

Exploiting the Power of Workflow Management

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Biography



- ▶ GIS manager for a local utility organization specializing in water, wastewater, and reclaimed water
- ▶ Master of Business Administration from Florida International University
- ▶ Bachelor of Science in Computing and Information Systems from University of North Florida
- ▶ GIS Professional since 2011

Concerns

- ▶ No project status tracking
 - ▶ Repetitive tasks driving up labor cost
- ▶ No standardized QA/QC methods
 - ▶ Data entry errors and/or omissions
 - ▶ Difficult QA/QC process (forced to retrace steps)
- ▶ “Edit-as-you-go” workflow (each user uses a static version and map document)
- ▶ 3-tier version tree (should we change it?...)

Research

- ▶ Program a solution in-house?
 - ▶ No
- ▶ Research third party solution?
 - ▶ No
- ▶ Go with Esri's product solution?
 - ▶ Yes

Solution(s)

- ▶ ArcGIS Workflow Manager
- ▶ ArcGIS Data Reviewer
- ▶ Esri's Infrastructure Editing Tools (Attribute Assistant)
 - ▶ Now known as Esri's Water Utility Network Editing Tools
- ▶ Esri's Industry Model for Water Utilities
- ▶ Portal for ArcGIS
 - ▶ ArcGIS Workflow Manager Web Edition Application

Implementation Time

- ▶ ArcGIS Workflow Manager
 - ▶ 1 - 2 weeks
- ▶ ArcGIS Data Reviewer
 - ▶ 2 - 3 weeks
- ▶ Esri's Water Utility Network Editing Tools (Attribute Assistant)
 - ▶ 1 week
- ▶ Portal for ArcGIS
 - ▶ 1-2 days
- ▶ Migration to Esri's Industry Model for Water Utilities
 - ▶ 3-4 months

Workflow Manager (WFM)

The screenshot displays the Workflow Manager (WFM) interface, divided into three main sections:

- Jobs:** A tree view on the left showing various query categories such as Public Queries, As-built Job Queries, General Job Queries, Group Queries, Personal Queries, POI and AOI Update Queries, Route Update Queries, Work Order Job Queries, User Queries, and Searches.
- Job Query Results - List View:** A table listing job details. The table has two columns: Job ID and Name. The data is as follows:

Job ID	Name
1603	116 Suzanne Aven
1604	Virginia Court and
1605	1801 Lakedge Driv
1606	1797 Lake Edge Dr
1607	Lot 5 & 6 Hidden M
1608	235 Industrial Loop
1609	585 & 595 Rocking
1610	2676 Loopridge Dr
1611	2658 & 2662 West
1612	Lot 12 & 13 Waterl
1613	331 Hibernia Oaks
1615	Boondocks Restau
1616	3087 and 3089 Zei
1617	1681 Royal Fern Lr
1618	2491, 2493 & 2494
1619	2844 Circle Ridge I
1621	1741 and 1737 Mo
1622	White Oak Estates
- Job Workflow:** A vertical flowchart on the right showing the sequence of steps for a job. The steps are represented by colored boxes: Start (circle), Assign (green), Assign (green), Assign (pink), Assign (yellow), Assign (red), Assign (pink), Assign (yellow), Assign (green), Assign (green), Assign (yellow), Assign (orange), Assign (pink), Assign (green), and End (circle). A decision diamond (blue) is located between the 10th and 11th steps.

Data Reviewer (DR)

The image shows a screenshot of the Data Reviewer (DR) software interface. The main window is titled "Reviewer Batch Job Manager - CCUA_WaterBa". It contains a tree view under "Batch Job Contents" with several items, including "Water System: Verify Owner is CCUA" and its sub-items like "Verify Owner is CCUA wHydrant". Below the tree is a "Check Description" section with the text "Returns features or rows resulting from an SQL Query w". At the bottom, there is a "Configuration Messages" section.

Overlaid on the main window is a dialog box titled "Execute SQL Check Properties". The dialog has the following fields and controls:

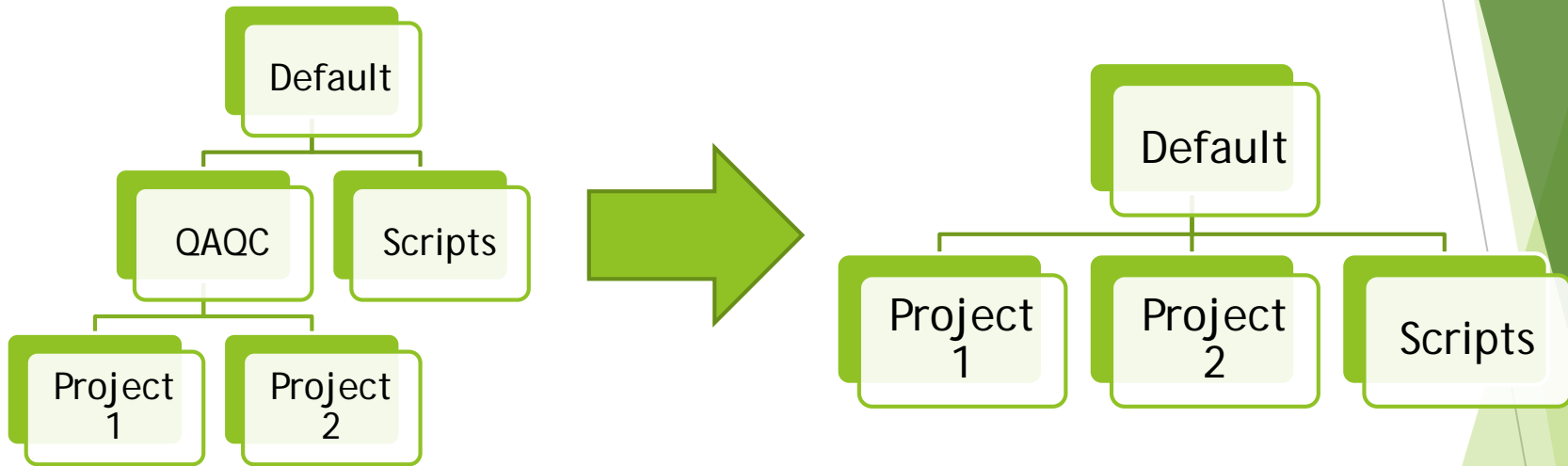
- Check Title:** "Verify Owner is CCUA wHydrant"
- Feature Class:** "gisim.GISDC.wHydrant - gisim" (selected in a dropdown)
- Always Run on Full Database:**
- Where Clause:** "NOT OWNEDBY = 'CCUA'" with an "SQL" button
- Reviewer Remarks:** "Notes" field containing "Verify Owner"
- Severity:** A dropdown menu set to "3", with a legend showing "1 - High" and "5 - Low".

The "Check Description" section of the dialog features a map visualization showing several points (grey and red) and a yellow box labeled "TYPE=4". Below the map, the text reads: "Returns features or rows resulting from an SQL Query whereclause".

Attribute Assistant

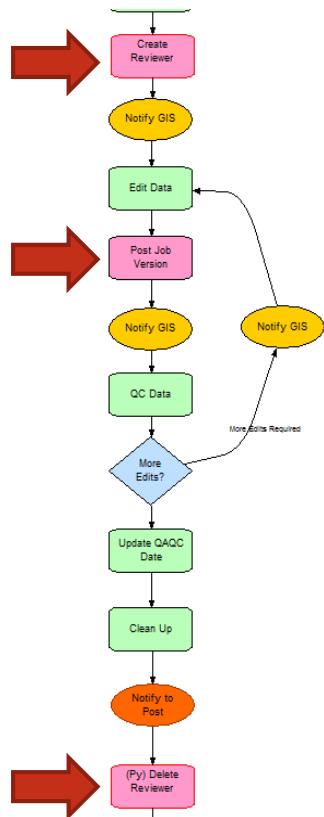
- ▶ Auto-ID rule
- ▶ Auto calculation rules for latitude and longitude coordinates, length, and nearest address fields
- ▶ Intersecting feature rule for fittings to transfer attributes
- ▶ Split intersecting rule to create new line segments (i.e., split at water valves)
- ▶ Expressions for custom steps
 - ▶ `iif(InStr([ASBUILT],","), "Feature references multiple As-builts", iif([ASBUILT] = "Unknown", "No as-built information provided; check as-built #", "X:/Engineering/General/Asbuilts/" & [ASBUILT] & ".dwg"))`
 - ▶ If the "as-built" field contains a comma(",") populate the "link" field identifying multiple, if "unknown" populate identifying no information, else populate the path using the as-built name in .DWG file extension

Version Tree Change



- ▶ Removed the QAQC version
 - ▶ In our configuration the DBO would be required to post the version
 - ▶ Additional branch in tree created version posting delays

Step Integration (WFM and DR)



- ▶ Create the 'Reviewer Session' at the time the job is created inside of WFM
- ▶ Post the 'Job Version'
 - ▶ Send transactions to the default version
 - ▶ Transaction posting MUST occur during the WFM session
 - ▶ JTXDesktopSteps.LaunchGPTool Arguments:
toolboxpath:"C:\Program Files (x86)\ArcGIS\WMX\Desktop10.4\ArcToolbox\Toolboxes\Workflow Manager Tools.tbx" /tool:PostJobVersion /param:Input_JobID:[JOB:ID]
- ▶ Delete the 'Reviewer Session' once the job is complete
 - ▶ Keeps the database table clean and prevents DR from slowing down
 - ▶ Executable Arguments: *Scripts\Production\DeleteSession.py [REVSESSION:ID] [JOB:ID]*
 - ▶ Pass the Session ID and Job ID as parameters to the Python executable and use the code to read those values

Python Code to Delete Session

```
# Name: DeleteSession.py
# Description: Passes custom parameters and deletes a Reviewer session from a Reviewer workspace
# Author: Daniel Johns
# Date: October 2015

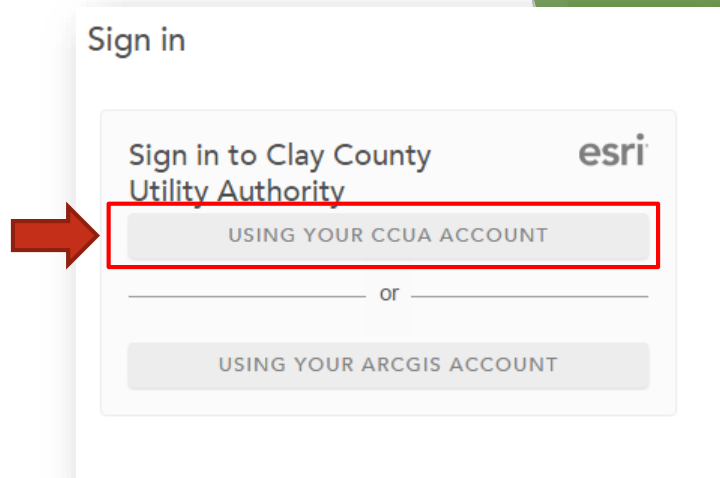
import arcpy
import sys, os
REVSESSION = sys.argv[1]
SESNAME = sys.argv[2]
WORKSPACE = "****Path to Reviewer Workspace****"

print 'Preparing to delete Session ' + REVSESSION + " : " + SESNAME
print '. . . checking out the license'
# check out a Data Reviewer extension license
arcpy.CheckOutExtension("datareviewer")

# session
SESSION = "Session " + REVSESSION + " : " + SESNAME

# execute the Delete Reviewer Session tool
arcpy.DeleteReviewerSession_Reviewer(WORKSPACE,SESSION)
print 'Reviewer session ' + SESNAME + ' has been deleted'
print '. . . checking in the license'
# check in the Data Reviewer extension
arcpy.CheckInExtension("datareviewer")
print 'Finished.'
```

Portal Tie-in



- ▶ Changed from a 'Traditional User Store' to a 'Portal User Store'
 - ▶ Portal hosted on premise
 - ▶ Portal is used to manage users
 - ▶ WFM console used to specify groups and permissions
 - ▶ Utilizing Single Sign-On (SSO) / Federated Services
 - ▶ Enhanced security
 - ▶ Doesn't require username or password

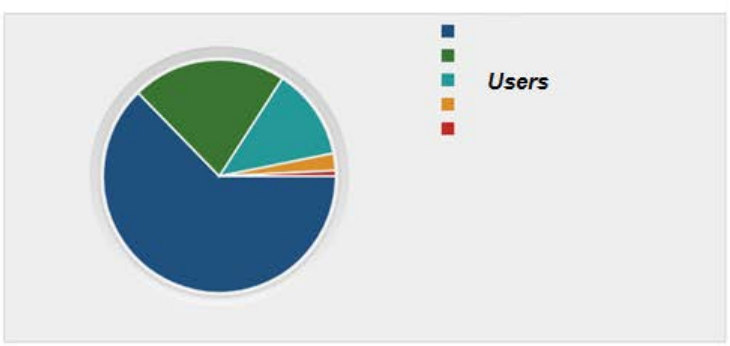
Portal Application

esri ArcGIS Workflow Manager Web Edition

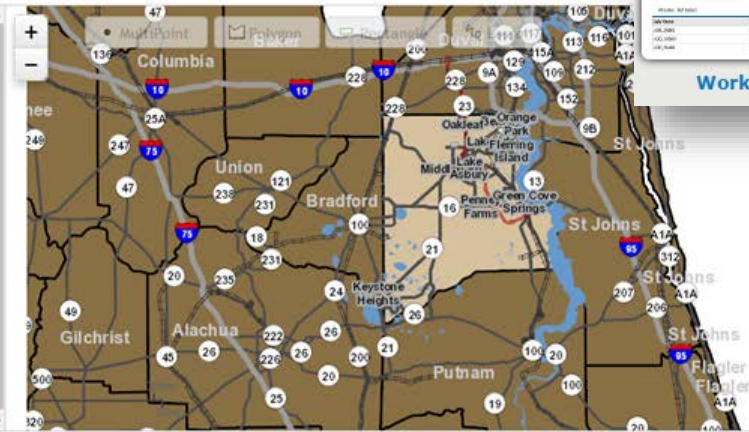
Queries: All As-built Jobs or find job: Find job

Categorized by Assigned To Grouped by Select

Bar Pie



Users



All As-built Jobs: 126 Job(s)

Job ID	Assigned To	Priority	Status	%	Type	WO #	As-built #	Ticket #	Name	Address	Nearest Landmark	Created	QAQC	Completed	Modified
1603	User	Low	Closed	100	Water	4830	G2-1		116 Suzanne Avenue Virginia	116 Suzanne Avenue	Lakeside Elementary School Montclair	11/8/16, 2:25 PM	1/20/17, 12:00 PM	1/23/17, 1:03 PM	3/30/17, 5:42 PM

Workflow Manager

Portal Application Cont.

- ▶ Web-based application
- ▶ Deployed directly from Esri with no programming involved
 - ▶ Does require parameters to be changed
- ▶ All CCUA employees have access
- ▶ Provides overall work progress

One Less Thing To-Do

- ▶ Included a step to send out an email along with attachment(s)
- ▶ Included a step to generate a PDF of the project (utilizing dynamic labels for automation)
- ▶ Built reports for project tracking
 - ▶ Utilizing a table view summarize projects

Completed GIS Job Report

[Open in New Window](#)

[COMPLETED] GIS Job Report

GIS job status report was prepared on 5/24/2017 at 10:02:19 AM

Job ID	Date Completed	Job Name	As-built Doc #	Job Priority	Days Open
35651	5/24/2017 9:44:29 AM	2672 Shannon Street	11459	Low	20
35647	5/24/2017 9:44:21 AM	813-816 (Lots 78-79) Wicklow Court	11464	Low	20
35644	5/24/2017 9:44:15 AM	940-942 (Lot 41) Ridgeway Court	11456	Low	20
31621	5/24/2017 9:44:07 AM	2438 - 2442 Sylvan Chase	11441	Low	40
35240	5/24/2017 9:44:00 AM	Lots 16-17 & 58-59 Foxridge Road	11455	Low	21
35241	5/24/2017 9:43:52 AM	1206 Autumn Pines Drive	11457	Low	21
35650	5/18/2017 8:33:47 AM	Keystone (Hallman Road) Water Main Extension	11443	Low	14

Table View Example (for Reporting)

- ▶ 'DAYS_PENDING' = Date Difference between Created and Ending Dates
- ▶ 'DAYS_FROMCREATED' = Date Difference between Created and Current Date

JOB_ID	CREATED_DATE	END_DATE	DAYS_PENDING	DAYS_FROMCREATED	PERC_COMPL
1655	12/1/2016 10:25:53	4/26/2017 7:59:3	146	174	
1622	12/9/2016 5:01:57	4/26/2017 7:55:2	138	166	
1616	12/9/2016 2:55:38	4/24/2017 8:57:0	136	166	
1713	12/12/2016 2:15:55	4/26/2017 8:00:5	135	163	
1642	11/7/2016 9:17:50	3/6/2017 1:27:08	119	198	
1666	1/9/2017 3:29:00 P	4/26/2017 7:56:1	107	135	
1610	11/28/2016 7:18:44	3/1/2017 1:08:29	93	177	
1619	11/21/2016 9:35:48	2/22/2017 3:28:3	93	184	
5601	1/23/2017 7:09:45	4/26/2017 8:03:2	93	121	
6805	1/24/2017 8:27:34	4/26/2017 8:11:3	92	120	
6806	1/24/2017 8:39:06	4/26/2017 8:12:1	92	120	
6808	1/27/2017 6:35:10	4/26/2017 8:12:5	89	117	
8407	2/3/2017 6:47:03 P	4/28/2017 6:57:4	84	110	
8807	2/2/2017 7:11:28 P	4/28/2017 6:57:4	86	111	

Database View Definition

```
CREATE VIEW WMX_JOB_SUMMARY AS SELECT
GISDC.JTX_JOBS.JOB_ID, GISDC.JTX_JOBS.CREATED_DATE,
GISDC.JTX_JOBS.END_DATE, GISDC.JTX_JOBS.PERC_COMPLETE,
GISDC.JTX_JOBS.JOB_NAME, GISDC.JTX_JOBS.DESCRPTION AS
JOB_DESC, GISDC.JTX_STATUS.CAPTION AS JOB_STATUS,
GISDC.WMX_ASBUILT_INFO.DOCNUM, GISDC.JTX_PRIORITY.NAM
E AS PRIORITY, DATEDIFF(day,
GISDC.JTX_JOBS.CREATED_DATE, GISDC.JTX_JOBS.END_DATE)
AS DAYS_PENDING, DATEDIFF(day,
GISDC.JTX_JOBS.CREATED_DATE, GETDATE()) AS
DAYS_FROMCREATED
FROM GISDC.JTX_JOBS INNER JOIN GISDC.JTX_STATUS ON
GISDC.JTX_JOBS.STATUS = GISDC.JTX_STATUS.ID INNER JOIN
GISDC.WMX_ASBUILT_INFO ON GISDC.JTX_JOBS.JOB_ID =
GISDC.WMX_ASBUILT_INFO.JOBID INNER JOIN
GISDC.JTX_PRIORITY ON GISDC.JTX_JOBS.PRIORITY =
GISDC.JTX_PRIORITY.PRIORITY_LEVEL
```

Lessons Learned

- ▶ Adapt and implement sooner!
 - ▶ Technology is constantly changing...
- ▶ Use the tools available
- ▶ Continue to evaluate other processes to see where WFM and DR can improve them
- ▶ Redundancy existed in various departments
 - ▶ Setting procedures is important, since buy-in is not guaranteed
- ▶ The 3-tier version tree was not necessary

Questions?

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Thank you!

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the frame, creating a modern, layered effect against the white background.