

# STREAMLINING DATA COLLECTION AND MAPPING WITH COLLECTOR AND TRIGGERS

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# ARCGIS COLLECTOR

- Collector is a game changer
  - Enables users to interact with complex data
  - Eliminates the learning curve
  - Delivers great UI
  - Supported on many different platforms
  - Extremely low cost
  - Massively flexible –supports drastically different work flows for the same data
  - Puts the data manager in control



# ARCGIS COLLECTOR

- Using Collector in the field can present a few challenges
  - Form factor can be challenging when many fields are present.
    - Generally only 6 or 7 fields are viewable at a time on mobile devices.
  - Information to be collected may not be readily discernible.
    - For instance a user may not know what drainage basin they are standing in when they log a new point in a feature class.



# WONDERFUL WORLD OF TRIGGERS

- What is a trigger?
  - A database trigger is procedural code that is automatically executed in response to certain events on a particular table or view in a database.
- In the ESRI world a trigger can also leverage database geometry functions.
  - This means you can perform geoprocessing tasks as part of a SQL statement.



# EXAMPLE 1 AUTO POPULATE DATA


- Scenario
  - User is collecting information for a feature in the field
  - Some of the feature attributes are present in other feature classes
    - (example: Drainage Basins, Maintenance Yard boundaries, County Boundaries, etc)
  - The person in the field may not know the correct information off the top of their head

# EXAMPLE 1 SOLUTION

- Simple SQL query implemented as a trigger can automatically update feature class attribute table.

## SQL Example

```
UPDATE FeatureClassA
SET FeatureClassA.DrainageBasin = TargetFeatureClass.DrainageBasin,
FeatureClassA.County = TargetFeatureClass.County,
FeatureClassA.CountyCode = TargetFeatureClass.CountyCode,
FeatureClassA.PermitAgency = TargetFeatureClass.WMDName,
FeatureClassA.MaintenanceYard = TargetFeatureClass.MaintYard
FROM FeatureClassA
INNER JOIN TargetFeatureClass
ON FeatureClassA.shape.STWithin(TargetFeatureClass.shape) = 1
WHERE FacilityID is NULL;
```



## EXAMPLE 2 AUTO GENERATE NAMES

- Scenario
  - Feature names need to be unique and conform to a planned structure
  - Users cannot easily determine what the next available name should be



## EXAMPLE 2 SOLUTION

- Simple SQL query implemented as a trigger can automatically create a feature name that conforms to a set of naming rules.

### SQL Example

```
Update FeatureClassA set FacilityId = 'D5SWF'+  
FeatureClassA.countycode + '-' + Format((NEXT Value for  
D5SWFSequence), '00000') where FacilityID is NULL;
```



# EXAMPLE 2 SOLUTION

- New feature

Location 25.58625691N, 80.38690608W

District Facility ID

TEST

State Project Number

1200

FM Number

Facility Name

Pond Alpha

Facility Type

Wet Detention

Side of Road

Right

# EXAMPLE 2 SOLUTION

- Saved data reveals information that was automatically generated by a trigger



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**D6SWF87000-00057**  
 Location 25.58625691N, 80.38690608W  
 Edited by: May, John- CO, April 22, 2019

### Attributes

Statewide Facility ID

D6SWF87000-00057

District Facility ID

TEST

State Project Number

1200

FM Number

Facility Name


Pond Alpha

Facility Type

Wet Detention

County

MIAMI-DADE



## EXAMPLE 3 AUTO GENERATE SCHEDULES

- Scenario
  - Features need to be inspected on a defined cycle
  - Each feature can have a different inspection cycle
  - The next inspection due is a function of when the last inspection was performed and the inspection cycle (frequency)
  - Users cannot easily determine when the next inspection should be performed




## EXAMPLE 3 SOLUTION

- Simple SQL query implemented as a trigger can automatically calculate when the next inspection should be performed.

### SQL Example

```
Update FeatureClassA Set  
FeatureClassA.NextInspectionDueDate = DATEADD(M,  
FeatureClassA.InspectionFrequency,  
FeatureClassA.LastInspectionDate) WHERE  
FeatureClassA.InspectionFrequency is NOT NULL;
```



## EXAMPLE 4 AUTO GENERATE DATES

- Scenario
  - Data has to be reviewed by a manager before becoming available for use
  - When a record is reviewed and passed a date needs to be recorded for future use
  - Need to eliminate the possibility that a person would select the incorrect date



## EXAMPLE 4 SOLUTION

- Simple SQL query implemented as a trigger can automatically get the current date when a record condition is changed.

### SQL Example

```
UPDATE FeatureClassAMaintenanceNeeds set ReviewDate =  
GetDate() where QAStatus = 'Passed' AND ReviewDate is  
NULL;
```



## EXAMPLE 5 AUTO UPDATE ATTRIBUTES

- Scenario
  - Map data needs to be symbolized based on information contained in related tables
    - Last Inspection Date
    - Last Inspection Result
    - Last Maintenance Activity
    - Open Maintenance Activities

## EXAMPLE 5 SOLUTION

- Simple SQL query implemented as a trigger can retrieve the desired information and store it as a feature class attribute.

### SQL Example

```
UPDATE FeatureClassA set LastInspectionDate = C.InspectionDate,  
LastInspectionResult = C.InspectionResult, LastMaintenanceRequestResult  
= C.MaintenanceRequired
```

```
FROM FeatureClassA
```

```
INNER JOIN
```

```
(SELECT ParentGUID, FORMAT(InspectionDate,'d') AS InspectionDate,  
InspectionResult, MaintenanceRequired from FeatureClassInspections A
```

```
INNER JOIN
```

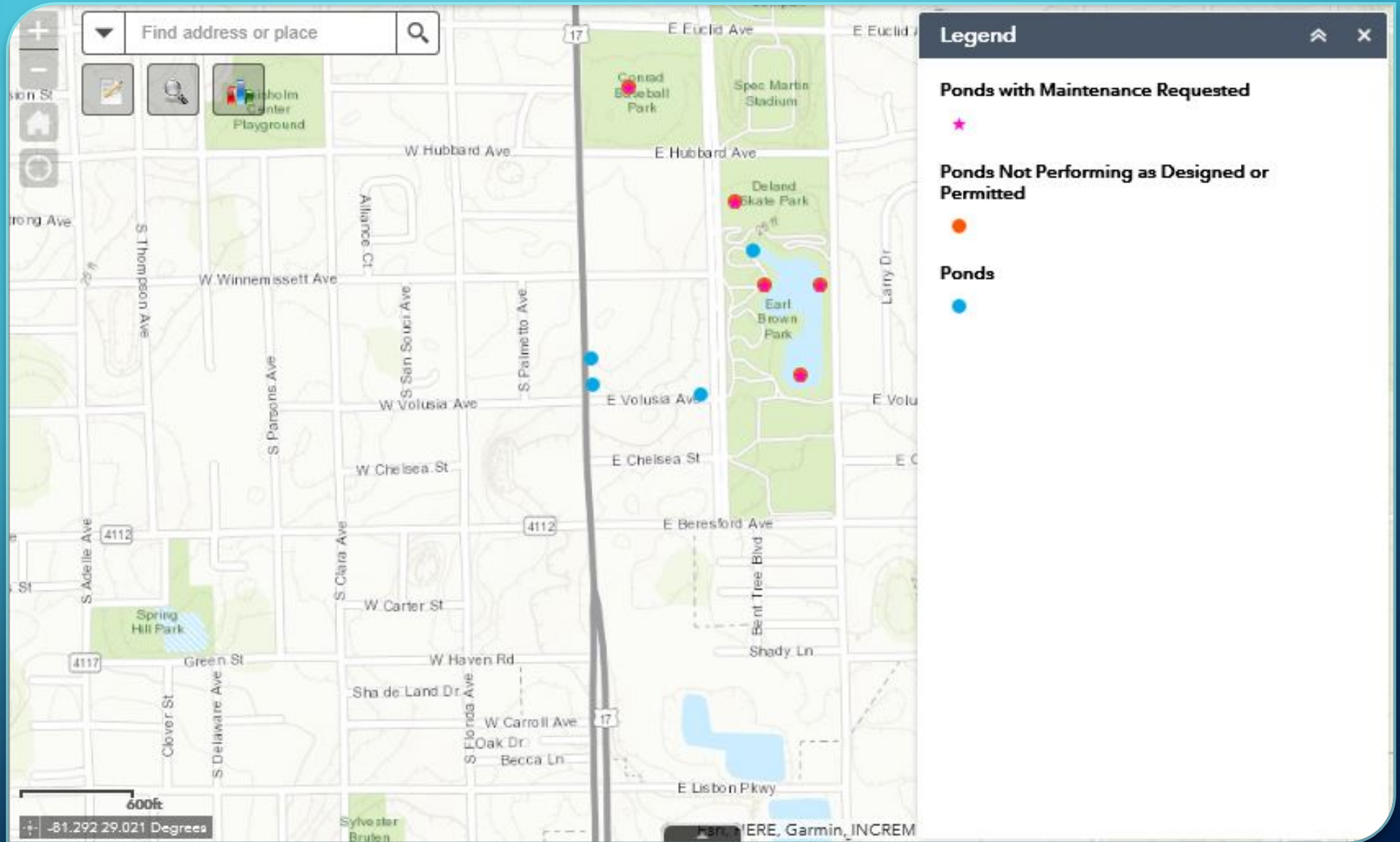
```
(select distinct ParentGUID as GUID, max(InspectionDate) as InspDate  
from FeatureClassInspections group by ParentGUID) B
```

```
on A.parentguid = B.guid and A.InspectionDate = B.Inspdate) C
```

```
ON FeatureClassA.GLOBALID = C.PARENTGUID;
```



# EXAMPLE 5 SOLUTION





## EXAMPLE 6 AUTOMATE LINKS TO EXTERNAL REPORTS

- Scenario
  - SSRS deployed to support all reporting operations
  - Need a user friendly way to link reports to records

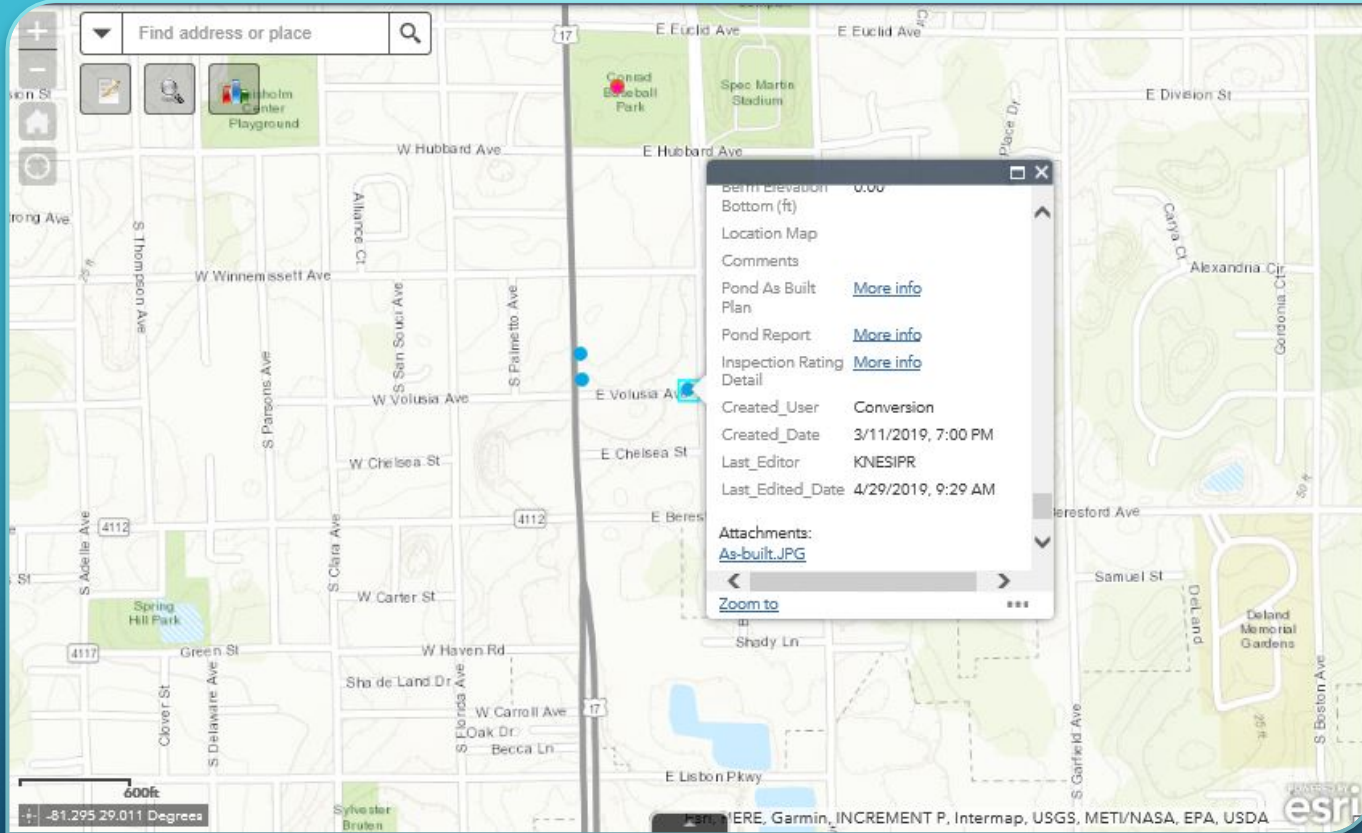
## EXAMPLE 6 SOLUTION

- Simple SQL query implemented as a trigger can retrieve the desired information and store it as a feature class attribute.

### SQL Example

```
UPDATE FeatureClass set rptFacility = 'http://dcs-abc-  
dec11/RptSrvr_SSRSPROD?/FOLDER/FacRpt&rs:Command=  
Render&GUID=' + cast(globalid as varchar(36))  
WHERE rptFacility is NULL;
```

# EXAMPLE 6 SOLUTION



1 of 2? 100% Find | Next

### STORMWATER POND REPORT

Statewide Facility ID:	D5SWF79000-00228	District Facility ID:	79008-3630-03
FM Number:		Facility Name:	Pond 3
State Project Number:	79008-3630	County:	VOLU SIA
State Road Number:	15/800	Facility Type:	Dry Retention
Permit Agency:	SJR/WMD	Maintenance Yard:	Deland Operations
ERP Permit Number:		Milepost Number:	0.00
FDEP MS4 Permit Number:	FLR 04E024	Permit Exp.Date:	No Date Recorded
Drainage Basin:	Lake Woodruff Unit	Footprint Acres:	No Data Recorded
Side of Road:		Mowing Area:	0.00 acres
Last Inspection Date:	08/04/2017	Last Inspection Result:	Performing as designed and permitted



#### Pond Inspection History

Date	Inspector	Inspection Result	Report
8/4/2017	Craig Eudell	Performing as designed and permitted	
8/10/2015	Craig Eudell	Performing as designed and permitted	



# OTHER STGEOMETRY FUNCTIONS

- Additional Scenarios
  - Is a point is within a buffered area
  - Is a point is within a distance of a feature
  - Does a line intersect another line or polygon
  - Does a feature fall completely within a polygon
  - Generate centroid values
  - Generate XY coordinates
  - Does a geometry touch another geometry
  - Union objects into a single result



## RESOURCES

- [ESRI Resource URL for STGeometry Functions](#)

<http://desktop.arcgis.com/en/arcmap/latest/manage-data/using-sql-with-gdbs/a-quick-tour-of-sql-functions-used-with-st-geometry.htm>

- [Microsoft Resource URL](#)

<https://docs.microsoft.com/en-us/sql/t-sql/spatial-geometry/ogc-methods-on-geometry-instances?view=sql-server-2017>