
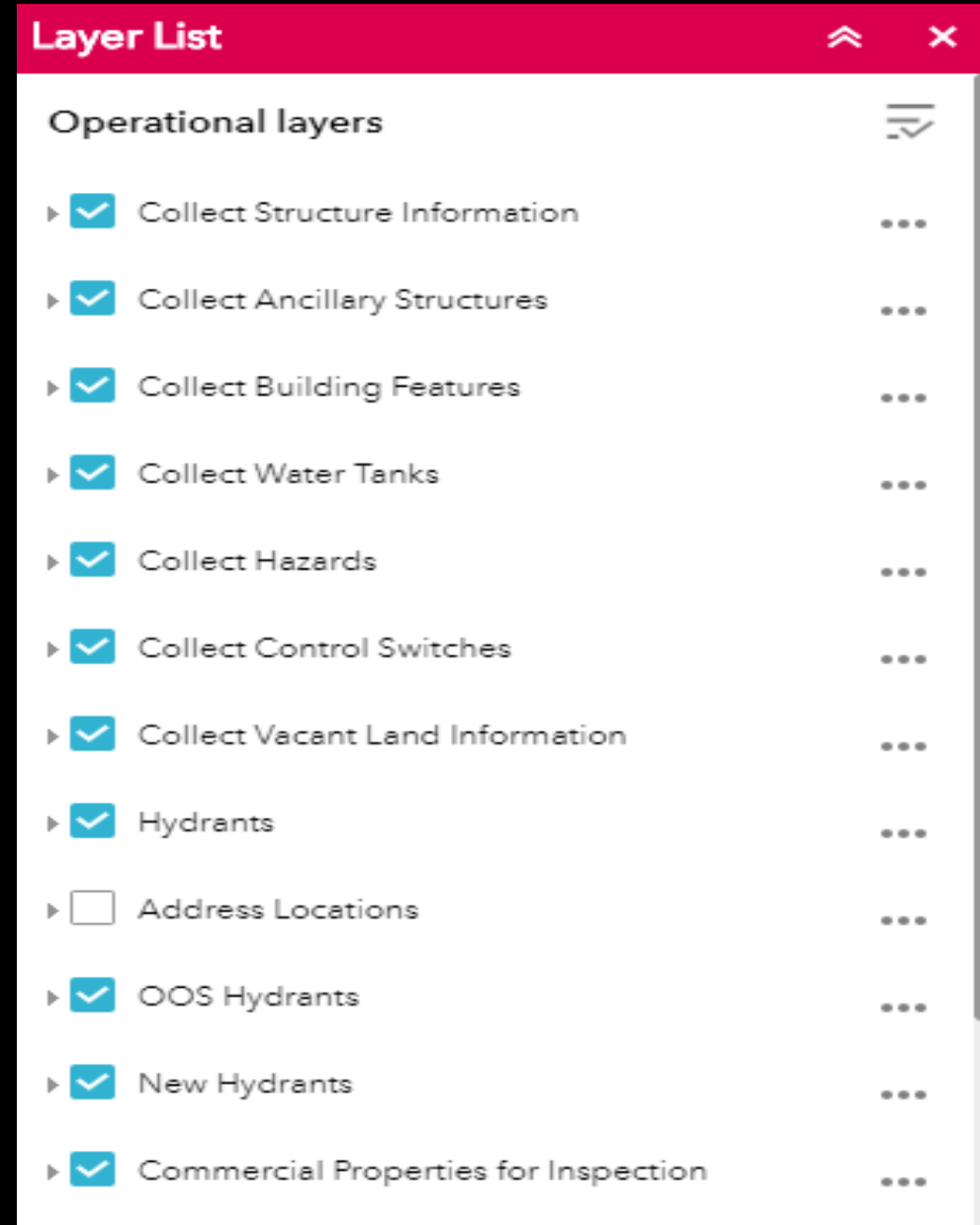


Pre-Incident  
Planning  
(“**PIP**”)

**Brandon Barnett**  
 **BarnettBee**

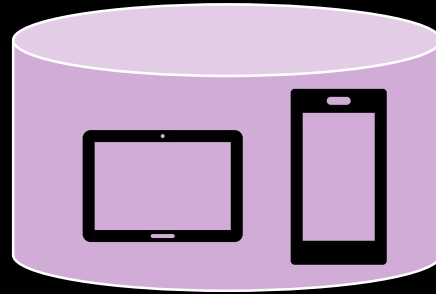
# Presentation Overview

- 1) Web GIS Terminology Review
- 2) Technical Details of PIP
- 3) The Start of PIP
- 4) PIP & General Maintenance
  - Currently 1 year old
  - Dashboards & Python
- 5) Future Improvements & ROI
- 6) General Q & A



# 1) General Web GIS Terminology

Front End  
(Website or app)



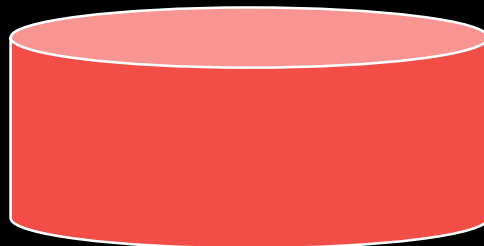
Allows the user to make requests to data to answer questions

Web GIS  
(ArcGIS & Web Server)



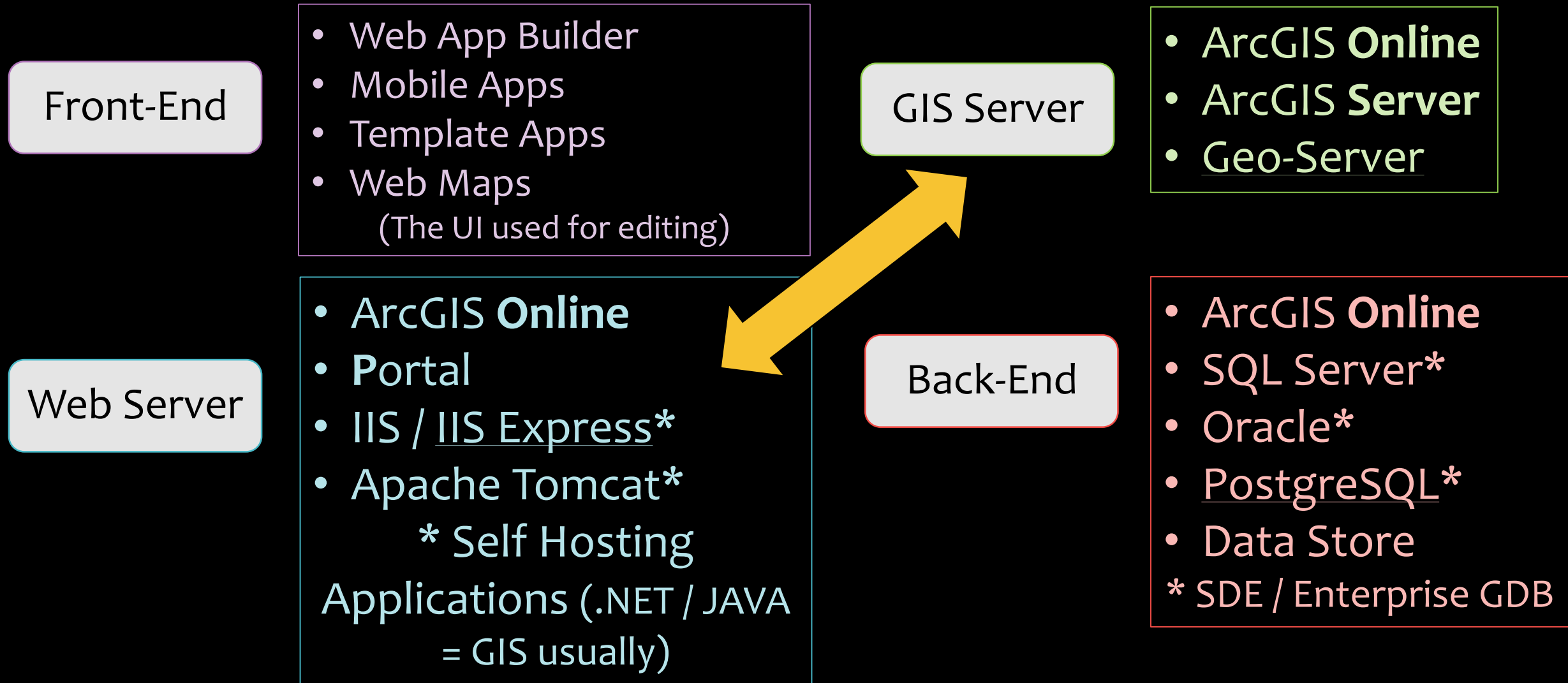
Handles requests from user and sends back results (data)

Back-End

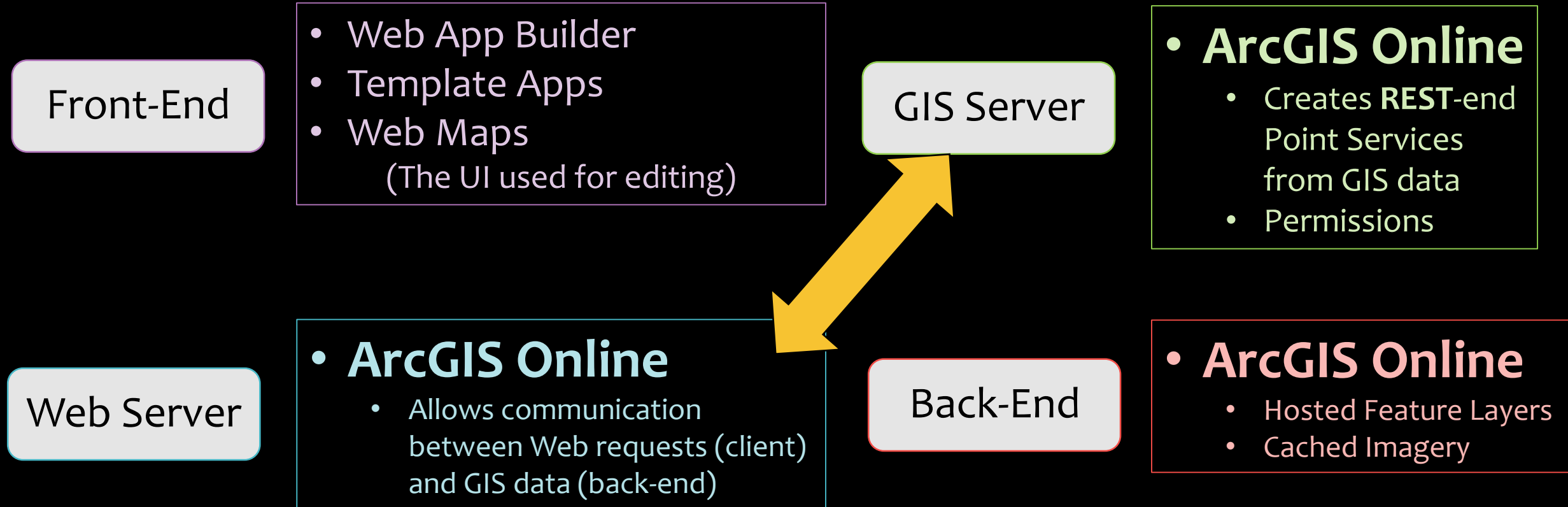


Where data lives  
“RDBMS”

# 1) General Web GIS Terminology

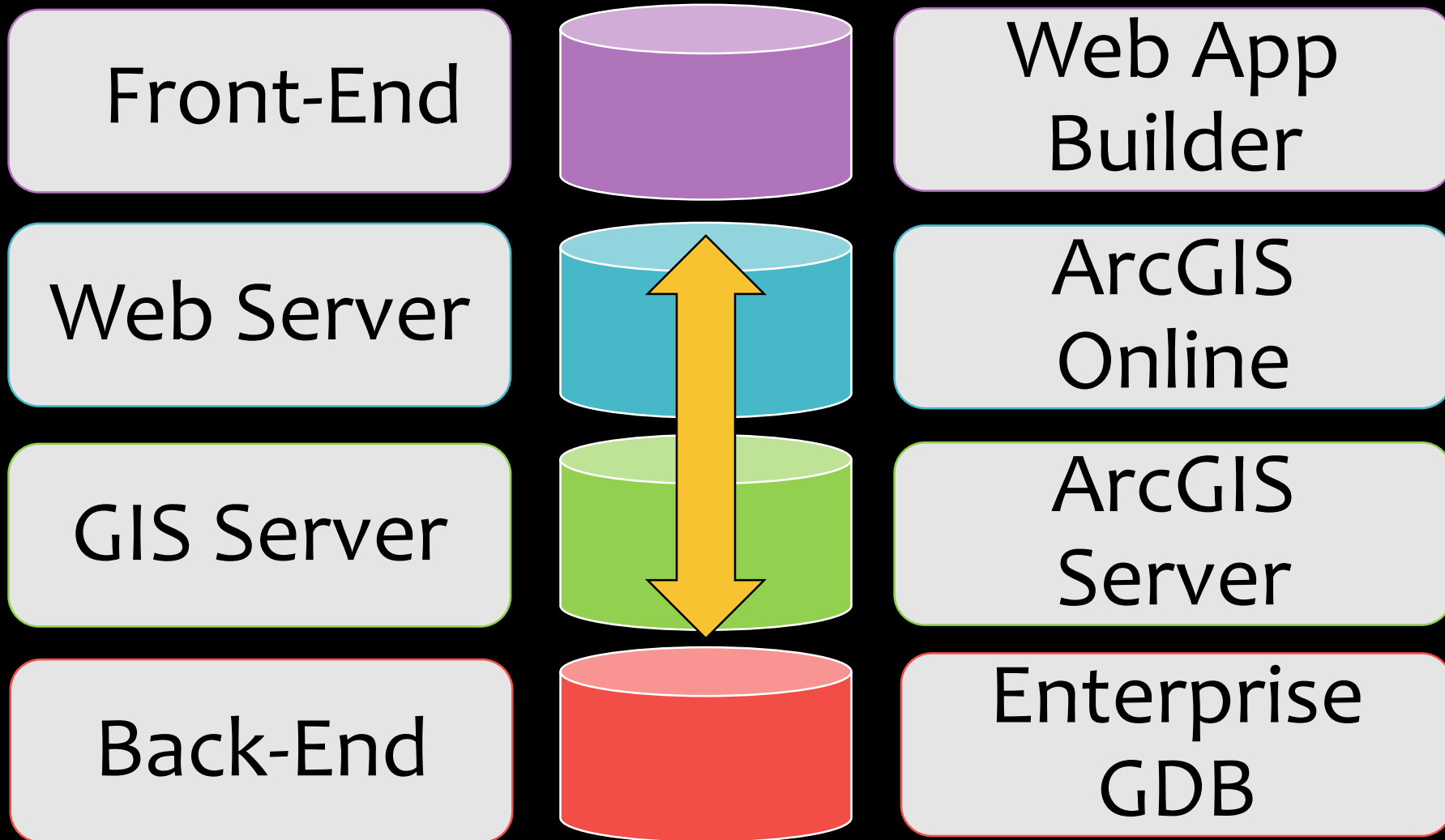


# 1) General Web GIS Terminology



# ArcGIS Online

## 2) Technical Details of PIP



WEB GIS STACK  
FOR PIP

## 2) Technical Details of PIP

Front-End

- Web App Builder
  - Smart Editor Widget

GIS Server

- ArcGIS Server
  - Token Based Security
    - Custom Users / Roles permissions (tracking)
  - 10.4.1 ArcServer (**REST**)
    - Public Service

Web Server

- ArcGIS Online
  - Cached Tiles

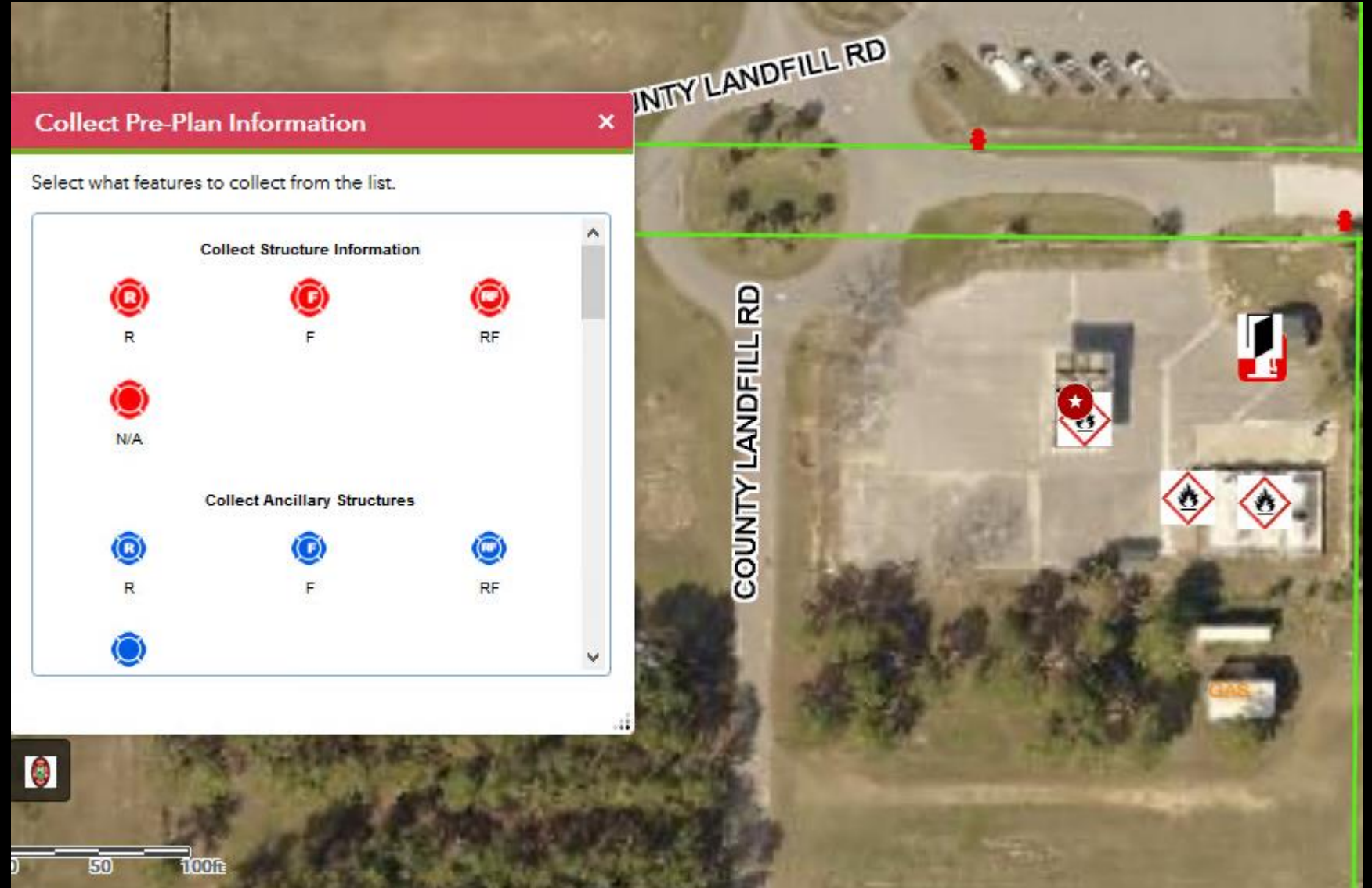
Back-End

- SQL Server (10.4.1 E-GDB)
  - 8 Feature Classes
    - Editor Templates
      - Easier to manage
      - Less Data
    - Editor Tracking

## 2) Technical Details of PIP

### Front-End

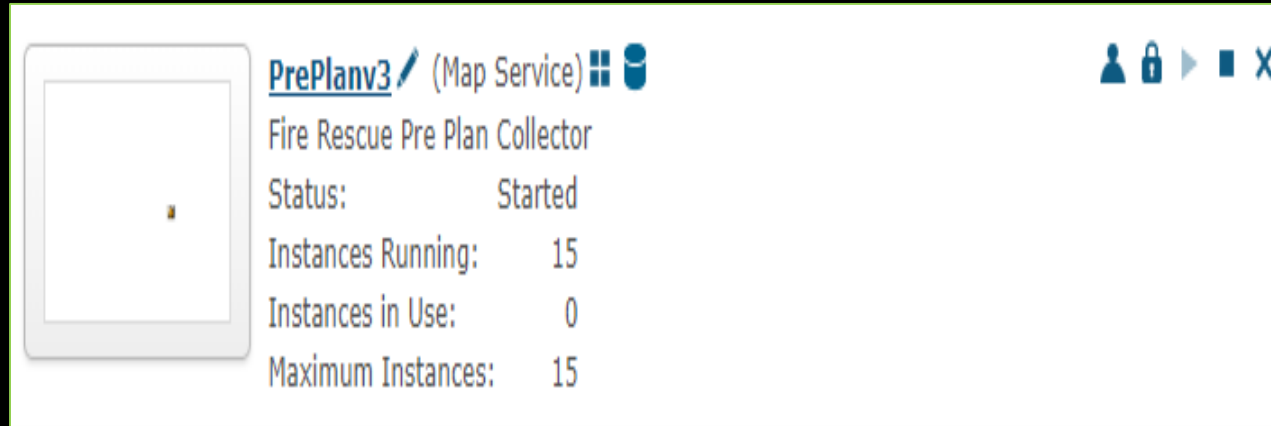
- Web App Builder
  - Smart Editor Widget










## 2) Technical Details of PIP

GIS Server



PrePlanv3 (Map Service)     

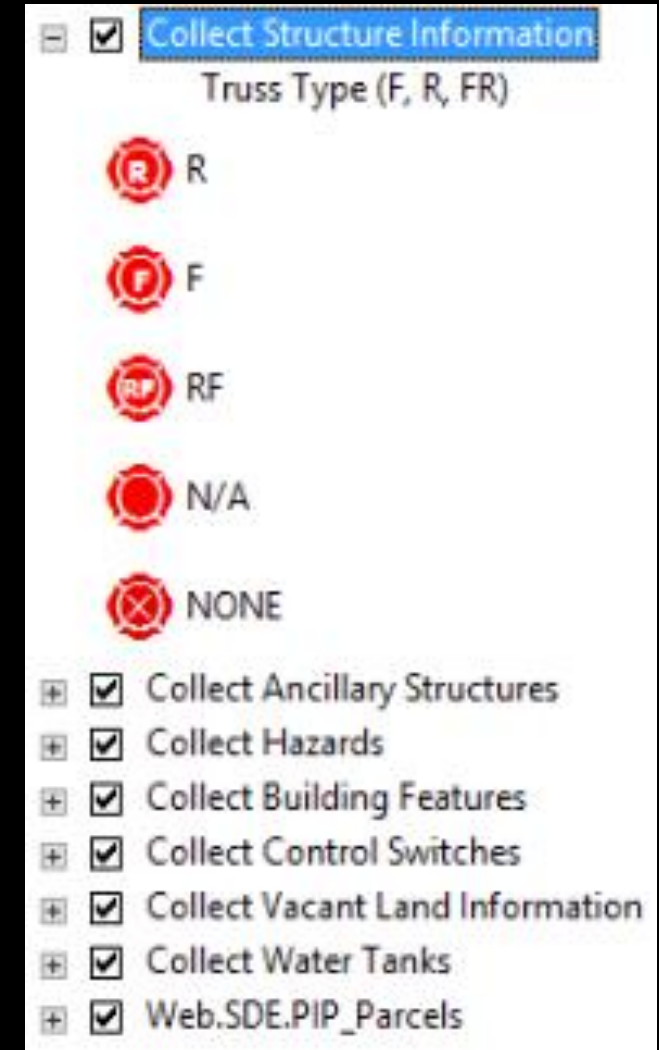
Fire Rescue Pre Plan Collector

Status: Started

Instances Running: 15


Instances in Use: 0


Maximum Instances: 15





Collect Structure Information

Truss Type (F, R, FR)

 R

 F

 RF

 N/A

 NONE

Collect Ancillary Structures

Collect Hazards

Collect Building Features

Collect Control Switches

Collect Vacant Land Information

Collect Water Tanks

Web.SDE.PIP\_Parcels

### • ArcGIS Server

- 10.4.1 GIS Server ; 2012 R2 ; 10.4.1 E-GDB
- 3 Feature Services
  - Main Editing Service = Cached
  - All have same pooling configuration (# of Instances)
  - All have same security settings (user / roles)
    - Token Based Authentication
    - All services public, but protected

## 2) Technical Details of PIP

### Back-End

- SQL Server  
(10.4.1 E-GDB)
- 8 Feature Classes
  - Editor Templates  
Easier to manage  
Less Data
  - Editor Tracking  
Enabled
  - Archiving  
Enabled
  - Versioned

Web.SDE.CollectFire_Water	SDE Feature Class
Web.SDE.CollectFire_VacantLand	SDE Feature Class
Web.SDE.CollectFire_StructureInfo	SDE Feature Class
Web.SDE.CollectFire_Objects	SDE Feature Class
Web.SDE.CollectFire_NewHydrants	SDE Feature Class
Web.SDE.CollectFire_CheckSpatialJoin	SDE Feature Class
Web.SDE.CollectFire_BrokeHydrants	SDE Feature Class
Web.SDE.CollectFire_AncillaryStructures	SDE Feature Class
Web.SDE.PIP_Parcels	SDE Feature Class

Field Name	Data Type
Category	Text
Comments	Text
Address	Text
LWT	Text
Signage	Text
VisibleAddress	Text
ContactNumber	Text
GateCode	Short Integer
SHAPE	Geometry
Creator	Text
DateCreated	Date
Editor	Text
DateModified	Date

## 2) Technical Details of PIP

```
#Iterate through the feature in the Web Database (BrokenHydrants)
BrokenHydrants= "BCCGISSQLPUB.WEB.SDE.sde\Web.SDE.CollectFire_BrokeHydrants"
TaxParcels = "BCCGISSQLPUB.Publication.SDE.sde\Publication.SDE.TaxParcelsWeb"
#print ("Existing OIDS: {0}".format(str(Hydrant_Alerted_List)))
with arcpy.da.SearchCursor(BrokenHydrants, ("OBJECTID", "DateModified", "Editor")) as Hydr
for rows in Hydrantcursor:
    OID = rows[0]
    DateModified = rows[1]
    Editor = rows[2]
    if str(OID) in Hydrant_Alerted_List:
        pass
    else:
        print ("Broken Hydrant Alert Found")
        with open(PIP_AlertHydrant_TxtDoc, "w") as txtwriter:
            txtwriter.write(ExistingTextHydrants)
            txtwriter.write("\n" + "OID:" + str(rows[0]) + ";" + "Alerted:" + str(Date
AK_Address = brokenhydrantinfo(BrokenHydrants, OID)
AK_Hydrant = AK_Address[0]
Address_Hydrant = AK_Address[1]
XY = AK_Address[2]
alert = "Broken Hydrant Alert!"
mailmess = "A Broken Hydrant has been found using PIP!\n" + "The closest AK is: {0} and the closest Address is: {1}\n ".format(AK_Hydrant, Address_Hydrant) + "\n The location of the hy
+ "\n Alerted on " + str(DateModified)
Toaddress= ["bbarnett@lakecountyfl.gov", "mvitta@lakecountyfl.gov", "eross@lakecountyfl.gov", "bbentley@lakecountyfl.gov"]
#Toaddress= ["bbarnett@lakecountyfl.gov"]
subject = "PIP Broken Hydrant ALERT"
mailer(mailmess, Toaddress, subject)

def brokenhydrantinfo(brokenhydrants_fc, OID):
    print ("Trying to find the closest parcel associated with the broken hydrant alerted")
    WGS_84 = 'C:\Users\{0}\AppData\Roaming\ESRI\Desktop\1)\ArcMap\Coordinate Systems\WGS 1984.prj'.format(user, version)
    taxParcels = "BCCGISSQL.Publication.SDE.sde\Publication.SDE.TaxParcelsWeb"
    tempbroken = 'BCCGISSQLPUB.WEB.SDE.sde\Web.SDE.NearTest'
    arcpy.Select_analysis(brokenhydrants_fc, tempbroken, "OBJECTID = {0}".format(OID))
    arcpy.AddGeometryAttributes_management(tempbroken, 'POINT_X_Y_Z_M', '', '', WGS_84)
    arcpy.Near_analysis(tempbroken, taxParcels, '', "LOCATION")
    with arcpy.da.SearchCursor(tempbroken, ['NEAR_FID', 'POINT_X', 'POINT_Y']) as NearCursor:
        for row in NearCursor:
            Parcel_OID = row[0]
            XY = "{0},{1}".format(row[2],row[1])
    with arcpy.da.SearchCursor(taxParcels, ['OBJECTID', 'AltKey', 'PropertyAddress'], 'OBJECTID = {0}'.format(Parcel_OID)) as ReturnCursor:
        for row in ReturnCursor:
            AK = row[1]
            Address = row[2]
    arcpy.Delete_management(tempbroken)
    return [AK, Address, XY]
```

### • Python

- Email Generation when a broken hydrant is collected using X, Y and closest parcel.
- Automated Map Changes when a commercial property is inspected
- Email Generation for Bad Addresses and Suspected Property Violations

Automation

# 3) The Start of PIP

1. Replaced Paper Process
2. Makes content accessible
3. Less long-term maintenance
4. Standards could be followed!





# 3) The Start of PIP

## 1. Replaced Paper Process

- Old Process involved hand drawn building footprints on paper
- Paper had to be indexed and reproduced so that it could be accessible in the field



# 3) The Start of PIP

## 2. Makes content accessible

- Digital content = accessible on any device that is connected to the internet.
- Centralized repository
- Standardized view





# 3) The Start of PIP

## 3. Less long-term maintenance

- Content doesn't take up drawer space.
- It can be managed and scaled as the amount of content increases
- It can be backed up and collected in a manner that is "trackable"



# 3) The Start of PIP

## 4. Standards could be followed!

- Standard values for fields could be enforced and “required” fields could be implemented
- Standard symbology
- Standard way to collect information and retrieve it when needed.







April 29, 2018

1:500

0 30 60 120 ft  
0 5 10 20 m

Collect Structure Information

- R

Collect Building Features

- Door / Entrance
- Other (Explain in Comments)

Collect Hazards

- Chemical Hazard
- Other Hazard (Explain in Comments)

Collect Control Switches

- Power Shut Off Control Switch
- Water Shut Off Control Switch
- Other Control Switch (Please Explain in Comments)

Commercial Properties for Inspection

- Yes
- Parcel Data
- Street Names
- City Limits
- TAVARES

Lake County Fire Rescue  
Demo



(1 of 5) [Close] [Previous] [Next]

**Collect Hazards: Other Hazard (Explain in Comments)**

Type of Feature	Other Hazard (Explain in Comments)
Comments	Used auto parts/ auto waste/ oil filters
DateCreated	August 17, 2017
Editor	Station78
DateModified	August 17, 2017

Edited by Station78 on 8/17/17 at 1:18 PM

[Zoom to](#) [More]

# 4) Improving PIP & General Maintenance

## 1. Additional Functionality

- Collect New Things

## 2. Automated Tasks

- Auto-Emails
- Auto Map View Changes

## 3. Performance!

## 4. Reporting (Dashboards)

The screenshot displays three email notifications from noreply@lakecountyfl.gov. The first two are PIP alerts for property issues, and the third is a Broken Hydrant alert. Each email includes a subject line, recipient list, a description of the issue, and links to property and WebGIS information.

**Email 1:** Sent Mon 2/12/2018 10:02 AM. Subject: PIP ALERT for AK:3701259 by:Station78. Recipients: Barnett, Brandon; Vitta, Michael; Ross, Erik; Bentley, Brent. Content: 3701259 has been Alerted for LCPA (Built Property Issue). Property Link: [https://na01.safelinks.protection.outlook.com/owa/40lakecountyfl.gov%7Cf4d163bf132a49f9fd1808d57229a399%7C8499232ea71a3d&reserved=0](https://na01.safelinks.protection.outlook.com/?url=https://na01.safelinks.protection.outlook.com/owa/40lakecountyfl.gov%7Cf4d163bf132a49f9fd1808d57229a399%7C8499232ea71a3d&reserved=0). WebGIS Link: <https://na01.safelinks.protection.outlook.com/owa/40lakecountyfl.gov%7Cf4d163bf132a49f9fd1808d57229a399%7C8499232ea71a3d&reserved=0>. Station78 indicated this on 2018-02-12 14:39:27.

**Email 2:** Sent Tue 4/3/2018 4:03 PM. Subject: PIP ALERT for AK:2831863 by:Station77. Recipients: Barnett, Brandon; Vitta, Michael; Ross, Erik; Bentley, Brent. Content: 2831863 has been Alerted for GIS (Addressing Issue). Property Link: [https://na01.safelinks.protection.outlook.com/owa/40lakecountyfl.gov%7Cac646c809d204cdbe8b608d5999de080%7C8499232ea71a3d&reserved=0](https://na01.safelinks.protection.outlook.com/?url=https://na01.safelinks.protection.outlook.com/owa/40lakecountyfl.gov%7Cac646c809d204cdbe8b608d5999de080%7C8499232ea71a3d&reserved=0). WebGIS Link: <https://na01.safelinks.protection.outlook.com/owa/40lakecountyfl.gov%7Cac646c809d204cdbe8b608d5999de080%7C8499232ea71a3d&reserved=0>. Station77 indicated this on 2018-04-03 18:54:05.

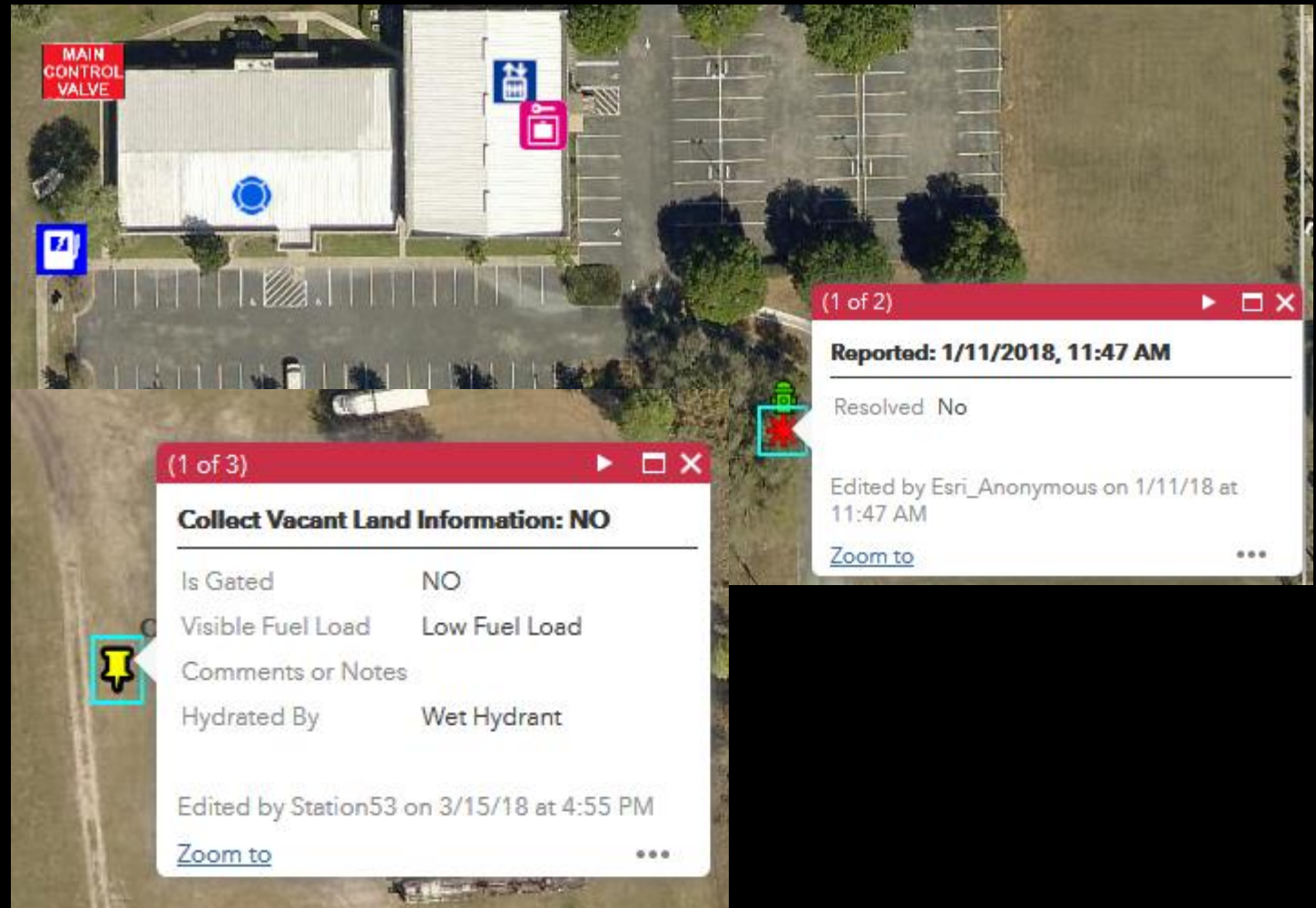
**Email 3:** Subject: PIP Broken Hydrant ALERT. Recipients: Barnett, Brandon; Vitta, Michael; Ross, Erik; Bentley, Brent. Content: A Broken Hydrant has been found using PIP! The closest AK is: 1293006 and the closest Address is: 1310 STATE ROAD 44 LEESBURG FL 34748. The location of the hydrant is 28.81303584,-81.93186204 Alerted on 2018-03-08 02:32:55.



# 4) Improving PIP & General Maintenance

## 1. Additional Functionality


- Collect Vacant Land
- Collect Broken Hydrants
- Collect Ancillary Structures



# 4) Improving PIP & General Maintenance

## 2. Automated Tasks

- Auto-update Map view
- Automated Emails
  - Broken Hydrants
  - Property Issues
  - Addressing Issues



The map shows an aerial view of a coastal area with several irregular polygons overlaid. A legend on the right indicates that red outlines represent 'No' and green outlines represent 'Yes'. The legend also includes a list of checked items: 'OOS Hydrants', 'New Hydrants', and 'Commercial Properties for Inspection'.

Field Name	Data Type
GateCode	Short Integer
SHAPE	Geometry
Creator	Text
DateCreated	Date
Editor	Text
DateModified	Date
AlertGIS	Text
AlertLCPA	Text
ContactName	Text
NumOfStories	Short Integer
Hydrated_By	Text
SuppressionSys	Text
OBJECTID	Object ID

# 4) Improving PIP & General Maintenance

## 3. Performance!

- Cached Services
- Custom Zoom Scales
- Pooling / Service Configuration

Cache Status: PIP\_Parcels (MapServer)

100% of the tiles are available for this service.

Level	Scale	Size	Expected Tiles	Completed Tiles	Percent
0	175,000	0.27 MB	54	54	100
1	100,000	0.55 MB	126	126	100
2	50,000	1.67 MB	486	486	100
3	2,400	465.47 MB	195,361	195,361	100

Cache Status: PrePlanv3 (MapServer)

100% of the tiles are available for this service.

Level	Scale	Size	Expected Tiles	Completed Tiles	Percent
0	175,000	30.95 MB	13,335	13,335	100
1	100,000	93.57 MB	40,443	40,443	100
2	50,000	373.58 MB	161,772	161,772	100

Customize visible scales

Type a scale number

✕ Delete [Reset to map's initial scales](#)

175,000

100,000

50,000

15,000

2,400

1,000

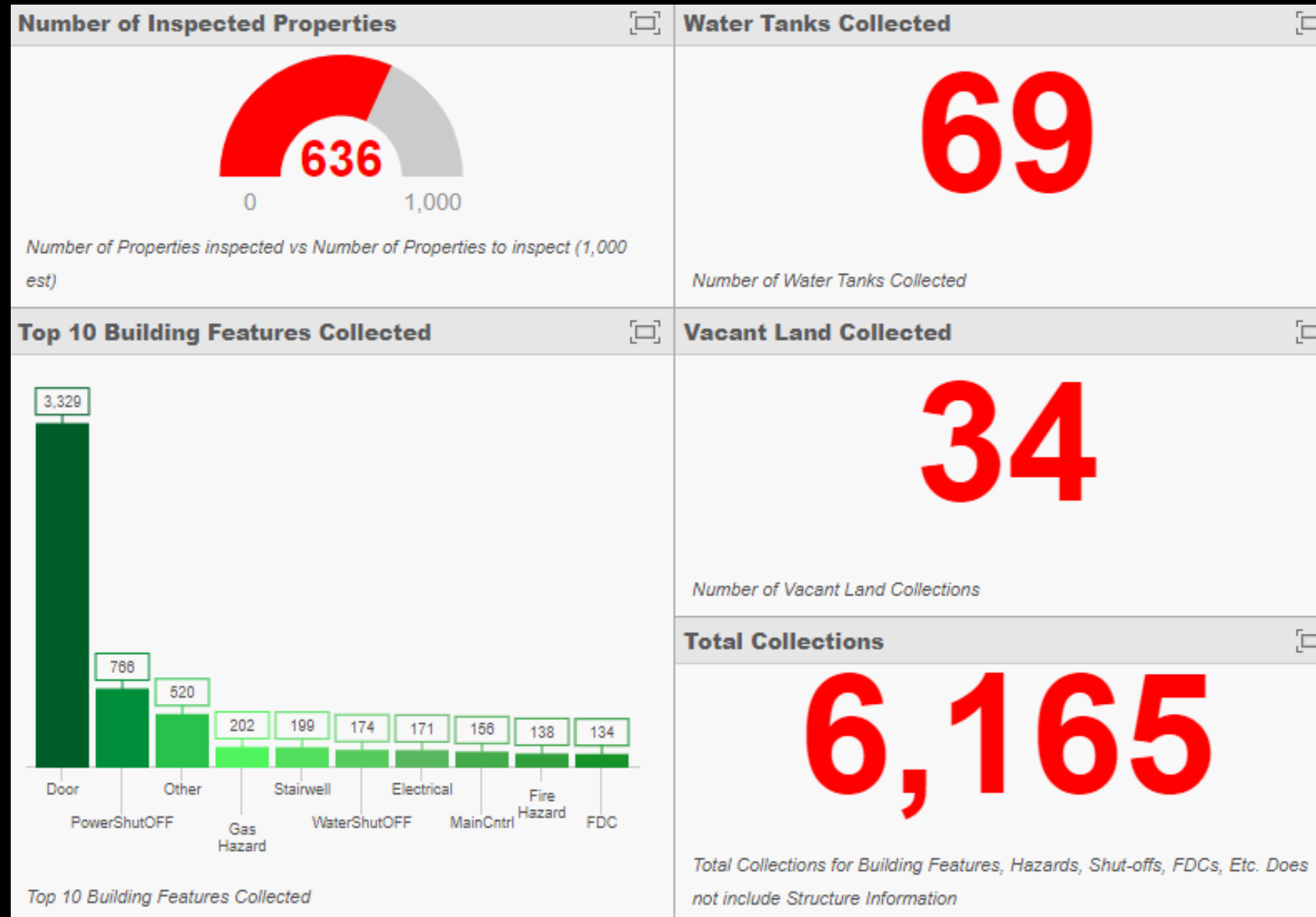
500

[Hide Details](#) [Close](#)

# 4) Improving PIP & General Maintenance

## 4. Dashboards

- Accessible Reporting
- Monitor Progress
- Accountability



## 5) Future Improvements & ROI

### 1. Future Improvements

- Design PIP to be taken offline
  - Permissions Management

### 2. Return on Investment (ROI)

- Lake County Fire Rescue  
Feedback

# 5) Future Improvements & ROI

## Future Improvements

- Design PIP to be taken offline
- Permissions Management
  - Need to integrate with Active Directory if possible
- Cache at all zoom scales
- Integrate with Active 911
- Ready made PDFs of all PIPs



Sign In

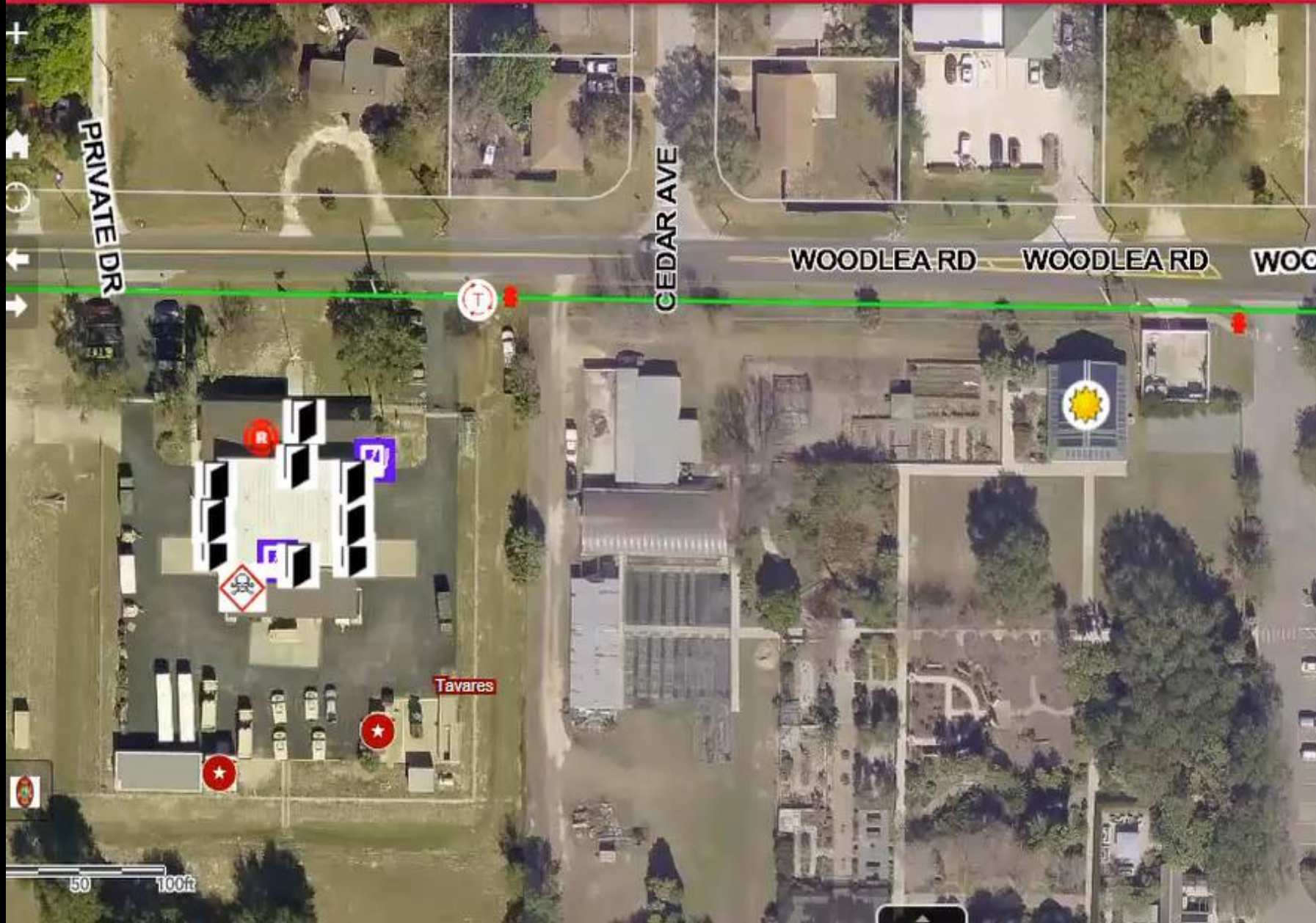
Please sign in to access the item on  
<https://gis.lakecountyfl.gov/lakegis>  
(FireRescue/BrokenHydrants)

Username:

Password:

OK Cancel





Print

Map title:

Layout:

Format:

[Advanced](#) [Print](#)

1. Error, try again
2. PIP Print Out

[Clear prints](#)

# 5) Future Improvements & ROI

1) How many times has PIP data been utilized in a call?

PIP's best moment involved a Hazmat call involving anhydrous ammonia. We used it in the field to respond to the call and know what we were walking into

2) How does management feel about PIP?

Love it

3) What is the general feedback you've received from your crews in the field? Generally positive / negative?

Positive- user friendly and is a practical pre-plan, collecting what is needed for a proper size up and what tactics to deploy

4) Has PIP improved the Pre-Incident Information Process?


Absolutely- more accurate real time data that can be continually updated. Once the initial is complete it is maintenance and checking for changes. Crews do not have to start all over.

5) What would be the biggest return on investment, from a Fire Rescue perspective, of PIP?


Identifies wrong addresses, discovered approximately 250K in improperly assessed parcels. Shows progress and has measures in place to get as close as possible to 100% ISO compliance.

## 6) Questions / Answers?

1. Database / Service Designs
2. ArcGIS Online
3. Application Creation
4. REST services and AGO
5. Permissions
6. Training / Supporting an AGO Application



# Pre-Incident Planning (“**PIP**”)

**Brandon Barnett**  
 **BarnettBee**