

# To CCTV or not CCTV? That is the Question.

Collaboration with St. Petersburg Water Resources

January 25, 2023

Christopher Baggett, PE  
Adam Iben



# Overview

---

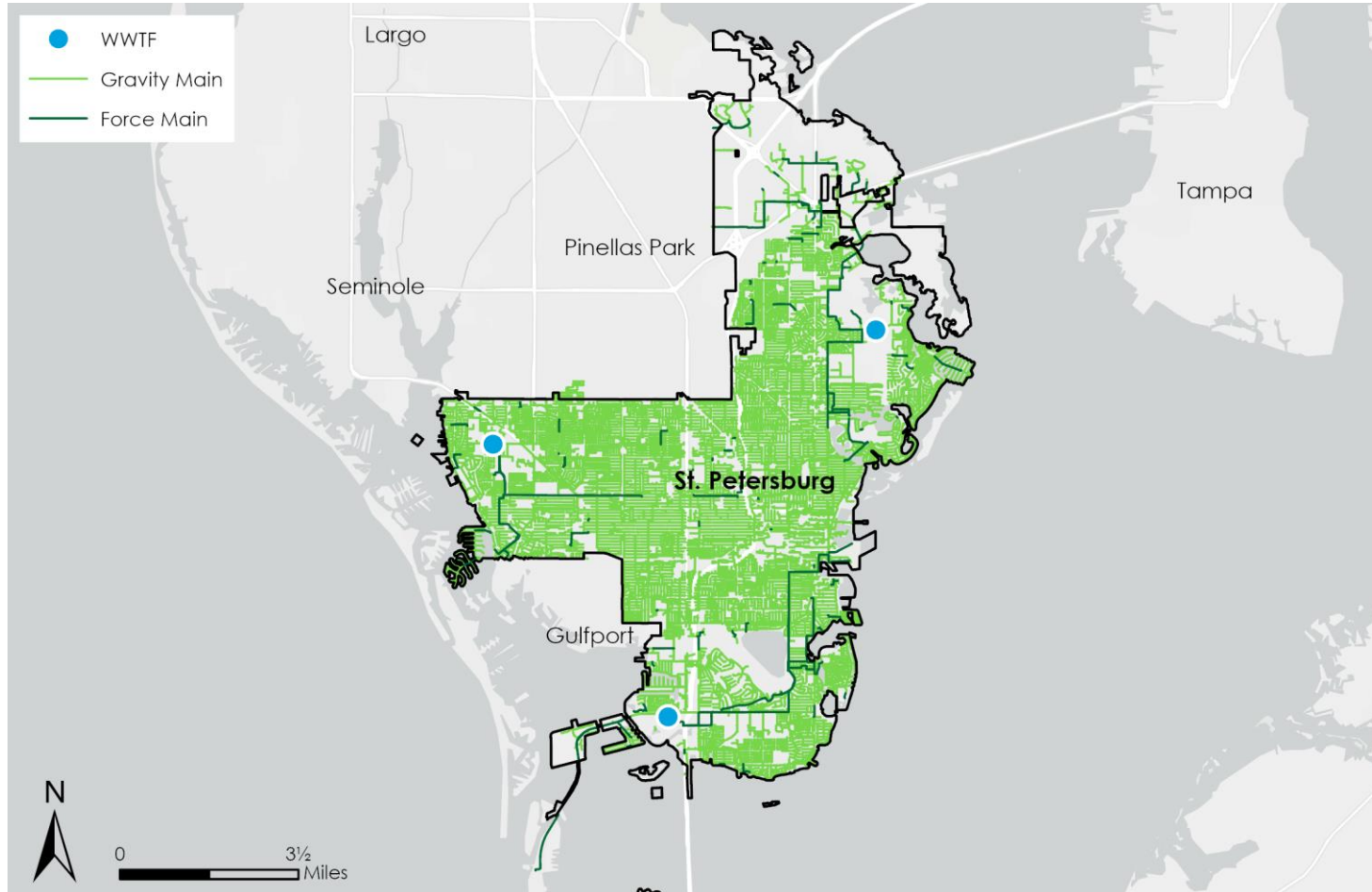
**Bridging the Gap**  
**St. Petersburg, FL – Background**  
**CCTV Program Challenges**  
**CCTV Program Updates**  
**Performing CCTV Field Work**  
**Processing CCTV Data**  
**Updating Master Database, Excel, & GIS**  
**Communicating Status**  
**Conclusions**

# Bridging the Gap

---



# St. Petersburg, FL – Background



- Located along Florida's gulf coast and part of the Tampa Bay area
  - Home to the Dali Museum and Tropicana Field
- Wastewater system:
  - Type: Sanitary Only
  - Sewer Laterals: 97,500
  - Gravity Mains: 888 Miles
  - Manholes: 19,500
  - Pump Stations: 85 + 41 (Private)
  - Force Mains: 56 Miles
  - WWTFs: 3

# St. Petersburg, FL – Background

---



- **Extreme wet weather → SSOs**
- **Consent decree 2017/2018**
- **Multi-phase Gravity Sewer Line and Manhole Inspection and Rehabilitation Program**
  - Initial Phase
  - Recurring Phase

# CCTV Program Challenges



- Limited number of trucks
- Multiple CCTV programs
- GIS repository not user friendly
- Paused incorporating GIS updates
- Quickly assessing current status
- Complex processes leads to lack of trust

**Summer 2021:**  
City initiated a  
CCTV program  
improvements  
project

# CCTV Program Updates

- Provide additional training
- Revise/create flowcharts, checklists, SOPs, logs, etc.
- Reconcile historical data
- Standardize CCTV database deliverables
- Create master GIS database
- Create planning and tracking files and dashboards
- Develop and execute plan
- Communicate, communicate, communicate!



# Performing CCTV Field Work

---

## Preventative Maintenance

- Combined with hydro-jet cleaning of gravity mains to ensure accurate condition assessment
  - Operate in tandem
- Identification of current and potential sources of Inflow & Infiltration
  - Helps with prevention of unauthorized discharges
    - Grease blockages
    - Root intrusion

## Challenges

- Seasonal variations in precipitation may mask infiltration
- Easement encroachment and access
- Inaccurate/incomplete GIS data
- Subjective nature of PACP scoring standards



# Processing CCTV Data

## GraniteNet

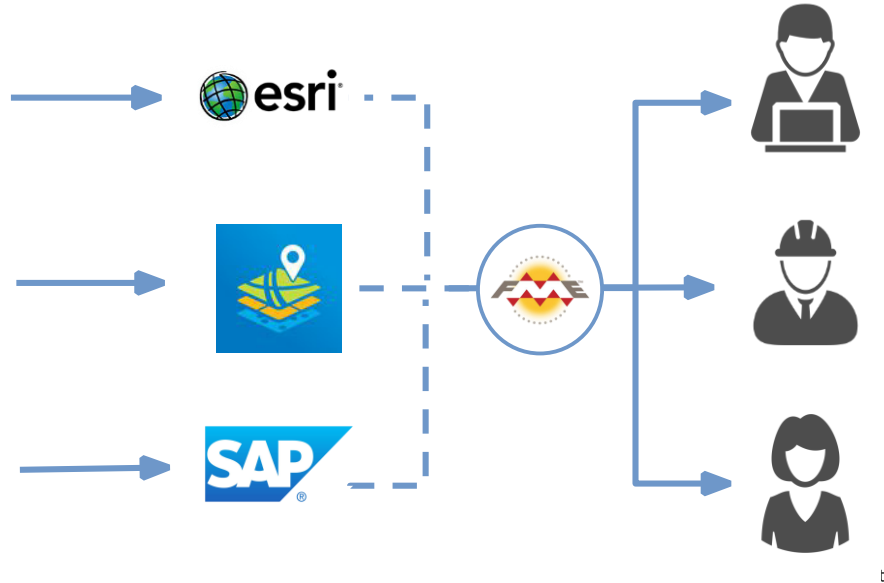
- **GIS Integration**
  - Shapefile of all active sanitary sewer assets ensures location accuracy and prevention of duplicate inspections
  - Importation of asset info reduces chances of invalid inspection
- **NASSCO PACP Compliance**
- **Inspection Organization**
  - Inspections are grouped by project
    - Project is determined by drainage basin and assigned work order
- **Inspection data transmitted from truck to central server via local network daily**
  - Synced to central master database
- **Quality Control**
  - Verification of location accuracy, asset information, condition score present, and success of whether a complete inspection was performed (+ \ - 20ft. tolerance)
  - Visual confirmation that inspection video is attached, matching header information, and visual clarity

# Processing CCTV Data

## Issues

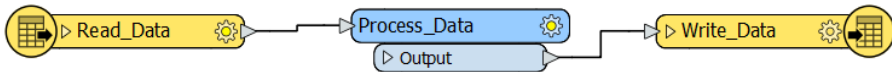
- **GIS**
  - Inaccurate or outdated GIS data
  - Inconsistent dissemination of GIS data across platforms
    - GIS data on trucks may not be as current as on City network
- **Internal Data Restrictions**
  - GraniteNet is designed to communicate with organization's GIS to update based on field observations
    - City data policy prevented this capability from being utilized in full
- **Organizational Challenges**
  - Information Siloing
    - Separation of IT and Wastewater divisions created internal conflicts created communication issues between personnel
  - Inadequate QC Process

# Updating Master Database, Excel, & GIS

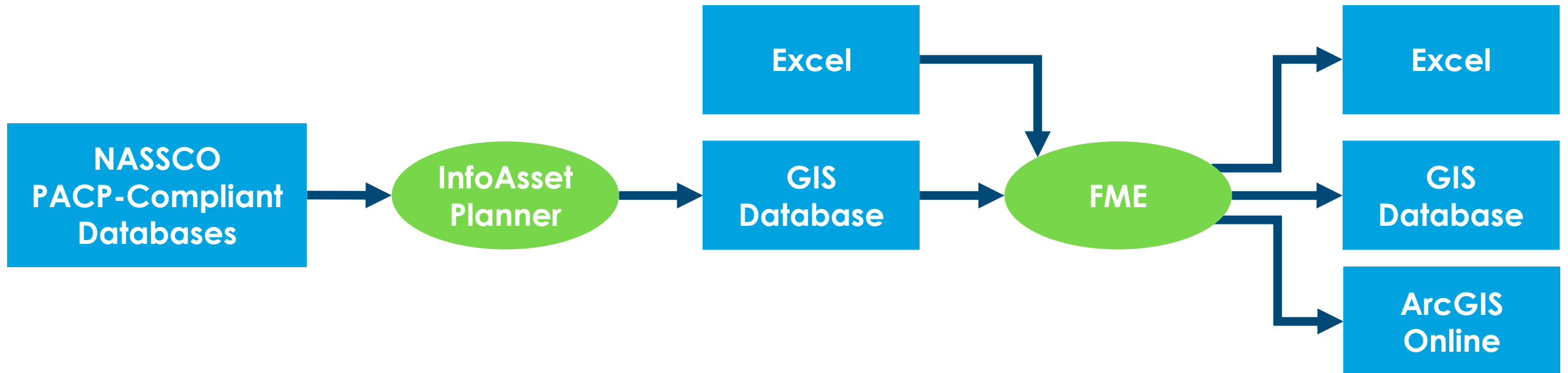


## Tools

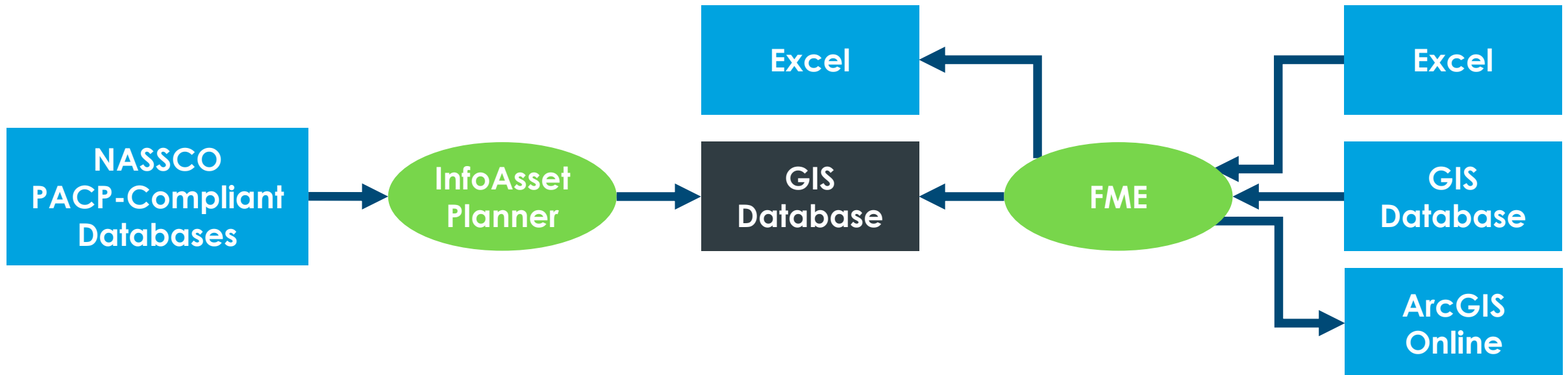
- **InfoAsset Planner**
  - Asset management software built on ArcGIS
- **FME (Feature Manipulation Engine)**
  - ETL application (Extract, Transform, and Load)
  - In a single project...
    - Read data from any number of formats
    - Process (transform, convert, validate) data inline
    - Write data to any number of formats



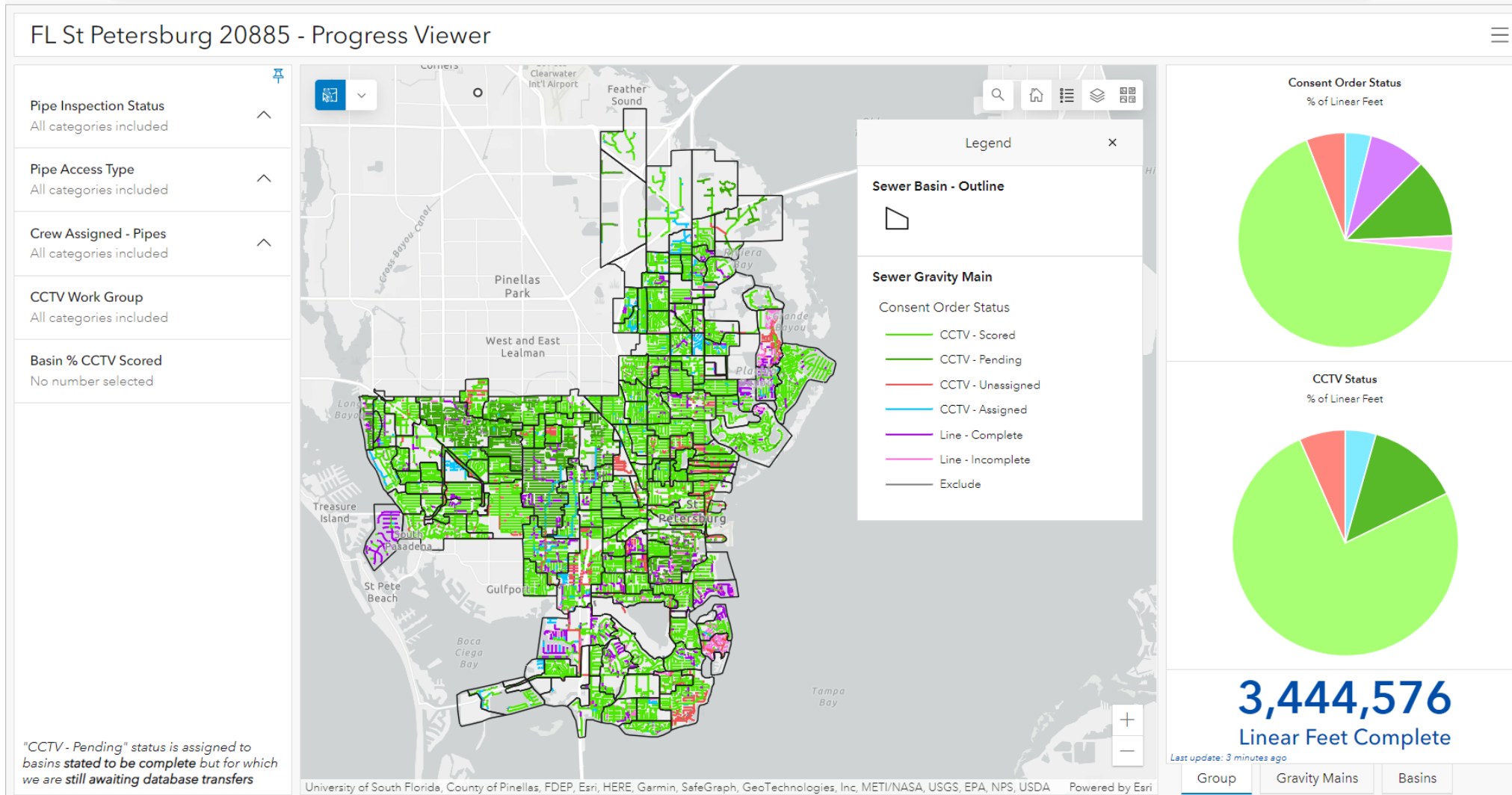
# Updating Master Database, Excel, & GIS



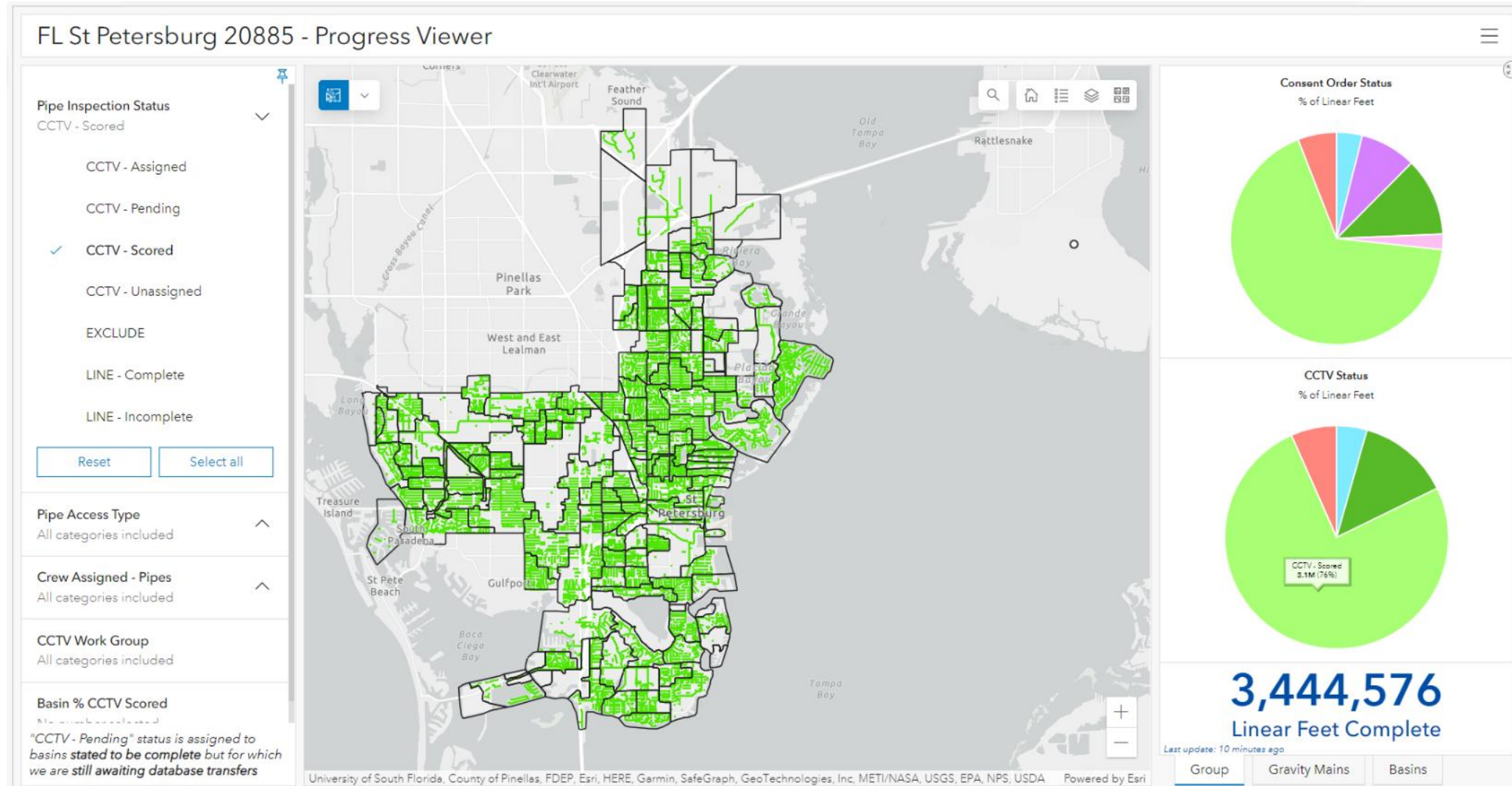
# Updating Master Database, Excel, & GIS



# Communicating Status



# Communicating Status



# Conclusions



- **Several asset inspection packages available**
- **InfoAsset Planner used to combine CCTV databases**
- **FEM used to efficiently:**
  - **Push data to various preferred formats**
  - **Facilitate planning, tracking, & communicating**
- **Trust & confidence enhanced by using:**
  - **Straight forward & transparent processes**
  - **Visuals/dashboards**
- **Primary key to success: Communication**



# THANK YOU

---