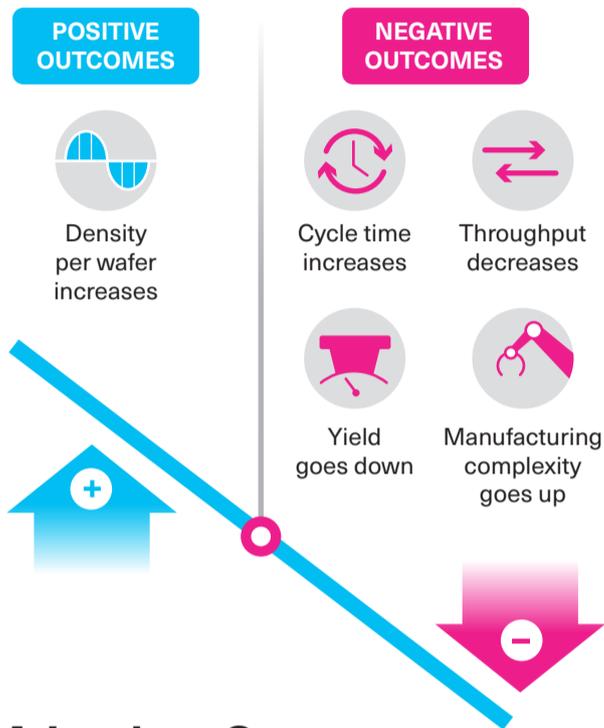


# The Race to Go Higher – Debunking the Layers Myth

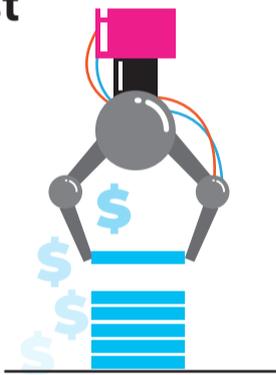
There is a misconception in the market that more layers equate to technology leadership. It's an understandable mistake as flash memory suppliers have promoted the number of layers since the first 3D flash memory devices were introduced. Suppliers make trade-offs to optimize generational layer counts to harness the greatest ROI and deliver a cost-effective storage solution.

## The Trade-offs of Adding Layers



## A Look at Cost

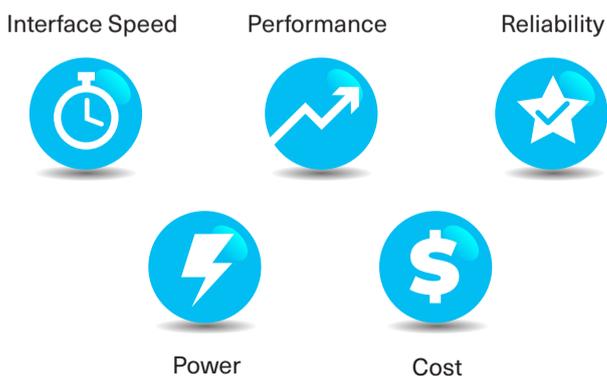
The motivation to add layers is to drive down **cost per Gigabyte**. Each additional layer adds incremental costs (*negative*), but also adds density per wafer (*positive*).



### TO ACHIEVE LOWEST COST

- Optimize** layer count with least additional capital investment per generation
- Most bits** per layer (areal density per layer)

## Five Keys to Meeting the Performance Roadmap



## What Remains Predominantly Unchanged Due to More/Less Layers?



Other factors impact performance, reliability and power - not layer count - in fact, adding layers increases complexity and can negatively impact these attributes.

“When evaluating who to align with for designs, don't assume that the supplier with the highest number of layers is leading technology-wise. Getting to the most layers the fastest is far less important than producing a competitive, cost-effective part.”

- **Scott Nelson**,  
Senior Vice President  
and Chief Marketing Officer,  
KIOXIA America, Inc.

## Technology Leadership Defined



The **cost-effective** solution that meets performance and density requirements, regardless of number of layers.

## Exposing the Myth of 3D Technology Leadership

### MYTH

Most layers = Technology Leader

### FACT

The best combination of Performance, Reliability, and Cost = **Technology Leader**

