Reducing Etch Variation using H2O.ai

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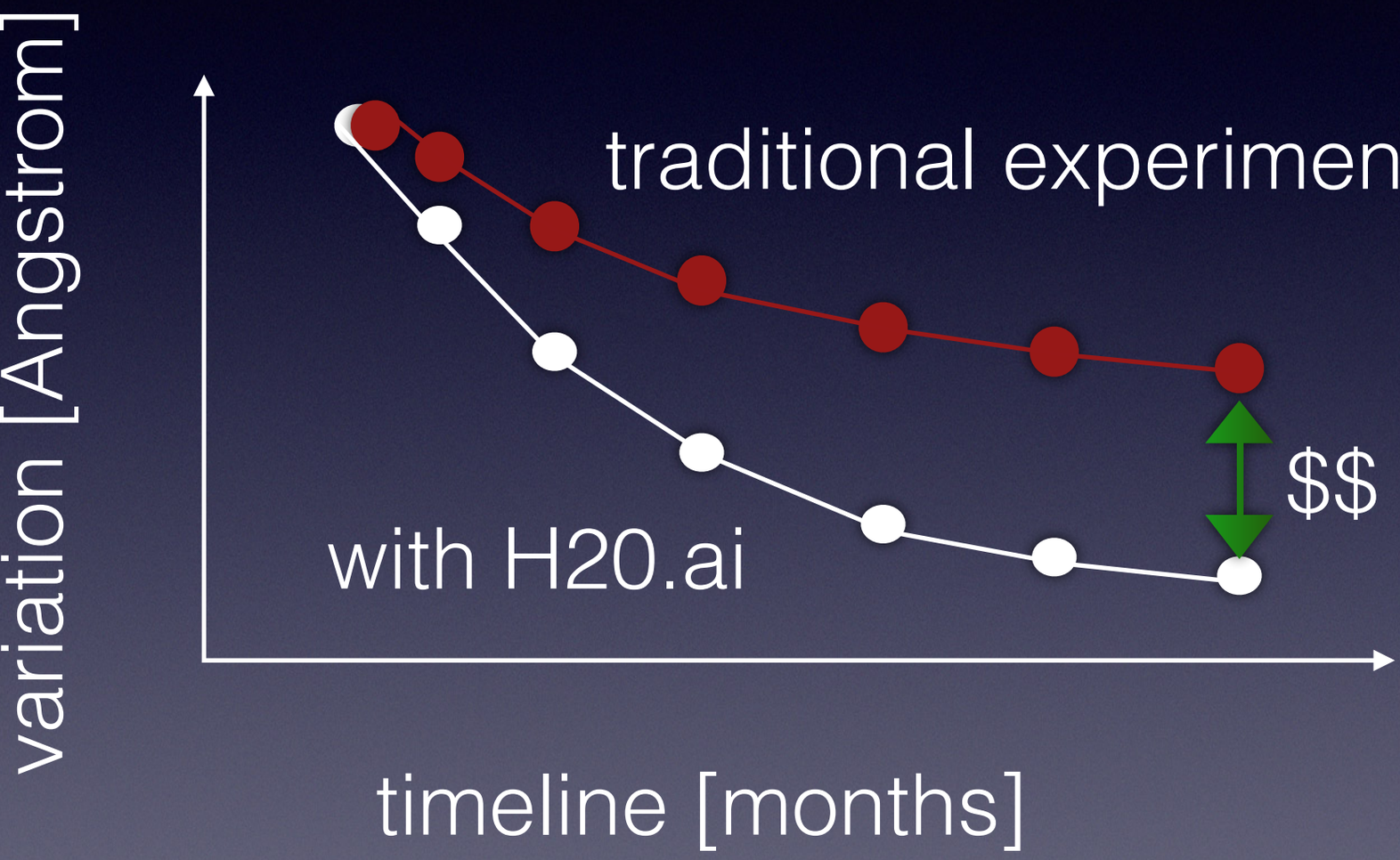
Applied Materials CENTRIS™ SYM3™ ETCH

- state of the art semiconductor etching equipment
- crucial step for high yields in fabrication

Steeper Learning Curve ==> $$



Complex Set of Variables

Expect to have a csv file of variables and resulting variation

- gas flow [m^3/sec] 100 - 500
- plasma energy [KeV] 200 - 300
- chemistry CF4 ratio to SF6 [real] 0 - 1
- temperature [K] 300 - 2000
- duration [min] 20 - 50
- pressure [Pa] 1 - 750
- gas density [molecules/cm^3] 10^3 - 10^6
- resist thickness [nm] 20 -100
- power [W] 50 - 2000
- variation [angstroms] 100 - 0

Use Generalized Linear Model

- model to be understandable, useful for prediction and fast
- other models not suitable
  - neural networks (classification)
  - decision forest (classification)

Proof of Concept

- created csv file of variables and result
- invoked GLM in h2o build 3.0.1.7
- prioritize investigation of variables with highest coefficients