INTERNSHIP REPORT

On

ISS (Integration Self Service)

Of

Cognizant

Submitted to: Dr. Swapnaja Patwardhan

Assistance Professor (IMCC)

Submitted by: Sanket Kasar

Seat no: 11194 (**IMCC**)

Cognizant

Cognizant Technology Solutions India Private Ltd.
Plot No. 26, 27,
Infotech Park,
MIDC Hinjewadi,Pune

TO WHOM IT MAY CONCERN

Sub: Employment Information as per our records

Employee Name	: **Mr. Sanket Jagannath Kasar**
Employee Id	: **712657**
Designation	: **Programmer Analyst**
Date of Joining	: **26 June 2018**
Employment status	: **Active**
Role Description	:

Mr. Sanket Jagannath Kasar had joined as an Entry level Programmer trainee and serving the organization from past 2.6 years .

Sanket has been associated with the project and is involved in the initial transition along with the set up of the project. He is engaged in providing IT services like analysis and design, Software Development, User training and Technical consulting in the area of data warehouse. Sanket has grown and played different roles in the project to meet the Client requirements and has been working on different modules and applications in the project as a Programmer Analyst, He has also fixed the various bugs and have added value to the project by performing automations in many areas. He has also played a role in ensuring standards in the customer deliverables and to improve the Customer satisfaction by taking part in driving various organizational activities.

Sanket has been improving himself with the state of art skill set on AWS, Informatica, Oracle, Unix and related technologies, and always meets the intense and ever-increasing demand for latest technologies in the IT industry.

His roles in the project have been summarized below and detailed out in the coming sections:

- Knowledge Transition on applications categorized as Business Critical by the Clients.
- Working at L2 and L3, fixing technical issues by the Business users as well as IT operations.
- Servicing applications related standard service request from Business users. Ensuring 24*7 application availability through a structured monitoring framework.
- Improving applications stability through problem management.
- Change management for Functional improvements.
- Driving Client governance calls on operational performance, risk and challenges.
- Crisis management to minimize the adverse impact of service interruptions and other incident on Client Business operations.
- End-to-End responsible for the service and takes full operational responsibility for the applications on an outcome – based model.
- Transition management from the delivery to support organization during project rollouts.
- Application rollouts activities such as preparation of User Training Manuals, Online Help Documentation etc. and conducting User Training.
- Responsible for managing Information Security controls through a consistent, reliable and documented processes of data management.
- Providing Services in a technically feasible and appropriately scalable manner which will accommodate bringing Applications in and taking Applications out of scope of the services.

TECHNICAL SKILLS

- Primary — AWS, Informatica 10.2, Oracle, Redshift, Linux
- Secondary Skill Set — Scheduling tools (e.g. Autosys, Airflow), Python
- Databases — SQL, Oracle, Redshift
- Documentation Tools — Microsoft Office Tools

PROJECT OVERVIEW

- **Project** 1

- **Role** Programmer
- **Technology** Informatica, Oracle, Linux
- **Others** CRM-Salesforce, Plutora, Excel, AutoSys

The objective of Programmer is to provide the E2E service with the means to run all the sales, customer, employee and master product data loads for the two-tiered distribution environment (business to business and business to customer) in their respective local markets. The important aspect of this role is to solve the technical data issues raised by business/customer in data warehouse's and generate the accurate reports on daily basis.

- He has been part of the project from the Pilot Phase of the Transition.
- He has been responsible for the L2/L3 on application issues, and on servicing standard issues from users.
- He is responsible for maintaining the weekly/daily status reports & in conducting the client governance calls on reviewing the team performance.
- He is responsible for maintaining the Knowledge Database by documenting frequent issues and workarounds for resolution at first line, and in creating Knowledge Articles.
- He is responsible for resource management and is in charge of the Knowledge transition and Mentoring of new team members.
- He is responsible for driving key operational services such as Problem Management and Change Management for improving the application stability and functionality.
- He has worked on key enhancements on security improvements for the application.
- He has Co-ordinated the Project deployment and regression test planning activities and had a successful on time implementation of enhancement projects.
- He has Co-ordinated on the post deployment audit processes as well.

- **Project** 2
- **Role** Programmer Analyst
- **Technology** AWS (Redshift, S3, Athena, Glue, IAM, CloudWatch etc.), Informatica, Oracle, Linux
- **Others** Airflow, Wherescape RED

The main objective is to get all the data from any type of source database and make it available to the market/customer in readable format in the Redshift database and for standard enterprise reporting.

- He was involved in the transition of one of the critical applications (ISS, DIL)
- He owns the End to End coordination with users/clients on Corrective and Adaptive Change Request.
- He has also involved in the application migration activities to DIA, NBE which is an ongoing Development project.
- He has taken up the team lead roles & responsibilities For ISS.
- He is been responsible L2/L3 on application issues, and on servicing standard issues from Users.
- He is also responsible for application related report generation, interface monitoring and maintaining the process flows.

Thanking you,
Yours Faithfully,
For**Cognizant Technology Solutions India Private Ltd.,**

Pravin Mathiyalagan Kumar
Sr. Manager - HR

Disclaimer: This document is valid, subject to associate being employed with us.

Acknowledgement

I am delighted to take this opportunity to acknowledge all those who Helped me in designing, developing and successfully executing of my Project "**ISS(Integration Self Service)**."

I would like to extend my thanks and gratitude to my project guide **Dr. Swapnaja Patwardhan** (Assistant Professor, IMCC) – Internal Guide and **Mr. Suyash Joshi** (External Guide) for their valuable guidance and timely assistance throughout the development of this project.

I would also like to extend my thanks and gratitude to **Dr. Santosh Deshpande** (Director, IMCC), **Dr. Ravindra Vaidya** (HOD, IMCC), **Dr. Manasi Bhate** (Head – Training and Placement, IMCC) for their constant help and support.

Last but not least, I would like to thank all the teaching and non teaching faculties for their cooperation.

- ***Sanket Kasar***

CHAPTER 1

INTRODUCTION

1.1 Company Profile:-

Merck is an American multinational pharmaceutical company and one of the largest pharmaceutical companies in the world. Merck is incorporated in New Jersey and was founded in 1891 by **Theodore Weicker**. The Company offers health solutions through its prescription medicines, vaccines, biologic therapies, and animal health products. It operates through four segments: Pharmaceutical, Animal Health, Healthcare Services, and Alliances. The Company's Pharmaceutical feature includes human health pharmaceutical and vaccine products marketed directly by the Company or joint ventures. Human health pharmaceutical products consist of therapeutic and preventive agents, generally sold by prescription, to treat human disorders. The Company sells its human health pharmaceutical products primarily to drug wholesalers and retailers, hospitals, government agencies, and managed healthcare providers, such as health maintenance organizations, pharmacy benefit managers, and other institutions. Vaccine products consist of

preventive pediatric, adolescent, and adult vaccines, primarily administered at physician offices.

Merck's Major Products Includes:-

- Januvia, Zetia, Remicade, Keytruda, Isentress etc.

Merck's Legacy Products:-

- Vaccines, Thiazide anti-hypertensives, First statin, Antibacterials, Vioxx, Mectizan, Fosamax, etc.

For more than 125 years, Merck (known as MSD outside of the U.S. and Canada) has been inventing for life, bringing forward medicines and vaccines for many of the world's most challenging diseases to pursue our mission to save and improve lives.

1.2 Existing System and Need for System:-

In the Previous old integration models, users faced significant issues when making any changes in existing logic. Whenever any Market users (end users) want to change any data types, any logic changes in data cleansing, or any changes, it was difficult to adapt those changes into existing data warehouse models as those may impact the whole system. It will take the entire week to go from all stages like DEV, SIT, and PRODUCTION.

1.3 Scope of Work:-

We perform the actions as per the User's needs. To ease the process of editing and updating and to provide data security are also the objectives of the proposed system. It also aims at increasing the speed, accuracy, and efficiency of processing the data and generating all the reports accurately and promptly. It reduces the paperwork and

helps in maintaining supremacy. It helps in making the data available very quickly. The primary purpose of developing this application is to make it work. The users feel it easier to work on it and provide accurate and speedy data.

1.4 Operating Environment – Hardware and Software:-

- **Softwares**
  - Matillion User Interface(UI)
  - Salesforce(CRM) Tool
  - BI Reports (Cognos reporting)
  - AWS - Amazon Web Services
  - Matillion Admin Cloud Tool
  - Informatica Powercenter ETL Tool
  - Oracle
  - Redshift

Hardware

- All the above software's are cloud-based, so there are no hardware requirements as such.

CHAPTER 2

PROPOSED SYSTEM

2.1 Proposed system:-

In the Previous old integration models, there were significant issues users faced. When making any changes in the existing logic, like any Market users (end users), want to change any data types, any logic changes in data cleansing, or any changes, it was difficult to adapt those changes into existing data warehouse models. Also, it takes the entire week to go from all stages like DEV, SIT, and PRODUCTION.

- So we have introduced this Integration Self Service model for users. This application mainly implies markets will be able to design, develop, test and deploy their services on their own.
- We've introduced a User-friendly integration service model in which users can interact with actual production data.
- UI Portal is on-boarded with Country-specific access from which Market Users can interact with an application and load their data into Redshift Cluster.

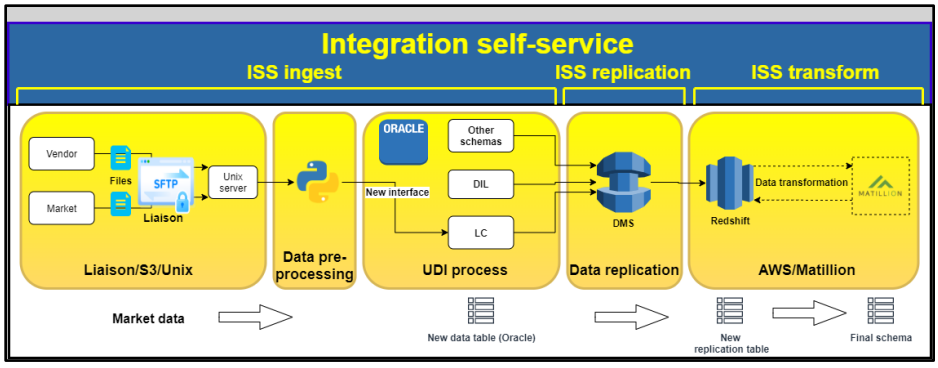
- CRM Portal (Salesforce) was introduced, which also has synced with the Data warehouse.
- This data is used further by all the downstream, on which the Cognos BI reports are generated for the data analyzing purposes.

So, in conclusion, User can load their data into the system, see their data on the CRM portal for all their daily usage, query the data on their own as per their requirement, and use the Reports for analyzing purposes.

2.2 Objectives of System:-

- To provide a platform-supported service model to the markets for full-scale integration development of data sources.
- The main difference between BYOD and these integrations is that these integrations are industrialized, i.e., the integrations will be automated and scheduled according to the scheduling requirements of the User.

- The system's main objective is to manage the data and make the data available to the users whenever in need, managing and maintaining the data, records, and confidentiality.
- The Separation of design and metadata from low-level development, release, and environment management.
- Another essential objective is to provide the necessary roles to the User so that they have access to perform the modification or any other operation.



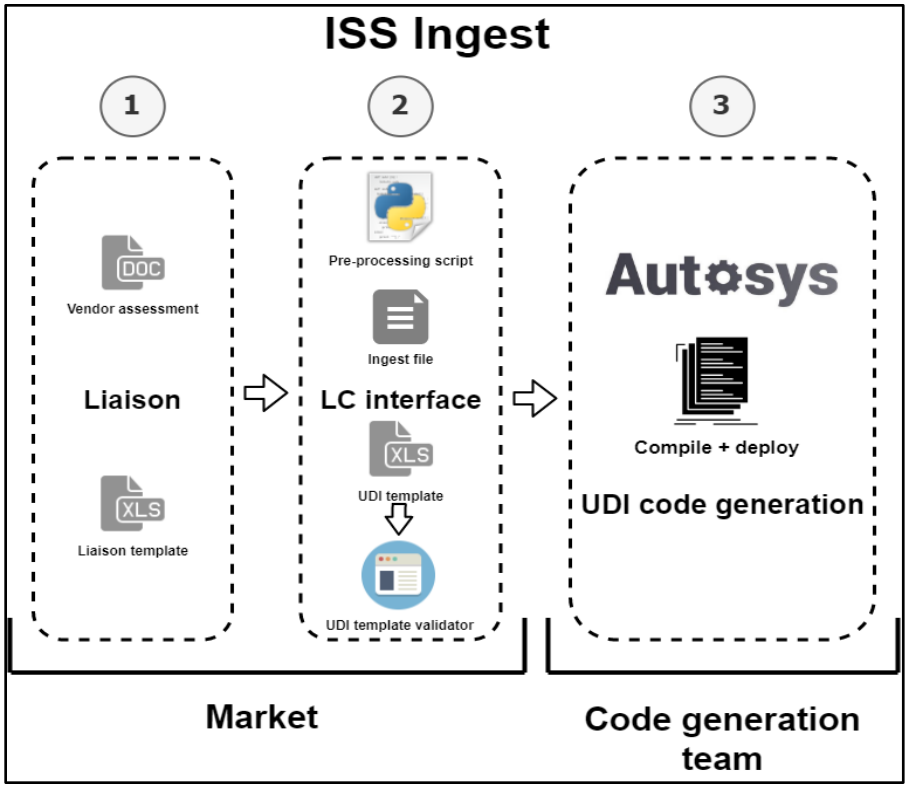
2.3 User Requirements:-

- The main requirement of the users (Market) is that the data should be available as and when needed for Data Visualization & Data Analysis.
- So basically, market/user have inbuilt BI (Business Intelligence) reports created on top of the Redshift DB.
- So our task is to get the data from multiple sources/vendors/stakeholders from the market itself. After gathering all this data from various sources, we need to transform it per user/market requirement and make the data presentable in the Redshift DB.
- User also needs their platform to perform specific queries/ operations on the Redshift DB. In such cases, we create different views on top of Redshift tables and provide the required access to the users/market.

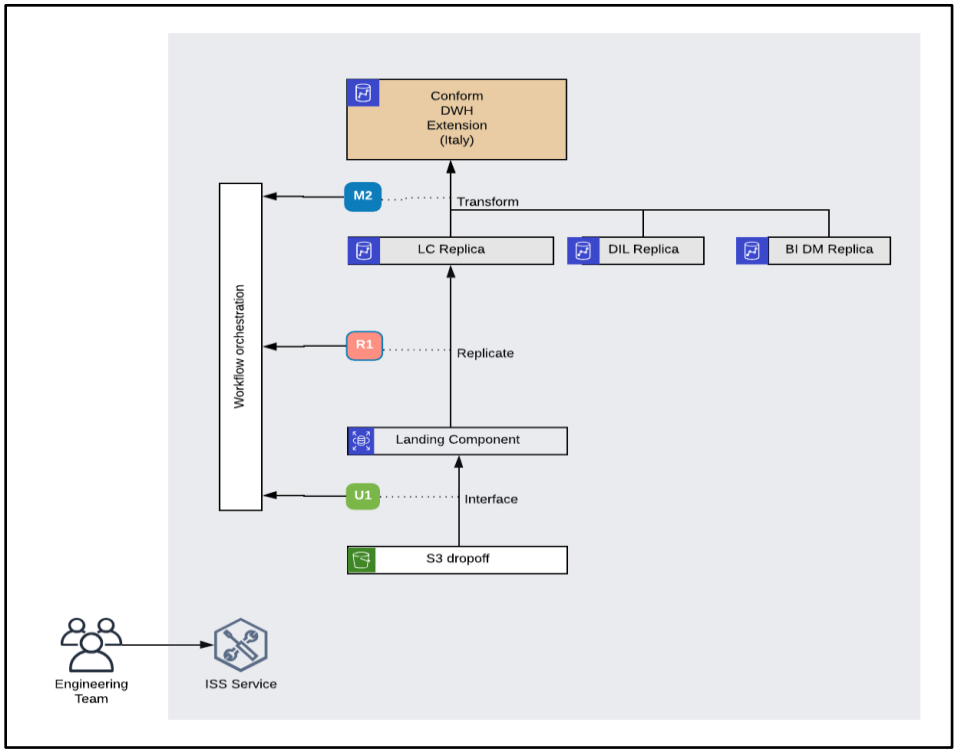
CHAPTER 3

ANALYSIS & DESIGN

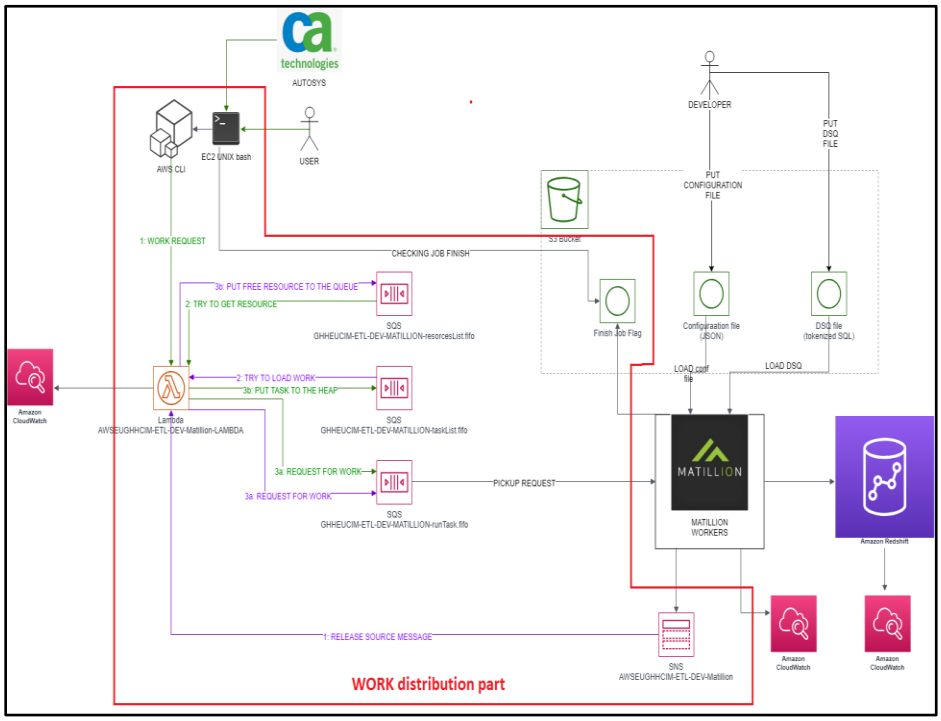
3.1 Process Diagram:-



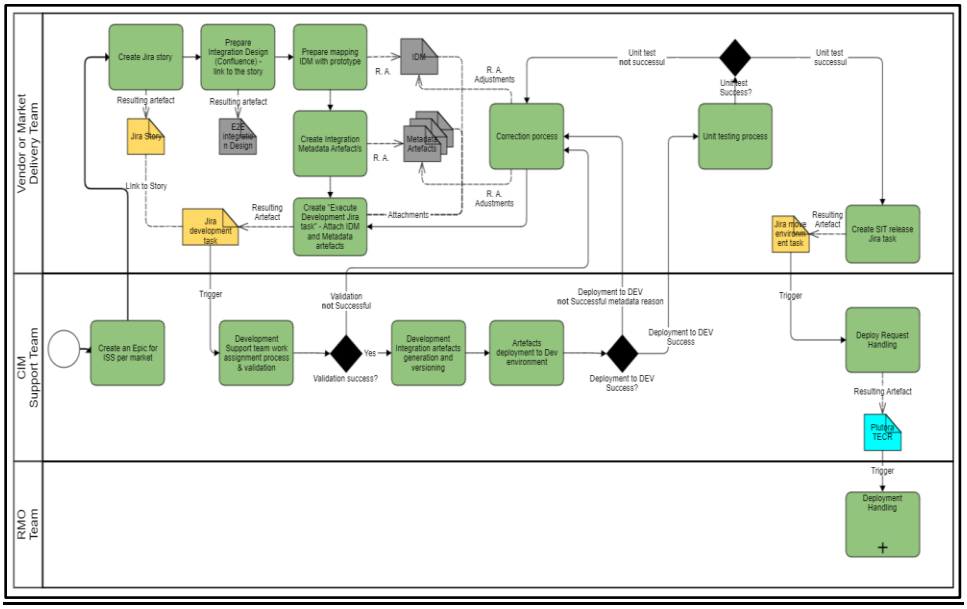
3.2 Generic Use case Diagram:-



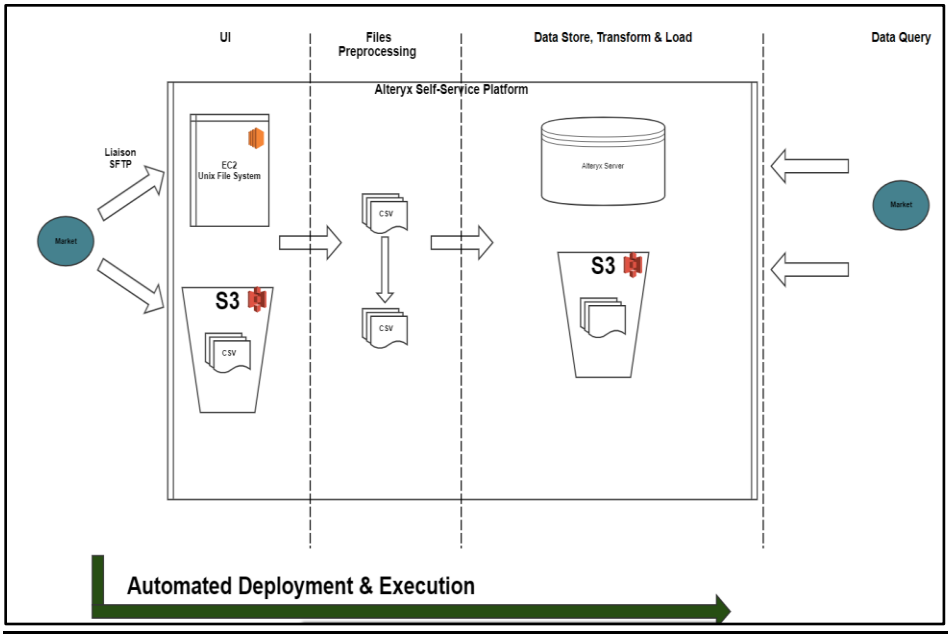
3.3 Entity-Relationship Model Diagram:-



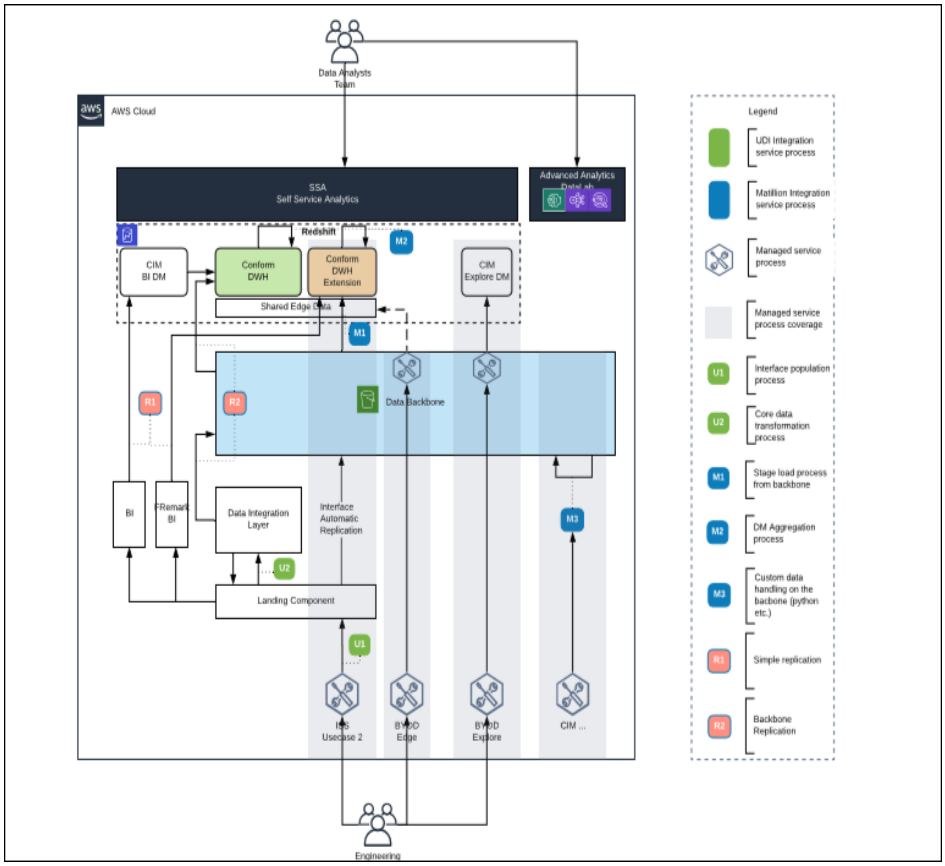
3.4 Guided Development Process Flow Diagram



3.5 User Interface to Redshift DB Data Flow Diagram



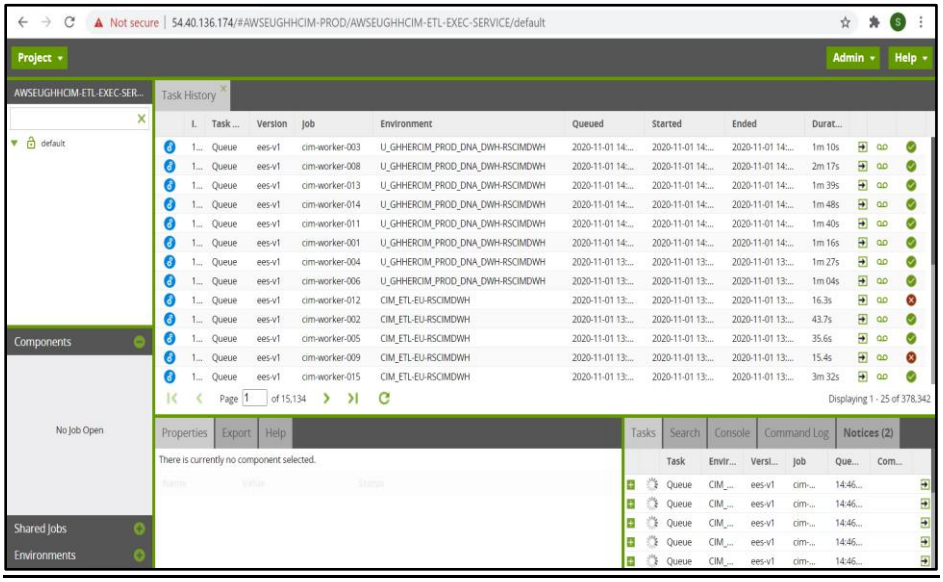
3.6 Dataflow Diagram

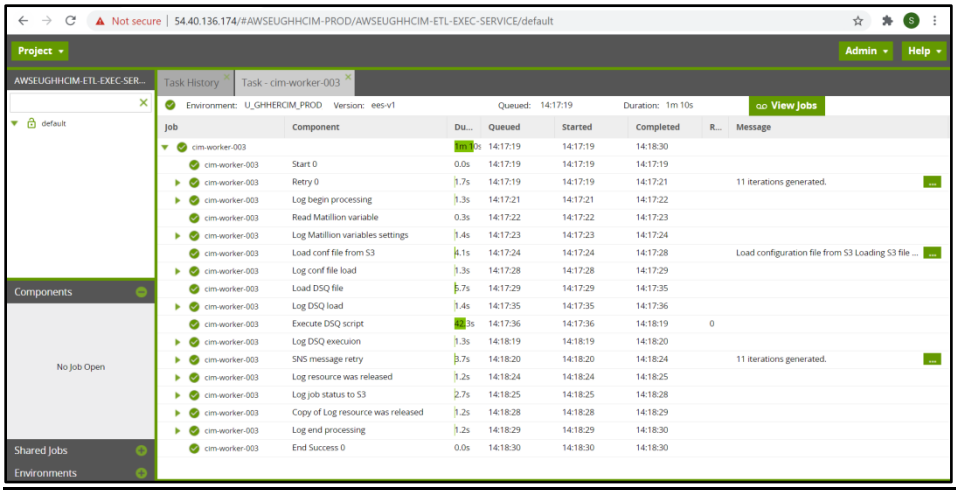


3.7 Interface Screens:

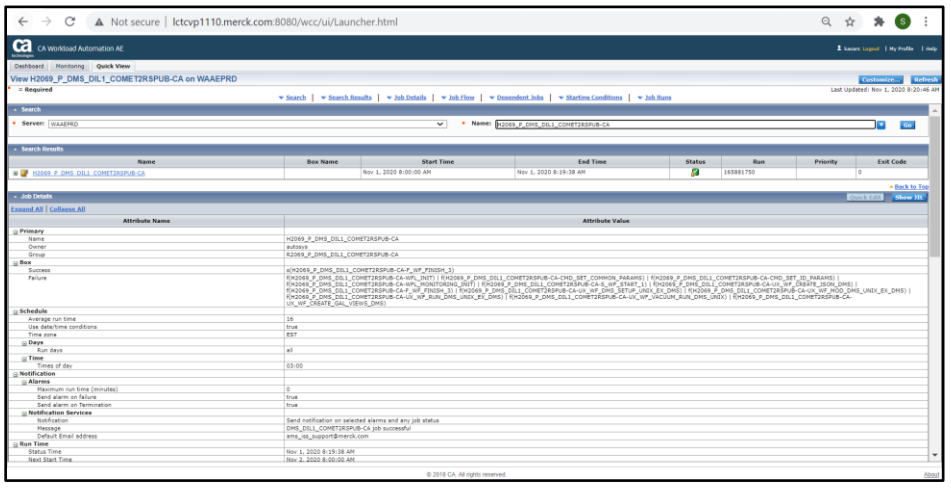
Matillion Admin Console

Matillion UI Task run flow

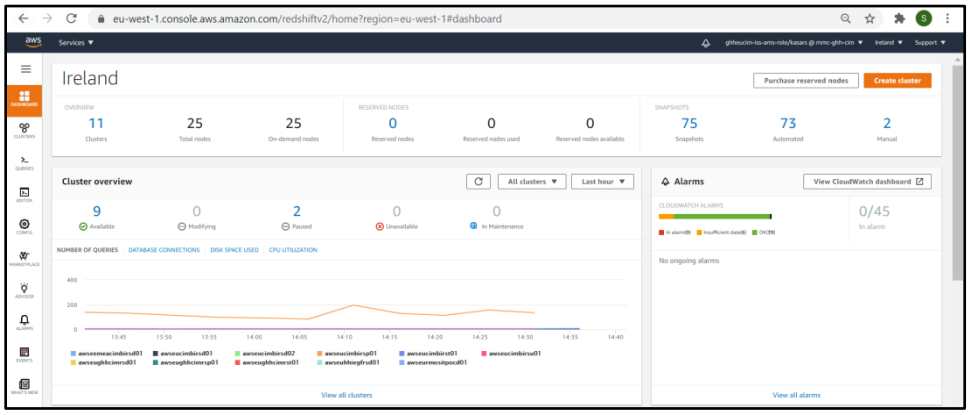




Autosys Scheduling Tool



AWS Cluster



Call Script through AutoSys

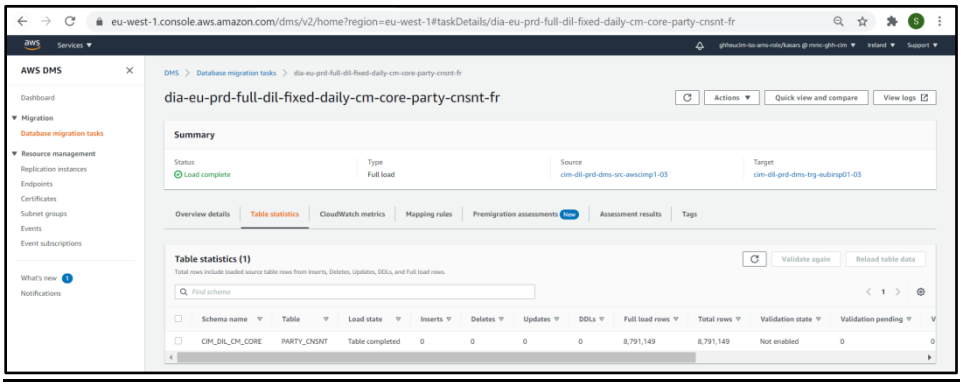
```
[cimetl@awseuletlp ~]$ cd  /cimetl/data001/CIM/Workflows/DMS_DIL1_COMET2RSPUB/CA/Scripts/
[cimetl@awseuletlp Scripts]$ ls -lrt
total 96
-rwxrwxr-x+ 1 cimetl cimetl 6140 Aug 14 17:26 DMS_DIL1_COMET2RSPUB-CA_unix_cust_ex_UX_WF_CREATE_GAL_VIEWS_DMS.sh_BKP09112020
-rwxrwxr-x+ 1 cimetl cimetl 6048 Aug 14 17:26 DMS_DIL1_COMET2RSPUB-CA_unix_cust_ex_UX_WF_CREATE_JSON_DMS.sh
-rwxrwxr-x+ 1 cimetl cimetl 6061 Aug 14 17:26 DMS_DIL1_COMET2RSPUB-CA_unix_cust_ex_UX_WF_DMS_SETUP_UNIX_EX_DMS.sh
-rwxrwxr-x+ 1 cimetl cimetl 6051 Aug 14 17:26 DMS_DIL1_COMET2RSPUB-CA_unix_cust_ex_UX_WF_MOD_DMS_UNIX_EX_DMS.sh
-rwxrwxr-x+ 1 cimetl cimetl 6052 Aug 14 17:26 DMS_DIL1_COMET2RSPUB-CA_unix_cust_ex_UX_WF_RUN_DMS_UNIX_EX_DMS.sh
-rwxrwxr-x+ 1 cimetl cimetl 6038 Aug 14 17:26 DMS_DIL1_COMET2RSPUB-CA_unix_cust_ex_UX_WF_VACUUM_RUN_DMS_UNIX.sh_BKP09112020
-rwxrwxr-x+ 1 cimetl cimetl 6139 Sep 11 16:57 DMS_DIL1_COMET2RSPUB-CA_unix_cust_ex_UX_WF_CREATE_GAL_VIEWS_DMS.sh
-rwxrwxr-x+ 1 cimetl cimetl 6046 Sep 11 16:57 DMS_DIL1_COMET2RSPUB-CA_unix_cust_ex_UX_WF_VACUUM_RUN_DMS_UNIX.sh
[cimetl@awseuletlp Scripts]$ cat DMS_DIL1_COMET2RSPUB-CA_unix_cust_ex_UX_WF_VACUUM_RUN_DMS_UNIX.sh
#!/usr/bin/bash
##############################################################################################################################
## Name    :  DMS_DIL1_COMET2RSPUB-CA_unix_cust_ex_UX_WF_VACUUM_RUN_DMS_UNIX.sh
## Purpose :  Script for custom Unix script execution
## Machine :  awseuletld
## Location:  ${CIM_HOME}/CIM/Workflows/DMS_DIL1_COMET2RSPUB/CA/Scripts
##-----------------------------------------------------------------------------------------------------------------------------
##
## Generated: N/G
##############################################################################################################################

##############################################################################################################################
#Run global profile
##############################################################################################################################
. /usr/local/bin/awseuletl.profile

##############################################################################################################################
#Run global profile for all Unix scripts
##############################################################################################################################
. ${CIM_HOME}/CIM/Workflows/Common/Profiles/unix.profile

##############################################################################################################################
#Run cimetl_pe profiles
##############################################################################################################################
. ${CIM_HOME}/CIM/Workflows/Common/Profiles/connections.profile
. ${CIM_HOME}/CIM/Workflows/Common/Profiles/functions.profile

##############################################################################################################################
```

DMS Oracle to Redshift replication Mapping Rule

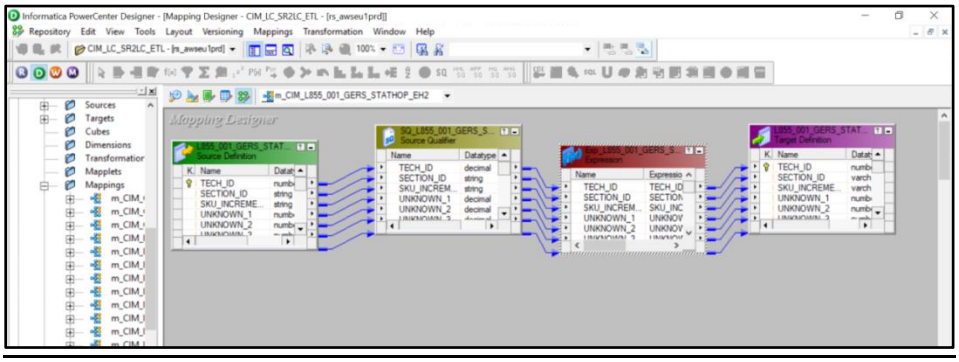
▼ Mapping rules (JSON)


```
{
  "rules": [
    {
      "rule-id": 1,
      "rule-name": "1",
      "rule-type": "transformation",
      "rule-action": "rename",
      "rule-target": "schema",
      "object-locator": {
        "schema-name": "CIM_LC_PRST_DNA"
      },
      "value": "stg_lc_replica"
    },
    {
      "rule-id": 2,
      "rule-name": "2",
      "rule-type": "selection",
      "rule-action": "include",
      "object-locator": {
        "schema-name": "CIM_LC_PRST_DNA",
```

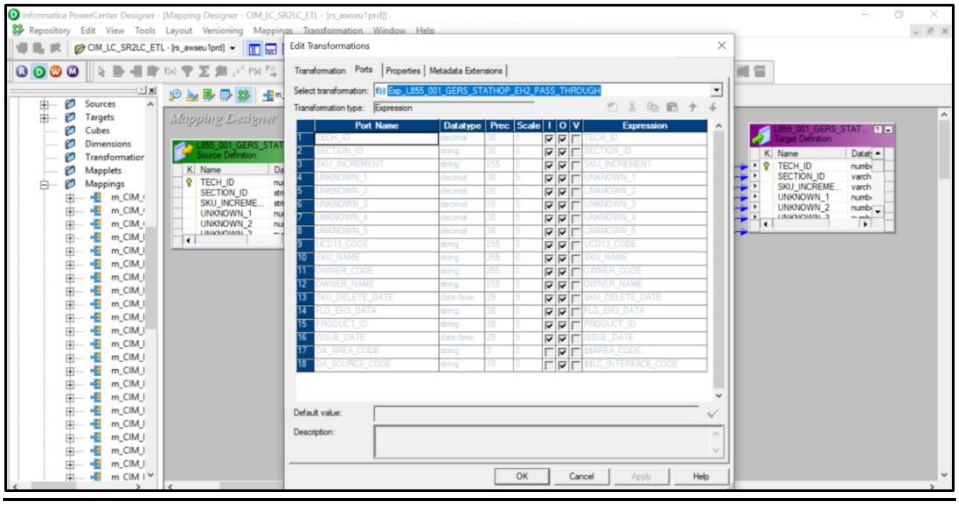

DMS Oracle to Redshift Replication Task



Informatica Mapping



Informatica Mapping Transformation Logic

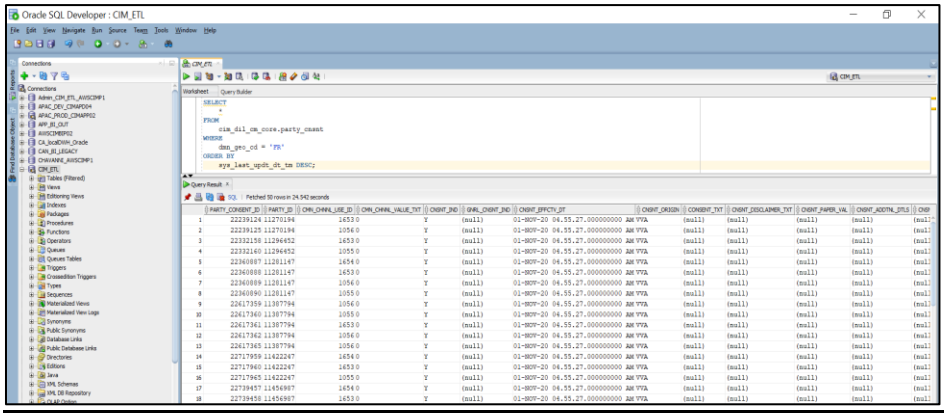


3.8 Data Dictionary

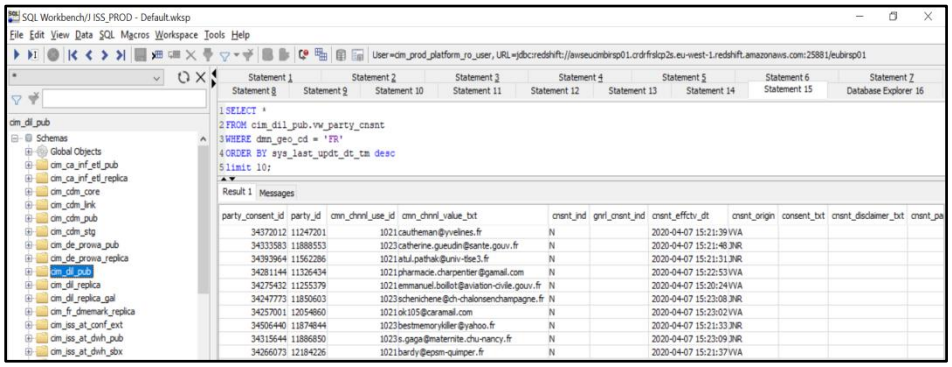
Data_Dictionary.xlsx

3.9 Tables Specifications:

Oracle Data:



Redshift Data:



3.10 Test Procedures and Implementation

- **Development Testing Process:**

As the project is driven by Agile methodologies having sprints comprised of four weeks, mentioned types of testing will be done by respective teams, as and when user stories are developed within a sprint.

Unit Testing will be done by the Development Team on the development environment after the completion of Coding. Sprint testing will be done by SV&T team during the sprints in Test environment after completion of the Unit testing for each story. System Integration Testing(Release Testing) will be done by the SV&T team on completion of sprint testing and at the end of release in the Test environment. After successful System integration testing the product will be deployed to DEMO Environment and there is no User Acceptance Testing planned.

Testing Sequence and Approach:

Start of Unit Testing depends on completion of coding activity by the Development team.

Start of Sprint Testing depends on successful completion of Unit Testing by the Development team. All defects identified during Unit testing should be resolved, Code should be migrated successfully on the Test environment.

Start of System Integration Testing depends on successful completion of Sprint Testing. All defects identified during in Sprint testing should be resolved.

Unit Testing Process

Unit testing is performed to help getting a fast feedback about the state of the code whether it fits the requirements on the most granular level of a single unit which might be a function or class or module etc. Unit tests are written by a developer who is implementing the behavior of the code in a iterative way and should be consider having the same importance as the code which implements the behavior. Unit tests are reviewed in scope of the code review process which is described below in this document the same way as the functional code. The process is supported by automatic execution of the tests each time a developer is trying to commit a change into the repository and when a new build is performed by CI.

Tests are located in a special folder within the project e.g. __tests__ substructure is formed the same way as a structure of functional code so there is one-to-one matching to allow easier searching. The test

file names should be affixed with .test.ts (e.g. handler.ts should have corresponding test file with name handler.test.ts.

Code / Design Reviews

Code review is performed on a peer-to-peer basis within the development team using the pull request functionality of BitBucket, for both application code and automated tests.

Once a developer is satisfied with their code, they issue a pull request to merge their changes in the feature branch into the develop branch. In order for a merge to be approved, at least one developer (other than the author) must review and approve the pull request. The reviewer may add comments and change the status of the pull request to "need work", then the original author will receive notifications that the pull request need further modifications before it can be approved.

To make sure that the standard coding style is adopted during the development, the team used tslint to check the quality of the code.

Tslint is a tool identifying and reporting on patterns found in TypeScript code, ensuring the potential bugs and problems can be found by analysing the code style and flow.

The review and approval actions are captured within the tool. A summary report of the changes committed, with author, timestamp and review approval(s) will be exported and attached to the Development Summary Report.

Pass/Fail Criteria

Pass Criteria

- All steps have been completed and documented correctly.
- All supporting documentation (output, etc.) is available, labeled, annotated, cross-referenced, and reviewed for technical correctness.
- Each test step was successful and the overall test met its objective. All defects reported against a test step are resolved.
- All defects are resolved by one of the following methods:
- The problem is corrected and retesting was successful.
- If the problem was not resolved, the issue is postponed and the test is identified as "passed with defects".
- Actual Results are completed as required for validation.

Fail Criteria

- Any test step was unsuccessful and the actual result did not match the expected.
- Any open and valid defect exists against a test case in ALM/JIRA

- TEST CASES:

NUMBER	TEST CASE NAME	TESTCASEDESCRIPTION	TEST CASE TEST STEPS	TEST EXPECTED RESULTS	TEST CASE NOTES

1	CTP_SIT_MVP4.1_DEMAND_INCREASE_1.1_TC_1 CTP_SIT_MVP4.1_DEMAND_INCREASE_1.1_TC_2	MVP4.1 Process Step 1.1: Demand Increase (forwardlo	TEST CASE 1: LOG INTO REDSHIFT SIT SELECT THE EXTERNAL TABLE: DEMANDINCREASE_DEMANDINCREASECOUNTRY FILTER THE COLUMN LABELED: YEAR TO BE TO THE VALUE '2021' FILTER THE COLUMN LABELED: PRODUCT FAMILY = DIA FILTER THE COLUMN LABELED: DEMAND TYPE TO 'DEMAND INCREASE' FILTER COLUMN LABELED: 95% EXCEPTION = TRUE (YES)	ABLE TO LOG INTO REDSHIFT SIT ENVIRONMENT SUCCESSFULLY ABLE TO SELECT THE DATABASE TABLE OK ABLE TO QUERY THE TABLE AND FILTER THE COLUMN OK ABLE TO VALIDATE THAT WHEN THE COLUMN LABELED "NEXT YEAR % DIFFERENCE" HAS A VALUE THAT IS GREATER THAN THE VALUE LOCATED IN THE COLUMN LABELED: "95% EXCEPTION	REDSHIFT SIT REDSHIFT EXTERNAL TABLE: DEMANDINCREASE_DEMANDINCREASECOUNTRY

		oking) via Forecast Change (Full calendar year) Test	IF THE COLUMN LABELED: "NEXT YEAR % DIFFERENCE (PERC DIFF)" HAS A VALUE THAT IS GREATER THAN > THE VALUE LOCATED IN THE COLUMN LABELED: "95% EXCEPTION RULE NEXT YEAR" DIVIDED BY 100) THEN APPEND THE COLUMNS: PRODUCT, SHIP TO, MONTHLY CYCLE --- TEST CASE 2: LOG INTO REDSHIFT SIT SELECT THE EXTERNAL TABLE: DEMANDINC	RULE NEXT YEAR" DIVIDED BY 100, THEN THE COLUMNS: PRODUCT, SHIP TO, MONTHLY CYCLE WILL BE APPENDED	

		ing Scenarios: Validate Jan uvia (DIA) PGI 95% with c	REASE_DEMANDINCREASECOUNTRY FILTER THE COLUMN LABELED: YEAR TO BE TO THE VALUE '2021' FILTER THE COLUMN LABELED: PRODUCT FAMILY = DIA FILTER THE COLUMN LABELED: DEMAND TYPE TO 'DEMAND INCREASE' FILTER COLUMN LABELED: PGI 5% EXCEPTION = TRUE IF THE COLUMN LABELED: "NEXT YEAR % DIFFERENCE " HAS A VALUE THAT		

		olumns PRODUCT, SHIP TO, MONTHLY CYCLE Januu	IS GREATER THAN > THE VALUE LOCATED IN THE COLUMN LABELED: "5% EXCEPTION RULE UNIT CHANGE) THEN APPEND THE COLUMNS: PRODUCT, SHIP TO, MONTHLY CYCLE		

		via (DIA) PGI 5% with columns PRODUCT, SHIPTO			

		,MONTHLYCYCLE			
2	CTP_SIT_MVP4.1_DEMAND_INCREASE_2.1	MVP4.1 Process Step: 2.1 Ex	=HYPERLINK("https://share.merck.com/display/DAEnablement/Final+Structure+of+Demand+Increase+and+Decrease";"NOT TESTING PER DIAGRAM OUTLINE IN: Final Structure of Demand Increase and Decrease")	=HYPERLINK("https://share.merck.com/display/DAEnablement/Final+Structure+of+Demand+Increase+and+Decrease";"NOT TESTING PER DIAGRAM OUTLINE IN: Final Structure of Demand Increase and Decrease")	=HYPERLINK("https://share.merck.com/display/DAEnablement/Final+Structure+of+Demand+Increase+and+Decrease";"NOT TESTING PER DIAGRAM OUTLINE IN: Final Structure of Demand Increase and Decrease")

		ceptiongenerated_Demandatrisk(stockout)			
3	CTP_SIT_MVP4.1_DEMAND_IN	MVP4.1P	LOG INTO REDSHIFT SIT SELECT THE EXTERNAL TABLE:	ABLE TO LOG INTO REDSHIFT SIT ENVIRONMENT	REDSHIFT SIT REDSHIFT EXTERNAL TABLE: DEMANDINC

	CREASE_2.2	rocessStep2.2Checktimeframefordemandtobefulfi	DEMANDINCREASE_UNMETDEMANDRISK FILTER THE COLUMN LABELED: PRODUCT FAMILY = DIA FILTER THE COLUMN LABELED: DEMAND TYPE TO 'DEMAND INCREASE' QUERY THE COLUMN LABELED: 'CTP AVAILABLE RISK QTY' (RISKQTY) AND VALIDATE THAT NO RECORDS EXIST THAT ARE 0 OR LESS THAN 0	SUCCESSFULLY ABLE TO SELECT THE DATABASE TABLE OK ABLE TO QUERY THE TABLE AND FILTER THE COLUMN OK NO RECORDS SHALL EXISTS WHERE THE COLUMN LABELED: 'CTP AVAILABLE RISK QTY' (RISKQTY) THAT ARE 0 OR LESS THAN 0	REASE_UNMETDEMANDRISK

		lled			
4	CTP_SIT_MVP4.1_DEMAND_INCREASE_2.2.1	MVP4.1 Process Step 2.2.1 Demand Increase	LOG INTO REDSHIFT SIT SELECT THE EXTERNAL TABLE: DEMANDINCREASE_UNMETDEMANDRISK FILTER THE COLUMN LABELED: PRODUCT FAMILY = DIA FILTER THE COLUMN LABELED: DEMAND TYPE TO 'DEMAND INCREASE' VALIDATE IN THE TABLE THAT IF THE DEMAND AT RISK (DAR) DATE > (TODAY'S	ABLE TO LOG INTO REDSHIFT SIT ENVIRONMENT SUCCESSFULLY ABLE TO SELECT THE DATABASE TABLE OK ABLE TO QUERY THE TABLE AND FILTER THE COLUMN OK VALIDATED THAT THE COLUMN "INFENCE" IS POPULATING CORRECTLY BASED ON THE DEMAND AT RISK DATE	REDSHIFT SIT REDSHIFT EXTERNAL TABLE: DEMANDINCREASE_UNMETDEMANDRISK

		Within Time Fence	DATE + TIME FENCE), THEN THE FIELD LABELED: "IN FENCE" SHALL BE SET TO THE VALUE OF TRUE VALIDATE IN THE TABLE THAT IF DEMAND AT RISK (DAR) DATE < (TODAY'S DATE + TIME FENCE), THEN SET THE FIELD LABELED: "IN FENCE" TO FALSE VALIDATE IN THE TABLE THAT IF DEMAND AT RISK (DAR) DATE = (TODAY'S DATE + TIME FENCE), THEN SET THE FIELD LABELED:		

			"IN FENCE" TO FALSE		
5	CTP_SIT_MVP4.1_DEMAND_INCREASE_2.2.2	MVP4.1 Process Step 2.2.2 Demand Incr	LOG INTO REDSHIFT SIT SELECT THE EXTERNAL TABLE: DEMANDINCREASE_UNMETDEMANDRISK FILTER THE COLUMN LABELED: PRODUCT FAMILY = DIA FILTER THE COLUMN LABELED: DEMAND TYPE TO 'DEMAND INCREASE' VALIDATE IN THE TABLE THAT IF THE	ABLE TO LOG INTO REDSHIFT SIT ENVIRONMENT SUCCESSFULLY ABLE TO SELECT THE DATABASE TABLE OK ABLE TO QUERY THE TABLE AND FILTER THE COLUMN OK VALIDATED THAT THE COLUMN "IN FENCE" IS POPULATING CORRECTLY BASED ON THE DEMAND AT RISK DATE	REDSHIFT SIT REDSHIFT EXTERNAL TABLE: DEMANDINCREASE_UNMETDEMANDRISK

		elseOutsideTF–checkexceptionforpackageor	DEMAND AT RISK (DAR) DATE > (TODAY'S DATE + TIME FENCE), THEN THE FIELD LABELED: "IN FENCE" SHALL BE SET TO THE VALUE OF TRUE VALIDATE IN THE TABLE THAT IF DEMAND AT RISK (DAR) DATE < (TODAY'S DATE + TIME FENCE), THEN SET THE FIELD LABELED: "IN FENCE" TO FALSE VALIDATE IN THE TABLE THAT IF DEMAND AT RISK (DAR) DATE = (TODAY'S DATE + TIME		

		bulk issue	FENCE), THEN SET THE FIELD LABELED: "IN FENCE" TO FALSE		
6	CTP_SIT_MVP4.1_DEMAND_INCREASE_2.3	MVP4.1 Process Step 2.3 Supply Av-Sh	LOG INTO REDSHIFT SIT SELECT THE EXTERNAL TABLE: DEMANDINCREASE_SHAREDPACK DEMANDINCREASE_SIMULATEDINVENTORY FILTER THE COLUMN LABELED: PRODUCT FAMILY = JANUVIA FILTER THE COLUMN LABELED: DEMAND TYPE TO 'DEMAND INCREASE'	ABLE TO LOG INTO REDSHIFT SIT ENVIRONMENT SUCCESSFULLY ABLE TO SELECT THE DATABASE TABLE OK ABLE TO QUERY THE TABLE AND FILTER THE COLUMN OK VALIDATED THAT THE COLUMN NAMED 'COUNTRY CODE' IS ONLY POPULATED FOR THE COLUMN	REDSHIFT SIT REDSHIFT EXTERNAL TABLE: DEMANDINCREASE_SHAREDPACK DEMANDINCREASE_SIMULATEDINVENTORY

		aredpack(SameSKU)	FILTER THE COLUMN LABELED: 'SC STAGE CODE' TO THE VALUE 'FG' VALIDATE THAT IN THE COLUMN LABELED: COUNTRY CODE - THAT THE FAMILY GROUP (FG) IS ONLY RELATED TO JANUVIA VALIDATE THAT THE SKUS FOR JANUVIA HAVE A MATERIAL COUNTRY MAPPED VALIDATE THAT THE TABLE HAS COLUMN LABELED: SUPPLY VALIDATE THAT THE COLUMN LABELED:	LABELED FAMILY GROUP (FG) WHERE THE VALUES ARE RELATED ONLY TO JANUVIA	

			'SUPPLY' POPULATES FOR 12 MONTHS OF VALUES VALIDATE THAT THE TABLE HAS A COLUMN LABELED: 'BALANCE' VALIDATE THAT THE COLUMN LABELED: 'BALANCE' POPULATES FOR 12 MONTHS OF VALUES'		
7	CTP_SIT_MVP4.1_DEMAND_INCREASE_2.3.1	MVP4.1 Process Step 2.3.	LOG INTO REDSHIFT SIT SELECT THE EXTERNAL TABLE: DEMANDINCREASE_HISTORICALSHIPMENT FILTER THE COLUMN LABELED: PRODUCT FAMILY = DIA FILTER	ABLE TO LOG INTO REDSHIFT SIT ENVIRONMENT SUCCESSFULLY ABLE TO SELECT THE DATABASE TABLE OK ABLE TO QUERY THE TABLE AND FILTER THE COLUMN OK	REDSHIFT SIT REDSHIFT EXTERNAL TABLE: DEMANDINCREASE_HISTORICALSHIPMENT

		1 Check historical shipment (demand fulfillment)	THE COLUMN LABELED: DEMAND TYPE TO 'DEMAND INCREASE' FILTER THE COLUMN LABELED: 'PLANNING VERSION' WITH THE VALUE SET EQUAL TO: 'ACTUALS' VALIDATE THAT IN THE TABLE THAT THE 'YEARLY LEVEL' IS AGGREGATED FILTER THE MATERIAL RECORDS WITH A 'PLANNING VERSION' SET EQUAL TO 'ACTUALS' VALIDATE THAT 'PGI EACH' IS	VALIDATED THAT IN THE TABLE THAT THE 'YEARLY LEVEL' IS AGGREGATED VALIDATED THAT 'PGI EACH' IS APPENDED VALIDATED THAT A MARKET CODE EXISTS FOR EACH YEAR	

			APPENDED VALIDATE THAT A MARKET CODE EXISTS FOR EACH YEAR		

8	CTP_SIT_MVP4.1_DEMAND_INCREASE_2.4	MVP4.1 Process Step 2.4 Check packaging line &LT(	LOG INTO REDSHIFT SIT SELECT THE EXTERNAL TABLE: DEMANDINCREASE_FEASIBILITYREWORK FILTER THE COLUMN LABELED: PRODUCT FAMILY = DIA FILTER THE COLUMN LABELED: DEMAND TYPE TO 'DEMAND INCREASE'	ABLE TO LOG INTO REDSHIFT SIT ENVIRONMENT SUCCESSFULLY ABLE TO SELECT THE DATABASE TABLE OK ABLE TO QUERY THE TABLE AND FILTER THE COLUMN OK	REDSHIFT SIT REDSHIFT EXTERNAL TABLE: DEMANDINCREASE_FEASIBILITYREWORK

		4 days for Januvia)			
9	CTP_SIT_MVP4.1_DEMAND_INCREASE_2,	MVP4.1 Pro	=HYPERLINK("https://share.merck.com/display/DAEnablement/Final+Structure+of+Demand+Increase+and+Decrease	=HYPERLINK("https://share.merck.com/display/DAEnablement/Final+Structure+of+Demand+Increase+and+Decrease	=HYPERLINK("https://share.merck.com/display/DAEnablement/Final+Structure+of+Demand+Increase+and+Decrease

	4.1	cessStep2.4.1AdjustPackaging(AddOvertime)	";"NOT TESTING PER DIAGRAM OUTLINE IN: Final Structure of Demand Increase and Decrease")	";"NOT TESTING PER DIAGRAM OUTLINE IN: Final Structure of Demand Increase and Decrease")	";"NOT TESTING PER DIAGRAM OUTLINE IN: Final Structure of Demand Increase and Decrease")

10	CTP_SIT_MVP4.1_DEMAND_INCREASE_2.5	MVP4.1 Process Step 2.5 Recommend – Dashboard #1:	=HYPERLINK("https://share.merck.com/display/DAEnablement/Final+Structure+of+Demand+Increase+and+Decrease";"NOT TESTING PER DIAGRAM OUTLINE IN: Final Structure of Demand Increase and Decrease")	=HYPERLINK("https://share.merck.com/display/DAEnablement/Final+Structure+of+Demand+Increase+and+Decrease";"NOT TESTING PER DIAGRAM OUTLINE IN: Final Structure of Demand Increase and Decrease")	=HYPERLINK("https://share.merck.com/display/DAEnablement/Final+Structure+of+Demand+Increase+and+Decrease";"NOT TESTING PER DIAGRAM OUTLINE IN: Final Structure of Demand Increase and Decrease")

		List options(markets) with Shared pack(same SKU)-sho			

		wdemand/supplyListofmarketsbasedonhistoricals			

		hipment. List Scheduled processorders for packa			

		ging for same bulk (repurpose) (subject to packaging			

		component availability)			

11	CTP_SIT_MVP4.1_DEMAND_INCREASE_2.6	MVP4.1 Process Step 2.6 Check Bulk Availability to meet in	LOG INTO REDSHIFT SIT SELECT THE EXTERNAL TABLE: DEMANDINCREASE_CHECKBULKAVAILABILITY FILTER THE COLUMN LABELED: PRODUCT FAMILY = DIA FILTER THE COLUMN LABELED: DEMAND TYPE TO 'DEMAND INCREASE'	ABLE TO LOG INTO REDSHIFT SIT ENVIRONMENT SUCCESSFULLY ABLE TO SELECT THE DATABASE TABLE OK ABLE TO QUERY THE TABLE AND FILTER THE COLUMN OK	REDSHIFT SIT REDSHIFT EXTERNAL TABLE: DEMANDINCREASE_CHECKBULKAVAILABILITY

		creaseddemand			
12	CTP_SIT_MVP4.1_DEMAND_INCREASE_2.	MVP4.1Pro	LOG INTO REDSHIFT SIT SELECT THE EXTERNAL TABLE: ZZZZ FILTER THE COLUMN	ABLE TO LOG INTO REDSHIFT SIT ENVIRONMENT SUCCESSFULLY ABLE TO	REDSHIFT SIT REDSHIFT EXTERNAL TABLE: ZZZZ

	7	cessStep2.7EvaluateSKUPackageOptionsTestingSc	LABELED: PRODUCT FAMILY = DIA FILTER THE COLUMN LABELED: DEMAND TYPE TO 'DEMAND INCREASE'	SELECT THE DATABASE TABLE OK ABLE TO QUERY THE TABLE AND FILTER THE COLUMN OK	

		enarios:			
13	CTP_SIT_MVP4.1_DEMAND_INCREASE_2.7.1	MVP4.1 Process Step 2.7.1 Package alternate	LOG INTO REDSHIFT SIT SELECT THE EXTERNAL TABLE: DEMANDINCREASE_LINECAPACITY DEMANDINCREASE_LINECAPACITYBULK FILTER THE COLUMN LABELED: PRODUCT FAMILY = DIA FILTER THE COLUMN LABELED: DEMAND TYPE TO 'DEMAND INCREASE'	ABLE TO LOG INTO REDSHIFT SIT ENVIRONMENT SUCCESSFULLY ABLE TO SELECT THE DATABASE TABLE OK ABLE TO QUERY THE TABLE AND FILTER THE COLUMN OK	REDSHIFT SIT REDSHIFT EXTERNAL TABLE: DEMANDINCREASE_LINECAPACITY DEMANDINCREASE_LINECAPACITYBULK

		line at the same site Testing Scenarios:			

14	CTP_SIT_MVP4.1_DEMAND_INCREASE_2.7.2	MVP2.7.2 Process Step Package alter nate sites Testin	LOG INTO REDSHIFT SIT SELECT THE EXTERNAL TABLE: DEMANDINCREASE_LINECAPACITY FILTER THE COLUMN LABELED: PRODUCT FAMILY = DIA FILTER THE COLUMN LABELED: DEMAND TYPE TO 'DEMAND INCREASE'	ABLE TO LOG INTO REDSHIFT SIT ENVIRONMENT SUCCESSFULLY ABLE TO SELECT THE DATABASE TABLE OK ABLE TO QUERY THE TABLE AND FILTER THE COLUMN OK	REDSHIFT SIT REDSHIFT EXTERNAL TABLE: DEMANDINCREASE_LINECAPACITY

		gScenarios:			

15	CTP_SIT_MVP4.1_DEMAND_INCREASE_2.8	MVP4.1 Process Step 2.8 Evaluate API availability across	LOG INTO REDSHIFT SIT SELECT THE EXTERNAL TABLE: DEMANDINCREASE_CHECKAPIAVAILABILITY FILTER THE COLUMN LABELED: PRODUCT FAMILY = DIA FILTER THE COLUMN LABELED: DEMAND TYPE TO 'DEMAND INCREASE'	ABLE TO LOG INTO REDSHIFT SIT ENVIRONMENT SUCCESSFULLY ABLE TO SELECT THE DATABASE TABLE OK ABLE TO QUERY THE TABLE AND FILTER THE COLUMN OK	REDSHIFT SIT REDSHIFT EXTERNAL TABLE: DEMANDINCREASE_CHECKAPIAVAILABILITY

		Janu via family Testing Scenarios:			

16	CTP_SIT_MVP4.1_DEMAND_INCREASE_2.9	MVP4.1 Process Step 2.9 Evaluate opportunities to incre	LOG INTO REDSHIFT SIT SELECT THE EXTERNAL TABLE: DEMANDINCREASE_LINECAPACITYBULK FILTER THE COLUMN LABELED: PRODUCT FAMILY = DIA FILTER THE COLUMN LABELED: DEMAND TYPE TO 'DEMAND INCREASE'	ABLE TO LOG INTO REDSHIFT SIT ENVIRONMENT SUCCESSFULLY ABLE TO SELECT THE DATABASE TABLE OK ABLE TO QUERY THE TABLE AND FILTER THE COLUMN OK	REDSHIFT SIT REDSHIFT EXTERNAL TABLE: DEMANDINCREASE_LINECAPACITYBULK

		asebulk capacity Testing Scenarios:			

17	CTP_SIT_MVP4.1_DEMAND_INCREASE_2.10	MVP4.1ProcessStep2.10Recommend_Dashboard#	=HYPERLINK("https://share.merck.com/display/DAEnablement/Final+Structure+of+Demand+Increase+and+Decrease";"MOST LIKELY A QLIK SENSE DASHBOARD ITEM NOT TESTING TABLES PER DIAGRAM OUTLINE IN: Final Structure of Demand Increase and Decrease")	=HYPERLINK("https://share.merck.com/display/DAEnablement/Final+Structure+of+Demand+Increase+and+Decrease";"MOST LIKELY A QLIK SENSE DASHBOARD ITEM NOT TESTING PER DIAGRAM OUTLINE IN: Final Structure of Demand Increase and Decrease")	=HYPERLINK("https://share.merck.com/display/DAEnablement/Final+Structure+of+Demand+Increase+and+Decrease";"MOST LIKELY A QLIK SENSE DASHBOARD ITEM NOT TESTING PER DIAGRAM OUTLINE IN: Final Structure of Demand Increase and Decrease")

		2: 1. List of primary packaging lines - Additional hrs ne			

		eded 2. List of secondary packaging line & capacity			

		3. List Bulk capacity and API availability			

CHAPTER 4

USER MANUAL

1. Go to web page http://com-dev-wfl.s3-website-eu-west-1.amazonaws.com/matillionTools/index.html

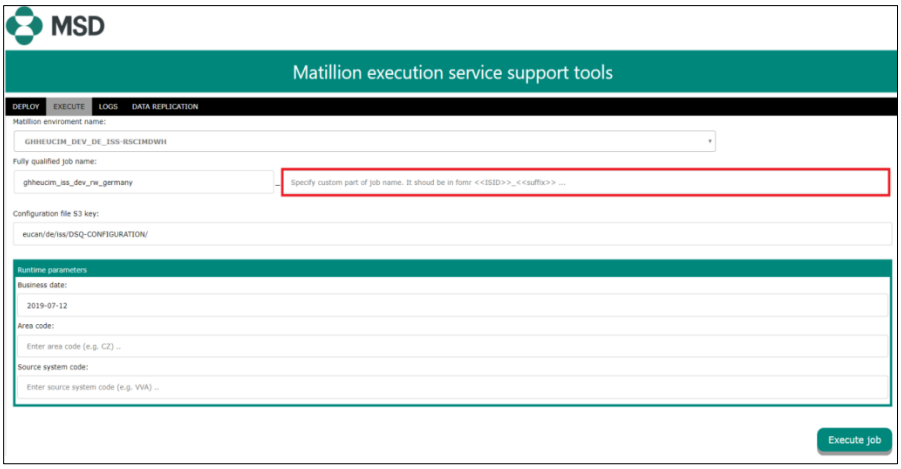
2. Go to tab "DEPLOY" and choose your artifacts (config file and dsqfile) from your computer

You can import both files at once, or you can import only one of them.

When you deploy artefact again with the same name, it will be automatically overwritten.

Executing job via WEB GUI

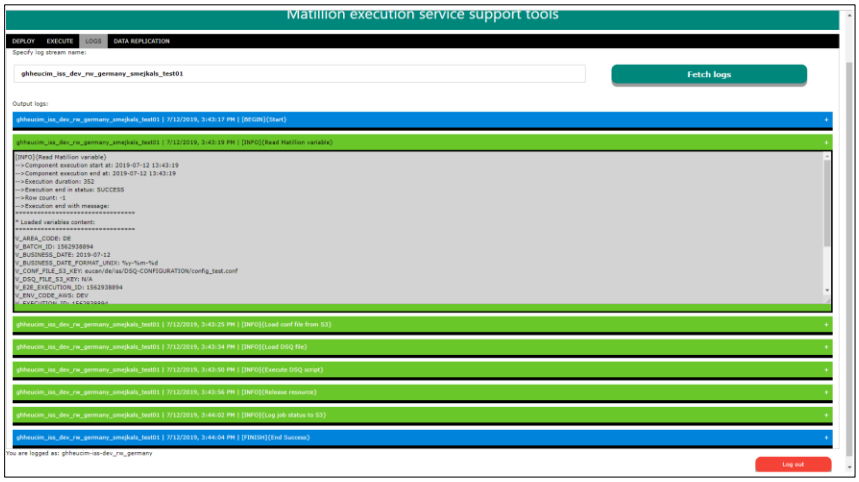
1. Go to web page http://com-dev-wfl.s3-website-eu-west-1.amazonaws.com/matillionTools/index.html, tab EXECUTE and fill in just job name (your ISID and particular suffix)



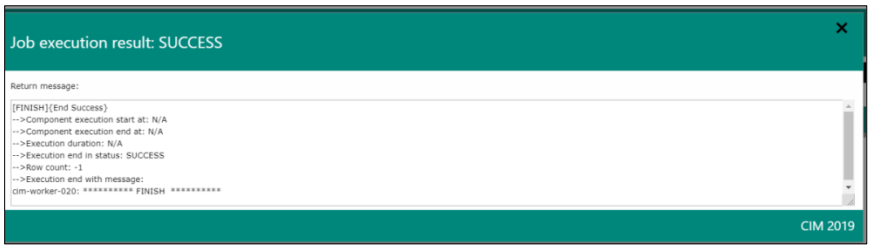
2. Section "Runtime parametrs" contains parameters which are initially populated for you. No need to change it, in case of parametrized your dsq transformation

   - Press "Execute job" button

- During a few minutes execution, you can go on tab LOG where can you fetch your logs from CloudWatch and watch whether or what something goes wrong.



- Execution result.



DRAWBACKS AND LIMITATIONS

AWS is the fastest-growing cloud provider, and it offers more than 70 different services. For just about any service that you could think of, there is probably already a specialized service on AWS where you can deploy your setup. And the entire AWS infrastructure is at your disposal. However, this doesn't mean that you can do whatever you want as every system has its advantages and disadvantages.

Cloud computing fallbacks

AWS does have general cloud computing issues when you move to a cloud, such as a downtime, limited control, and backup protection. However, these flaws can be overcome after some time. This makes them a temporary issue.

Lack of relevant knowledge by your team

If you choose to work with AWS as your Cloud provider, be prepared to learn and invest in your team's education. As we mentioned before, AWS is an excellent and extensive platform, and you need to know what you're doing if you want to use it.

PROPOSED ENHANCEMENTS

We are continually taking the users' feedback about their experience while using this application and their suggestions. So that we can improve the user's experience easier and at the same time efficient and reliable.

In our next version of **ISS 2.0**, we will be going to introduce a **Tiger Framework**, which will include a new Apache Airflow service to schedule the data pipelines. This will straightly reduce the User's work of manually sending files to integration. This Tiger Framework will automatically pull the files/data from any type of source and ingest it into the system automatically without any human intervention. We are working to increase the infrastructure capacity in order to avoid the storage issue. We are trying to make the interfaces user friendly so that any user can access it and will be more comfortable.

Also in order to educate or guide the users that will be accessing for the first time we will providing the Knowledge articles guide which will help the user to have a hands on help on the workflows. The

articles will ultimately help the end users to get the knowledge about the newly launched features which will ultimately help in the smooth functioning for the end users as well the team.

CONCLUSION

In the ISS 1.0 version, we have deployed all the User's requirements successfully without any post-delivery defects. Currently, everyone is using it at its best and we are continuously receiving appreciation notes from all the Users.

Now we will be planning/working on the ISS 2.0 to put one step ahead in interface appearance and improve the service at its best.

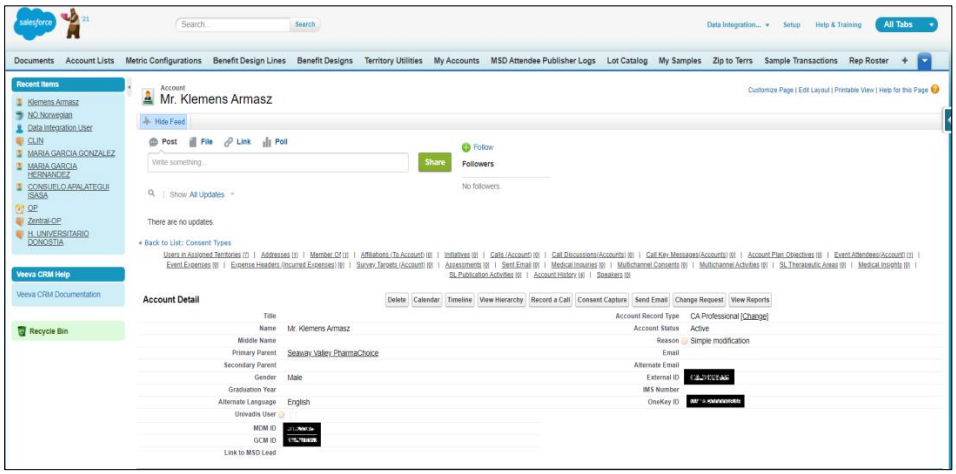
BIBLIOGRAPHY

- **Amazon Elastic Compute Cloud (Amazon EC2):** http://aws.amazon.com/ec2/.
- **AWS Step Functions:** https://aws.amazon.com/step-functions/?nc2=h_ql_prod_ap_stf
- **Amazon Redshift:** https://aws.amazon.com/redshift/?nc2=h_ql_prod_an_rs&whats-new-cards.sort-by=item.additionalFields.postDateTime&whats-new-cards.sort-order=desc
- **AWS Lambda:** https://aws.amazon.com/lambda/?nc2=h_ql_prod_fs_lbd
- **AWS Database Migration Service:** https://aws.amazon.com/dms/?nc2=type_a
- **Amazon CloudWatch:** https://aws.amazon.com/cloudwatch/?nc2=type_a

ANNEXURES

ANNEXURE 1 : USER INTERFACE SCREENS

- **Salesforce CRM(Customer Relationship Management) Portal**

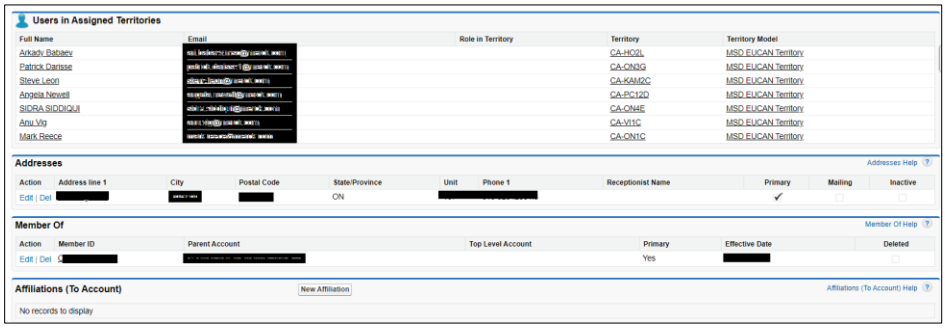


The above snap is of the Salesforce CRM portal which is the front-end of this entire model. Here every detail is shown like Employee, Customers, Products, Promotional products, consents, emails, etc.

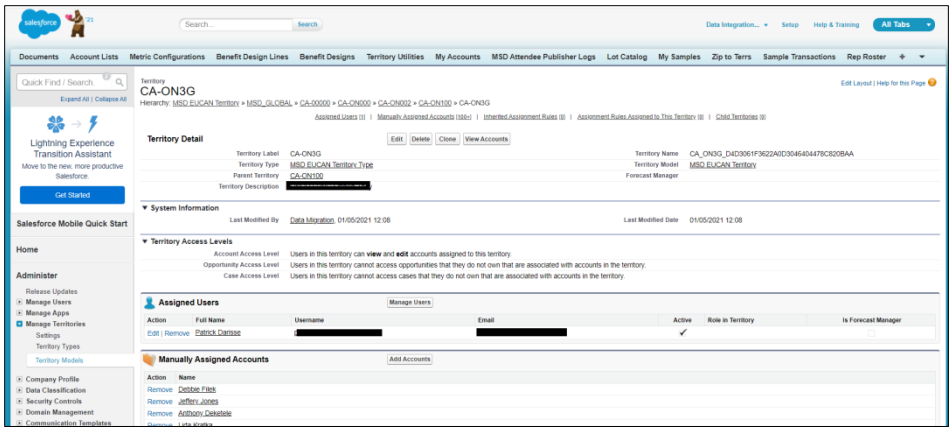
This is the portal where all Merck business associates interact with each other for business purposes. e.g. If anyone wants to take some information about some particular employee like in which

department he works, his specialties, address, language, Gender and from which country he belongs etc.

As we can see in the above snap this Associate <<Mr. Khelmens Armasz>>is a Pharmacist and his specialty is Pharmacy.



Here we can see which all associates are tagged under the same territories(Geographical Areas) under which this <<Mr. Khelmens Armasz>> is tagged.



In the upper portion, we have seen the Employee profile and along with under which Territory he is tagged. The territory is the geographical area. (e.g. Kothrud is the sub Territory of Pune)

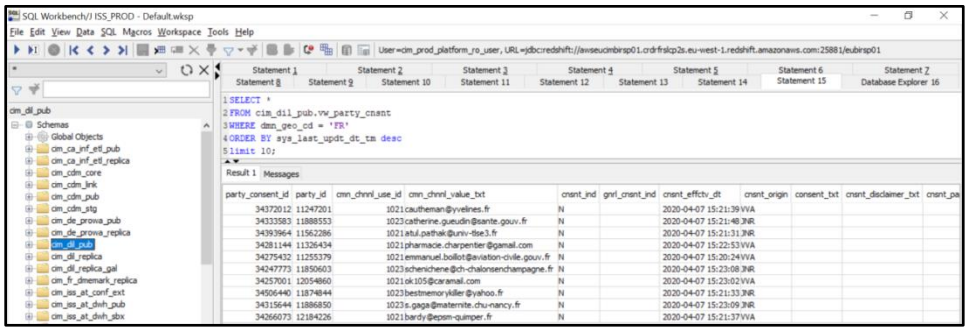
In the above snap, we can see the all details of any Territory. i.e. Territory Code, Area Covers, which all associates are tagged under this particular Territory. Etc.

- **Matillion UI Portal**

The above snap is of the UI portal which we have built for the Local IT admin members, they can easily just upload the file here and it will get loaded into the Redshift database. The table structures, column data types, column length. Everything is managed by the python script in the backend.

By dumping the data into the system, users can easily perform the queries on their data as per their need/requirement and link that data to the Qlik reports.

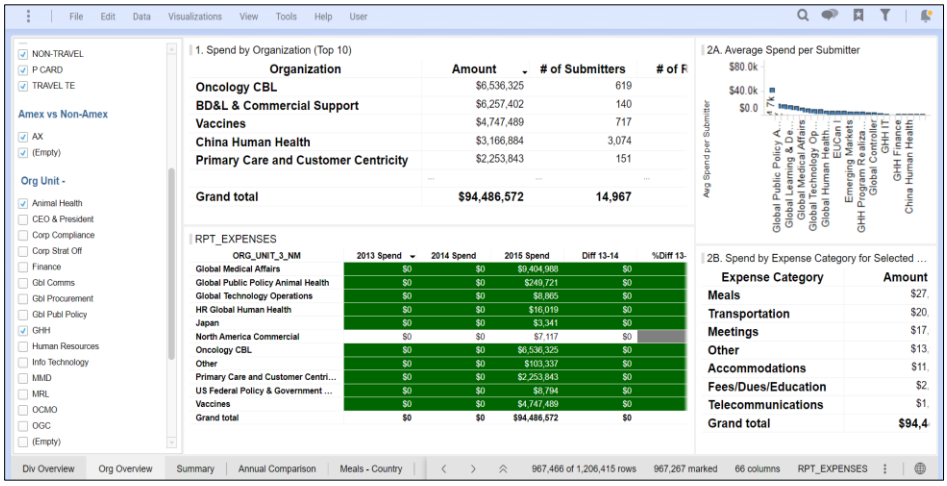
SQL Workbench(Redshift DB) Tool



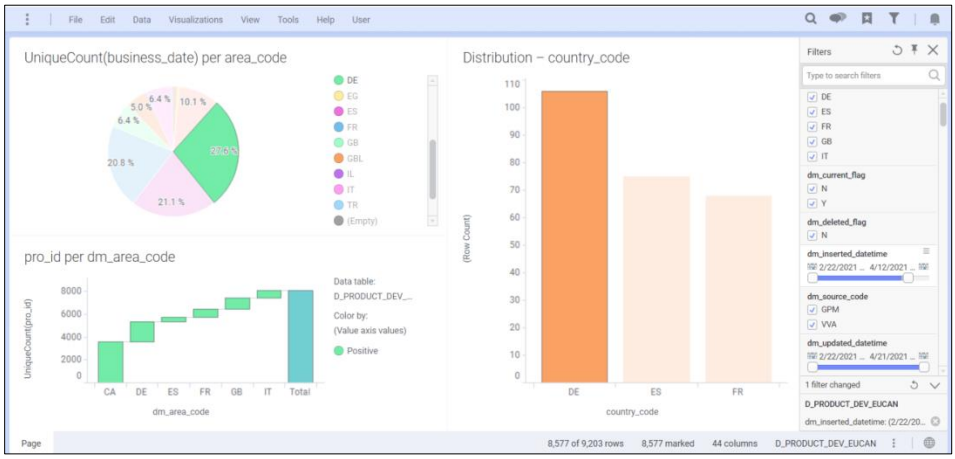
The above is the SQL workbench, through which Users connect to the Redshift database and perform/fire their queries on the data.

ANNEXURE 2 : OUTPUT REPORTS WITH DATA

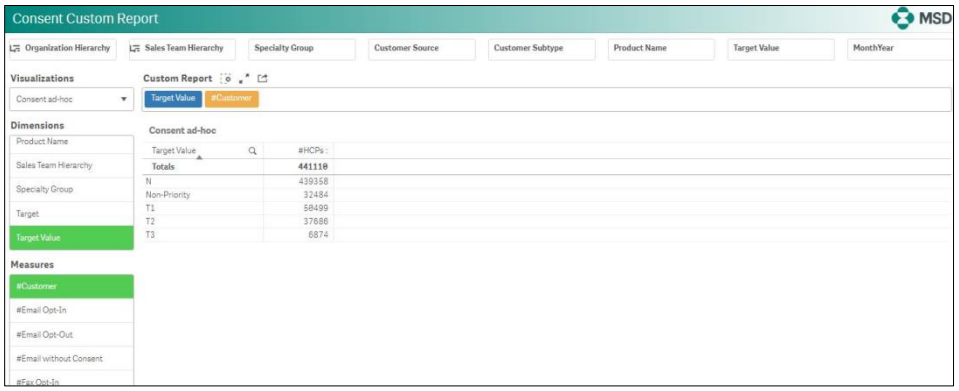
1.Expense Report



2.Product Report

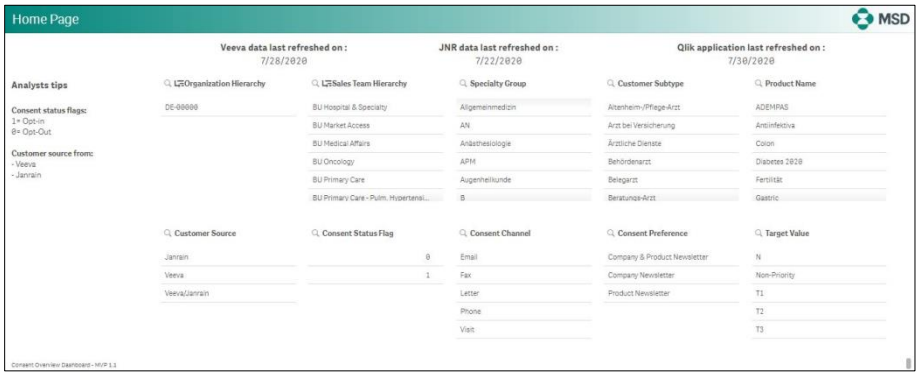


3.Consent Report

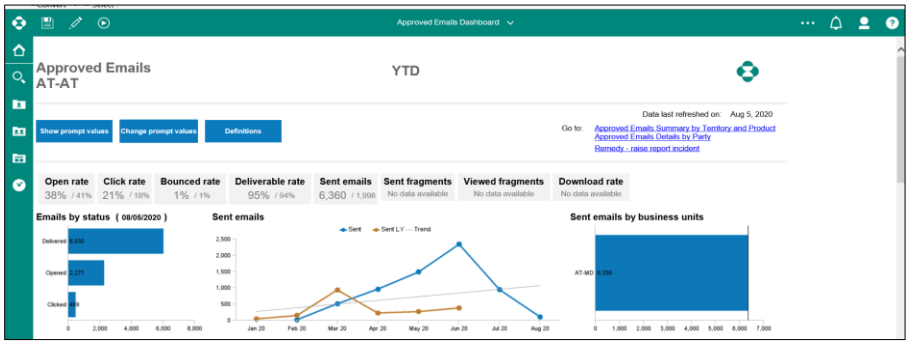


4.Consent Summary Analysis Report

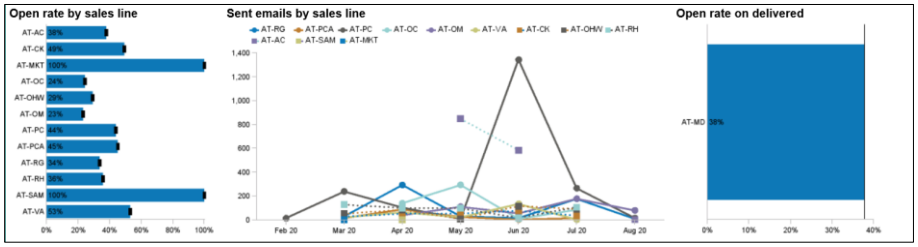
4.Dashboard



5.Approved Email Report



6.Sent Email by Sales Line Report



7.Approved Email Open & Click Analysis Report