DSCP ASG2 Presentation

Content

Team

1. Team introduction
2. Architecture overview

Individual

3. Screenshots of dashboards and tools
4. Key ideas and concepts behind your dashboard
5. Usage of software/hardware features in in development

Team

6. Q&A
7. Summary of individual contribution (Last slide) (Might show)

Team Introduction

Challenge Statement

- Optimise maintenance and operations, reduce costs, and improve overall performance of facilities
- Improve the safety, comfort, and productivity of employees and customers

Unique Selling Point

- Use **descriptive** analytics to summarise data and identify potential issues
- Use **diagnostic** analytics to discover why they happened
- Use **prescriptive** analytics to ideate possible solutions
- Use **predictive** analytics to forecast future issues
- Create **user-friendly** dashboards with a **clear, concise, and intuitive** design

Architecture overview

Communication

Sprint Planning

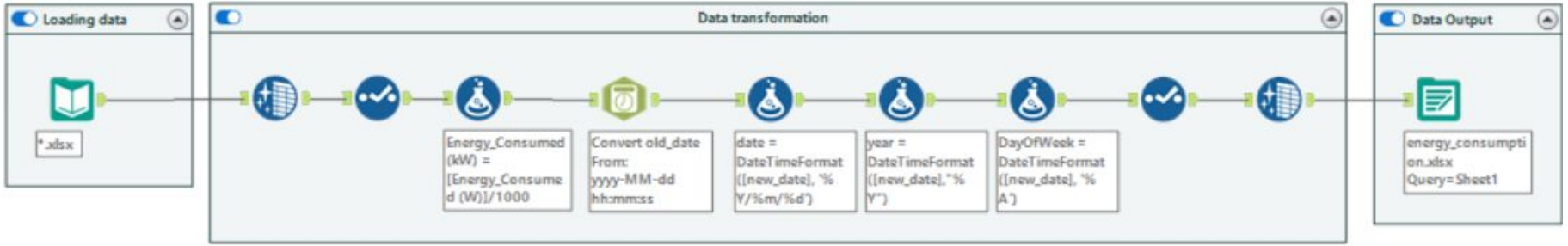
Datasets

Data Cleaning

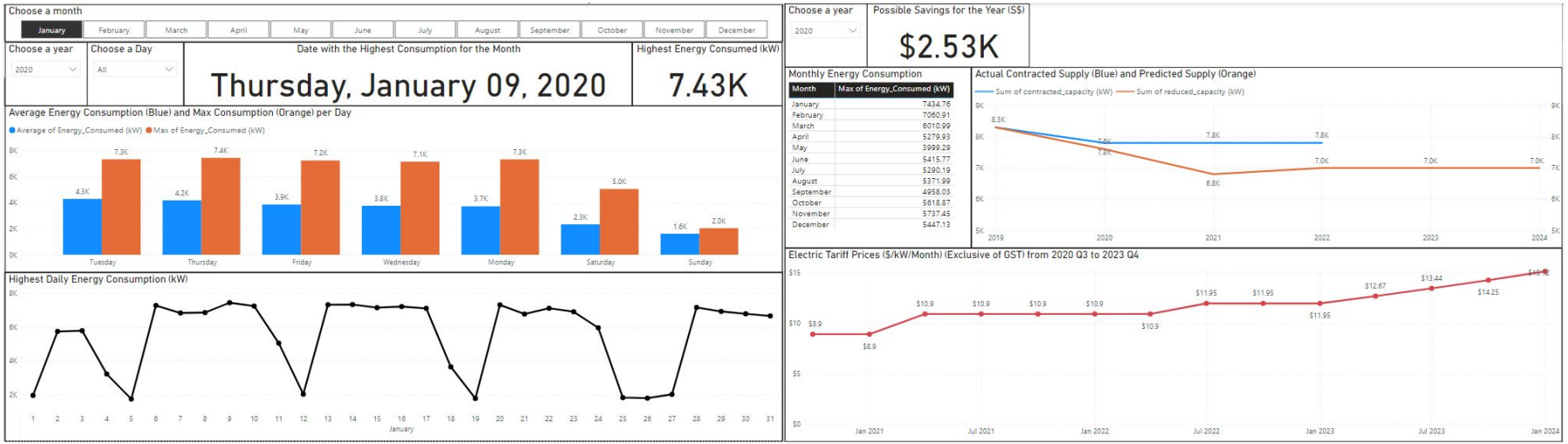
Data Visualisation

Energy Consumption: Alteryx Solution

By Lim Wee Liang Kelven



Dashboard


Choose a month
January
February
March
April
May
June
July
August
September
October
November
December
Choose a year
2020
Choose a Day
All
Date with the Highest Consumption for the Month
Thursday, January 09, 2020
Highest Energy Consumed (kW)
7.43K
Average Energy Consumption (Blue) and Max Consumption (Orange) per Day
Average of Energy_Consumed (kW)
Max of Energy_Consumed (kW)
Tuesday
Thursday
Friday
Wednesday
Monday
Saturday
Sunday
Highest Daily Energy Consumption (kW)
January
Choose a year
2020
Possible Savings for the Year (S$)
$2.53K
Monthly Energy Consumption
Month
Max of Energy_Consumed (kW)
January 7434.76
February 7060.91
March 6010.99
April 5279.93
May 3999.29
June 5415.77
July 5290.19
August 5371.99
September 4958.03
October 5618.87
November 5737.45
December 5447.13
Actual Contracted Supply (Blue) and Predicted Supply (Orange)
Sum of contracted_capacity (kW)
Sum of reduced_capacity (kW)
Electric Tariff Prices ($/kW/Month) (Exclusive of GST) from 2020 Q3 to 2023 Q4
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Jan 2023
Jul 2023
Jan 2024

Key Ideas and Concepts for Dashboard Design

1. When/How will the campus reach 90% of the contracted capacity?
2. Which month has the highest energy consumption?
3. Contracted energy capacity is reviewed each year. 8300 kW in 2019, 7800 kW in 2020, 7800 kW in 2021, and 7800 kW in 2022 . What should be the recommended contracted capacity in 2023?
4. Can we predict 2024?
5. What is the current electric tariff?
6. How much can we save?

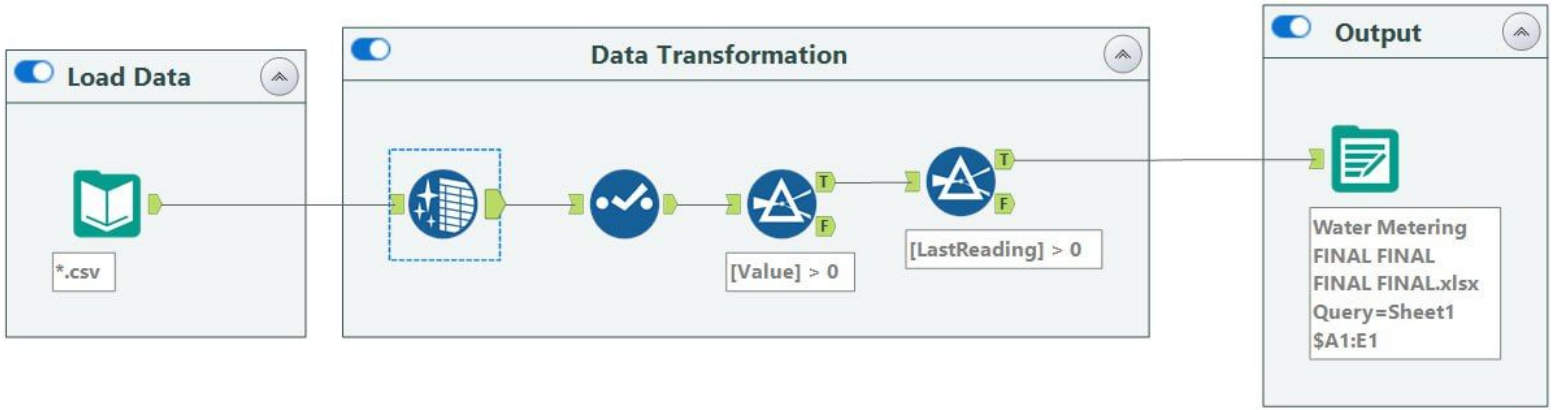
Features Implemented

Alteryx

Power BI

Water Metering: Alteryx Solution

By Iman



Dashboard


Month
January
February
March
April
May
June
July
August
September
October
Clear All
Day of the Month
1
31
Sum of Value by Month
Sum of Value
0.3bn
0.2bn
0.1bn
0.0bn
January
February
March
April
May
June
July
August
September
October
November
Month
LastReading by Month
Sum of LastReading
0.3bn
0.2bn
0.1bn
0.0bn
January
February
March
April
May
June
July
August
September
October
November
Month
Sum of Value
Sum of Reading
2.94bn
2.94bn
Block Name & Number
ModbusRTU Blk 16 WT
ModbusRTU Blk 18 WT
ModbusRTU Blk 22 WT
ModbusRTU Blk 23 WT
ModbusRTU Blk 27 CT
ModbusRTU Blk 27 WT
ModbusRTU Blk 31 WT
ModbusRTU Blk 34 CT
ModbusRTU Blk 34 WT
ModbusRTU Blk 37 CT
Value by Name
0.4bn
0.3bn
0.2bn
0.1bn
0.0bn
LastReading by Block
0.4bn
0.3bn
0.2bn
0.1bn
0.0bn

Key Ideas and Concepts for Dashboard Design

1. In which month has the **highest** value?
2. In which month has the **highest** last reading?
3. Which block has the **highest** value/last reading so that we can implement ways to reduce it?
4. How can we **save** water in 2024?
5. Which block has **sudden** high surges or pipe bursts so that we can prevent it?

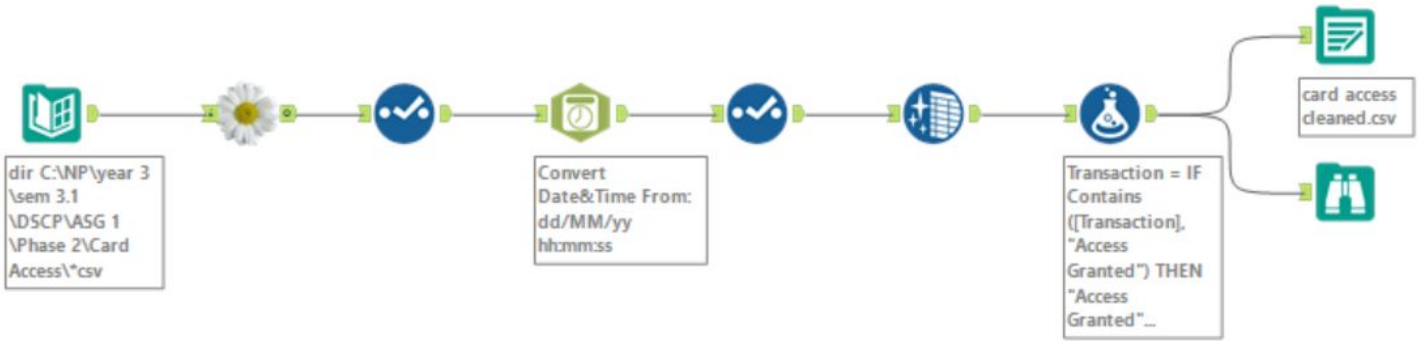
Features Implemented

Alteryx Designer

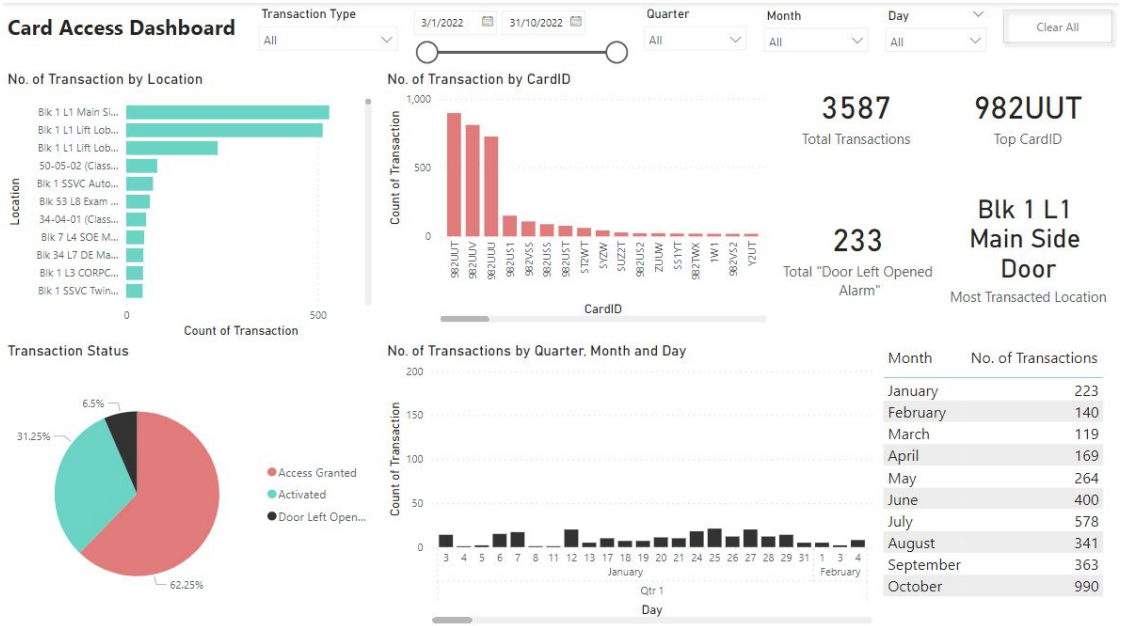
Microsoft Power BI

Card Access: Alteryx Solution

By Ally



Dashboard


Card Access Dashboard
Transaction Type
All
3/1/2022
31/10/2022
Quarter
All
Month
All
Day
All
Clear All
No. of Transaction by Location
Blk 1 L1 Main Si...
Blk 1 L1 Lift Lob...
Blk 1 L1 Lift Lob...
50-05-02 (Class...
Blk 1 SSVC Auto...
Blk 53 L8 Exam ...
34-04-01 (Class...
Blk 7 L4 SOE M...
Blk 34 L7 DE Ma...
Blk 1 L3 CORPC...
Blk 1 SSVC Twin...
Location
0
500
Count of Transaction
No. of Transaction by CardID
1,000
500
0
Count of Transaction
982UUT
982UUV
982UUU
982US1
982VSS
982USS
982UST
STZWT
SYZW
SUZZT
982US2
ZUUW
SS1YT
982TWA
1W1
982VS2
Y2UT
CardID
3587
Total Transactions
982UUT
Top CardID
233
Total "Door Left Opened Alarm"
Blk 1 L1 Main Side Door
Most Transacted Location
Transaction Status
6.5%
31.25%
62.25%
Access Granted
Activated
Door Left Open...
No. of Transactions by Quarter, Month and Day
200
150
100
50
0
Count of Transaction
3 4 5 6 7 8 11 12 13 17 18 19 20 21 24 25 26 27 28 29 31 1 3 4
January
February
Qtr 1
Day
Month
No. of Transactions
January 223
February 140
March 119
April 169
May 264
June 400
July 578
August 341
September 363
October 990

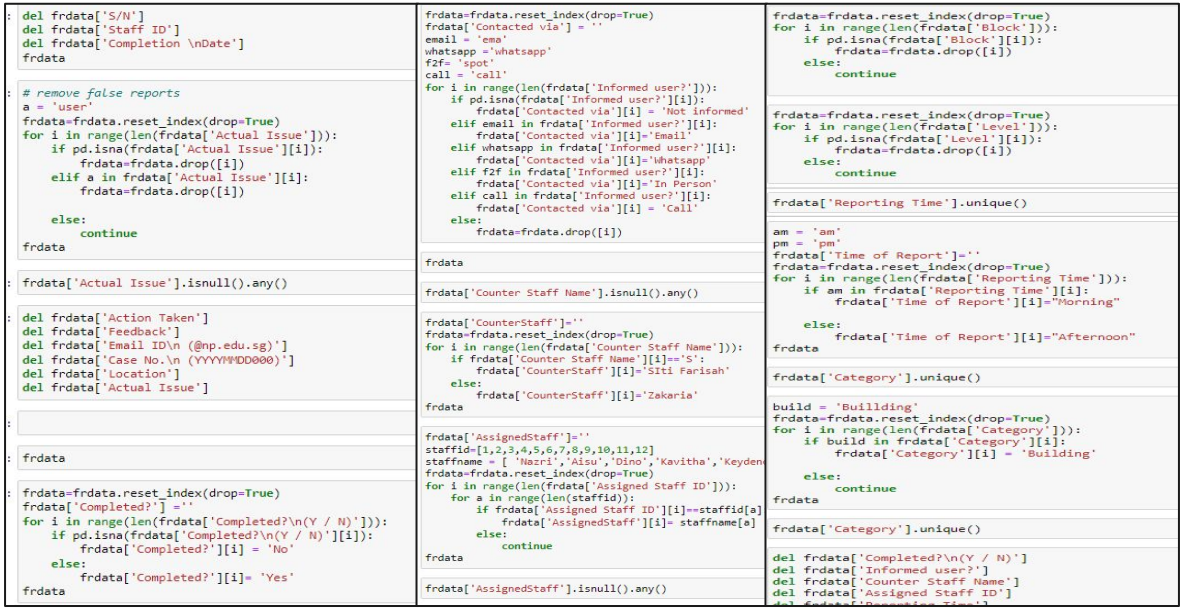
Key Ideas and Concepts for Dashboard Design

Features Implemented

- Alteryx
- PowerBI

Fault Reporting: Jupyter Solution

By Marcus Chua



```
del frdata['S/N']
del frdata['Staff ID']
del frdata['Completion \nDate']
frdata
```

```
# remove false reports
a = 'user'
frdata=frdata.reset_index(drop=True)
for i in range(len(frdata['Actual Issue'])):
    if pd.isna(frdata['Actual Issue'][i]):
        frdata=frdata.drop([i])
    elif a in frdata['Actual Issue'][i]:
        frdata=frdata.drop([i])

    else:
        continue
frdata
```

```
frdata['Actual Issue'].isnull().any()
```

```
del frdata['Action Taken']
del frdata['Feedback']
del frdata['Email ID\n (@np.edu.sg)']
del frdata['Case No.\n (YYYYMMDD000)']
del frdata['Location']
del frdata['Actual Issue']
```

```

```

```
frdata
```

```
frdata=frdata.reset_index(drop=True)
frdata['Completed?'] =''
for i in range(len(frdata['Completed?\n(Y / N)'])):
    if pd.isna(frdata['Completed?\n(Y / N)'][i]):
        frdata['Completed?'][i] = 'No'
    else:
        frdata['Completed?'][i]= 'Yes'
frdata
```

```
frdata=frdata.reset_index(drop=True)
frdata['Contacted via'] = ''
email = 'ema'
whatsapp ='whatsapp'
f2f= 'spot'
call = 'call'
for i in range(len(frdata['Informed user?'])):
    if pd.isna(frdata['Informed user?'][i]):
        frdata['Contacted via'][i] = 'Not informed'
    elif email in frdata['Informed user?'][i]:
        frdata['Contacted via'][i]='Email'
    elif whatsapp in frdata['Informed user?'][i]:
        frdata['Contacted via'][i]='Whatsapp'
    elif f2f in frdata['Informed user?'][i]:
        frdata['Contacted via'][i]='In Person'
    elif call in frdata['Informed user?'][i]:
        frdata['Contacted via'][i] = 'Call'
    else:
        frdata=frdata.drop([i])
```

```
frdata
```

```
frdata['Counter Staff Name'].isnull().any()
```

```
frdata['CounterStaff']=''
frdata=frdata.reset_index(drop=True)
for i in range(len(frdata['Counter Staff Name'])):
    if frdata['Counter Staff Name'][i]=='S':
        frdata['CounterStaff'][i]='SIti Farisah'
    else:
        frdata['CounterStaff'][i]='Zakaria'
frdata
```

```
frdata['AssignedStaff']=''
staffid=[1,2,3,4,5,6,7,8,9,10,11,12]
staffname = [ 'Nazri','Aisu','Dino','Kavitha','Keyden
frdata=frdata.reset_index(drop=True)
for i in range(len(frdata['Assigned Staff ID'])):
    for a in range(len(staffid)):
        if frdata['Assigned Staff ID'][i]==staffid[a]
            frdata['AssignedStaff'][i]= staffname[a]
        else:
            continue
frdata
```

```
frdata['AssignedStaff'].isnull().any()
```

```
frdata=frdata.reset_index(drop=True)
for i in range(len(frdata['Block'])):
    if pd.isna(frdata['Block'][i]):
        frdata=frdata.drop([i])
    else:
        continue
```

```
frdata=frdata.reset_index(drop=True)
for i in range(len(frdata['Level'])):
    if pd.isna(frdata['Level'][i]):
        frdata=frdata.drop([i])
    else:
        continue
```

```
frdata['Reporting Time'].unique()
```

```
am = 'am'
pm = 'pm'
frdata['Time of Report']=''
frdata=frdata.reset_index(drop=True)
for i in range(len(frdata['Reporting Time'])):
    if am in frdata['Reporting Time'][i]:
        frdata['Time of Report'][i]="Morning"

    else:
        frdata['Time of Report'][i]="Afternoon"
frdata
```

```
frdata['Category'].unique()
```

```
build = 'Buillding'
frdata=frdata.reset_index(drop=True)
for i in range(len(frdata['Category'])):
    if build in frdata['Category'][i]:
        frdata['Category'][i] = 'Building'

    else:
        continue
frdata
```

```
frdata['Category'].unique()
```

```
del frdata['Completed?\n(Y / N)']
del frdata['Informed user?']
del frdata['Counter Staff Name']
del frdata['Assigned Staff ID']
```

Final Dataset

```
frdata
```

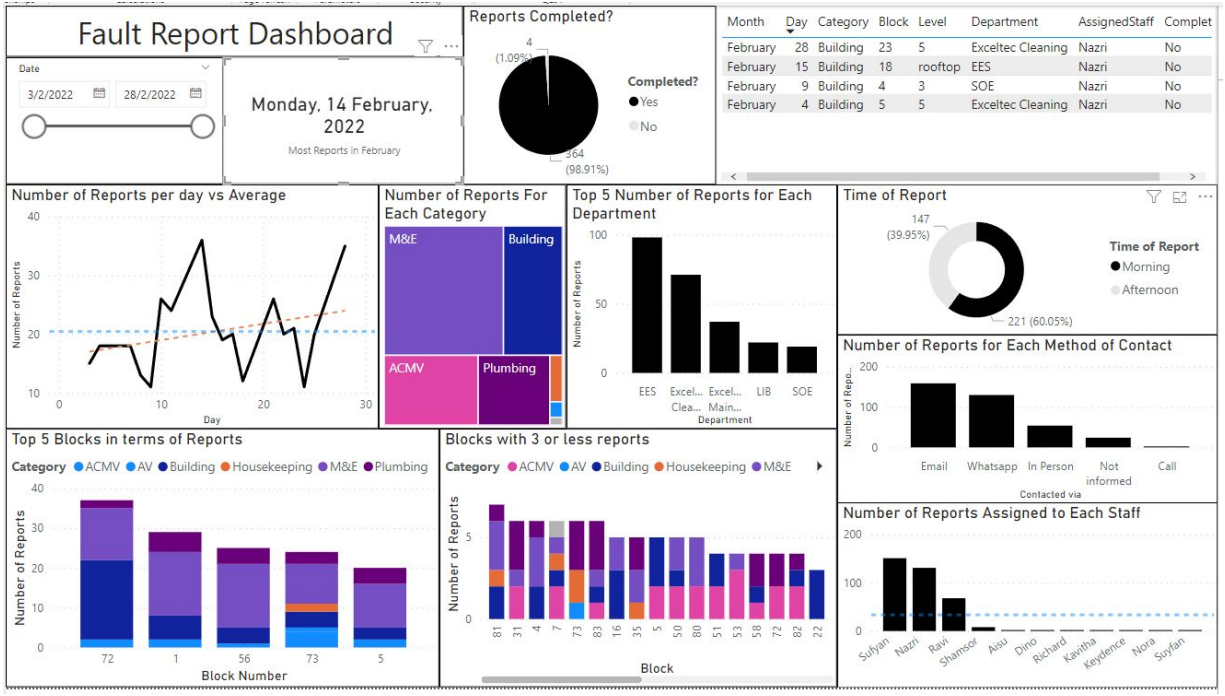
	Date	Department	Block	Level	Category	Completed?	Contacted via	CounterStaff	AssignedStaff	Time of Report
0	3-Feb-22	EES	31	4	Building	Yes	Whatsapp	Slti Farisah	Nazri	Morning
1	3-Feb-22	Exceltec Maintenance	51	2	Plumbing	Yes	Email	Slti Farisah	Nazri	Morning
2	3-Feb-22	Exceltec Maintenance	51	2	Building	Yes	Whatsapp	Slti Farisah	Nazri	Morning
3	3-Feb-22	FMS	52	1	ACMV	Yes	Email	Slti Farisah	Ravi	Morning
4	3-Feb-22	campus warden	37	2	M&E	Yes	Whatsapp	Slti Farisah	Sufyan	Morning
...	...	...	...	...	...	...	...	...	...	...
363	28-Feb-22	Exceltec Cleaning	72	2	M&E	Yes	Whatsapp	Zakaria	Sufyan	Afternoon
364	28-Feb-22	Exceltec Cleaning	71	1	Plumbing	Yes	Whatsapp	Zakaria	Nazri	Afternoon
365	28-Feb-22	Exceltec Cleaning	71	1	M&E	Yes	Whatsapp	Zakaria	Sufyan	Afternoon
366	28-Feb-22	CC	27	3	ACMV	Yes	Not informed	Zakaria	Ravi	Afternoon
367	28-Feb-22	Exceltec Cleaning	31	4	Plumbing	Yes	Whatsapp	Zakaria	Nazri	Afternoon

368 rows × 10 columns

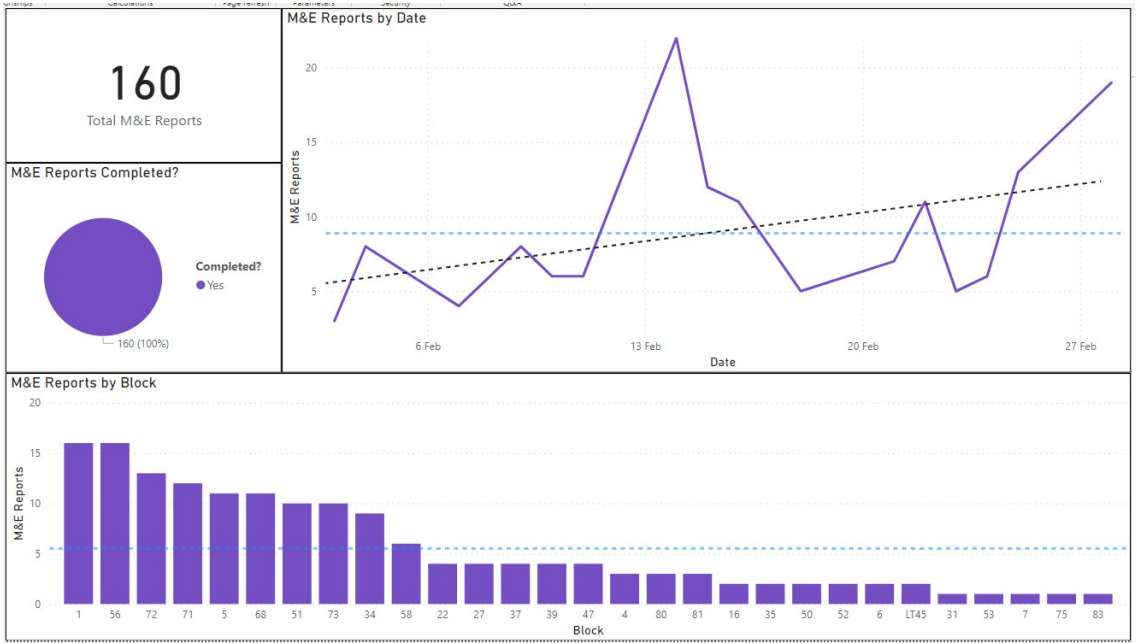
```
frdata.isnull().any()
#all columns contain null values
```

```
Date              False
Department        False
Block             False
Level             False
Category          False
Completed?        False
Contacted via     False
CounterStaff      False
AssignedStaff     False
Time of Report    False
dtype: bool
```

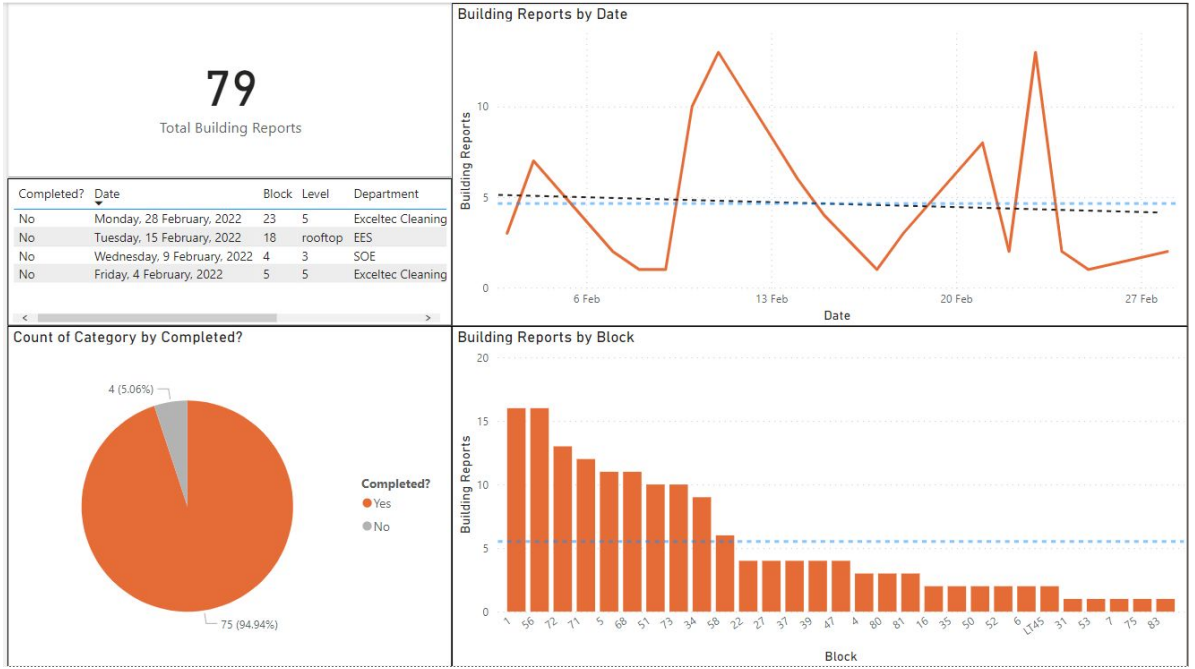
Dashboard - Overview



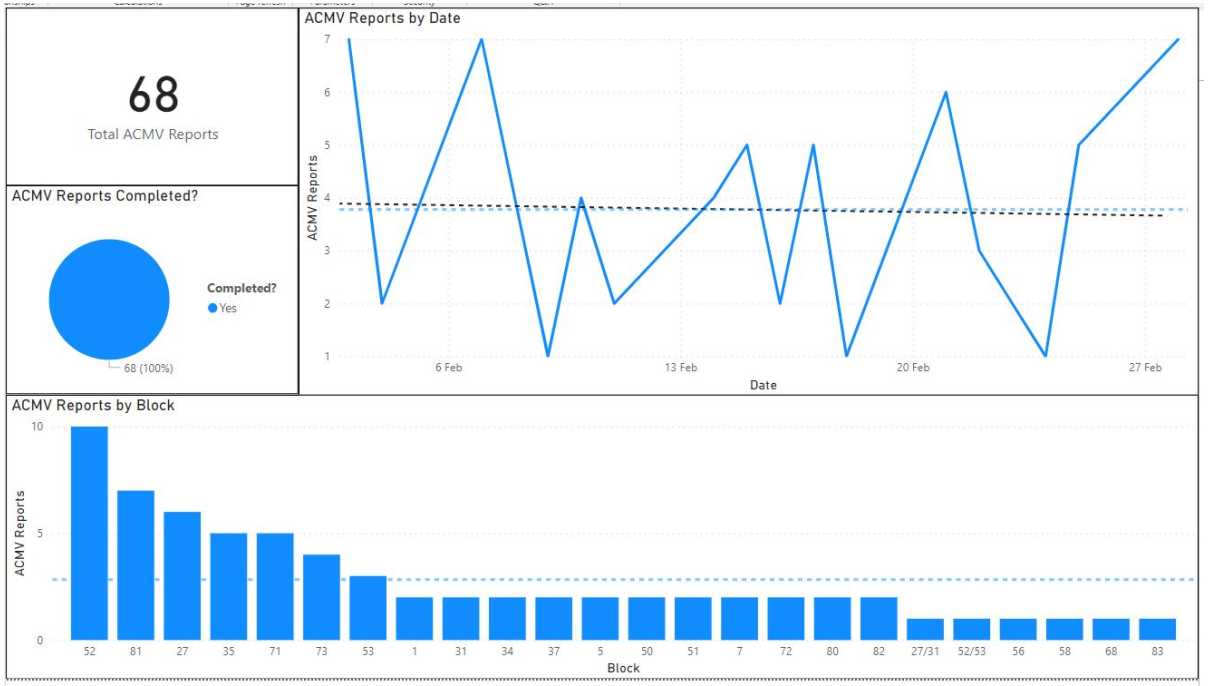
Dashboard - M&E



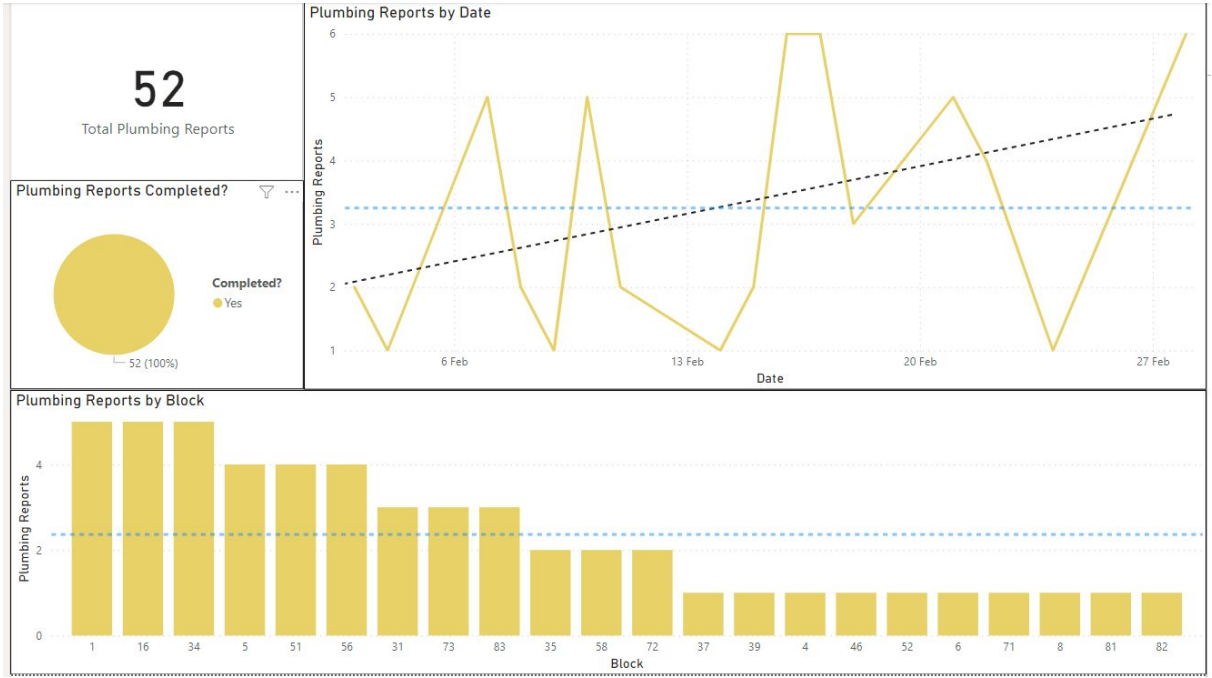
Dashboard - Building



Dashboard - ACMV



Dashboard - Plumbing



Key Ideas and Concepts for Dashboard Design

- Display common blocks, departments and categories that receive the most and least reports so that I can find out which areas to prioritise more.

- Display fault reports that are not completed in order to complete the reports efficiently

- Give insights regarding trends which can help lower the count of fault reports

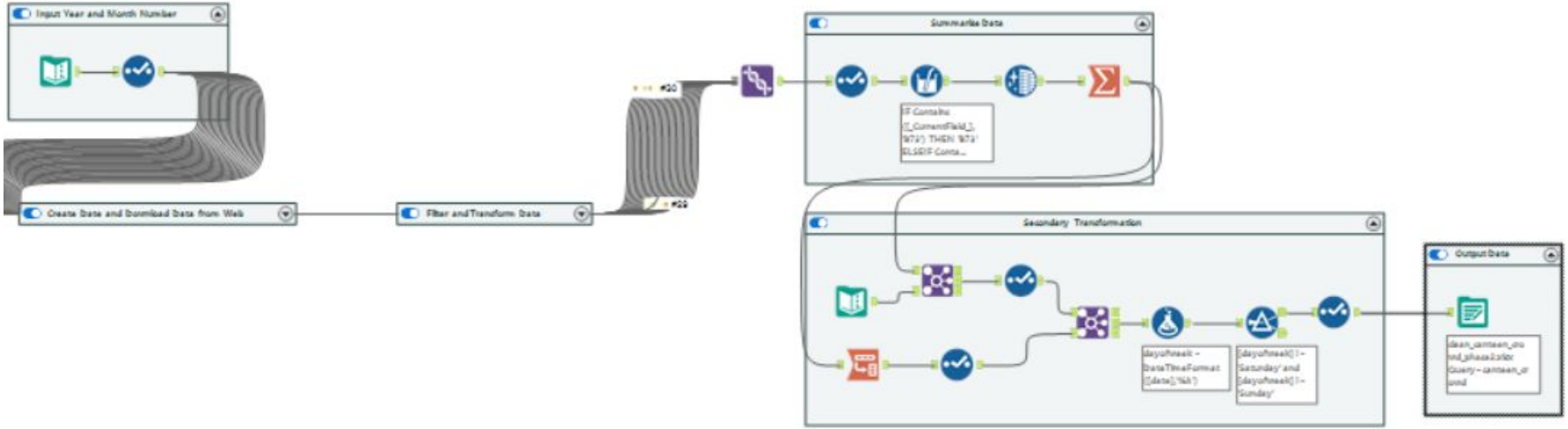
- Ensure that dashboard is easily understandable for users

Features Implemented

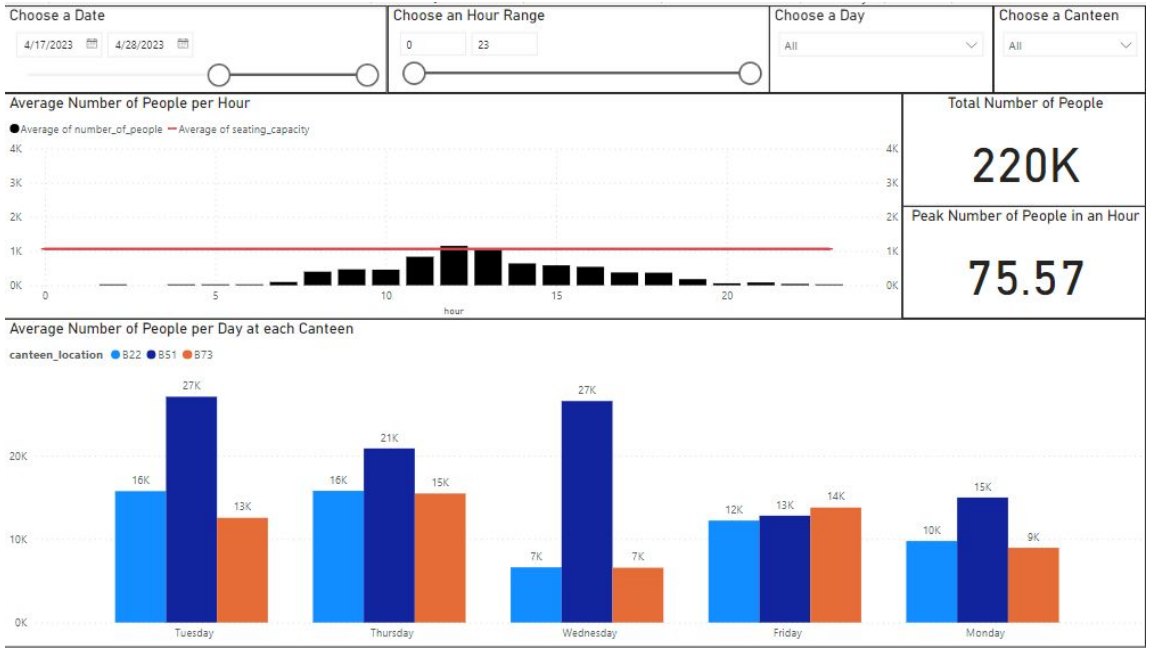
- Power BI, Jupyter
- Phase 2(plan): Jupyter, Alteryx, Power BI

Canteen Crowd: Alteryx Solution

By Lim Wee Liang Kelven



Dashboard


Choose a Date
4/17/2023
4/28/2023
Choose an Hour Range
0
23
Choose a Day
All
Choose a Canteen
All
Average Number of People per Hour
Average of number_of_people
Average of seating_capacity
4K
3K
2K
1K
0K
0
5
10
15
20
hour
Total Number of People
220K
Peak Number of People in an Hour
75.57
Average Number of People per Day at each Canteen
canteen_location
B22
B51
B73
20K
10K
0K
16K
27K
13K
16K
21K
15K
7K
27K
7K
12K
13K
14K
10K
15K
9K
Tuesday
Thursday
Wednesday
Friday
Monday

Key Ideas and Concepts for Dashboard Design

1. Which day has the most and least number of people?
2. Which time has the most and least number of people?
3. When are more cleaners needed?
4. What is the best time to go for lunch to reduce overcrowding?
5. Can canteen vendors plan the amount of food to prepare to reduce food wastage?

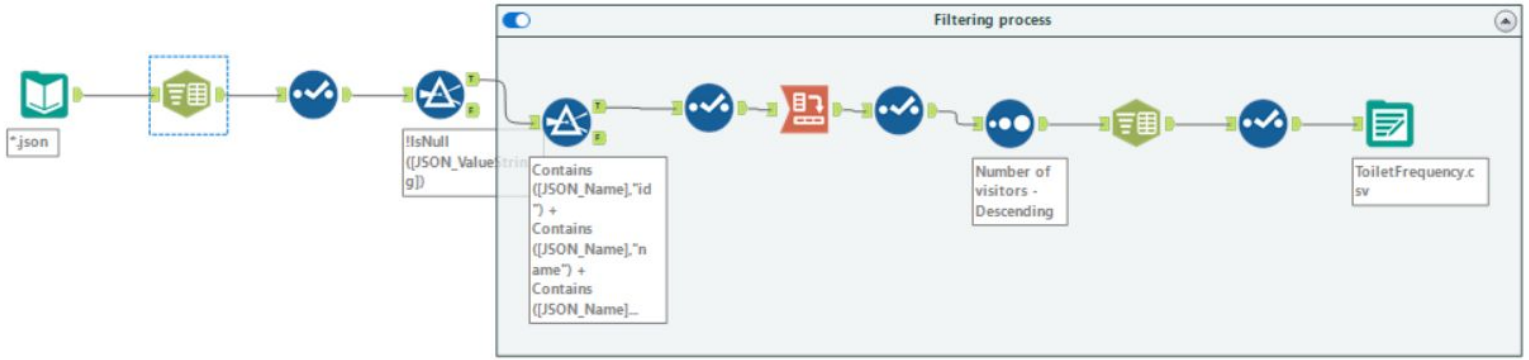
Features Implemented

Alteryx

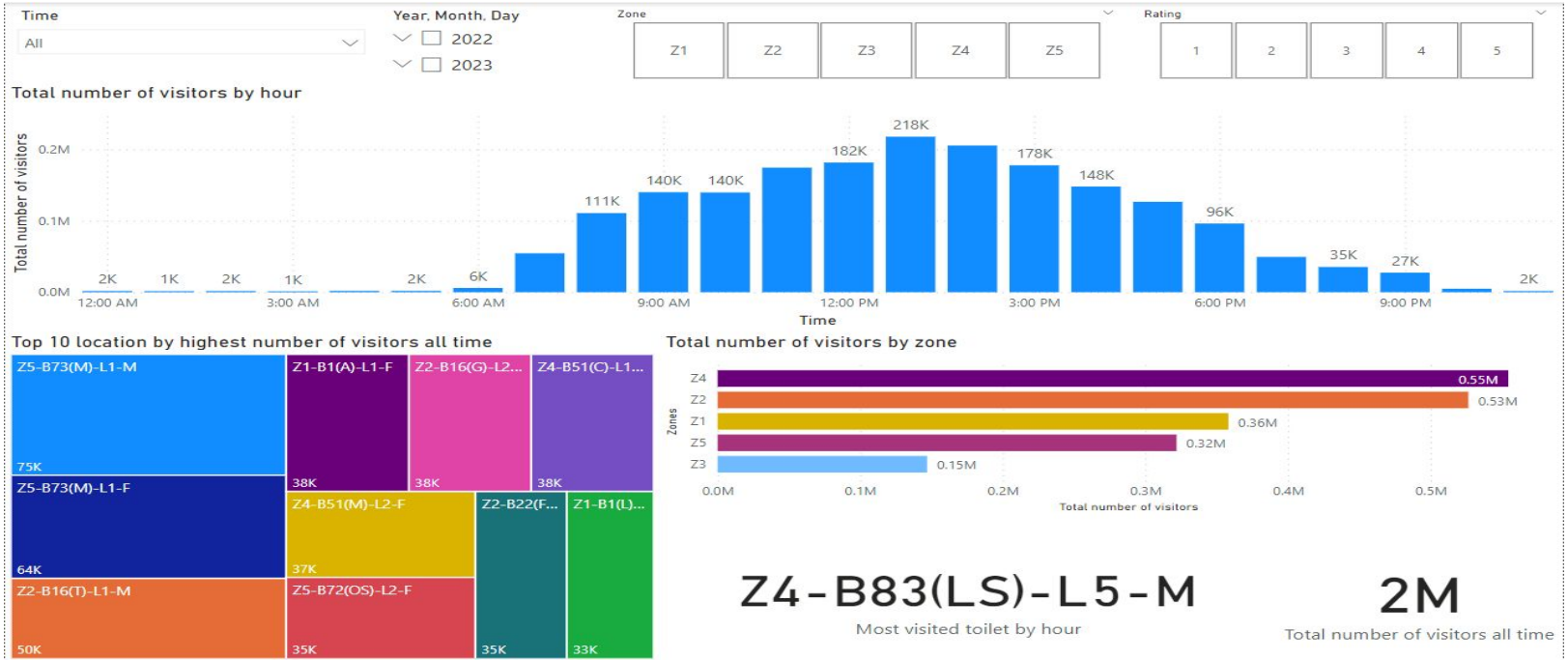
Power BI

Toilet Utilisation (Frequency): Alteryx Solution

By: Tiew Wee Xiang

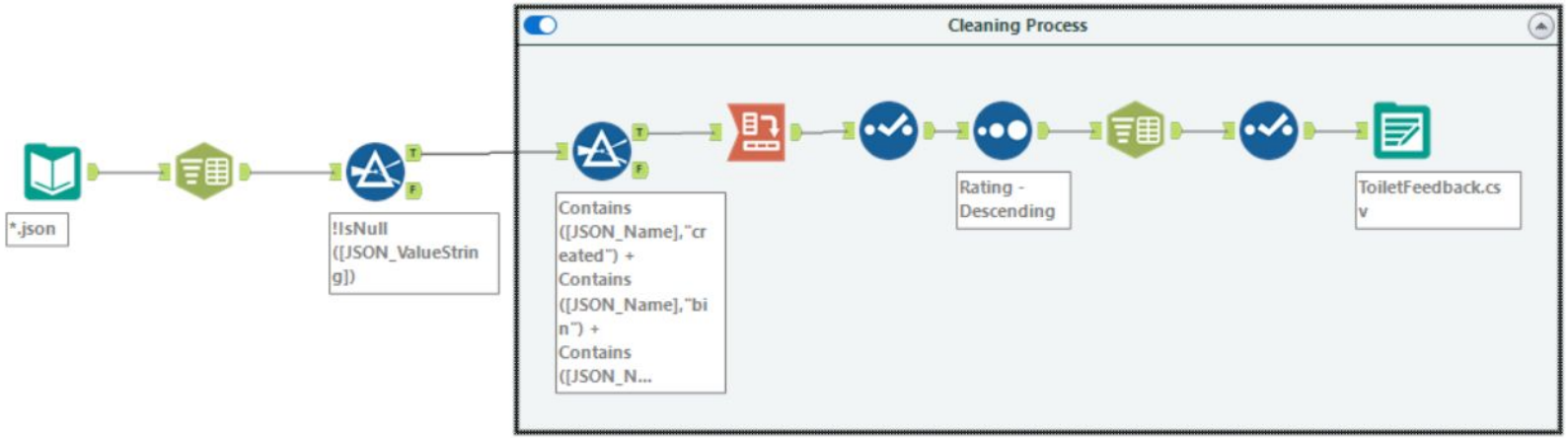


Dashboard: Toilet Frequency

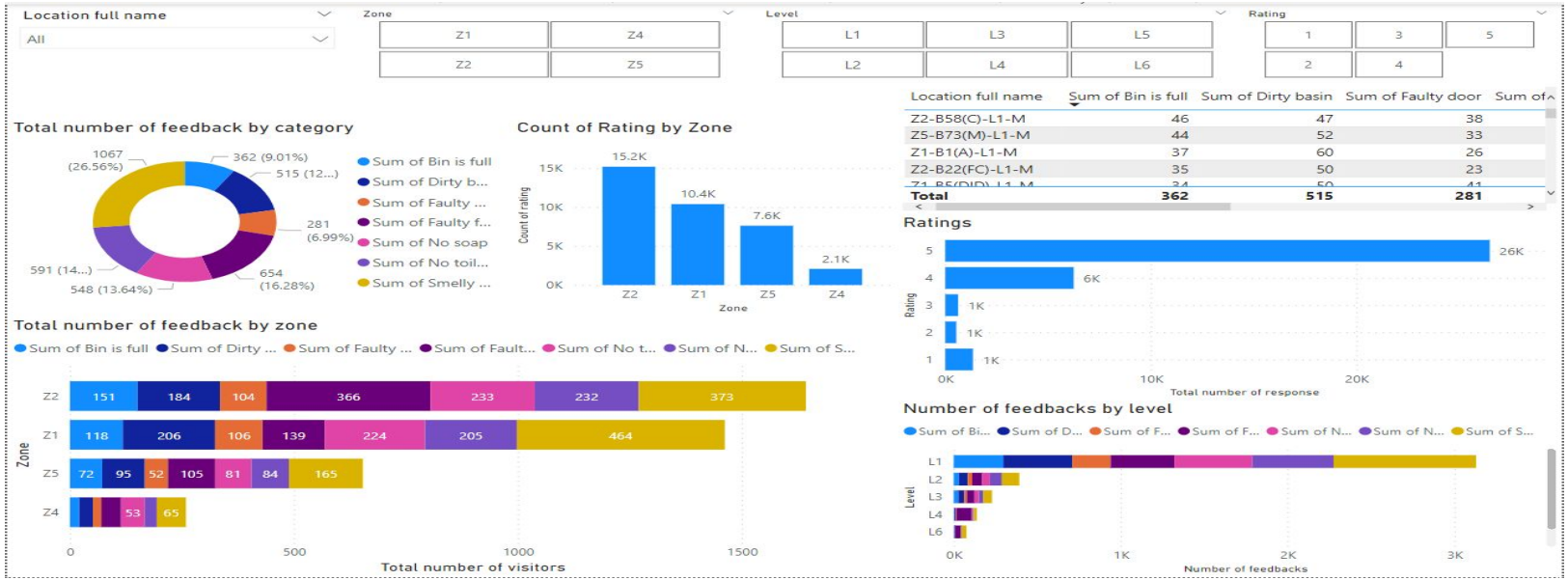


Toilet Utilisation (Feedback): Alteryx Solution

By: Tiew Wee Xiang



Dashboard: Toilet Feedback

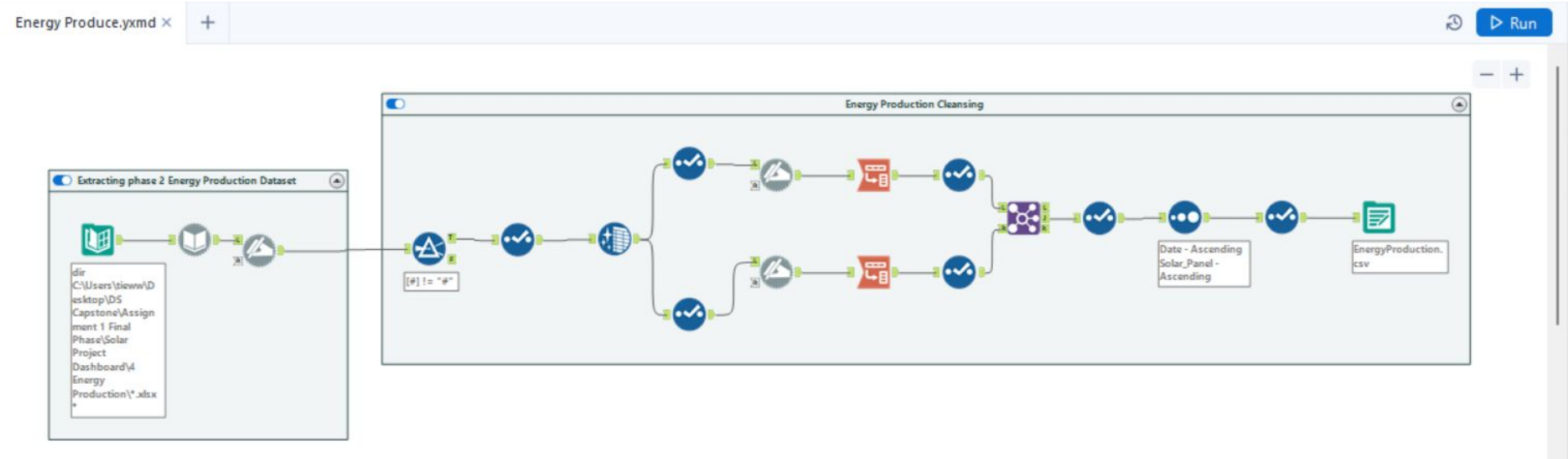


Key Ideas and Concepts for Dashboard Design

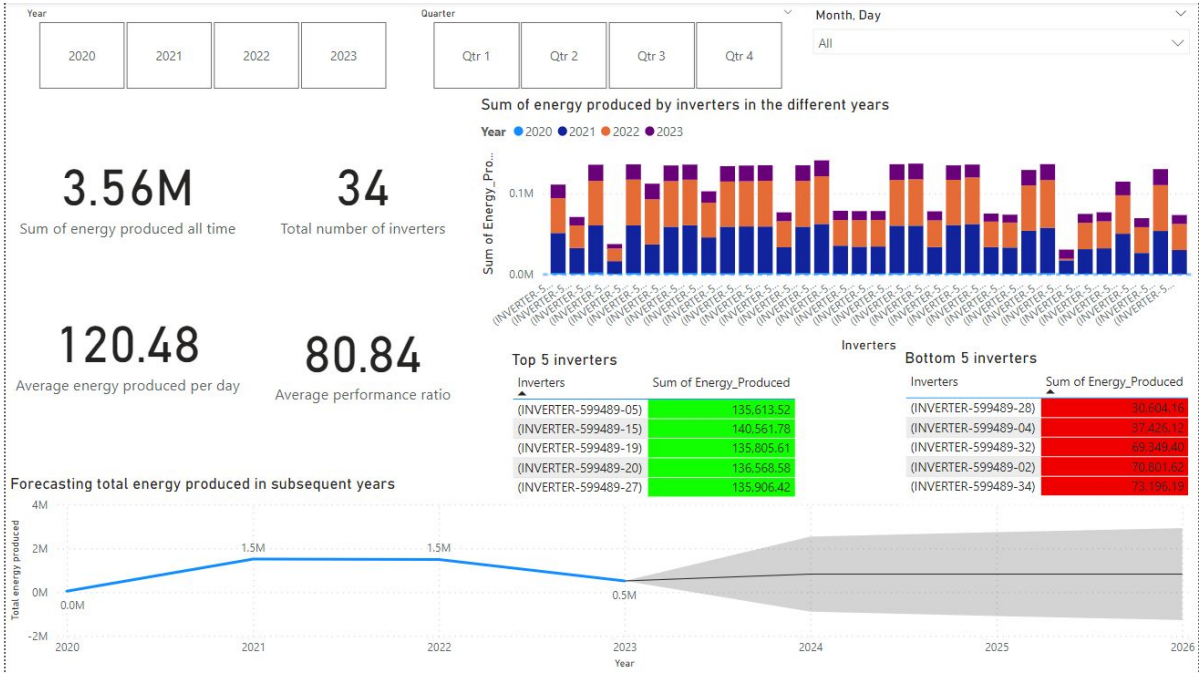
- Understand which toilet location requires more cleaning due to high frequency vice versa
- Knowing what time has the highest number of frequency so that cleaning can be avoided during peak period
- Able to visualize feedbacks given so that the toilet environment can be improved
- Knowing which specific toilet has low row ratings so that it can be improved from 1 star to 5 stars

Solar Energy (Energy Production): Alteryx Solution

By: Tiew Wee Xiang

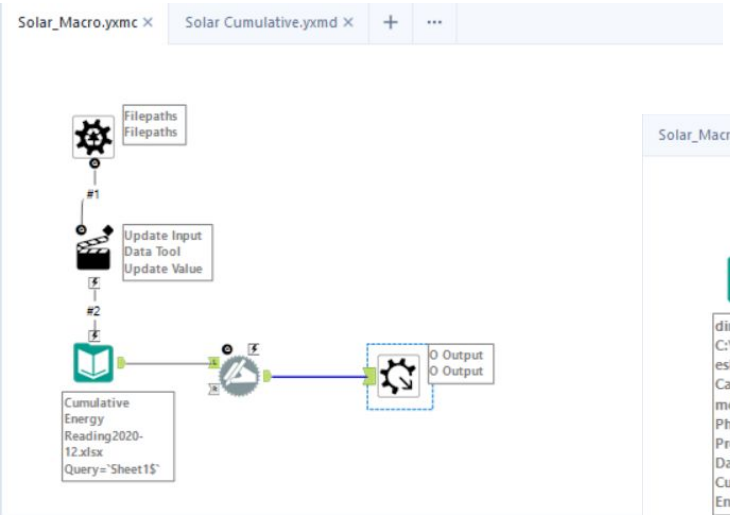


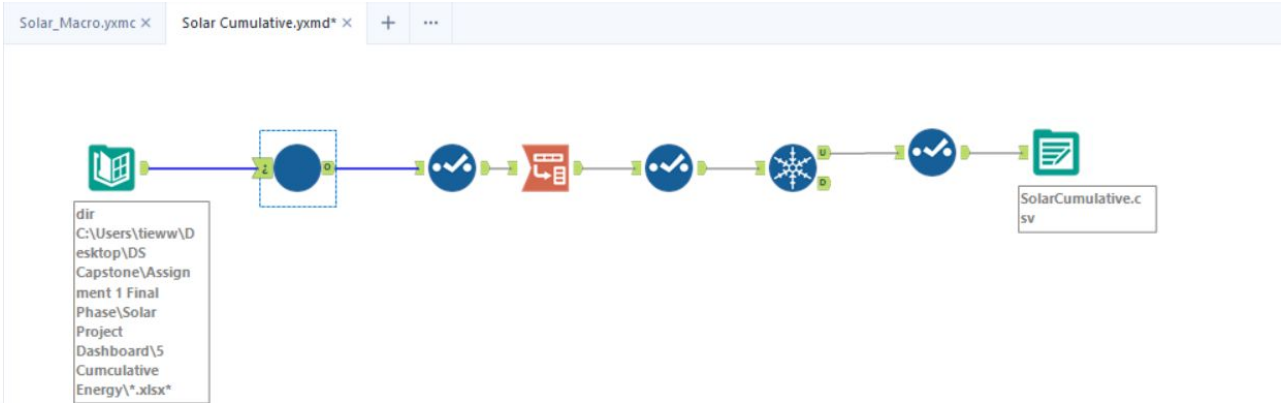
Dashboard: Energy production



Solar Energy (Solar cumulative): Alteryx Solution

By: Tiew Wee Xiang





Dashboard: Solar cumulative

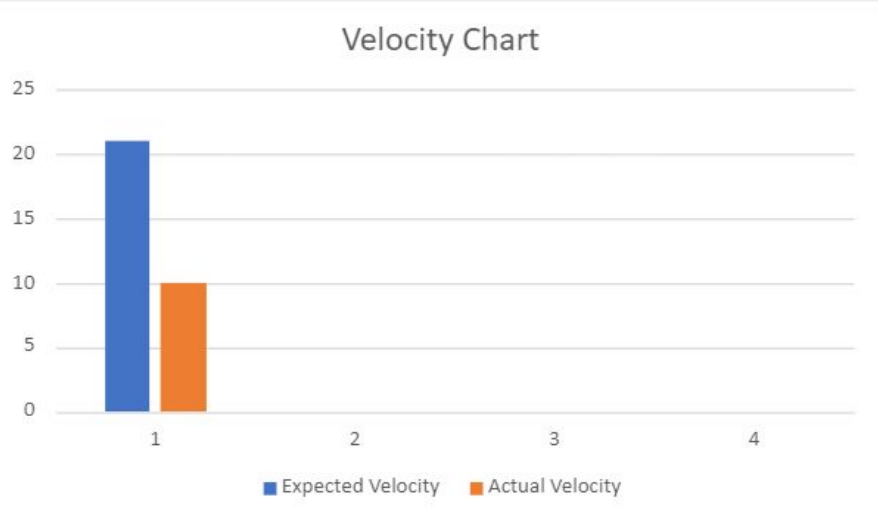
Key Ideas and Concepts for Dashboard Design

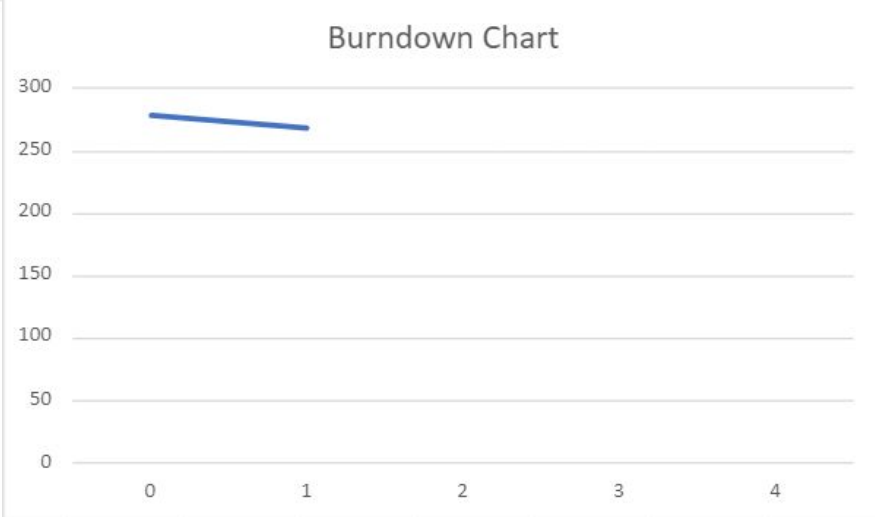
- Gain insights on which inverter is not performing well so that maintenance can be conducted

- Forecast how much energy can be produced so that the school can save cost from electricity

- Know the performance ratio across the inverters

Project Artefact





Plan Moving Forward

- Clean Phase 2 datasets
- Create dashboard using Phase 2 datasets
- Alter our solutions to meet our stakeholder's changing needs
- Improve the feasibility and value of our solutions (how practical is it? Is there social/commercial value?)
- Improve the UI/UX to be more user friendly