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?

We have technology......
Tech Stack

• Programming Languages
  - C
  - C#
  - JS
  - Python

• Databases
  - ElephantSQL
  - Sybase
  - c-treeACE
  - SQL Server
  - MongoDB

• Framework & Libraries
  - Microsoft .NET
  - gRPC
  - React
  - Angular
  - Node.js
  - Entity Framework
  - Rails

• Cloud

• Devops

• Tools
Services

• DataCo Connectivity
• DataCo REST APIs
• Daylight
• SupportCo
DataCo Connectivity (Agent)

- Installed at Practice
- C++ Windows service 24/7
- GRPC to communicate to Cloud
  - 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
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

Tech:
• C# .Net Core
• Azure Blob Storage
• Azure Functions
• Azure Batch Apps
• Azure Events
• Linq
• Entity Framework
• PostgreSql
DataCo REST APIs

### Bitwerx Dataco API

#### Dataco API

Contact Bitwerx Operations

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**GET** /api/v1/Appearances  : Retrieves a paginated and filterable list of Appearances

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>$select</strong> (query)</td>
<td>Limits the properties returned in the result.</td>
</tr>
<tr>
<td><strong>$expand</strong> (query)</td>
<td>Indicates the related entities to be represented inline. The maximum depth is 2.</td>
</tr>
<tr>
<td><strong>$filter</strong> (query)</td>
<td>Restricts the set of items returned. The maximum number of expressions is 100.</td>
</tr>
<tr>
<td><strong>$orderby</strong> (query)</td>
<td>Specifies the order in which items are returned. The maximum number of expressions is 5.</td>
</tr>
</tbody>
</table>
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

Tech:
• C# .Net Core
• Swagger
• AutoMapper
• Azure Web Service
• Azure B2C
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

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

Tech:
- 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