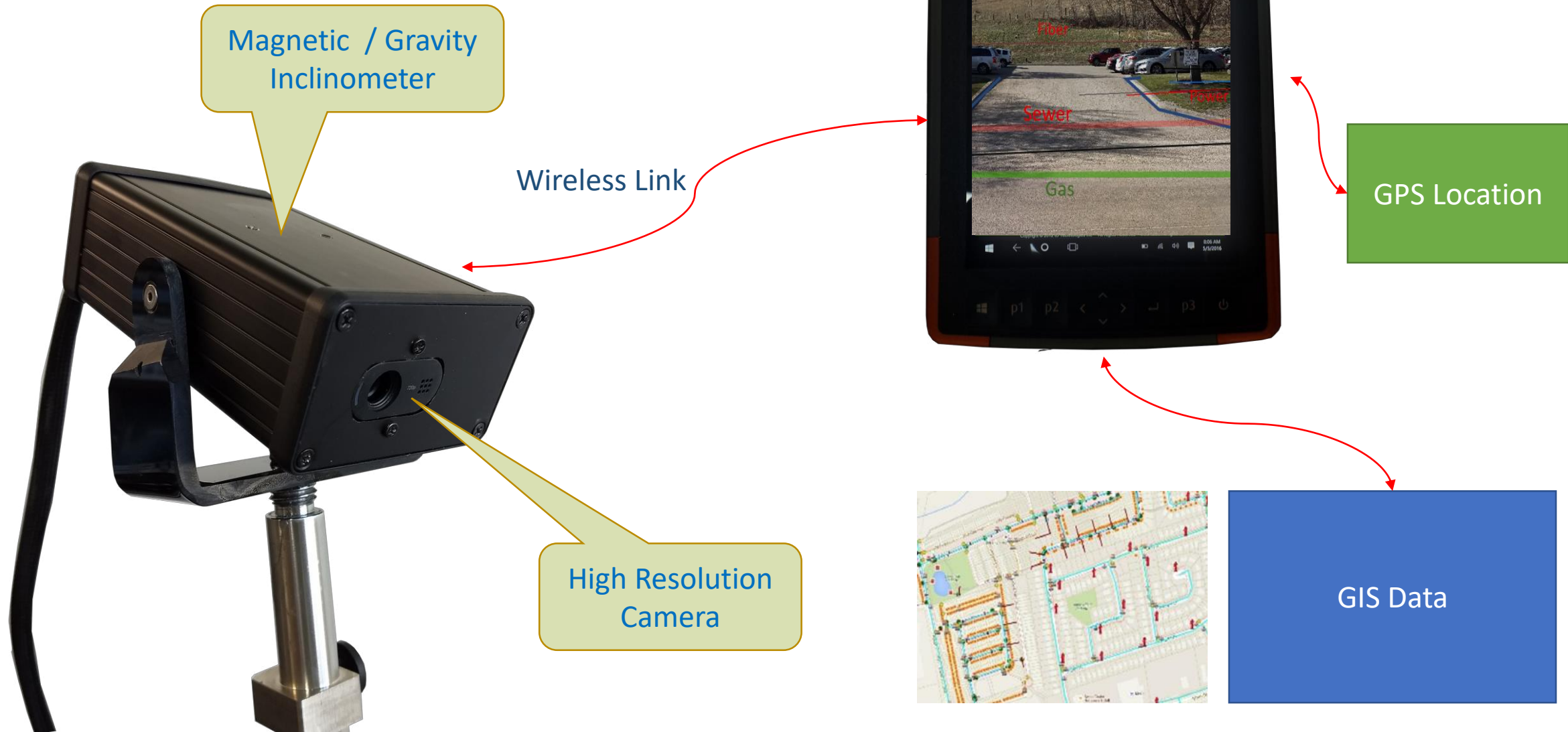
- Surveillance Mode

- GIS / Mapped data view on live video from built-in camera
- Use of internal GPS and attitude sensors
- Used for locating the presence of utilities in the area

- Precision Mode

- GIS / Mapped data view on live video from high resolution camera
- Reference position and orientation from RTK based GPS and gravity based inclinometer
- Professional grade equipment
- Used for locating the position of utilities

# System Architecture



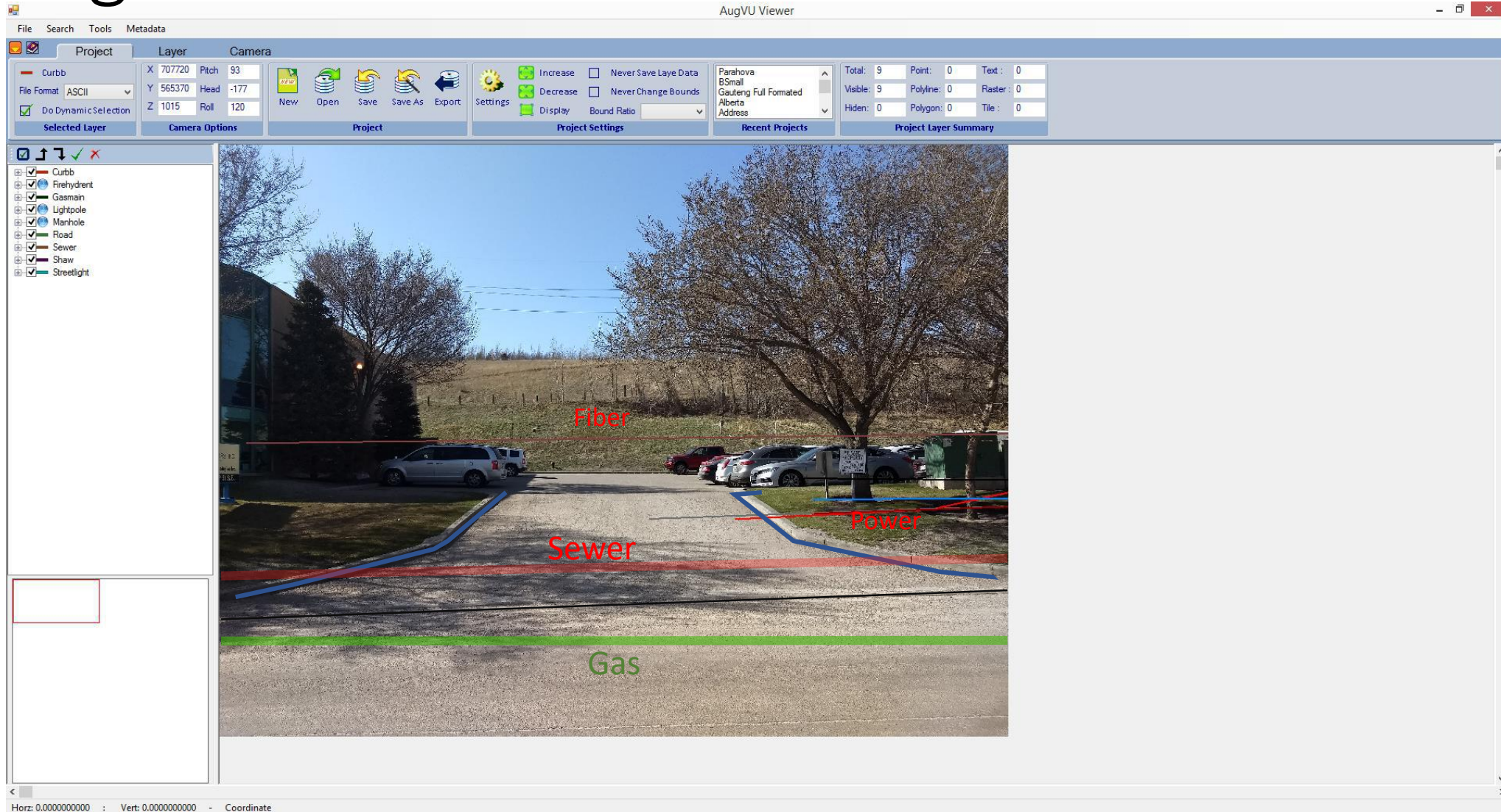


# Tablet Mode



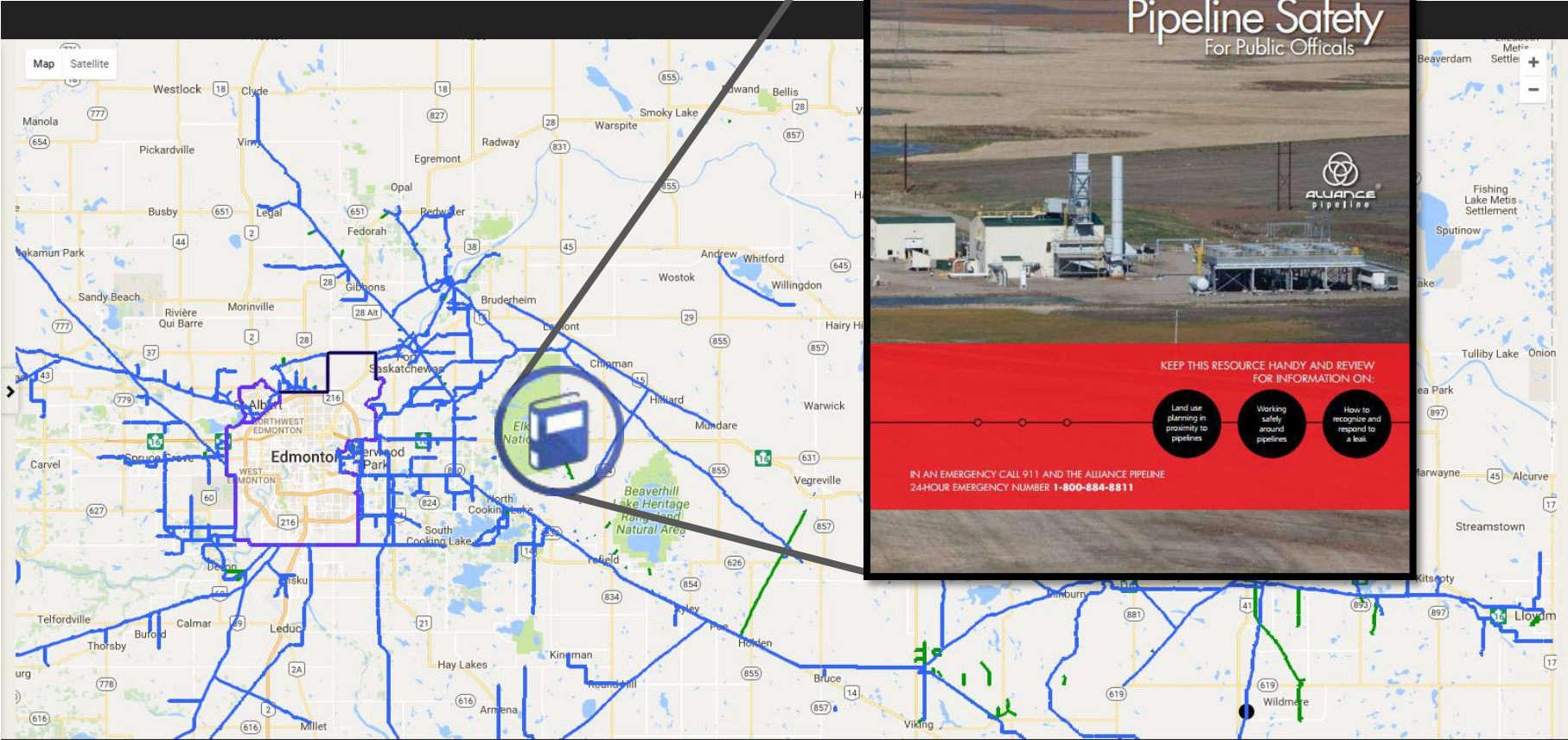


# Augmented View



# “FELIX”

## Geo-referenced Training and Emergency Response Procedures





# “FELIX”

## Geo-referenced Training and Emergency Response Procedures

FELIX version date: September 26, 2016

File Tickets Options Help

Filter Ticket List ESDN (Field GIS) Map

Selected Project : York Region Water Load

Layer : OilGritSeparator [Item : 671088640]

FIELD	VALUE
LATSTART	621754.55
LOCATION	Green Lane East btwn
LONGSTART	4881250.8
MAINTBY	York Region
MAINTSEC	NO
MHSHAPE	Circular
OTLTDJA_MM	525
OUTLETS	1
OWNEDBY	York Region
RDGISID	17401
RDNUM	19
RDSEC	26
RIMELEV_M	265.87
SBWTSHD	East Holland
STATUS	Active
STEPS	True
Z_ATTCHMNT	<a href="#">First Aid and Fire Protection.pdf</a>
Z_ATTCHMNT	<a href="#">SSI Procedure.pdf</a>
Z_ATTCHMNT	<a href="#">Investigations Incidents.pdf</a>

Labels in diagrams:  
- Bonding Clamp: HEAVY GAUGE BONDING WIRE, BRASS AUTOFLARE STRAIGHT FITTING  
- Pipe Transition: Galvanized steel pipe, Nut, Screw-on transition fitting, Plastic washer, Sweated brass female end, Copper pipe  
- Utility Room: bathtub, toilet, utility sink, washing machine, water heater, water meter, meter stop, from water main, to sewer or septic tank  
- Legend: cold water pipes (blue), hot water pipes (red), vent pipes (grey), waste pipes (orange)



# “FELIX”

## Geo-referenced Training and Emergency Response Procedures



### Inferential Meters

“Infer” the volume of gas flowing through a line by measuring a parameter which is then used to calculate the flow, rather than actual volume e.g. - **Pressure drop or velocity**

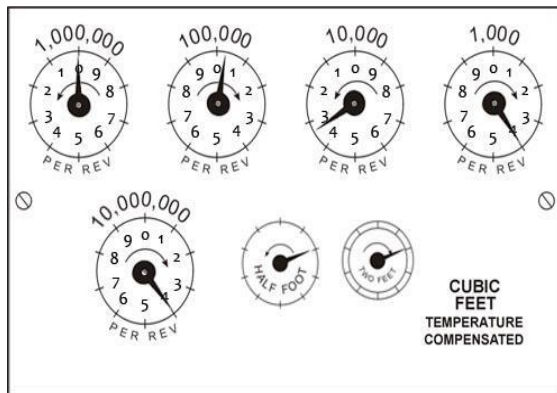
**Pressure Drop**  
Orifice Plate  
Difference in pressure increases with flow

**Turbine**  
Blades on the rotor transform flow stream energy into rotational energy

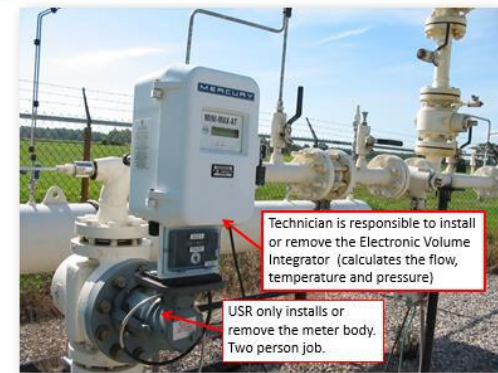
**Ultrasonic**  
Ultrasonic waves sent & received between transducers. As flow increases upstream travel slows down.

Meters

### Reading a Meter



Analog Dial Type – have to look at each dial to find the meter reading



Training manuals & Interactive guides