

USING TABLEAU AS AN AUTOMATION PLATFORM FOR WAFER PRODUCTION DATA PROCESSING

Department of Industrial Systems Engineering and Management
IE3100R Systems Design Project | Group 14

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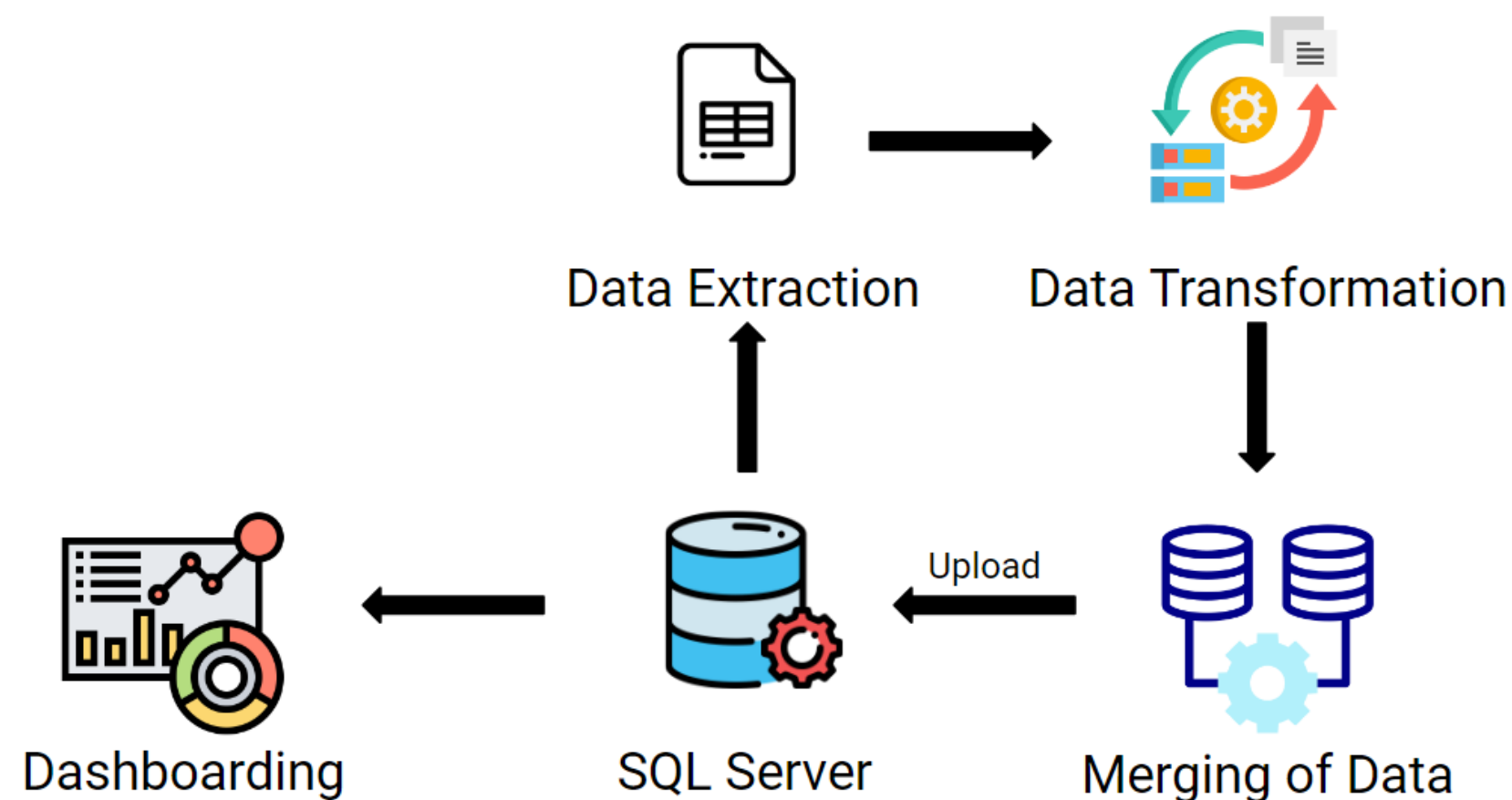
1. PROBLEM DESCRIPTION

Micron currently uses a manual and tedious process to extract wafer die data from the databases. Additionally, the absence of a central dashboard makes it inefficient for the team to visualise the processed data.

2. OBJECTIVE

Automate data processing and enable viewing of all key metrics on a centralised platform. Enable Fab to make informed decisions and adjust production volumes to meet goals.

3. METHODOLOGY



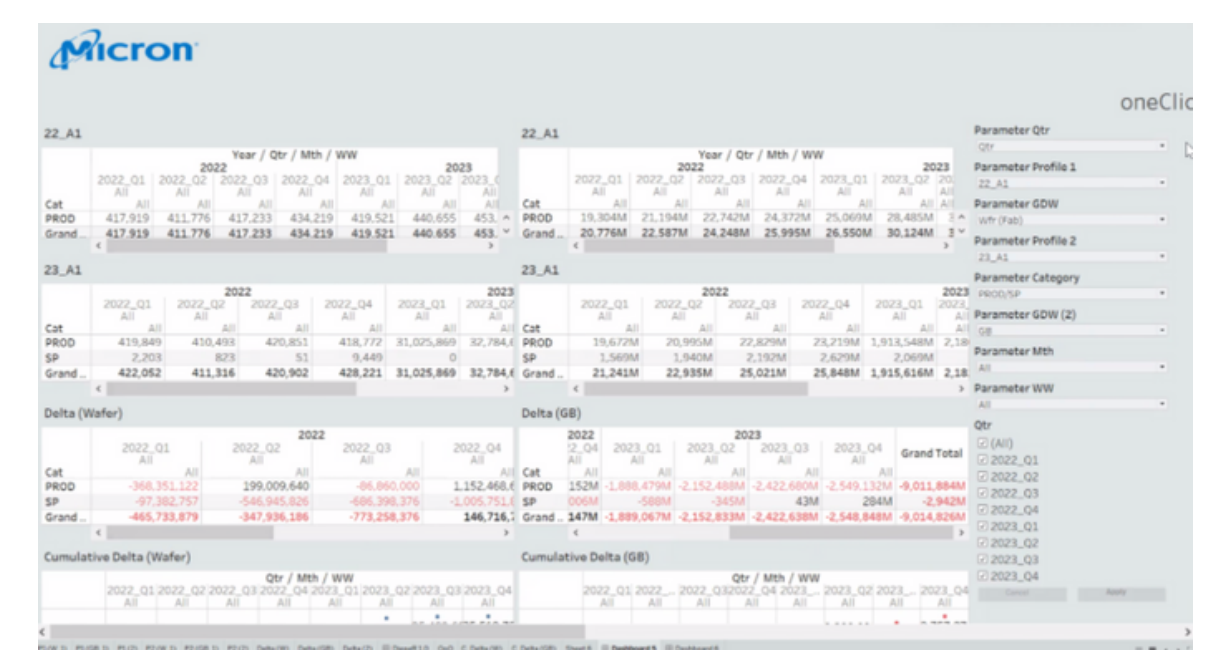
- Extract data from SQL server to analyse and derive new datasets that will be uploaded back into SQL server.
- Establish connection between the derived dataset and data visualisation in Tableau.
- Use data visualisation tools to display key metrics such as: Cumulative Delta, Quarter-on-Quarter (QoQ) growth.
- Create Tableau dashboard with parameters selection for users to filter and display key metrics for detailed analysis of wafer production levels.

4. SOLUTION

Previous (Excel):

ACCT38	SEP 36	SEP 37	SEP 38	SEP 39	SEP 40	OCT 41	OCT 42	OCT 43	OCT 44	NOV 45	NOV 46	NOV 47	NOV 48
Type A	228	300	300	200	250	275	275	275	275	275	275	275	275
Type B	1737	1200	1300	1600	1474	1225	1225	1225	1225	1225	1200	1200	1200
Total 300%	1965	1500	1600	1800	1724	1500	1500	1500	1500	1500	1475	1475	1475

Current (Tableau):

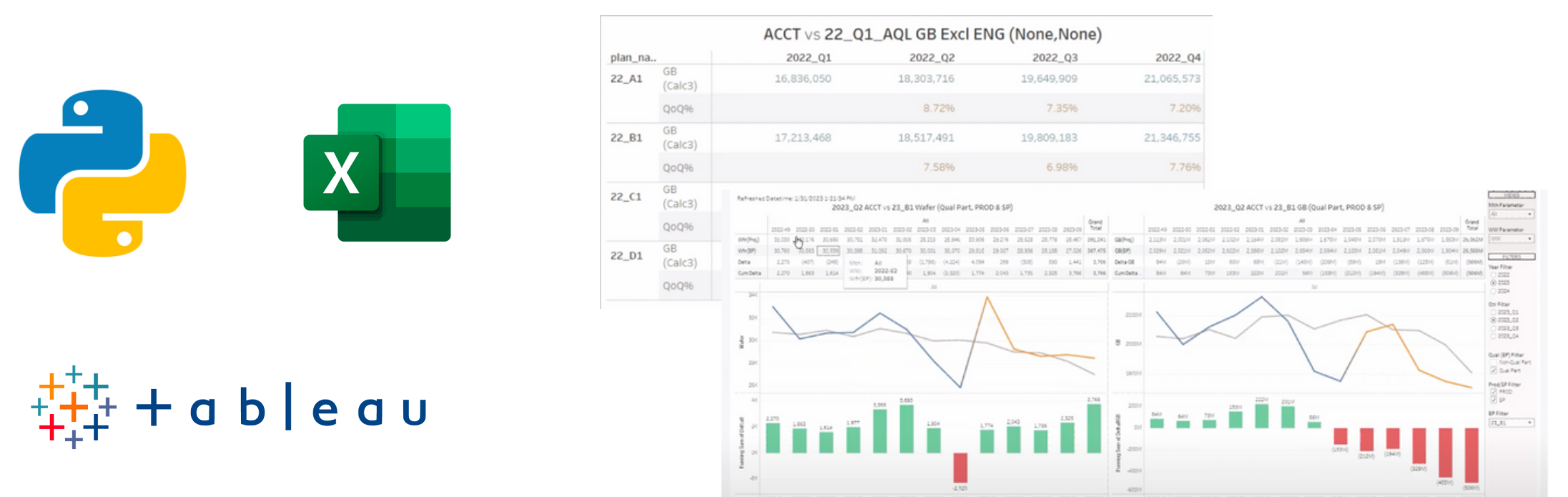


Previous (Excel):

GB and GB QoQ%	Q4'22	Q1'23	Q2'23	Q3'23	Q4'23	Q1'24
A1	GB	M	M	M	M	M
	QoQ%	3.2%	2.2%	7.3%	1.9%	-100.0%
B1	GB	M	M	M	M	M
	QoQ%	3.7%	-0.3%	-5.2%	3.5%	-100.0%
C1	GB	M	M	M	M	M
	QoQ%	3.7%	-0.3%	-5.2%	3.5%	-100.0%

Reduced 22 manhours of data extraction administrative work!

Current (Tableau):



- Coding solutions significantly reduce computational time for complex datasets.
- Improved code structure is user-friendly and organised for easy integration.
- Tableau provides customisable parameters and key metrics compared to Excel.
- New chart displays cumulative differences between forecast and actual production.
- Smart table contains actual and forecast values alongside quarterly growth rate.

5. EVALUATION

- Data-processing algorithm that built to efficiently extract & manipulate data significantly reduced manhours.
- Effective visualisation tools aided in insightful analysis of wafer production levels which improved the wafer production planning to meet target, while facilitating stakeholders' decision in production level intervention.

Future Direction

- Enabling the dashboard to separately account for demand-driven and supply-side changes in wafer production. This will help the team to construct better forecasts in production levels to meet targets.