

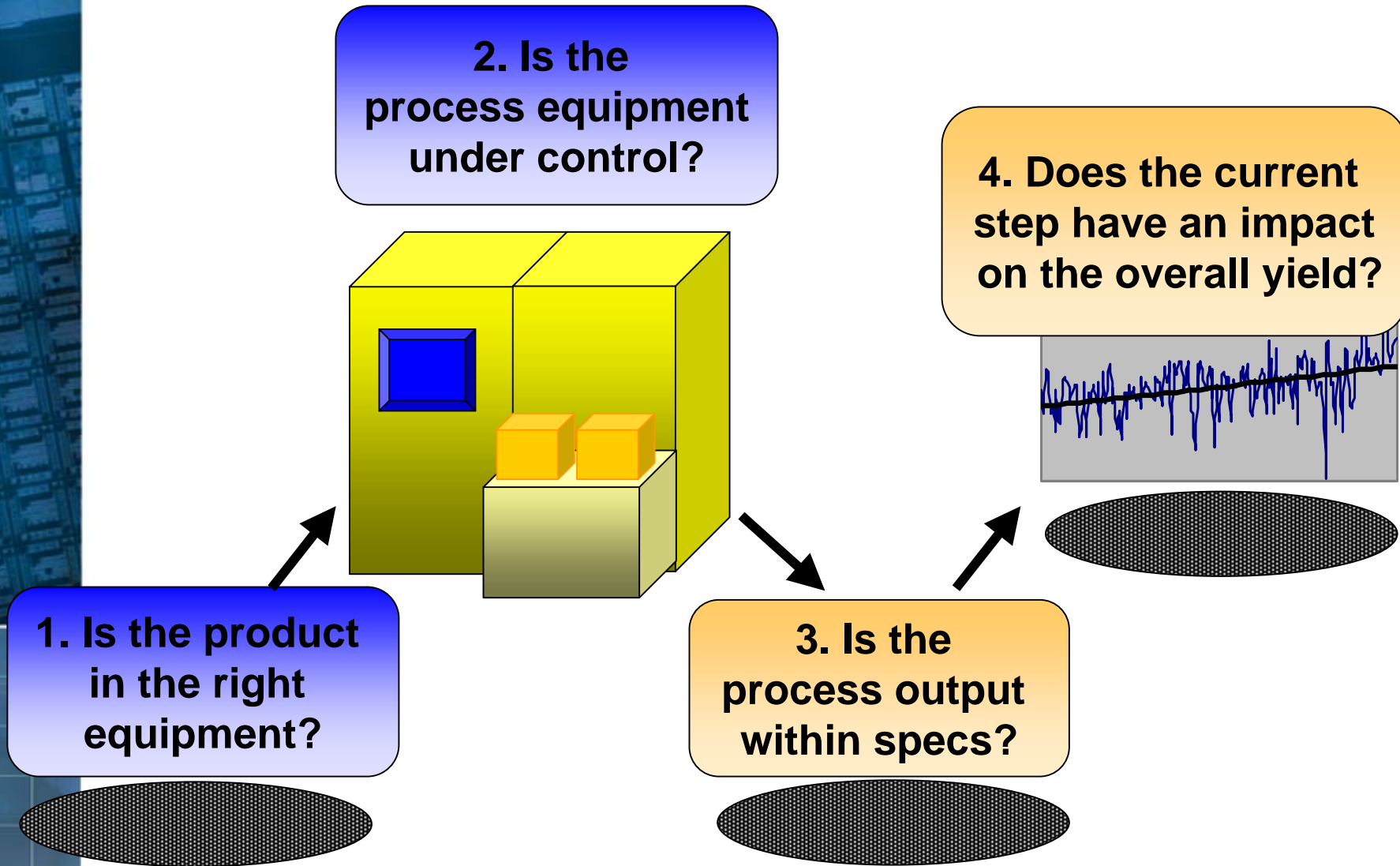
Effective APC/FDC Through Data Quality

John Pace
Si Automation

- Data Quality Background
- Data Usage
- Data Quality Problems
- Impact on Application/Product Design
- Impact on Fab – Discussion
- Closing remarks

Data Quality Background

- Data and the information it contains is key to the successful operations of the tools and the Fab
- In order to insure the successful operations the data must have the “highest” quality – avail, accurate, timely.....

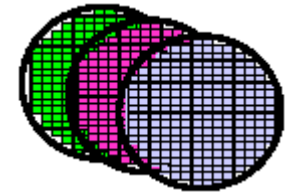


- Goal?

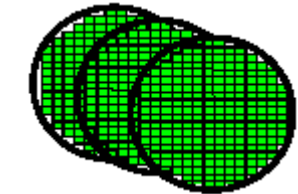
Equipment Control

- Why?

Scrap



NPW

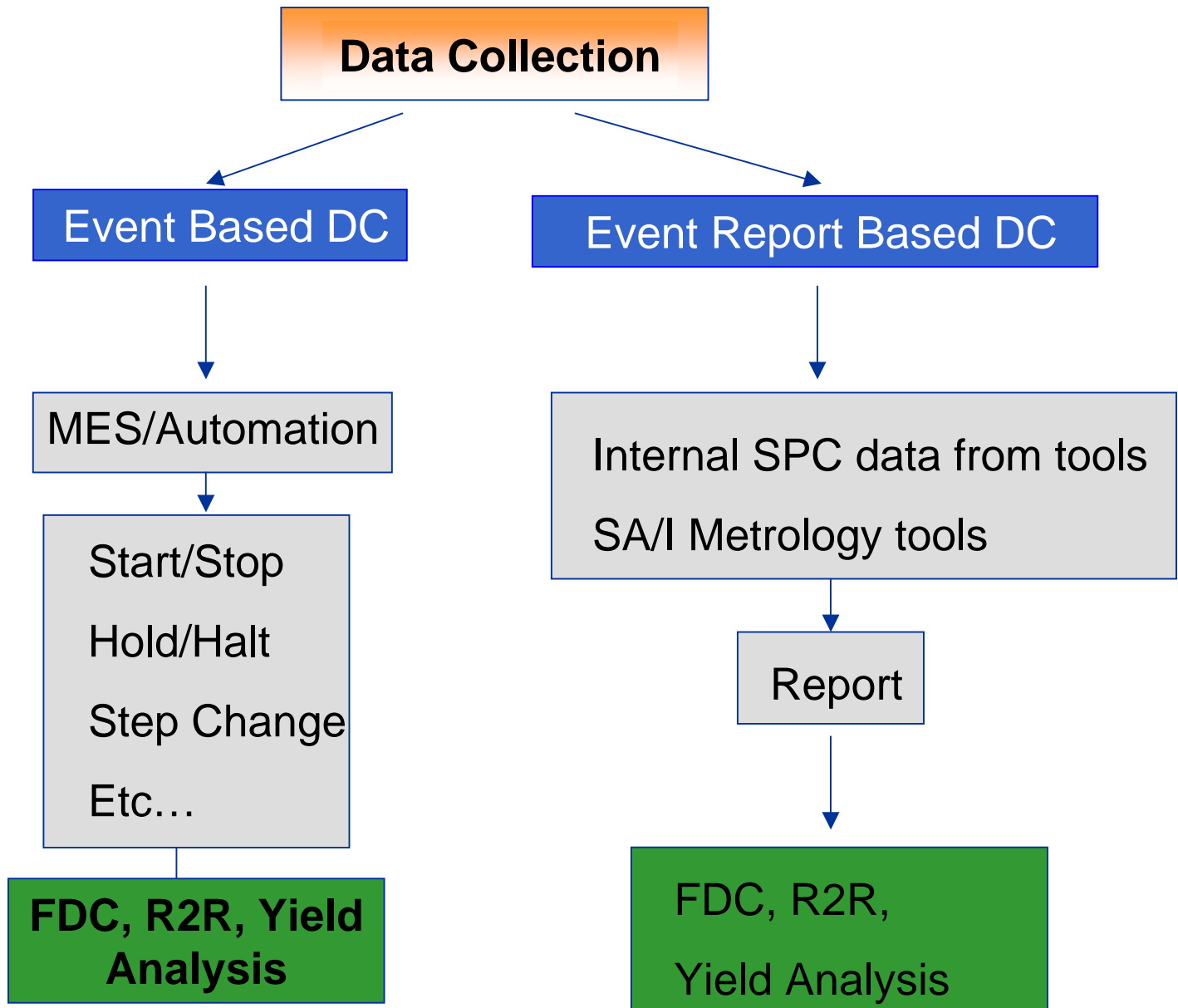


OEE



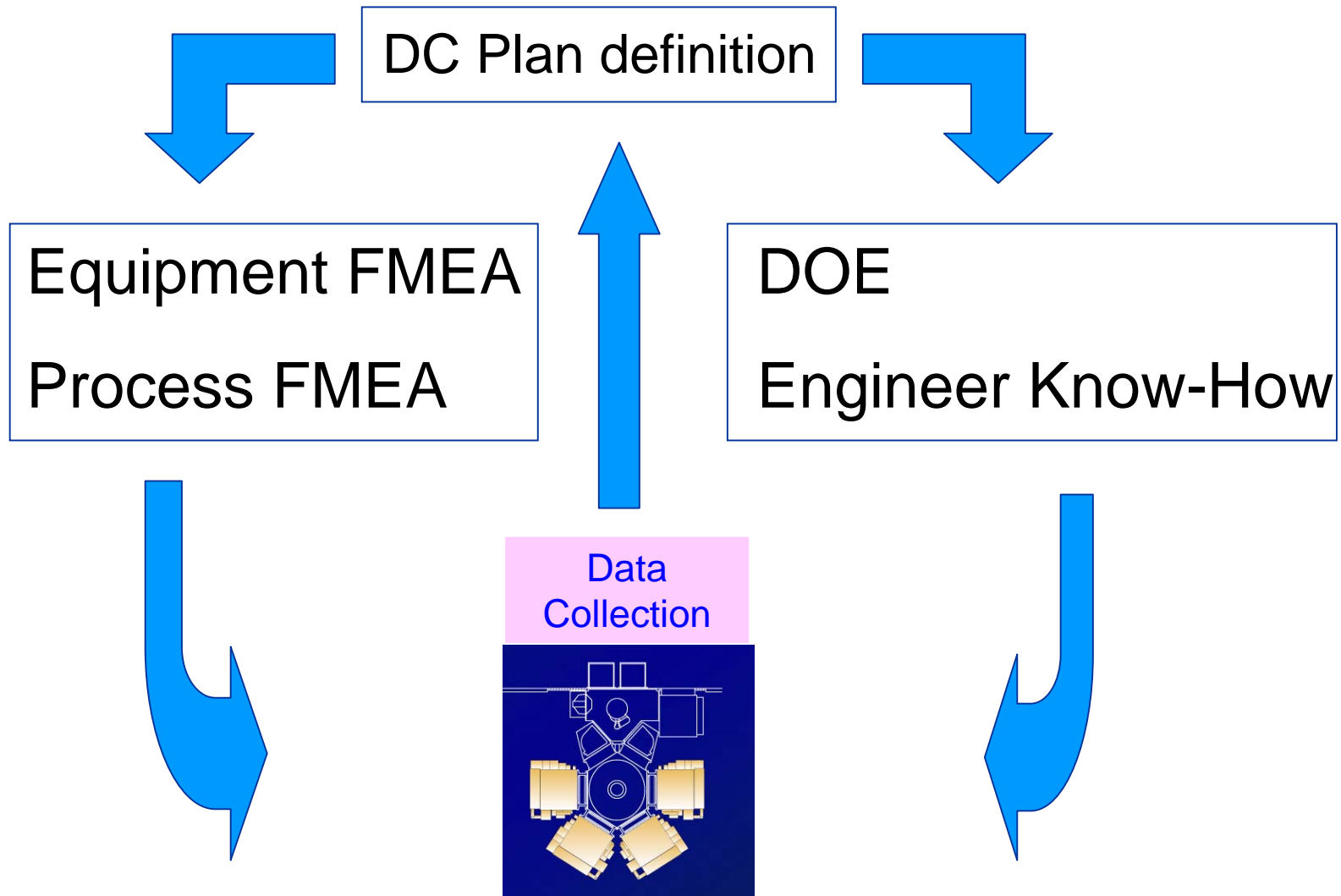
- How ?

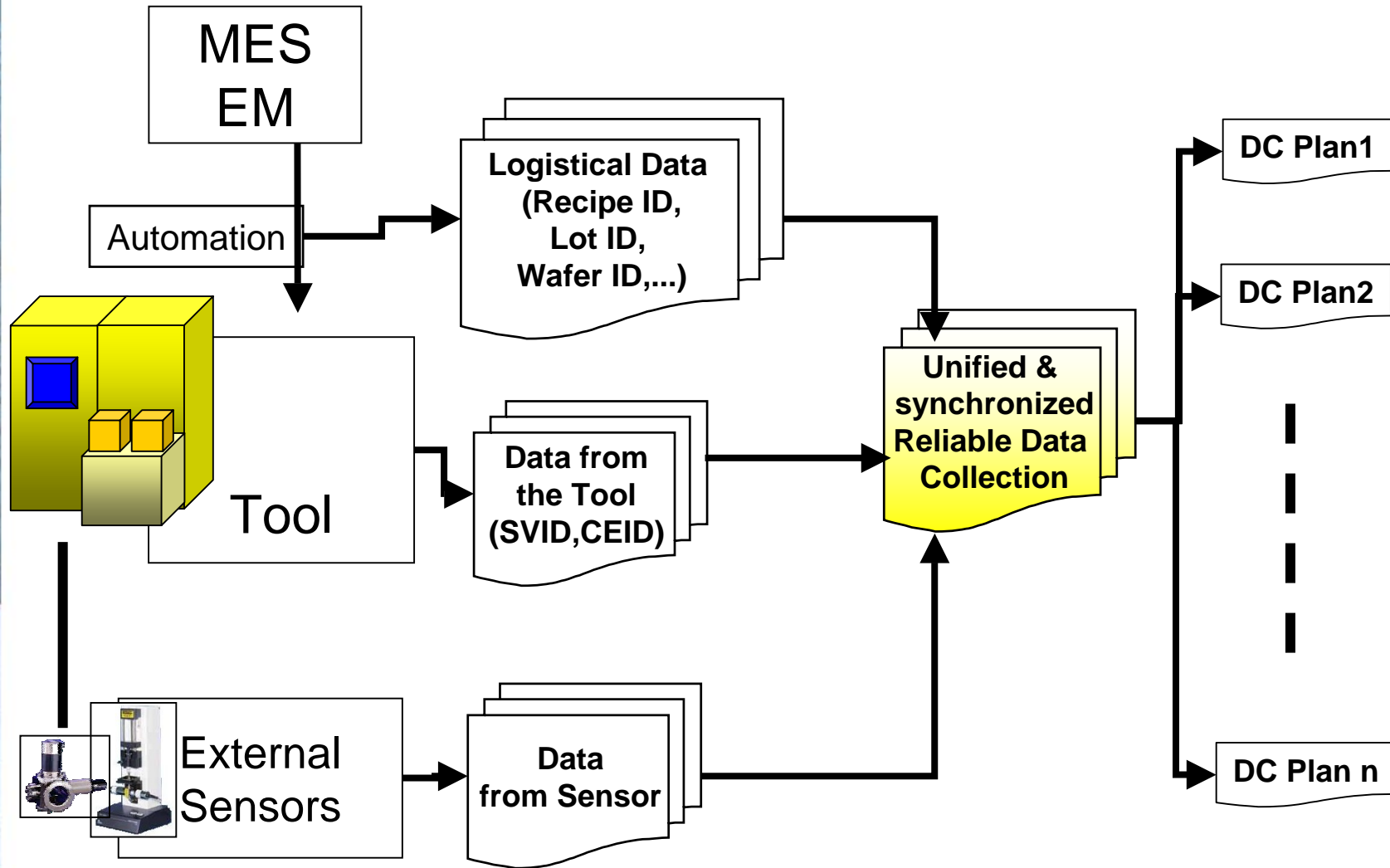
Through APC/FDC
Methodology



What Data to collect?

Which specific step(s)?





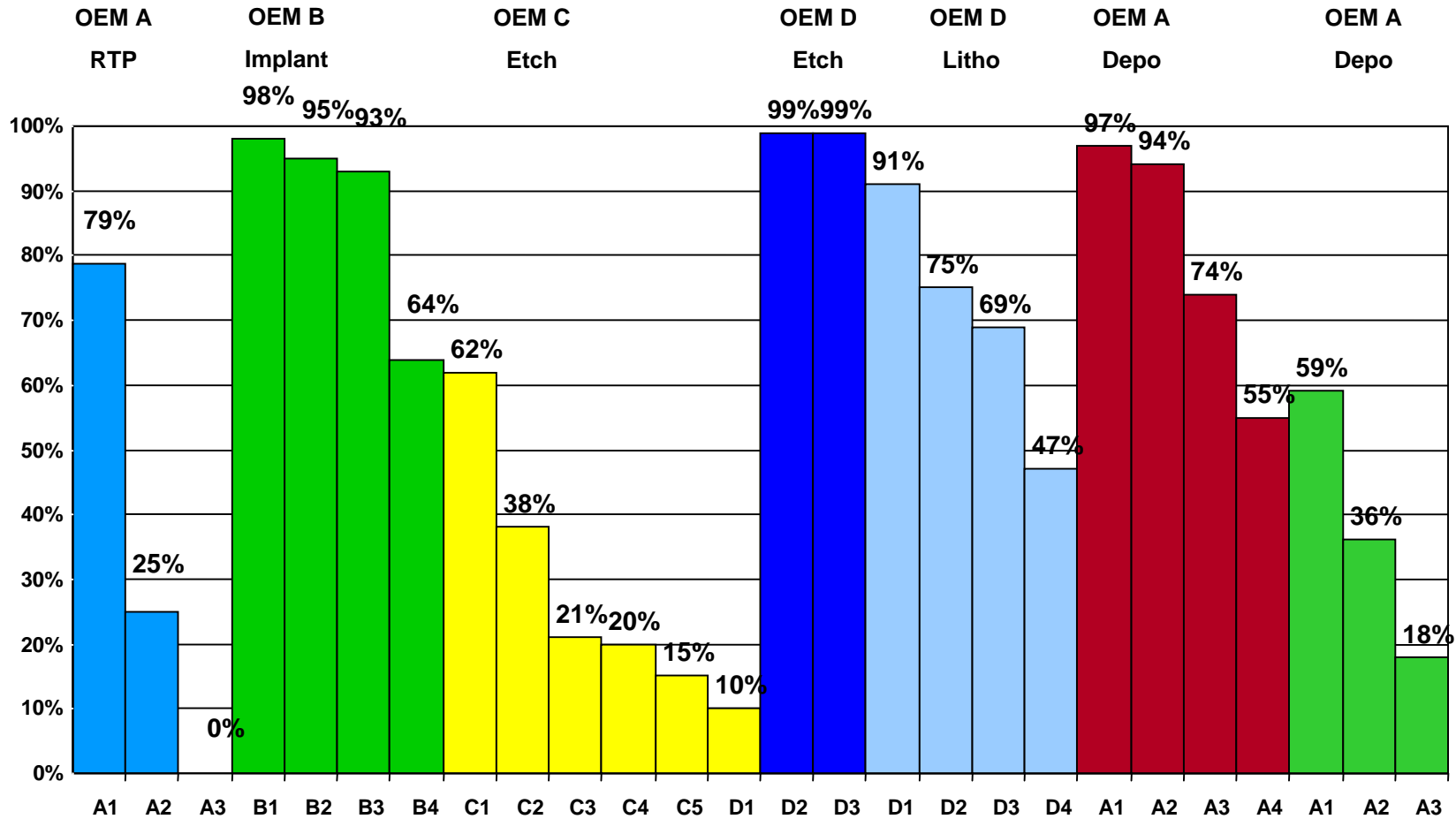
Observed Equipment Interface Problem and their Impact on APC/FDC

- **Event Delays - - -** **Bad data synchronization, missing part of data to analyze**
- **Event Missing - - -** **Impossible to prepare/start/stop APC/FDC Strategy**
- **Variable Missing - - -** **Impossible to collect and analyzed variable (it is not hooked up)**
- **Logistic Variable Missing - - -** **Impossible to start required strategy for this context**
- **Sample delays - - -** **Induced Noise, Potential false alarms**
- **Secs Port - - -** **Hole in Data Collection because Automation messages are prioritized**
- **Huge DC Plan handling - - -** **May impact equipment throughput, or normal behavior, possible crash, in best case big delays**
- **StepID and Variables synchronization - - -** **False Alarms**

Another Problem

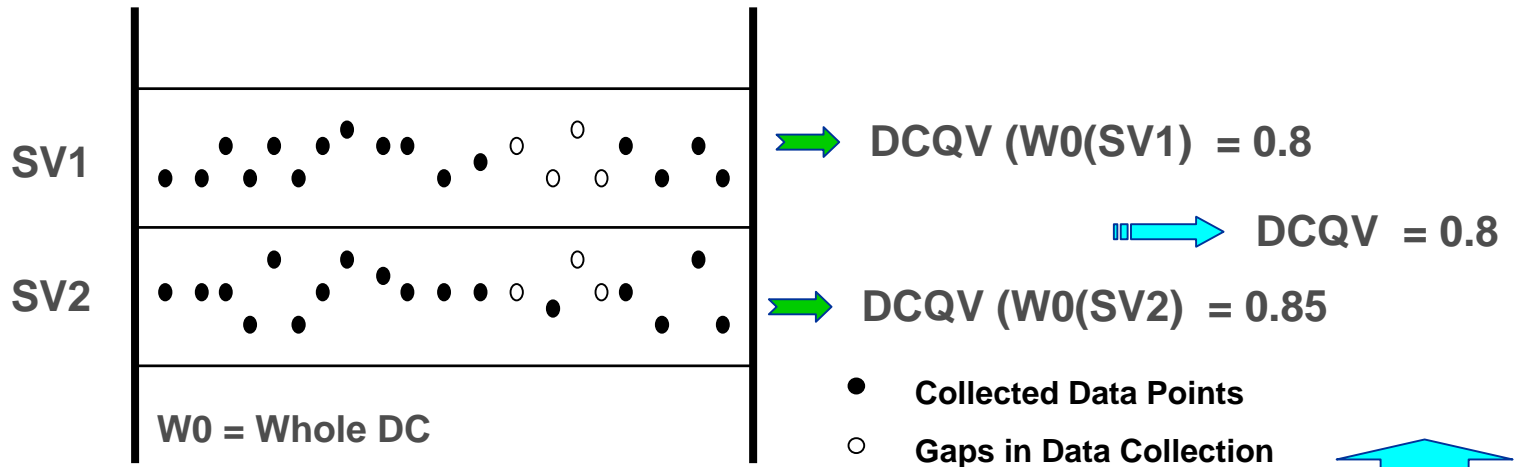
- Once you have solved the problem previously listed and are satisfied with data accuracy, freshness..... You still may have a bigger problem.....

Example: Equipment DQ Performances



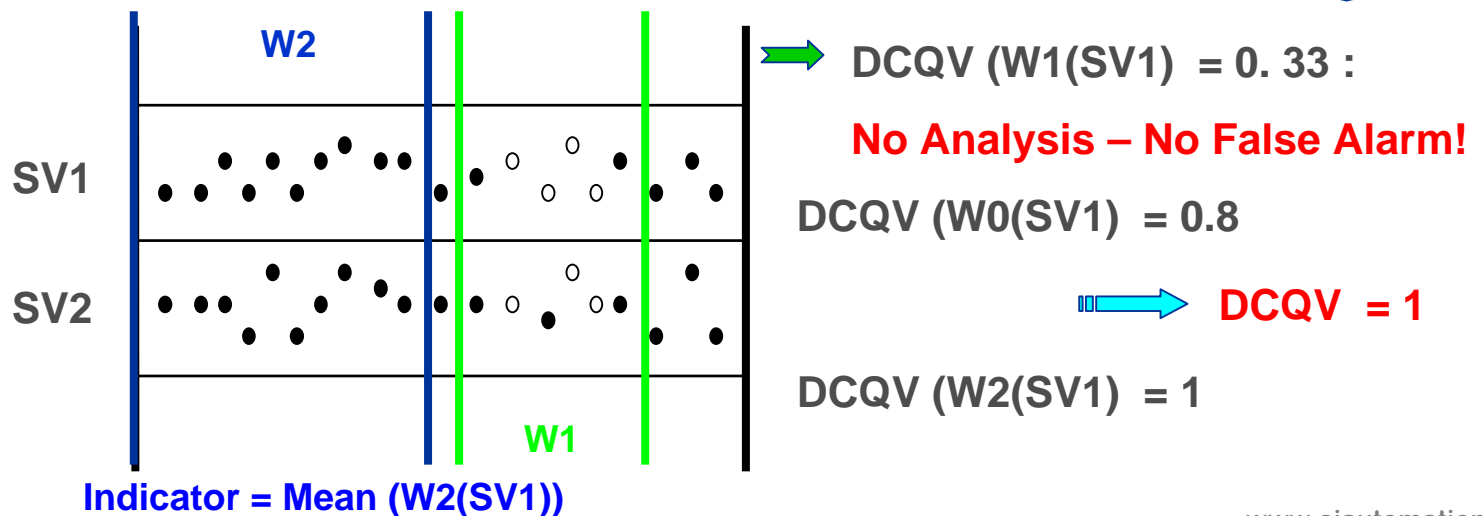
Percentage of quality data collected

Source : Customer B



DC Quality Value calculation for whole process

DC Quality Value calculation within selected time windows



DCQV setting considerations

- How signal(s) is varying with time
- DoE
- Experience with calling Faults

- Discussion

- Data Quality is important for effective use of APC/FDC in the Fab
- Tools must provide “high” quality data
- SEMI NA Data Quality Task Force