"The Future of Semiconductor Manufacturing: New Developments in Speed and Innovation."

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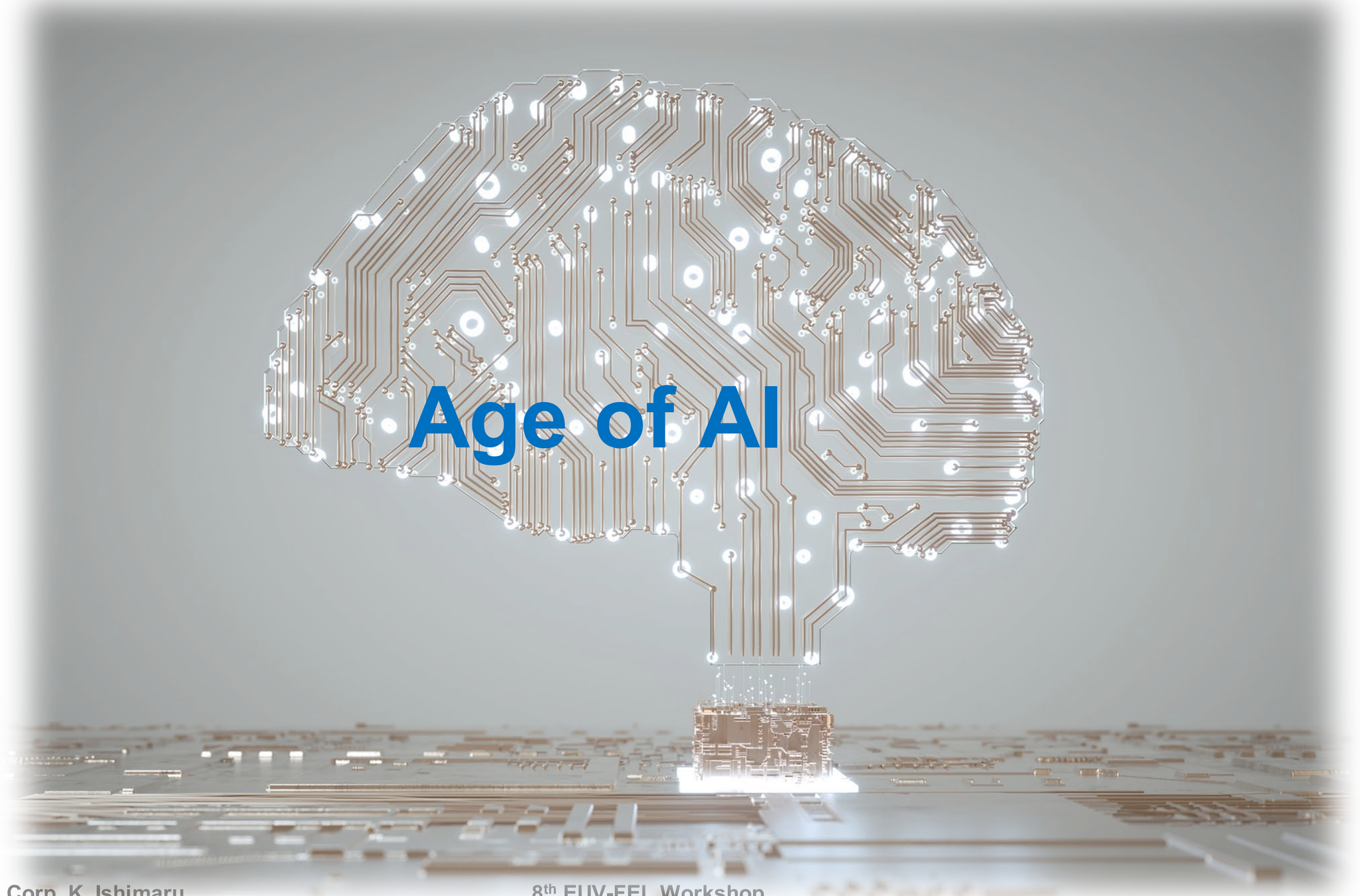
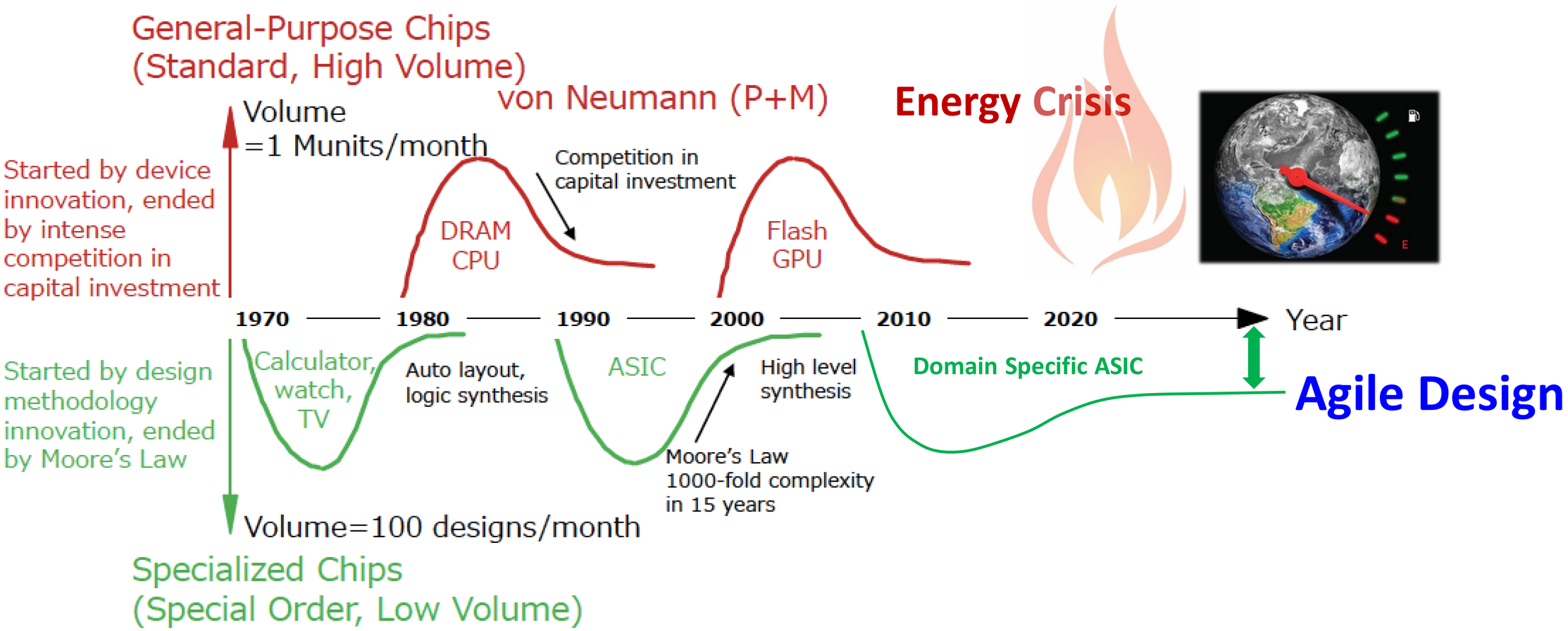
Rapidus KAJIMA CORPORATION


Age of AI

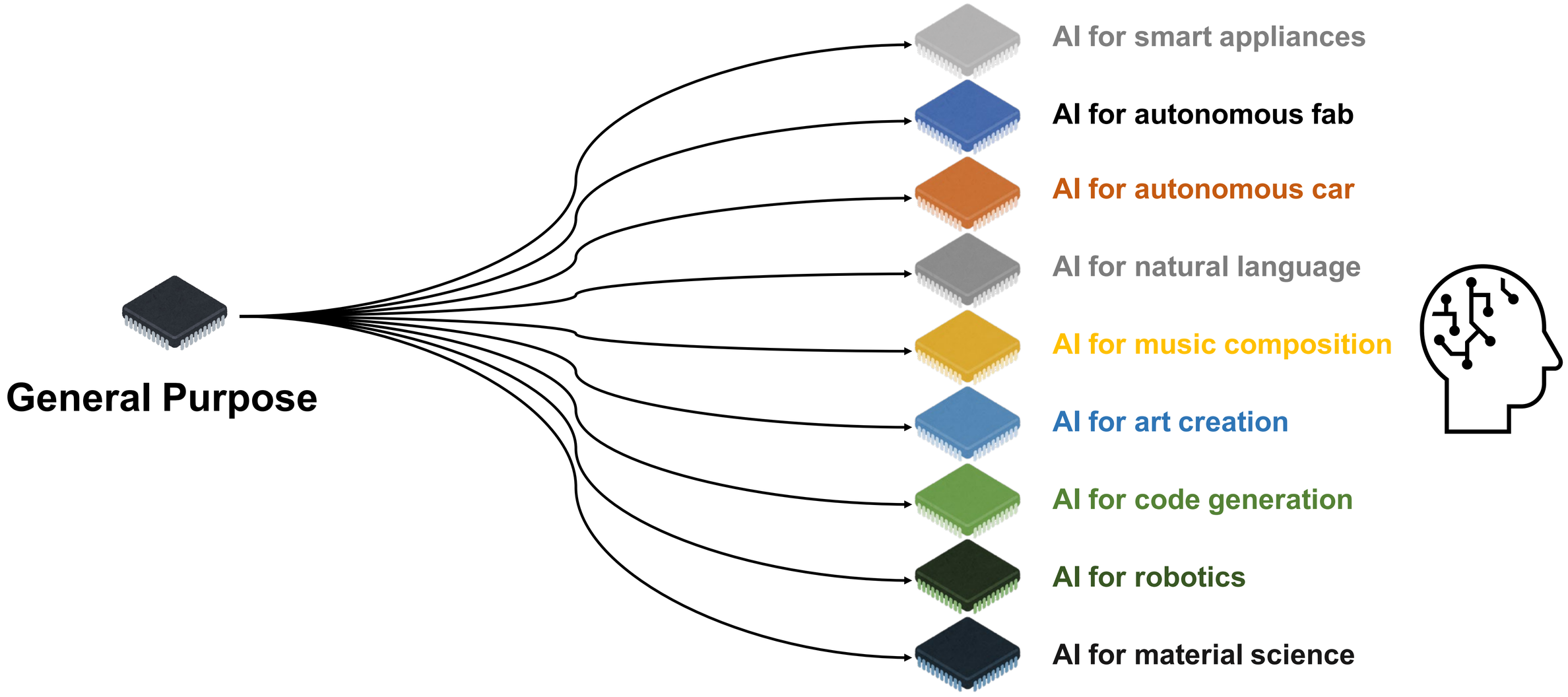


Source: T. Kuroda, ISSCC 2010 Panel Discussion, "Semiconductor Industry in 2025".

Predicted in 2010 about Semiconductor Industry in 2025

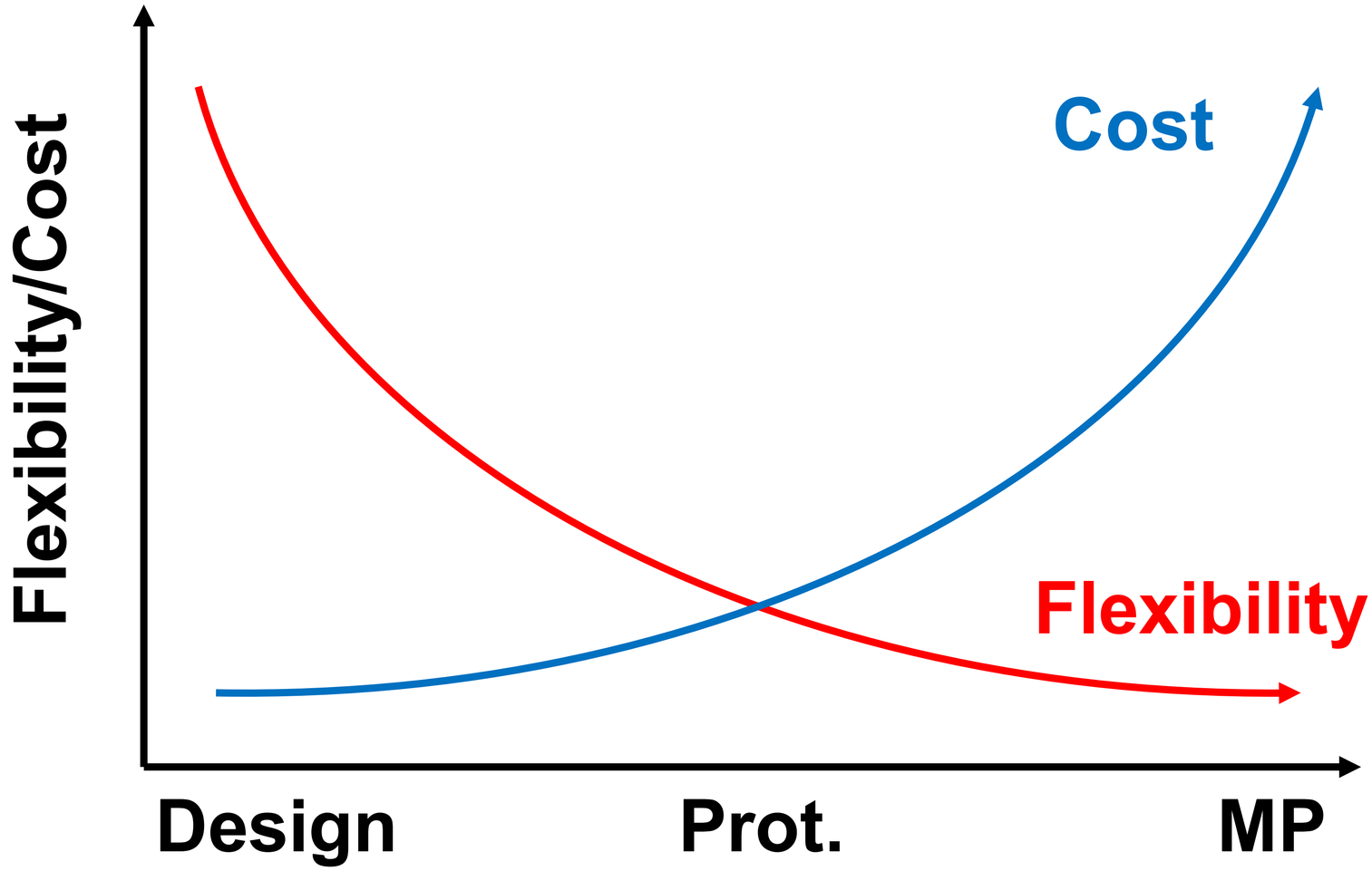
Source: http://www.dlab.t.u-tokyo.ac.jp/en/message/chapter01.html

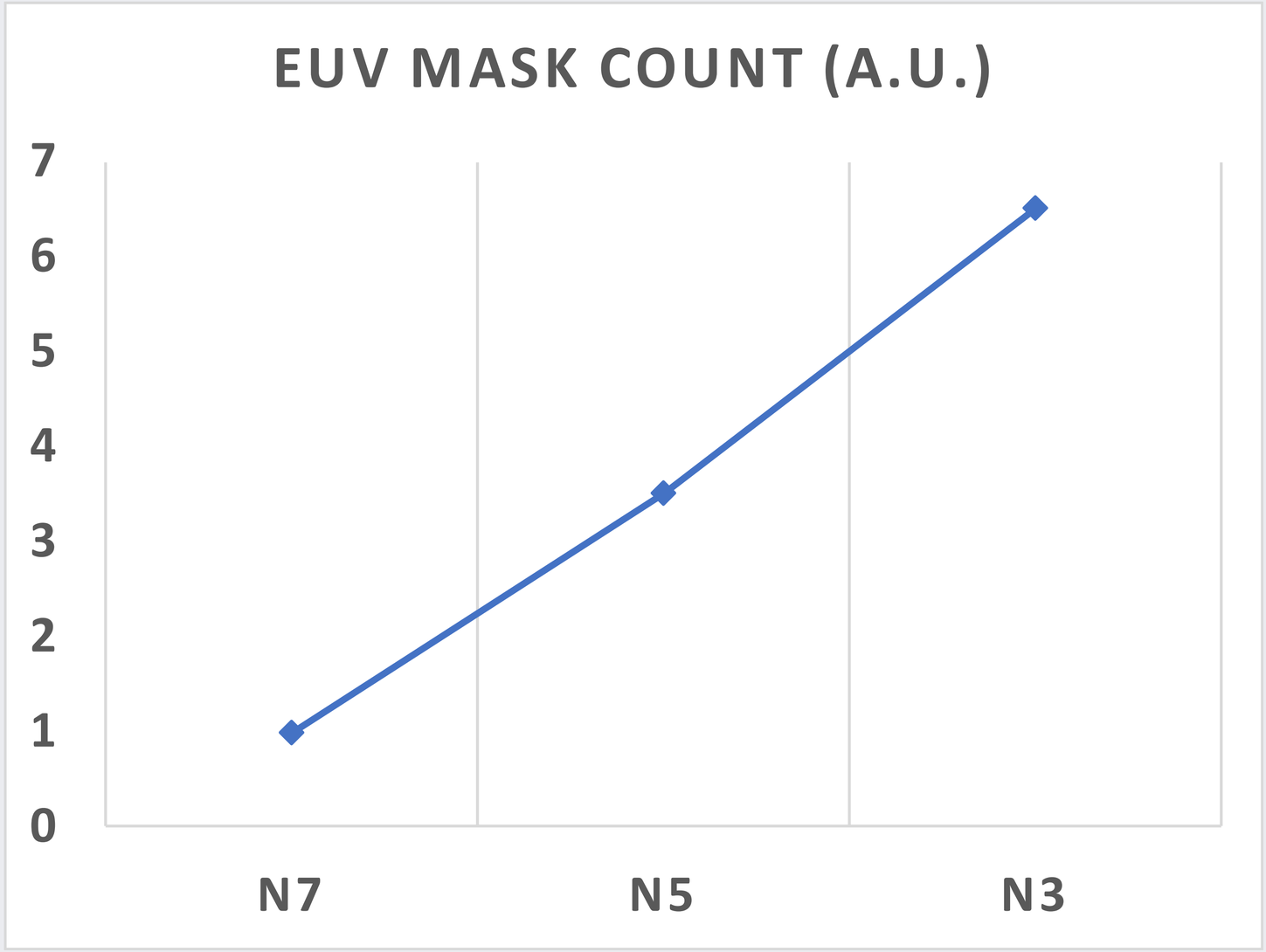
General Purpose to Specialization



Custom chip for Edge AI

Conventional Design for Manufacturing (DFM)




EUV MASK COUNT (A.U.)
7
6
5
4
3
2
1
0
N7
N5
N3

Focusing on Speed – A New Foundry Model

Design Solution

Front-end

Back-end

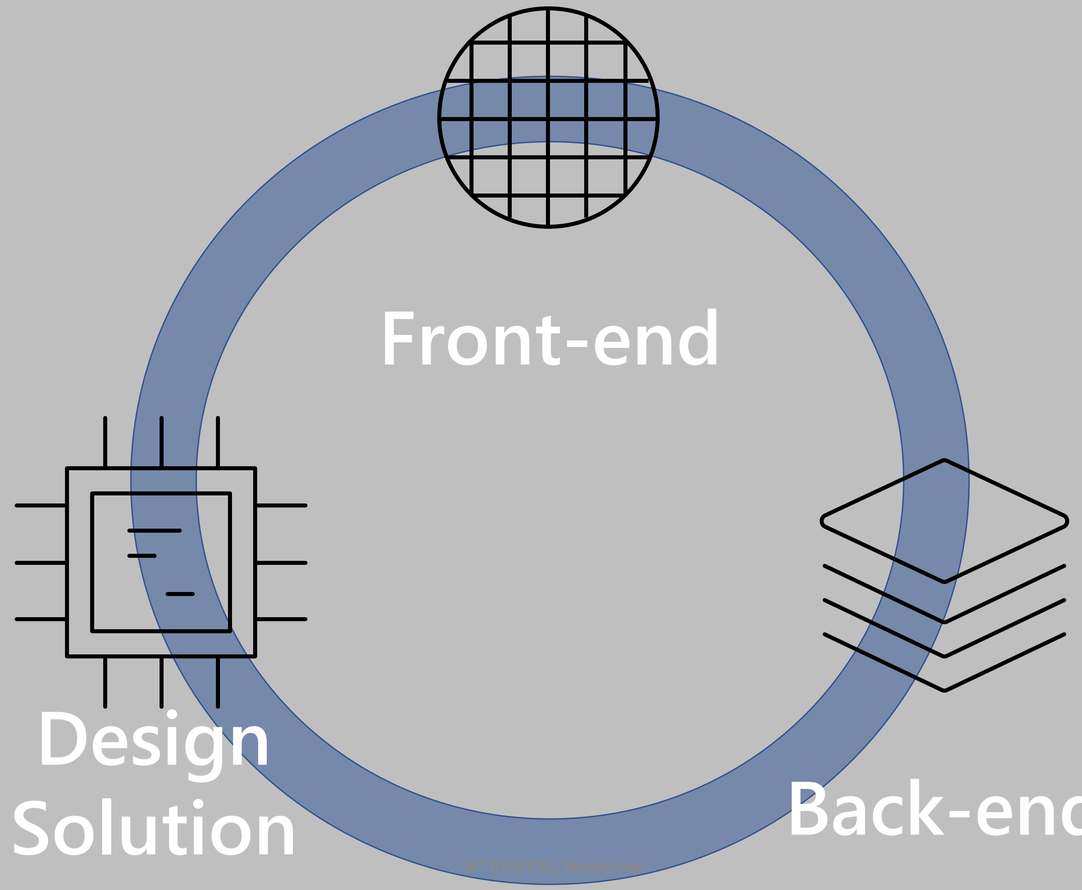
World's Shortest Total Cycle-Time

高性能　半導体製品をめざして

Design-Manufacturing Co-Optimization

“RUMS” – A New Foundry Model for the Age of AI

“RUMS”
Rapid & Unified Manufacturing Service



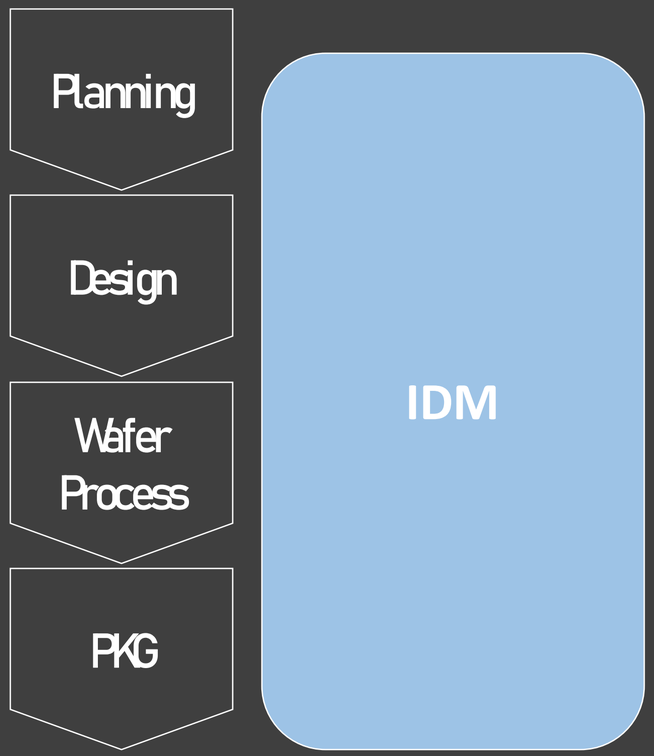
Co-optimize both Design & Manufacturing

with AI and Advanced Sensors

“RUMS” – True Requirement for the Age of AI

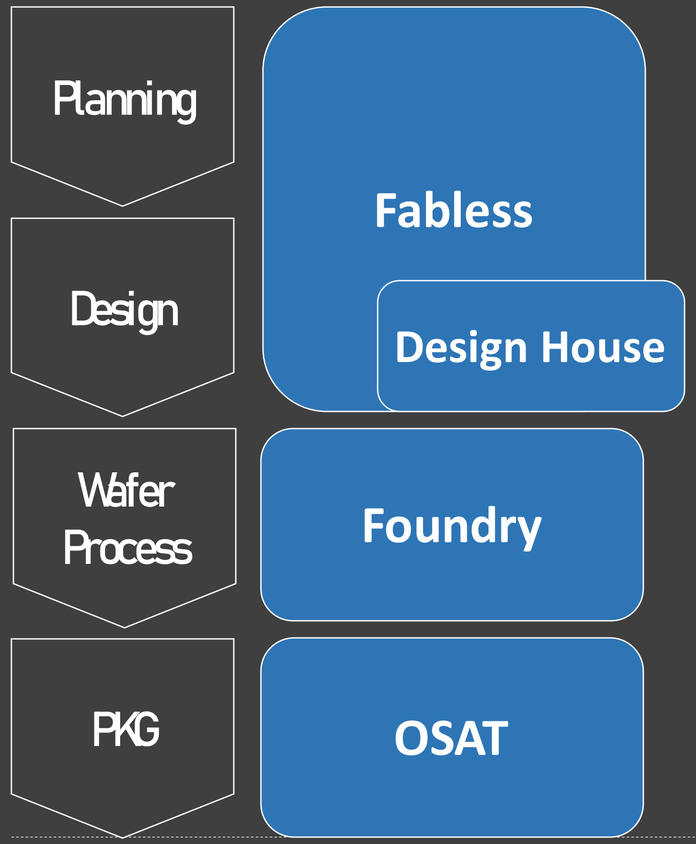
1

Vertical Integration



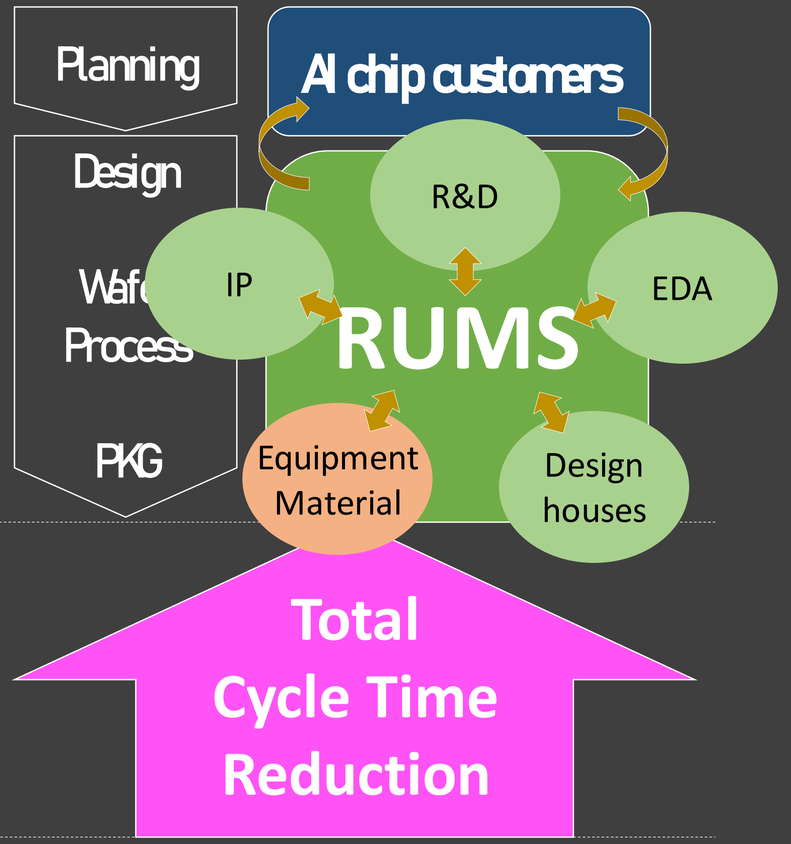
2

Horizontal Specialization

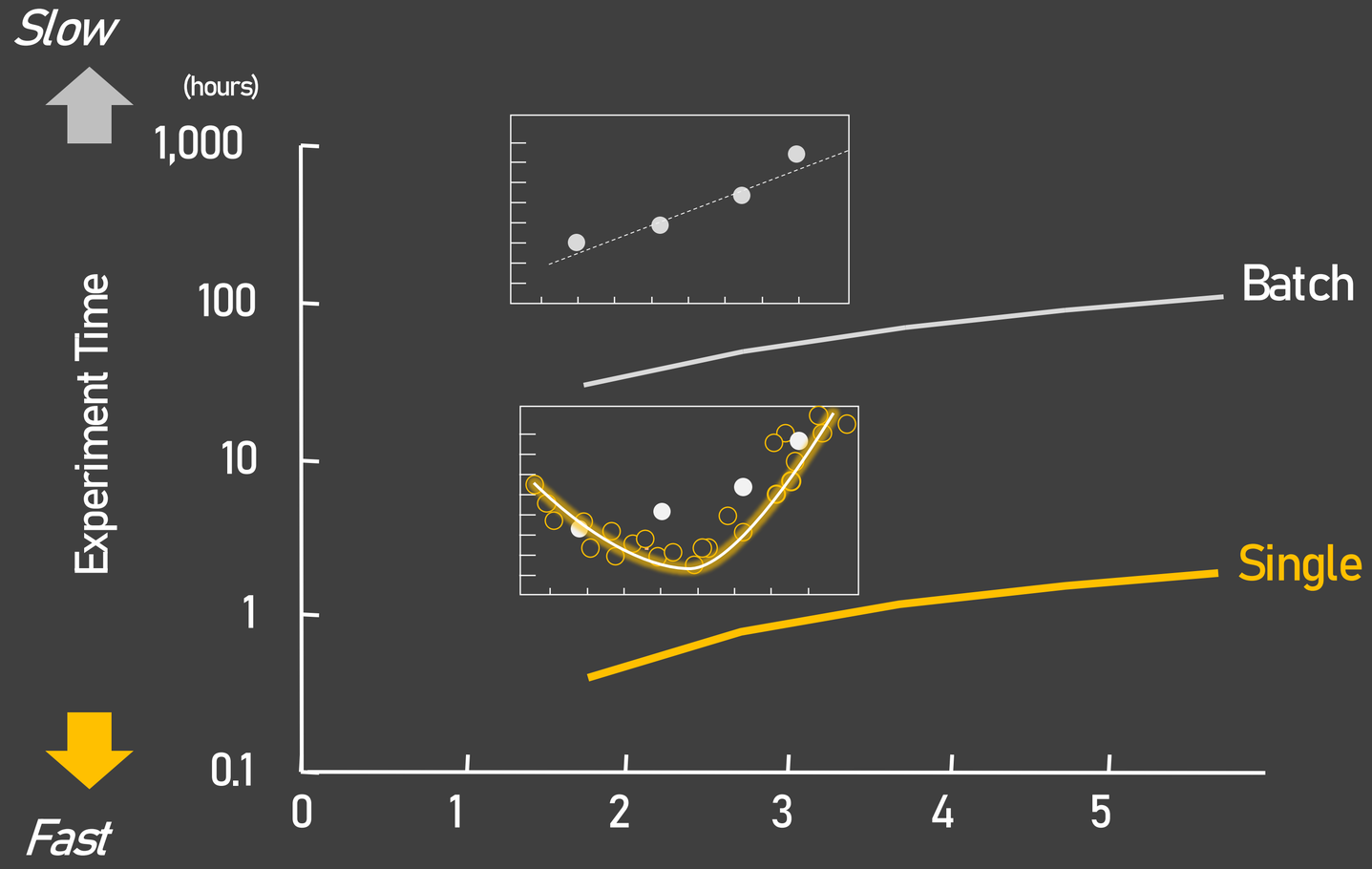


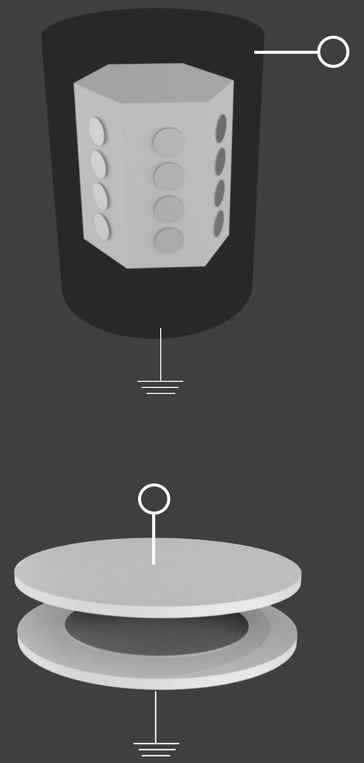
3

Integrative Co-Creation



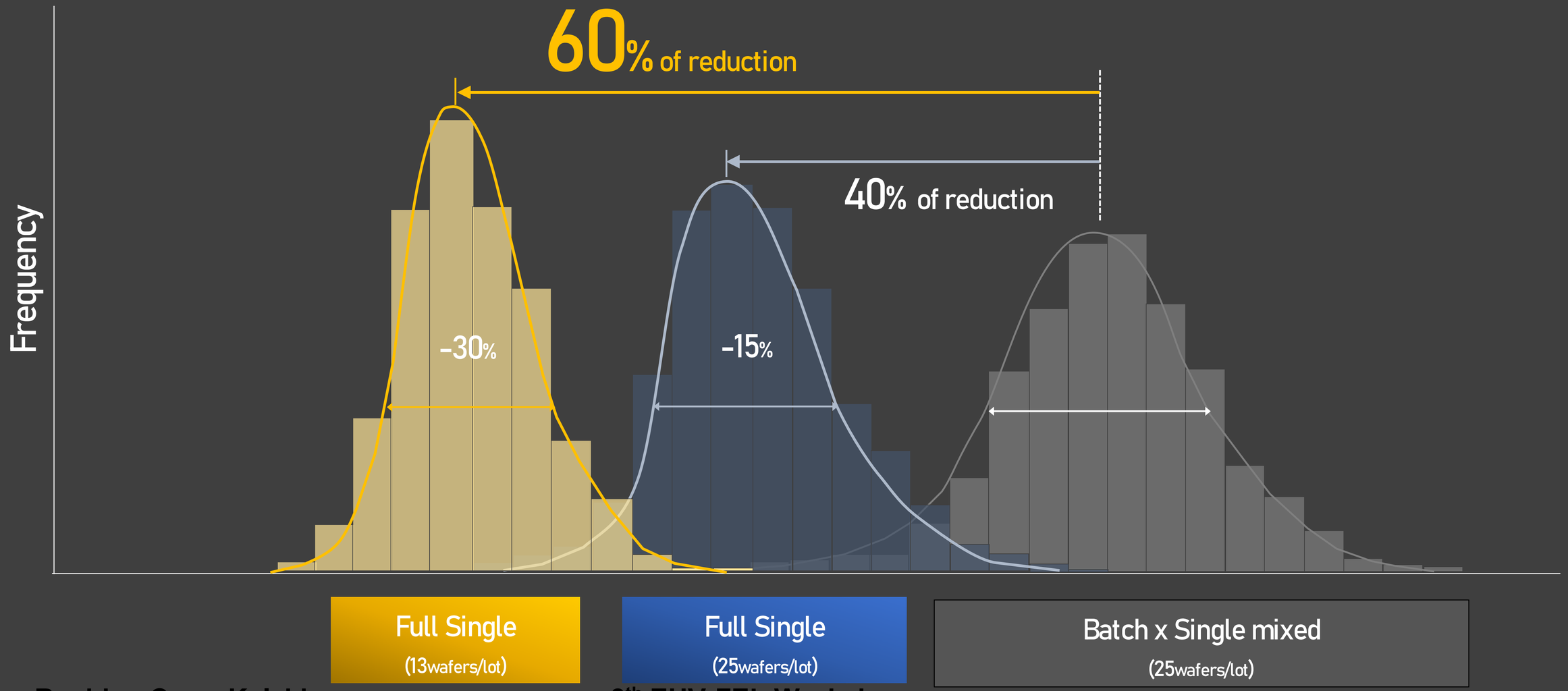
Start Point of Innovative Idea





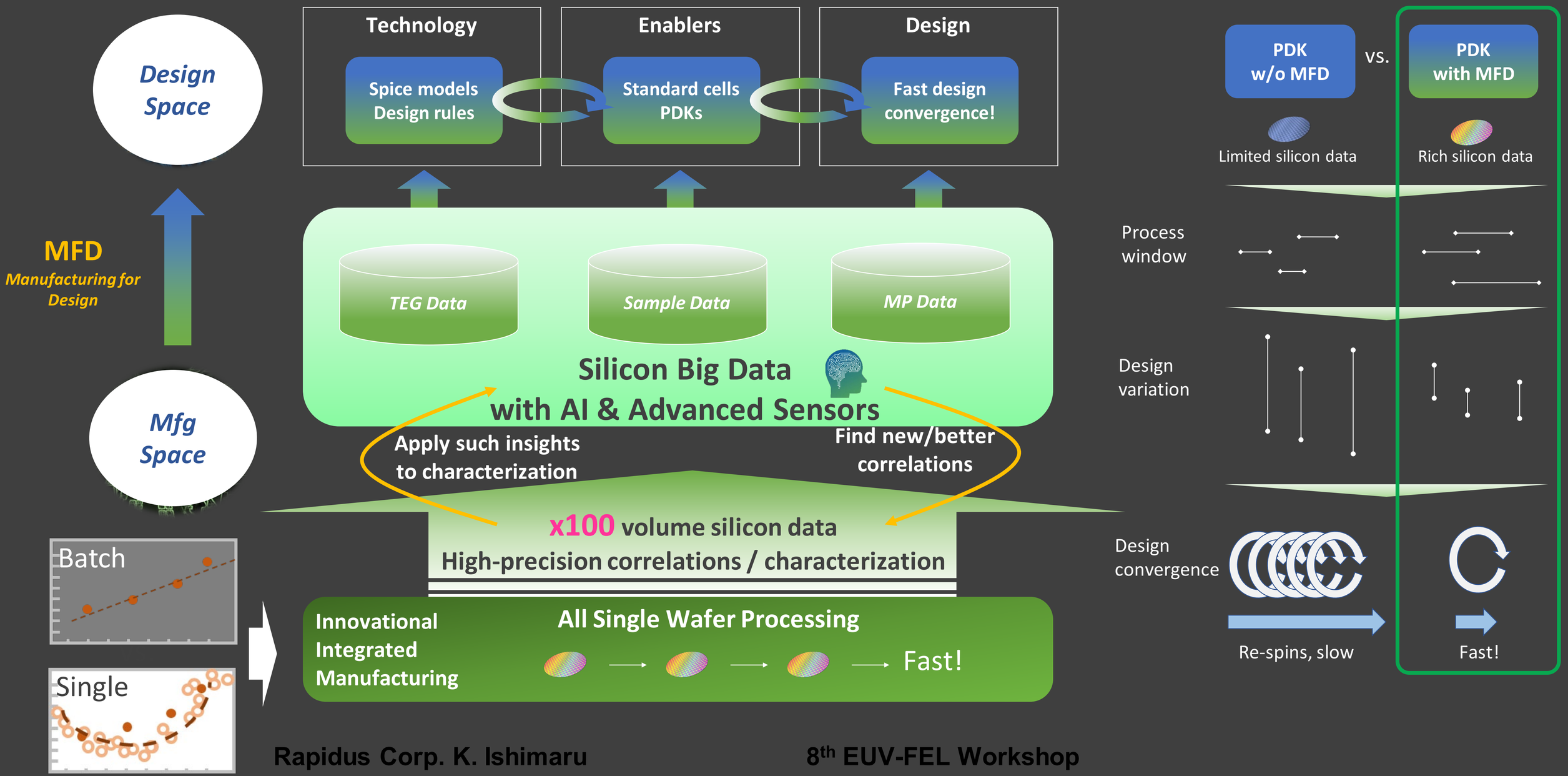
Cycle Time Simulation

Rapidus is building a fab with all single wafer processing.

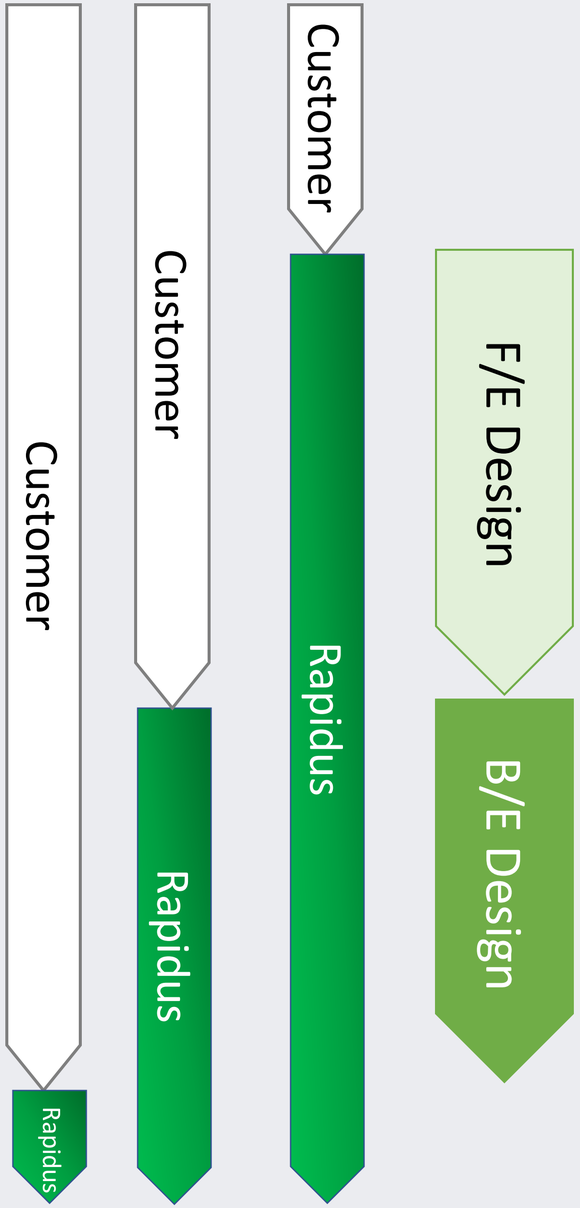


Source : ISSM2000 "A New Fab Concept in the 300mm Wafer Era", A Koike

Si-trained PDK and AI models



Raads: Rapidus AI-Assisted Design Solutions



3 key components of Raads

1 Raads.Generator

- Generate machine readable codes from specifications in natural languages

2 Raads.Optimizer

- Find the optimal combination of parameters under given constraints.
  - ✓ Ex. Achieve least leakage while maintaining clock freq. XX GHz.

3 Raads.Navigator/.Manager

- Learn design cases with fast PPA convergence from the historical design, then accompany designers to navigate.
- Learn and optimize hierarchical layout blocks to achieve short-TAT.

1. Design Cycle Time < x ½ of conventional
2. Replicate experts w/ Raads.Navigator for parallelism


Rapidus