

Automate Your Application with Azure Logic Apps



George Young
Dawson Butte Software
info@dawsonbutte.net



Access DevCon Vienna
April 24 (25), 2020

Dev Life

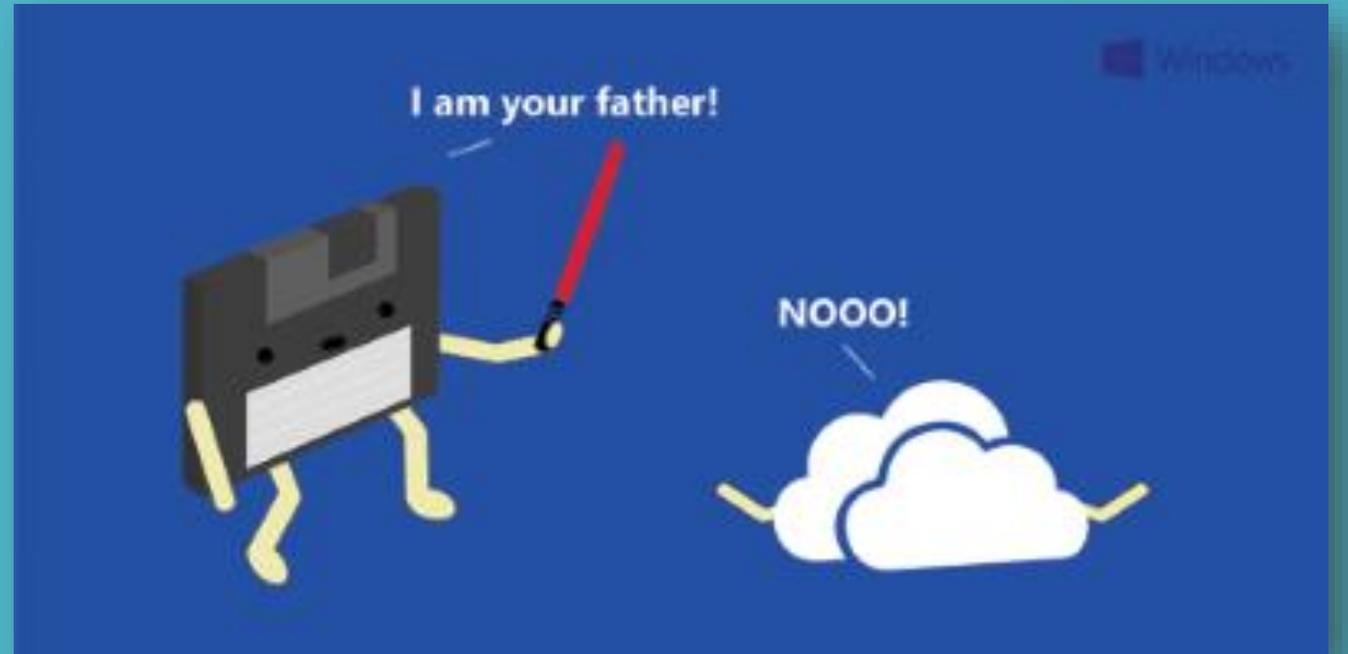
Quarantine, day 11



About the Presenter

-  25+ years professional development on the Microsoft stack
-  Started with Access around 1993, web dev a couple of years later
-  Independent development consultant – database and cloud
-  Conference speaker – Access Day, Denver Dev Day, PAUG, SQL Saturday...
-  Denver Area Access Users Group – <http://www.daaug.org>

Access and the Cloud



Access and the Cloud – Question

- 📊 Something of the black sheep of the Office family
- 📊 All the cool stuff is the cloud, but ...
- 📊 Access does not have a great native Internet story
- 📊 It does have some still *unparalleled* RAD features
- 📊 How to have the best of Access and the best of the cloud?
- 📊 “Pure” Access, “pure” SQL, “pure” cloud

Access and the Cloud – The Voyage

- Started with encountering limitations of Access Web Apps (2013)
- Auto-generated an ASP.NET app from the AWA database
- Upsized Access backend to SQL Azure, hooked up Access client
- Wrote complex ASP.NET web/mobile apps against SQL Azure database
- Wrote Power BI Reports against SQL Azure database
- Put the Access client in Azure VM
- ASP.NET version of AWA (just for fun)

Some Client App Screen Shots (2017)

City of Denver - WCPMIS

Wastewater Capital Program Management System

- Rich Access app (on Azure Virtual Machine)
- Azure SQL Database
- ASP.NET MVC mobile-friendly interface
- Integration with Office apps
- Power BI reports against live data



All the benefits of Access

Broader access to the application data

Standardizes data access across client and web



Show All Projects Standard Sort Add New Project...

Funding Plan Cat	Project Name	Short Project Name
WW CIP 2016-2021	13th and Delaware Sanitary	13thDel
WW CIP 2016-2021	2015 General Storm	Gen Stm 2015
WW CIP 2016-2021	2016 General Sanitary Improvements, Ph1	GenSan2016
WW CIP 2016-2021	2016 General Sanitary Improvements, Ph2	GenSan2016
WW CIP 2016-2021	2016 Public Restrooms	Loos 2016
WW CIP 2016-2021	2016 Sanitary Master Plan Updates	SSMP 2016
WW CIP 2016-2021	2016 Sanitary Project Development	SSDev 2016
WW CIP 2016-2021	2016 Storm Drainage MP Implementation	SDMP Imp 2016
WW CIP 2016-2021	2016 Storm Project Development	StormDev 2016
WW CIP 2016-2021	2016 Wastewater Capital Project Support	CIPsupport 2016
WW CIP 2016-2021	2017 General Sanitary Improvements	GenSan2017
WW CIP 2016-2021	2017 Public Restrooms	Loos 2017
WW CIP 2016-2021	2017 Sanitary Master Plan Updates	SSMP 2017
WW CIP 2016-2021	2017 Sanitary Project Development	SSDev 2017
WW CIP 2016-2021	2017 Storm Drainage MP Implementation	SDMP Imp 2017
WW CIP 2016-2021	2017 Storm Project Development	StormDev 2017
WW CIP 2016-2021	2017 Wastewater Capital Project Support	CIPsupport 2017
WW CIP 2016-2021	2017 Water Quality Implementation	WQ Impl 2017
WW CIP 2016-2021	2018 General Sanitary Improvements	GenSan2018
WW CIP 2016-2021	2018 General Storm	Gen Stm 2018
WW CIP 2016-2021	2018 Public Restrooms	Loos 2018
WW CIP 2016-2021	2018 Sanitary Master Plan Updates	SSMP 2018
WW CIP 2016-2021	2018 Sanitary Project Development	SSDev 2018
WW CIP 2016-2021	2018 Storm Drainage MP Implementation	SDMP Imp 2018
WW CIP 2016-2021	2018 Storm Project Development	StormDev 2018
Total		

Create a New WCPMIS Project

You must have ALL of the following information at your fingertips before you can add a project to WCPMIS...

Project Name:

Short Project Name:

Project Location:

Work Type:

Design Consultant:

Design Complexity: Simple Regular Complex

Construction Complexity: Simple Regular Complex

Special Considerations:

Potential Benefits:

Executive Summary:

Funding:

Primary Funding Source:

Funding Category:

Primary Funding Plan:

Procurement Method:

Budget Amount:

Preliminary Cost Estimate:

Expend Year:

Dates:

Start Planning:

Proposed Start Design:

Proposed Advertise:

Proposed POP (days):

Expand To: Funding Sources Funding Plans

Potential Benefits
This project will increase the capacity of an undersized sanitary system
Storm improvements will help limit historical, localized flooding and a
The benefit of this program is to extend the life of the city sanitary sy
The benefit of this program is to extend the life of the city sanitary sy
Public amenity; reduction of waste that has potential to runoff into th
The master plan allows the City to identify potential current capacity
This allows issues to be investigated prior to design in order to impro
This provides funding to respond to storm drainage investigations not
This allows issues to be investigated prior to design in order to impro
Annual project for repairs, rehabilitation, and pre-construction activiti
The benefits of this project is to extend the life of the city sanitary sy:
Public amenity; reduction of waste that has potential to runoff into th
The master plan allows the City to identify potential current capacity
This allows issues to be investigated prior to design in order to impro
This provides funding to respond to storm drainage investigations not
This allows issues to be investigated prior to design in order to impro
Annual project for repairs, rehabilitation, and pre-construction activiti
Water Quality projects mitigate the various pollutants generated by u
The benefits of this project is to extend the life of the city sanitary sy:
Storm drainage improvements constructed in this program help to red
Public amenity; reduction of waste that has potential to runoff into th
The master plan allows the City to identify potential current capacity
This allows issues to be investigated prior to design in order to impro
This provides funding to respond to storm drainage investigations not
This allows issues to be investigated prior to design in order to impro

Orders

Add New Order

#, Description, Team, Project, or Vendor

Work Authorizations Task Orders Work Orders Only Open/Active Orders

Order #			Vendor	Initial Amt	Change Orders	Adjusted Amt	Approved Invoices	Amt Remaining	Actual NTP	Initial POP (days)	Original End Date	Change Orders POP	Adjusted End Date
201841361			Merrick & Company	\$84,591.00	\$0.00	\$84,591.00	\$40,789.30	\$43,801.70	4/20/2018	240	12/16/2018	0	12/16/2018
201736300			ICON Engineering, Inc.	\$277,992.00	\$0.00	\$277,992.00	\$262,737.30	\$15,254.70	8/1/2017	500	12/14/2018	0	12/14/2018
201734567			Merrick & Company	\$289,775.00	\$0.00	\$289,775.00	\$30,071.50	\$259,703.50	5/9/2017	550	11/10/2018	0	11/10/2018
2018123847				\$167,000.00	\$0.00	\$167,000.00	\$0.00	\$167,000.00	10/2/2018	0	10/2/2018	0	10/2/2018
2018123848				\$235,000.00	\$0.00	\$235,000.00	\$0.00	\$235,000.00	10/2/2018	0	10/2/2018	0	10/2/2018
201628751			Enginuity Engineering Solutions, LLC	\$99,795.50	\$62,262.10	\$162,057.60	\$143,250.00	\$18,807.60	6/27/2016	278	4/1/2017	545	9/28/2018
2018-001	Work Authorization	WCPMIS		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	2/27/2018	210	9/25/2018	0	9/25/2018
201627738	Task Order	Parkhill Phase V: Utility Coordination (SEH/Goodbee Associates)	Short Elliott Hendrickson, Inc.	\$58,432.00	\$0.00	\$58,432.00	\$25,246.51	\$33,185.49	5/11/2016	181	11/8/2016	669	9/8/2018
2018-010	Work Authorization	CCE Sampling		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	6/7/2018	90	9/5/2018	0	9/5/2018
1234	Task Order	testing		\$90,000.00	\$0.00	\$90,000.00	\$0.00	\$90,000.00	10/24/2017	270	7/21/2018	0	7/21/2018
2018-009	Work Authorization	Missouri and Nebraska Paving		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	6/7/2018	30	7/7/2018	0	7/7/2018
201732522	Task Order	Muller - Design Support Services	Muller Engineering Company, Inc.	\$99,999.00	\$0.00	\$99,999.00	\$57,602.61	\$42,396.39	1/12/2017	534	6/30/2018	0	6/30/2018
2018-007	Work Authorization	Florida and South Platte River Drive Excavation		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	4/26/2018	60	6/25/2018	0	6/25/2018
201735171	Task Order	Parsons - WCPMIS Support 2	Parsons	\$98,934.84	\$0.00	\$98,934.84	\$97,453.02	\$1,481.82	6/15/2017	365	6/15/2018	0	6/15/2018
201735075	Task Order	Parkhill Ph V - BNSF Agreement #BF10010577	BNSF Railway Co.	\$206,448.09	\$0.00	\$206,448.09	\$178,507.86	\$27,940.23	1/30/2018	120	5/30/2018	0	5/30/2018
2018-008	Work Authorization	Potenza Park Sod		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	5/15/2018	14	5/29/2018	0	5/29/2018
2018-003	Work Authorization	Kennedy Soil and Sod		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	3/26/2018	60	5/25/2018	0	5/25/2018
2018-006	Work Authorization	12th and Cherokee Utility		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	4/14/2018	30	5/14/2018	0	5/14/2018
2018-005	Work Authorization	Glencoe Sanitary		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	4/13/2018	30	5/13/2018	0	5/13/2018

Globeville Stormwater Study

On Call consultant Merrick & Company and their sub-consultant OV Consulting shall provide enhanced public involvement and outreach services to develop a planning strategy and public education and involvement program to establish a framework for resiliency in land use practice and green infrastructure that supports near-term and long-range drainage improvements for Globeville.



Active General Storm Projects Ranking Summary

[Print/Save as PDF](#)
[Done](#)

Project Name	Score	Project Manager	In House
43rd and Sherman - East Alley	78	Pavone	1
Goldsmith Gulch at Monaco and Evans	74	Stewart	0
Platte Farm Open Space (49th and Grant)	62	Cherry	0
Ellsworth & Kalamath	58	Blake Russo-Nixon	0
Utica and Bayaud	58	Bastasch	0



Project Details - General Storm Mt. Harvard



[General](#)
[Dates](#)
[Notes](#)
[Funding](#)
[Team](#)
[Locations](#)

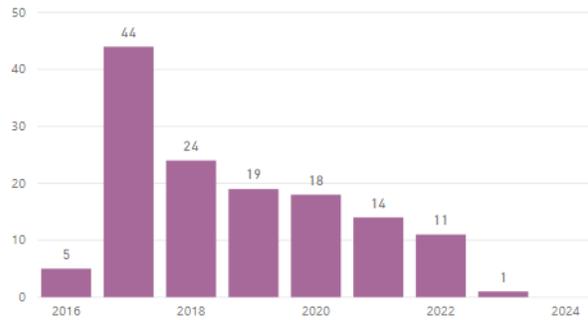
[Risks](#)
[Materials](#)
[Bid Tabs](#)
[Summary](#)

Dates

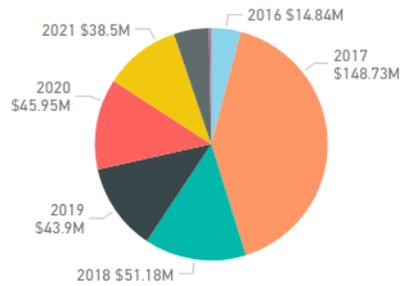
Design	Proposed	Estimated	Actual
Start Design	3/1/2015		11/3/2014
30% Plans Submitted for Review			
65% Plans Submitted for Review		2/17/2016	3/25/2016
95% Plans Submitted		6/16/2016	7/21/2016

Power BI Interactive Reports

Future Projects by Proposed Advertise Year



Budget by Proposed Advertise Year



Budget Amount

\$361.85M

ProjectID	ProjectName	ExpendYr	BudgetAmt
4580	Jackson St. System, Ph1	2019	\$3,000,000
4678	UDFCD CIP: Lakewood Gulch-Sheridan Ph2, 2018	2018	\$500,000
4773	East Yale Avenue Storm, Ph1	2017	\$2,630,040
4850	2016 General Sanitary Improvements, Ph1	2016	\$2,400,000
4851	2017 General Sanitary Improvements	2017	\$3,000,000
4871	2016 Citywide ADA Ramp & Concrete Repair, Ph3	2016	\$840,000
4957	Park Hill Storm, Ph5	2017	\$12,240,000
4964	USACE Study: Denver GI Feasibility Study	2014	\$1,350,000
4969	2019 Wastewater Capital Project Support	2019	\$1,000,000
4974	2018 Citywide Concrete Repair	2018	\$2,000,000
4975	2019 Citywide Concrete Repair	2019	\$2,000,000
4977	2018 General Storm	2018	\$4,500,000
4978	2019 General Storm	2019	\$5,000,000
4992	27th Street Interceptor, Design	2017	\$400,000
4993	27th Street Interceptor, Ph1	2020	\$15,000,000
5002	IC-Globeville Landing Outfall, Ph3	2016	\$0
5004	IC-Globeville Landing Outfall, Ph2	2016	\$24,000,000
5013	2020 Citywide Concrete Repair	2020	\$2,000,000
5016	2018 General Sanitary Improvements	2018	\$3,500,000
5017	2019 General Sanitary Improvements	2019	\$4,000,000
5018	2020 General Sanitary Improvements	2020	\$4,000,000
5024	2020 General Storm	2020	\$5,000,000
5031	2017 Wastewater Capital Project Support	2017	\$1,500,000
5033	2020 Wastewater Capital Project Support	2020	\$1,500,000
5034	2021 Wastewater Capital Project Support	2021	\$1,500,000
5036	2018 Wastewater Capital Project Support	2018	\$1,500,000
5037	Marion Street System, Design	2017	\$1,000,000
5038	Marion Street System, Ph1	2019	\$5,000,000
5041	E. 16th Avenue System, Ph2	2021	\$15,000,000
5049	E. 16th Avenue System, Ph1	2018	\$1,500,000
5051	Jackson St. System, Ph2	2020	\$13,000,000
5066	2019 Storm Drainage Master Plan Update	2018	\$1,250,000
5071	Sanderson Gulch Reach 1	2017	\$12,500,000
5073	Oneida & Tenn to Cherrv Creek	2021	\$1,750,000
Total			\$361,845,040

Access and the Cloud – Logic Apps

- 🤖 The Azure cloud offers much more than databases, VMs and web apps
- 🤖 Logic Apps are one of these
- 🤖 Application workflow automation outside of the Access application
- 🤖 Easy, no-code, drag-drop-click interface to orchestrate workflows
- 🤖 Work natively with SQL Azure – no new platforms to learn
- 🤖 Two pieces: triggers and actions, which are chained together
- 🤖 A trigger kicks off the processing of the Logic App (something happens)
- 🤖 Action(s) are what is done as a result of the trigger firing (stuff is done)

Access and the Cloud – Logic Apps

 Two workflow automation demos

 1. Logging database changes to a log table

 2. Generating a daily summary email with database data

DEMO: Sample Access/SQL Azure App

-  Access application on the local machine
-  Azure SQL Database backend
-  An Order table, to store orders
-  An Order form, to enter orders
-  An OrderLog table, to log order activity

logic app demo - azure sql db : Database- C:\Users\George\OneDrive\presentations\access devcon vienna 2020\logic app demo - az... George

File Home Create External Data Database Tools Help Tell me what you want to do

View Paste Cut Copy Format Painter Filter Ascending Descending Remove Sort Selection Advanced Toggle Filter Refresh Save Delete More Find Replace Go To Select Text Formatting

All Access Objects Search... Tables: dbo_Order, dbo_OrderLog Forms: frmOrder

Order Form

ID	3
Item	Chocolate Ice Cream
Quantity	1
Price	\$9.95
Customer Email	fred@bedrock.com
Order Date	4/24/2020 07:52:19
Order Total	\$9.95

Record: 3 of 3 No Filter Search

Form View

dbo.Order

Columns

- ID (PK, int, not null)
- Item (nvarchar(64), not null)
- Quantity (int, not null)
- Price (decimal(5,2), not null)
- CustomerEmail (nvarchar(64), not null)
- OrderDate (datetime2(0), not null)
- cOrderValue (Computed, decimal(16,2), null)

dbo.OrderLog

Columns

- ID (PK, int, not null)
- OrderID (int, not null)
- OrderDate (datetime2(0), not null)
- OrderValue (decimal(16,2), not null)

	ID	Item	Quantity	Price	CustomerEmail	OrderDate	cOrderValue
1	1	Yellowfin Tuna	1	50.00	bob@hungry.net	2020-03-19 15:34:17	50.00
2	2	Cheese Pizza	2	15.00	daaug@meeting.com	2020-03-19 15:34:55	30.00

	ID	OrderID	OrderDate	OrderValue
1	1	1	2020-03-19 15:34:17	50.00
2	2	2	2020-03-19 15:34:55	30.00

DEMO: Logging Database Changes

- 👤 When an order is placed, we want to log in the database
- 👤 Trigger: A row is added to the Order table
- 👤 Action: Add a row to the OrderLog table, with data from Order

When an item is created (V2) ...

* Server name

* Database name

* Table name

How often do you want to check for items?

* Interval * Frequency

Connected to logicappdemo vienna2020.database.windows.net. [Change connection.](#)



Insert row (V2) ...

* Server name

* Database name

* Table name

* OrderID

* OrderDate

* OrderValue

Connected to logicappdemo vienna2020.database.windows.net. [Change connection.](#)

ID	OrderID	OrderDate	OrderValue
1	3	4/24/2020 07:52:19	9.95
* (New)			

Order Form

ID: 5

Item: Ice Cream

Quantity: 150

Price: \$2.50

Customer Email: karl@accessvienna.org

Order Date: 4/24/2020 17:29:24

Order Total: \$375.00

ID	OrderID	OrderDate	OrderValue
1	3	4/24/2020 07:52:19	9.95
2	5	4/24/2020 17:29:24	375
* (New)			

DEMO: Generating Summary Emails

 On a daily basis, we want to send out an email summarizing orders

 Trigger: A specific time every day (recurrence)

 Actions: Get the daily orders, put them in an email, and send it

Recurrence ...

*Interval: *Frequency:

[Add new parameter](#)

Get rows (V2) ...

*Server name:

*Database name:

*Table name:

[Add new parameter](#)

Connected to logicappdemo vienna2020.database.windows.net. [Change connection.](#)

Create HTML table ...

*From:

*Columns:

Header	Value
ID	<input type="text" value="ID"/>
OrderDate	<input type="text" value="OrderDate"/>
Total	<input type="text" value="cOrderValue"/>
CustomerEmail	<input type="text" value="CustomerEmail"/>

Send an email from a shared mailbox (V2) ...

*Body:

*Mailbox Address:

*Subject:

*To:

[Add new parameter](#)

Connected to [Change connection.](#)

```
8 ALTER VIEW [dbo].[vDailyOrders]
9 AS
10 SELECT ID, Item, Quantity, Price, CustomerEmail, OrderDate, cOrderValue
11 FROM [dbo].[Order]
12 WHERE OrderDate > DATEADD(HOUR, -24, GETDATE())
13 GO
```

All Unread
By Date v ↑

v Today

Dawson Butte Information

Daily Orders

Here are the orders for the day

↓

11:42

Currently displaying all messages newer than 12 months.

Daily Orders

DB

Dawson Butte Information

To ○ Vienna 2020 Mail

i This message was sent with Low importance.
 If there are problems with how this message is displayed, [click here to view it in a web browser.](#)

Here are the orders for the day

Date	Customer	Total
2020-04-24T07:52:19	fred@bedrock.com	9.95
2020-04-24T16:35:51	barney@bedrock.com	25
2020-04-24T17:29:24	karl@accessvienna.org	375
2020-04-24T17:30:09	karl@accessvienna.org	129.9
2020-04-24T17:30:56	test@test.org	320
2020-04-24T17:30:34	mug@contoso.com	2.5
2020-04-24T17:31:18	john.doe@contoso.com	22
2020-04-24T17:30:43	donald.trump@whitehouse.gov	10000
2020-04-24T17:32:16	hanover@vienna2020.net	6.66

Wrapping Up

- 🤖 With a cloud database for our Access back end, it's a whole new world
- 🤖 The Azure cloud offers many ways to enhance and extend Access
- 🤖 Logic Apps allow drag-drop-click automation of complex workflows
- 🤖 Access can still be *the* application, while taking advantage of the cloud
- 🤖 No need to learn new frameworks or platforms
- 🤖 Thank you for your participation!
- 🤖 Any questions or comments, please email info@dawsonbutte.net

Dev Life



Thank You



Any questions or comments, please email info@dawsonbutte.net



Join us online at <http://www.daaug.org>