

Productivity and Security in the Age of IoT

University of Maryland

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Synopsys: Silicon to Software

#1 in EDA

#2 in IP

#15 in Software

11,203 SYNOPSYS®
Employees



7,026
R&D Engineers

417M

Lines of code
in SYNOPSYS® products

\$2.423B FY16
Revenue

Synopsys USB Leadership

>3,000
Design Wins with Billions of Units Shipped



500
Customer Logos

IoT

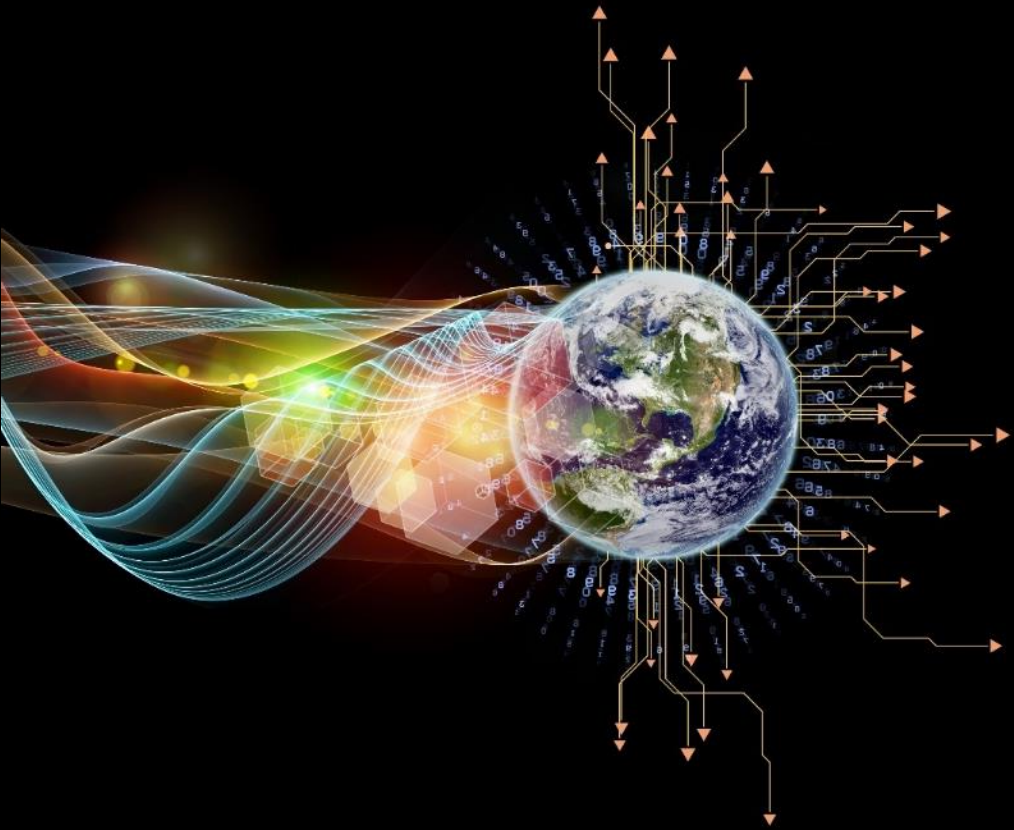


SEARCH

ANALYSIS

ANALYSIS

Innovation and Opportunity in Technology



Hard Work

Team

Passion

Moore's Law Continues

TSMC TALK ABOUT THE PROCESS OF 7 NM ALREADY IN 2017



TSMC announces first 16nm FinFET results, unveils 10nm roadmap

China's SMIC, [Q'comm](#), Huawei, Imec in 14nm Deal

Globalfoundries Begins Ramping 14nm Production For Customers

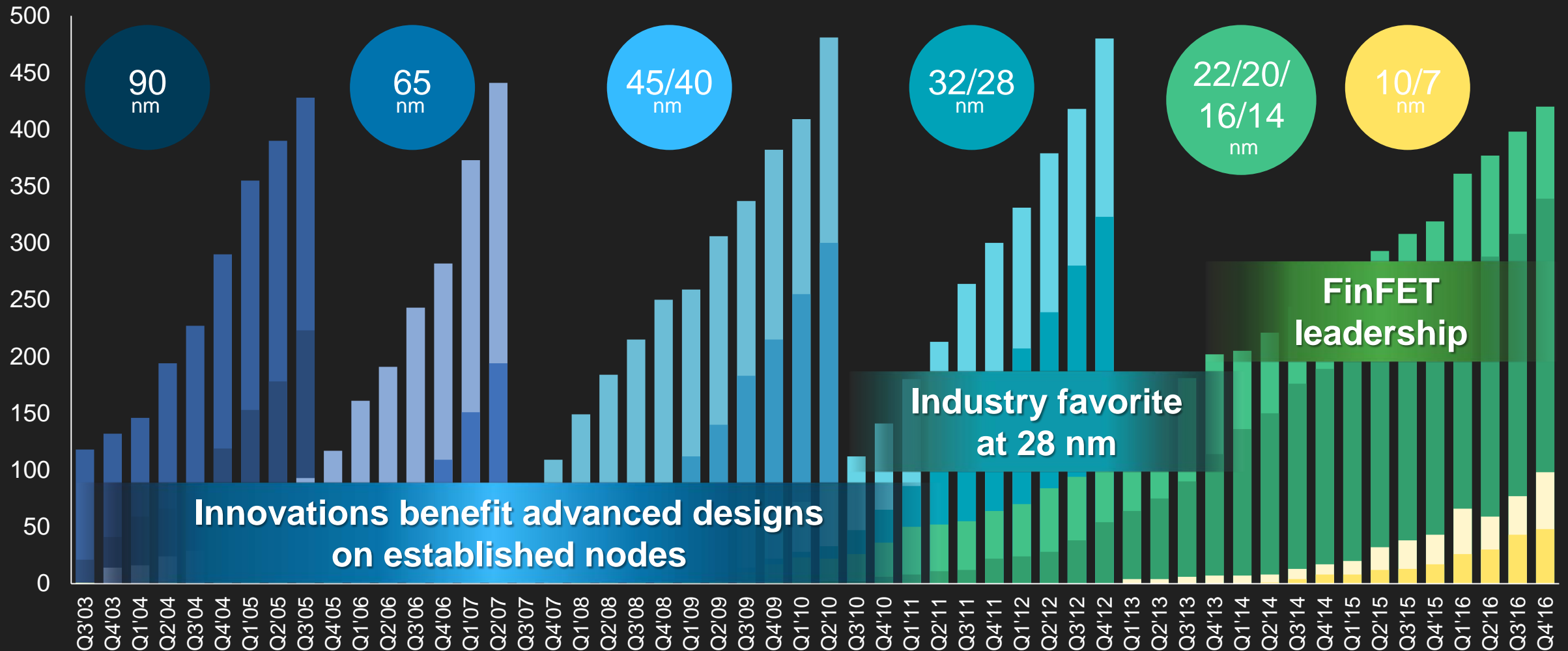
Why Intel's 14-Nanometer Products Could Change the Game

Samsung Unveils The World's First 10-nm FinFET Semiconductor Technology

Intel Opens Door on 7nm, Foundry

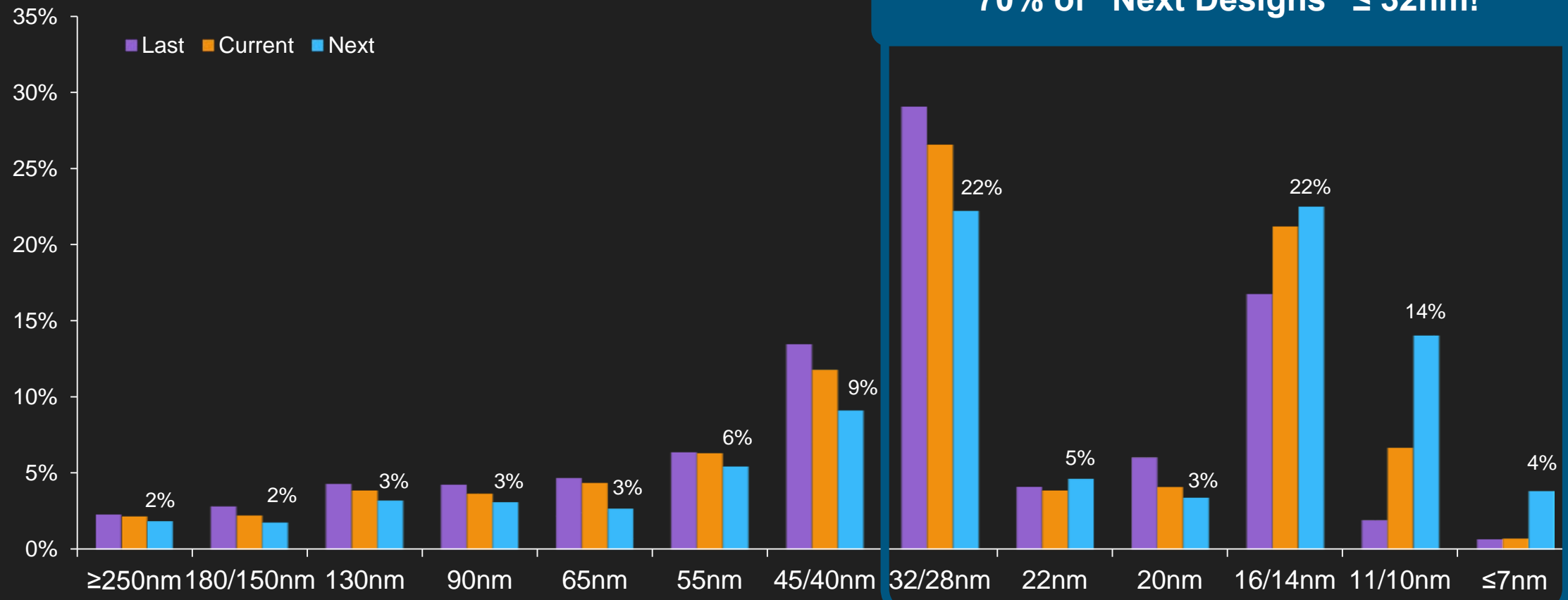
With IBM's Fancy 7-Nanometer Chip, Moore's Law (Kind Of) Continues

Technology Leader for Advanced Designs



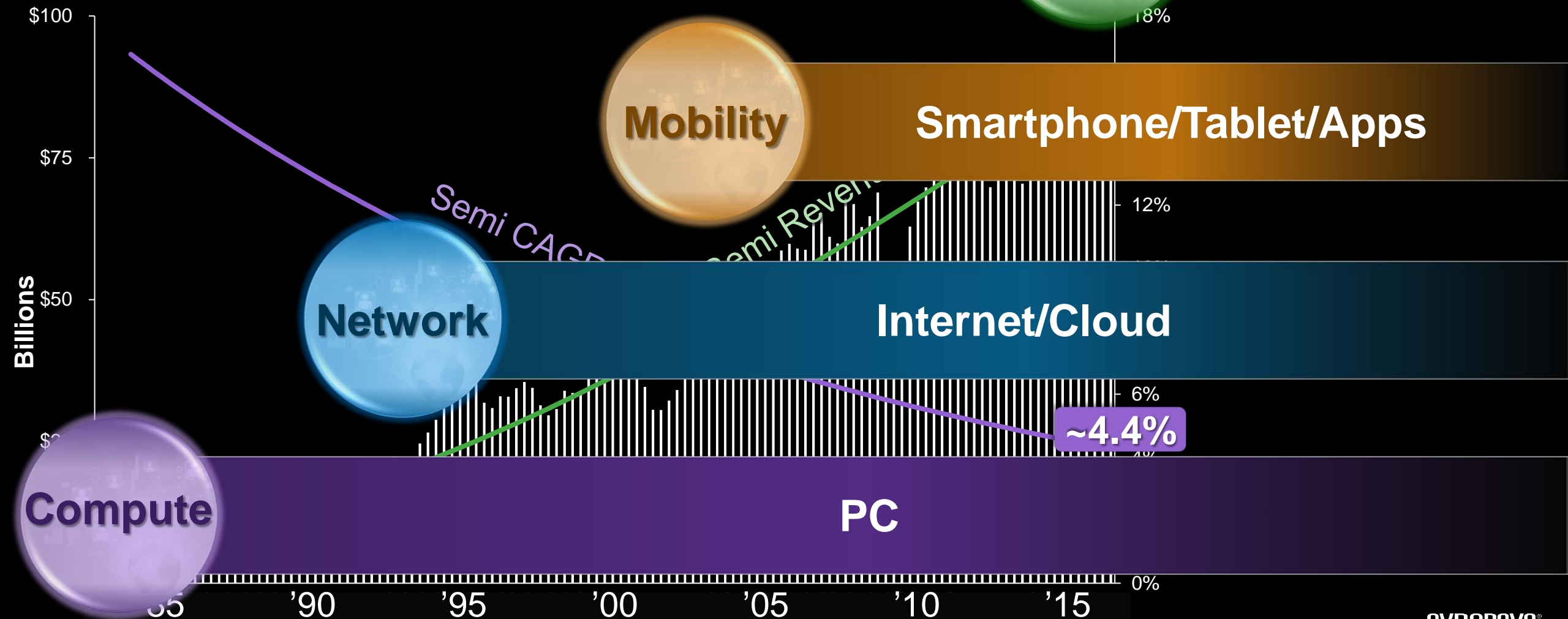
Power Performance Requirements Drive Node Migrations

Global Results



Source: 2015 Synopsys Global User Survey

Semiconductor Revenue



IoT

A futuristic digital cityscape with a glowing hand holding a glowing orb. The scene is dominated by blue and yellow light. In the foreground, a hand is shown holding a glowing yellow orb. The background features a cityscape with buildings and a large circular interface with a bright yellow light in the center. The interface includes labels like 'SEARCH' and 'ANALYSIS'. The overall atmosphere is high-tech and optimistic.

Incredibly **O**ptimistic **T**hinking

IoT Ecosystem: From Sensors to Servers

IoT Edge Devices



“Things” with sensors & actuators that monitor and control

Aggregation Layers (Hubs/Gateways)



Connectivity & Interfaces to aggregate the edge data to send to the cloud

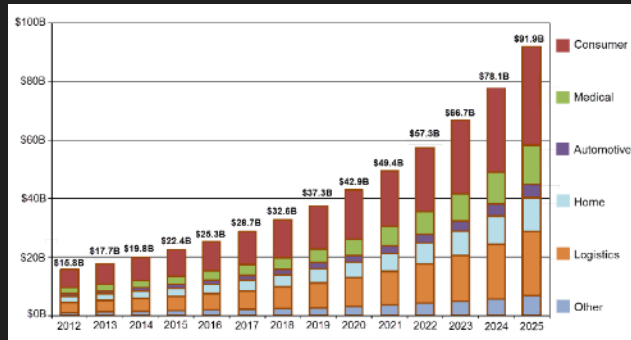
Remote Processing (Cloud Based)



Applications to analyze the data and offer cloud services

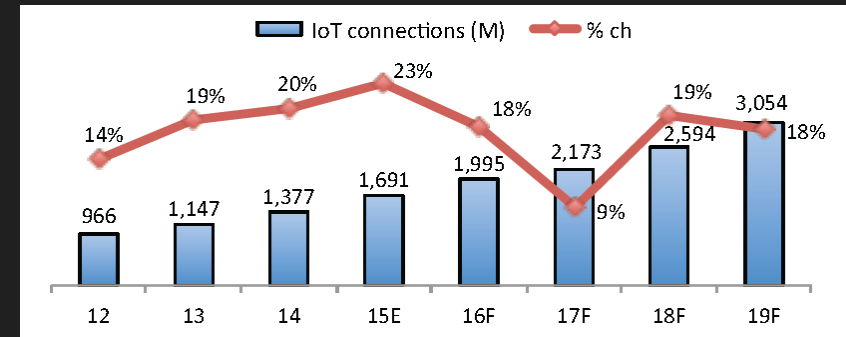
Incredibly Optimistic Thinking

Semi Market for IoT Devices \$91.9B by 2025



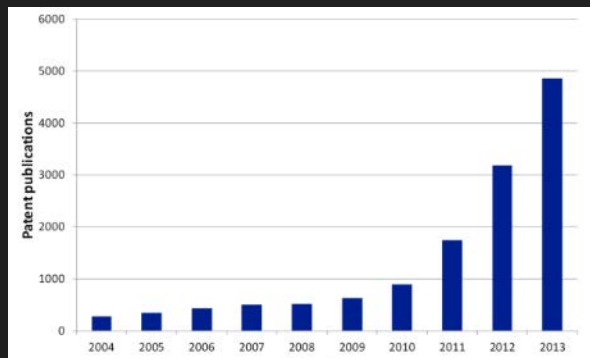
Source: IBS, IoT Technology and Market Analysis, July 2015

IoT Market to Double by 2019, 15.9% CAGR



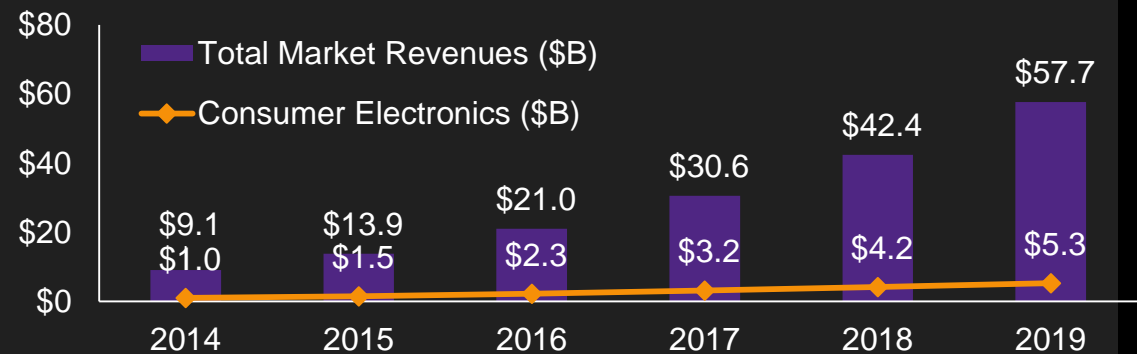
Source: IC Insights, 2015

IoT Patents Publications Exploding



Source: UK Government: Informatics-Internet

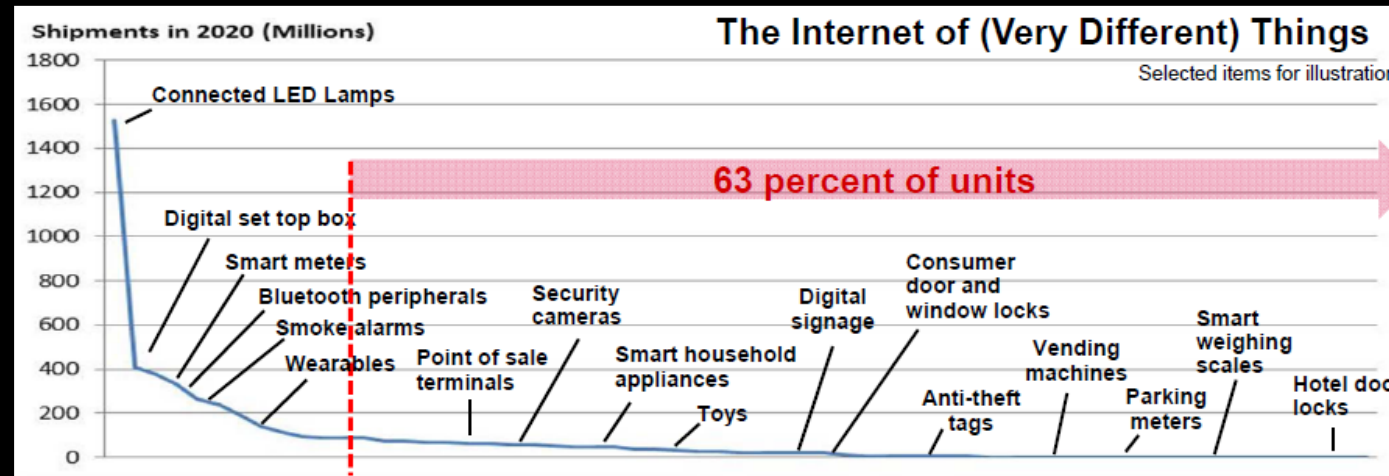
WW Revenues for IoT-Specific Services



Source: VDC Research, Embedded & IoT Security for Cons. Elect. & Home Auto, Feb 2016

The Internet of “Very Different” Things

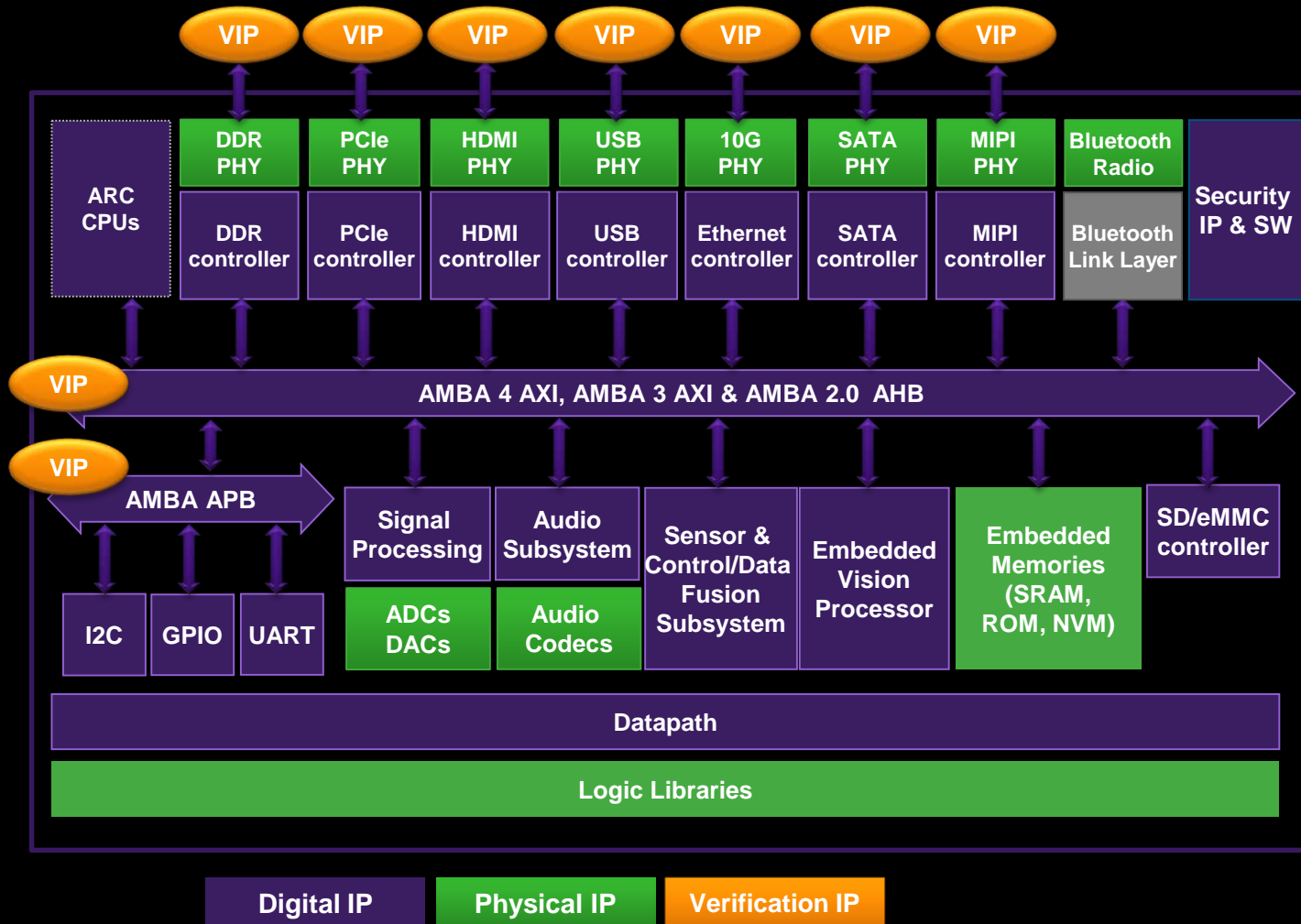
Highly Fragmented Market



Source: Gartner

- 10 billion shipments in 2020
- Many ‘smart versions’ of existing product markets
- By 2016, 50% of IoT devices will originate in startups less than 3 years old

DesignWare IP Portfolio



Trusted IP Supplier

#1 in Interface, Analog, Embedded Memories, Physical IP

Committed to Your Success

~2400 IP Engineers Worldwide

Fast IP Integration into SoCs

Integrated Subsystems
IP Prototyping Kits Software

IoT



Internet Of Threats

Internet of Threats

This Is Why Half the Internet Shut Down Today



Major Cyber Attack on Dyn Causes Outages on Spotify, Twitter & Many Other Sites

Why Experts Are Sure Russia Hacked the DNC Emails

How Podesta became a cybersecurity poster child

US authority warns hospitals over use of hackable drug pump

IRS Revises Tax Returns Hack Numbers, Says Over 300,000 Accounts Were Hacked

AFTER JEEP HACK, CHRYSLER RECALLS 1.4M VEHICLES FOR BUG FIX

Banking hack heist yields up to \$1 billion

What Threats Do You Face?

Understand Your
Threat Environment.
Security Depends
On It.

Network Level

- Communication attacks
- Software attacks

Chip Level

- Software attacks
- Invasive Hardware attacks

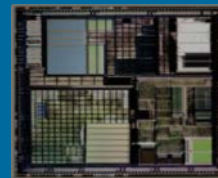
Network



Device



Chip

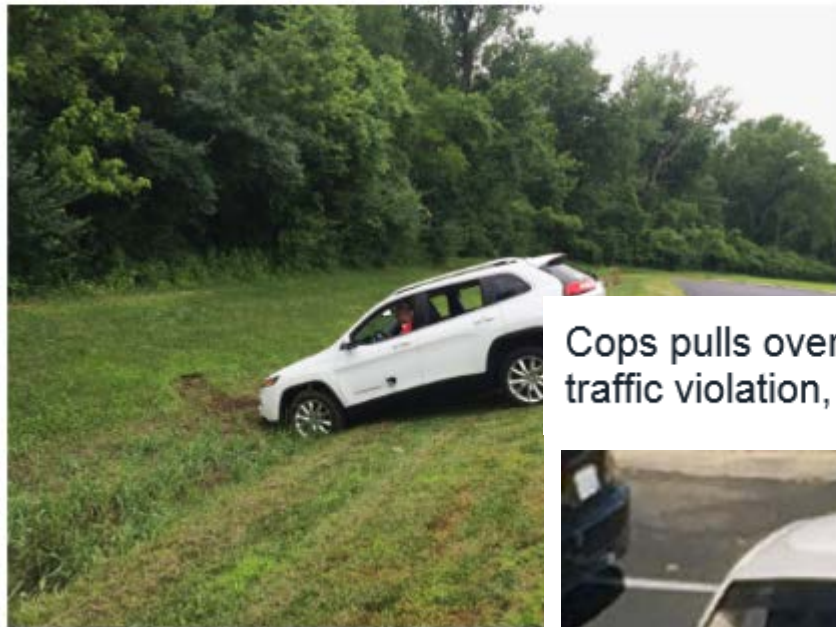


Device Level

- Software attacks
- Non-invasive hardware attacks

- Communication
- Software
- Hardware

AFTER JEEP HACK, CHRYSLER RECALLS 1.4M VEHICLES FOR BUG FIX



Cops pulls over Google self-driving car for traffic violation, but who gets the ticket?



By **2018**

the Automotive IC Market will be

31.7B

8.2M

Autonomous Cars by

2030

Source: IHS 2015



Rising Stakes in Software

Standalone SW Apps



Quality

Internet and WWW



Quality /
Security

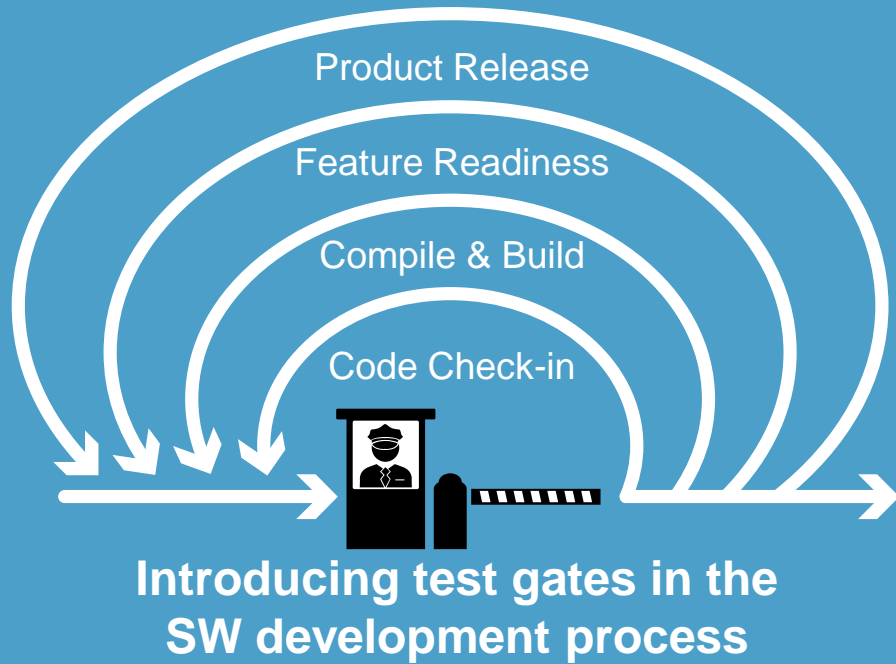
HW/SW Devices



Quality / Security /
Safety & Privacy

Financial Liability

Signoff for Software Development



- Release criteria
- Agile feature acceptance
- Required for successful build
- Required for code check-in

Software Signoff

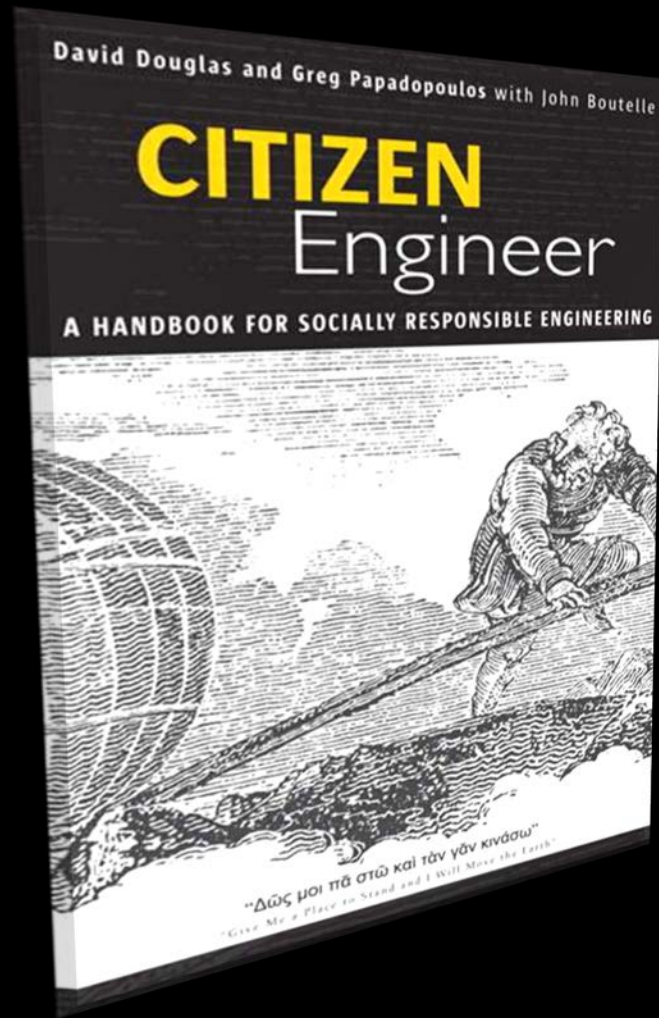
Signoff for Supply Chain Management



- Legal compliance
- Regulatory compliance
- Industry compliance
- Best practices compliance

Purpose + Plan + Our Part

How Will We Impact the Future?



Thank You

