

Maglen Ebeam Wafer Imaging System

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Agenda

- Introduction
- Review of Previous Works
- Progress
- Miniaturization
- Advantages
- Summary

Introduction

- Optical Microscope VS Scanning Electron Microscope

Fast

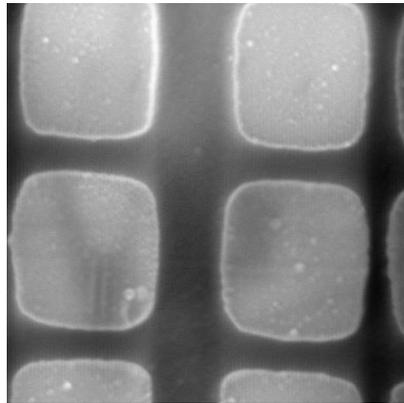
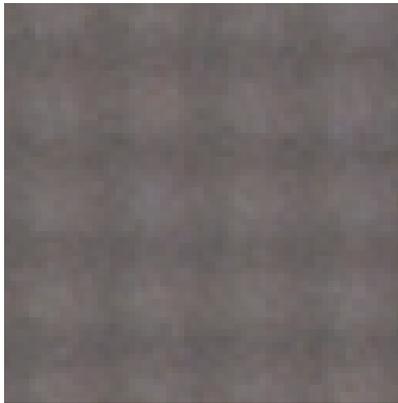
Slow

Blur

Clear

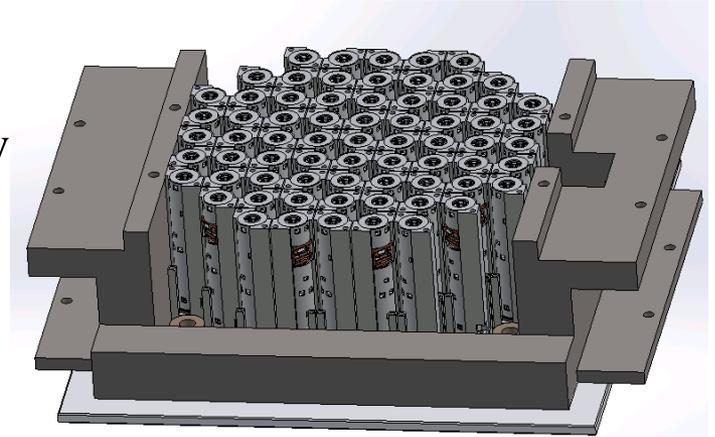
193nm

0.04nm

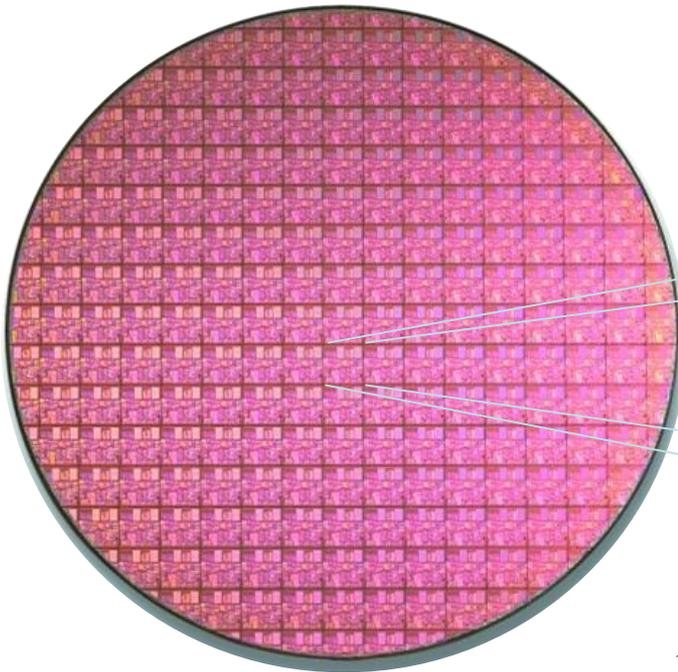


Review of Previous Works

- Miniaturized columns for multi-column array
- Custom print for inspection



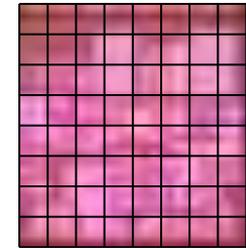
Partial wafer inspection applications



1 column, 1 wafer, 2 years



1 column, 1 print, 2 weeks



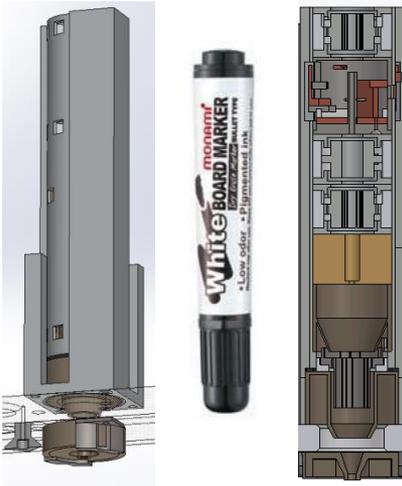
69 columns, 1 print, 3 hours

Progress

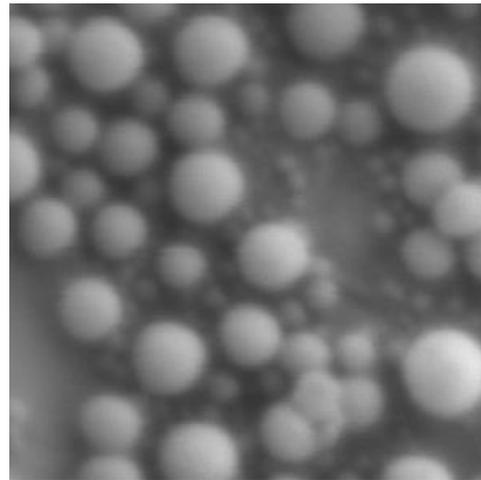
- 1 Diameter: 29mm -> 20mm future
- 2 High resolution of 2nm with high beam current of 1nA

Column

Size: 29mm
Height: 140mm



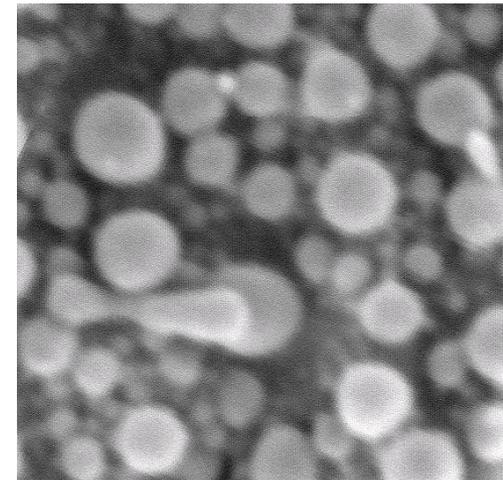
Google Reference



500nm

Maglen Pte Ltd

Maglen



500nm

Small array of columns

- A Multi-Column not for parallel imaging purposes...
...but for multi-functional common platform

SEM V1.0

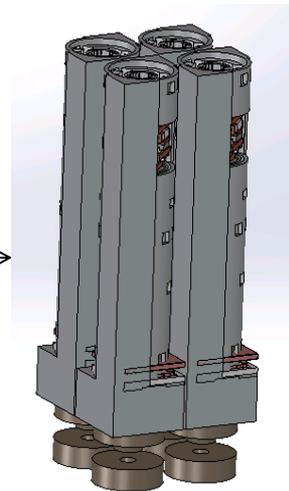


CDSEM
Review SEM
Physical Inspection
Electrical Inspection

Single function
Split Market

Multifunction
Integrated Market

SEM V2.0



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Why so many SEMs

- High resolution is too hard, and SEM is just too slow. Therefore, column hardware designs must focus on some applications, while compromise on others.



Miniaturization allows common platform

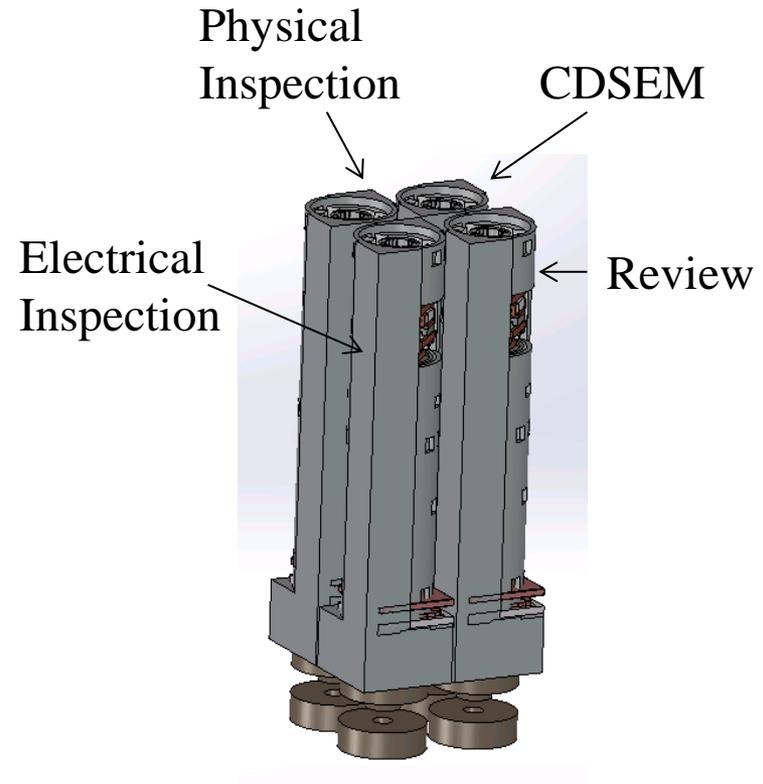
2X2 small array to consolidate the market

4 Markets in 1

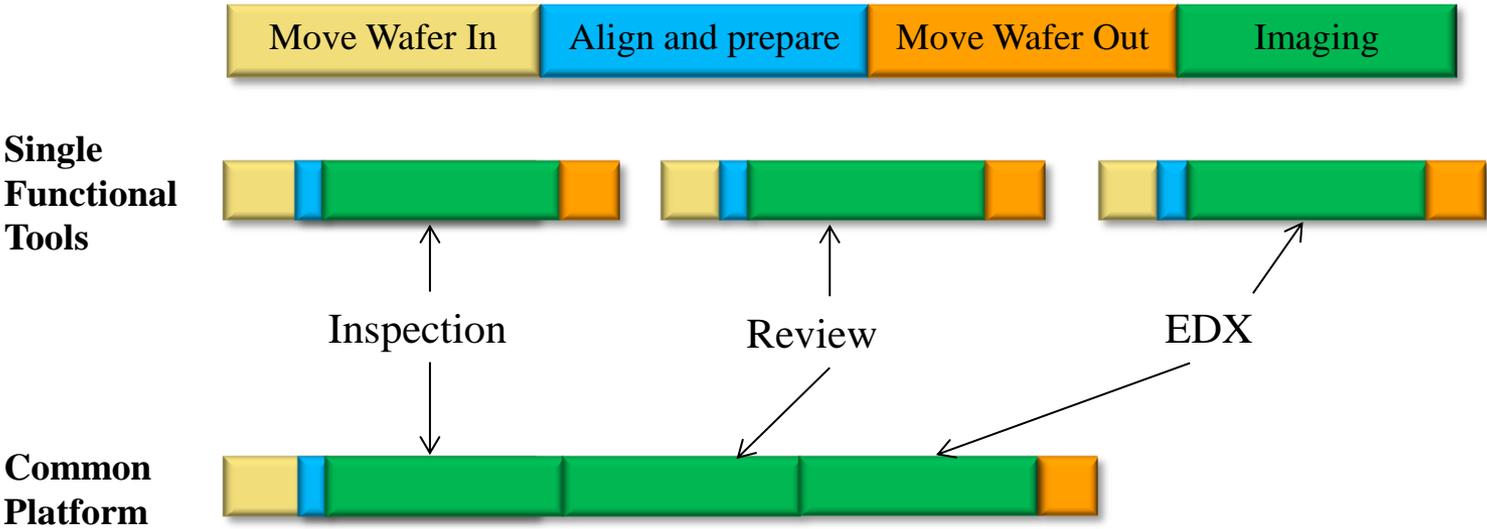
Change of process, higher efficiency

Reduce the redundancy

Dynamic throughput control

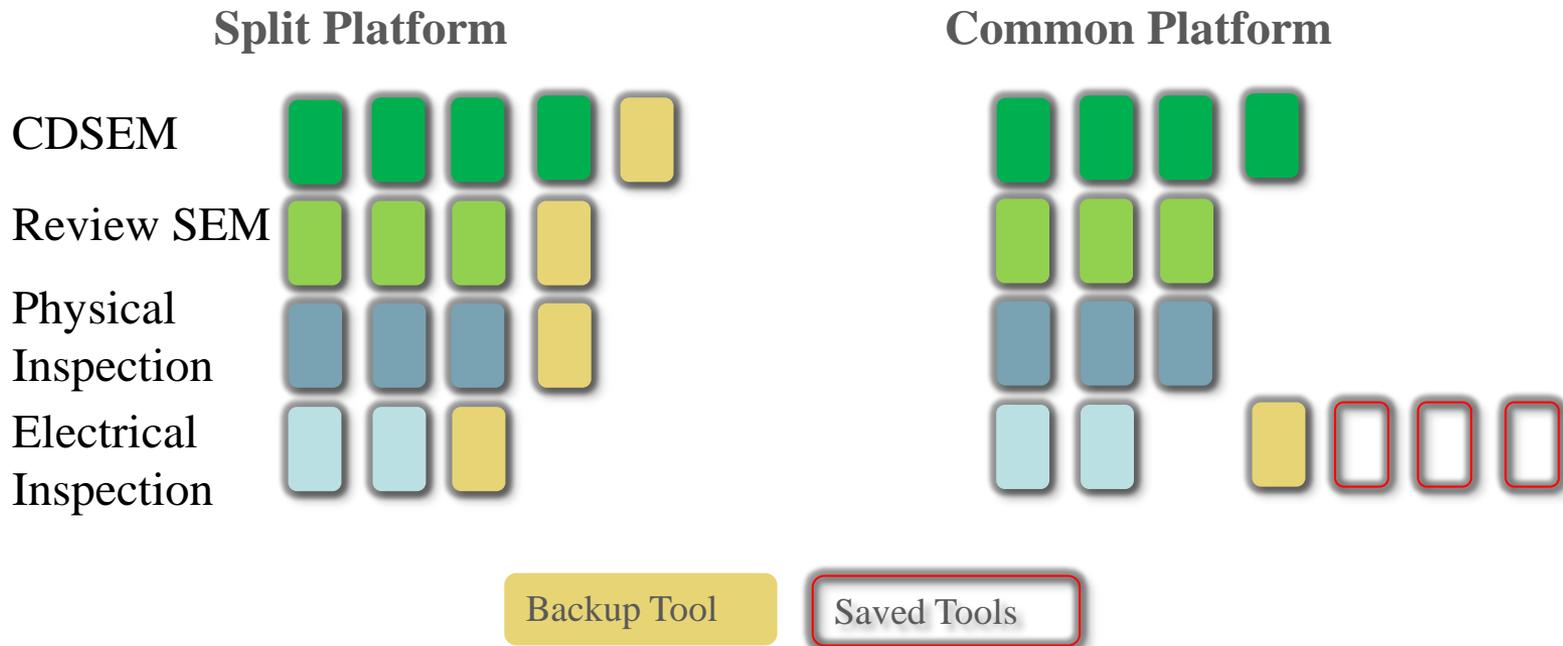


Change of process, higher efficiency



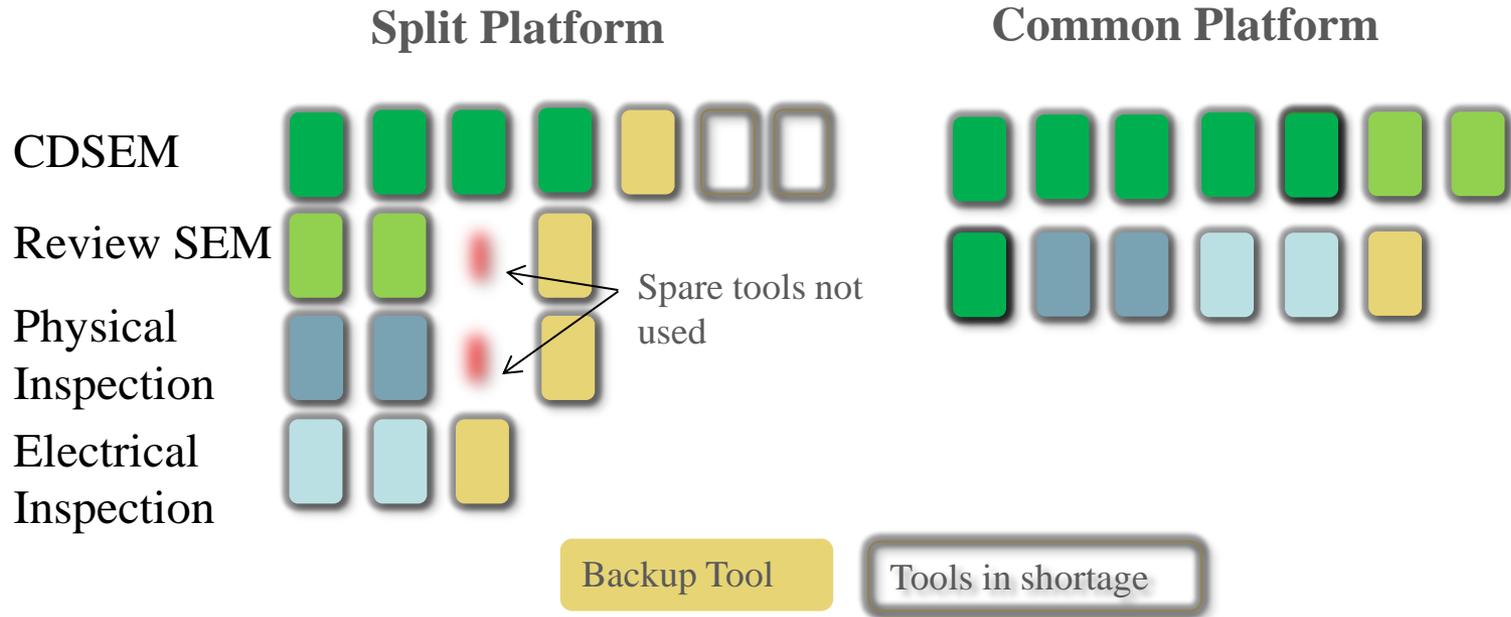
Common platform can quickly switch the column for the job, reduce non-productive efforts, enhance the efficiency

Reduce the Redundancy



When a SEM tool of any kind failed, it can be replaced by a common platform tool, and less redundancy is needed.

Dynamic throughput control



- Limited by individual tool throughput
- Spare tools can not be switched for other modes

- Adjustable throughputs according to demands

Throughput distribution can be adjusted without purchasing new hardware.

Summary

Miniaturization allows common platform ebeam imaging system

Consolidating the market allows economy of scale

Performance and efficiency both improves with independent optimization

Q&A

