Jean Paul Uwimana ST-659 Project Deliverable Part II

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Part 1: Design Project Narrative

At work, my team is responsible for collecting, analyzing, validating data from a source data which is owned by another team within our organization. This internal team is thus responsible for correcting any data discrepancies identified by my team. After this data has validated clean, my team is then responsible for distributing it to various clients outside our organization.

The data is delivered per request by these clients. Currently, my team receives these data requests through email which is very cumbersome and overwhelming due to the amount of emails my team receives on a hourly/daily basis.

My team would like to have a tool that would help us manage these data requests and track information including: requestor name, request date, email address, phone number. Requestor may be an employee or external client.

We would also like to maintain specific data that allow the processing of these data requests including: item part number (item for which the data is being requested), serial number, cage code, intended destination (country), data request description(short description of the issue needing the data). This information will be submitted by the person submitting the data request to our team.

In addition, we would also like to maintain a generalized list of our internal teams we coordinate with so that they can update the status of these requests whenever they have finished doing their part of the job in order to fulfill the request.

Within the tool where the data request is logged, we (my team) would like to be able to track its status, who submitted it to our team (the client aka the requestor), and whether it's been claimed by an analyst or not. The request status could take a number of options such as whether our team is still waiting on some other team (kind of prerequisite) that has to happen before my team could complete the request, unclaimed or to completed.

A data request can only be worked on by one analyst (member of my team) at a time, but an analyst can work on multiple requests at the same time. Our clients (requestors) submitting requests are only be able to submit it to my team as a whole, not to an individual analyst as they don't know the availability of each individual analyst.

Data Dictionary

With the described data problem above, I have identified the following list of entities and their attributes.

Entity	Attribute	Properties
DQTeam	AnalystID	Required and Unique
	AnalystName	Required and composite of first and last name
	DQTeam Email	Required
Request	RequestID	Required and Unique
	SerialNumber	Required
	PartNumber	Required
	Description	Required
	RequestDate	Required DEFAULT to GETDATE()
Status	StatusName	Required and Unique
Requestor	ClientID	Required and unique
	Name	Required composite of first and last name
	Phone	
	Email	Required
InternalTeam	TeamName	Required and Unique
	Email	Required and Unique
RequestLine	RequestLineID	Required and Unique
	ClientID	Required
	RequestID	Required
StatusLine	StatusLineID	Required and Unique
	AnalystID	Required
	StatusName	Required
	InternalTeamName	Required

	RequestID	Required and Unique
InternalTeamStatus	InternalTeamStatusID	Required and Unique
	StatusName	Required
	TeamName	Required

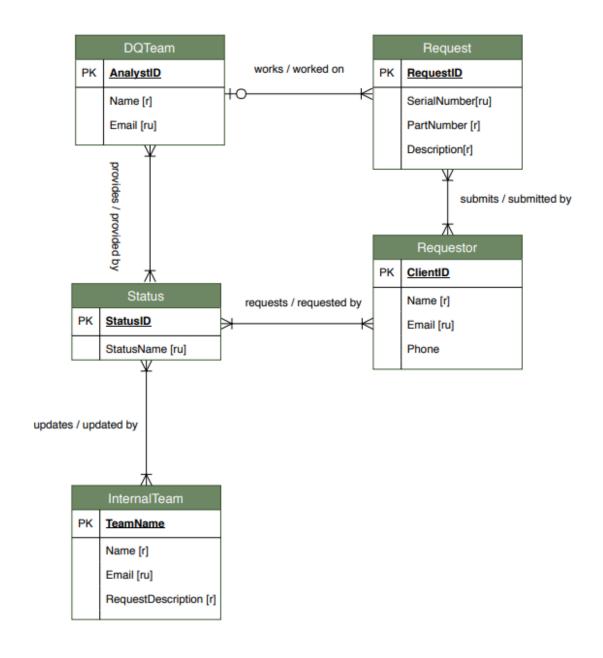
Data Questions

Some questions my Data Quality Team hopes to answer using this database are:

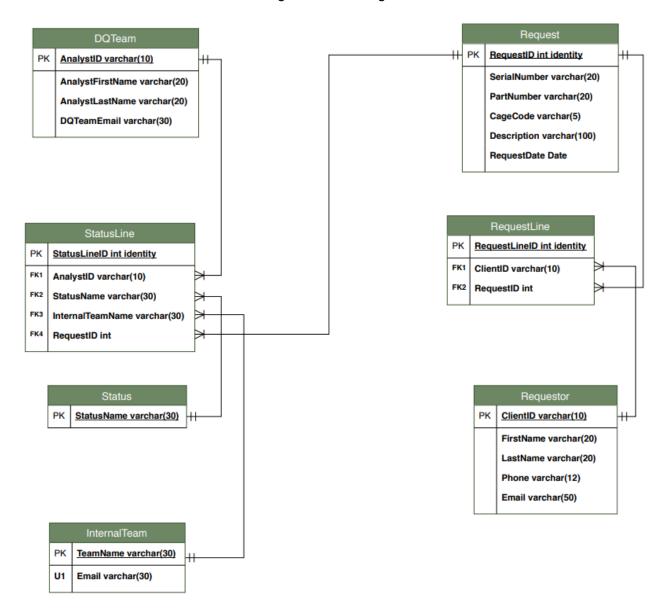
- 1. Which requests are in pending status and from which client?
- 2. Which requests have been completed for a particular day?
- 3. For any given day, which requests are being worked on by a particular analyst?
- 4. For any given day, which requests are pending action from other teams?
- 5. Which requests have not yet been claimed by an analyst?

Entity Relationship Diagram

When connected via relationship, the ERD is as follows:



Logical Model Diagram



Part 2: Implementation

```
SQL DDL
-- Course Project Deliverable II
-- Creating DQTeam table
CREATE TABLE DQTeam
      -- columns for the DQTeam table
      AnalystID varchar(10),
      DQTeamEmail varchar(30) NOT NULL,
      AnalystFirstName varchar(20) NOT NULL,
      AnalystLastName varchar(20) NOT NULL
      -- Constraints on the DQTeam table
      CONSTRAINT PK_DQTeam PRIMARY KEY (AnalystID),
)
-- Creating Request table
CREATE TABLE Request
      -- columns for the Request table
      RequestID int identity NOT NULL,
      SerialNumber varchar(20) NOT NULL,
      PartNumber varchar(20) NOT NULL,
      CageCode varchar(5) NOT NULL,
      Description varchar(100) NOT NULL,
      RequestDate Date DEFAULT GETDATE() NOT NULL
      -- Constraints on the Request table
      CONSTRAINT PK_Request PRIMARY KEY (RequestID)
)
-- Creating Status table
CREATE TABLE Status
      -- Columns for the Status table
      StatusName varchar(30) NOT NULL
      -- Constraints on the Status table
      CONSTRAINT PK_Status PRIMARY KEY (StatusName)
)
-- Creating Requestor table
```

```
CREATE table Requestor
      -- Columns for the Requestor table
      ClientID varchar(10) NOT NULL,
      FirstName varchar(20) NOT NULL,
      LastName varchar(20) NOT NULL,
      Phone varchar(12) NOT NULL,
      Email varchar(50) NOT NULL
      -- Constraints on the Requestor table
      CONSTRAINT PK_Requestor PRIMARY KEY (ClientID)
)
-- Creating InternalTeam table
CREATE TABLE InternalTeam
      -- Columns for the InternalTeam table
      TeamName varchar(30) NOT NULL,
      Email varchar(30) NOT NULL
      -- Constraints on the InternalTeam table
      CONSTRAINT PK_InternalTeam PRIMARY KEY (TeamName),
      CONSTRAINT U1_InternalTeam UNIQUE (Email)
)
-- Creating RequestLine table
CREATE TABLE RequestLine
      -- Columns for the RequestLine table
      RequestLineID int identity NOT NULL,
      ClientID varchar(10) NOT NULL,
      RequestID int NOT NULL
      -- Constraints on the RequestLine table
      CONSTRAINT PK_RequestLine PRIMARY KEY (RequestLineID),
      CONSTRAINT FK1_RequestLine FOREIGN KEY (ClientID) REFERENCES Requestor
(ClientID),
      CONSTRAINT FK2_RequestLine FOREIGN KEY (RequestID) REFERENCES Request
(RequestID)
-- Creating StatusLine table
CREATE TABLE StatusLine
```

-- Columns for the StatusLine table StatusLineID int identity NOT NULL, AnalystID varchar(10) NOT NULL, StatusName varchar(30) NOT NULL, InternalTeamName varchar(30) NOT NULL, RequestID int

-- Constraints on the StatusLine table

CONSTRAINT PK_StatusLine PRIMARY KEY (StatusLineID),

CONSTRAINT U1_StatusLine UNIQUE (RequestID),

CONSTRAINT FK1_StatusLine FOREIGN KEY (AnalystID) REFERENCES DQTeam (AnalystID),

CONSTRAINT FK2_StatusLine FOREIGN KEY (StatusName) REFERENCES Status (StatusName),

CONSTRAINT FK4_StatusLine FOREIGN KEY (InternalTeamName) REFERENCES InternalTeam (TeamName),

CONSTRAINT FK5_StatusLine FOREIGN KEY (RequestID) REFERENCES Request (RequestID)

DDL - Programming Objects

```
-- Programming objects --
-- Create a function that returns the count of Requests made by a particular user
GO
CREATE FUNCTION dbo.RequestCount(@ClientID int)
RETURNS int AS
BEGIN
      DECLARE @returnValue int
      SELECT @returnValue = COUNT(RequestLine.ClientID)
      FROM Requestor
      JOIN RequestLine ON Requestor.ClientID = RequestLine.ClientID
      JOIN Request ON Request.RequestID = RequestLineID
      WHERE RequestLine.ClientID = @ClientID
      --Return @returnValue to the calling code
      RETURN @returnValue
END
-- Testing Function
SELECT TOP 10
      dbo.RequestCount(ClientID) as RequestCount
      FROM Requestor
      ORDER BY RequestCount DESC
-- Create View to retrieve the top 10 data Requestors and their Request Counts
GO
CREATE VIEW MostActiveRequestors AS
      SELECT TOP 10 *,
             dbo.RequestCount(ClientID) AS RequestCount
      FROM Requestor
      WHERE dbo.RequestCount(ClientID) > 0
      ORDER BY RequestCount DESC
GO
-- Testing the View
SELECT * FROM MostActiveRequestors
-- Create View to see requests that are NOT in hands of my team (DQTeam - Data Quality
-- Requests that are pending actions from other Teams, not my team
GO
CREATE VIEW RequestByOtherTeams AS
```

SELECT Requestor.FirstName, Requestor.LastName, StatusLine.StatusName, Request.RequestDate, Request.Description

FROM Requestor

JOIN RequestLine ON Requestor.ClientID = RequestLine.ClientID

JOIN Request ON RequestLine.RequestID = Request.RequestID

JOIN StatusLine ON RequestLine.RequestID = Request.RequestID

WHERE StatusLine.StatusName != 'Claimed by DQTeam'

GO

-- Testing the RequestOtherTeams View

Select * from RequestByOtherTeams ORDER BY LastName

- -- Create procedure to assign Requests with a specific Status to a particular group
- -- The first parameter is the StatusName (status of request)
- -- The second parameter is the Team to be assigned a request to

GO

CREATE PROCEDURE AssignRequestToTeam(@StatusName varchar(30), @TeamName varchar(30))

AS

BEGIN

UPDATE StatusLine SET StatusName = @StatusName WHERE InternalTeamName = @TeamName

END

GO

-- Execute the procedure

EXEC AssignRequestToTeam 'Assigned to FDM', 'OBPHM'

- -- Create View to query requests that are in pending status (NOT Submitted to LDM in this case)
- -- Completed requests will have the Status of either: 'Available in LDM' or 'Submitted to LDM'.

All others are pending

GO

CREATE VIEW PendingRequests AS

SELECT Requestor.FirstName + ' ' + Requestor.LastName AS DataRequestor,

Status.StatusName, Request.RequestDate, Request.Description

FROM Requestor

JOIN RequestLine ON Requestor.ClientID = RequestLine.ClientID

JOIN Request ON RequestLine.RequestID = Request.RequestID

JOIN StatusLine ON Request.RequestID = StatusLine.RequestID

JOIN Status ON RequestLine.RequestID = StatusLine.RequestID

WHERE Status.StatusName NOT LIKE 'LDM'

GO

-- Testing the view

Select * From PendingRequests ORDER BY RequestDate

-- Create View that retrieves Claimed requests

-- Requests that are being worked by my team, DQTeam GO CREATE VIEW ClaimedRequests AS SELECT Requestor.FirstName + ' ' + Requestor.LastName AS DataRequestor, Status.StatusName, Request.RequestDate, Request.Description FROM Requestor JOIN RequestLine ON Requestor.ClientID = RequestLine.ClientID JOIN Request ON RequestLine.RequestID = Request.RequestID JOIN StatusLine ON Request.RequestID = StatusLine.RequestID JOIN Status ON RequestLine.RequestID = StatusLine.RequestID WHERE Status.StatusName = 'Claimed by DQTeam' GO -- Testing the above View Select * From ClaimedRequests GO CREATE VIEW WholsWorkingWhat AS SELECT DQTeam.AnalystID, DQTeam.AnalystFirstName, Request.Description, StatusLine.StatusName FROM DQTeam JOIN StatusLine ON DQTeam.AnalystID = StatusLine.AnalystID JOIN Request ON Request.RequestID = StatusLine.RequestID GO

-- Testing the above View

SELECT * FROM WhoIsWorkingWhat

DML: INSERT and Update

- -- Beginning of INSERT Statements --
- -- Inserting into DQTeam table

 $INSERT\ INTO\ DQTeam\ (AnalystID,\ AnalystFirstName,\ AnalystLastName,\ DQTeamEmail)$

VALUES

('m310000', 'Jean Paul', 'Uwimana', 'JeanPaul.Uwimana@amazon.com'),

('m310009', 'Leila', 'Khalaf', 'Leila.Khalaf@amazon.com'),

('m310295', 'Steve', 'Lucas', 'Steve.Lucas@amazon.com'),

('S167512', 'Bruno', 'Mullins', 'Bruno.Mullins@Maecenas.org'),

('N660032', 'Rudyard', 'Olson', 'Rudyard.Olson@eteuismodet.edu')

-- Updating Analyst email adress

UPDATE DQTeam SET DQTeamEmail = 'Steve.Lucas@glorious.com'
WHERE DQTeamEmail = 'Steve.Lucas@amazon.com'

-- Inserting into Request table select * from request

INSERT INTO Request (SerialNumber, PartNumber, CageCode, Description)

VALUES

('TSGCAA0900', '5100072', '73030', 'IDMS SCU showed up at Fort Worth without electronic data (EEL). Please submit EEL ASAP'),

('TSGCAB0212', '5100049', '77400', 'Jet engine at Eglin without electronic data (EEL)'),

('XVSABA4546', '5132056', '06456', 'Submit EEL for Washington DC retrieval'),

('TSGCAB0976', '4138668', '77263', 'Submit all data related to the power module in Middletown, CT'),

('60063255363', 'PW83673', '03208', 'Gwen request EEL for Fan Module, please send to LDM by COB today'),

('T5TGOG0984', '4451993', '78925', 'Please submit data ASAP to avoid further aircraft grounding'),

('T4TGOG0239', '4695982', '77603', 'An AR for AF data has been submitted but there was no follow-up. Please refer to AR:63562'),

('QAGGOG00376', '4509726', '77350', 'Ferry for BF-90 is coming for Italy. Please data for reconciliation'),

('9500202052', '4289239', '79179', 'Need data for SN: 9500202052 PN: 4289239'),

('T7TGOG0PGY', '4876436', '79091', 'Fort Worth is requesting that you confirm DOI for the above IDMS')

-- Inserting into Status table

INSERT INTO Status (StatusName)

VALUES

('Available in LDM'),

('Submitted to LDM'),

('Claimed by DQTeam'),

('Assigned to FDM'),

('Waiting for PADL file'),

```
('Assigned to OBPHM'),
       ('Rejected by DQIM'),
       ('Assigned to PAIR')
-- Inserting into Requestor table
INSERT INTO Requestor (ClientID, FirstName, LastName, Phone, Email)
       VALUES
       ('1882772', 'Brice', 'Butdorf', '817-555-1212', 'Brice.Butdorf@elf.com'),
       ('1673880', 'Kygo', 'LaRose', '817-555-1200', 'Kygo.LaRose@elf.com'),
       ('1875466', 'Peter', 'Andrew', '817-555-1000', 'Peter.Andrew@elf.com'),
       ('1882958', 'Lamirou', 'Gwen', '800-555-9388', 'Lamirou.Gwen@mode.com'),
       ('1620092', 'Salvador', 'Waters', '602-147-4725', 'Donec.feugiat.metus@amet.net'),
       ('1678102', 'Joel', 'Wilder', '911-180-2758', 'magna.et@egestasSed.ca'),
       ('1625080', 'Hector', 'Strickland', '807-309-1324', 'interdum.enim@eros.net'),
       ('1677040', 'Peter', 'Lewis', '800-409-6905', 'mattis.semper.dui@egestasnunc.edu'),
       ('1626101', 'Thane', 'Baxter', '484-672-4085', 'aliquet.diam.Sed@velitAliquam.net'),
       ('1686062', 'Quentin', 'Guerra', '635-684-6126', 'inceptos.hymenaeos@ac.ca')
-- Updating a Client contact information on Requestor Table --
UPDATE Requestor SET Phone = '817-456-0000', Email = 'Brice.Butdorf@lion.com'
       WHERE FirstName = 'Brice' AND LastName = 'Butdorf'
-- Updating ClientID of Requestor Table
       -- First step we need to alter table first due to foreign key constraint on RequestLine
Table
       ALTER TABLE RequestLine
       DROP CONSTRAINT FK1_RequestLine
-- Second step would be to update record
UPDATE Requestor SET ClientID = '1671000'
       WHERE ClientID = '1678102'
       -- Finally, adding the Constraint back to the RequestLine Table
       ALTER TABLE RequestLine ADD CONSTRAINT FK1 RequestLine FOREIGN KEY
(ClientID) REFERENCES Requestor (ClientID)
-- End of Updating Requestor Table --
-- Inserting into InternalTeam table
INSERT INTO InternalTeam (TeamName, Email)
       VALUES
       ('Fleet Data Mgmt', 'FDM@google.com'), -- FDM
       ('OBPHM', 'OBPHM@google.com'), -- OBPHM
       ('PAIR', 'PAIR.Ptr@google.com'), -- PAIR
       ('Supply Chain', 'SupplyChain@business.biz') -- SCM
```

-- Inserting into RequestLine table

INSERT INTO RequestLine (ClientID, RequestID)

VALUES ('1620092', 1), ('1625080', 2),

('1625080', 3),

('1677040', 6),

('1677040', 10)

-- Inserting into StatusLine table

INSERT INTO StatusLine (AnalystID, StatusName, InternalTeamName, RequestID)

VALUES

('m310000', 'Assigned to FDM', 'Fleet Data Mgmt', 1),

('m310295', 'Submitted to LDM', 'Supply Chain', 3),

('N660032', 'Assigned to FDM', 'Fleet Data Mgmt', 4),

('m310000', 'Waiting for PADL file', 'OBPHM', 6),

('S167512','Assigned to FDM', 'Fleet Data Mgmt', 10),

('S167512', 'Claimed by DQTeam', 'Supply Chain', 7),

('N660032','Assigned to OBPHM', 'OBPHM', 9)

SQL DML - Programming Objects

- -- Programming Object names are highlighted in blue
- -- Using a pre-created function that returns the count of Requests made by a particular user SELECT TOP 10

dbo.RequestCount(ClientID) as RequestCount

FROM Requestor

ORDER BY RequestCount DESC

	ClientID	First Name	LastName	Phone	Email	RequestCount
1	1677040	Peter	Lewis	800-409-6905	mattis.semper.dui@egestasnunc.edu	2
2	1625080	Hector	Strickland	807-309-1324	interdum.enim@eros.net	2
3	1620092	Salvador	Waters	602-147-4725	Donec.feugiat.metus@amet.net	1
4	1882958	Lamirou	Gwen	800-555-9388	Lamirou.Gwen@mode.com	0
5	1882772	Brice	Butdorf	817-456-0000	Brice.Butdorf@lion.com	0

-- Querying View that shows the most active data requestors

SELECT * FROM MostActiveRequestors

	ClientID	FirstName	LastName	Phone	Email	RequestCount
1	1677040	Peter	Lewis	800-409-6905	mattis.semper.dui@egestasnunc.edu	2
2	1625080	Hector	Strickland	807-309-1324	interdum.enim@eros.net	2
3	1620092	Salvador	Waters	602-147-4725	Donec.feugiat.metus@amet.net	1

/*-- Requests that are pending actions from other Teams, not my own team and who the data requestor is */

Select * from Re	questByOtherT	eams ORDER BY	LastName
------------------	---------------	---------------	----------

	First Name	LastName	StatusName	RequestDate	Description
1	Peter	Lewis	Assigned to FDM	2018-12-17	Please submit data
2	Peter	Lewis	Submitted to LDM	2018-12-17	Please submit data
3	Peter	Lewis	Assigned to FDM	2018-12-17	Please submit data
4	Peter	Lewis	Waiting for PADL file	2018-12-17	Please submit data
5	Peter	Lewis	Assigned to FDM	2018-12-17	Please submit data

- -- Using a stored procedure that assigns requests from a particular internal team to another EXEC AssignRequestToTeam 'Assigned to FDM', 'OBPHM'
- -- Querying View that retrieves requests with a pending statusSelect * From PendingRequests ORDER BY RequestDate

	DataRequestor	StatusName	RequestDate	Description
1	Salvador Waters	Assigned to FDM	2018-12-17	IDMS SCU showed up at Fort Worth without electro

-- Querying View that retrieves requests assigned to my Team (Data Quality Team) Select * From ClaimedRequests

	DataRequestor	StatusName	Request Date	Description
1	Salvador Waters	Claimed by DQTeam	2018-12-17	IDMS SCU showed up at Fort Worth without electro
2	Hector Strickland	Claimed by DQTeam	2018-12-17	Submit EEL for Washington DC retrieval
3	Peter Lewis	Claimed by DQTeam	2018-12-17	Please submit data ASAP to avoid further aircraft gr
4	Peter Lewis	Claimed by DQTeam	2018-12-17	Fort Worth is requesting that you confirm DOI for th

GUI Prototype I chose to use R programming language

Retrieve requests that have been received today and have already be claimed by my team (DQ Team) claimed_requests <- sqlQuery(con, "Select * From ClaimedRequests") claimed_requests %>%

filter(grepl("2018-12-17", RequestDate)) %>% kable()

Check data request status and which analyst is working it sqlQuery(con, "select * From WhoIsWorkingWhat") request_status <- sqlQuery(con, "select * From WhoIsWorkingWhat") kable(request_status)

```
request_status <- sqlQuery(con, "select * From whoIsworkingwhat")
kable(request_status)
AnalystID |AnalystFirstName |Description
                                                                                                                                                                                                                                                                                                                 |StatusName
                                                                       | IDMS SCU showed up at Fort Worth without electronic data (EEL). Please submit EEL ASAP | Submit EEL for Washington DC retrieval | Submit submit all data related to the power module in Middletown, CT | Please submit data ASAP to avoid further aircraft grounding | Fort Worth is requesting that you confirm DOI for the above IDMS | An AR for AF data has been submitted but there was no follow-up. Please refer to AR:63562 | Need data for SN: 9500202052 PN: 4289239
m310000
                           |Jean Paul
                                                                                                                                                                                                                                                                                                                  Assigned to FDM
                                                                                                                                                                                                                                                                                                                | Assigned to FDM | Submitted to LDM | Assigned to FDM | Waiting for PADL file | Assigned to FDM | Claimed by DQTeam | Assigned to OBPHM
m310295
                           Rudyard
.
| N660032
m310000
                           Jean Paul
                           Bruno
                           Bruno
                          Rudyard
```

My boss wants to see a report of who is working what, but doesn't have access to the database # Extract data requests, status and who's working them, and export them to external Excel file request_status <- sqlQuery(con, "select * From WholsWorkingWhat") write.xlsx(request_status, file = "request_report.xlsx", col.names = T, sheetName = "Request Status")

```
> request_status <- sqlQuery(con, "select * From WhoIsWorkingWhat")
> write.xlsx(request_status, file = "request_report.xlsx", col.names = T, sheetName = "Request Status")
> |
```

The exported file of the above code is the spreadsheet below

	AnalystID	AnalystFirstName	Description	StatusName
1	m310000	Jean Paul	IDMS SCU showed up at Fort Worth without electronic data (EEL). Please submit EEL ASAP	Assigned to FDM
2	m310295	Steve	Submit EEL for Washington DC retrieval	Submitted to LDM
3	N660032	Rudyard	Submit submit all data related to the power module in Middletown, CT	Assigned to FDM
4	m310000	Jean Paul	Please submit data ASAP to avoid further aircraft grounding	Waiting for PADL file
5	S167512	Bruno	Fort Worth is requesting that you confirm DOI for the above IDMS	Assigned to FDM
6	S167512	Bruno	An AR for AF data has been submitted but there was no follow-up. Please refer to AR:63562	Claimed by DQTeam
7	N660032	Rudyard	Need data for SN: 9500202052 PN: 4289239	Assigned to OBPHM