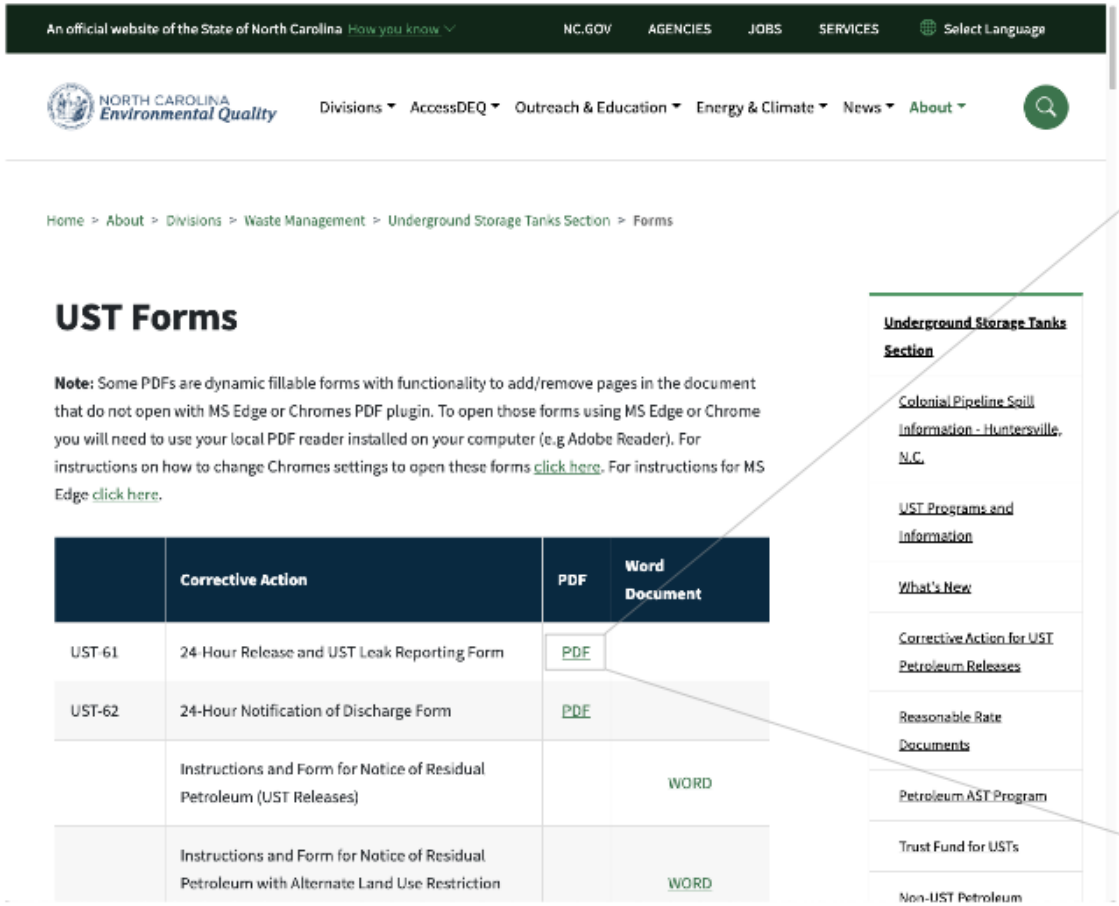
DEQ's Permitting Transformation Program (aka AccessDEQ)

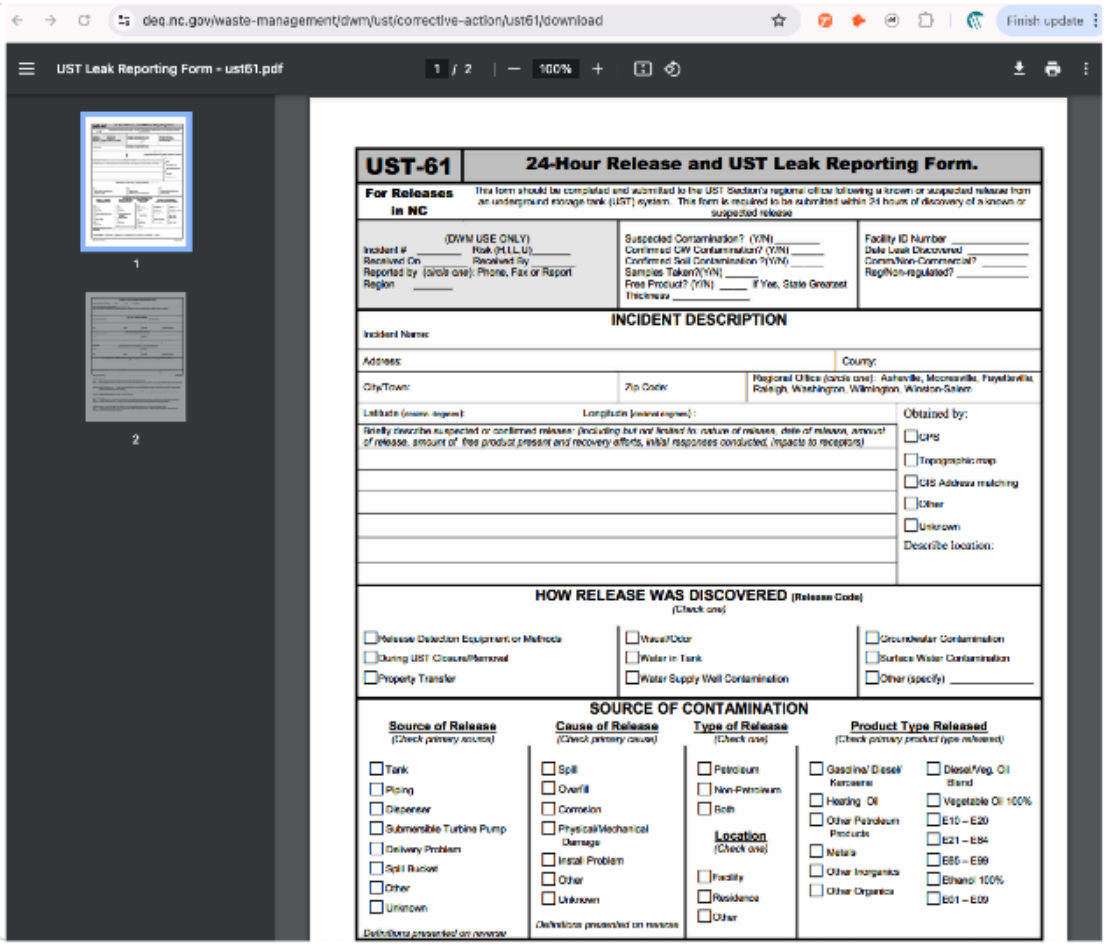
A COUPLE OF BIG BUSINESS PROBLEMs TO SOLVE

- **Permit applications completed by the external community are analog (i.e., Word docs, fillable PDFs)**

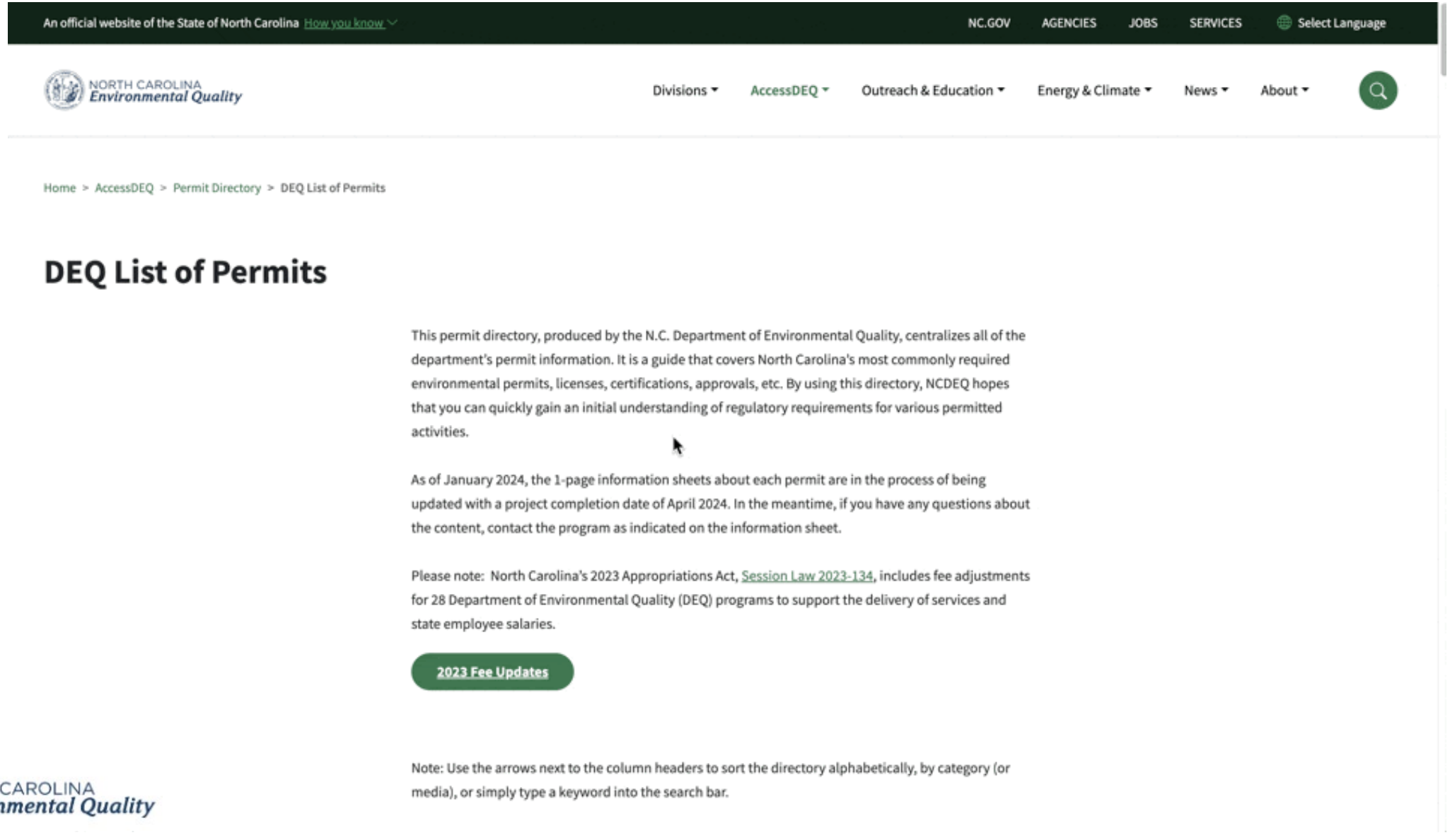
- **Aggregating data into actionable/meaningful information is difficult and time-consuming (e.g., how many underground storage tank diesel leaks reported in 2023 in Mecklenburg County were the result of a damaged spill bucket?)**

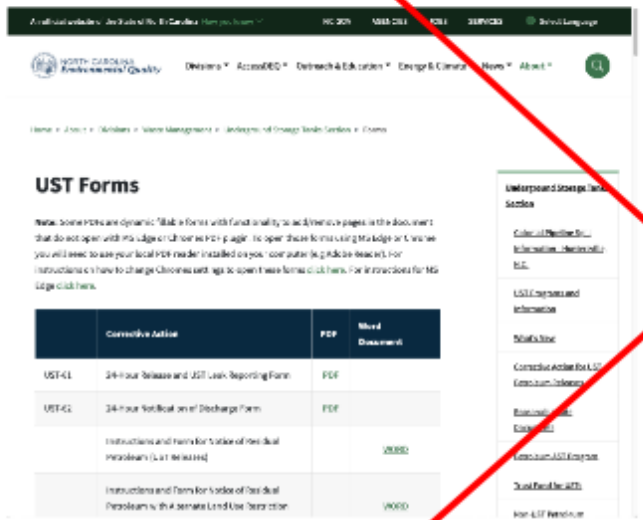
CURRENT METHOD TO FILL OUT A PERMIT APPLICATION

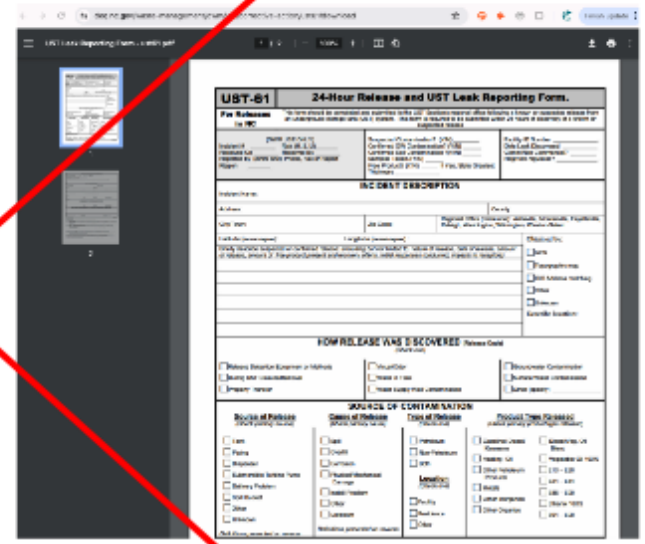




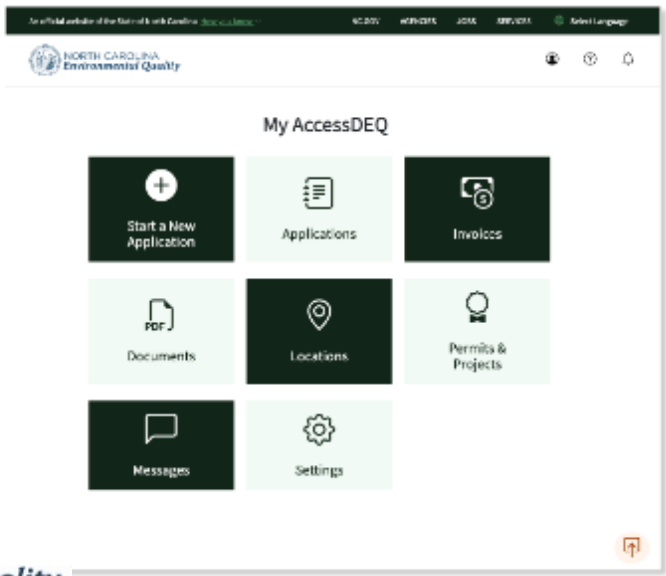
132 PERMIT APPLICATION FORMS !!





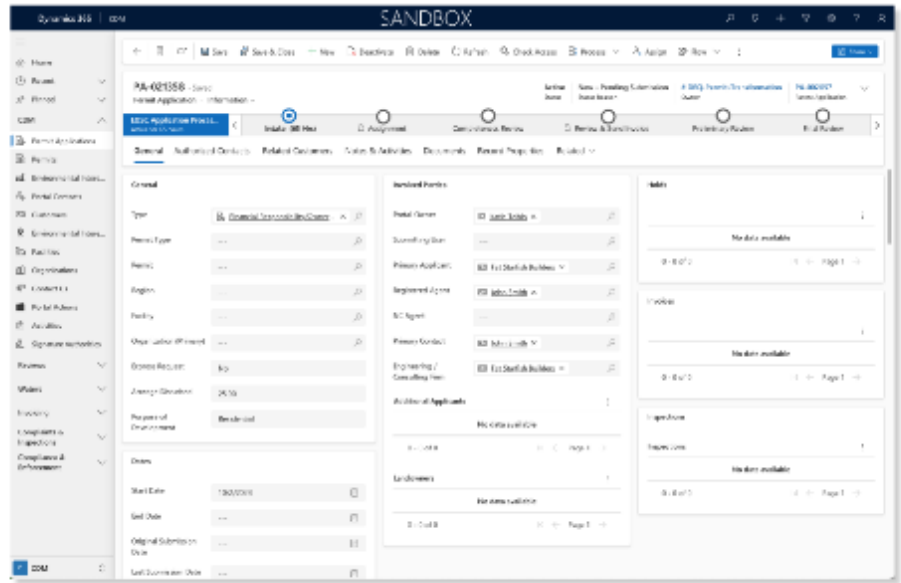


External Portal



portal connector

Internal System



NORTH CAROLINA
Environmental Quality

DEQ Data Platform

PLATFORM MODERNIZATION COMPONENTS

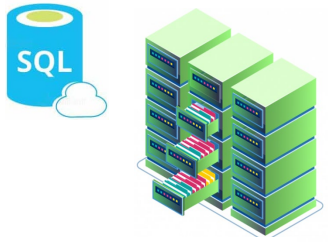
TIGHTLY INTEGRATED

Data Warehouse

Centralization of DEQ Data Sources

DEQ Enterprise Data Model

Optimized for Data Storage



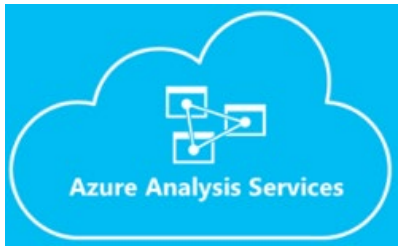
Analysis Services

Optimized for performance (Fast)

Role based security (Access)

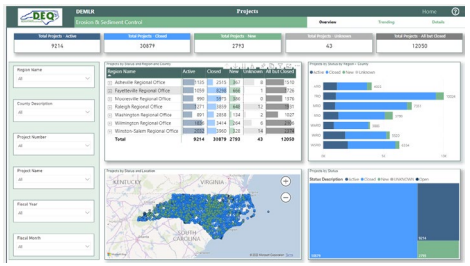
Semantic Data Model (User Friendly)

Business logic and metrics (Validated)



Analytics

Interactive Visuals

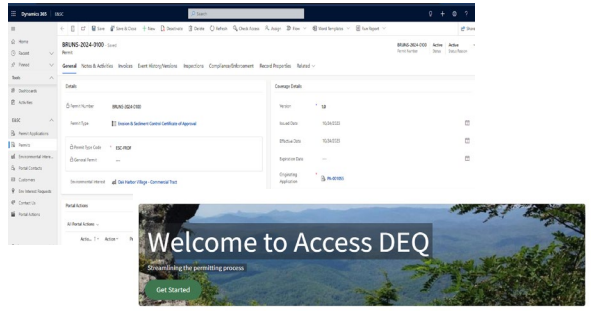


AccessDEQ Solution

Single Platform Integration

Permitting Workflow and Management

Public Portal



Welcome to the Access DEQ online permitting portal.

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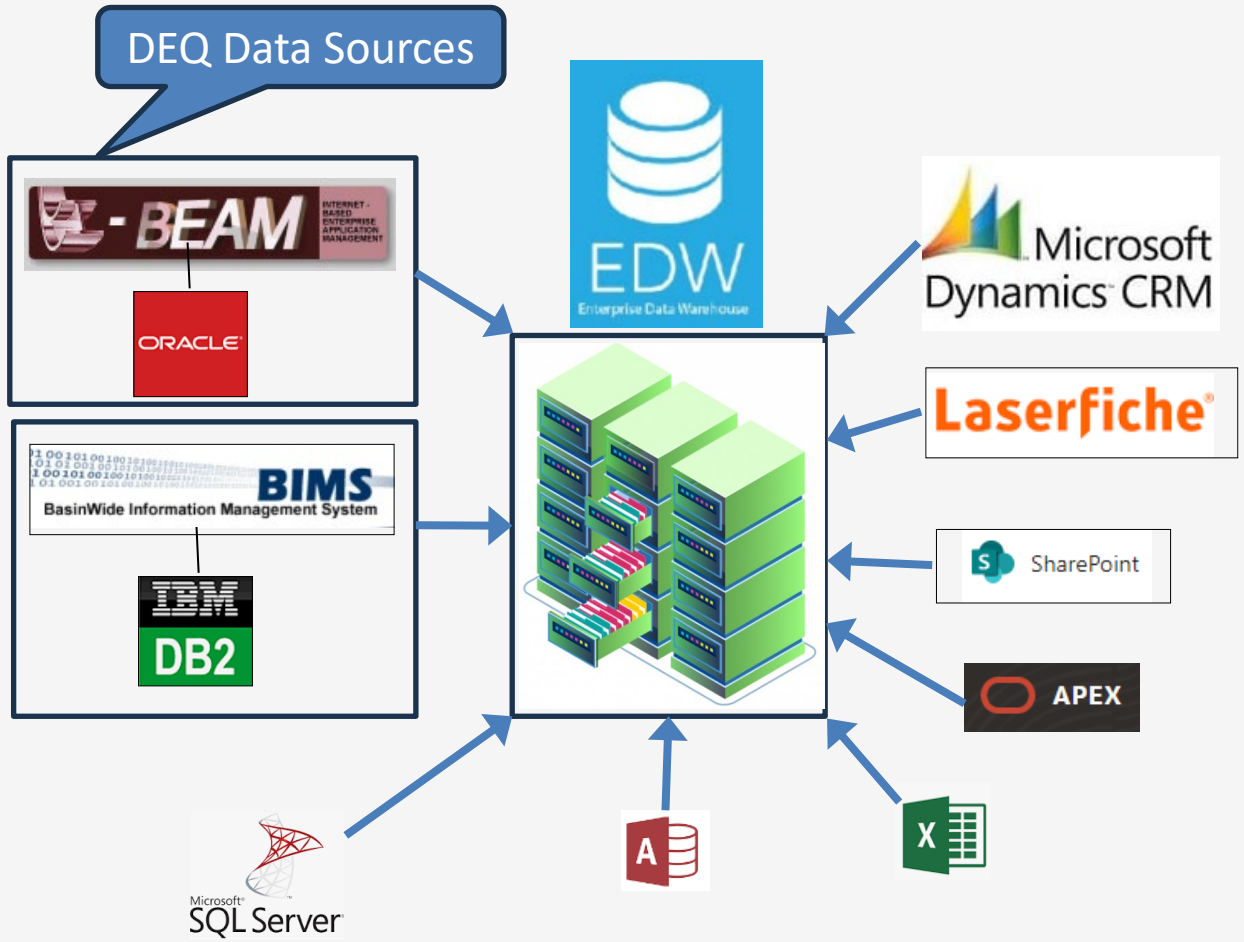
Environmental Quality

Enterprise Data Warehouse (EDW)

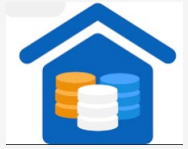
Azure SQL

- The EDW acts as the single repository for all DEQ data sources. No data is left behind.
- The DEQ Common Data Model promotes consistency.
- Centralizes DEQ data originating from multiple data sources and applications.
- Makes data available in the cloud ready for Azure Analysis Services.
- Original data sources and systems remain untouched.

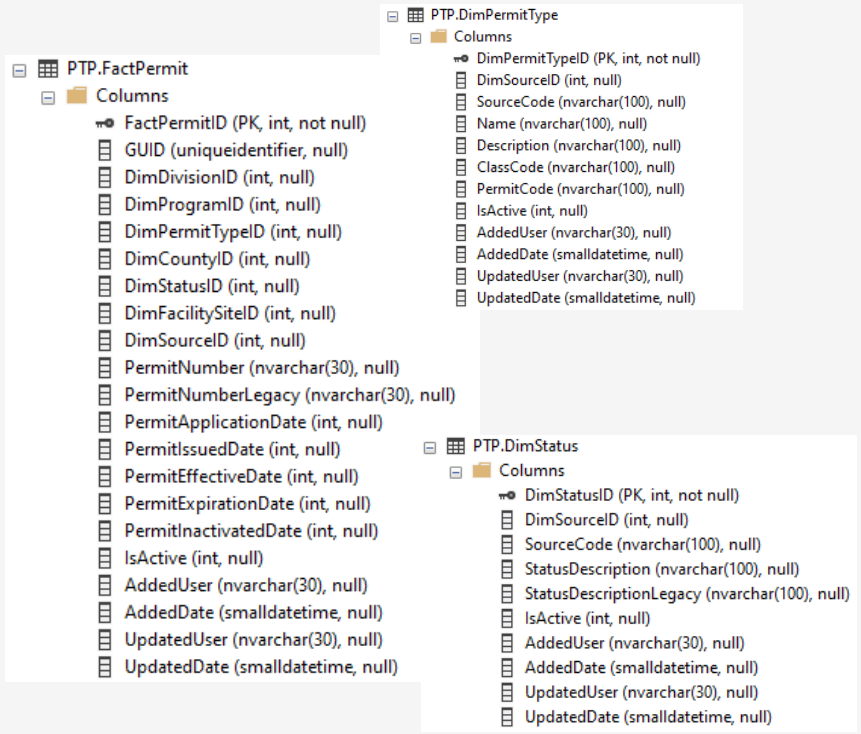


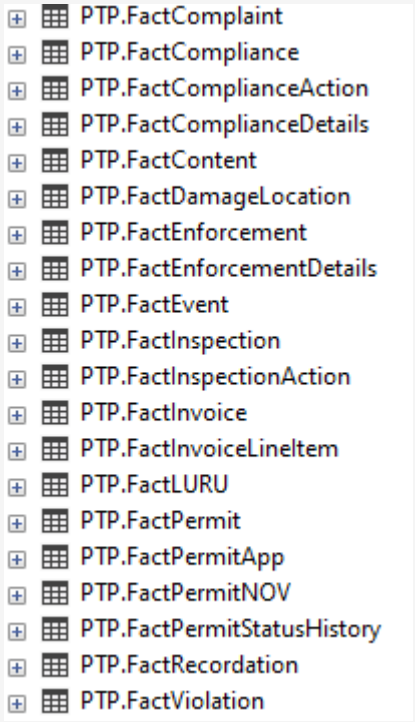
Enterprise Data Warehouse

Data Modeling



- Permit - Fact Table
- Permit Type – Dimension Table
- Status – Dimension Table





- A fact table is the central table in a star schema of a data warehouse. A fact table stores quantitative information for analysis and is often denormalized.
- A fact table works with dimension tables. A fact table holds the data to be analyzed, and a dimension table stores data about the ways in which the data in the fact table can be analyzed.

https://www.techtarget.com/searchdatamanagement/definition/fact-table

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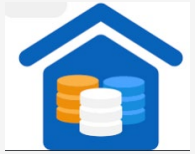
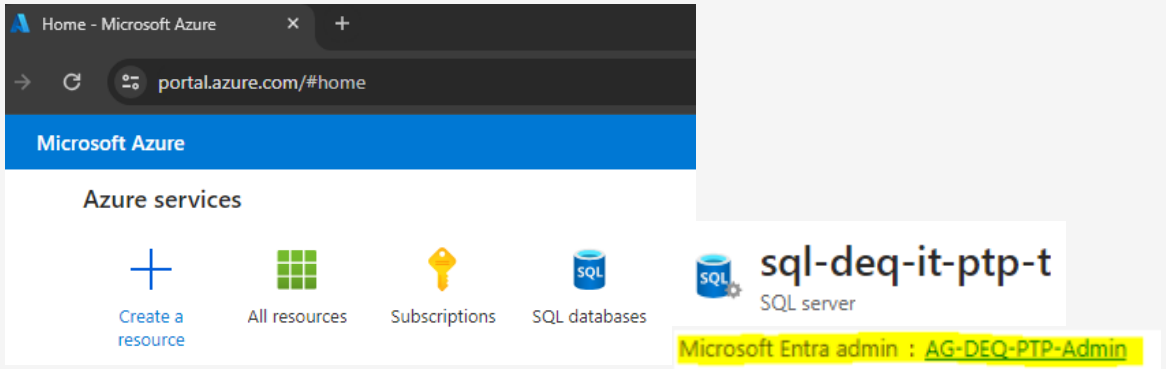
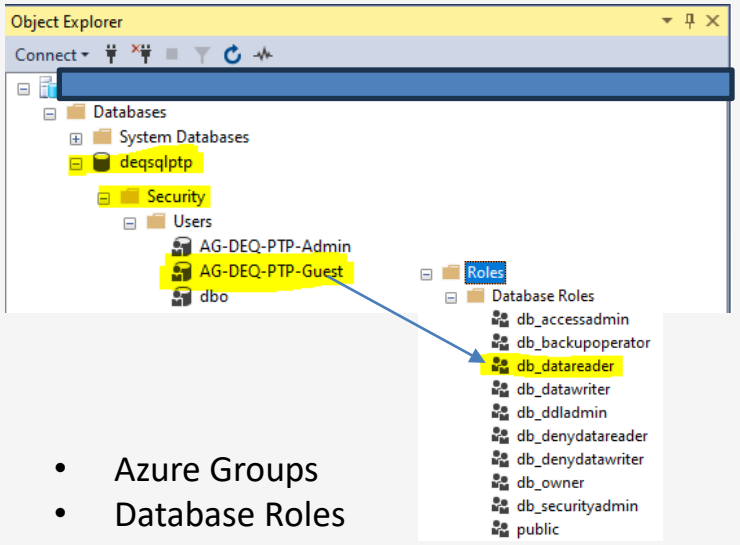
Enterprise Data Warehouse

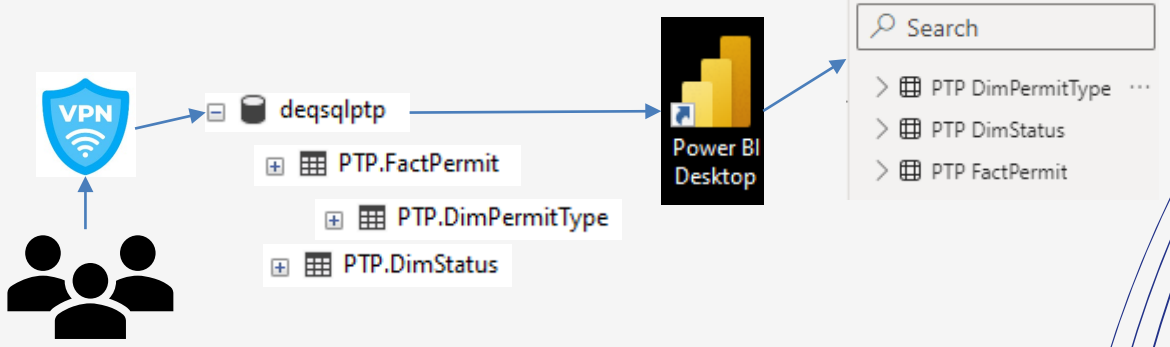
Hosting & Security







- Azure Groups
- Database Roles

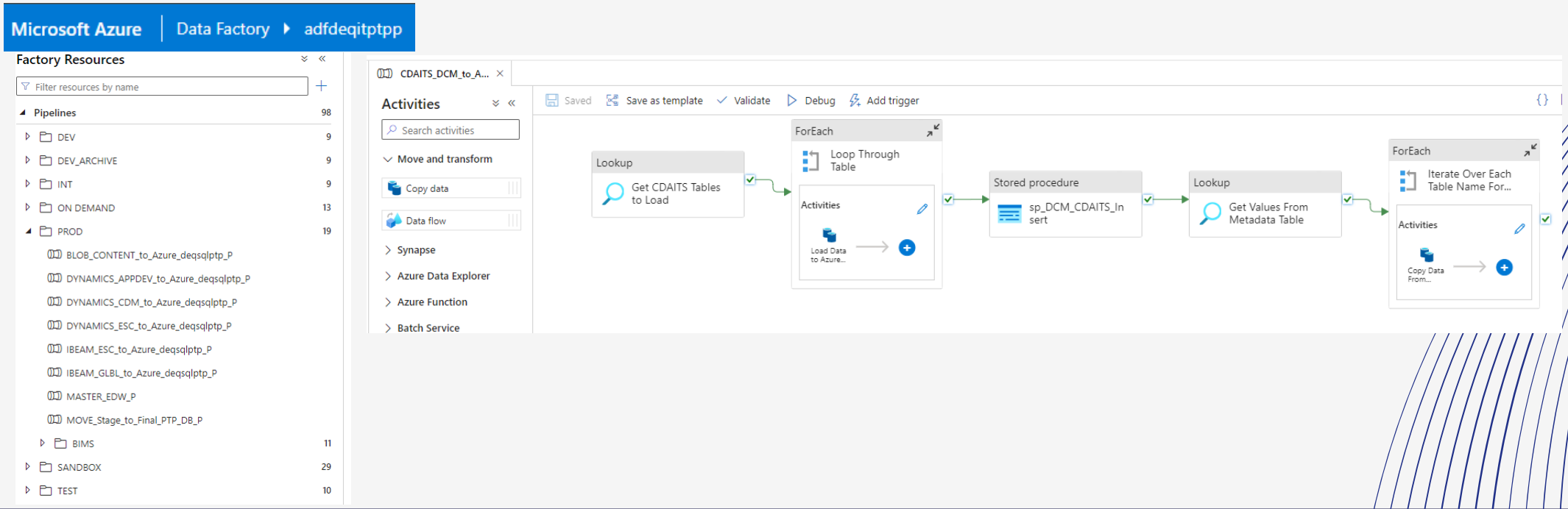


DEQ Power Users

Azure Data Factory

Pipelines

https://www.cathrinewilhelmsen.net/integration-runtimes-azure-data-factory/



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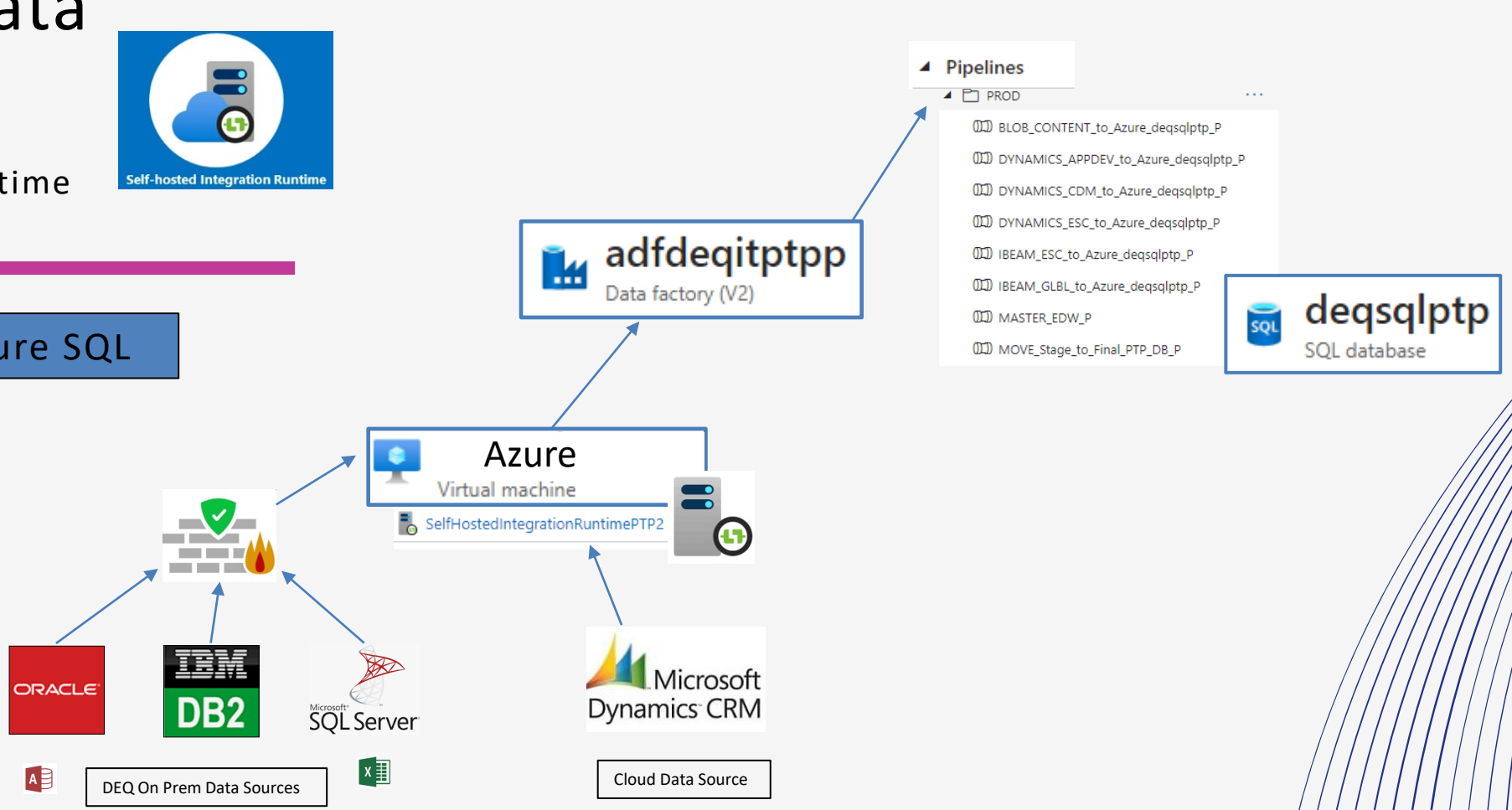
Azure Data Factory

Integration Runtime

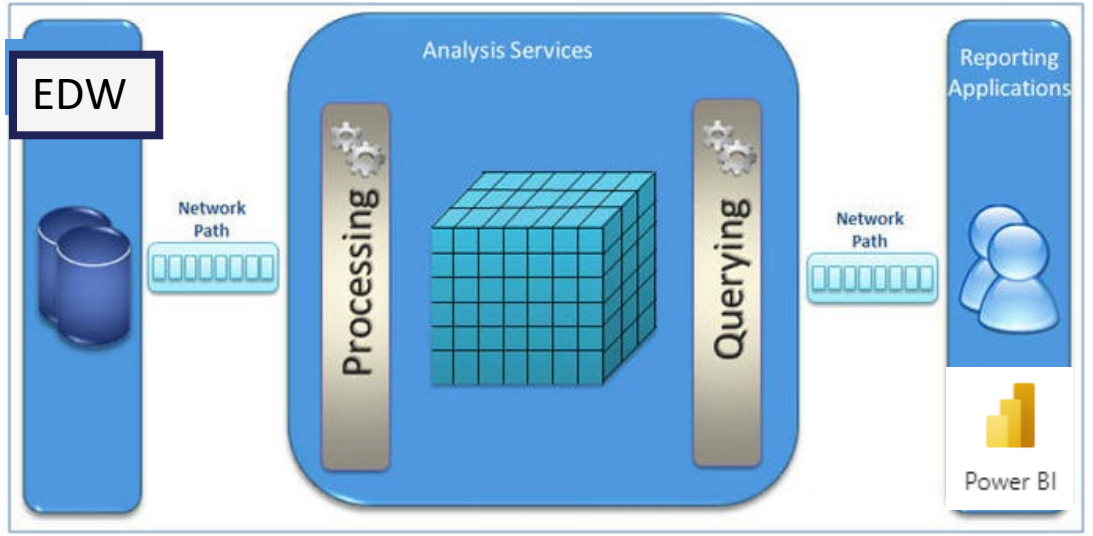
Source →Azure SQL



Azure Analysis Services

The Cube

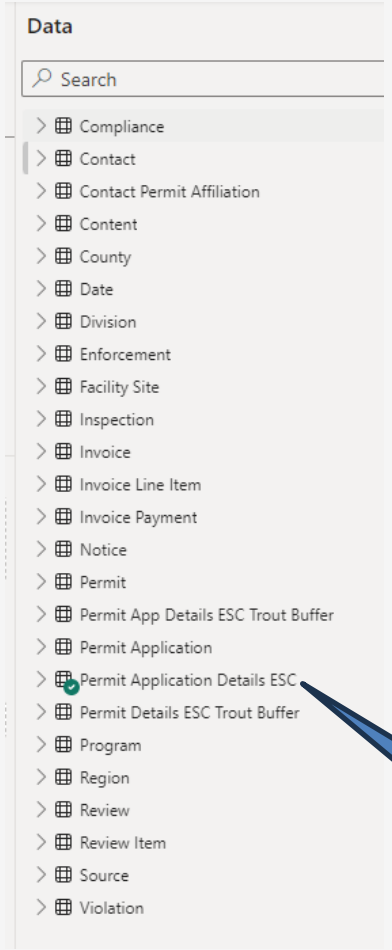
- The analytical data processing engine in the cloud.
- Presents the raw data as optimized for reports and visualizations that end users can understand.
- Where end users will go for most reporting and analysis needs:
  - Fast and responsive.
  - Role level security access to data.
  - Leverage the organizational measures and common data model.



Azure Analysis Services

Key Concepts

- Pre-Defined Data Modeling
- Define & develop organizational Measures and Key Performance Indicators.
- Stored in the cube, Measures and KPI's can be reused across the enterprise promoting consistency and minimizing room for error.



Organizational Measure

SUM (Permit Applications Table [Applications])

Division	Total Applications
DAQ	34
DEMLR	331
DCM	127
DWM	50
DWR	81

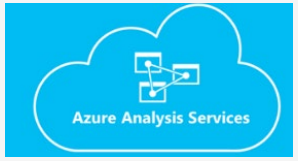
Total ESC Permit Applications Submitted

Semantic Data Modeling

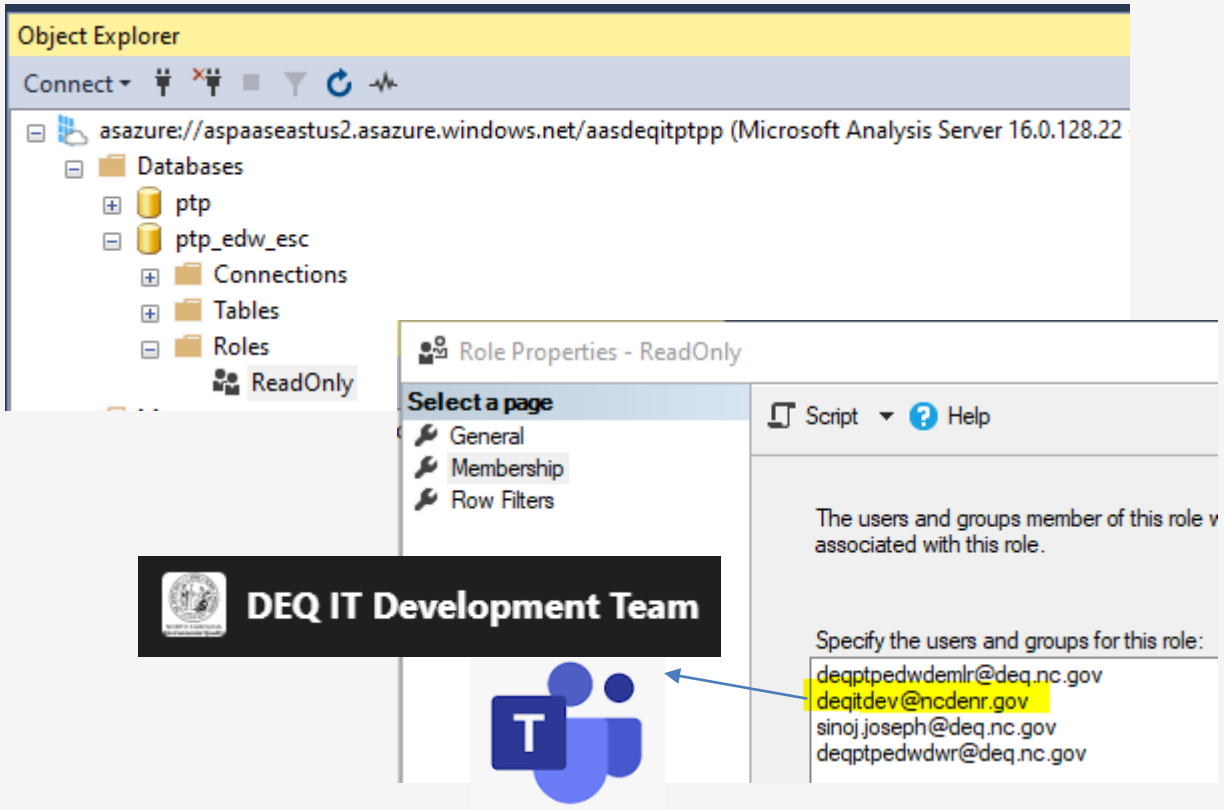
NORTH CAROLINA Environmental Quality

Azure Analysis Services

Security



- Roles are setup in the cube for user access.
- Administrators can add teams or individuals to the roles.



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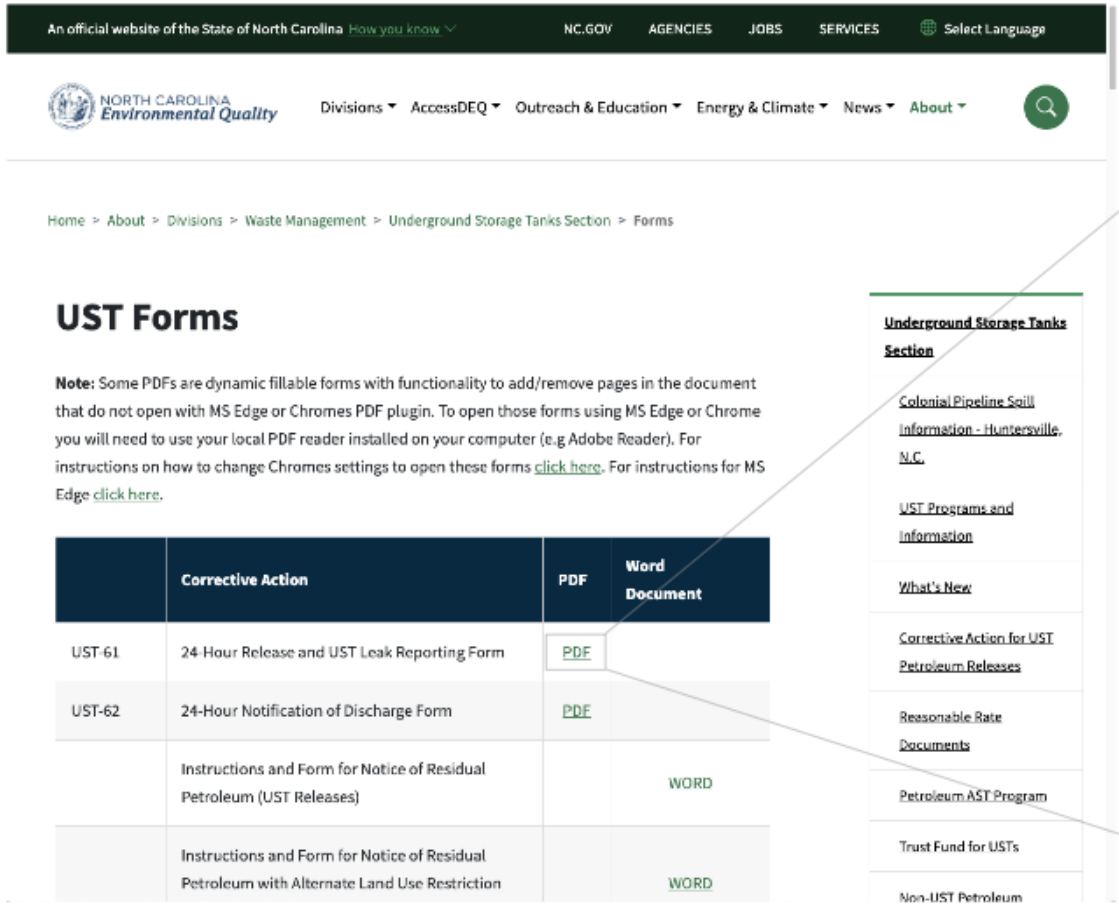

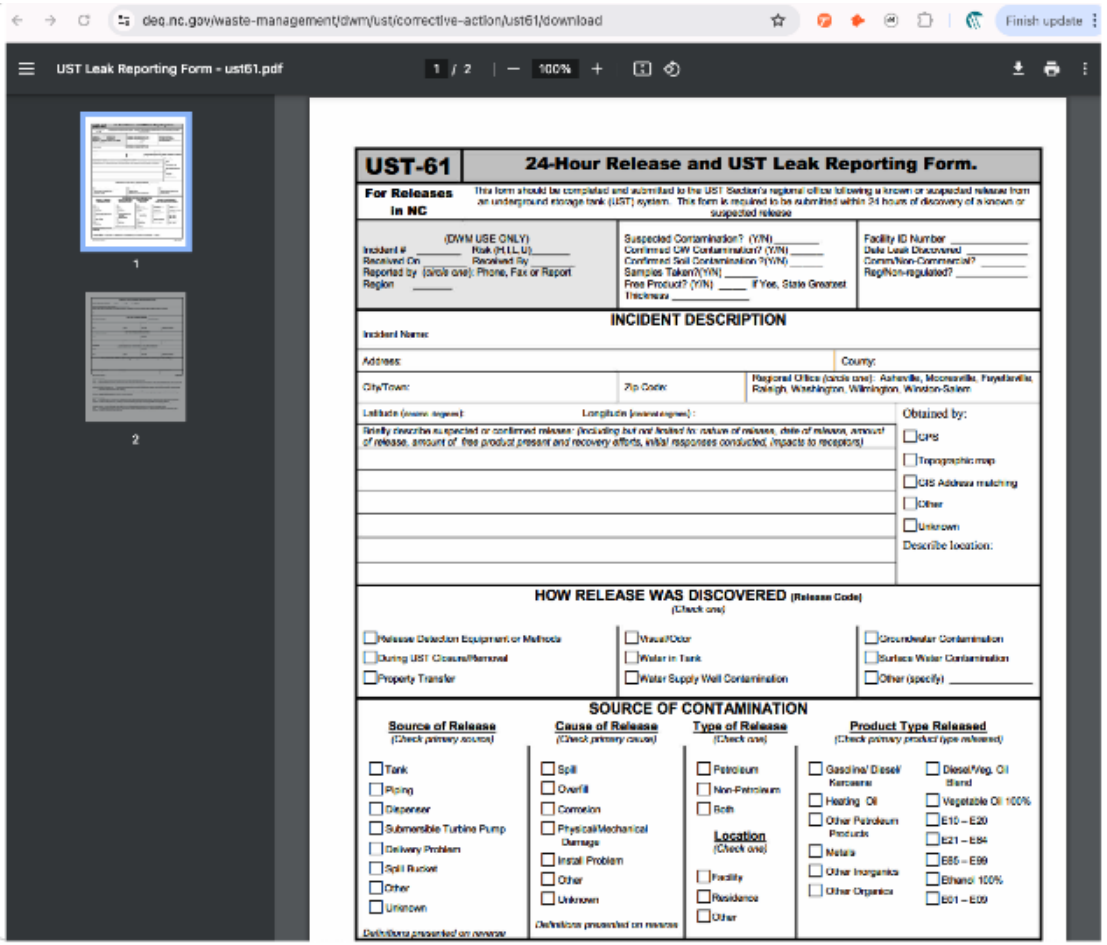

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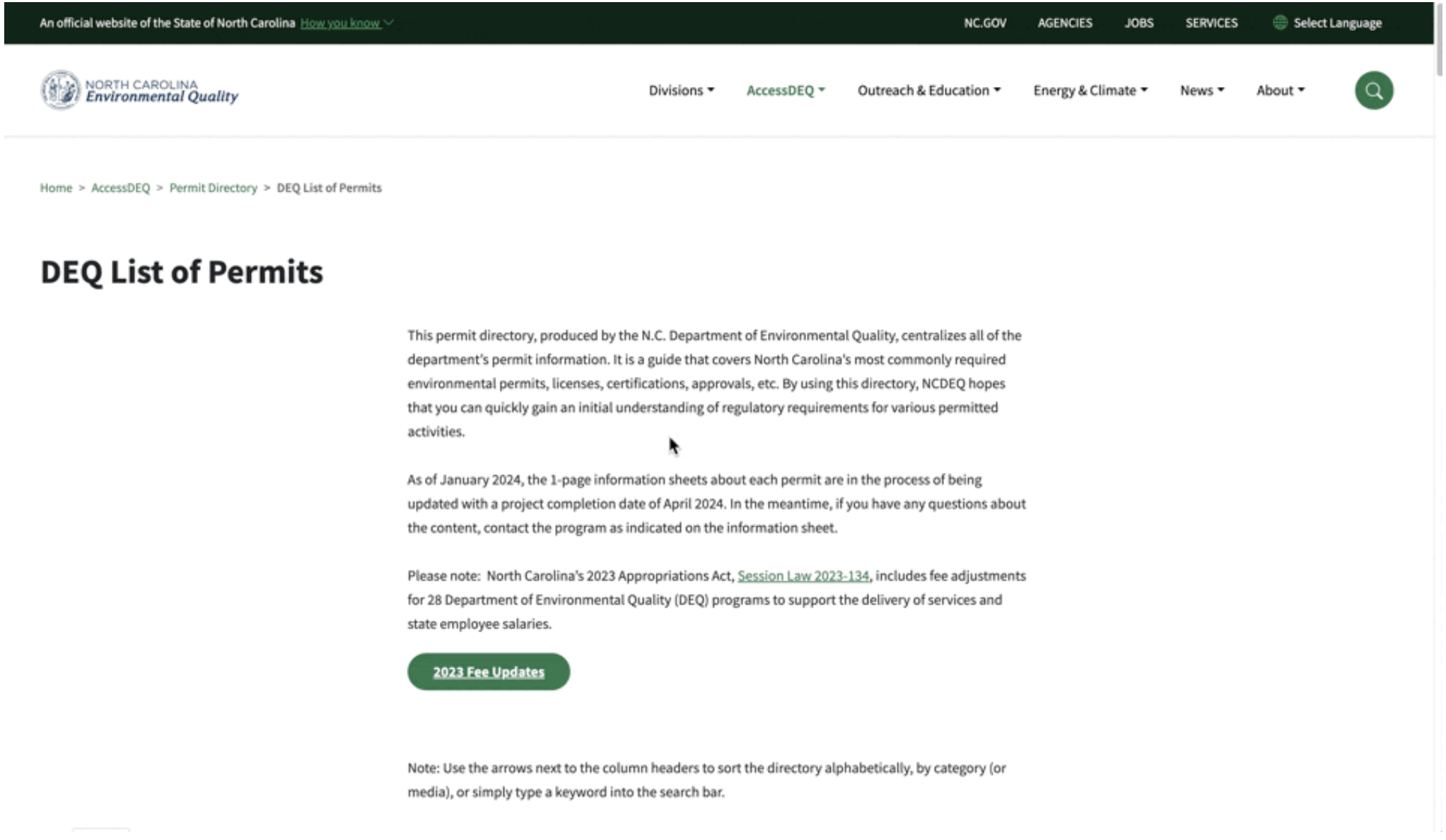
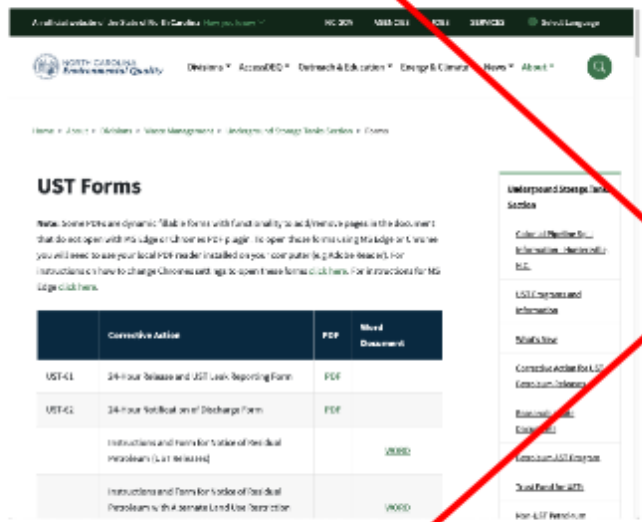
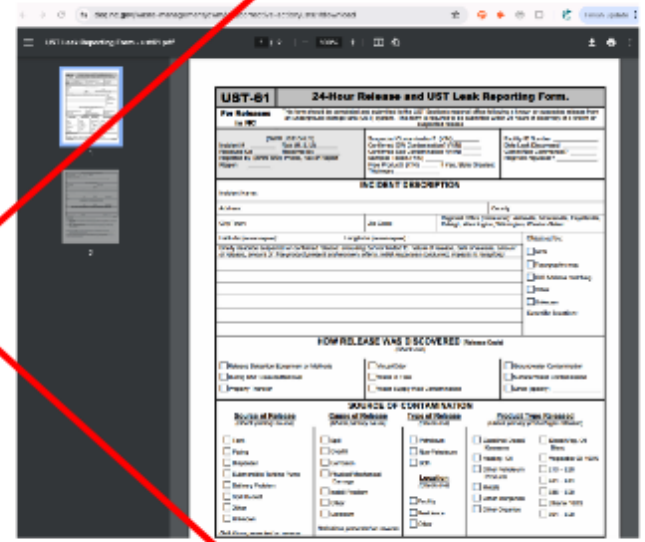
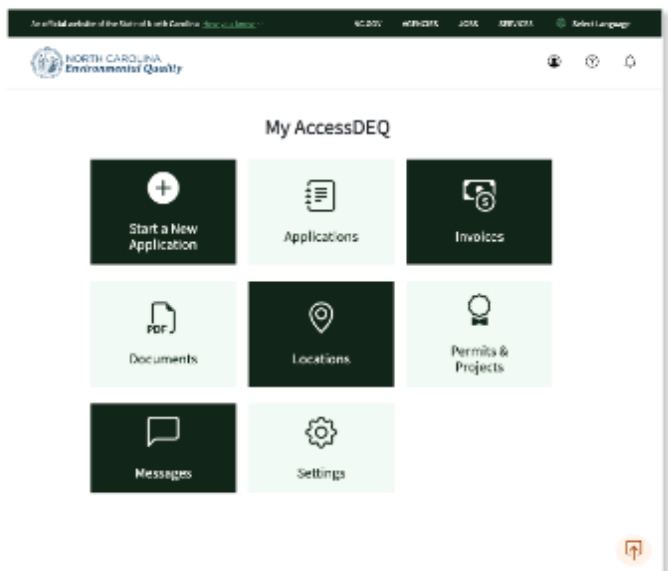
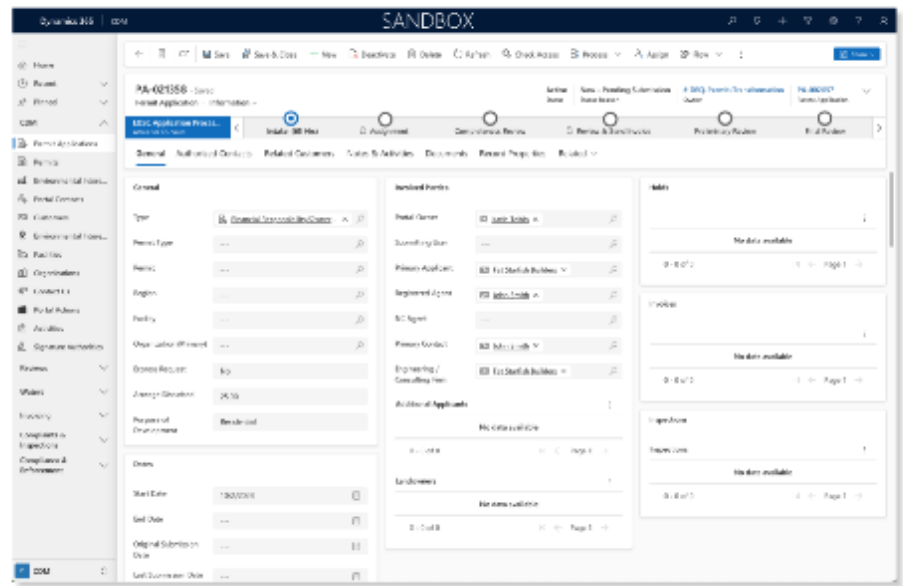






External Portal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