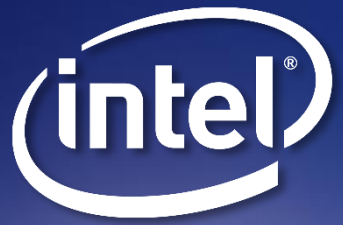


KEYNOTE:
BUILDING A HYBRID SUPPLY CHAIN ECOSYSTEM TO ENABLE GROWTH IN NEW AND VOLATILE MARKETS

SCMS 2017 BERLIN

DR. STEFAN KLUGE, INTEL CORPORATION

BUILDING A HYBRID SUPPLY CHAIN ECOSYSTEM TO ENABLE GROWTH IN NEW AND VOLATILE MARKETS

Dr. Stefan Kluge

Senior Director Strategic Sourcing & Program,
External Silicon Manufacturing, Global Supply Management, Intel

- Ubiquitous computing and communications command a diverse portfolio of electronic components enabling an inspiring user experience
- The art is to connect the analogue environment in a transparent way to the compute power, thus triggering valuable real world actions, relieving and buffering us from the underlying technical complexity
- While, for instance, the “Internet of Things” has begun to deliver results, its implementation is not yet standardized
- The verticals are nascent, volatile in terms of differentiation possibilities, underlying technology needs and customer demand
- Smart and decisive partnering with Foundries and Outsourced Assembly and Test (OSAT) suppliers enables off-the-shelf technology and offers access to flexible capacity to alleviate steep product ramps and development support
- Companies gain time-to-market benefits and flexible revenue support, thus minimizing their financial risk in new and/or volatile product markets
- This capability nicely complements established core businesses running their high-volume, in-house manufacturing.

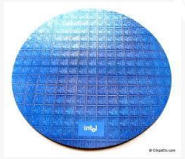
INTEL CORPORATION IN NUMBERS

- Leading Manufacturer of Computer, Networking & Communications Products
- $59.4B (2016) in Annual Revenues - 25+ Consecutive Years of Positive Net Income
- 170 Sites in 66 Countries
- Over 106,000 Employees – 84,600 technical roles
- Named one of the Top Ten Most Valuable Brands in the World by Interbrand
- Ranked #46 Fortune's World's Most Admired Companies
- Ranked among the top 10 supply chain companies for the last 6 years by Gartner

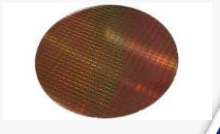
Other names and brands may be claimed as the property of others.

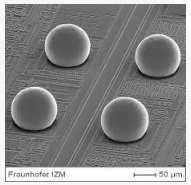
SUPPLY CHAIN HAS TO MANAGE CONSECUTIVE MANUFACTURING STAGES WITH A GLOBAL FOOTPRINT

Demand/ Supply Match



Wafer Fab
App. 400 process steps
6-10wks





BUMP/ TEST
1 wk

Semi finished good stocking point

Assembly
1-3 wks

Final Test
1 wk

Warehouse finished good stocking point

Delivery

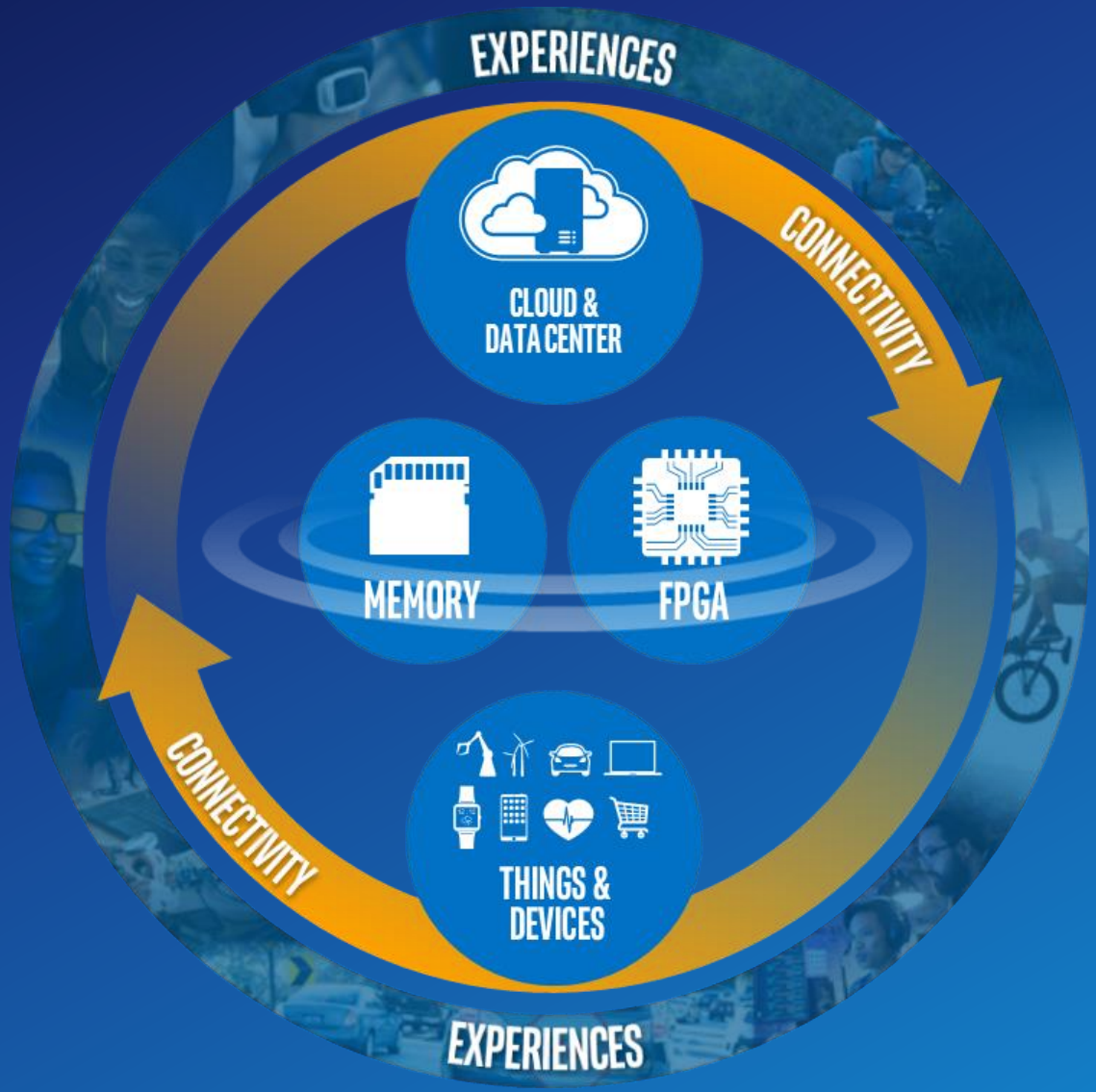
2-4 month

INTEL IS EVOLVING.

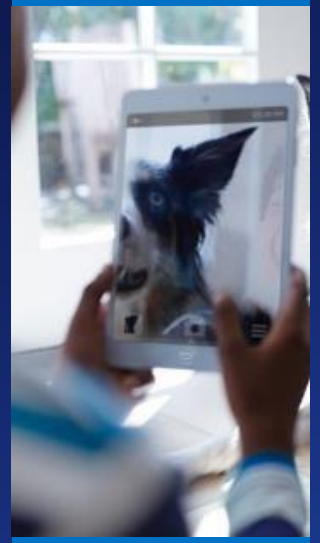
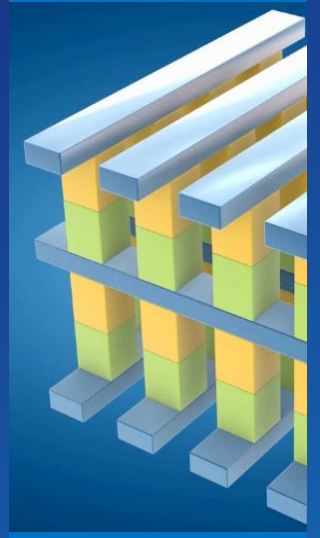
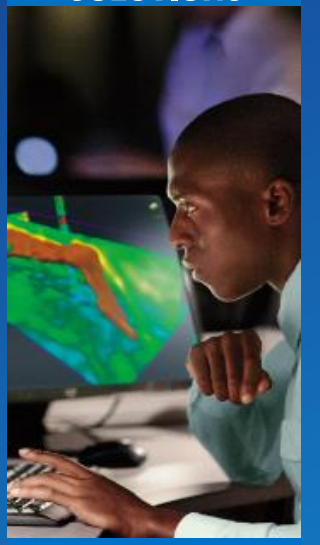
To a company that powers
the data center
and billions of smart,
connected devices

INTEL'S VISION:

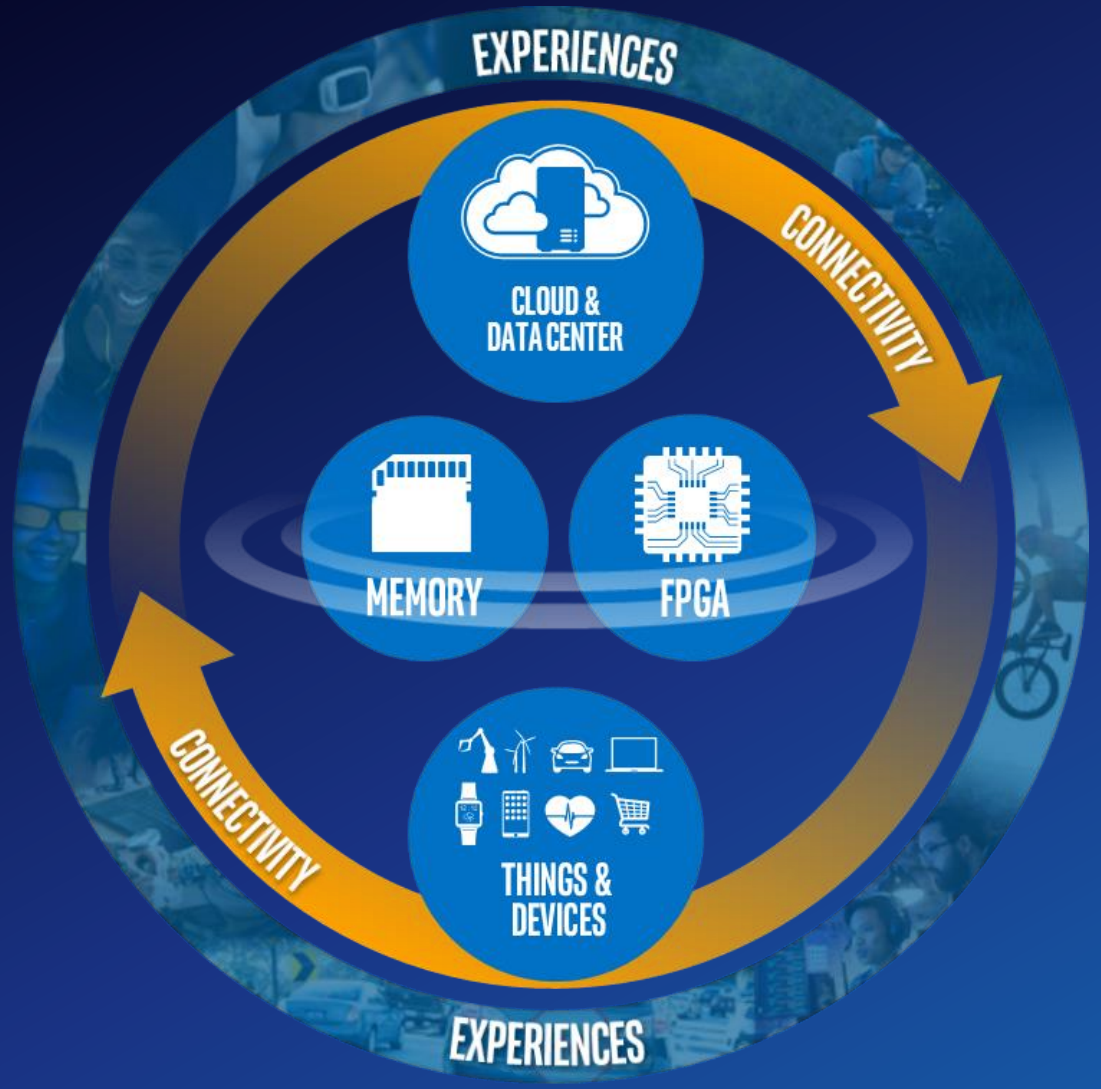
If it's **smart** and **connected**,
it's **best** with **Intel**.



INTEL DELIVERS END TO END SOLUTIONS

CLIENT	IOT	DATA CENTER	NEW TECHNOLOGIES	MEMORY SOLUTIONS	SECURITY	PROGRAMMABLE SOLUTIONS
						

THE VIRTUOUS CYCLE:
MARKETS OF OPPORTUNITY
A PRODUCT EXPLOSION



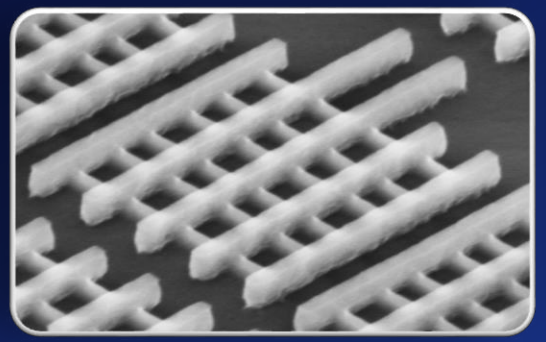
NEW MARKET COMPLIANCE	PRODUCT COMPLEXITY	DEAL-DRIVEN DEMAND
40x	**>20x**	**3x** upsides & **90%** downsides
Unique manufacturing flow paths	BOMs at Assembly	On a single customer deal

Our Supply Chain Enables us to Win

Customized Compute Delivers Customer Value

SUPPLY CHAIN DELIVERING INTEL'S VISION

Technology Leadership



Continuing to extend our leadership through innovation

Manufacturing Scale

Making significant investments and have the scale to deliver

Agile and Responsive Supply Chain

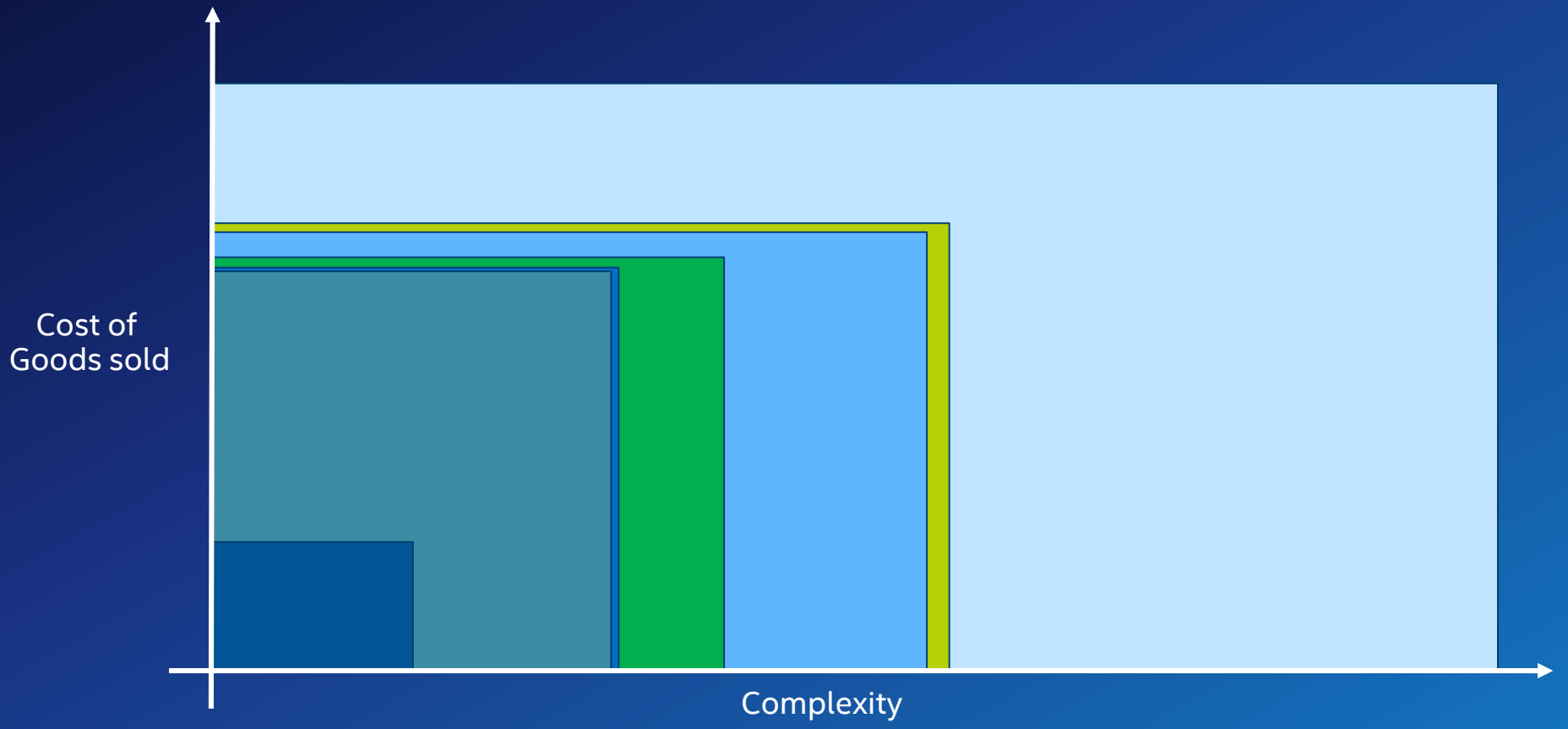
A world-class Supply Chain delivering what our customers want

Social Responsibility

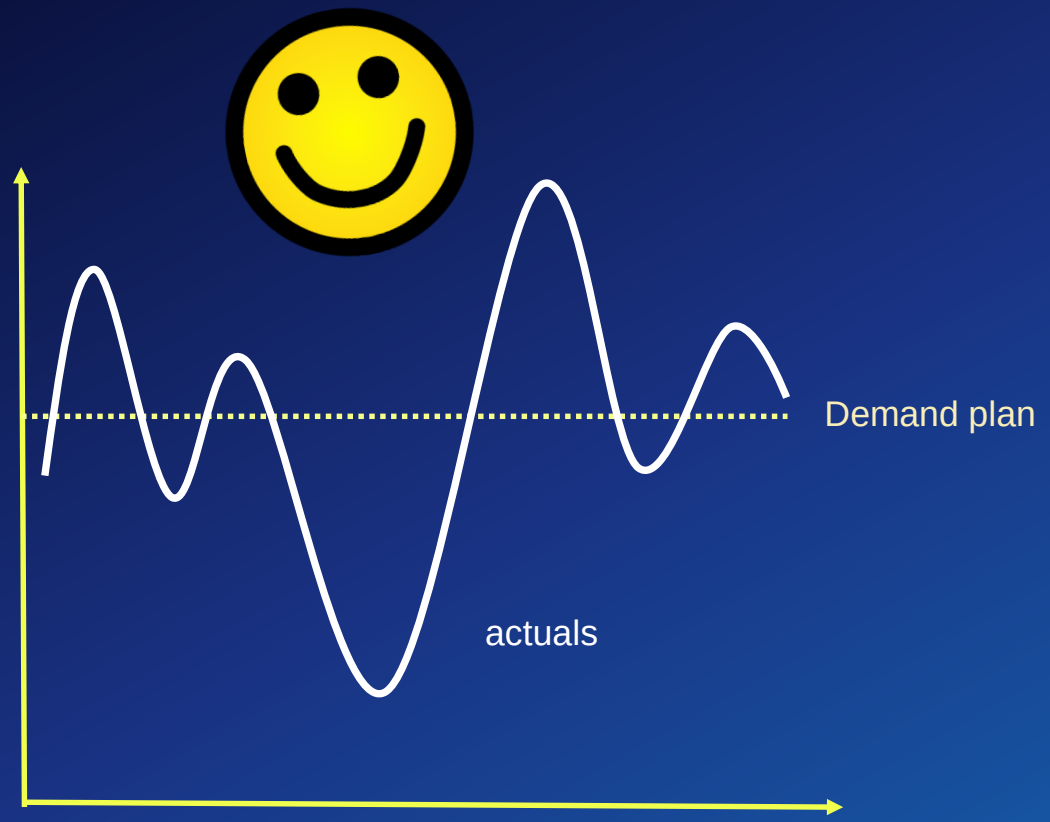
Caring for the planet and its people

These 4 themes continue to be integral pieces that shape our SC strategy

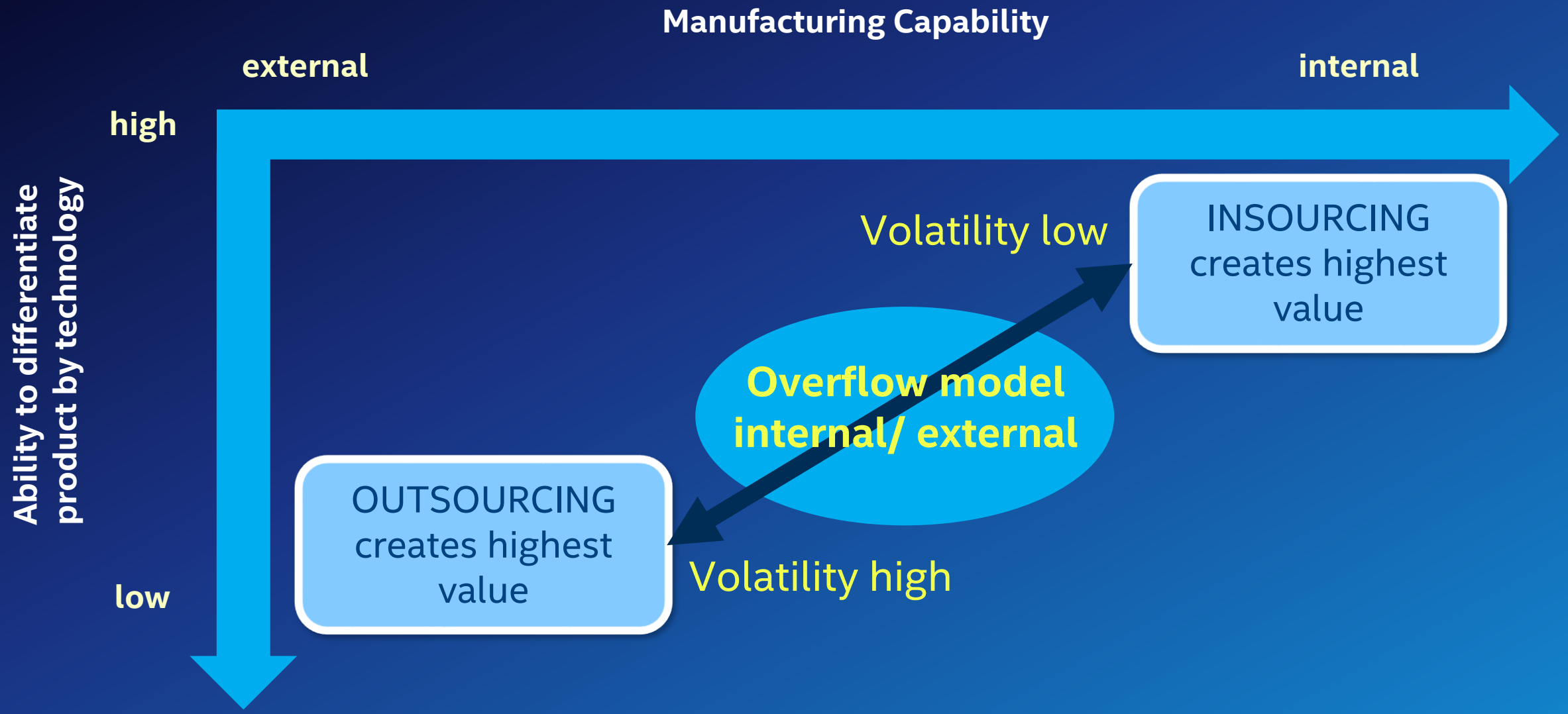
VOLUME AND COMPLEXITY OF EXTERNAL SUPPLY CHAIN INCREASES BY M&A, ACQUIRED COMPANIES ARE USUALLY FABLESS



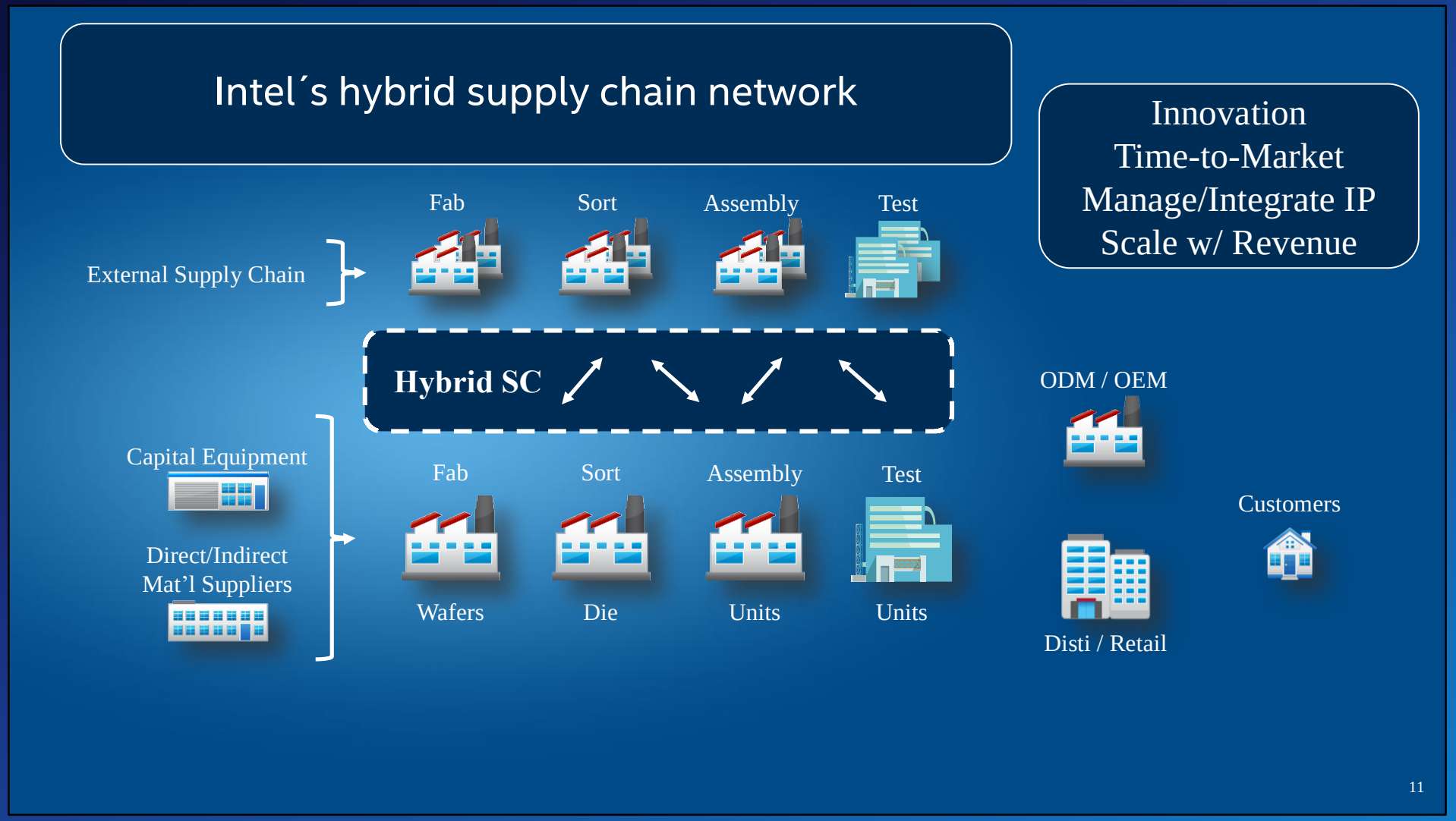
VOLATILITY TO BE MANAGED…



PRODUCT AND MARKET NEEDS ARE DRIVING MAKE / BUY



OUR SUPPLY CHAIN NETWORK IS GETTING MORE COMPLEX



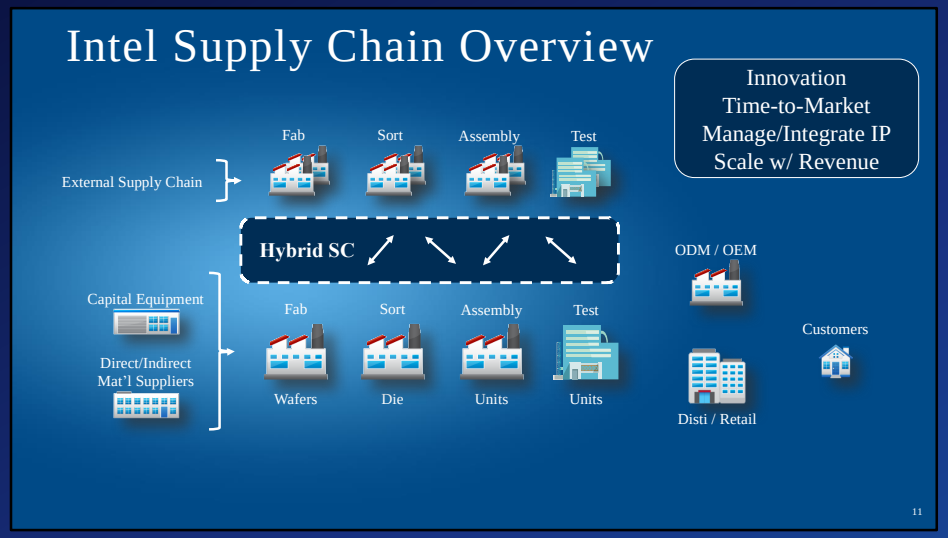
ENABLING A PRODUCT EXPLOSION FOR NEW MARKETS

RELENTLESS DIRECTED SUPPLY CHAIN IMPROVEMENT

Integrated our Supply Network

One Platform

Internal & External Solvers



Dynamic execution enabled by multi-tier visibility

Decisions in Minutes

2016

WE EXECUTED

- 30M units per quarter optimized across the new network
- Integrated Data Platform launched
- Internal and External Business Planning & Platform Analytics

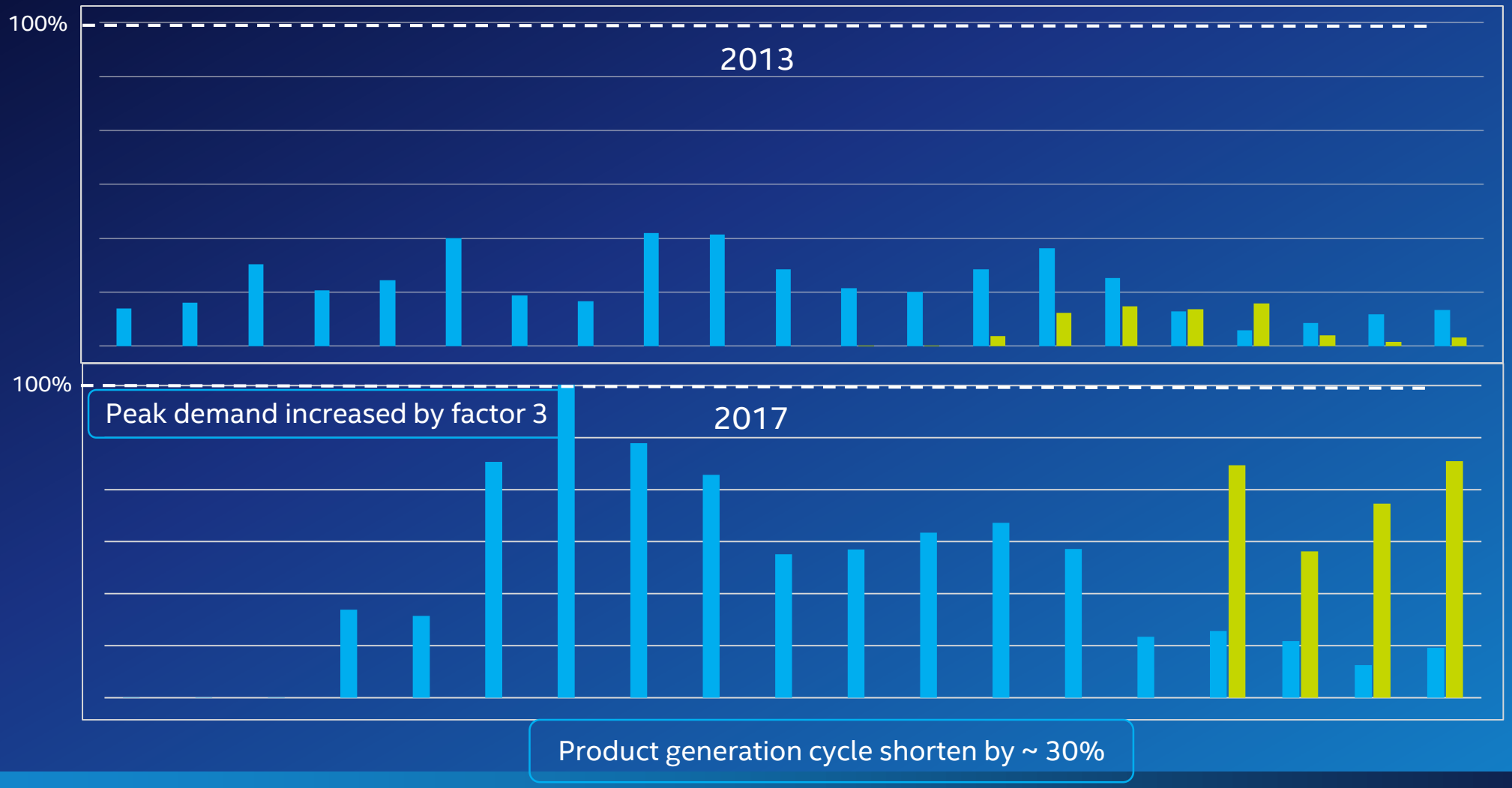
OVER $XXXM IN MARGIN IMPACT

MANUFACTURING: SCALE IS BIG

> 70 MANUFACTURING SITES* IN 17 COUNTRIES

*hybrid supply chain

PRODUCT CYCLES BECOMING SHORTER AND RAMPS STEEPER



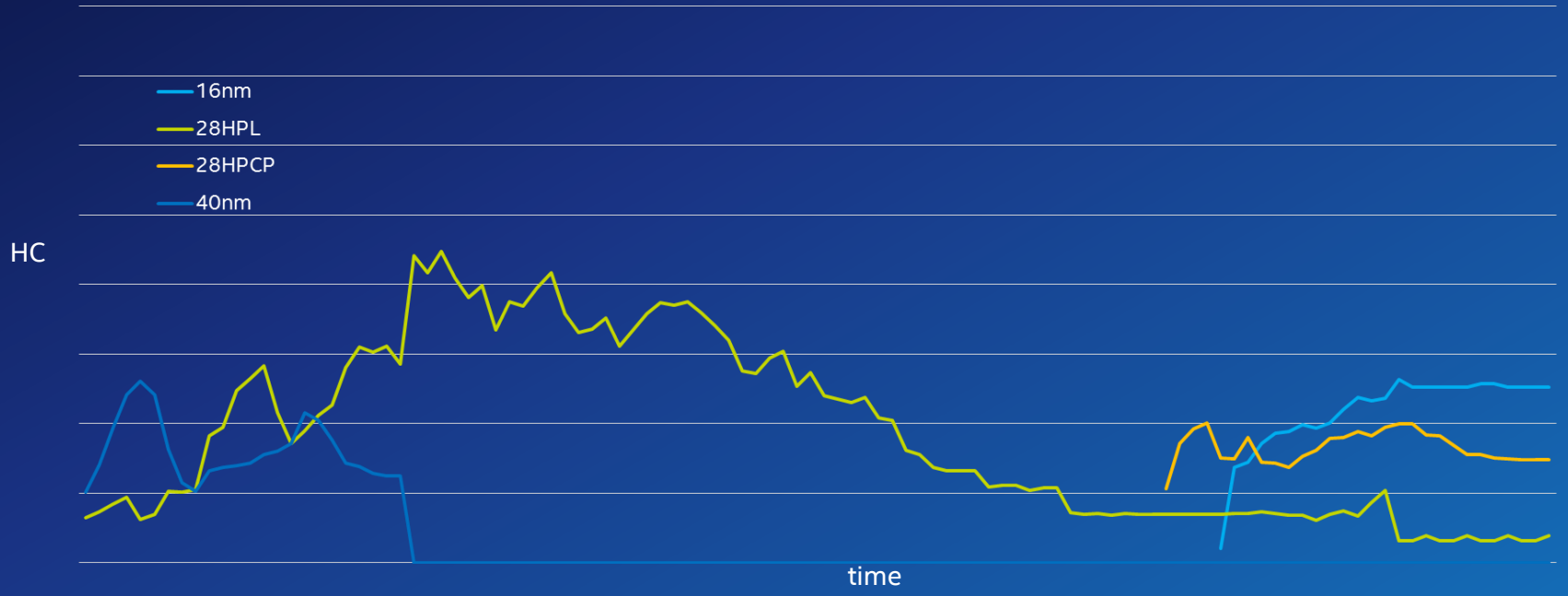
WE DRIVE TIME TO MARKET BY…

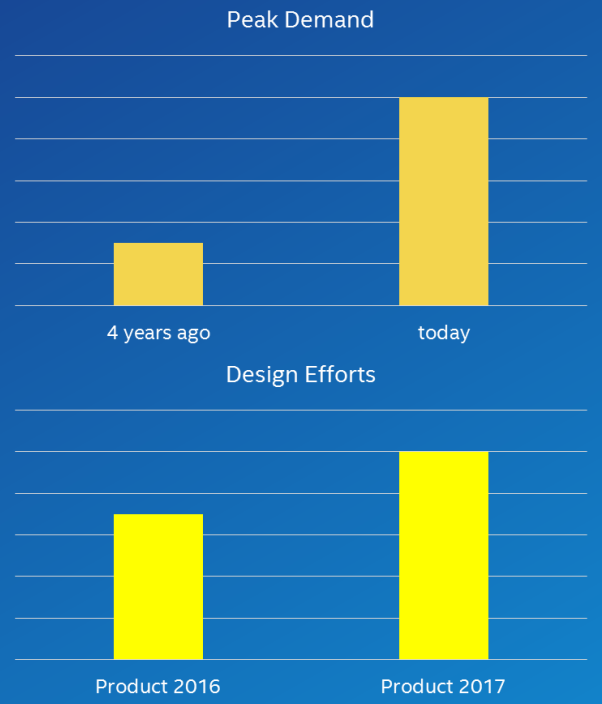
We have implemented a partnership with our suppliers to keep short design schedules despite increasing complexity and steeper ramps by implementing a design chain from path finding to high volume manufacturing with shared responsibilities.

We are using standard technologies to participate from world wide available capability/ capacity

We are using a hybrid manufacturing network combining internal and external advantages

We are multisourcing high volume products @ all manufacturing stages to enable steep ramps @ lowest costs





EXTERNAL/ HYBRID SILICON SUPPLY CHAIN KPI COCKPIT

Cost/ Gross Margin

Tier 2 KPI	Performance against Target	Critical incidents
Affordability (quarterly)		
Pipeline Inventory		

Quality

Tier 2 KPI	Performance against Target	Critical incidents
Excursions		
Health of Supplier QO		

Sustainability

Tier 2 KPI	Performance against Target	Critical incidents
Supplier Requirement Completion		
Supplier Financial Sustainability		

Availability/ Revenue

Tier 2 KPI	Performance against Target	Critical incidents
Supplier Delivery Reliability (DR)/ Performance (DP)		
Committed Delivery Dock (CDD)		
Perfect Order (PO)		
Throughput Time		
Forecast Accuracy		
Forecast Execution (PRF vs. SL)		

Technology

Tier 2 KPI	Performance against Target	Critical incidents
Yield		
Sample Delivery Reliability		

KPI on target, no issues

KPI slightly off target
issues – but understood/ no customer impact

KPI significantly off target
issues – not understood/ customer impact

KEY CHALLENGES EXPERIENCED

- Link the global hybrid manufacturing network by processes and IT systems seamlessly to the design-chain and supply chain of the corporation
- A hybrid supply chain has to bridge numerous dimensions: business divisions, market segments, technologies, manufacturing sites, suppliers, R&D, planning, …
- Product design efforts are steadily increasing
- Ensure capability/ capacity availability in volatile markets
- Supplier portfolio tends to get out of control along with increasing supply chain complexity, number of products; M&As cause stepfunction increase

KEY TAKEAWAYS TO SHARE

- Establish multi-sourcing to ensure capacity @ lowest costs by leveraging the resources of the hybrid supply chain smartly
- Products differentiated more by design/ functionality than manufacturing technology are suitable candidates to use standard technologies available in the supplier base to participate from a world wide capacity pool
- Close collaboration at relevant management/ functional levels with suppliers
  - to enable agile response on demand changes, e.g. upsides in product ramps
  - to tailor the innovation support by suppliers as required
- A hybrid supply chain/ manufacturing network is well suited for M&A integration

DELIVERING INTEL'S FUTURE THROUGH THE WORLD'S BEST SUPPLY CHAIN

The World is Changing…

We are Orchestrating and Transforming our Supply Chain to Enable Intel's Virtuous Cycle of Growth

intel