



Economic Development
Utah Legislature

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SHIFTING DEMAND

Presentation **Outline**

- *Overview of IM Flash Technologies*
- *What we make?*
- *Large and growing market*
- *What matters in our industry*

High-level Bio:

*Grew up in Utah - degrees from BYU and U of U
16 semiconductor career- 3.5 years on Intel's Site
selection team*

Been with the Joint venture since the inception

IM Flash Joint Venture



From 0 to > \$2.5B revenue in
5 years

IM Flash by the Numbers



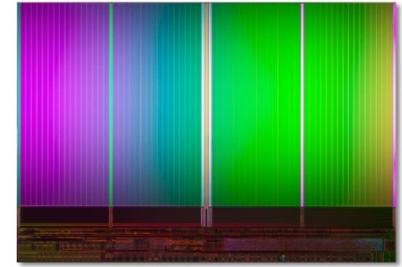
OUR FACILITY

- *2.3 million square feet*
- *40% cleanroom expansion over 5 years*
- *2,100 acres of land*
- *85% of water recycled internally*
- *Meets or exceeds all environmental standards*
- *Member of Clean Utah Program*



OUR PEOPLE

- *1,600 employees*
- *Hiring ~ 100 per year*
- *600 contractors on site*
- *World class technical talent*
- *Industry leading 20nm technology*
- *>\$100M per year in Payroll*



OUR BUSINESS

- *\$2.5 billion in revenue*
- *~ 25% of Utah exports**
- *\$4.5 billion in capital*
- *> 1 billion GB / year*
- *~ 20 % market share*
- *4x technology award winner*

** Excluding metals*

Presentation Outline

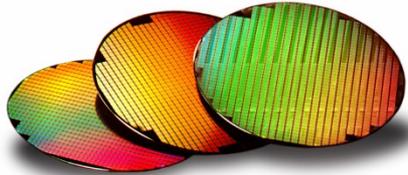
- *Overview of IM Flash Technologies*

- ***What we make?***

- *Large and growing market*
- *What matters in our industry*
- *How can Utah make*

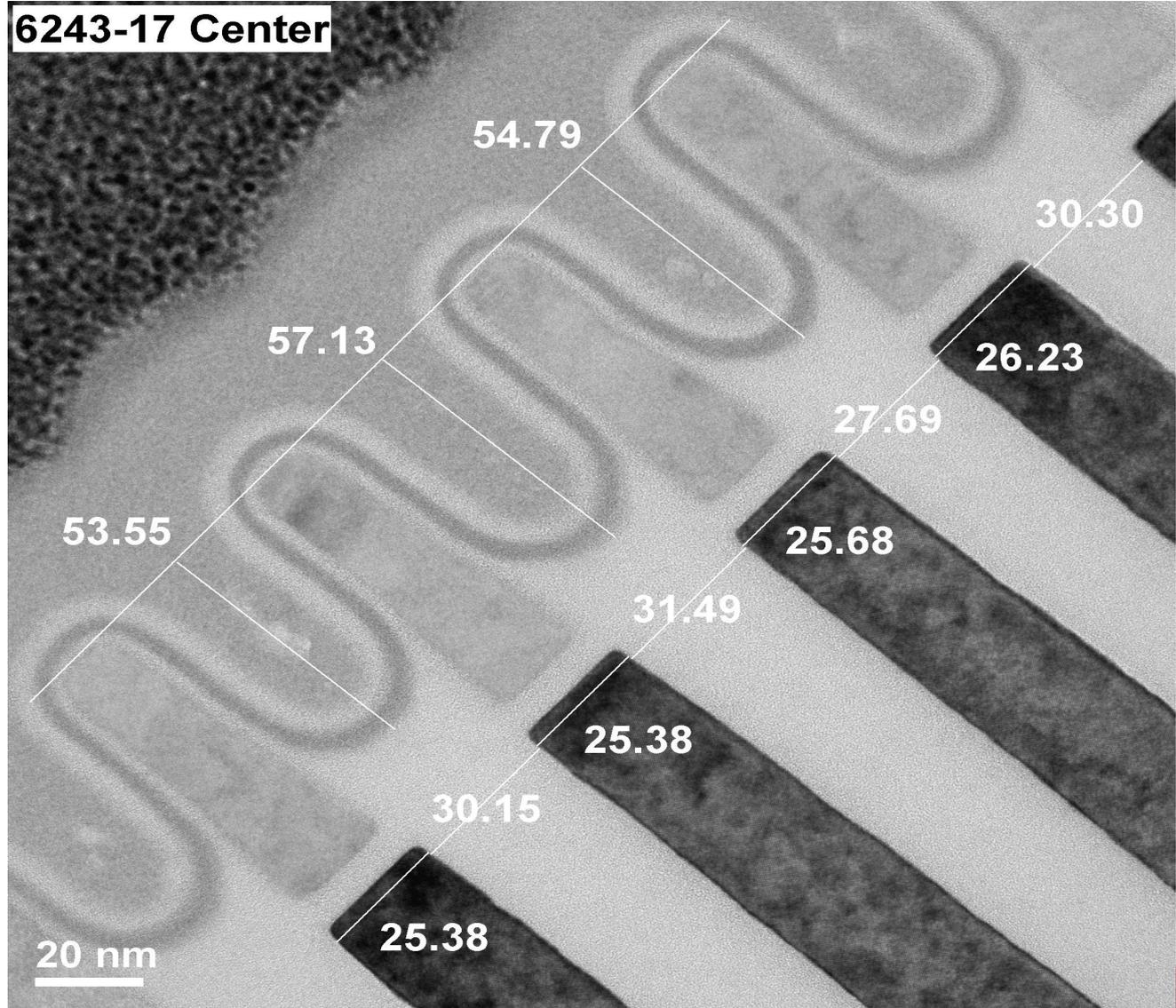
What do we make?

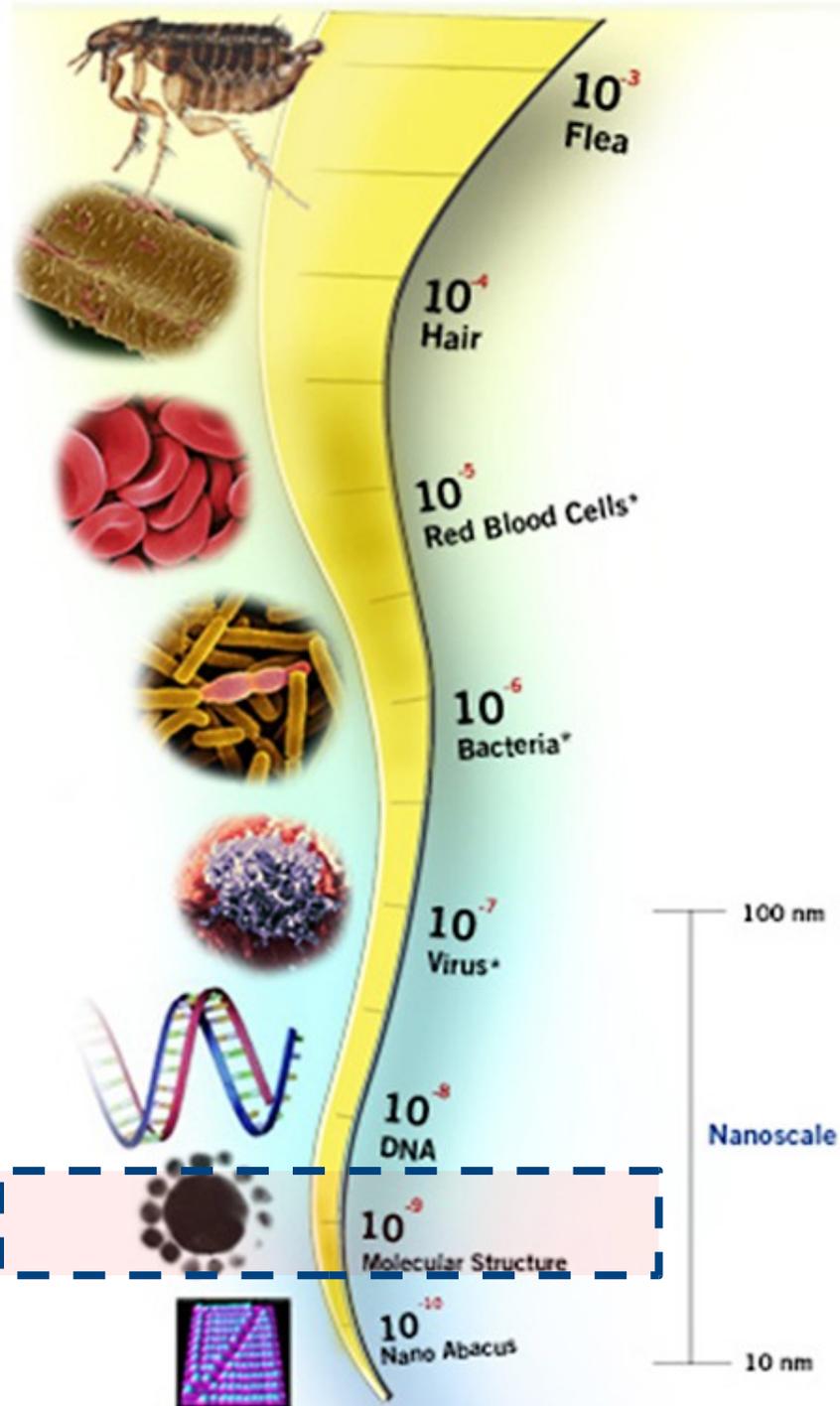
Roughly
200 Billion
cells per
Wafer



Roughly the
size of the
record
album but
would hold
738K songs

6243-17 Center





To make these cells we have to print lines smaller than DNA

Slide - 7 Current line size

In an expensive Fab

How much does it cost to build a modern 300mm semiconductor manufacturing facility (aka. "fab) like the one used by IM Flash?



Shopping Mall: \$25 Million



Cruise Ship: \$0.7 - 1 Billion



Car Plant: \$1 Billion



Offshore Oil Rig: \$1.5 - 2 Billion



300mm Fab: \$4 Billion

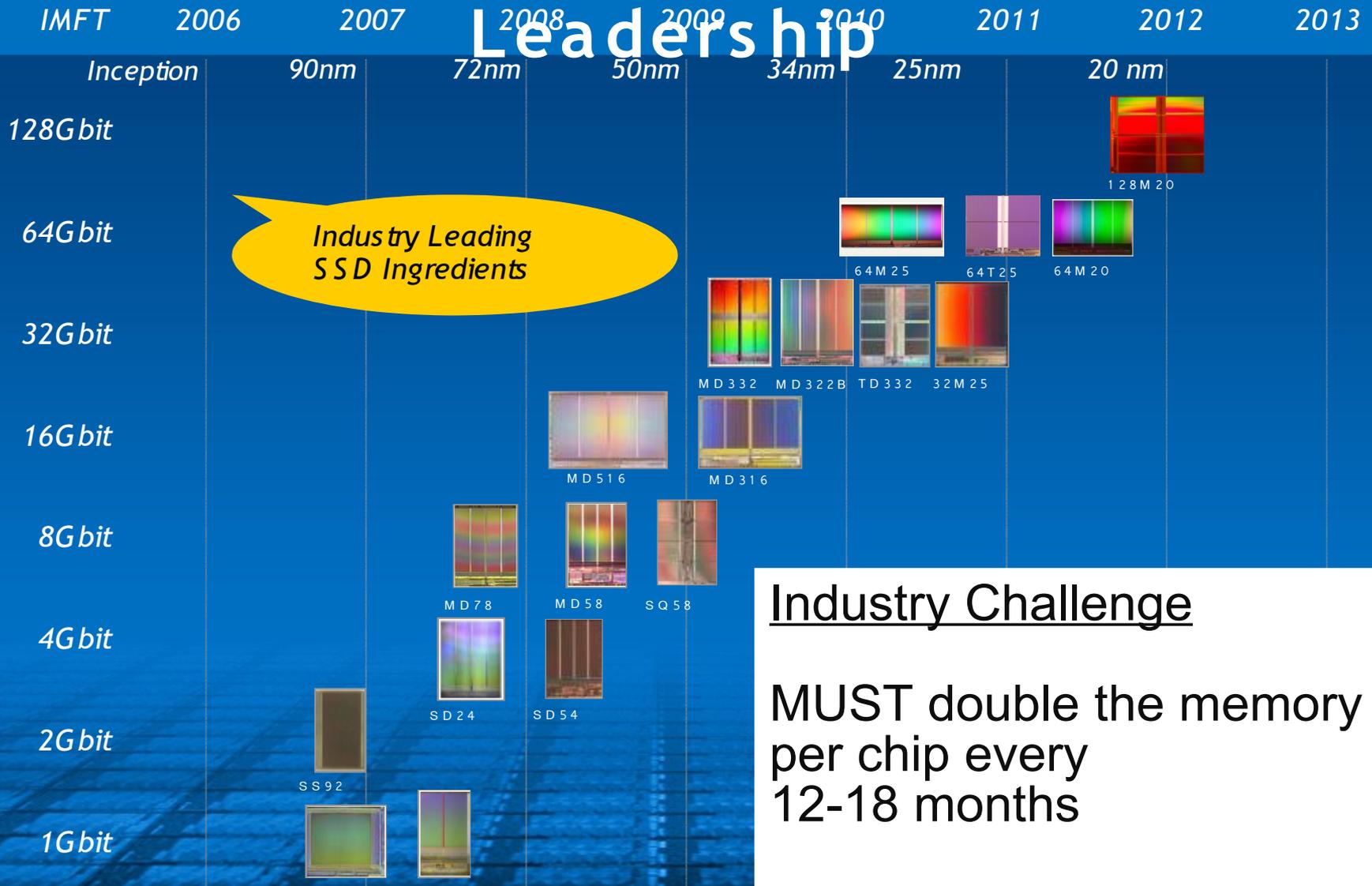


Aircraft Carrier: \$4 - 5 Billion

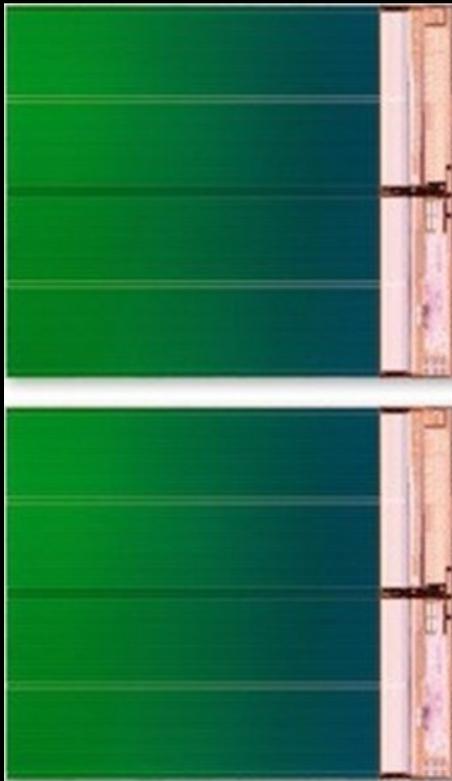
Next generation factories are expected to be \$10 Billion, very few can make this type of investment.

IM Flash NAND Technology

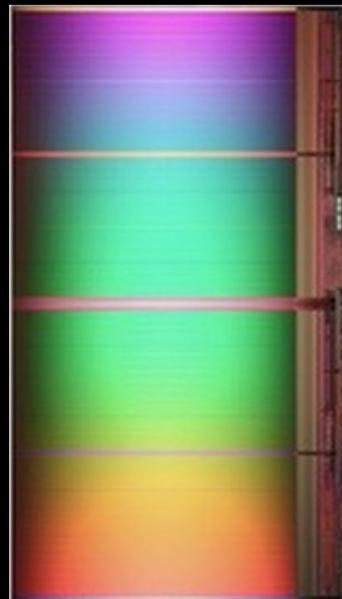
Leadership



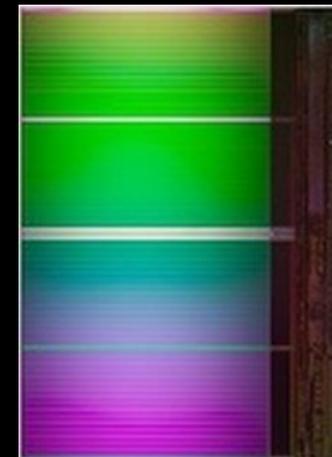
And we are pretty good at it



34nm



25nm



20nm

IM Flash Technology - 3-

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flickr

30.4M Photos
viewed per day

152 TB/day

You Tube
2 Billion Videos
viewed per day

25 PB/day

Internet Traffic = **5x increase** in 5 years
Enterprise Storage = **7x increase** to match that growth

Source: IDC

facebook

8.6B Pages
viewed per day

1.7 PB/day

twitter

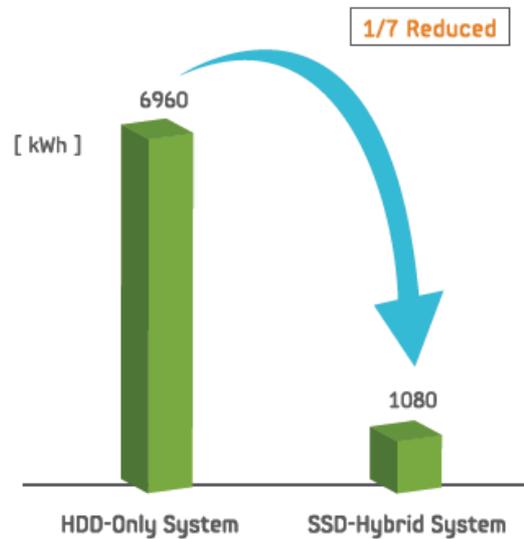
146M Tweets
per day

1.4 TB/day

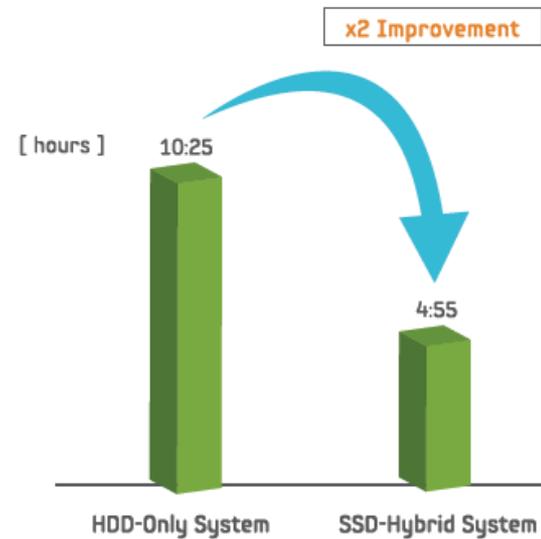
SSD is Green



Power Consumption



Completion Time of DB Workload



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- ***What matters in our industry***
- *The Role of government in our industry*

What matters to our industry?

1. Engineering talent: Average salary 170% of Utah

Historical	Historical	Historical	Projections
<i>Fiscal Hires 2009</i>	<i>Fiscal Hires 2010</i>	<i>Fiscal Hires 2011</i>	<i>Fiscal Hires 2012</i>
184	166	293	~ 100



* Excluding metals

What matters to our

industry?

2. Help in the economics:

- Large Capital investment up front- \$4B and growing
- With large chunks of capacity coming on line at once, prices can fall rapidly
 - When JV was announced price per GB of Memory was \$17.50--- today 40 cents (ave. 37% reduction per year)
- Large and strong competitors who leverage support from home governments:
 - Our biggest competitors are: Samsung (Rev. of ~200B per year) and Toshiba (rev of \$80B per year)

Requires - intense cost reduction work, rapid technology improvements and low variable cost structures to compete

The role of government in our industry?

- Incentives
- Infrastructure: Power and Water consistency and quality
- Consistent Business environment
- Talent Development