

#### Keeping Current

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#### Who are we?

- 30-40 person company
- Based in Lexington
- Large domain knowledge in Veterinary software (growing in Dental)
- Provides data integration to Practice Management Software (PMS)
- Contracted software development for veterinary service providers



#### Who are our Partners?

- 3rd party integration services
  - ex: scheduling, payment processing
- Companies that own multiple practices
- Co/ops of multiple practices

### What is Data Integration?



- Processes, such as Extract/Transform/Load (ETL), to combine data from disparate source systems
- Providing easy access to handled data
- At Bitwerx that involves (but isn't limited to):
  - Accessing, manipulating, and taxonomizing PMS source data
  - Conversions to secondary PMS
  - Straight data access via REST API



## What is Data Integration?

- Scheduled syncs of data
  - In-House standardized schema of PMS data
    - various PMS schemas transformed into Bitwerx schema
  - API to get sync'd data (use ODATA)
- OnDemand/WriteBack from/to PMS source data
  - API to get real time data from PMS
    - ex: appointments
  - API to write data back to PMS
    - ex: payments



# What is Data Integration? (cont)

- Conversions (from one PMS to another)
- Mapping of veterinary data
  - no standardized codes as opposed to Human Health
    - ex: Coloring: B/W, Black and White, Black & White



#### How do we do this?





### Tech Stack

Programming Languages







Framework & Libraries •

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Devops ٠



• Tools

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#### Services



- DataCo Connectivity
- DataCo REST APIs
- Daylight
- SupportCo



## DataCo Connectivity (Agent)

- Installed at Practice
- C++ Windows service 24/7
- GRPC to communicate to Cloud
- Scheduled scraping of PMS database
  - Use ODBC to connect to database
  - Transform SQL result to CSV
  - Use LibRsync to only upload delta of CSV to blob (cloud) storage
- OnDemand targeted SQL queries to retrieve or write back particular information

Tech:

• C++

- GRPC
- ODBC
- LibRsync



### DataCo Connectivity (Cloud Internal Endpoint)

- Docker container running in Azure Kubernetes Service (AKS)
- .NET Core 3.1 (C#) compiled for linux
- Communicate with installed agent at the practice
  - Give instructions on what to do
  - Get appropriate configs, format for client
- Apply LibRsync data from client to blob storage

- C# .Net Core
- GRPC
- Docker / AKS
- Azure Events
- LibRsync
- Azure Blob Storage
- Docker

### DataCo Connectivity (Cloud Loaders)

- Initiator + Coordinator
  - Azure Function App (Microservice) + Batch App
  - Azure Creates loader tasks, monitors status
- Staging
  - Azure Batch App
  - Convert data in blob storage CSVs to PostgreSql
  - Important to be smart about how the staging schema's are setup
- Intermediate / DataStore
  - Azure Batch App
  - Convert Staging data to Intermediate Data (in-house schema)
    - Utilize EF + Linq to transform data



- C# .Net Core
- Azure Blob Storage
- Azure Functions
- Azure Batch Apps
- Azure Events
- Ling
- Entity Framework
- PostgreSql



Authorize

#### DataCo REST APIs

#### Bitwerx Dataco API <sup>10</sup> <sup>0459</sup>

/swagger/v1/swagger.json

Dataco API

Contact Bitwerx Operations

Appearances						
GET	/api/v1/Appearances Retrieves a paged and filterable list of Appearances.	2				
Parameters		Try it out				
Name	Description					
\$select	Limits the properties returned in the result.					
(query)	\$select - Limits the properties returned in the					
Sexpand string	Indicates the related entities to be represented inline. The maximum depth is 2.					
(query)	\$expand - Indicates the related entities to be					
\$filter string (query)	Restricts the set of items returned. The maximum number of expressions is 100.					
	\$filter - Restricts the set of items returned. Th					
<pre>\$orderby string (query)</pre>	Specifies the order in which items are returned. The maximum number of expressions is 5.					
	\$orderby - Specifies the order in which items					

#### DataCo REST APIs

- Base API
  - Provides access to Intermediate and Daylight data
  - Queries utilize ODATA
- OnDemand API
  - Provides access to live querying of practice data
  - Requests send down SQL to Connectivity Agent
  - Results from Agent are sent directly back to API to give to user

- C# .Net Core
- Swagger
- AutoMapper
- Azure Web Service
- Azure B2C





# Daylight

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	All Pharmacy Medications	M337	METOCLOPRAMIDE 5MG	\$0.20		Category	
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## Daylight

- Internal Tool/Website to map data from Intermediate to Daylight
- Uses Angular Frontend, .Net Core Backend, PostgreSql DB, Neo4j
- Starting to work with Machine Learning to automate process
  - or help facilitate a first pass



- C# .Net Core
- Angular
- Azure Web Service
- Neo4j

## SupportCo



Practices	Dashboard 🔟								
	Current Statuses								
New ×	4 ×	1 🖹	149 V Live						
	Stale	Muted							
	68 +	221 🏠	215 🔀						
New Y & B =	New	Total Active	Conversions						
New X	Communication Activity Oldest active	Conversion	Activity Past Due This Week Upcoming Complete						
	Mapping feedback	All Offerings	~						
	93 #528 Last active	Aug 5	Trial Gather Data No Date						
×±s≡	Converting Attach	nents Aug 27	Trial Q.A. No Date						
	Vaccine Dates - As Due Date	signing Incorrect	Trial Gather Data No Date						
New 2	● 5 #682 Last active	Sep 3	Trial Q.A. No Date						

### SupportCo



- React Based Website
  - In-House admin Portal
    - configs, statuses, triggers, communication, installers
  - Partners have limited access
- SupportCo Backend is both the frontend's backend and internal repository for admin db

- C# .Net Core
- REACT
- Azure Web Service
- Azure B2C

#### How We Organize Work



- Kanban (monthly prioritization meetings)
- Use Azure to organize Projects, Epics, Features, User Stories, Bugs, etc.
- Use Azure as git repo
  - Pull Requests (PRs)
  - Build / Release Pipelines
- Microsoft Teams for internal communication



#### Reasons to come to work









#### Want to work here?

- Use modern programming approaches
- Developer first company
- Collaborative development environment
- Great resources / benefits for employees
- Inclusive workplace
- Work with experts in the veterinary data field





**Questions?**