

SDP Group 8 Members:

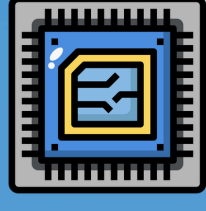
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Infineon Supervisors:

Yvonne Yeo | Kelly Lim | Cai Xiao Hua

COMPANY BACKGROUND

Infineon Technologies is a global semiconductor company specializing in power and automotive electronics. Our project focuses on addressing loading optimisation into Singapore's testing operations.

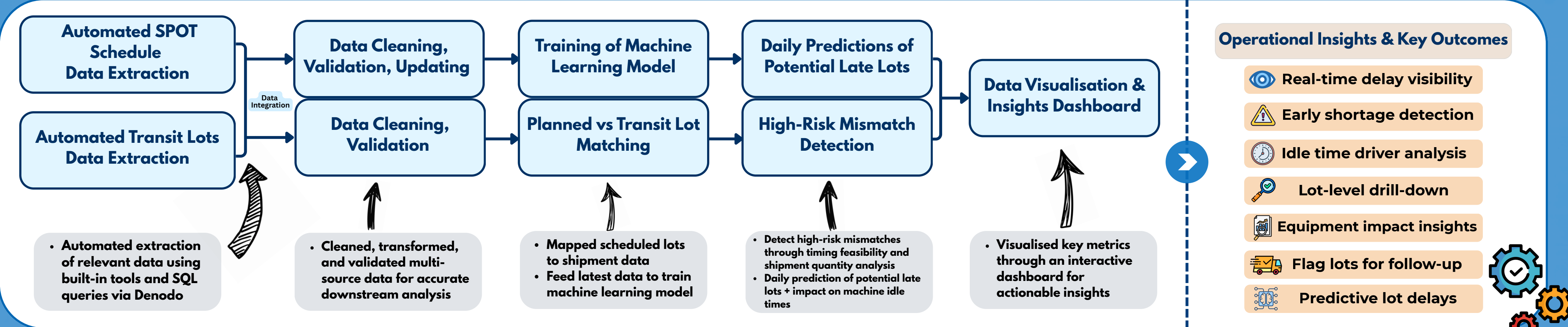


PROJECT OBJECTIVES

- Pre-emptive delay detection
- Visualisation of overall WIP status
- Reducing impact on machine idling times
- Alert mechanism for urgent shipments



PROJECT METHODOLOGY:



DATA ANALYSIS AND OUTCOMES:

WIP Shortage Analysis (Daily)

WIP SHORTAGE DASHBOARD

Data as of: 23-Mar-26 | Idle Period: 22-Mar-2026 ~ 31-Mar-2026 | Days of Idle: 10

SHORTAGE EVENTS	TOTAL IDLE HOURS	TOTAL EQUIPMENTS AFFECTED
769	3,571	55
Total Shortage Qty: 10,107,448	Avg Idle Hrs/Event: 4.6	Digital Affected: 32 Power Affected: 23

SHORTAGE EVENTS BY STATUS

NOT SHIPPED (URGENT)	NOT SHIPPED (NOT URGENT)
317 (36.10%)	183 (20.84%)
Malacca: 236 (26.88%)	Malacca: 141 (16.00%)
OSAT: 81 (9.23%)	OSAT: 42 (4.78%)
SHORTAGE (PARTIAL)	SATISFIED
269 (30.64%)	109 (12.41%)
Malacca: 0 (0.00%)	Malacca: 0 (0.00%)
OSAT: 269 (30.64%)	OSAT: 109 (12.41%)

TOP 10 EQUIPMENT BY IDLE HOURS

Equipment	Idle Hrs	First Idle Time
V93K-236	198.4	22/3/2026 23:43
V93K-209	162.9	22/3/2026 18:16
V93K-213	151.8	23/3/2026 7:39
V93K-242	132.6	22/3/2026 18:16
V93K-212	131.6	22/3/2026 18:16

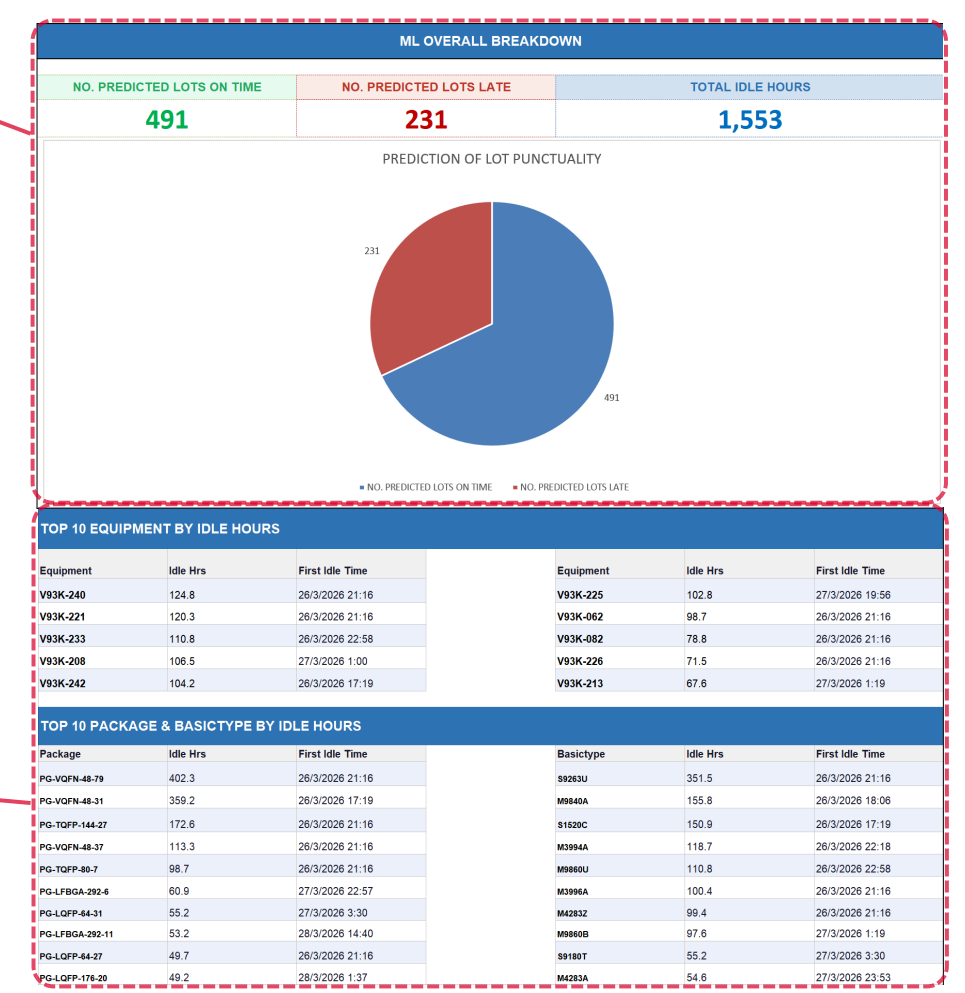
TOP 10 PACKAGE & BASICTYPE BY IDLE HOURS

Package	Idle Hrs	First Idle Time
PG-VQFN-48-79	775.6	22/3/2026 17:40
PG-LQFP-64-31	592.0	25/9/1900 7:12
PG-VQFN-48-31	327.2	19/6/1900 14:24
PG-LQFP-176-22	257.5	12/6/1900 19:12
PG-VQFN-48-37	189.6	9/5/1900 9:36
PG-TQFP-100-23	175.6	28/4/1900 7:12
PG-LFPGA-292-10	168.9	10/4/1900 9:36
PG-TQFP-144-27	118.4	6/4/1900 2:24
PG-LFPGA-292-11	114.3	17/3/1900 0:00
PG-TQFP-80-7	103.2	9/3/1900 7:12

Trend Analysis (Past 2 Weeks)



Delay Prediction with ML

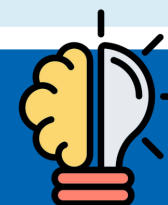


Risk Scores by Equipment

Equipment	Shortage Events	Total Idle Hours	Avg Idle/Event	Total Qty Needed	Days Affected	Risk Score
V93K-001	16	48.9	3.1	40,189	3	147
V93K-004	1	2.5	2.5	5,674	1	9
V93K-012	1	2.2	2.2	1,130	1	2
V93K-013	1	8.4	8.4	3,609	2	17
V93K-017	4	80.4	20.1	49,938	3	241
V93K-028	1	1.4	1.4	500	1	7
V93K-029	5	8.1	1.6	14,925	2	16
V93K-041	4	80.4	20.1	49,938	4	322
V93K-043	10	28.9	2.9	97,645	4	116
V93K-044	15	309.0	20.6	208,665	6	654
V93K-045	5	40.3	8.1	56,753	2	80
V93K-046	4	49.5	12.4	55,001	2	149
V93K-051	1	0.9	0.9	1,072	1	10
V93K-057	6	31.0	5.2	65,434	3	63
V93K-058	2	13.2	6.6	27,430	1	13
V93K-060	2	21.6	10.8	27,516	1	22
V93K-061	8	28.5	3.6	88,651	3	80
V93K-063	4	6.7	1.7	7,084	2	13
V93K-065	9	54.5	6.1	78,676	3	82
V93K-067	5	27.3	5.5	40,133	3	104
V93K-068	2	7.1	3.6	14,830	1	7
V93K-072	3	21.2	7.1	37,438	1	21
V93K-074	1	4.6	4.6	8,505	1	5
V93K-082	2	33.3	16.7	33,627	1	20
V93K-083	2	14.5	7.3	27,814	1	15
V93K-086	12	71.3	5.9	132,664	4	255
V93K-088	1	7.3	7.3	5,940	1	7
V93K-105	6	29.3	4.9	55,368	4	117
V93K-102	38	142.9	3.8	134,865	7	650
V93K-204	40	235.7	5.9	1,163,375	11	2,939
V93K-208	20	307.0	15.4	524,895	6	642
V93K-209	32	135.2	4.2	285,265	6	691
V93K-212	9	46.2	5.1	146,376	4	150
V93K-213	47	151.7	3.2	555,717	8	1,213

ISE CONCEPTS APPLIED

- Project Management
- Systems Thinking & Modelling
- Data Analytics
- Operations Research
- Modelling & Analytics
- Supply Chain Analytics



SKILLSETS APPLIED

- Data Pipeline & Cleaning**
 - Developed ETL pipelines integrating SAP and SPOT data.
- Operational Performance Metrics Design**
 - Designed weighted metrics combining shortage frequency, impact, and duration to prioritise critical issues.
- Data Analytics & Decision Support**
 - Developed Excel dashboards to translate complex data into clear, actionable insights for decision-making.
- Predictive Modelling**
 - Forecasted lot delivery ETA while detecting material shortage risks in the process.
 - Utilise machine learning model to predict punctuality of lots and provide insights on potential impacts

ACHIEVEMENTS

Forward Visibility into Shortage Events

Enables proactive replanning of workloads, and smoother coordination across production. As a result, potential disruptions are mitigated before they impact the manufacturing schedule.

Identification of Idle Machines

By identifying underutilized equipment, operations can redistribute tasks, optimize routing, and improve machine assignment. This leads to higher equipment utilization, reduced downtime, and increased throughput.

Prediction of Future Shortage Risks

These predictive insights give planners the ability to intervene earlier, adjust priorities, and secure resources ahead of time. The outcome is a more stable production flow and reduced risk of schedule delays.