

# Challenges and Opportunities Ahead... Are we ready for the future digital world?

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# We Have Come a Long Way in 40 Years!

Capability

High

Low

'75

'80

'85

'90

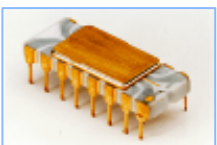
'95

'00

'05

'10

16 Lead  
CER DIP



QFP  
iQUAD (IV) 160LD  
28MM X 28MM



CPGA



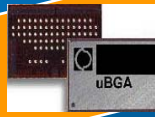
C-MCM



FC-BGA



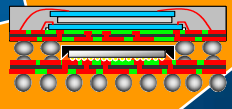
Chip Scale Package



uBGA



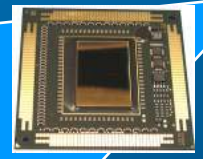
Stack Die



Stack Package



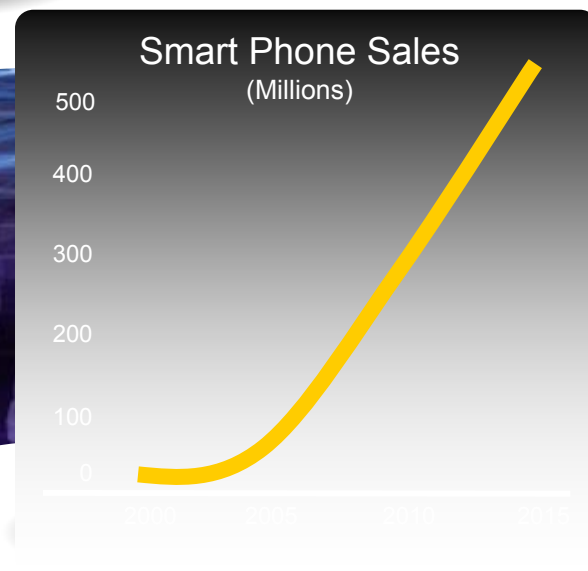
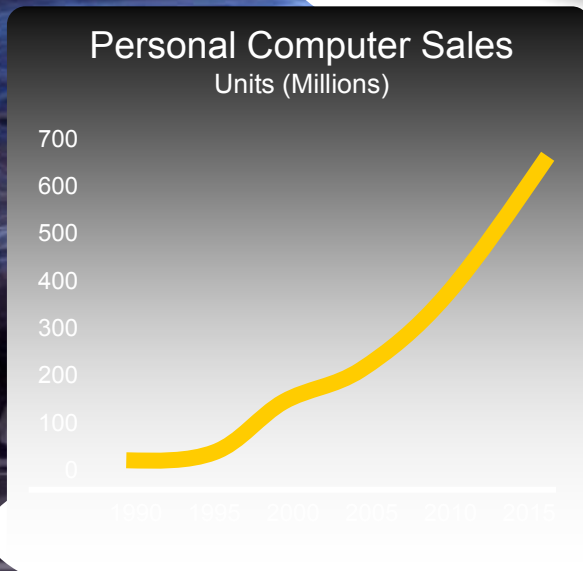
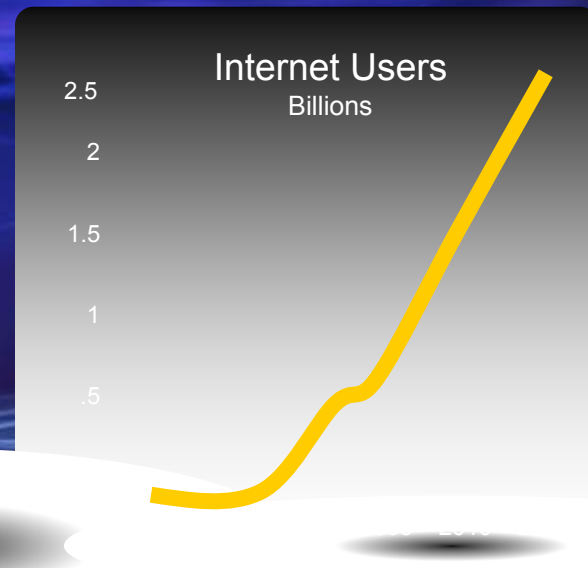
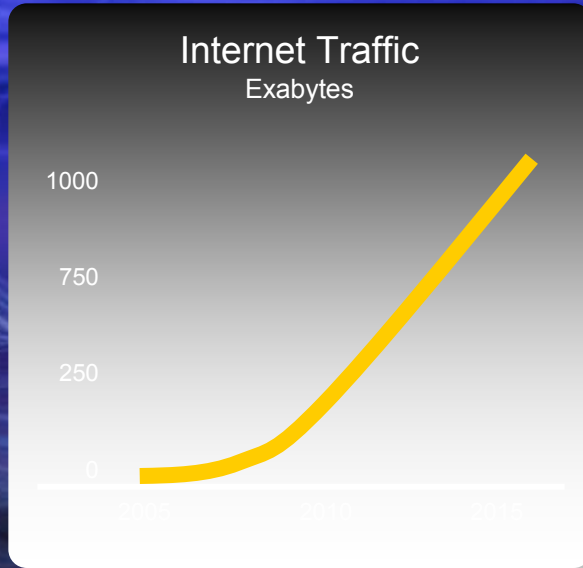
High Density  
Flip Chip MCP



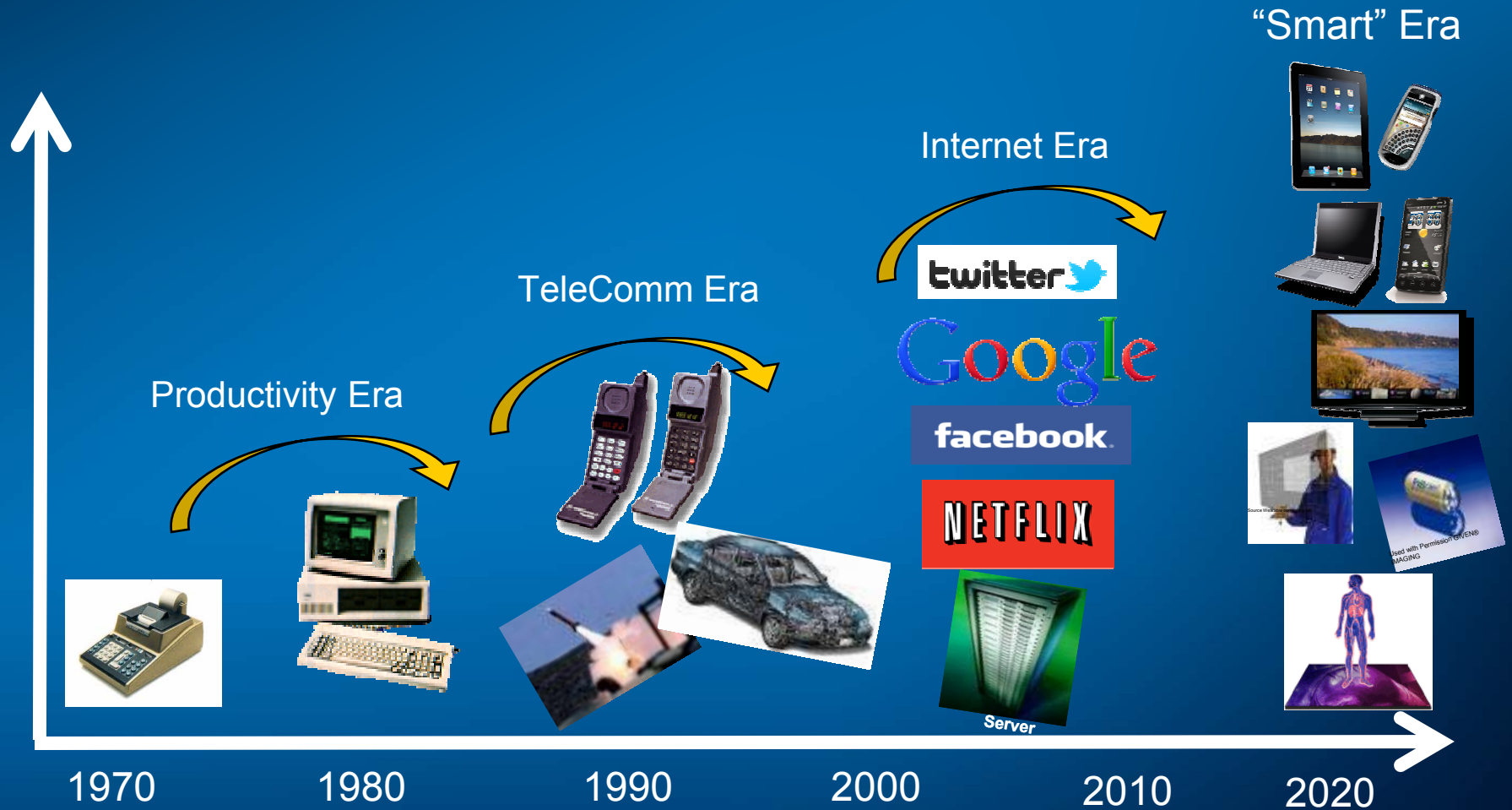
Low Cost, Size



# Digital Growth Worldwide



# Explosion in Types of Devices & Usages



New Era of Smart Devices & Usage Models

# Smarter Products are More Complex



Technologies and Form Factors are Rapidly Changing and Evolving

# Putting 2015 into Perspective



More People

1 Billion More Internet Users



More Devices

10 Billion More Connected Devices



Doing More Things

8x More Internet Traffic and 16x More Storage

**More People Doing More Things with More Types of Devices**



# Quality Issues Can have an Impact

## iPhone 4G: So many problems and no solutions

July 18, 2010 by [D. Burton](#)



## Problems grow TOYOTA

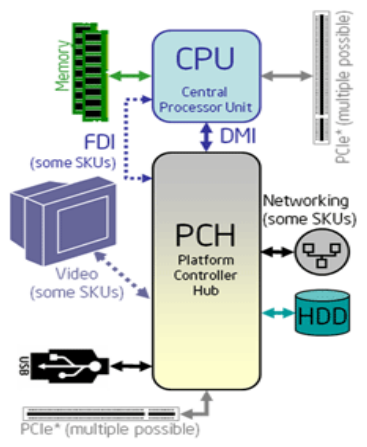
Toyota has recalled more than 8.5 million vehicles in recent months because of growing complaints about safety issues.

- '06 Sept. National Highway Traffic Safety Administration (NHTSA) opens investigation on reports of "surging" in Camrys; closes investigation a year later
- '07 March Toyota receives reports about accelerator pedal glitch in Tundra truck
- Sept. Toyota recalls some Lexus and Camry models to secure floor mat that could trap second seat passenger
- '10 Jan 21 Toyota recalls 2.3 million vehicles to correct separate problems that could cause gas pedal to stick
- Jan 26 Toyota suspends sales; halts production of eight models due to gas pedal recall; the next day, adds 1.1 million to floor mat recall
- Feb. 1 Toyota says it had developed fix for sticking gas pedal; begins shipping

## How bad could BP oil spill get for the Gulf & the nation? June 9, 2010 USA Today



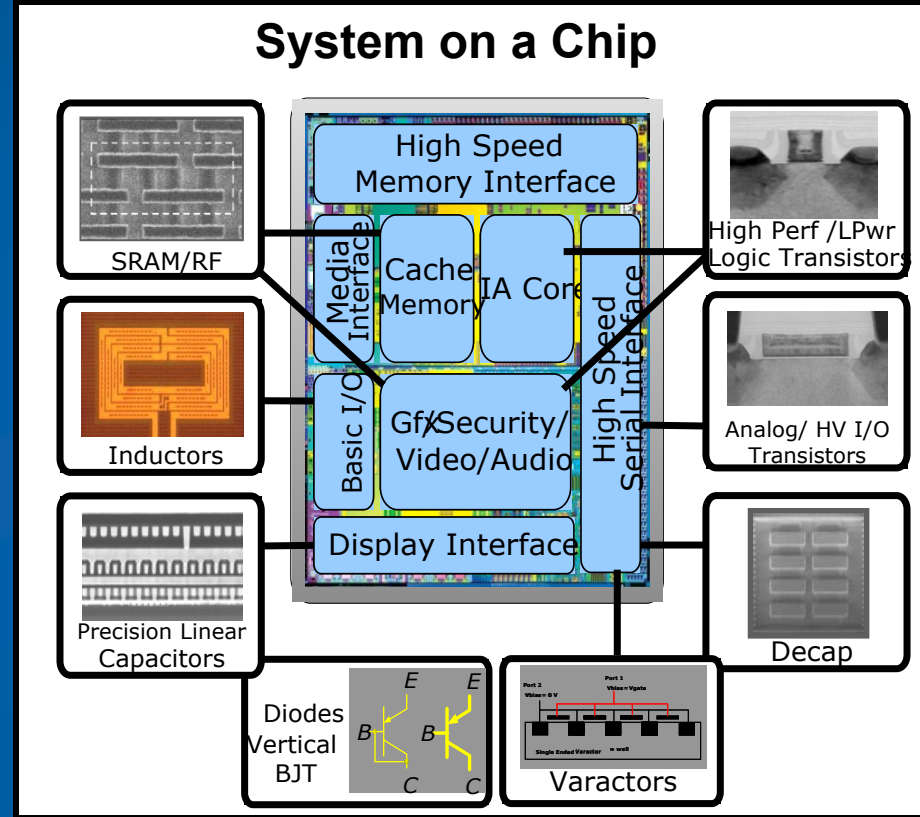
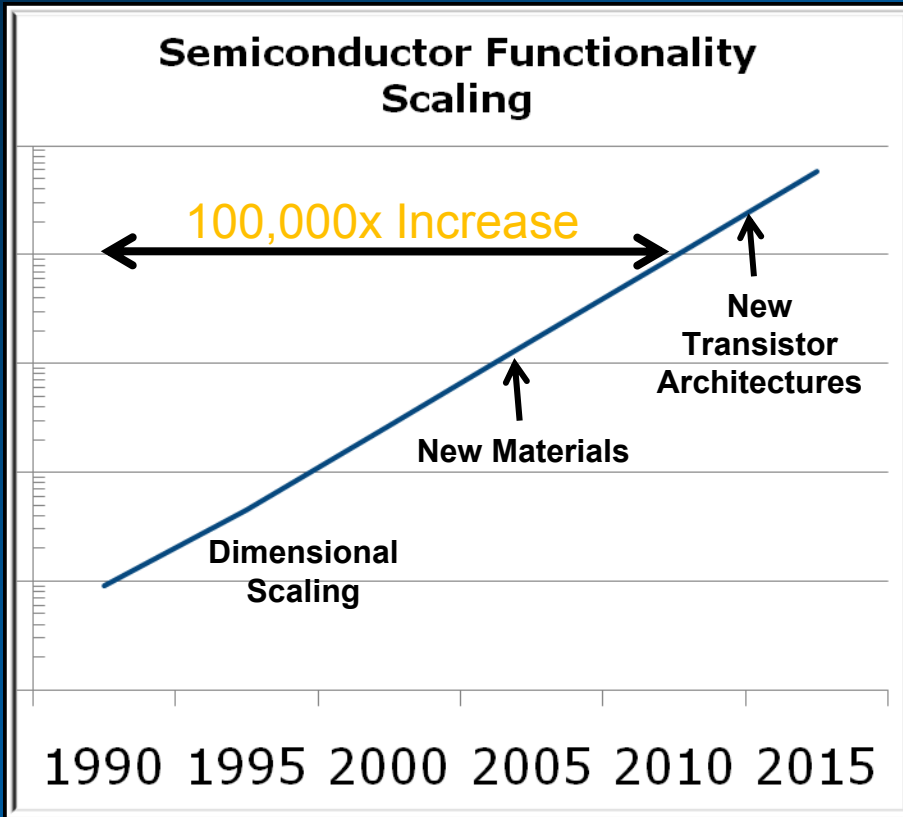
## Our Own Issue



## Intel® 6 Series Chipset Issue



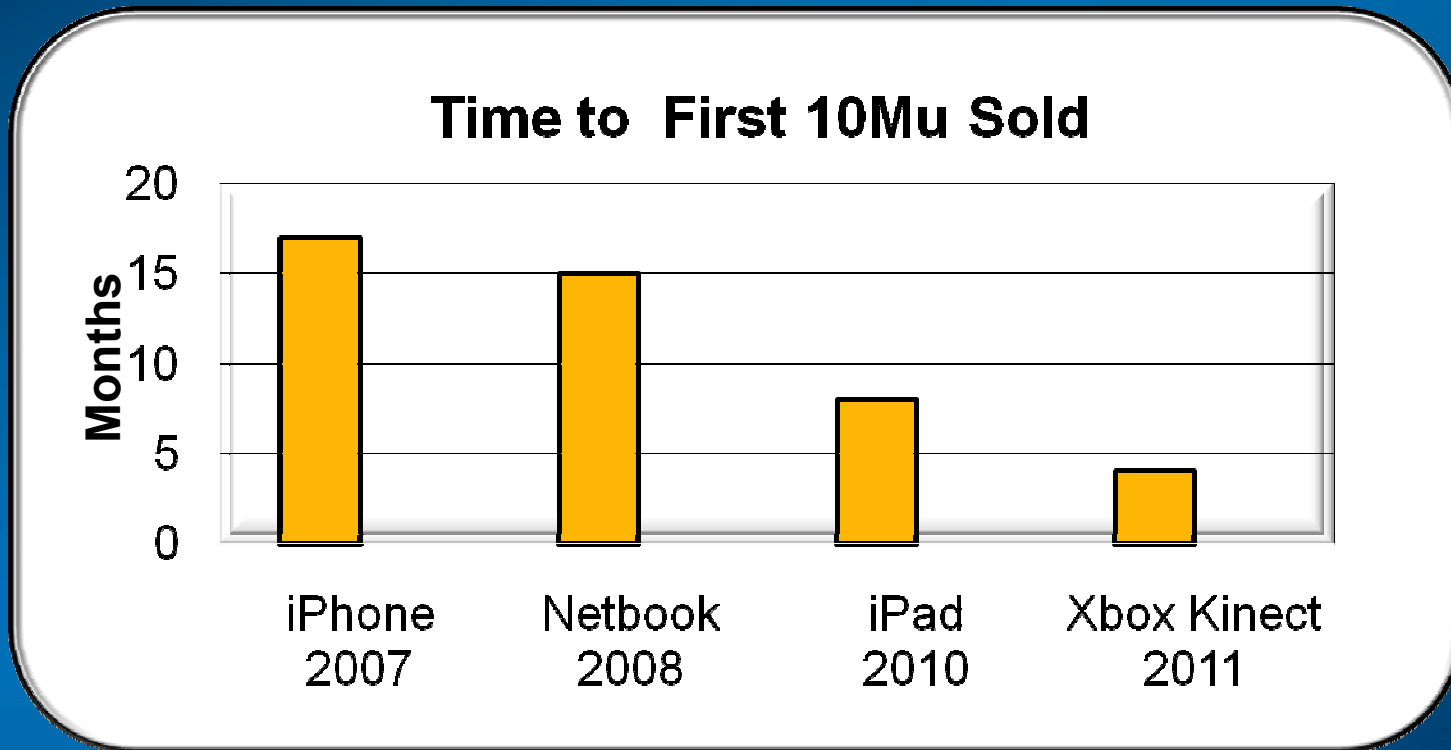
# Increasing Product & Technology Complexity



Maintaining Quality & Reliability in Face of Increasing Diversity of Materials, Architectures, Circuits and Technology is Critical



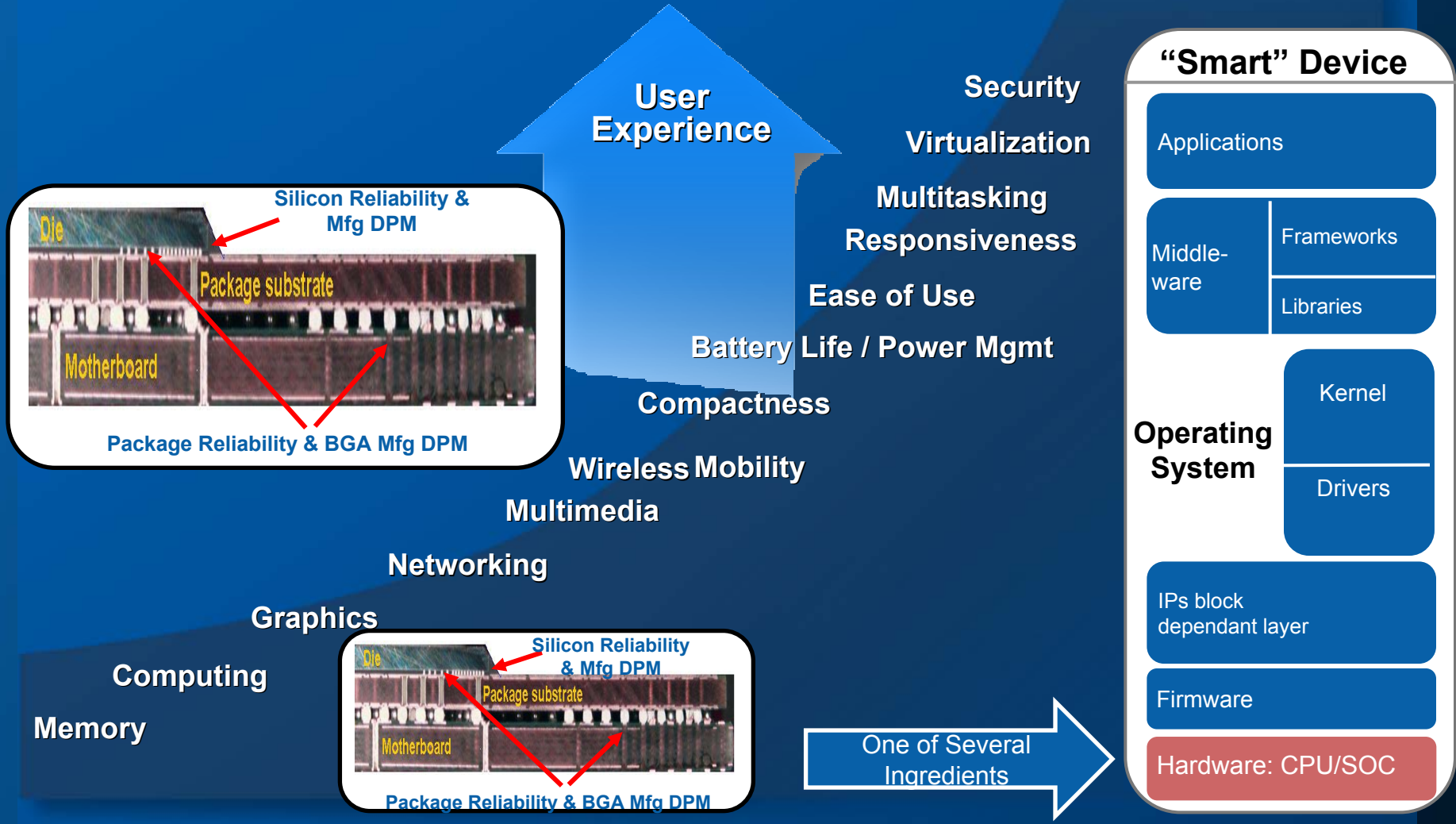
# Rapid Ramp of New Technology



Robust Design and Manufacturing Defect Detection and Containment Systems are Critical



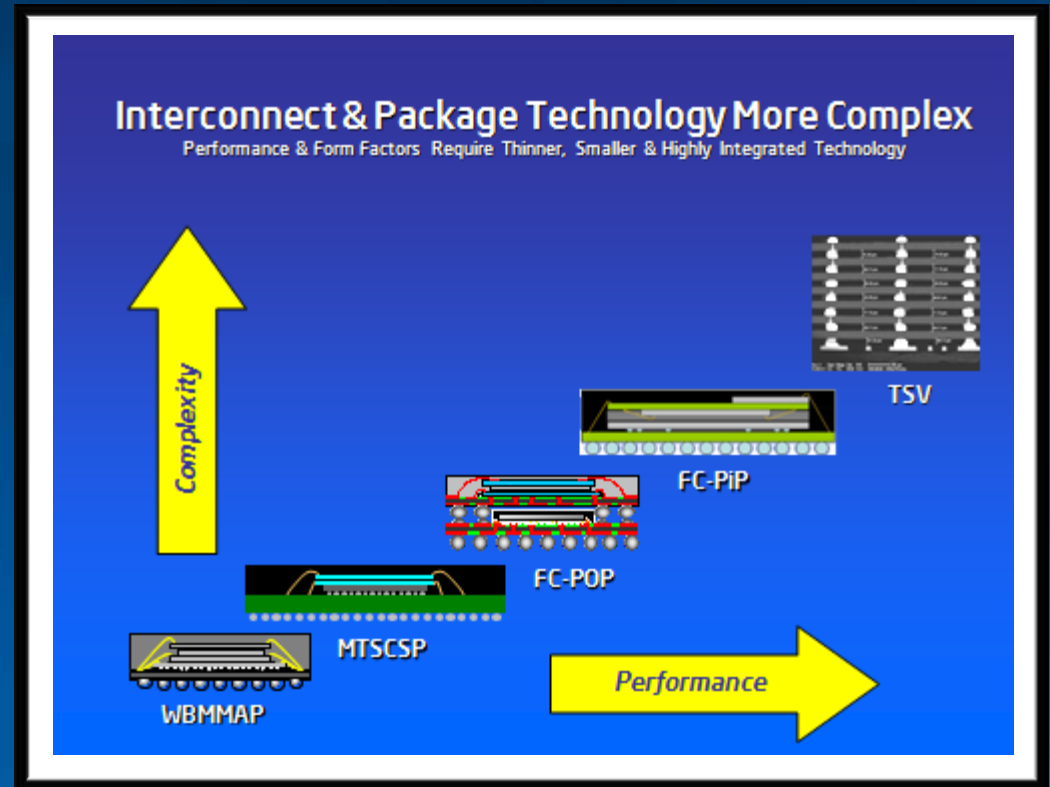
# Is the User Experience a Reflection of Quality?



Products Now Require a Higher Level of Integration to Ensure “Quality & Reliability” of Consumer Experience



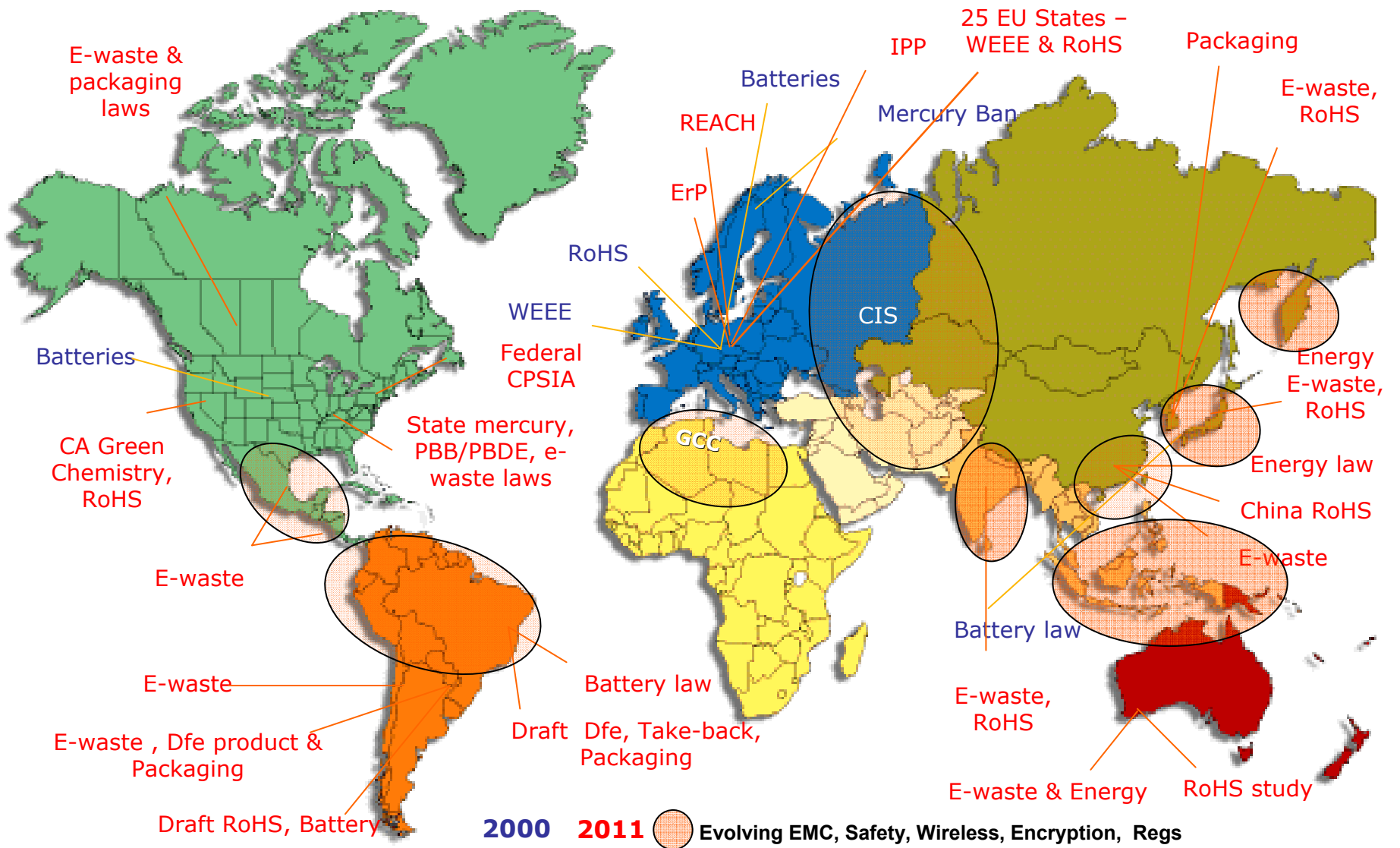
# Form Factors and Usage Models will Continue to Evolve Rapidly and Impact Q&R Requirements



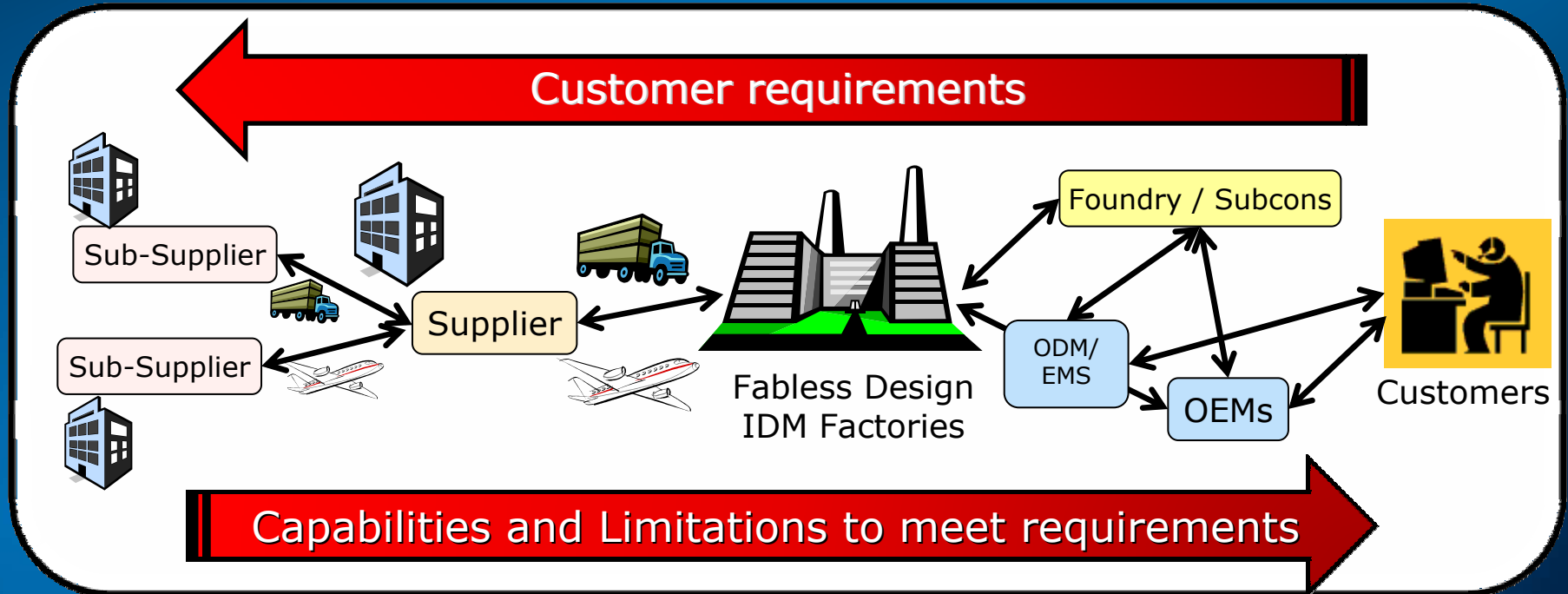
Must Increase Confidence in Modeling Capabilities to Predict the Quality & Reliability Performance of More Complex Form Factor Products



# Regulatory Landscape is Changing Rapidly

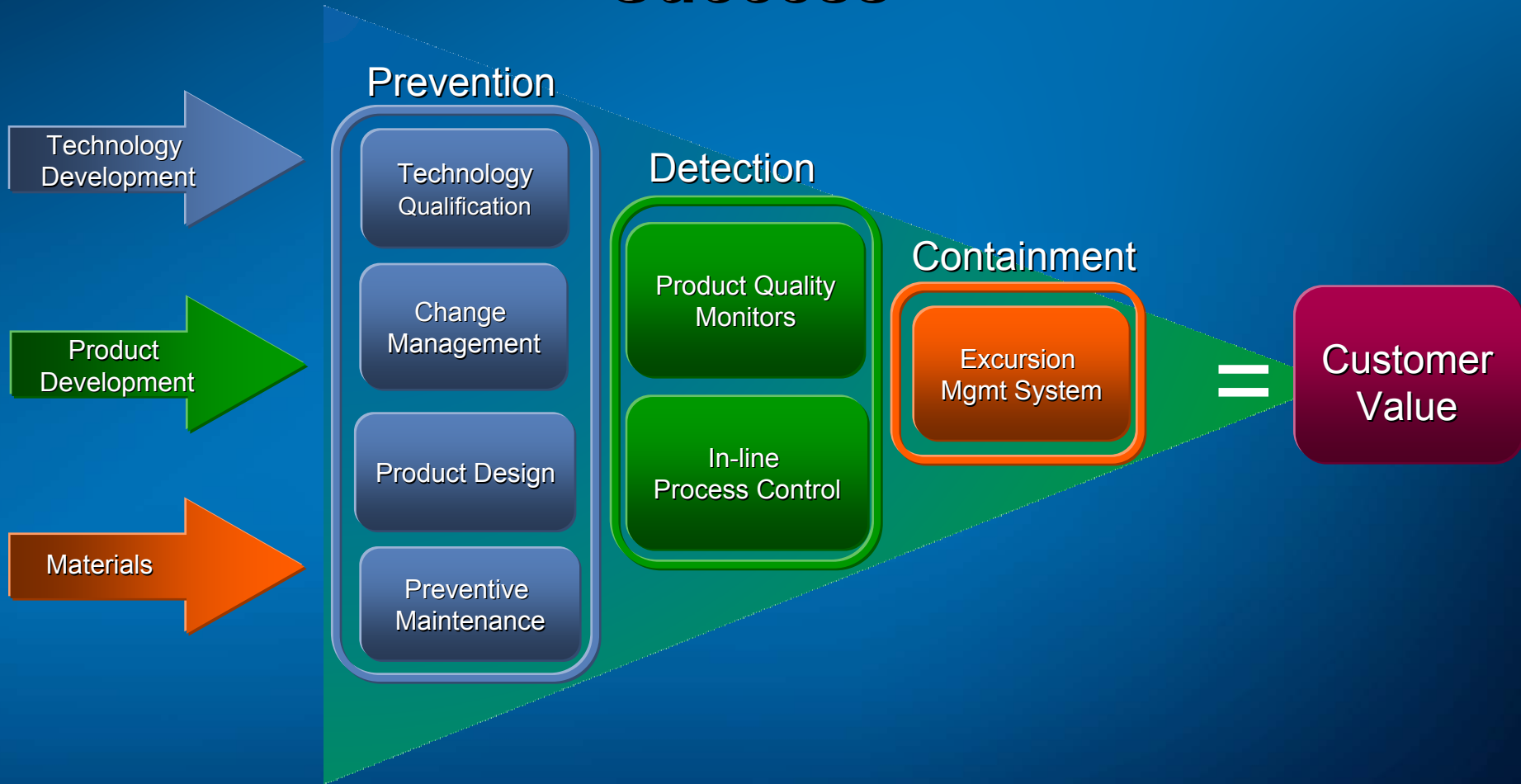


# Our Ecosystem is More Interdependent & Complex than Ever



Achieving our Quality System Goals by Ensuring High Quality Across the Supply Chain

# Quality Systems are the Foundation of Our Success



Robust Quality Systems Must Include All Three Elements to be Successful  
But Focus Must Shift from Containment to Prevention Systems



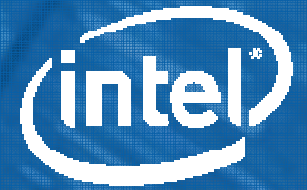
# New Quality Imperatives

- Adopt a Systems Perspective to Quality & Reliability
- Predictive Design & Modeling Capabilities are becoming more important to Prevent Quality Issues from Occurring
- Products Require a Higher Level of Integration to Ensure “Quality & Reliability” of Consumer Experience
  - Increasing Complexity Requires that we Fully Understand the Material & Processes across the Supply Chain

# Summary

- More People Doing More Things with More Devices... Exciting New Era with many opportunities to innovate
- Quality Systems must evolve to meet the new market needs or risk failure
- New approaches and capabilities are a “Must Have” to Survive
- Are you ready for the future digital world?





**Questions?**



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