

KEYSIGHT TECHNOLOGIES

Investor Day 2020

MARCH 3, 2020



One-Click Video Links to Executives' Respective Presentations

Presentation One-click Video Links Below	Speaker	Duration (Min)
<u>Company Overview and Strategic Direction</u>	Ron Nersesian Chairman, President and Chief Executive Officer	36:09
<u>Culture and Talent Transformation</u>	Ingrid Estrada SVP, Chief Administrative Officer and Chief of Staff	13:12
<u>Technology Leadership and Software Differentiation</u>	Jay Alexander SVP and Chief Technology Officer	32:30
<u>Communications Solutions</u>	Satish Dhanasekaran SVP, President – Communications Solutions Group	37:30
<u>Electronic Industrial Solutions</u>	Gooi Soon Chai SVP, President – Electronic Industrial Solutions Group	20:52
<u>Global Services</u>	John Page SVP, President – Global Services	11:28
<u>Global Marketing</u>	Marie Hattar SVP and Chief Marketing Officer	11:30
<u>Global Sales</u>	Mark Wallace SVP – Global Sales	14:17
<u>Financial Update</u>	Neil Dougherty SVP and Chief Financial Officer	18:25
<u>Closing Remarks</u>	Ron Nersesian Chairman, President and Chief Executive Officer	3:29

Safe Harbor

This communication contains forward-looking statements as defined in Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, and is subject to the safe harbors created therein. Statements preceded by, followed by, or that otherwise include the words “anticipate,” “plan,” “estimate,” “expect,” “intend,” “forecast,” “target,” “project,” “believe,” “outlook,” “prospect” and similar words or expressions, or future or conditional verbs such as “will,” “should,” “would,” “may,” or “could”, or statements regarding the company’s goals, priorities, anticipated revenues, anticipated demand, growth opportunities, customer service and innovation plans, new product introductions, anticipated financial condition, anticipated gross and operating margins, future earnings, the anticipated continued strengths and expected growth of the markets the company sells into, and future operations, earnings, and tax rates are intended to identify forward-looking statements. These forward-looking statements involve risks and uncertainties that could cause Keysight’s actual results to differ materially from management’s expectations contemplated by these forward-looking statements. Keysight disclaims any intention to, and undertakes no responsibility to, update or revise any forward-looking statement, whether as a result of new information, a future event, or otherwise. Such risks and uncertainties include, but are not limited to, changes in the demand for current and new products, technologies, and services; customer purchasing decisions and timing; our ability to realize the savings or benefits expected from integration and restructuring activities; and impact on the supply chain and slowdown in customer purchasing caused by epidemic and pandemic conditions. For additional risks and uncertainties that could impact Keysight’s actual results, please see our latest Form 10-K for the fiscal year ended October 31, 2019, including but not limited to the discussion under “Risk Factors” therein, which may be viewed at www.sec.gov.

This presentation includes a number of different financial measures, both GAAP and non-GAAP, in analyzing and assessing the overall performance of the business, for making operating decisions and for forecasting and planning for future periods. Non-GAAP measures exclude primarily the impacts of amortization of acquisition-related balances, share-based compensation, acquisition and integration costs, non-recurring items such as goodwill impairment, legal settlement, gain on divestitures, Northern California wildfire-related costs and others. Also excluded are tax benefits or expenses that are not directly related to ongoing operations and which are either isolated or cannot be expected to occur again with any regularity or predictability. Most of these excluded amounts pertain to events that have not yet occurred and are not currently possible to estimate with a reasonable degree of accuracy. Accordingly, no reconciliation to GAAP amounts has been provided. The definitions of these non-GAAP financial measures may differ from similarly titled measures used by others, and such non-GAAP measures should be considered supplemental to and not a substitute for financial information prepared in accordance with GAAP. Keysight generally uses non-GAAP financial measures to facilitate management’s comparisons to historic operating results, to competitors’ operating results and to guidance provided to investors. In addition, Keysight believes that the use of these non-GAAP financial measures provides greater transparency to investors of information used by management in its financial and operational decision-making. Refer to slide 23 for more details on the use of non-GAAP financial measures.

Today's Agenda

8:30 am	Welcome and Opening Remarks Jason Kary VP, Treasurer and Investor Relations
	Company Overview and Strategic Direction Ron Nersesian Chairman, President and Chief Executive Officer
	Culture and Talent Transformation Ingrid Estrada SVP, Chief Administrative Officer and Chief of Staff
	Technology Leadership and Software Differentiation Jay Alexander SVP and Chief Technology Officer
	Communications Solutions Satish Dhanasekaran SVP, President – Communications Solutions Group
10:30 am	Q&A
10:45 am	Break
10:55 am	Electronic Industrial Solutions Gooi Soon Chai SVP, President – Electronic Industrial Solutions Group

11:15 am	Global Services John Page SVP, President – Global Services
	Global Marketing Marie Hattar SVP and Chief Marketing Officer
	Global Sales Mark Wallace SVP – Global Sales
	Financial Update Neil Dougherty SVP and Chief Financial Officer
	Closing Remarks Ron Nersesian Chairman, President and Chief Executive Officer
12:15 pm	Q&A
12:30 pm	Lunch



Company Overview and Strategic Direction

Ron Nersesian

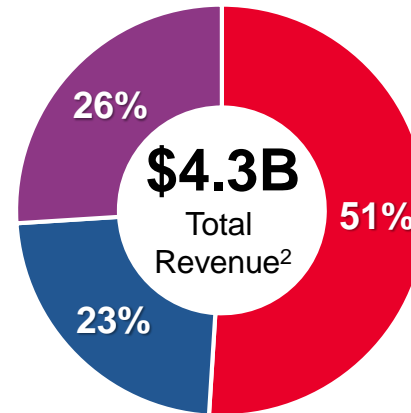
Chairman, President and Chief Executive Officer

Keysight Technologies at a Glance (NYSE: KEYS)

FY19 KEY STATISTICS



FY19 REVENUE MIX



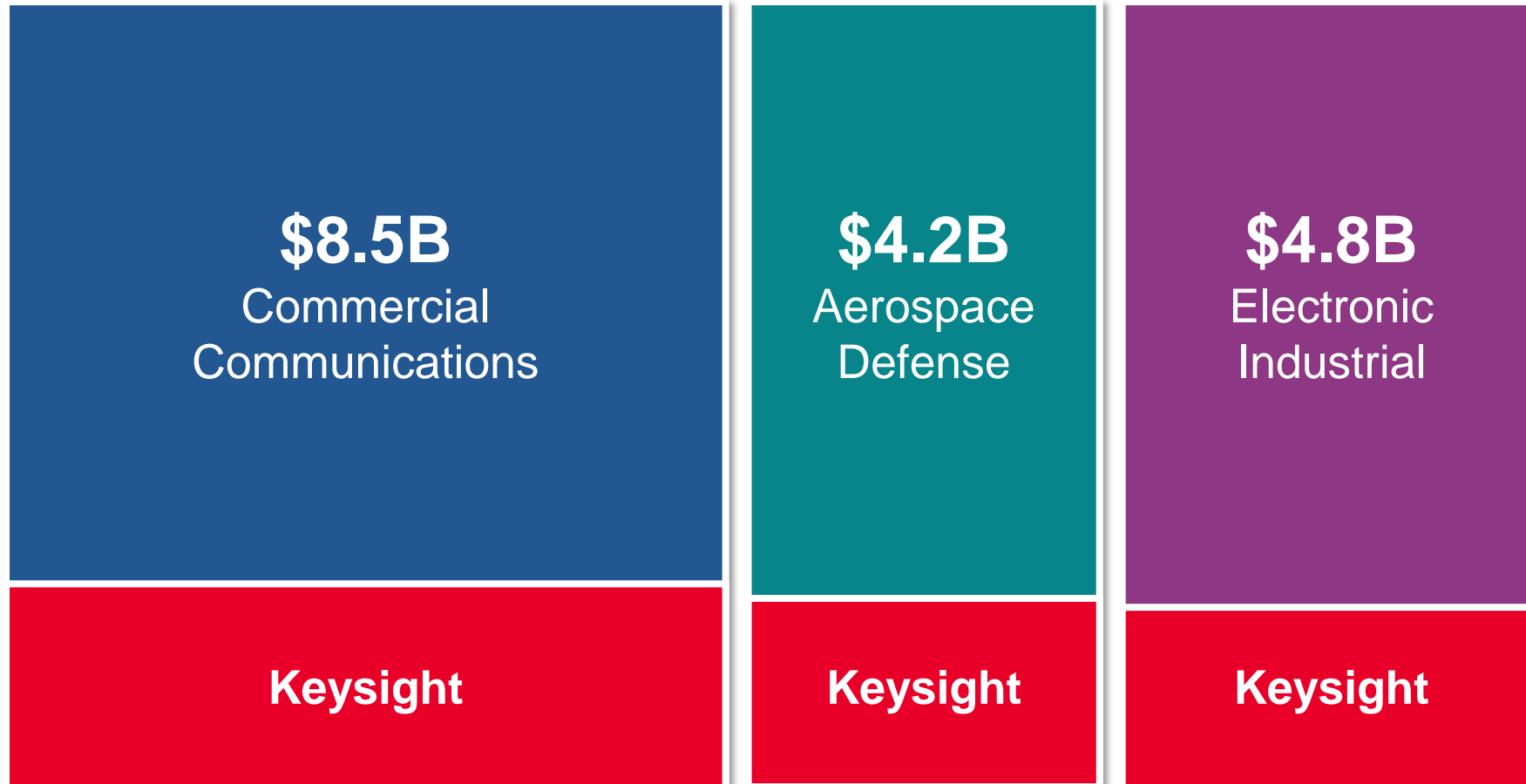
- Commercial Communications: **\$2.2B**
- Aerospace, Defense and Government: **\$1.0B**
- Electronic Industrial: **\$1.1B**



- **40% Americas**
- **17% Europe**
- **43% Asia-Pacific**

\$17.5B Served Addressable Market

Leadership position and room to grow



\$17.5B

Served Addressable Market¹

+\$2B vs. 2017

3-5%

Avg. Market Growth Rate²

~25%

Keysight Market Share¹

+300 bps vs. 2017

KEYSIGHT WELL-POSITIONED FOR CONTINUED SHARE GAINS

INDUSTRY LEADER WITH 32,000+ CUSTOMERS

Deep Customer Relationships and Market-Leading Positions

Leading Market Positions¹

#1 Software Revenue for Electronic Design & Test

#1 Hardware Revenue for Electronic Design & Test

#1 Commercial Comms, Aero & Defense, Electronic Industrial, Network Test (Ixia)

Serving Market Leaders²

10 / 10

25 / 25

25 / 25

25 / 25

24 / 25

20 / 20

Top
Telecom Equipment
Companies

Top
Semiconductor
Suppliers

Top
Aero & Defense
Contractors

Top
Technology
Companies

Top
Telecom
Operators³

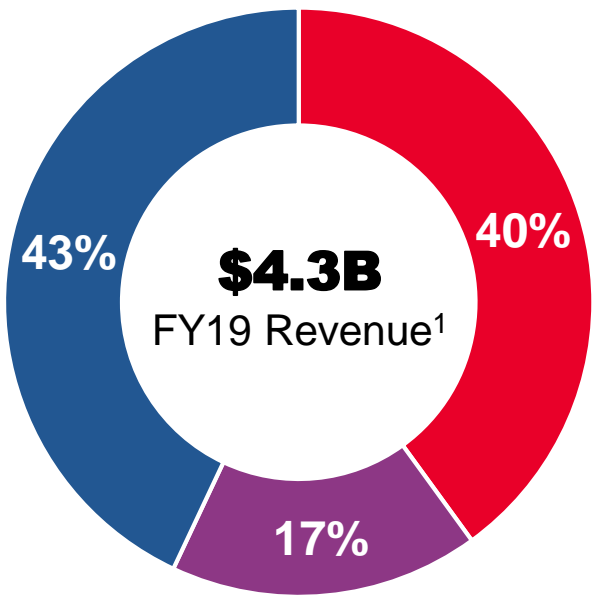
Top
Engineering & Tech
Universities

Deep and Broad Customer Base⁴

Alphabet • Amazon • Arris • AT&T • BAE Systems • Boeing • Broadcom • Cisco • Continental Auto • Daimler • Datang • Delphi • Denso • Facebook • Finisar • Ford Motor Company • Fujitsu • Harris • Hewlett Packard Enterprise • HTC • Infineon • Innolight Tech • Lenovo • Leonardo • LG • Lumentum • Marvell Semiconductor • MediaTek • Microsoft • muRata • Naval Research Lab • Nokia • Nvidia • Qorvo • Qualcomm • SAIC Motor • Samsung • Schneider • Siemens • Skyworks • Sporton International • Spreadtrum • Taiwan Semiconductor • Tesla • Thales • Toyota • Tsinghua University • U.S. Government • Volkswagen • Wistron Neweb • ZheJiang University

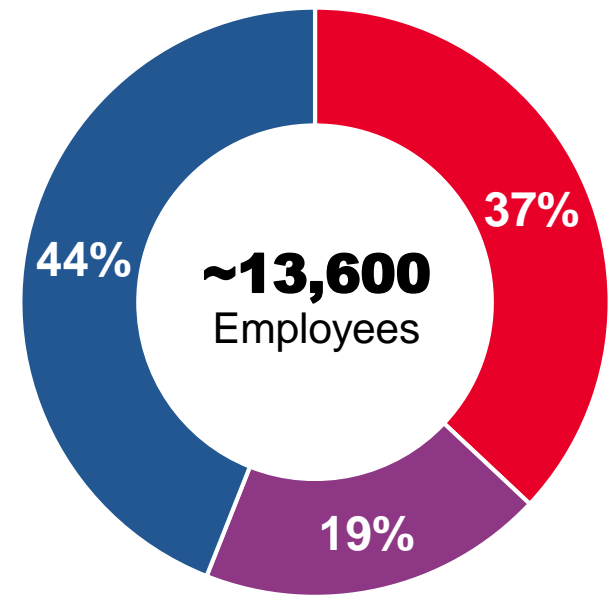
Global Scale and Differentiated Solutions Addressing Growing, Diversified End Markets

REGIONAL REVENUE MIX



■ Americas ■ Europe ■ Asia-Pacific

REGIONAL EMPLOYEE MIX



KEY STATISTICS

Products	>7,000
Engineering Expertise	>40,000 yrs.
Patents ²	>3,000
R&D Centers ³	15
Installed Base ⁴	>\$30B (estimated)

ENGINEERING EXPERTISE ALIGNED WITH CUSTOMERS ACROSS REGIONS

Business Segments, End Markets and Customers Served

CSG

Communications Solutions Group

Serving customers spanning the global communications end markets

- Wireless and Wired Communications
- Network Applications and Security
- Aerospace, Defense and Government

EISG

Electronic Industrial Solutions Group

Serving electronic industrial end markets, focusing on high-growth applications

- Next-Generation Automotive and Energy
- IoT, Consumer, Education, and Medical Electronics
- Semiconductor Design and Manufacturing

Customers

**NEMs • Enterprise • Operators •
Government Agencies • Commercial Companies**

**OEMs • Suppliers of Electronic Industrial
Products and Services • Research and Academia**

Technology Innovation is Driving Perpetual Change

Keysight is accelerating innovation to connect and secure the world



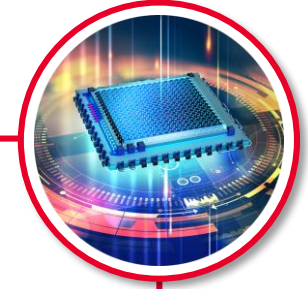
WIRELESS

\$3.6T 5G mobile value chain by 2035¹



AUTOMOTIVE

70% of new vehicles and trucks shipped will be connected by 2023²



QUANTUM

Nations investing >\$10B through 2024 for leadership³



NETWORKING / CLOUD

Data center capacity expected to grow 4X by 2022⁴



IOT

127 new IoT devices connected to the internet every second⁵



AEROSPACE / DEFENSE

New satellite launches could grow 3X by 2025⁶

Our Strategy for Long-term Growth and Value Creation

Accelerate customer success with first-to-market, differentiated solutions



What We Are Doing

- 1 Transforming from hardware-centric products to **first-to-market, software-centric solutions** to enable customer success
- 2 Expanding **margins**
- 3 Strengthening the **durability of our business** model
- 4 Increasing **organizational capability** to deliver results
- 5 Executing **disciplined capital allocation** priorities
- 6 Utilizing our **high-performance culture** as a competitive advantage

1

Complete Solutions End-to-End Spanning Industries and Full Workflow

Markets



**Commercial
Communications**



**Network Applications
& Security**



**Automotive
& Energy**



**Aerospace
Defense**



IoT

Workflow

Simulate

Prototype

Validate

Manufacture

Optimize

Differentiated, Market-Leading Solutions

Hardware



Software



Services



1

Accelerating Customer Success Through First-To-Market Solutions

ACTIONS



Shifting to software-centric solutions

from hardware-centric products

HARDWARE + SOFTWARE + SERVICES



Reorganizing around industries

enabling speed and solutions tailored to key customer end markets



Increasing investment in R&D

~16% of revenue; up from 12%



Leveraging our leading technologies

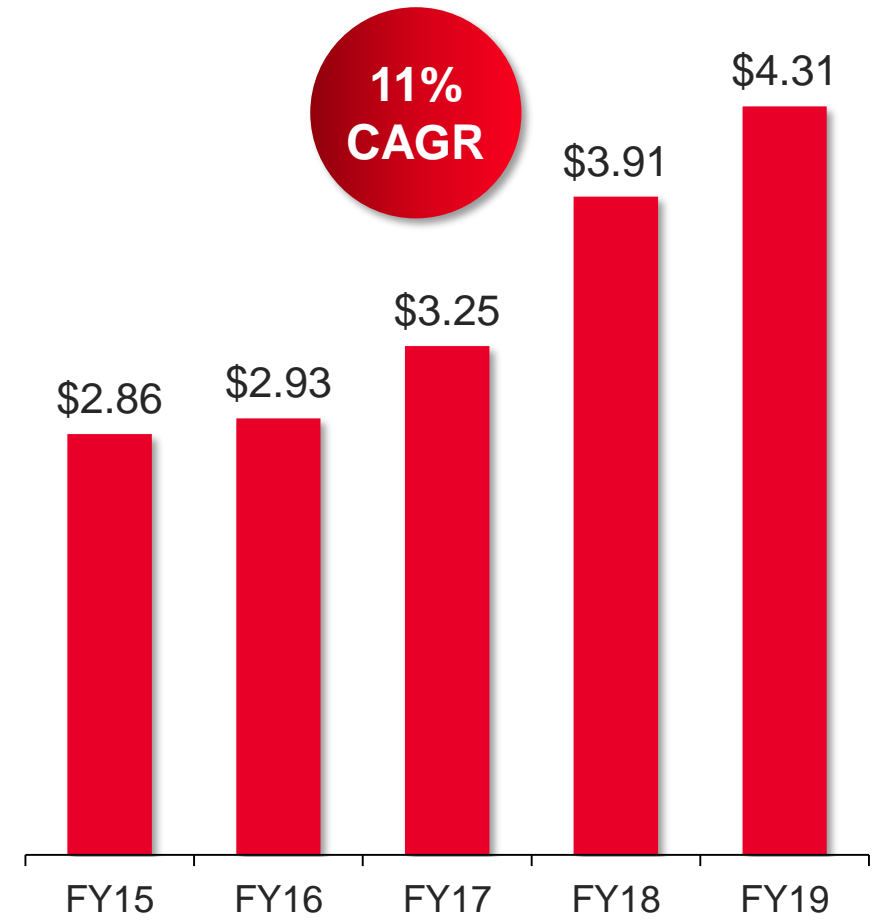
Keysight Labs, fab, and R&D investments for differentiation



Aligning to key long-term trends

like 5G, next-gen automotive while investing earlier in the cycle

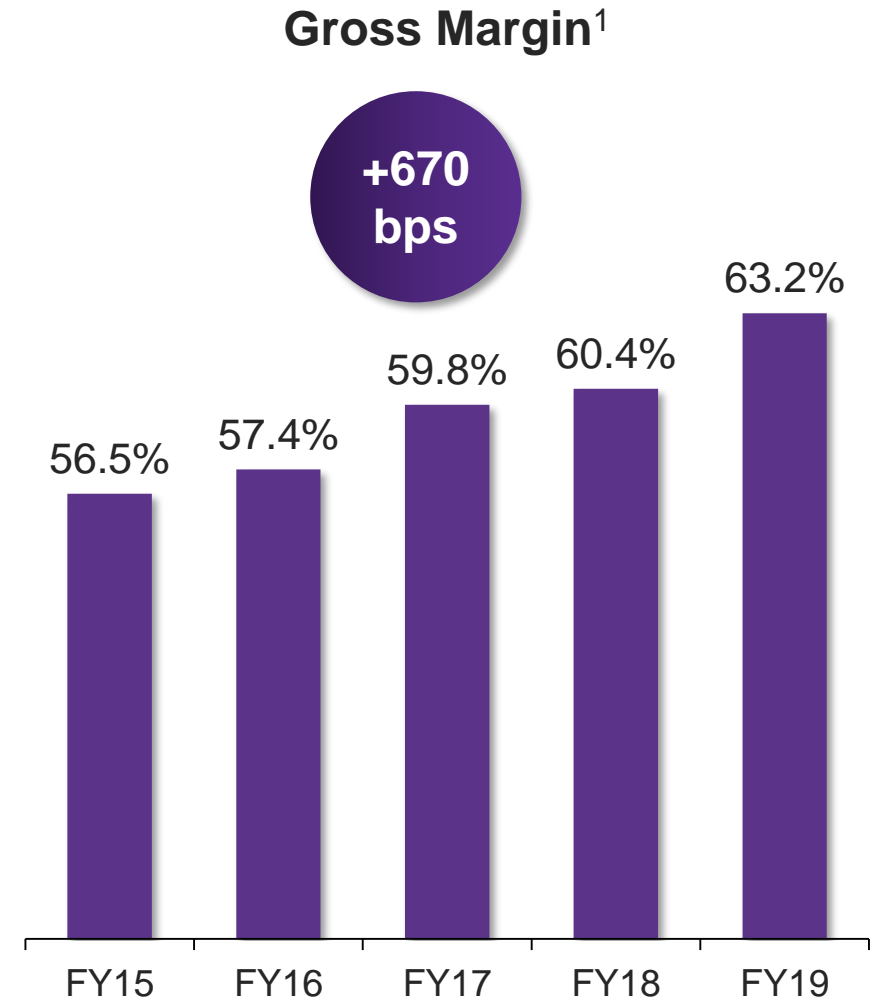
Revenue¹ (\$B)



Expanding Margins

ACTIONS

- **Increasing R&D sales mix**
versus manufacturing mix
- **Growing software sales**
~\$800M in FY19; up from ~\$360M in FY15
- **Focusing on first-to-market solutions**
higher selling prices and lower discounts
- **Improving tools and processes**
to drive efficiency, especially across corporate functions



Strengthening the Durability of Our Business Model

ACTIONS

➤ **Diversified business and portfolio**
with differentiated solutions and broad and deep customer base

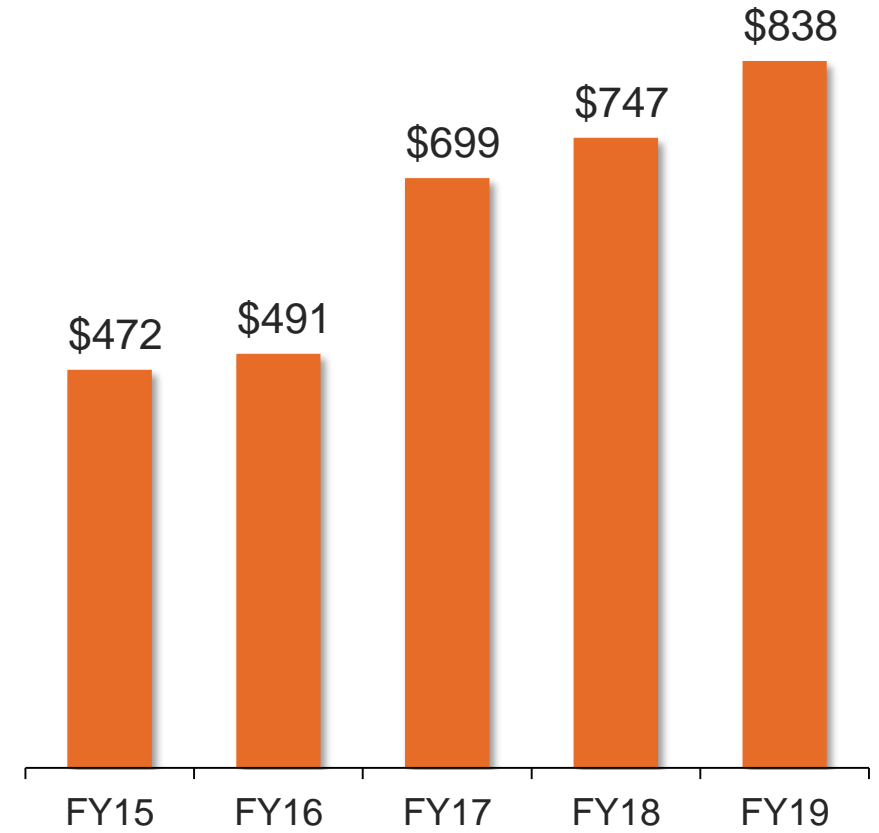
➤ **Increasing software mix**
19% of total FY19 revenue; up from 12% in FY15

➤ **Growing recurring revenues**

- Subscription / perpetual software
- Higher value services

➤ **Flexible cost structure**

Annualized Recurring Revenue¹ (\$M)



Increasing Organizational Capability to Deliver Results

ACTIONS



Doubling front-line sellers

through “Feet on the Street” initiative without incremental investment



Increasing sales compensation variability

and upside to drive higher performance



Centralizing marketing for scale

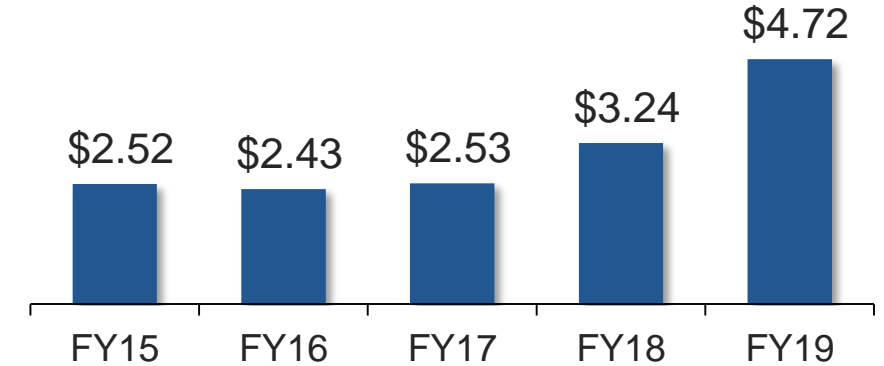
- Hired chief marketing officer
- Balancing people vs. program spend



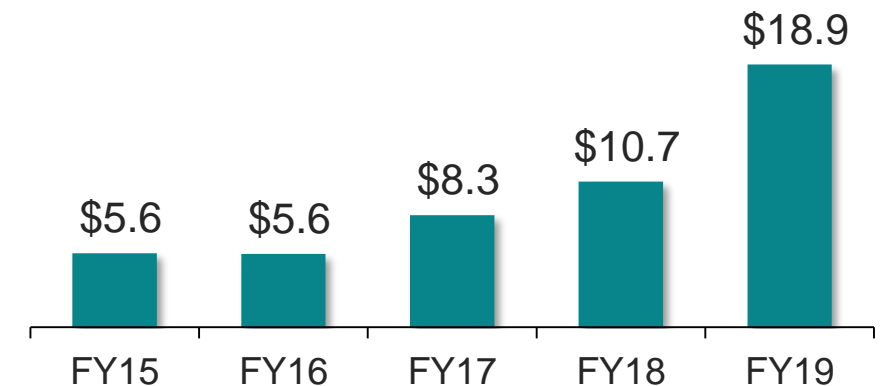
Putting the right talent in key roles

- 154 leadership changes since FY15
- 83% increase in software engineers since FY14
- Driving employee growth

Earnings per Share¹



Market Cap² (\$B)



Capital Allocation Priorities

1

Fund Organic Growth

R&D investment is ~16% of revenue; up from 12% at spin-off

2

M&A

when strategic and financial criteria are met

3

Return Capital

DISCIPLINED, RETURN-FOCUSED APPROACH IS A CORE STRENGTH

Completed 10 Strategic Acquisitions to Expand Portfolio and Deliver Returns

EVALUATION CRITERIA FOR M&A

Strategic

- Accelerates near- and long-term strategic objectives
- High software content and/or high recurring revenue
- Expands portfolio of high-value solutions

Financial

- ROIC above cost of capital
- Accretive to growth and gross margin
- Revenue and cost synergy opportunities

RETURN ASSESSMENT

Ahead			On Track	Delayed	New
					
					

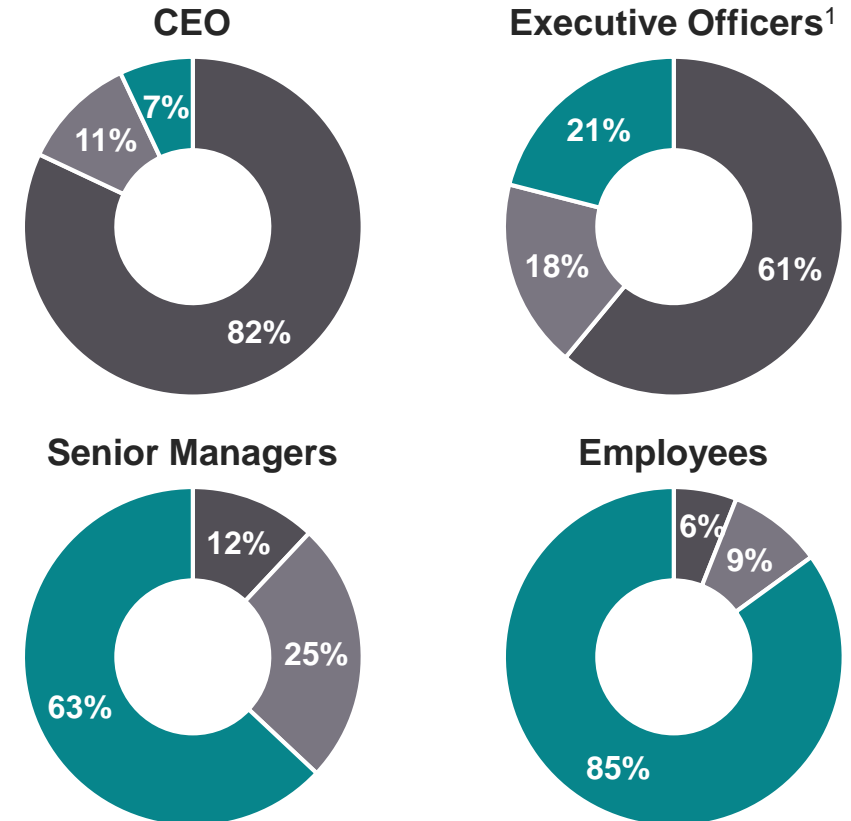
Our Unique, High-Performance Culture is a Competitive Advantage

OUR CULTURE

based on the Keysight Leadership Model

- Results-oriented with a passion to win
- Uncompromising integrity
- Collaborative, transparent, and open communication
- Speed and courage
- Continuous improvement
- Committed to corporate social responsibility
- Respectful and supportive

COMPENSATION MIX AT ALL LEVELS IS ALIGNED WITH SHAREHOLDER INTERESTS



- Base salary (fixed)
- Annual incentives at target
- Long-term incentives at target

Deepening Focus on Corporate Social Responsibility

OUR CSR VISION

Build a better planet by accelerating innovation to connect and secure the world and employing a global business framework of ethical, environmentally sustainable, and socially responsible operations

Key Impact Goals by End of FY20

Results as of End of FY19

>\$1.25B
In value committed to strengthening communities

~\$1.4B

570,000
Students and future engineers engaged through STEM education

~670,000

10% & 15%
Energy and water conservation, respectively

7.4% & 17.9%



Selected Recognitions



Listed on **Barron's Top 100 Most Sustainable Companies**

New!

Separate directors for social responsibility and sustainability (new) to further our commitment, evaluate carbon footprint and drive strategy

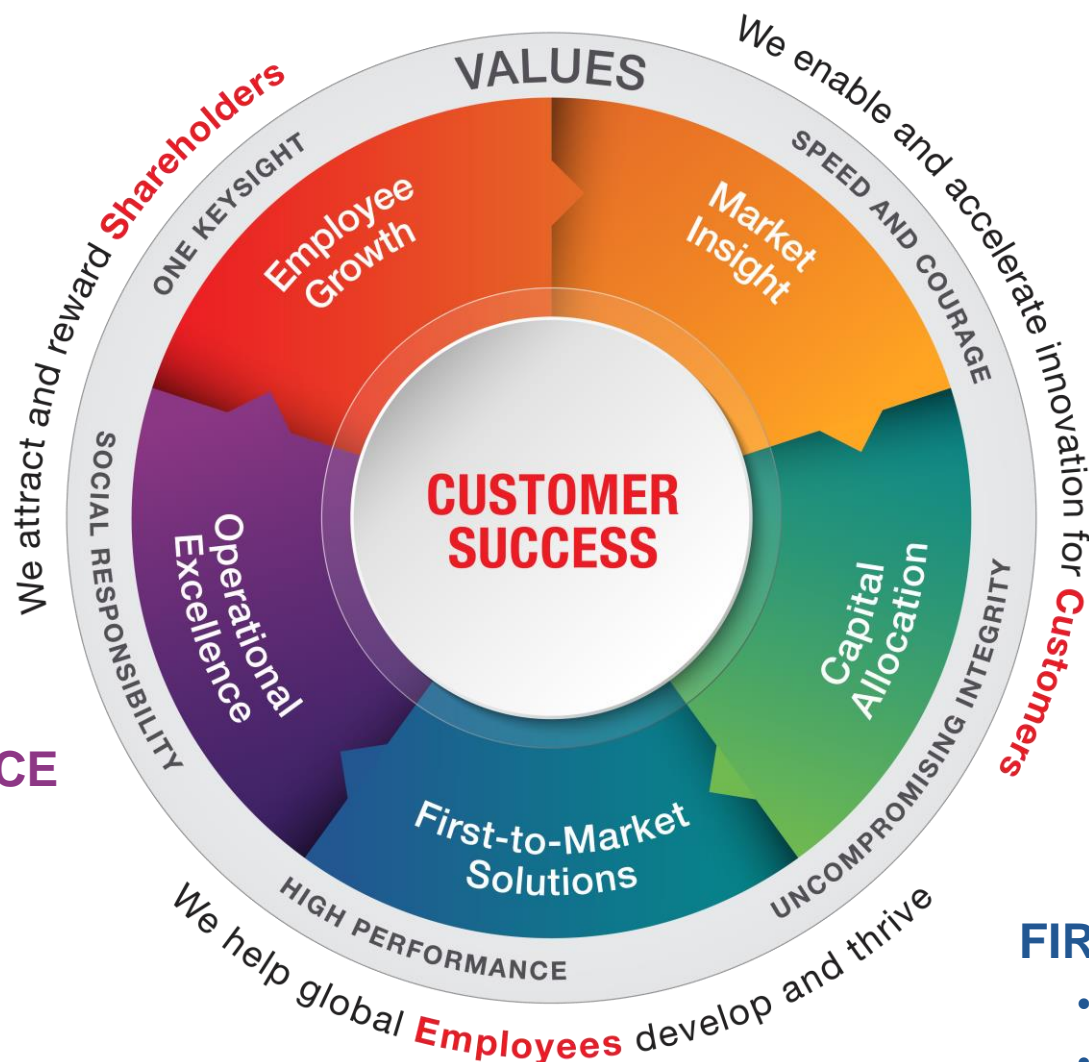
The Keysight Leadership Model (KLM) Enables Strong Execution

EMPLOYEE GROWTH

- Encourage passion
- Inspire and facilitate growth
- Anticipate change

OPERATIONAL EXCELLENCE

- Highest quality
- Continuous improvement
- Flexible operating model



MARKET INSIGHT

- Early trend identification
- Accelerate innovation

CAPITAL ALLOCATION

- Focus on ROIC
- Flexible, balanced approach

FIRST-TO-MARKET SOLUTIONS

- Committed to being first
- Exceed the customer needs

Our Transformation Journey: First Five Years (1 of 2)

2014 – 2015

Established Strong Foundation

- Nov. 2014: Became **independent company**
- Shifted focus from hardware-centric products to **software-centric solutions**
- Activated M&A strategy with **Anite**, software company supporting first-to-market 5G solutions
- Increased **investment in R&D** from 12% to 14% of revenue
- Announced **transformation to industry-focused solutions** company with end market structure

2016

Enhanced Solutions and Capabilities

- Delivered **first-to-market 5G solutions** totaling \$66M in orders
- 25+ **early collaborations with key 5G industry leaders** and standards bodies
- Launched **automotive growth initiative** with 50+ solutions
- Initiated strategy to **double frontline salesforce** keeping costs flat
- **Opened Software Design Center** in Atlanta, GA to accelerate software platform development, including PathWave
- Announced first **share repurchase authorization**

2017

Executed for Long-term Growth

- **Acquired Ixia**; expands software solutions and broadens communications development lifecycle reach
- **Acquired ScienLab**; provides high power eMobility solutions for automotive and industrial sectors
- Created chief marketing officer role and **centralized marketing organization**
- Recognized on two Forbes lists: **Just Companies** and **America's Best Employers**

Our Transformation Journey: First Five Years (2 of 2)

2018

Delivered and Raised Commitments

- **Launched PathWave**, industry-first design and test software platform accelerating workflows
- **Raised long-term financial commitments** at Investor Day
- **Deployed Keysight Leadership Model**, our value creation framework
- **Captured triple-digit 5G** and **double-digit auto** order growth
- **Achieved record financial performance** with 20% revenue growth and 28% EPS growth
- Promoted to **S&P 500** from S&P 400

2019

Achieved Record Results

- Achieved **record financial results** with 11% core revenue growth, 63% GM, 24% OM, 46% EPS growth, and \$878M free cash flow
- **Exceeded 2021 margin targets** (+500 bps GM, +400 bps OM)¹
- **Software** orders reached \$853M, **services** orders exceeded \$550M, combined over 30% of total orders
- Captured **triple-digit 5G** order growth
- Aligned **services with business groups** and **ISG with CSG** as next-level growth catalyst
- Ongoing strategic **evaluation of technology waves** and future growth drivers

220% TOTAL SHAREHOLDER RETURN (FY15 – FY19)

Keysight Results to Date

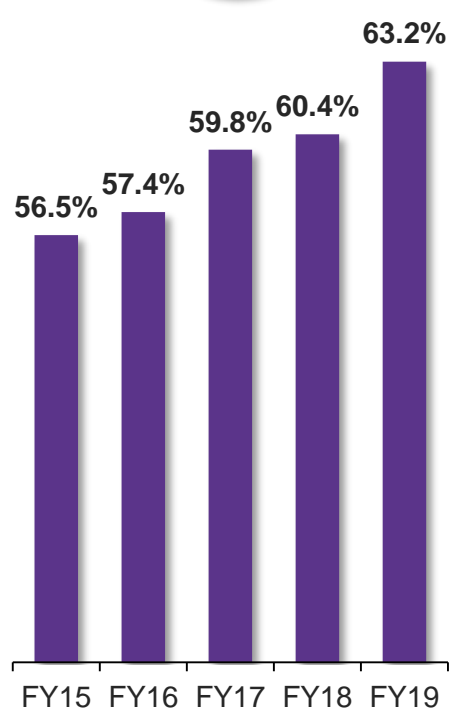
Revenue¹ (\$B)

11%
CAGR



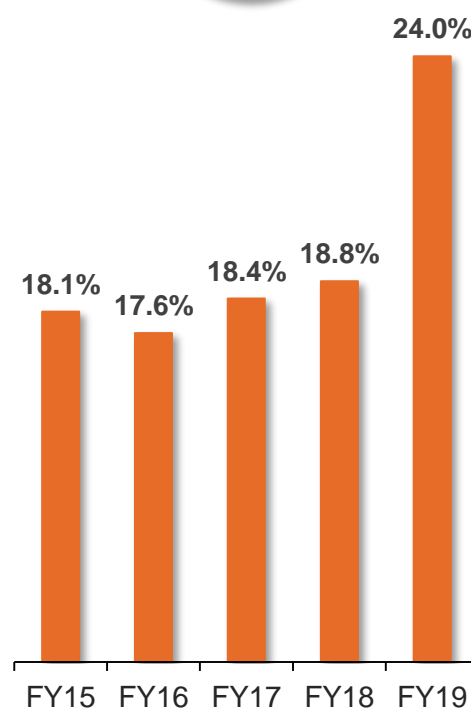
Gross Margin^{1,2}

+670
bps



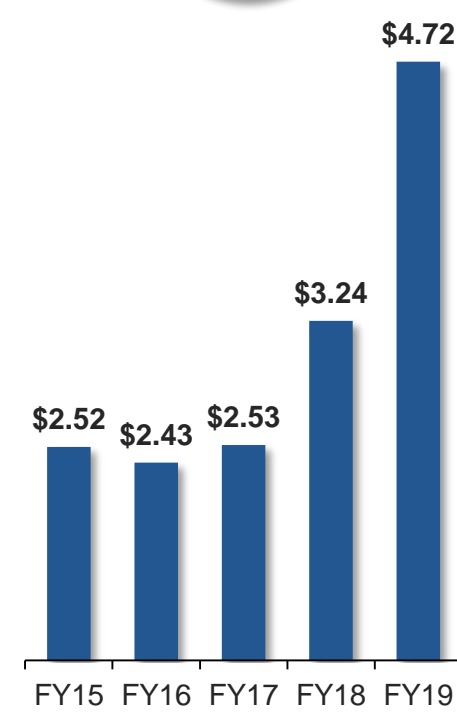
Operating Margin^{1,2}

+590
bps



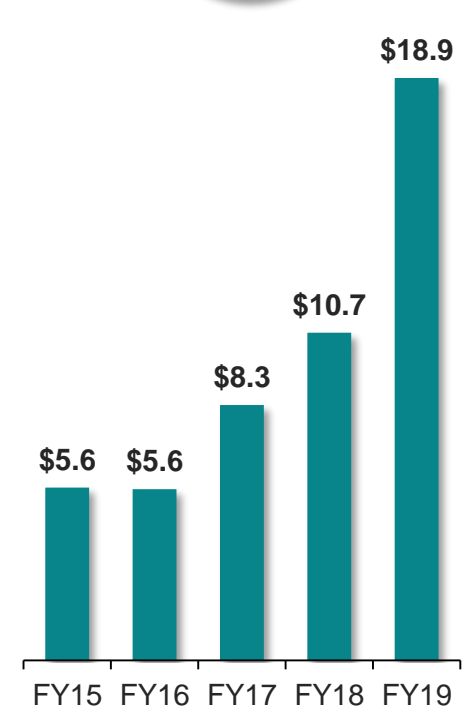
Earnings per Share¹

17%
CAGR



Market Cap³ (\$B)

+\$13B
(237%)



Our Strategy is Strong with Significant Runway Ahead

Accelerate customer success with first-to-market, differentiated solutions

Utilizing our culture as a competitive advantage for speed, margin expansion, and value creation

TREMENDOUS OPPORTUNITIES FOR CONTINUED VALUE CREATION

Keysight Well-Positioned for Multi-Year Growth Opportunity

2014

2019

FUTURE

SEEDING

CULTIVATING and ACCELERATING

COMPOUNDING

1

Be First in 5G Wireless – Well-positioned to capitalize on early lead

2

Enter Next-Generation Automotive – “early innings” for a large market opportunity

3

Expand Leadership in Design and Test Software – focusing on recurring revenue

4

Grow Services – differentiated and higher value offerings (e.g., KeysightCare)

5

Investing in New Growth Initiatives (e.g., 6G, Quantum)

DECADE-LONG OPPORTUNITIES AHEAD

Achieved FY21 Financial Commitments Ahead of Schedule

	2015 Investor Day	2018 Investor Day		FY19 RESULTS
Core Revenue Growth ^{1,2}	Sustainable 4% CAGR	Sustainable 4% - 5% CAGR	➤	<ul style="list-style-type: none"> • 11% core growth in FY19 • 11% CAGR since FY15 • Five consecutive years of market share gains
Operating Margin ^{1,3}	17% - 18%	21% - 22% (by 2021)	➤	<ul style="list-style-type: none"> • 24% in FY19 • Expanded 590 bps FY15 – FY19 • Exceeded 40% OM incremental commitment in FY19
EPS Growth ¹	8% - 10%	≥10%	➤	<ul style="list-style-type: none"> • Achieved 46% growth in FY19 • 17% CAGR since FY15

Introducing New Long-Term Expectations

	2015 Investor Day	2018 Investor Day	New! 2020 INVESTOR DAY
Core Revenue Growth ^{1,2}	Sustainable 4% CAGR	Sustainable 4% - 5% CAGR	Sustainable 4% - 6% CAGR
Operating Margin ^{1,3}	17% - 18%	21% - 22% (by 2021)	26% - 27% (by 2023)
EPS Growth ¹	8% - 10%	≥10%	≥10%

Strong, Experienced and Driven Leadership Team



Ron Nersesian

Chairman, President and
Chief Executive Officer



Jay Alexander

SVP, Chief Technology Officer



Satish Dhanasekaran

SVP | President,
Communications Solutions Group



Mark Wallace

SVP, Global Sales



Neil Dougherty

SVP, Chief Financial Officer



Marie Hattar

SVP, Chief Marketing Officer



Gooi Soon Chai

SVP | President, Electronic
Industrial Solutions Group;
Order Fulfillment & IT



Jeffrey Li

SVP, General Counsel &
Secretary



Ingrid Estrada

SVP, Chief Administrative Officer,
Chief of Staff



Elizabeth Cheever

VP, Corporate Development



John Page

SVP | President, Global Services

Track Record of Creating Value with More Opportunity Ahead

1

Strong leadership team and employees successfully executing to deliver on commitments

2

Delivering first-to-market solutions aligned to key growth areas and end markets

3

Executing on our software-centric solutions strategy to meet customer needs and increase recurring revenue

4

Applying the Keysight Leadership Model, a sustainable competitive advantage, to win through strong execution

5

Tremendous opportunities for continued value creation



Culture and Talent Transformation

Ingrid Estrada

SVP, Chief Administrative Officer and Chief of Staff

Culture and Talent Transformation Themes

Our culture is a competitive advantage

1

Innovation and collaboration thrive in our culture



2

A diverse workforce magnifies skills, understanding and idea-generation



3

The **Keysight Leadership Model** is a blueprint for everything we do



4

High employee engagement drives our strategy, our culture and our **customers' success**



A Winning Formula for Talent Engagement and Activation

Strong Core Values

- ✓ High performance
- ✓ Uncompromising integrity
- ✓ Speed and courage
- ✓ Respect for individuals
- ✓ Social responsibility



Unique Culture

- ✓ One Keysight
- ✓ Move at speed of customer
- ✓ Deeply care about people
- ✓ Reward result-driven behavior
- ✓ Communicate transparently
- ✓ Global collaboration



Compelling Purpose

- ✓ Accelerate customer innovation to connect and secure world
- ✓ Make a difference in our communities
- ✓ Continuously on leading-edge of technology
- ✓ #1 in our markets



Culture as a Catalyst for Keysight's Success



COMMITMENT

Low attrition rate of ~6%



ACQUIRED TALENT

~3K employees, 99.5% acceptance rate



NEXT-GEN TALENT

49% increase in intern and campus hiring since 2016



R&D FOCUS

83% increase in software engineers since 2014

Our culture powers a rich, stable environment where some of the world's deepest technologists can focus on delivering customer and company success

RIGHT LEADERS

154 leadership changes since FY15, cross-domain promotions, leadership development



RIGHT TALENT

Significant increases in engineering, software and customer-facing people



HIGH-SPEED DECISION MAKING



Diversity, Inclusion and CSR Enrich Talent Acquisition and Activation

BUILDING A DIVERSE WORKFORCE



30

Countries with
Keysight employees



5

Generations of
Keysight employees



31%

Women in
Keysight's **workforce**



23%

Women in
Keysight **leadership** roles



16%

Women in
Keysight **R&D** roles

POSITIVELY IMPACTING THE GLOBAL COMMUNITY



12,000

Employee volunteer
hours in 2019



~670,000

Students engaged through
STEM education (since FY18)



7.4%

Energy conservation
(FY19)



17.9%

Water conservation
(FY19)

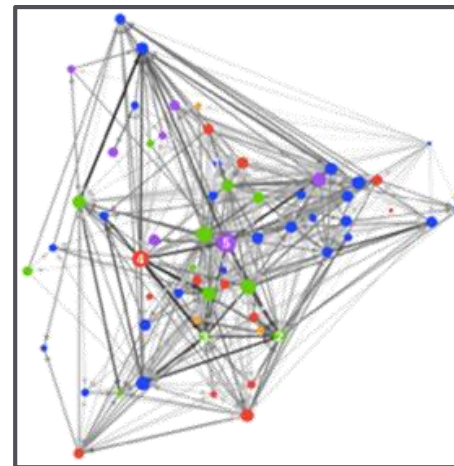
Maximizing Employee Engagement



KLM IS PART OF EVERYTHING WE DO

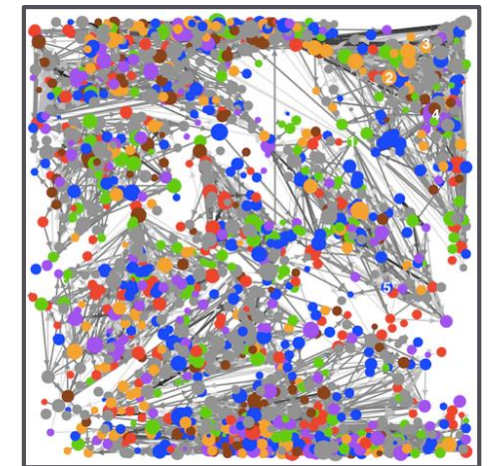
- ✓ A common framework and language that creates employee alignment with company strategy
- ✓ Builds business competence and investment in Keysight's success
- ✓ Company-wide training led to off-the-charts engagement

Organizational Connectedness Metric & Visual¹



Typical employee connectedness during a training event

VS.



Keysight's employee connectedness during the KLM training

Culture Empowers Continuous Learning

Drives commitment and contributions



“My purpose and passion help me stretch beyond my comfort zone.”

Deepty Chauhan

R&D Manager, PathWave Cloud Program Lead



“The Emeritus program was a perfect opportunity to help early career engineers develop, grow, and thrive in their careers.”

John Swanstrom

Keysight Emeritus Expert

Our Culture is Being Recognized and Rewarded

Internal Recognition from the **Great Place to Work** Employee Survey



GLOBAL RECOGNITION



Culture and Talent Transformation Key Takeaways

Strengthening our competitive advantage for future growth

1

Company results fuel excitement for continued success

2

Building next-generation talent through internal networks to strengthen our culture

3

KLM provides a common framework and language to drive top and bottom line results

4

Our focus on R&D and software talent growth will further drive culture and Company success



Technology Leadership & Software Differentiation

Jay Alexander

SVP and Chief Technology Officer

Technology Leadership & Software Differentiation Themes

Executing on Keysight's strategy and driving growth

1

Powerful R&D team and innovation engine
for creating **first-to-market solutions**
that drive **customer success**



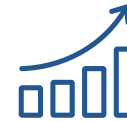
2

Sustainable competitive advantage
from proprietary technology capabilities that create differentiation



3

Tremendous growth in software capabilities and results,
with more PathWave opportunity to come



4

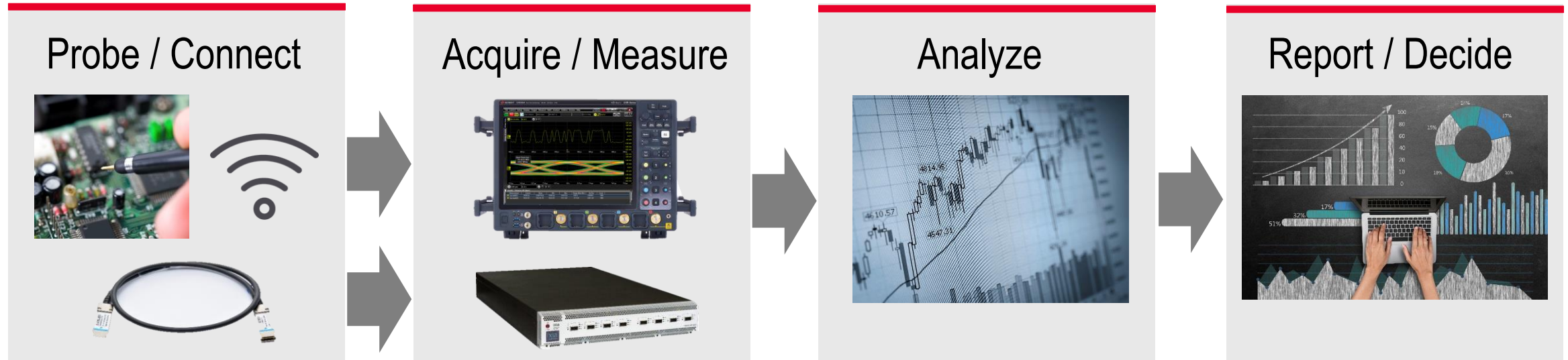
Attacking next growth opportunities
to augment the foundation for future success



Keysight's Approach to R&D Starts with Our Solutions Strategy

Transform from hardware-centric products to software-centric solutions, including more services content

Additional Opportunity to Differentiate and Capture Value



Hardware

Software and Services

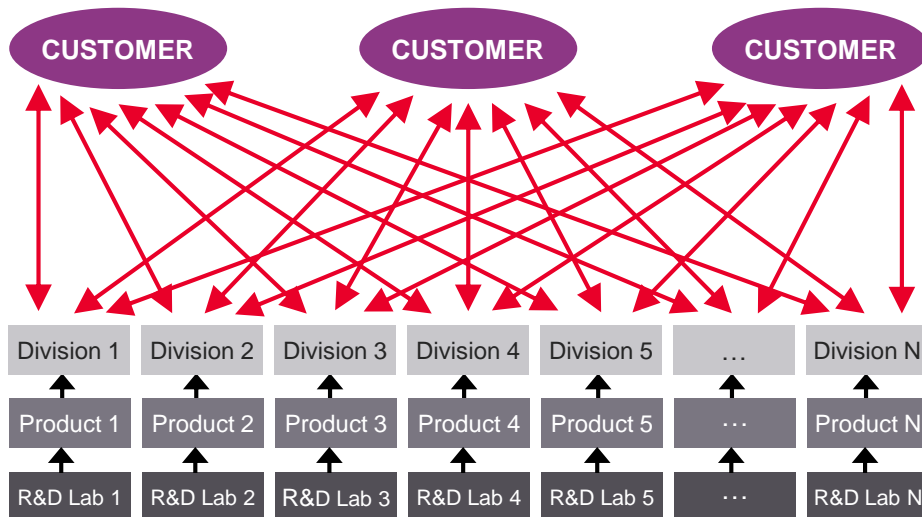
Transformed Organization for Solutions Underpins Our Success

In 2016 Keysight pivoted from siloed divisions to industry-based solutions groups

FROM

- Individual products with hardware bias
- Slower, complex decision-making and execution due to multiple owners interfacing with customers
- Product line run-rate funding

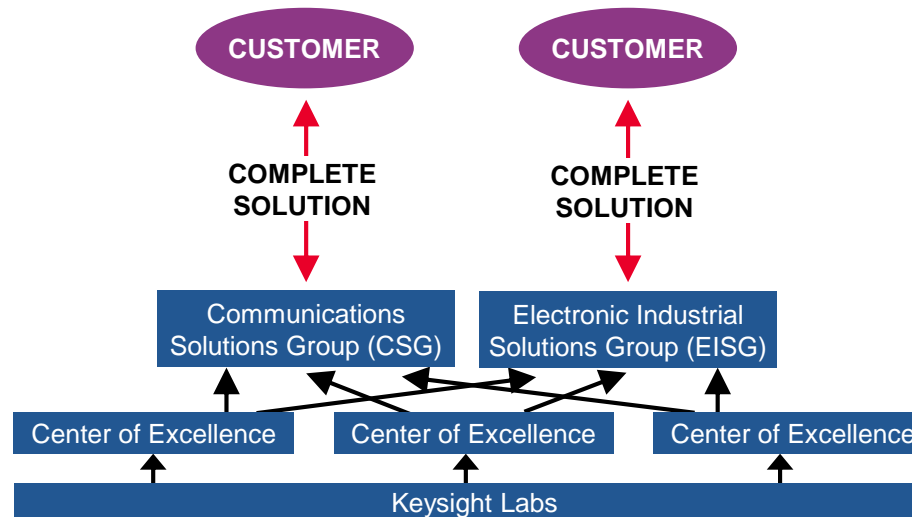
OLD



TO

- Full solutions: Hardware + Software + Services
- Faster commitments and solutions development for customers; single decision owner
- Strategic Keysight growth investments

NEW



Actions Taken Since 2018 Investor Day

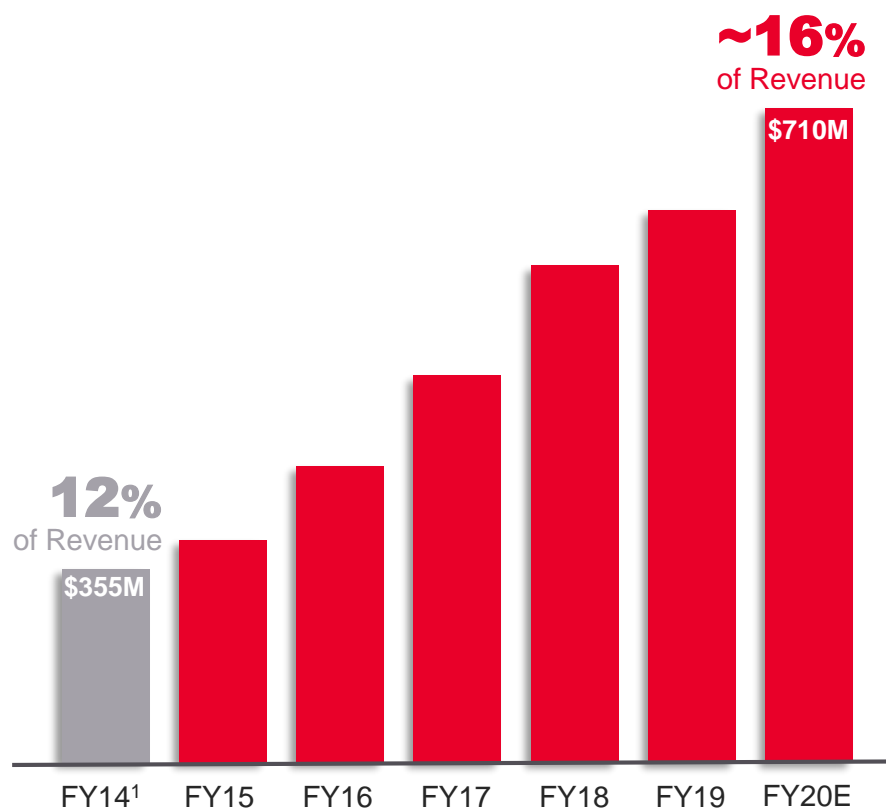
- Further consolidated core technology teams into Keysight Labs, to pursue fewer, more impactful programs (2018)
- Incorporated services into solutions groups, to more easily enable full solutions (2019)
- Fully integrated Ixia into Communications Solutions Group (2020)

Benefit

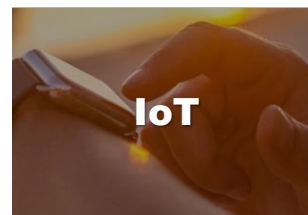
- ***Faster*** development of ***more capable*** solutions for Keysight's customers

Strategic R&D Investment Has Resulted in Sustained Revenue Growth

R&D Investment



Focus



Impact

Strong Financial Return

FY15 – FY19 average ROIC of 22% enabled by many first-to-market solutions that drive growth

- ✓ **5G:** Over 100 sustained and monetized customer collaborations; 17 quarters of double- or triple-digit order growth
- ✓ **Automotive:** 88 innovative solutions targeting EV and HEV especially
- ✓ **Software:** Initial PathWave platform with much more to come

Acquisitions Have Added Capabilities and Expertise

And expanded our served market

5G Wireless Solutions Beyond the Physical Layer

Anite

Software-centric solutions for wireless R&D and network performance testing

prisma
telecom testing

Industry-leading solutions for test of next-generation base stations

Core & Edge Network Solutions

ixia

Test, visibility and security solutions for network development and deployment

Automotive & Energy Solutions

scienlab

Advanced test solutions for electric vehicles and charging infrastructure

Technology Capabilities for Quantum Computing

Signadyne

Labber
QUANTUM

Services Capabilities

PSNA

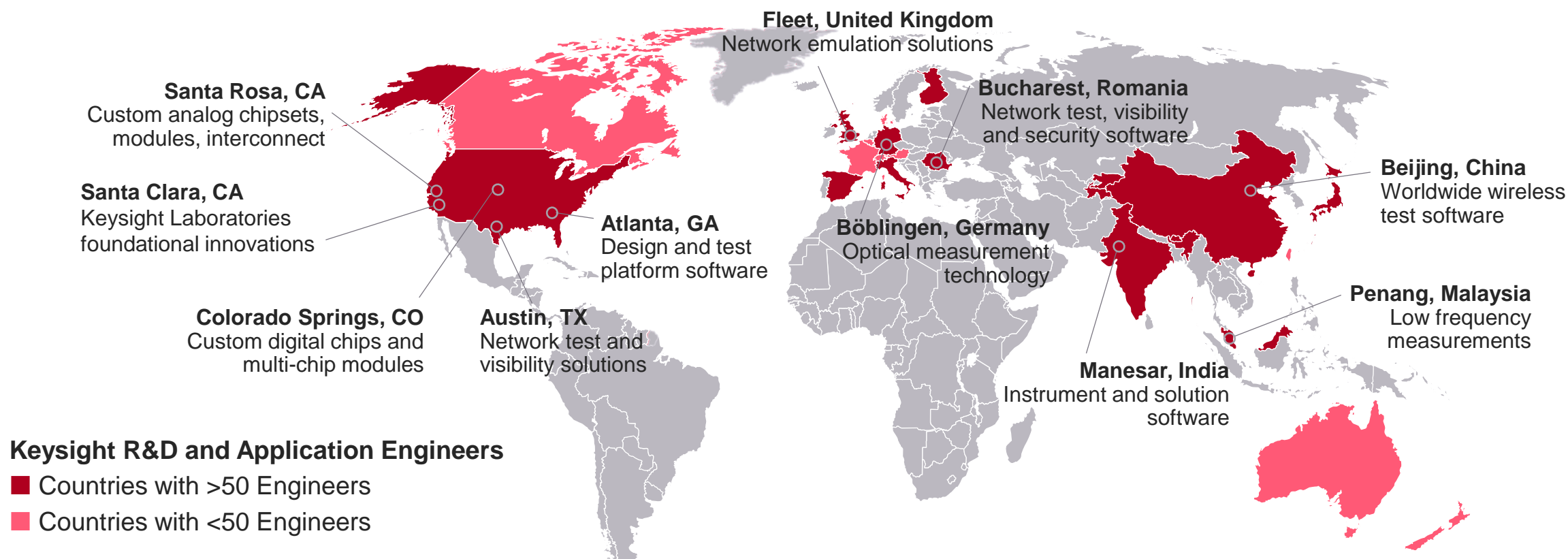
Electroservices

Liberty Calibration

THALES
Australia Calibration Services

Keysight's R&D and Technical Sales Teams are Close to Customers

Validating our investments and enabling first and best solutions



Keysight R&D and Application Engineers

INDUSTRY-LEADING TECHNOLOGISTS

- ~3,000 R&D engineers, 40%+ with M.S. or Ph.D. degrees
- Deep connections with leading research universities such as Stanford, UCSD, Georgia Tech, Bristol, Tsinghua, Oulu

THOUGHT LEADERSHIP

- Active in 30+ standards bodies and industry consortia
- 3,000+ patents awarded¹, with hundreds of new applications and trade secrets generated each year

EMBEDDED WITH MARKET LEADERS

- Diverse and deep customer relationships around the world
- Viewed as trusted advisor and partner
- Strong local R&D presence

Our Unique Innovation Engine Is a Competitive Advantage

Difficult-to-Replicate Approach
Delivers First-to-Market Solutions

Partner with leading customers to create high-value **solutions** with faster time-to-market than previously possible

Develop hardware and software **products** to address many applications, applying deep competencies in areas such as High Frequency Measurements and Digital & Photonics Measurements

Innovate game-changing technology **components** – breakthroughs created for maximum impact and scale

Solutions
Groups

Centers of Excellence

Keysight Labs Central Teams



Example: *Over-The-Air (OTA) Test – A Must for mmWave Applications*

OTA Measurement – A Realm that Requires Significant Innovation



Compared to cabled measurements, requires new specifications, calibration procedures, and measurement software

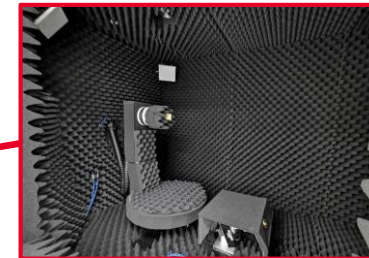
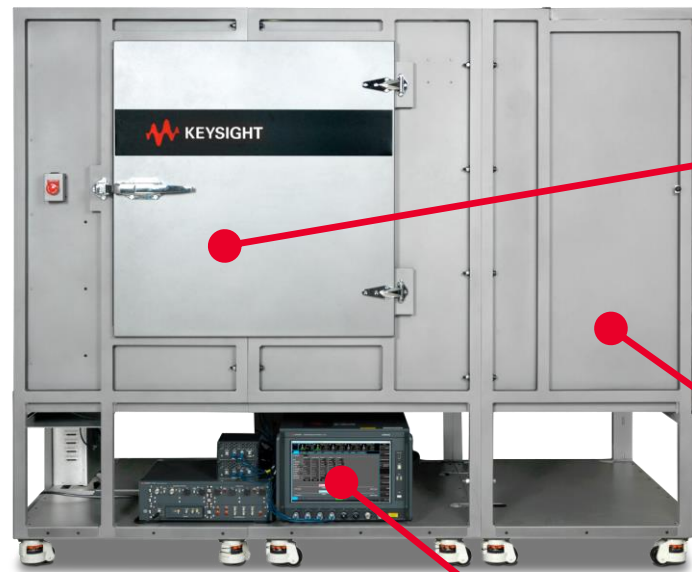


Keysight solution originally developed for early validation of mobile devices, since extended to other segments such as Automotive

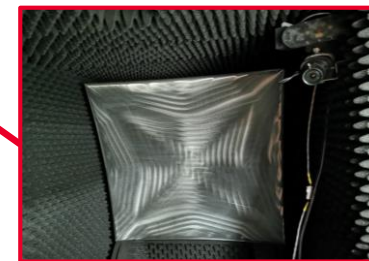
Compact Antenna Test Range

- Innovated by Keysight Labs and brought to market by Keysight's Solutions Groups
- Initial prototypes sold to customers who needed to be first
- Full solution includes chamber plus advanced instruments and software
- Just one aspect of our total solution portfolio for the 5G workflow

Calibrated Test Chamber



Antennas and robotic positioner for smartphone



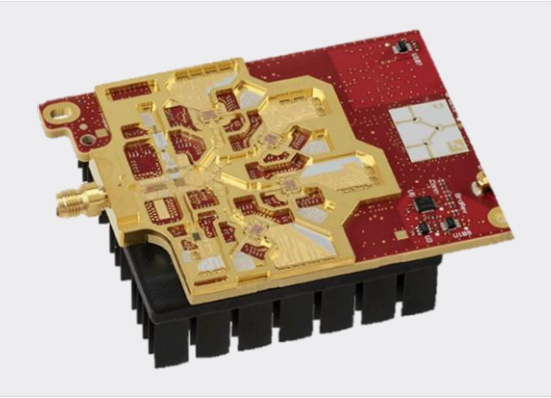
Proprietary mmWave reflector

Keysight instruments and software

Proprietary Hardware and Software Capabilities that Go Well Beyond Commercially-Available Technology

Keysight Fab

Santa Rosa, CA



- Proprietary chips, modules, and interconnects, purpose-built for advanced solutions such as 5G and Automotive radar test
- Optimized with hundreds of years of expertise
- Innovating for even more usage across Keysight and preparing for next performance upgrades

Delivers
performance, cost,
and time-to-market
benefits for Keysight
and our customers

Software Design Center

Atlanta, GA



- **Platform software** developed with Agile methods to support electronic design and test solutions
- 60+ developers focused on:
 - ✓ Cloud-first design and deployment
 - ✓ Data management and analysis
 - ✓ Modern, consistent user experience
- In partnership with Georgia Tech

Accelerates
Keysight's software
transformation
and platform
development

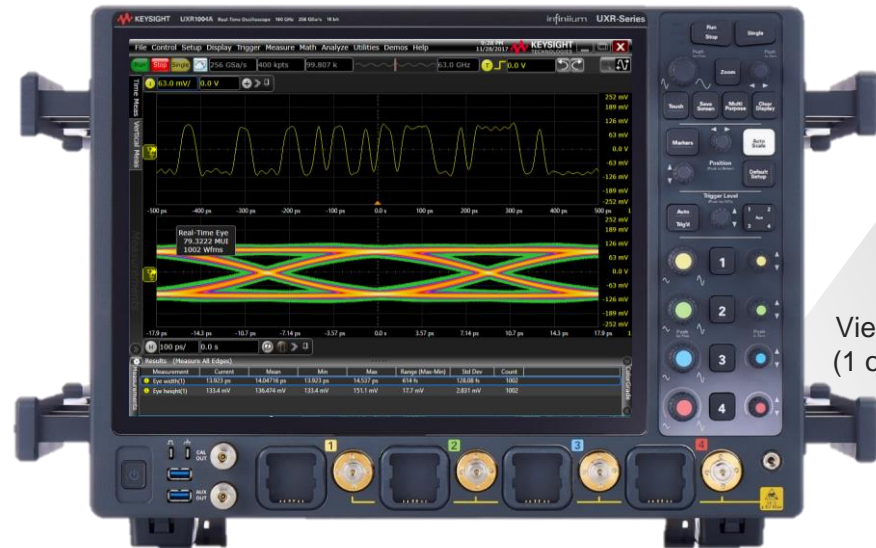
VERTICALLY INTEGRATED FOR DIFFERENTIATED TECHNOLOGIES

Example: *Infiniium UXR-Series – Undeniable Performance Leadership*

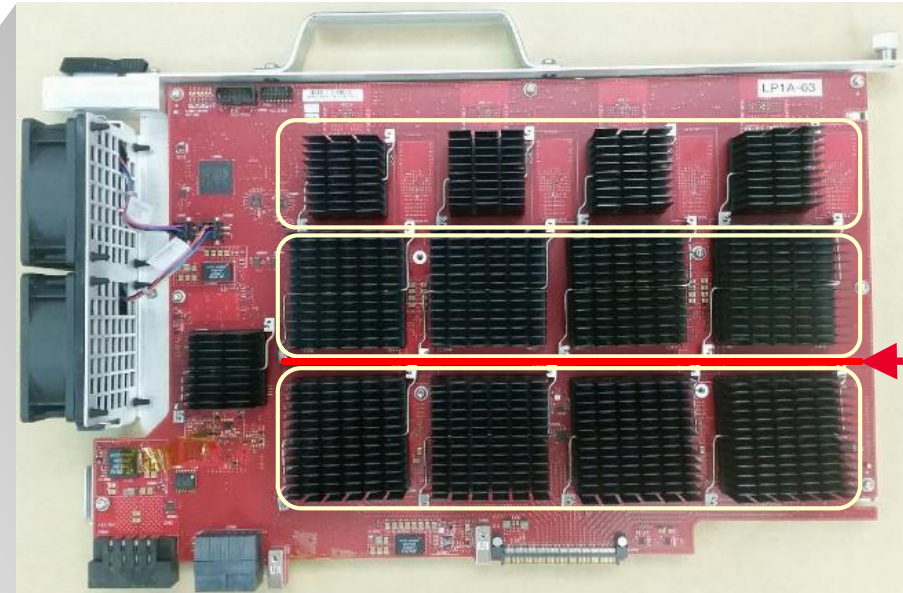
The world's most advanced oscilloscope and a solution platform in its own right

- | | Vs. Predecessor |
|--------------------------------------|-----------------|
| • 110 GHz real-time bandwidth | 175% |
| • Full bandwidth on all 4 channels | 200% |
| • 256 GSa/s on all 4 channels | 160% |
| • 10-bit samples | 125% |

2G max memory, wide sensitivity range, self-calibration, and dozens of application software packages



View of acquisition board
(1 of 4 inside the product)

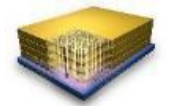


Input Module
Connects Here



2.56 Tb/s at this Interface
(320 lanes at 8 Gb/s each)

10 Tb/s Total Data Rate Across 4 Channels
Enabled by Proprietary Technology Capabilities



New
Memory
Manager



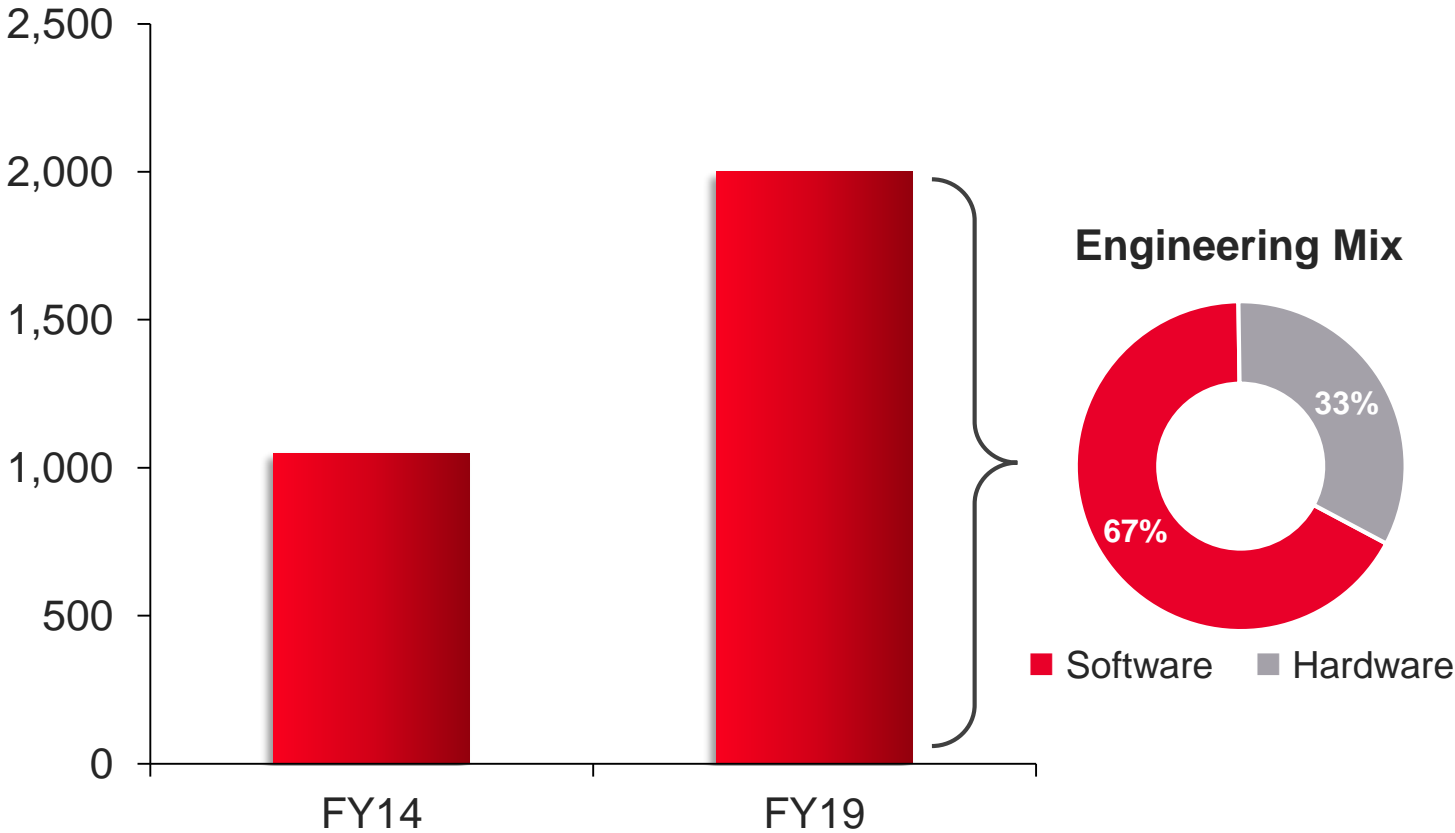
New Data
Processing
ASIC



Custom
10-bit A/D
Converter

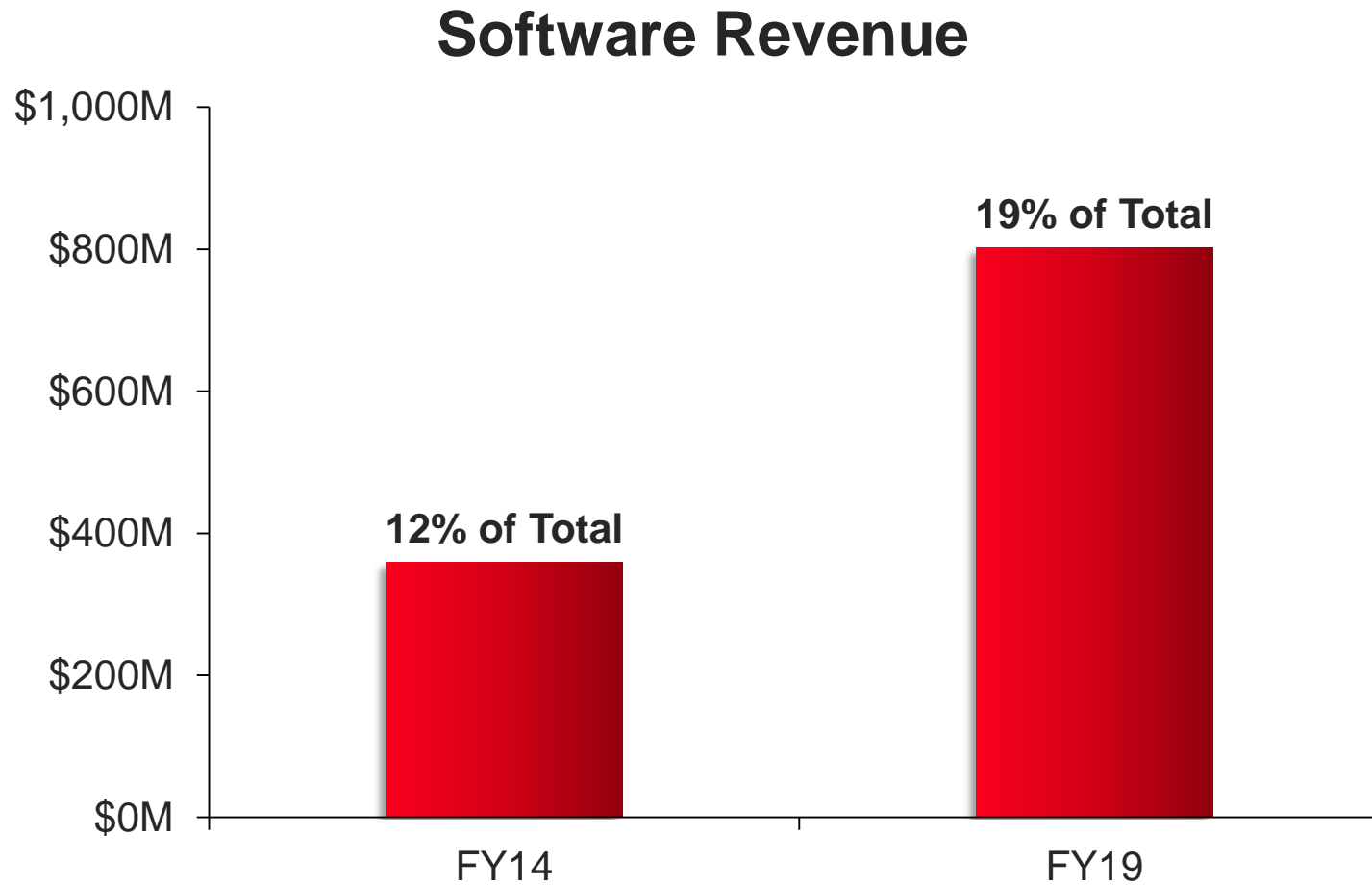
Dramatic Growth in Software Capabilities

Number of Software Engineers



83%
Increase in
Software
Engineers

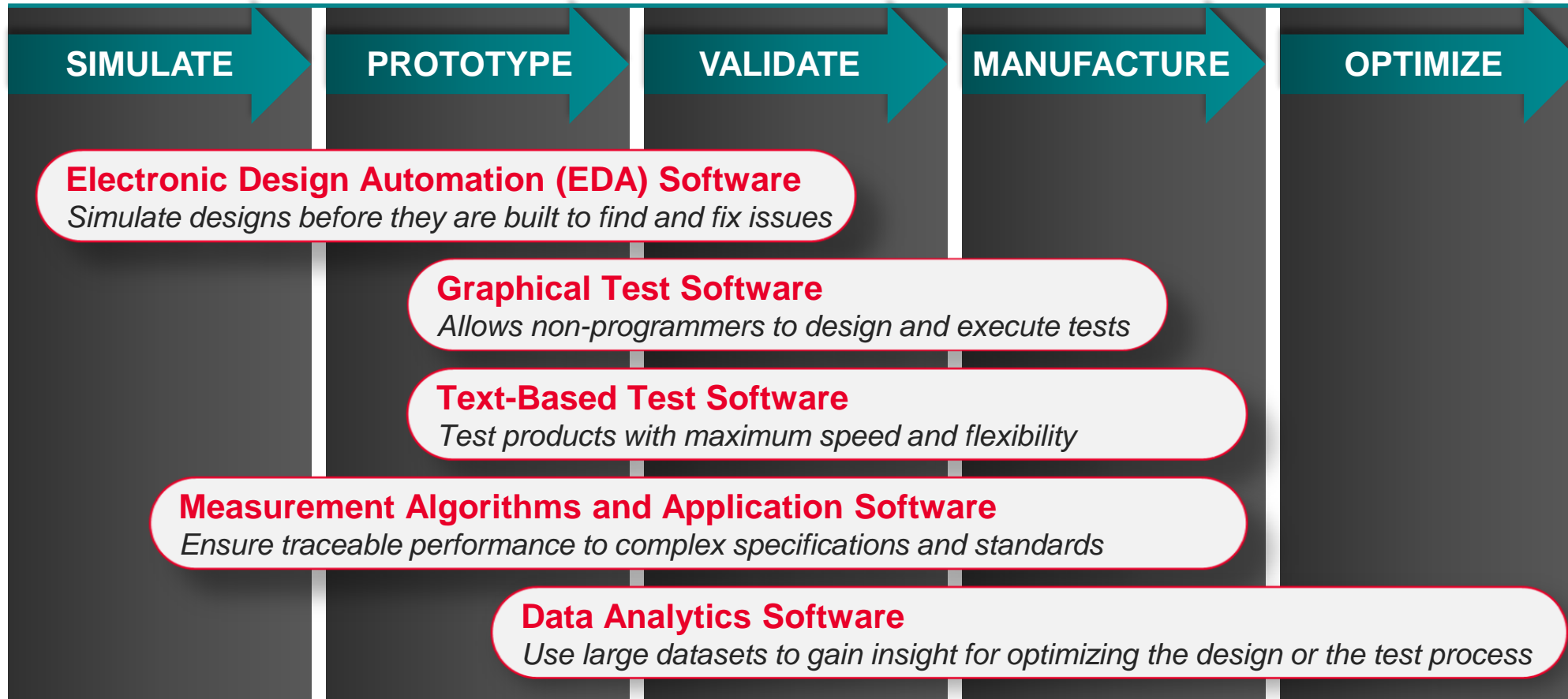
And in Software Revenue



123%
Increase in
Software
Revenue

Next Opportunity: Unify Fragmented Design and Test Software for Faster Time-to-Market and Lower Costs

LIFECYCLE PHASES



Customer Pain Point:

Inability to share specifications, test software, and results across lifecycle phases, leading to costly and time-consuming duplicate work

Quantifying the Pain Point

Customer challenges led to Keysight innovation of PathWave

ENGINEERING CHALLENGES

>1-month correlating data, *at every iteration*

Getting design and test results to match takes engineers months; for 49% it takes 3 months or more

3+ different software tools utilized

For testing and verification

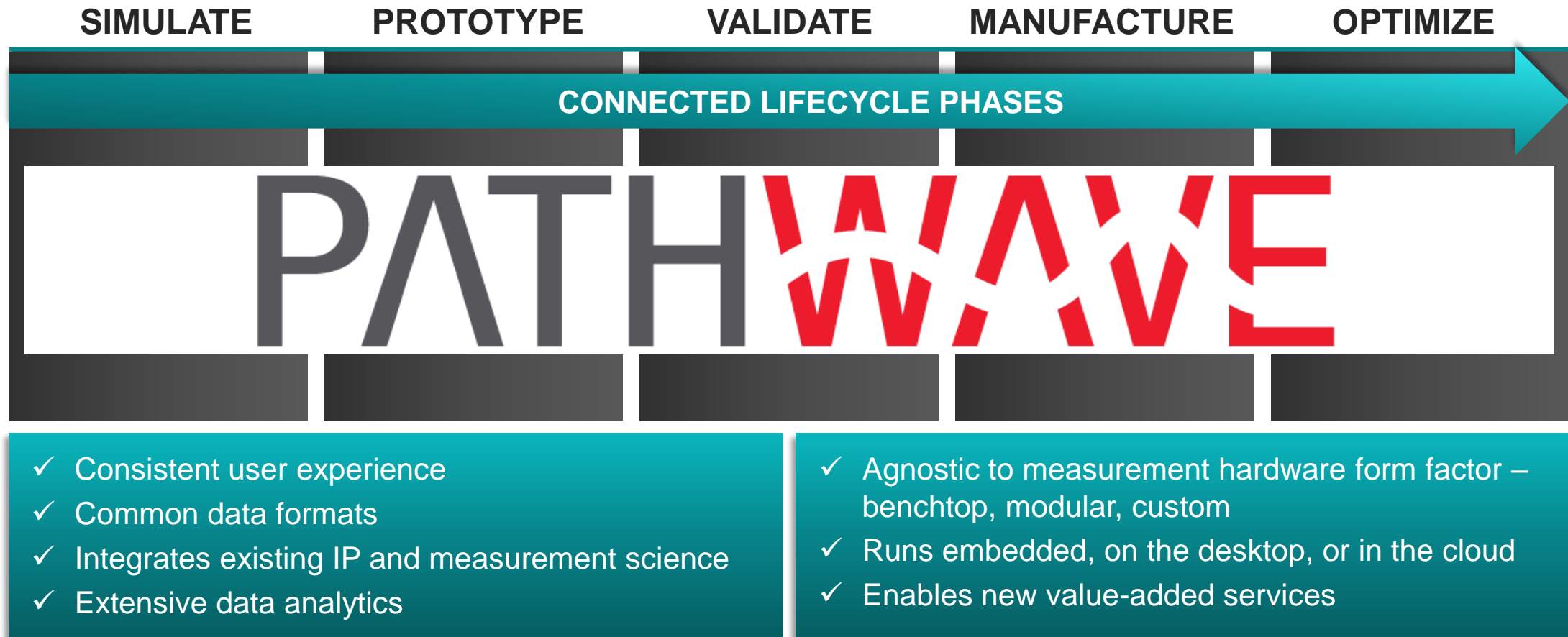
**93% ACROSS THE INDUSTRY
REPORTED WANTING A CHANGE**

Engineers want to accelerate time-to-market with an integrated product development solution

KEYSIGHT'S STRATEGIC SOLUTION

PATHWAVE

PathWave: A Superior Software Platform that Increases Productivity Across the Overall Workflow



OPEN, SCALABLE, PREDICTIVE PLATFORM

PathWave Platform Development

2018

- **Platform vision and architecture goals**
- **Components released:**
 - ✓ Manufacturing Analytics
 - ✓ Asset Advisor
 - ✓ PathWave FPGA

2019

- **Platforms released:**
 - ✓ VXG Embedded Edition
 - ✓ Desktop Edition
- **Components released:**
 - ✓ Instrument Connectivity
 - ✓ Uniform Licensing
 - ✓ Waveform Analytics

2020

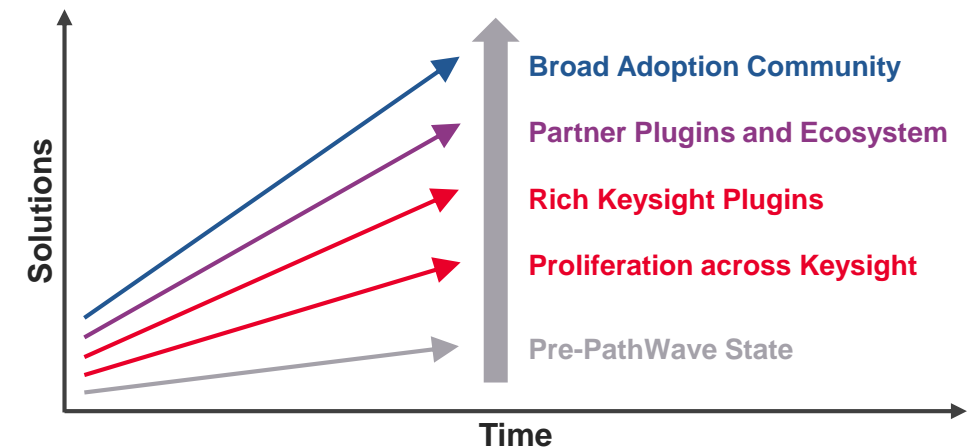
- **Platform releases:**
 - ✓ Cloud Edition
- **Component releases:**
 - ✓ Connection Expert
 - ✓ Test Automation
 - ✓ TestOps
 - ✓ Test Station Manager
 - ✓ Many Keysight solutions...

2021+

- **Updates to all platform editions**
- **Enable broader developer community**
- **Proliferate solutions widely**

PATHWAVE

Solutions Velocity



Example: *PathWave TestOps*

Breakthrough cloud solution being developed with leading 5G customer

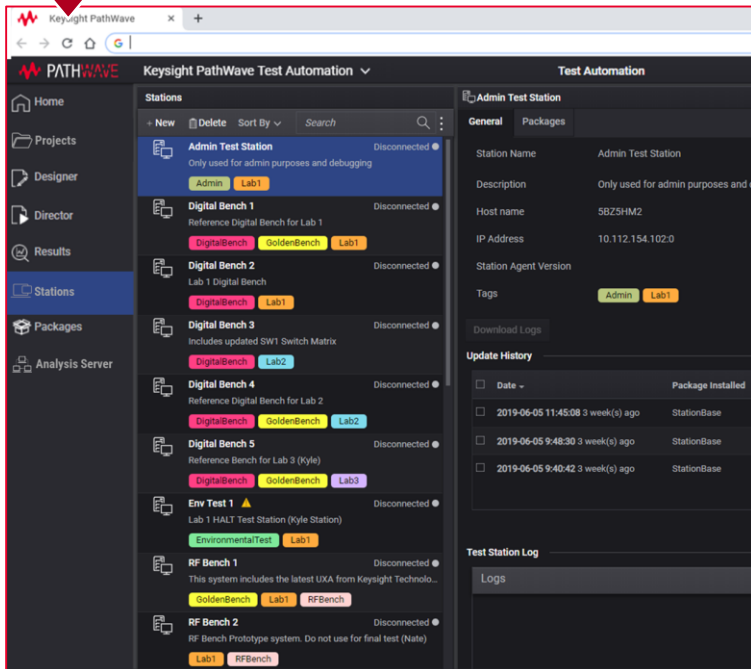
Cloud-Based Testing Cockpit

At-scale operation of complex, high-value test processes

Optimized deployment of expensive test assets

Real-time metrics for fast insights and continuous improvement

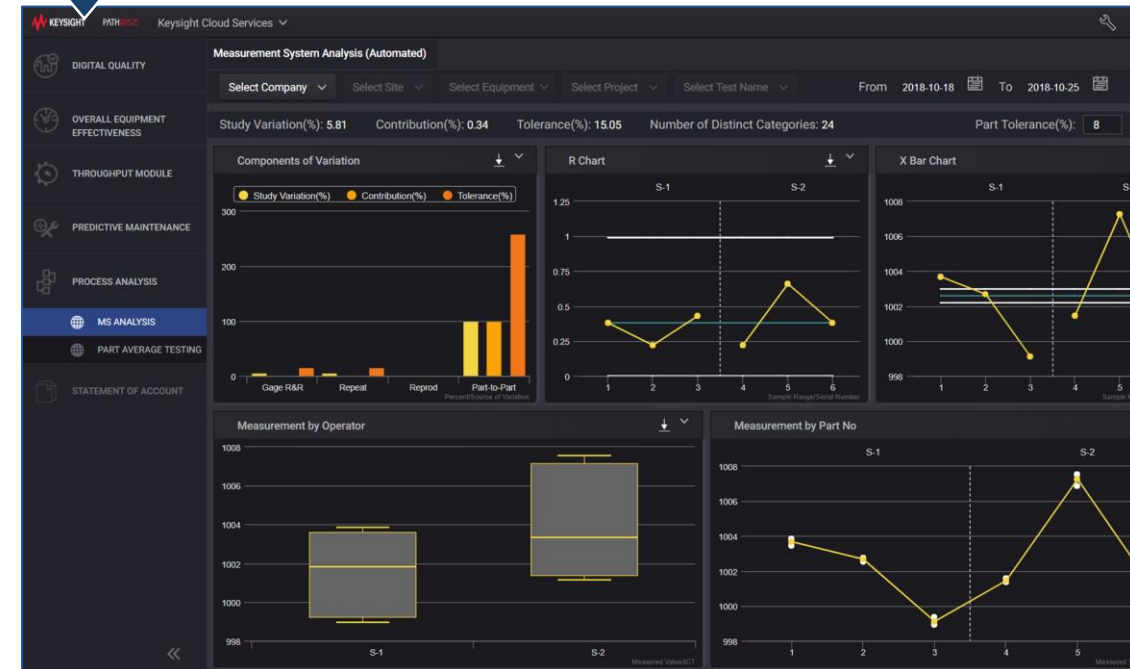
Coordinated management of dozens of test stations at multiple physical sites



Utilization analysis and equipment health monitoring



Analysis of immediate test results and trends over time



Seeding the Next Growth Opportunities

Selected focus areas – executed in partnership with universities and industry consortia

6G

- Joined 6G Flagship Program at University of Oulu in Finland
- Assigned program leader (proven technical manager who led Keysight's 5G efforts)
- Assessing core technology requirements in Keysight Labs

Quantum Computing

- Acquired Signadyne and Labber to gain quantum control expertise and application insights
- Staffing quantum-focused R&D team located near MIT and Lincoln Labs
- Joined MIT Center for Quantum Engineering, initiated strategic partnership for qubit control research
- Engaged in Quantum Economic Development Consortium led by National Institute of Standards and Technology

+

- Autonomous drive emulation – prototyping breakthrough approach with lead OEM customer
- Next-Generation Network Visibility – new capabilities being explored as the network transforms
- Artificial Intelligence and Machine Learning – multiple opportunities for domain-specific contributions across Keysight's market segments

Technology Leadership & Software Differentiation Key Takeaways

Transformed, growing, and exceeding commitments

1

Sustainable competitive advantage with powerful, industry-leading R&D team and proprietary hardware and software technology

2

Critical first-to-market advantage

3

Addressing customer pain point with software-centric approach based around PathWave

4

Capturing growth opportunities now and planting seeds for the future



Communications Solutions

Satish Dhanasekaran

SVP, President – Communications Solutions Group

Communications Solutions Group (CSG) Themes

1

Solidified #1 position in end markets, delivering substantial growth and profitability



2

Actioning significant opportunities in key technology waves including 5G, defense modernization, and quantum



3

Delivering first to market, software-centric solutions aligned with industry priorities; offerings significantly enhanced by strategic acquisitions



4

Driving portfolio strategy that enables customers' business outcomes and accelerates innovation for digital transformation



CSG at a Glance: Delivering Record, Above-Market Performance

FY19 Highlights

+12% YoY

Revenue Growth

\$0.7B

Operating Income³

52% YoY

Operating Income Growth

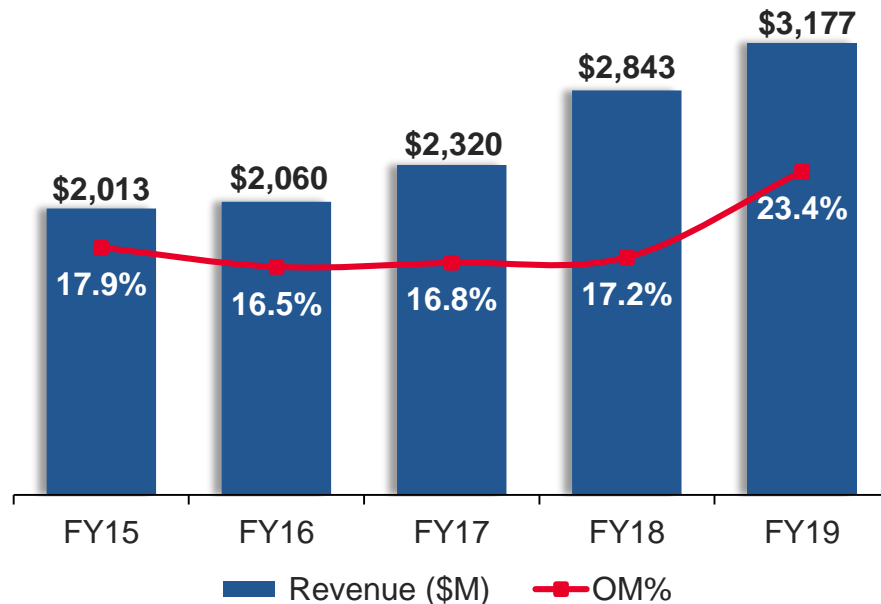
+620 bps²

Operating Margin Growth

\$12.7B

Addressable Markets

Revenue¹ & Operating Margin^{2,3}



Communications Solutions for Diverse, Growing End Markets

3,000+ Global, Close-to-Customer Engineering Talent



**Commercial
Communications**

69% Revenue



**Aerospace, Defense and
Government**

31% Revenue

Exceeded Commitments, Gaining Momentum

What We Said At 2018 Investor Day

Actions Taken

5G technology wave will drive growth

Developed end-to-end 5G platform and delivered solutions at scale

Extend solutions leadership and expand customer base (Ixia)

Integrated Ixia and accelerated synergies and leverage

Geopolitical dynamics creating opportunities

Prioritized investments to create solutions for defense modernization

Focus on operational excellence to create value

Enhanced capabilities to rapidly introduce new products and monetized differentiation



RESULTS

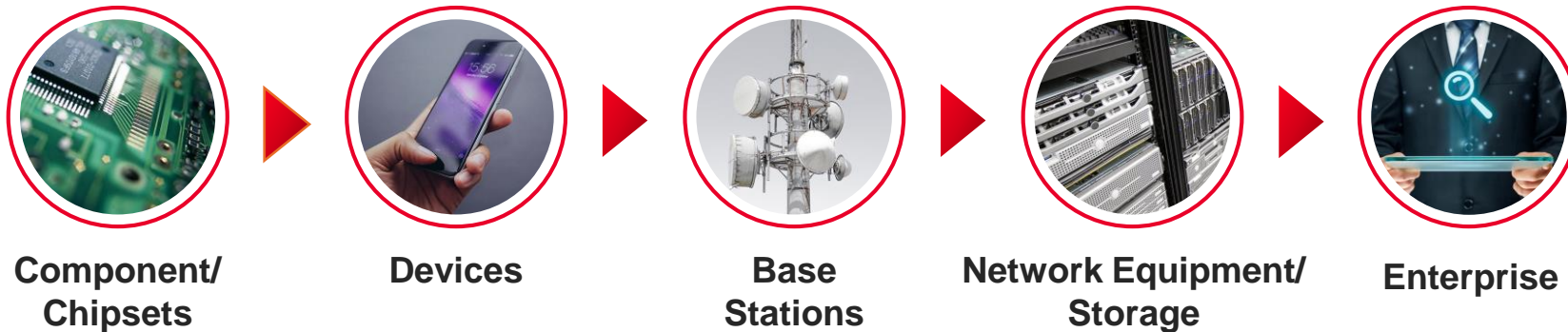
2 Consecutive Years of Double-Digit Growth, Outperforming Market

- ✓ Delivered 4 years of sustained double-digit 5G order growth
- ✓ Returned Ixia business to growth in FY19 (+9%)
- ✓ Grew U.S. Aerospace Defense revenue at 7% CAGR from FY15-FY19
- ✓ +300 bps GM expansion in FY19

Commercial Communications Overview

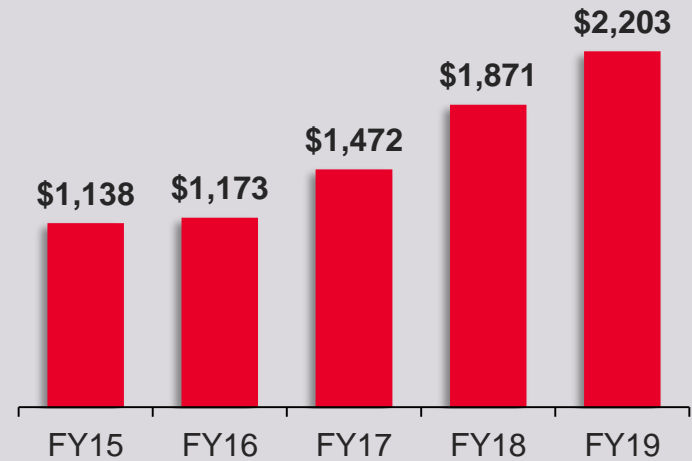
- Business organized around the wireless and wireline ecosystems; delivering end-to-end value, up and down the technology stack, and across the ecosystem
- Accelerating innovations through software-centric solutions that address key challenges around user experience, mobility, interoperability, and security

Differentiated Solutions for Wireless to Wireline Convergence



Technology Waves Drive Sustained Innovation

Revenue (\$M)



- ✓ FY15-19 revenue CAGR of 18% and significant margin improvement driven by higher value solutions, software content
- ✓ Integrated strategic acquisitions (AT4, Anite, Ixia and Prisma) to create solutions end-to-end across entire workflow

Aerospace, Defense and Government Overview

- Enable global defense modernization by providing mission-critical instrumentation, solutions, and services to government agencies, prime contractors and broad supply chain
- Solve challenges around new threats surfacing as a result of digital transformation

Solutions Address Technology Refresh and Defense Modernization Trend



**ELECTROMAGNETIC
SPECTRUM
OPERATIONS
(EMSO)**



**SPACE &
SATELLITE**



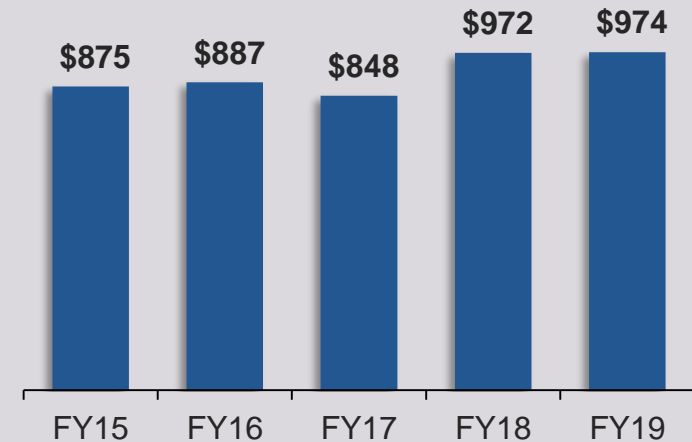
**SUPPLY CHAIN &
COMMUNICATIONS**



**ADVANCED
RESEARCH &
METROLOGY**

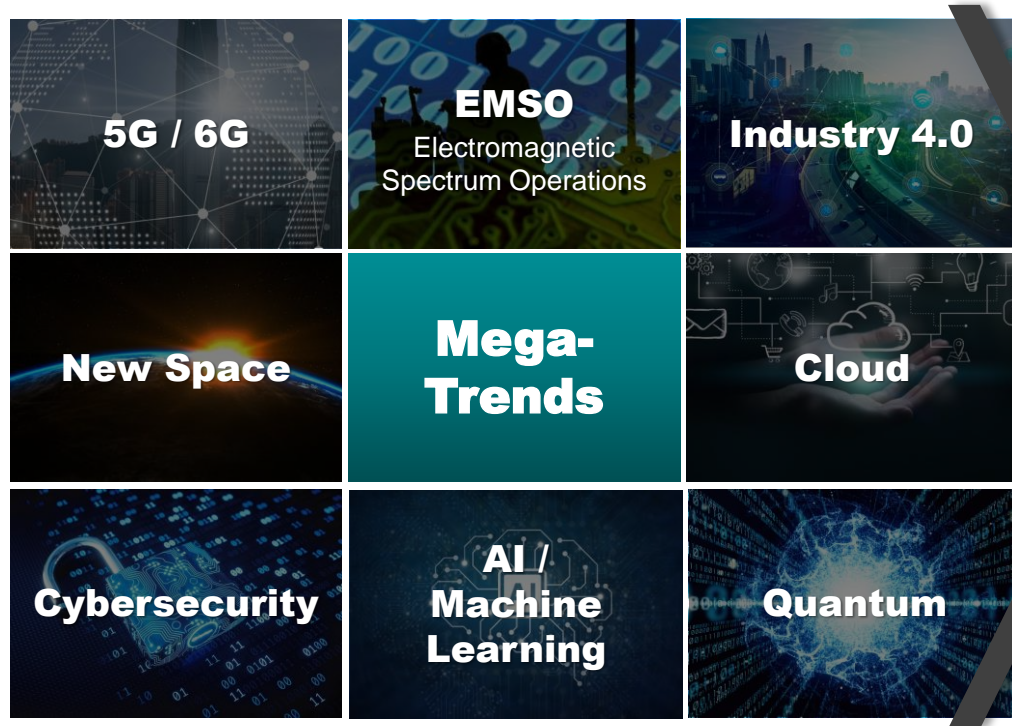
Industry Experiencing Rapidly Accelerating Innovation Cycles

Revenue (\$M)



- ✓ Revenue CAGR¹ of 3%; record orders exceeded \$1B in FY19
- ✓ U.S. region strength: >58% of AD business with 7% CAGR¹
- ✓ Strong growth and momentum in services: 8% CAGR²

Digital Transformation Driving New Innovation Paradigm



Customer Challenges



Accelerating Design Cycles
~2X¹



Increasing Technology Complexity
~2X¹



Improving Productivity
~25%/year¹

Our Innovation Strategy

Disciplined, Early Investment



Co-Innovating
with Market-Defining Customers



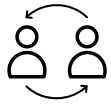
Connecting
Critical Workflows



Accelerating
through Acquisitions

Transforming from Tool Provider to Outcome Enabler

VOICE OF OUR CUSTOMERS



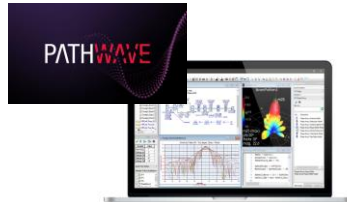
“Accurately troubleshoot and debug our designs.”

SUSTAIN



Maintaining #1 position with leading design and test platforms

- #1 in hardware
- #1 in software



“Launch our first 5G product for the global market.”

EXPAND



Delivering first-to-market solutions to enable customer workflows

- 5G solutions (R&D, manufacturing)
- Electromagnetic Spectrum Operations
- Network Visibility
- 400GE digital solutions

Simulate

Prototype

Validate

Manufacture

Optimize

“Create and execute the test strategy for our enterprise.”

GROW



Providing greater value throughout customer lifecycle

- Collaboratively implementing roadmaps with customers
- Integrating differentiated and value-added services to accelerate customer programs



Communications Solutions Growth Strategy



Maximize

5G Lifecycle
Opportunity



Accelerate

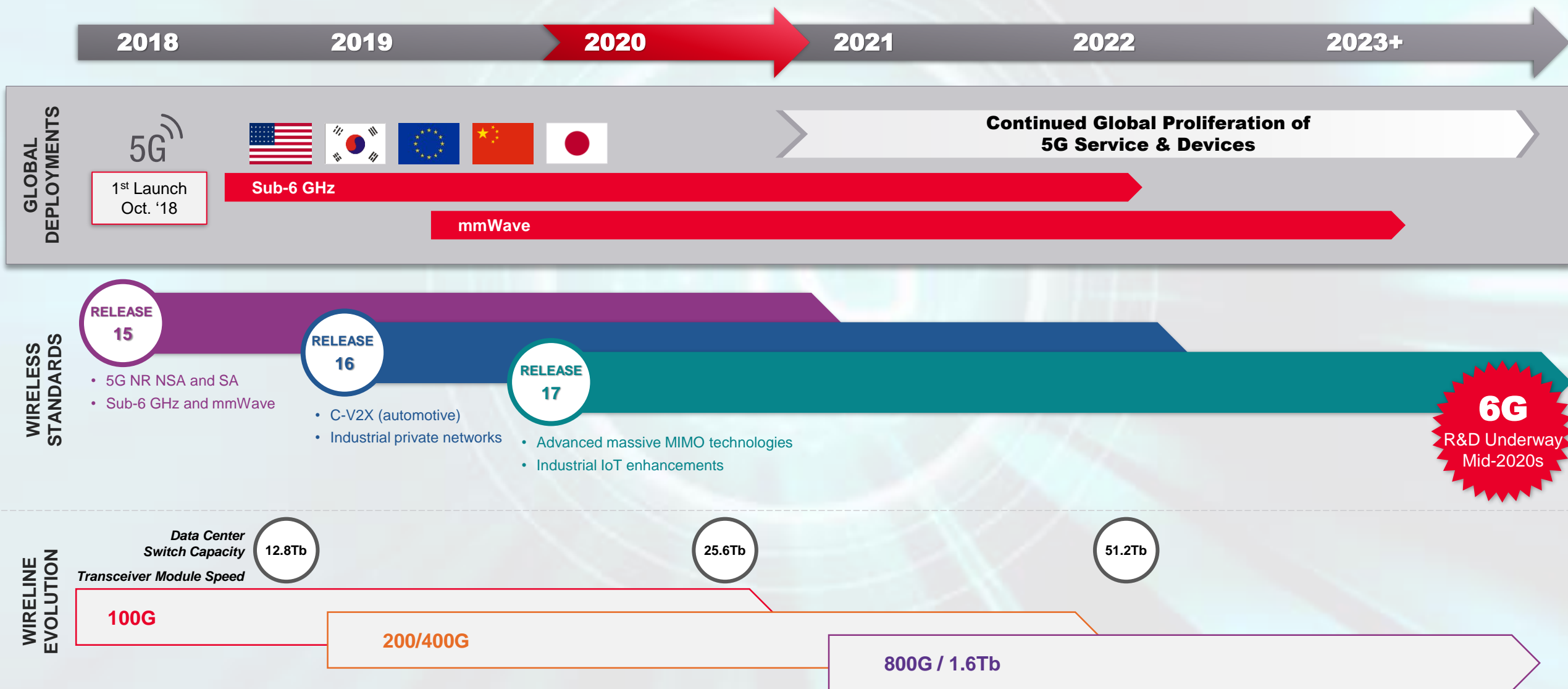
Defense
Modernization
Solutions



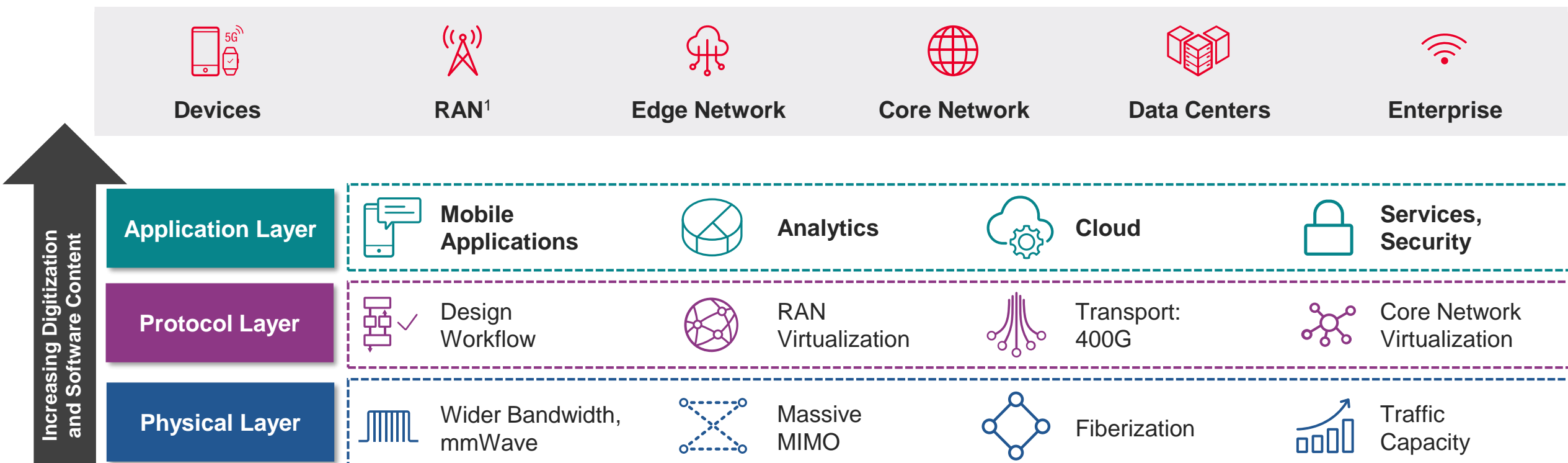
Seed

Next-Gen Growth
Opportunities

Industry View: 5G Progression and Deployments Drive Sustained Investment



5G: The Connectivity Fabric for the New Digital Economy

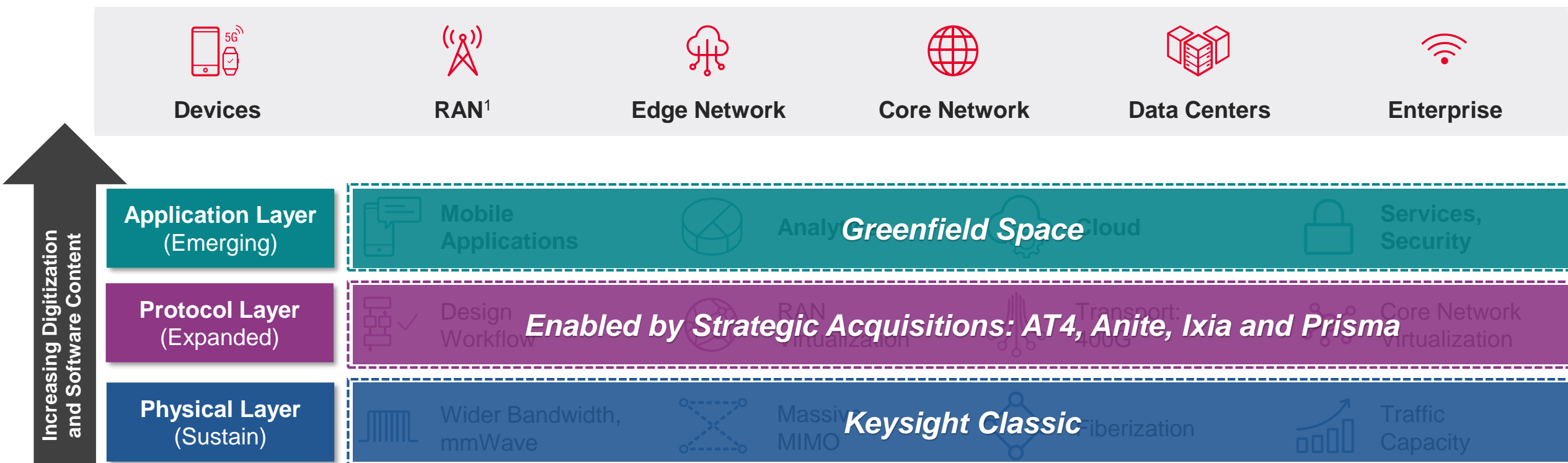


5G intensifies investment to re-engineer every aspect of value chain

Increased **security challenges** add new dimension of complexity

Business critical services will **require extensive validation in software**

Uniquely Positioned to Capture Value Migration Up the Stack

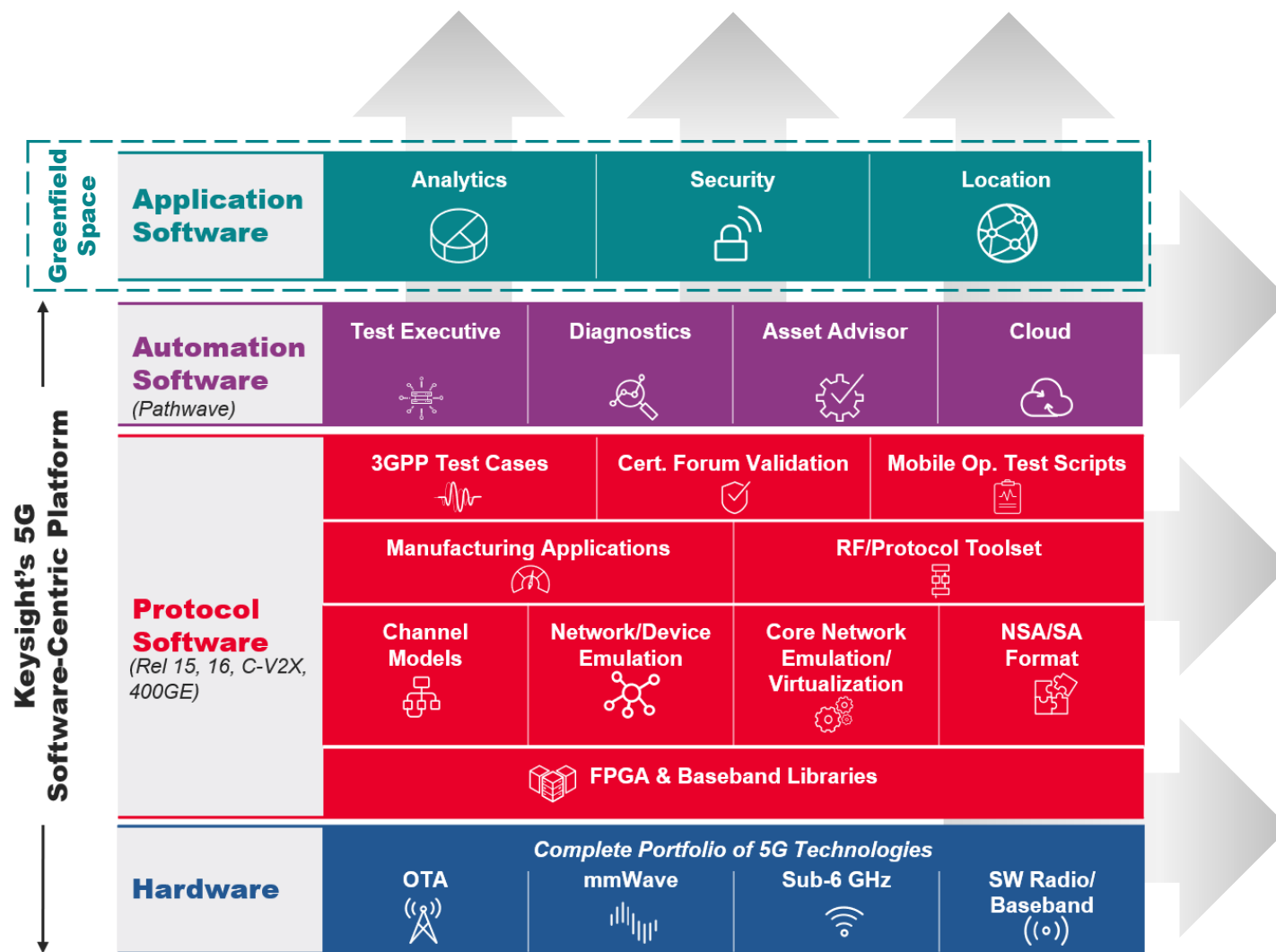


Momentum in physical / protocol layer solutions and actioning greenfield opportunities

Industry's Most Comprehensive 5G Platform Provides Foundation for Growth

Keysight's 5G "technology stack" is a proprietary combination of layers of product hardware, embedded software, connectivity, test, and security tools that enable customers throughout the entire 5G lifecycle

- ✓ Provides **end-to-end lifecycle** coverage from simulation through deployment
- ✓ Deep engagement and high-value offering create **sustainable** strategic partnerships
- ✓ Highly **extensible** (e.g., location, security, application space)
- ✓ Leverageable to **multiple vertical industries** (e.g., automotive, defense, industrial)
- ✓ Rich in **software IP**, creating sustainable differentiation and delivering profitable **recurring revenue** streams



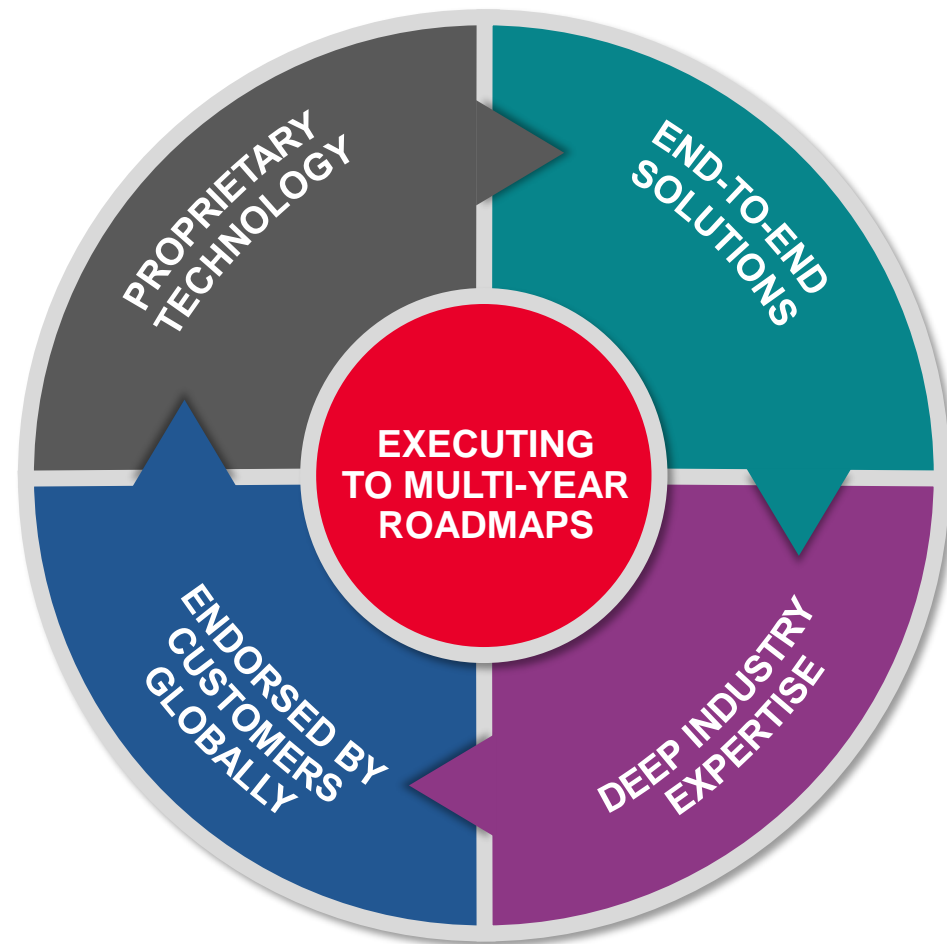
ADOPTED BY 375+ CUSTOMERS AND COUNTING

Keysight's Compelling 5G Value Proposition

Winning Across the Ecosystem



...With Increasingly Differentiated Solutions





Keysight Partnership Instrumental to Japan's 5G Launch

Customer need – form an ecosystem to launch 5G under challenging timelines



Keysight selected to deliver end-to-end solutions for the connected workflow

KEYSIGHT SOLUTION

- Established regional R&D presence to engineer solutions for local needs that will be deployed through 5G lifecycle
- Engaged pre-standards and deployed 5G “technology stack” across ecosystem:
 - ✓ Chipsets
 - ✓ Device makers
 - ✓ Network equipment manufacturers



Portfolio breadth enabled customers to validate complete communications stack



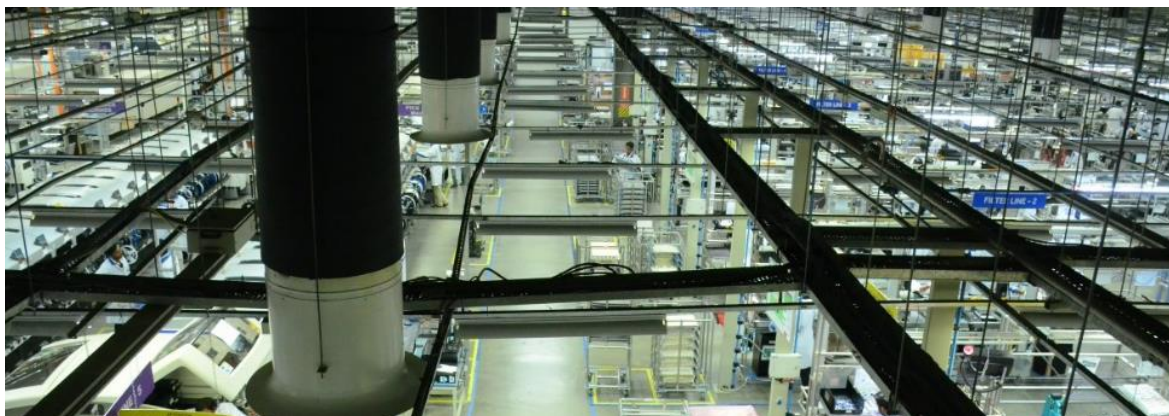
Redefining 5G Manufacturing with Pathwave Cloud Software

5G Workflow



Drivers for 5G Manufacturing Complexity

- ▶ Spectrum (mmWave frequency, new bands)
- ▶ Use of phased-array antennas **driving 10x test/calibration time increase**



KEYSIGHT SOLUTION

Breakthrough throughput with virtualized measurement IP via PathWave cloud software

Next-Generation Modular Transceiver



PathWave Cloud Software for Manufacturing

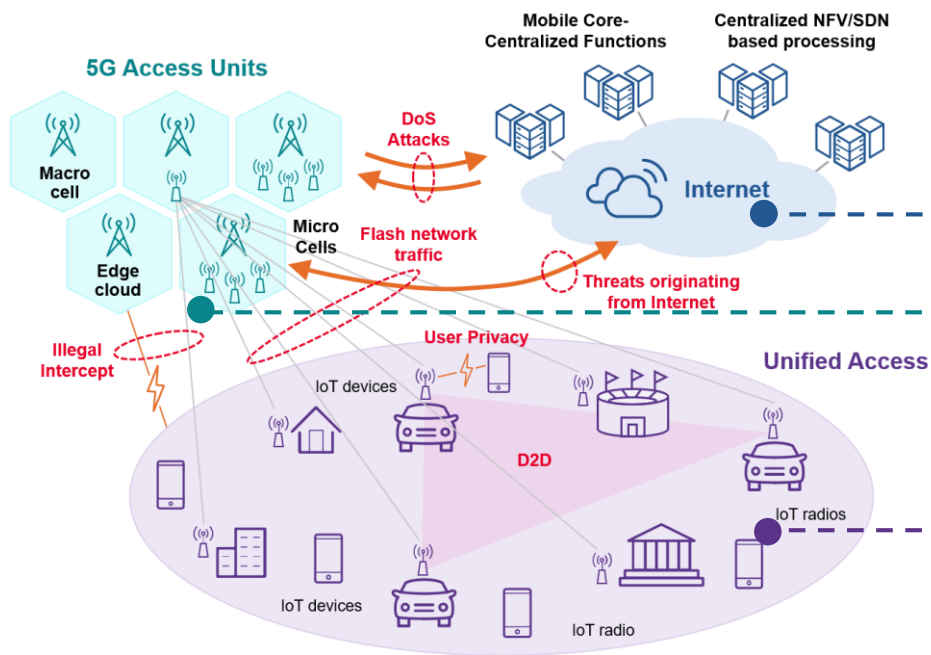




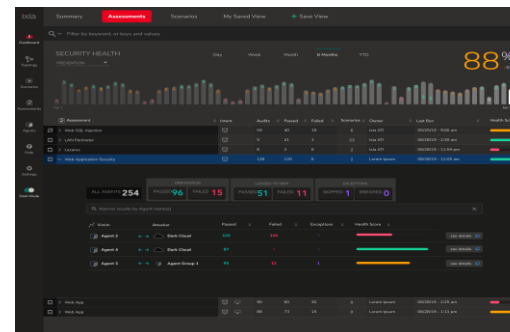
1 UNIQUE SOLUTION ACCELERATED BY SYNERGIES BETWEEN 5G PLATFORM AND IXIA Launched Industry's Only 5G Security Test Bed

Keysight Solution Emulates Threats in the Lab

Proliferation of connected devices results in magnified security vulnerabilities



Ixia Security Toolkit



Network & Device Emulation



Significant Opportunity Ahead and Positioned to Win



5G

Opportunity Drivers

Industry R&D investment continues

\$30B in R&D spend through 2026¹

Scaling deployments drive increased need for validation, conformance, manufacturing and operational solutions

Multi-industry proliferation of technology to new applications including security, cloud, and IoT

>21 major use cases anticipated²

Delivering Enhanced Solutions to Accelerate Defense Modernization



EMSO

(ELECTROMAGNETIC SPECTRUM OPERATIONS)

Race for control of spectrum

Strong budget support for innovation

Leading with **differentiated threat simulation and analysis** solution



SPACE & SATELLITE

Privatization of space and satellite revolution

5X increase in satellites over next 5 years

Building **portfolio for workflow** in ground, air, and space domains



COMMUNICATIONS & SUPPLY CHAIN

5G extending to Aerospace Defense applications

5G test beds have formed globally

Leveraging **comprehensive 5G solution platform into AD applications**



ADVANCED RESEARCH / METROLOGY

New technologies needed to enhance performance

Changes in threat environment drive U.S. DoD R&D spend

Broadest portfolio of simulation software and high-performance instrumentation

Outcomes-based Services Platform Increases Customer Performance, Efficiency, Time-to-market

Dynamic Threat Simulation Software Gaining Traction in Market

INTRODUCED

November 2019

APPLICATION

Complex high-fidelity threat environments

KEY ATTRIBUTES

Real-time kinematics and angle of arrival calculation

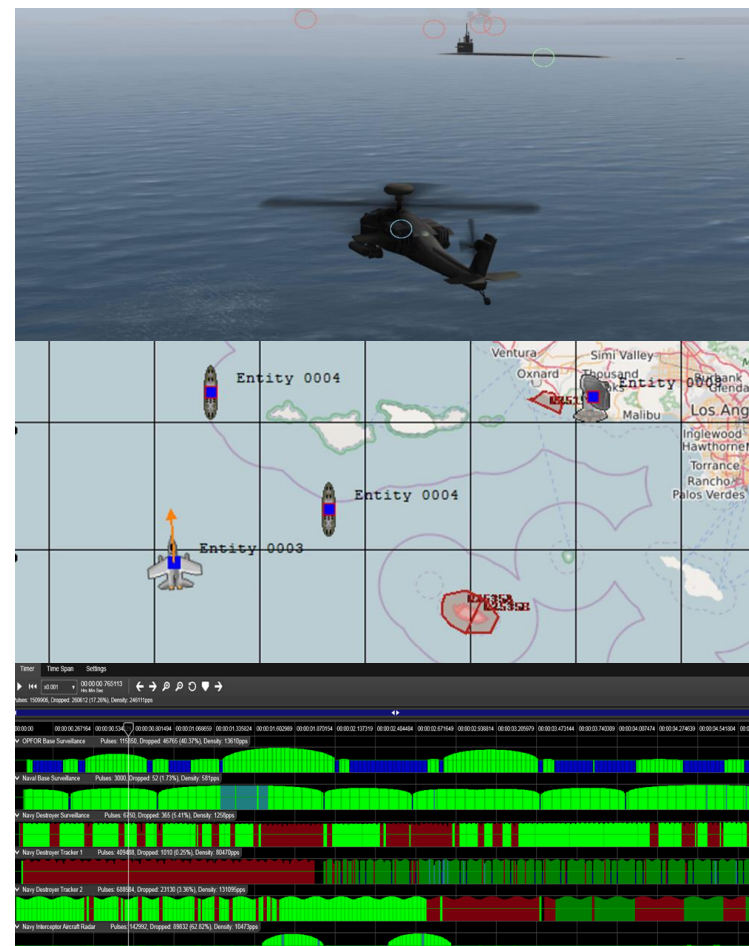
RF emitter verification

Legacy threat database translation

Complete EW lifecycle test platform



*Multi-channel EMSO solution
deployed for U.S. Navy*



*Simulation View software simulating
electromagnetic threats*

KEYSIGHT THREAT SIMULATORS SELECTED BY U.S. DOD

Seeding Next-Gen Growth: Quantum Computing

LARGE-SCALE INVESTMENTS BEING MADE

R&D investment directed at solving critical integration and scaling challenges



Nations of the world investing \$10B+ for leadership in quantum computing through 2024¹

OPPORTUNITY

At maturity, quantum technology has the potential to upend entire industries through an exponential breakthrough in parallel computation power

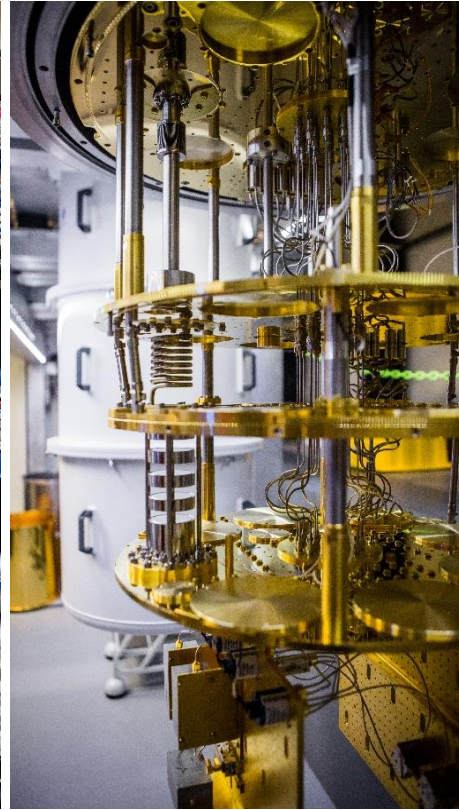
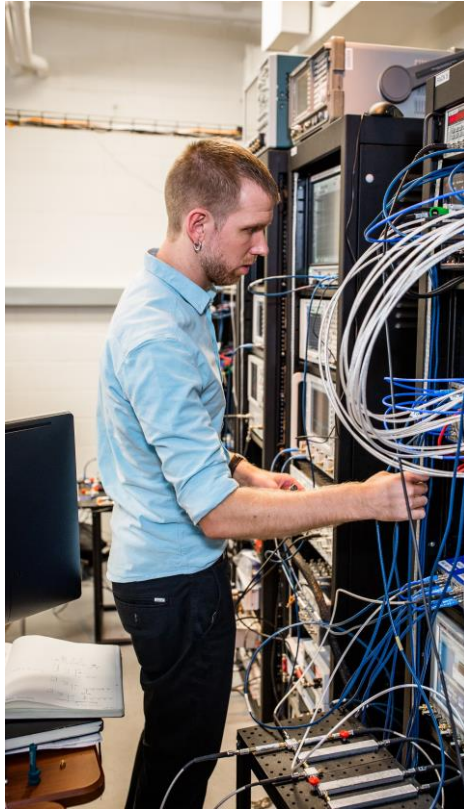
KEYSIGHT APPROACH

- ✓ Engaging with leading industrial and public research centers
- ✓ Investing in solution components, including software and hardware, targeted at complex technical challenges
- ✓ Designing-in high-precision instrumentation to many early quantum computers

NASCENT MARKET ECOSYSTEMS DEVELOPING

	HIGH TECH	INDUSTRIAL	HEALTHCARE
Use Cases	<ul style="list-style-type: none"> ✓ Artificial intelligence ✓ Machine learning 	<ul style="list-style-type: none"> ✓ Logistics ✓ Traffic Simulation 	<ul style="list-style-type: none"> ✓ Drug discovery ✓ Bioinformatics
Enterprises (Examples ¹)	Microsoft • IBM • Google • Amazon	NASA • Lockheed Martin • Honeywell • Raytheon	Fujitsu • QC-Ware • Agilent • Booz Allen Hamilton

Partnering with MIT to Accelerate Innovation in Quantum



“Early access to Keysight’s technology has been key to enabling our research for the past few years. EQuS looks forward to applying Keysight’s emerging quantum software and hardware solutions to our new 64-qubit test bed.”

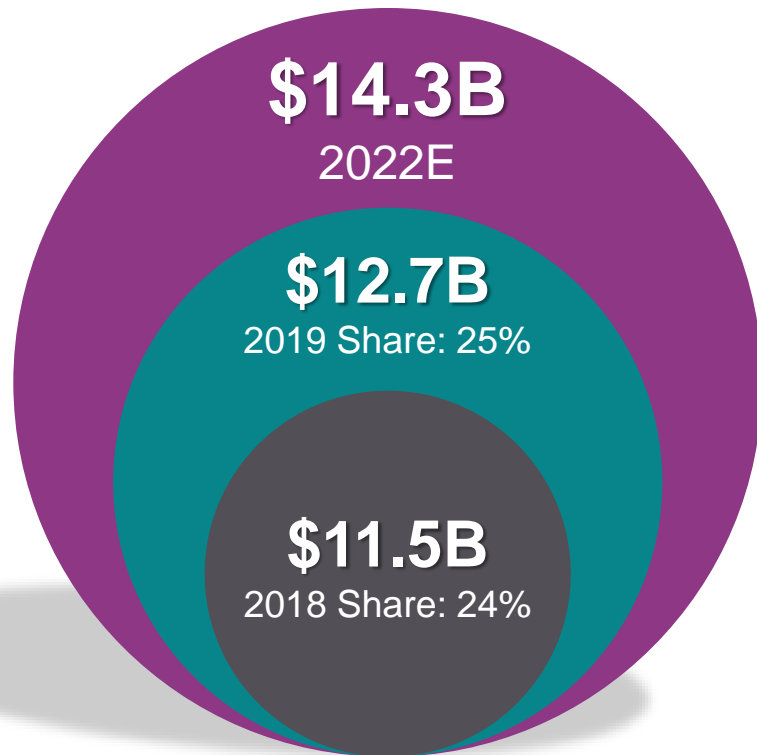
*Professor William D. Oliver, Ph.D.
Director | Center for Quantum Engineering
Massachusetts Institute of Technology*

✓ Establishing Quantum Research Center in Cambridge, MA

✓ Expanding ecosystem partnerships

Well-Positioned in Attractive, Growing Markets

ADDRESSABLE MARKET¹



Commercial Communications



Aerospace, Defense and Government

Market Size	\$8.5B	\$4.2B
Growth Rate	4% - 6% ²	2% - 3% ²
Industry Dynamics	<p><i>2020E ICT global spend of \$5.3T expected to increase to \$6.0T by 2022E³</i></p> <ul style="list-style-type: none"> • Exponential data growth and effective use of spectrum • Operator investments for network leadership and business models • Massive proliferation of IoT devices drive security investments • Global race for technology leadership 	<p><i>2020 U.S. defense budget \$738B⁴</i></p> <ul style="list-style-type: none"> • Global investment in indigenous defense modernization programs • Renewed investments in space • Shift from large scale to smaller, agile innovation methodologies • Geopolitical dynamics

Communications Solutions Group (CSG) Key Takeaways

1

Investing to expand market position and leadership

2

Accelerating portfolio transformation to enable digital revolution in end markets

3

Expanding software, services in high growth markets creating runway for profit expansion

4

Increasing differentiation and customer adoption enabling lifecycle value capture

Q&A Session



BREAK



Electronic Industrial Solutions

Gooi Soon Chai

SVP, President – Electronic Industrial Solutions Group

Electronic Industrial Solutions Group (EISG) Themes

1

Strengthening EISG market position by delivering **sustainable and profitable growth**



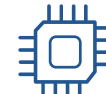
2

Driving strategy to capture technology inflection points in **high-value automotive and emerging IoT applications**



3

Capitalizing on technology leadership for wins in advanced **wafer fabrication opportunities** driven by key technology waves (5G, Automotive, IoT)



4

Advancing customers innovation process across their value chain through **differentiated solutions and global scale**



EISG at a Glance: Delivering Solid Performance

FY19 Highlights

+6% YoY

Revenue Growth

\$294M

Operating Income¹

20% YoY

Operating Income Growth

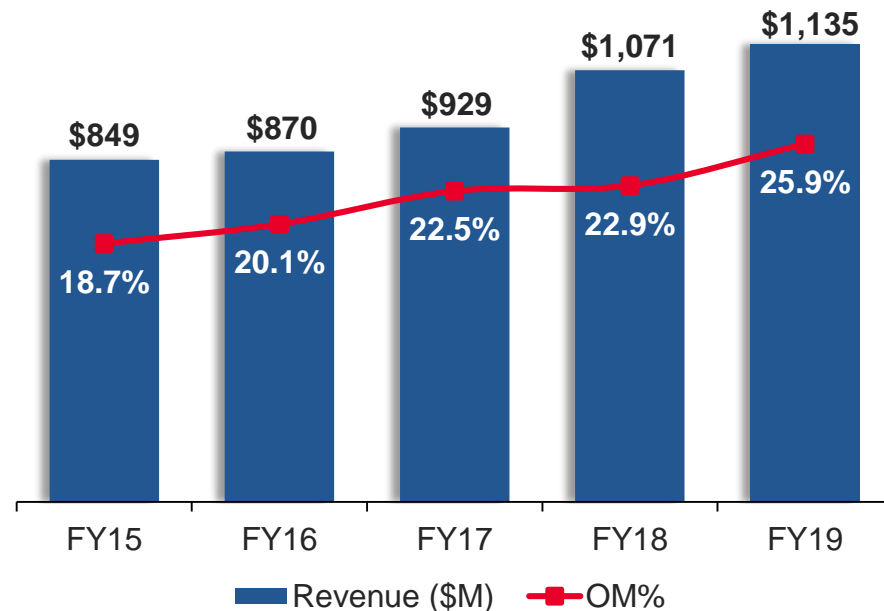
+300 bps

Operating Margin Growth

\$4.8B

Addressable Markets

Revenue & Operating Margin¹



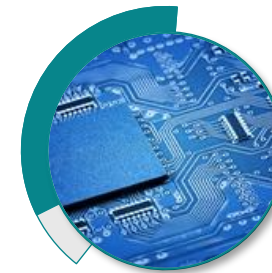
Key Markets and Customers



General Electronics

Electronics Manufacturers

Academic Institutions



Semiconductor

Foundries

Equipment Manufacturers



Automotive

Automotive OEMs

Components Suppliers

Successfully Delivering on Our Commitments

What We Said At 2018 Investor Day

Capture opportunities in high-value automotive, emerging IoT applications and next-generation semiconductor technologies

Deliver customer-centric solutions to align with the customers' evolving needs

Actions Taken




- ✓ **Broadened** solutions portfolio for automotive and emerging IoT applications
- ✓ **Extended** solutions into high power battery charging through the ScienLab acquisition
- ✓ **Expanded** customer base with the establishment of Automotive Innovation Centers in Europe, U.S., China and Japan
- ✓ **Enabled** advancement of semiconductor technologies through strong partnership with leading edge foundries and key semiconductor companies
- ✓ **Disciplined** execution of margin expansion initiatives



RESULTS

- **Delivered 11% revenue CAGR and 340 bps operating margin expansion from FY17 to FY19**
- **18% revenue CAGR in the high-value automotive segment¹**
- **Introduced 88 solutions for Electric Vehicle / Autonomous Vehicle²**
- **Added 600+ new automotive and IoT customers²**
- **Captured 7nm and 5nm investments for advanced semiconductor technologies**

Mega Trends Creating Opportunities for EISG

1	Proliferation of Connected Devices 	2	Automotive Industry Transformation 	3	Semiconductor Innovation 
<ul style="list-style-type: none">• Connected devices to increase from 22B¹ to 50B by 2030²• 127 new IoT devices connected to the internet every second³• Each person will be connected to more than 15 devices by 2030⁴		<ul style="list-style-type: none">• Increase in automotive electronics from 35% to 50% by 2030⁵• 70% of new vehicles and trucks shipped will be connected by 2023⁶• Electric Vehicles on the road increase from 5M¹ to 500M in 2040⁷		<ul style="list-style-type: none">• 5X surge in data volumes from 14ZB¹ to 79ZB by 2025⁸• Multi-functional chipsets• China IC capacity expansion	
Emergence of a Complex and Dynamic Ecosystem		Development of Smarter Automobiles		Demand for Smaller, Power Efficient and Highly Integrated Chipsets	

LEVERAGING KEY TECHNOLOGY WAVES

Electronic Industrial Solutions Value Creation Strategy



Accelerate

Innovation for the
Internet of Things
("IoT") Ecosystem



Enable

Next-Generation
Semiconductor
Capabilities



Drive

Advancement in
Next-Generation
Automotive

Accelerating Innovation for IoT Ecosystem



5Cs of IoT

Connectivity	Ensuring robust and reliable connections
Compliance	Complying to global standards and regulations for market access
Coexistence	Operating harmoniously in crowded IoT environment
Continuity	Optimizing power consumption to maximize battery life
Cybersecurity	Securing devices and infrastructure from cyber threat

KEYSIGHT SOLUTIONS

Connectivity

- IoT OTA¹ Device Test
- Advanced Design System Simulation Software
- High Speed Connectivity Solutions

Compliance

- EMC² Compliance Solutions
- Radio Equipment Directive Regulatory Solutions
- High Speed Digital Compliance

Coexistence

- IoT Device Coexistence Solution
- IoT Infrastructure Coexistence Test
- Field Coexistence Verification

Continuity

- Battery Life Optimizer
- IoT Current Waveform Analyzer
- Battery Drain Analysis

Cybersecurity

- IoT Device Penetration Test
- IoT Infrastructure Security Test

ENABLING MISSION-CRITICAL ATTRIBUTES OF THE IOT EVOLUTION

Enabling Next-Generation Semiconductor Technologies

MORE than MOORE's : Functional Diversification								
MOORE's LAW : Node Size Scaling	Function Node	Analog / RF	MEMS ¹	High Power	mmWave	Image Sensor	Silicon Photonics	Advance Materials
	90 nm	<div>KEYSIGHT SOLUTIONS</div> <div><div>DESIGN VERIFICATION</div><ul style="list-style-type: none">Materials and components modelling and evaluationHigh power semiconductor design simulation, modeling and characterization</div> <div><div>PRECISION POSITIONING</div><ul style="list-style-type: none">Nano-scale positioning supporting next-gen lithography processPositioning systems for lithography, inspection and metrology for all device functional types and node sizes</div> <div><div>WAFER TEST</div><ul style="list-style-type: none">Parametric test for in-line process monitoring and wafer acceptanceWafer functional assurance to measure precise physical characteristics of smart components before being manufactured into integrated circuits</div>						
	65 nm							
	45 nm							
	32 nm							
	28 nm							
	14 nm							
	10 nm							
	7 nm							
	5 nm							
	3 nm							
	▼							

PROVEN ABILITY TO ADDRESS INCREASING COMPLEXITY IN WAFER FABRICATION

Automotive Market Overview

3 SUB-SEGMENTS

1 Electric Vehicle / Battery Development

2 ADAS¹, Radar & Communications

3 Electronic Manufacturing

CURRENT INDUSTRY DYNAMICS

- Reinvention of automotive ecosystem
- New entrants and business models
- Restructuring and retooling of auto supply chain
- Slowdown of global car sales
- Continuous investments in AV / EV²

Market Drivers



Technology Innovation

- Sensor Fusion / Artificial Intelligence
- Low latency and high-speed communications and computing
- Level 4³ / Level 5³ driving autonomy



Infrastructure Buildout

- Deployment of 5G network
- Charging infrastructure
- Retooling of factories
- Battery efficiency and cost



Legislative Implementation

- Increasing regulations on autonomous driving
- Phasing out of fossil-based fuel vehicles
- Stringent green energy targets

KEYSIGHT UNIQUELY POSITIONED TO ENABLE THE FUTURE OF MOBILITY

Driving Innovation for Autonomous and Electric Vehicles

... Fully Connected

... Electric Powered

... Self Driving



Automotive
Diagnostics



In-car
Network



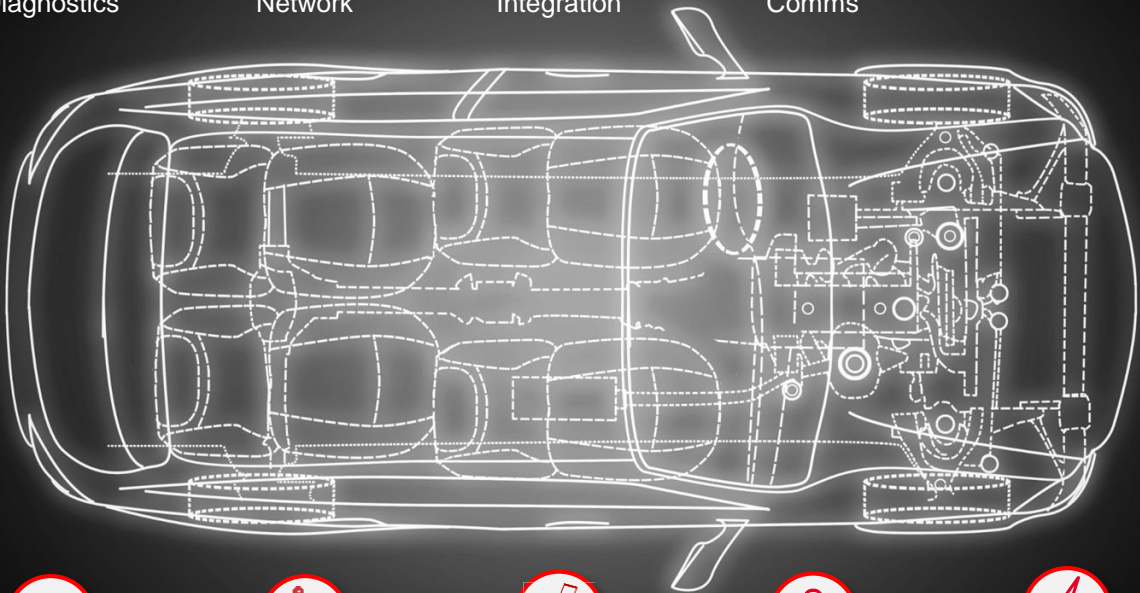
Mobile
Integration



V2X
Comms



Radar



Camera



ADAS¹



Infotainment



Security



Electric
Powertrain

88 Keysight Solutions

Across Multiple Technology Domains

Vehicle to Everything (V2X) Communications • Radar Collision Avoidance • Infotainment and Entertainment • Emergency Call • Automotive Cybersecurity Penetration Test • Charging Function and Interoperability Test • Converter and Inverter Efficiency • Cells Forming and Self Discharge Optimization • Automotive Ethernet and Serial Bus Testing • Engine Control Unit Security and Testing • Body and Safety Electronics Test Solutions • Electronics Functional Test Systems

Solutions Differentiation

- ✓ First-to-market integrated cellular V2X solution for 4G / 5G networks with integrated traffic scenario testing
- ✓ Comprehensive solutions for design and validation of electric powertrain / charging infrastructure interoperability standards
- ✓ Expertise to design complete labs with sophisticated solutions for batteries including lab operations software
- ✓ Precise radar solutions for all radar standards; smallest radar target simulator footprint
- ✓ Proven performance leadership backed by decades of measurement expertise and global support

ENABLING BUILDING BLOCKS THAT MAKE TOMORROW'S CAR A REALITY

Deep and Rich Expertise in Electric Vehicle Test Technology

EV / EV Supply Equipment Charging Interface



Battery Characterization and Development



Battery Management Systems Testing



Lab Management



CUSTOMERS VALIDATION

“ Our mission is to produce special application, tailor-made cells that meet our customer's unique requirements. The Keysight solution gives us the flexibility we need to support that mission and enable full traceability. ”



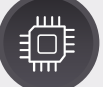


“ The combination of industry-leading hardware, software and solution competency were critical elements to choose Keysight as our partner for a new state-of-the-art battery test facility. As efficiency has been another key decision criteria, we have been impressed with both the operational efficiency the Keysight hardware offers as well as with Keysight's PathWave Lab Operation workflow management solutions. ”

DRIVING ADVANCEMENT IN EV / HEV¹ TECHNOLOGIES

Strategically Located Automotive Innovation Centers



KEY CUSTOMERS

-  Automotive OEMs
-  Electronic Components Suppliers
-  Semiconductor Chipset Manufacturers
-  Battery and Charging Infrastructure Providers
-  Compliance Labs

BRINGING MEASUREMENT EXPERTISE CLOSER TO CUSTOMERS

Electronic Industrial Solutions Group (EISG) Key Takeaways

1

Delivering strong results consistently: 6% revenue growth and 300 bps OM improvement in FY19

2

Capturing technology inflection points in high-value automotive and IoT applications

3

Leveraging innovation to maintain leadership and enable technology advancements in the semiconductor industry

4

Well-positioned to unlock new opportunities and accelerate profitable growth



Global Services

John Page

SVP, President – Global Services

Global Services Themes

1

Global Services orders **expected to exceed \$600M in FY20** (>48% increase vs. FY17)



2

Essential and growing part of Keysight's software-centric solutions model with opportunities for **high margin recurring revenue**



3

Continue to launch **new, differentiated and higher-value services** to meet increasing demand for complete solutions from our customers



4

Increasingly well-positioned for **continued profitable organic growth**



Global Services at a Glance

FY17 – FY19 Highlights

20+

Countries with Services Presence

17%

Services Orders CAGR

10%

Services Revenue CAGR

54%

Services Sold Upfront CAGR

Global Services Centers

Overview



● Keysight Service Location ● Keysight Service Partner

- Global presence with services operations in 20+ countries
- Services designed to help customers achieve business outcomes: calibration, repair, design, installation, technology refresh, asset management, consulting, training, and product purchase alternatives
- Double-digit order growth for the last 2 years expected to continue in FY20

Delivering On Our Commitments

What We Said At 2018 Investor Day

Actions Taken and Results

Future Outlook

Grow organically to \$600M in services revenue

- ✓ 17% services orders CAGR (FY17 - FY19) driven by services subscriptions that generate recurring revenue
- ✓ 10% services revenue CAGR (FY17 - FY19)

- On track to exceed \$600M in services revenue
- Increasing contribution from recurring revenue

Grow higher margin offerings and increase efficiency to expand operating profit

- ✓ Operating profit dollars up >20% in FY19 vs. FY17

- Attaching subscription services upfront to drive growth, margin expansion and customer outcomes

Create new premium technical support plans: shifting from “free-to-fee” recurring revenue model

- ✓ KeysightCare subscription services launched December 2018 and growing, transition from “free-to-fee” continues

- KeysightCare growth from extensions, solutions, renewals and installed base

Expand services focused on delivering complete, outcome-based solutions

- ✓ Created and launched industry-first, cloud-based instrument management software and new maintenance platform

- Successful engagements with leading customers to expand opportunities

Expand used equipment business as remarketing engine for other services and high-margin, low-cost alternative

- ✓ Expanded supply of used equipment and grew used equipment revenues by >20% in FY19 vs. FY17

- Used equipment to grow at Keysight’s overall rate

Enabling Customer Success by Increasing Outcome-based Services

4

Higher-Value Services

Trusted Partner

As the measurement expert, be a partner with higher-level, value-added services, deliver outcomes



3

Digital End-to-End Customer Experience

Smart Connected Products Ecosystem

Creating an ecosystem of smart connected products that enable entirely new and higher-value services



2

Sell and Expand the Value We Deliver

Free-to-Fee

Much of our value is (e.g. KeysightCare), or can be, delivered as a service and attached upfront



1

Basic Hardware Support Legacy

Hardware Product Support

Historically we were not a services organization, focus was on basic hardware support to sell boxes



KeysightCare: Higher Level of Customer Support



Performance
Fast, Committed Support

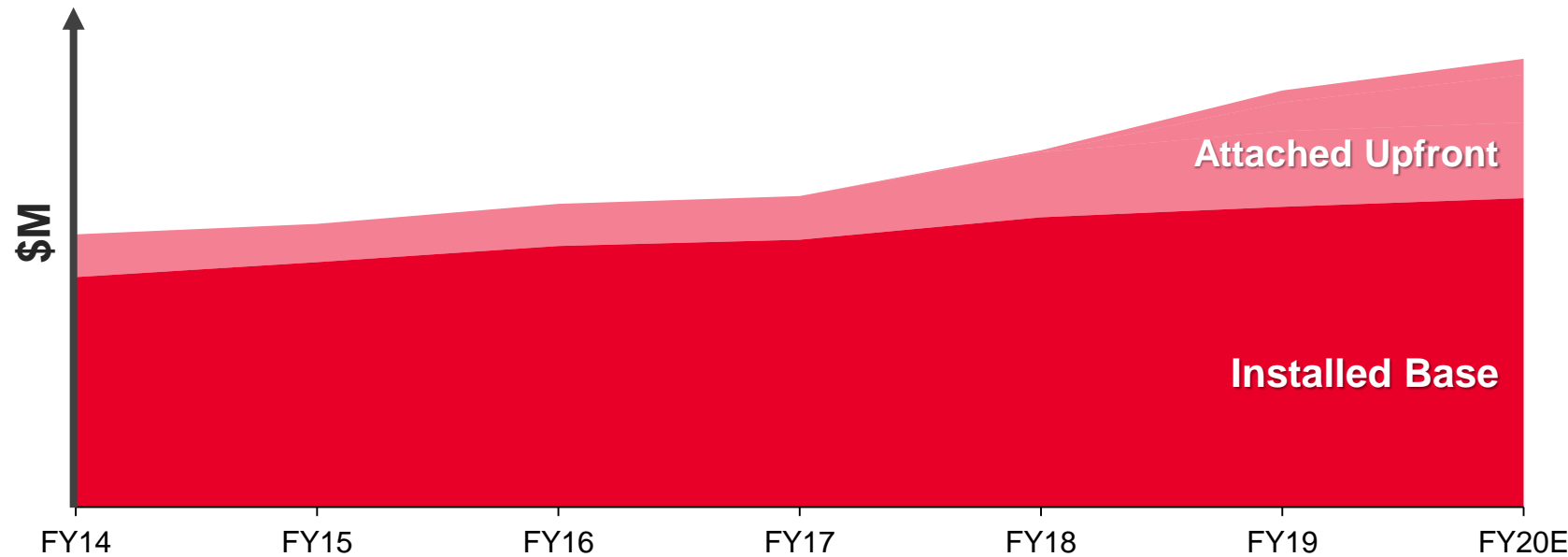


Enhanced
Priority Support



Assured
Proactive, Enterprise Support

Services Orders Attached Upfront



Market Dynamics



Increasingly complex test solutions



Technology integration requires measurement, instrument and software experts



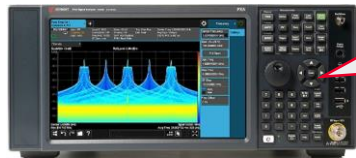
Time-to-market requires improved uptime and efficiency at lower cost

ATTACHING SERVICES UPFRONT ADDS RECURRING REVENUE

Digital Customer Experience: Smart Connected Products

Smart Connected Products, Solutions & Systems

One-click Calibration Ordering



"My calibration is due"

Return to Loan Pool (Instrument Sharing)



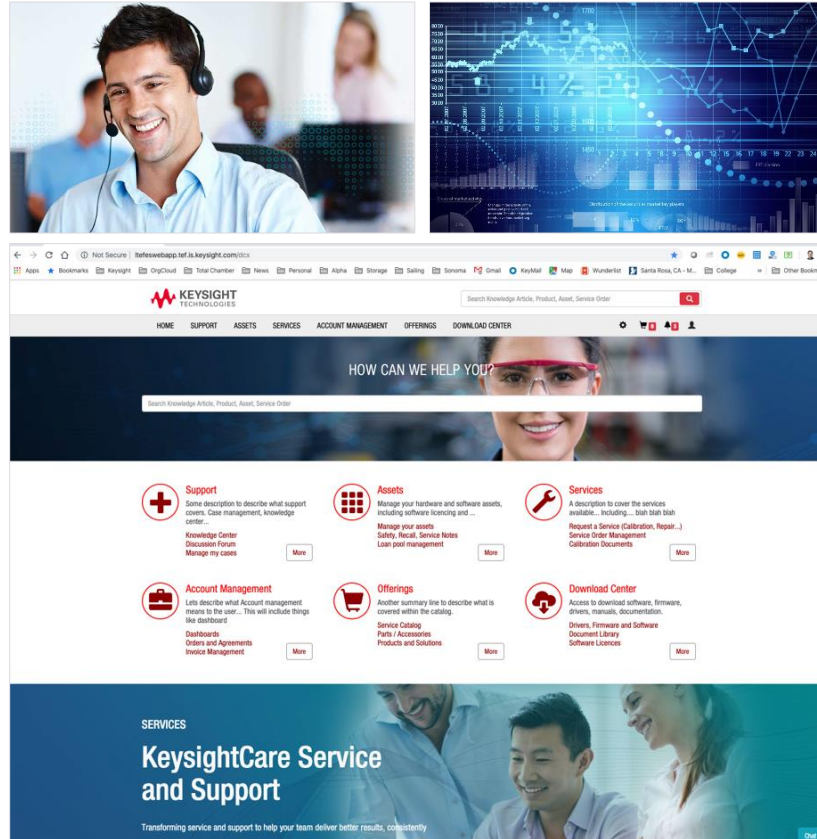
"My utilization is very low"

Run Diagnostics



"My attenuator is not working"

Integrated Data, Analytics, Customer Interface and Support



Customer Outcomes



Improved asset utilization



Consistent, predictable support



Increased measurement quality and speed



Higher yields



Increased uptime

DIFFERENTIATED DIGITAL CUSTOMER EXPERIENCE

Aligning Services with Keysight's Industry Solutions

Industry Focus



Aerospace Defense



5G



Autonomous Vehicle / Electric Vehicle

Wrapping Services Around Industry Solutions

OUTCOME-BASED SERVICES

Integrating services early to provide full customer solution

- **Quality uptime** for multiple system installations
- **Upfront global service agreements** addressing new 5G solutions
- **Financing** to meet 5G/6G OpEx vs. CapEx needs
- **Global expansion** of Scienlab services to **accelerate** solution wins

Aerospace and Defense Customer

CUSTOMER NEED

- Lower cost of test
- Improved speed and quality
- Better utilization



KEYSIGHT SERVICES SOLUTION

- Over past 2 years, evolved from reactive, basic hardware support to:
 - Unique uptime solution
 - New software to connect and track test instruments
 - New calibration process achieves in minutes what previously took weeks



CUSTOMER OUTCOMES

- ✓ Asset utilization up **29%**
- ✓ Cost of test down **20%**
- ✓ Improved quality
- ✓ ROI on program **>100%**

KEYSIGHT'S OUTCOMES

- ✓ **3X services** revenue
- ✓ Shifted to **recurring**
- ✓ **2X** gross margins
- ✓ Deepened **customer relationship**

DELIVERING OUTCOMES-BASED SERVICES SOLUTIONS

Global Services Key Takeaways

Services growth and profitability are accelerating

1

Growth: FY20 orders to exceed \$600M with revenue tracking current and future order growth

2

Strategic focus: wrapping essential Services around Keysight's software-centric solutions, while capturing opportunities for recurring revenue

3

New offerings: successfully meeting customer demand for solutions with differentiated services offerings and capabilities

4

Margin expansion and recurring revenue: well-positioned for profitable organic growth



Global Marketing

Marie Hattar

Senior Vice President and Chief Marketing Officer

Global Marketing Themes

1

Transformed marketing to support Keysight software-centric solutions strategy; now **maximizing impact**



2

Harnessing our technical leadership and world-class reputation to **grow brand value**



3

Infusing marketing data science to measure and implement **digital pivot to drive awareness and growth**



4

Enabled significant revenue growth while keeping investment flat

6X unaided brand awareness

#1 in media mentions

+28% marketing qualified leads



Keysight Marketing Strategy: Building our Brand and Driving Growth



Solutions Leadership

- Reorganized marketing to solution campaigns
- Orienting brand to next-generation solutions leadership
- Expanding Keysight World as the premier event for technology advancement

Strong Partnership with Sales

- Implementing digital programs to attract new company logos
- Driving low-touch digital software and services renewals model
- Focusing on strengthening preference and increasing leads to grow funnel

Marketing Maximization

- Shifting people and program mix to drive results
- Modernizing marketing infrastructure and tools
- Driving analytics muscle and ROI-based programs



San Francisco

Shanghai

Taipei

Tokyo

Penang



**KEYSIGHT
WORLD 2019**

Largest event with customers,
industry thought leaders,
academics, and Keysight experts
coming together



2017

Started as 1,000-person engineering community
event in Japan

2019

Attendees include engineers and new executive track
Expanded to **10** countries and growing

24,000+
Attendees

1,000+
Sales Opportunities

Singapore

Bangkok

Bangalore

Seoul

New Delhi

Strategic and Focused Marketing to Enable Business Returns

Supporting major growth initiatives through industry events and activities



World-Class Industry Events

Maximize industry tradeshow engagement to drive brand preference and leads

10X

Increase in Leads and Opportunities



IoT Innovation Challenge

Design contest for university students to innovate IoT for clean water and air

98%

Reach to Our Tier 1 Higher-Education Research Customers



Establishing KeysightCare and PathWave Brands

PathWave and KeysightCare integrated in all programs

#1

Unaided Awareness for Test & Measurement Software Platform in First Year

IMPACT

Driving Growth with Digital Programs: Keysight Wave

Technical education, tutorials and insights from Keysight experts

BACKGROUND & APPROACH

- 2-week daily livestream insight-driven education and how-to webinars with giveaways of Keysight gear
- Utilize digital advertising and social media influencers to reach broad design audience

2019 RESULTS



Multi-Prong Approach to Build Brand Equity



Strong Brand Purpose

- Establish strong brand purpose and align with strategic business planning
- Connect our brand with CSR principles
- Be an employer of choice



Targeted Advertising

- Strong presence in key industries' physical locations
- Behavior-based and geo-targeting advertising to increase online reach



#1 in Media Mentions

- Scale brand equity through others writing about us
- Focused program to surpass competitors with Tier 1 industry publications

FY15

Keysight / Agilent / HP

25%¹
BRAND
AWARENESS

FY18

Keysight / Agilent / HP

41%¹
BRAND
AWARENESS

Unaided Keysight
Awareness in
Test & Measurement¹

#1

\$143M

Marketing Sourced
Won Opportunities

Tradeshaw
Leads

10X

Early Traction
Generating
**Strong
ROI**

+28%

Marketing
Qualified Leads

Media
Mentions

#1
+15%

5,000

New Customers
Added²

Global Marketing Key Takeaways

1

Transformed into a world-class marketing organization at no incremental cost

2

Strong partnership with sales and increasing ownership for order generation

3

Aligning and partnering with solutions business groups to drive demand and grow customer base

4

Cultivating culture of ROI measurement for every marketing investment



Global Sales

Mark Wallace
SVP – Global Sales

Global Sales Themes

1

Executed on our promises with **positive order growth** and increasingly **diversified customer base**, on track to **doubling frontline sales capacity** at lower cost per order dollar



2

Deepening customer relationships with industry leaders and first-to-market solutions sold across entire ecosystems



3

Increasing capability on **value pricing** and **solution-selling** to further expand margins



4

Continuing to grow and optimize global sales capacity with emphasis on recurring revenue from services and software sales and expanded reach including a new E-commerce channel



Keysight Global Sales at a Glance

FY19 Highlights

32,000+

End Customers
Served Annually¹

100+

Countries
Served

\$4.4B

Total
Orders

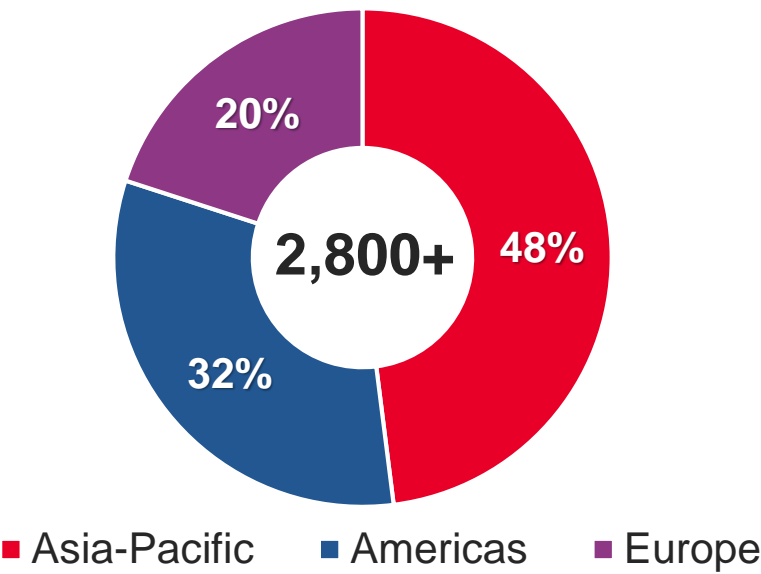
10%

Core Orders
Growth

>30%

Software & Services Sales
as a % of Total

Global Sales Footprint



Overview

- Large global footprint with 2,800+ customer-facing and customer support resources
- 600+ solution, industry, and application experts
- Dedicated global new services and renewal sales channel
- Global network of 650+ channel resellers and solution partners (~75/25 direct/indirect channel)
- Customers: Unique access to industry leaders, innovators and decision-makers in commercial, government, enterprise and education accounts

Successfully Delivering On Our Commitments

What We Said At 2018 Investor Day

Actions Taken

**Great customer relationships,
satisfaction and loyalty**

✓ Deepened and leveraged leading customer relationships

Insufficient growth and reach

✓ Transformed the organization to increase frontline sellers and digital lead generation

**Services sales not structured to
capitalize on opportunity**

✓ Deployed dedicated global sales channel to grow services

**Sales tuned to products, not
solutions**

✓ Shifted to software and solutions-based value selling

**Viewed by market as trusted
advisors with strong expertise**

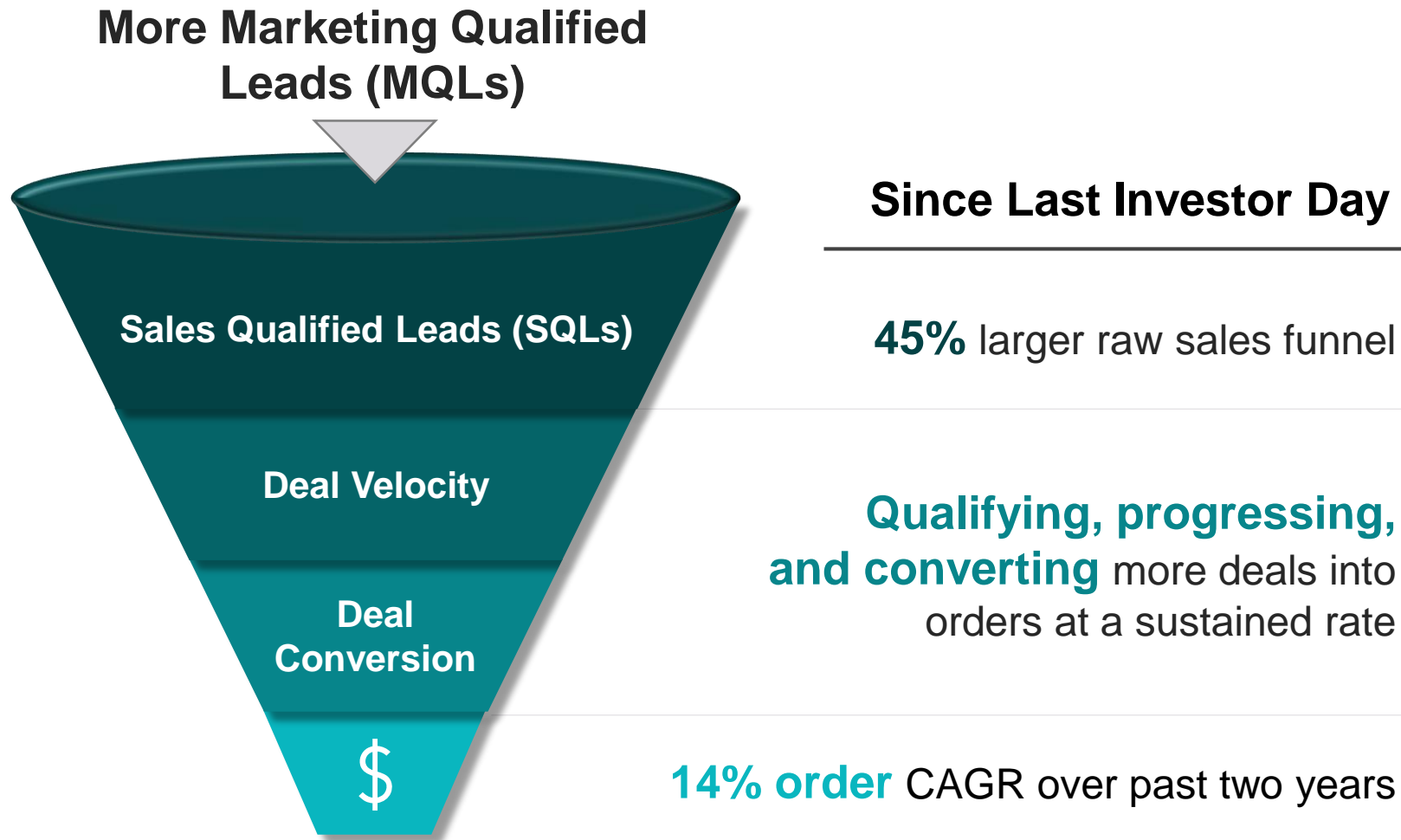
✓ Expanded 5G, EV/AV, and Ixia specialist focus while leveraging global sales reach



RESULTS

- **Positive order CAGR across all regions and industry segments (FY17-FY19)**
 - **17%** services CAGR
 - **22%** software CAGR
 - **15%** reduction in cost per order dollar
- **60% increase in frontline capacity since November 2016**

Strong Operational Discipline Enables Global Sales Machine



Dynamic Resource Deployment Driving Double-Digit Growth

- **400+** account managers and application engineers onsite at industry-leading customers
- **50%** more frontline sellers added to geographic sales, with over **5,000** new customers added in past two years

EFFECTIVE SALES FUNNEL MANAGEMENT DRIVES ORDER GROWTH

Customer Buying Trends Are Accelerating



TIME TO MARKET PRESSURE

- More complexity and competition to get to market
- Require complete, end-to-end solutions to speed time-to-market



OPTIMIZING WORKFLOW

- Focused on
- Reduced cost and rework
 - Increased asset utilization
 - More R&D productivity



COMMERCIALIZING TECHNOLOGY WAVES

- More companies creating smart, connected devices and ecosystems
- Global scaling of 5G commercial use cases, including commercial comms, automotive, and IoT



ADOPTING A DIGITAL BUYING JOURNEY

- Spend >50%¹ of buying journey online
- Fast, easy, and flexible procurement of hardware, software, and services

KEYSIGHT ACTION

Added Solution Selling Capabilities

Created a Services Sales Channel and Selling PathWave Software

Engaging and Enabling Industry Leaders

Launch of E-commerce Platform

Keysight Global Sales Growth Strategy



Grow

New Customers to
Extend Reach



Accelerate

Solutions to
Grow Share



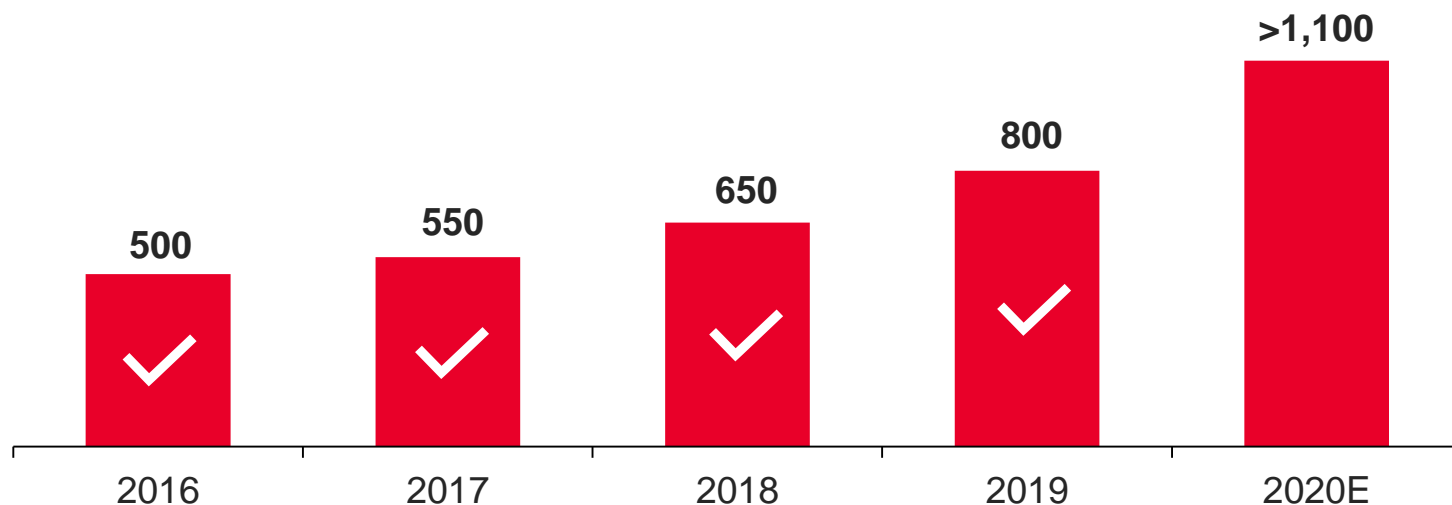
Expand

Services and
Software to
Increase Recurring
Revenue

WINNING FORMULA TO SUSTAIN TOP-LINE GROWTH AND EXPAND MARGINS

Sales Productivity: Maximize Sales Capacity and Capability

SALES CAPACITY: FRONTLINE SELLERS



FY20 Objectives

- ▶ Continue journey to double direct frontline salesforce
- ▶ Integrate Ixia sales
- ▶ Ramp E-commerce in North America and Europe with global expansion in FY21

SALES CAPABILITY

Onboarding experts, experienced, and early career sales and application engineers to match solution selling and support skill requirements



TOOLS

Cloud-based CRM



TRAINING

Technical and professional skills



MEASURES

Incentive compensation for solution, software, and enterprise sales models

EXPANDED SALES CAPACITY AND CAPABILITY DRIVE SUSTAINABLE TOP-LINE GROWTH

Accelerating Growth from New Customers with Efficient, Easy to Use Buying Channels

DIGITAL MARKETING

Industry Insight and Lead Generation

- Continue successful marketing lead generation + frontline seller program to reach new customers
- Demonstrate industry expertise and insight
- Reframe customers' understanding of industry and measurement challenges

GUIDED BUYING

The Solution is a Product

- Lead customers to our solutions
- Target highly competitive portfolios with our differentiation
 - KeysightCare
 - PathWave
 - mmWave
 - Industry solutions

E-COMMERCE + DISTRIBUTION

Buy It Now!

- Make it easy for customers to purchase from Keysight immediately
- Complete the digital buying journey with Keysight E-commerce
- Leverage distribution partners

INCREASING EASE OF PURCHASING KEYSIGHT SOLUTIONS

Scaling Our Industry Solutions Beyond the Industry Leaders



Dedicated Keysight global account teams, focused on Tier 1 industry leaders and their global ecosystems

100%

Major 5G test houses¹
use Keysight solutions



Customer engagement process harnesses Keysight's full capability – from sales to R&D to marketing – and aligns to customers' business priorities



100%

Top 25 tech companies
use Keysight solutions



Regional Solutions Delivery Centers deliver local, responsive capability to customers' on-going solution needs

20%

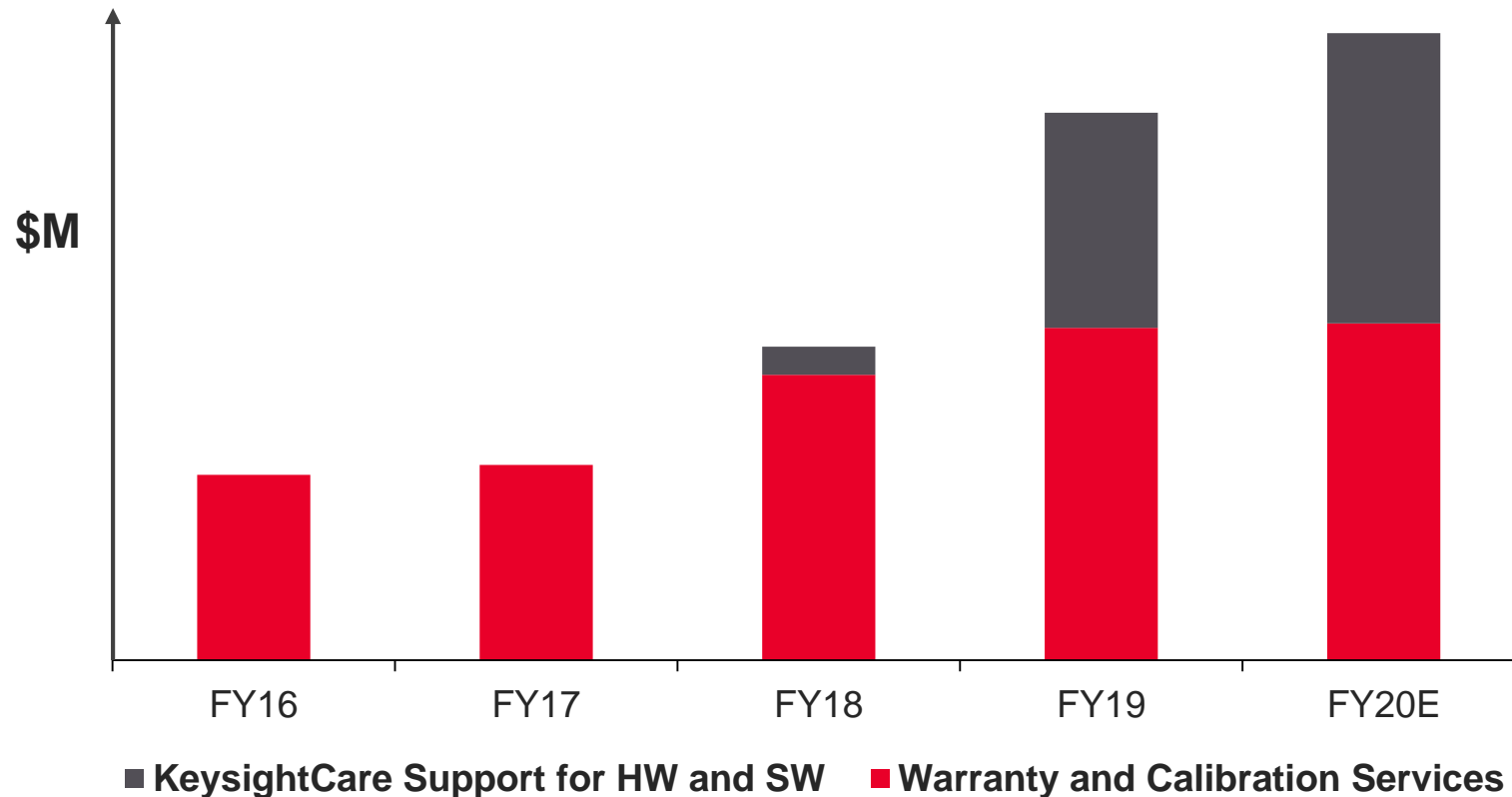
Order growth in FY19 in
top 100 direct customers



THOUSANDS OF CUSTOMERS PURCHASED OUR FIRST-TO-MARKET SOLUTIONS IN FY19

Solutions Focus to Sell Value-Added Services Upfront

TOTAL SERVICES ORDERS ATTACHED UPFRONT



FY19 RESULTS

- Accelerated growth of orders for services attached upfront
- Launched KeysightCare in early FY19

FY20 PRIORITIES

- Grow recurring revenue by expanding renewal sales channel
- Grow multi-year KeysightCare
- Extend enterprise licensing into installed base accounts
- Migrate to fee-for-service model for post-sales services

KEYSIGHTCARE ADDS RECURRING REVENUE

Enabling Customer Success with Solutions + Services

CUSTOMER NEED

Increased test accuracy, precision, throughput, and productivity at a leading semiconductor wafer manufacturer and legacy installed base customer



KEYSIGHT SOLUTION

Hardware + Software + Services

- P9000 Series Parametric Tester: first-to-market tester to meet test requirements for advanced technology nodes

Ongoing, multi-year technical and professional services

- Onsite experts and support
- Onsite spare parts stocking program
- Special test functions
- Custom training package

P9000 Massively Parallel Parametric Tester



CUSTOMER OUTCOMES

- ✓ Higher throughput
- ✓ Less floor space
- ✓ Lower total cost of ownership

KEYSIGHT'S OUTCOMES

- ✓ Multi-million dollar sale
- ✓ Higher gross margin
- ✓ Stronger competitive differentiation
- ✓ Recurring revenue

Global Sales Key Takeaways: Driving Long-term Growth

1

Sustained, positive order growth, increasingly diversified customer base, on track to doubling frontline sales capacity at lower cost per order dollar

2

Deepening customer relationships, first-to-market-solutions scaled across ecosystem

3

Increasing focus on value pricing and solution selling to expand margins

4

Optimizing global sales capacity with emphasis on recurring revenue from services and software, and expanded reach including E-commerce



Financial Update

Neil Dougherty

Senior Vice President and Chief Financial Officer

Financial Update Themes: Differentiated, Diversified & Durable

1

Dramatically transformed financial performance with FY19 gross margin¹ reaching 63%, operating margin¹ expanding to 24% and FCF¹ doubling to ~\$900M



2

Taking share in a large growing end market: 5 consecutive years of share gains in a \$17.5B addressable market with 3% - 5% long-term growth



3

Sustained investment for growth: ~\$700M annual R&D investment; multi-year investment to double direct sales force



4

Increasing business resiliency with a flexible cost structure: more durable revenue mix with software and services revenue growing to \$1.3B in FY19



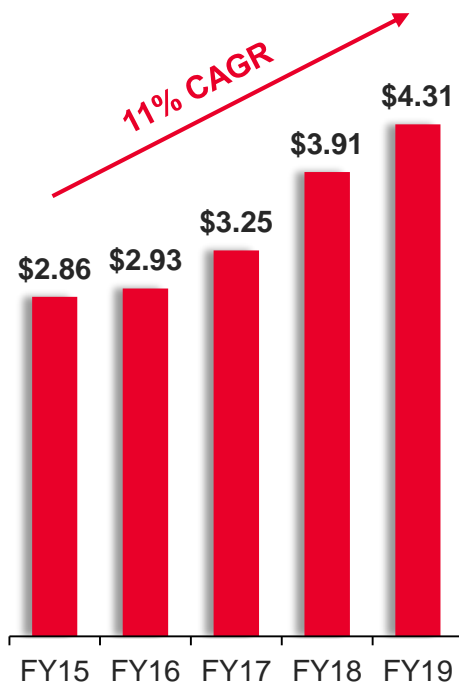
5

Raising the bar: Increasing operating margin target to 26% - 27% by 2023 driven by 40% operating leverage on 4% or greater core revenue growth

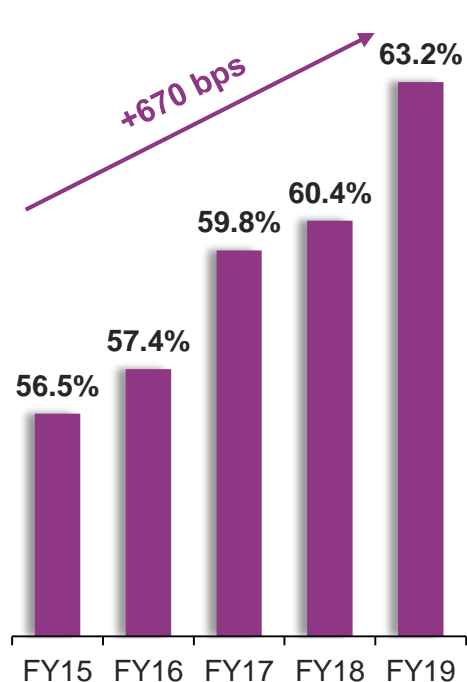


Record Performance Driven by Strong Execution

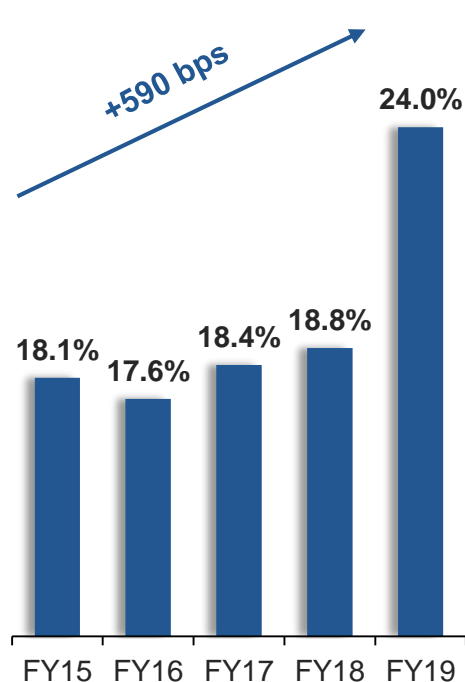
Revenue (\$B)¹



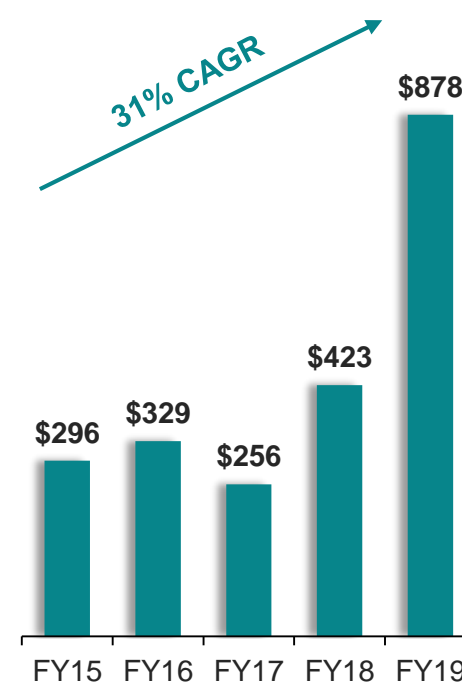
Gross Margin %^{1,2}



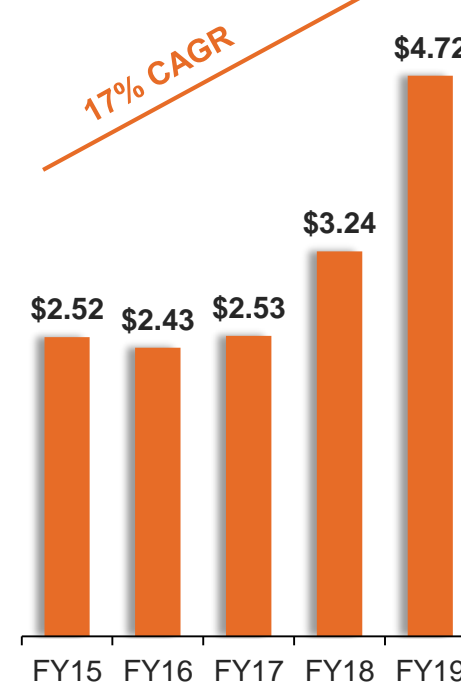
Operating Margin %^{1,2}



Free Cash Flow¹ (\$M)



EPS¹



- \$1.3B in software and services revenue in FY19
- >50% of annual non-services revenue from solutions released in the last 5 years

- +280 bps YoY improvement in FY19
- Sustained favorable mix shift driving higher gross margins

- Increased annual R&D spend by \$300M+ since launch
- Leveraging KLM for continuous improvement

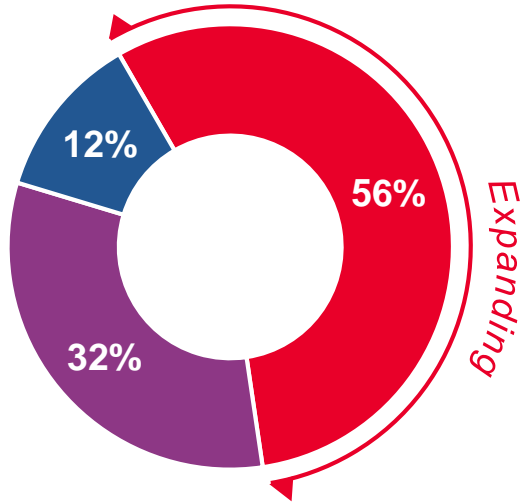
- ~3X growth in FCF since FY15
- 97% FCF conversion¹ in FY19

- 46% EPS growth in FY19
- Positioned for continued double-digit growth

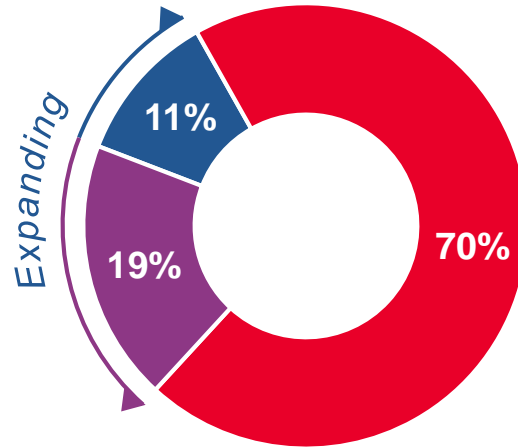
WHILE INCREASING R&D INVESTMENT FROM 12% TO ~16% OF REVENUE

Transforming Business Mix and Improving Revenue Stability

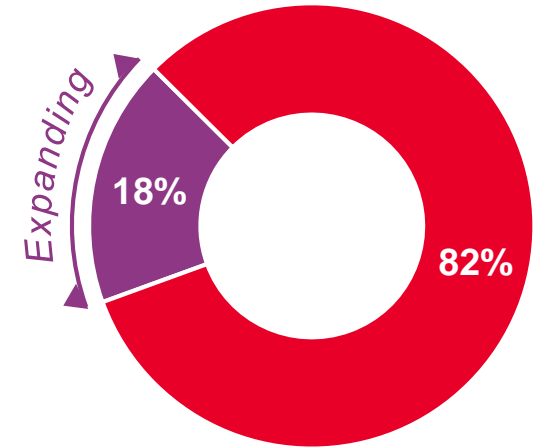
FY19 Revenue Mix



■ R&D ■ Manufacturing ■ Operations



■ Hardware ■ Software ■ Services



■ Non-Recurring ■ Recurring

- ✓ Software and services revenue expected to grow faster than overall Keysight
- ✓ Significant opportunity to convert software sales from perpetual to time-based driving higher recurring revenue

Strong Track Record of Delivering on Commitments

	COMMITMENT	STATUS	PROGRESS
Top-line Growth	Sustained 4% - 5% revenue growth	✓	<ul style="list-style-type: none"> ✓ Achieved core growth^{1,2} of 13% in FY18 and 11% FY19 ✓ Five consecutive years of market share gains³
Operating Margin ^{1,4}	Deliver 40% OM incremental on 4% core growth Baseline operating margin of 21% - 22% by FY21	✓	<ul style="list-style-type: none"> ✓ Reached 24% operating margin in FY19
Free Cash Flow Conversion ¹	Free cash flow conversion 80% - 90% in FY19	✓	<ul style="list-style-type: none"> ✓ 97% free cash flow conversion in FY19
EPS ¹ Growth	Deliver ≥10% EPS growth	✓	<ul style="list-style-type: none"> ✓ 17% EPS CAGR since launch ✓ EPS growth of 28% in FY18 followed by 46% in FY19
Acquisitions	Anite synergies Ixia mid-teens accretion to adj. EPS within 24 months	✓ ✓	<ul style="list-style-type: none"> ✓ Anite technology is key to our 5G success ✓ Ixia targeted return is delayed, not reduced ✓ Markets are strengthening, business results are improving, and strategic thesis remains intact
Growth Initiatives	Drive growth in targeted market opportunities (5G, Next-Generation Automotive, Software and Services)	✓	<ul style="list-style-type: none"> ✓ In aggregate, growth initiatives well ahead of plan with >30% revenue growth in FY19 ✓ Services back on track with \$553M FY19 orders

Great Position in Attractive \$17.5B Market

Favorable Long-term Secular Growth Trends (5G, Next-Generation Auto, IoT)

	CSG		EISG	TOTAL ¹
	Commercial Comms ²	Aerospace, Defense & Gov't	Electronic Industrial	▼
Market Size ³	\$8.5B	\$4.2B	\$4.8B	\$17.5B
Long-term Growth Rates ³	4% - 6%	2% - 3%	2% - 3%	3% - 5%
Keysight Revenue ⁴	\$2.2B	\$1.0B	\$1.1B	\$4.3B
Keysight Position ⁵	#1	#1	#1	#1
Keysight Share	~26%	~24%	~23%	~25%

INCREASING KEYSIGHT'S CORE GROWTH⁶ EXPECTATION TO 4% – 6%³

Remain Committed to Our Operating Model

40%

Operating Leverage
at 4% or Greater
Core Revenue Growth



Raising Operating Margin Targets

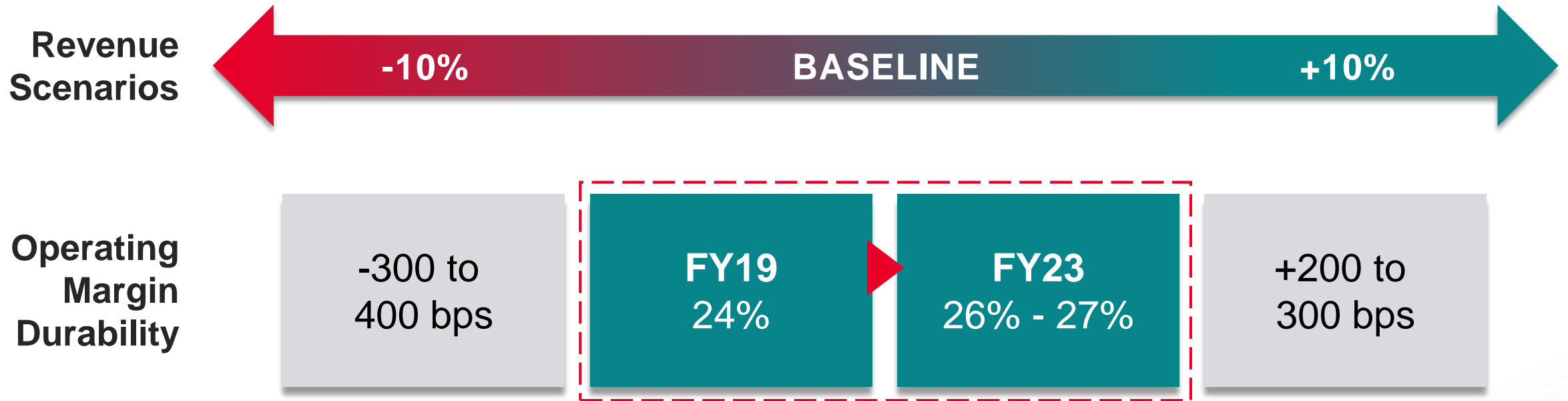
	Prior Target (2018 Investor Day)	FY19 Results	New Target by FY23	Increase vs. Prior Target
Gross Margin ¹	61% - 63%	63% ✓	64% - 66%	+300 bps
Operating Margin % ¹	21% - 22% ²	24% ✓	26% - 27%	+500 bps

DRIVERS

Improved Market Position • Increased Differentiation (Solutions) • Favorable Mix Shift (SW, R&D)

ENABLED BY 4% - 6% CORE REVENUE GROWTH^{1,3} WITH 40% OPERATING LEVERAGE

Resilience in a Variety of Economic Scenarios



Enabled by Flexible Cost Structure



- ✓ 100% of employees have a variable pay component
- ✓ ~50% of production is outsourced
- ✓ ~25% of sales flow through indirect channels
- ✓ Strategic use of flexible staffing

Flexible Balance Sheet and Capital Structure


Leverage Profile

(\$M)	As of Q1'20 (\$M)
\$450M Revolving Credit Facility	Undrawn
4.55% Senior Notes due 2024	600
4.60% Senior Notes due 2027	700
3.00% Senior Notes due 2029	500
Gross Debt ¹	\$1,800
Net Debt¹	\$107
Total Capital¹	\$4,927
LTM Adjusted EBITDA ¹	\$1,251
Gross Debt-to-Capital	36.5%
Gross Debt-to-Adjusted EBITDA	1.4x

Capital Structure

- ~\$2.1B available liquidity
 - \$1,693M cash, cash equivalents and restricted cash
 - \$450M revolving credit facility

- Committed to investment grade rating

Moody's	Baa2	 Upgraded within last 9 months
S&P	BBB	
Fitch	BBB	

- Gross Debt-to-EBITDA Target of ~2x

AMPLE LIQUIDITY WITH IMPROVED INVESTMENT GRADE RATINGS

Capital Allocation Priorities

1

Sustained Investment to Drive Organic Growth

- Increased R&D investment to ~16% of revenue
- Continued increase in sales channel capacity
- Baseline CapEx of \$120M - \$130M per year

2

Disciplined M&A

- Value creation through M&A is a strategic objective
- Active M&A funnel development in adjacent markets aligned to targeted growth strategies
- Remain patient and disciplined




3

Return of Capital




- \$500M share repurchase authorization; \$335M remains
- Base case: offset share dilution from equity-based compensation
- Additional opportunistic repurchases a function of liquidity, valuation and actionability of M&A funnel

Disciplined M&A Strategy

Strategic Filters

-  Accelerates near and long-term strategic objectives
-  High software content and/or high recurring revenue
-  Expands portfolio of high-value solutions

Financial Criteria

-  ROIC above cost of capital
-  Accretive to growth and gross margin
-  Revenue and cost synergy opportunities

Anite
ixia

scienlab
electronic systems

prisma
telecom testing

 **Labber**
QUANTUM

THALES
Australia Calibration Services

 **Signadyne**

 **Liberty**
Calibration

 **Electroservices**

PSNA

Raising Long-term Expectations

	Original Target 2015 Investor Day	Prior Target 2018 Investor Day		NEW TARGET
Core Revenue Growth ^{1,2}	Sustainable 4% CAGR	Sustainable 4% - 5% CAGR	➤	Sustainable 4% - 6% CAGR
Operating Margin ^{1,3}	17% - 18%	21% - 22%	➤	26% - 27%
EPS Growth ¹	8% - 10%	≥10%	➤	≥10%

26% - 27% OPERATING MARGIN EXPECTED BY FY23

Financial Update Key Takeaways: Compelling Investor Value Proposition

1

A market leader in a large, diverse, and growing end market

2

A diversified global business serving multiple industries and over 32,000 customers annually with no customer accounting for more than 5% of FY19 revenue

3

Investing in R&D and Sales to drive continued above-market growth; building upon five consecutive years of market share gains

4

A growing recurring revenue base from software and services that is improving top-line resiliency and increasing gross margins

5

Dramatically transformed financial performance and raising the bar again to 26% - 27% Operating Margin by 2023

Q&A Session

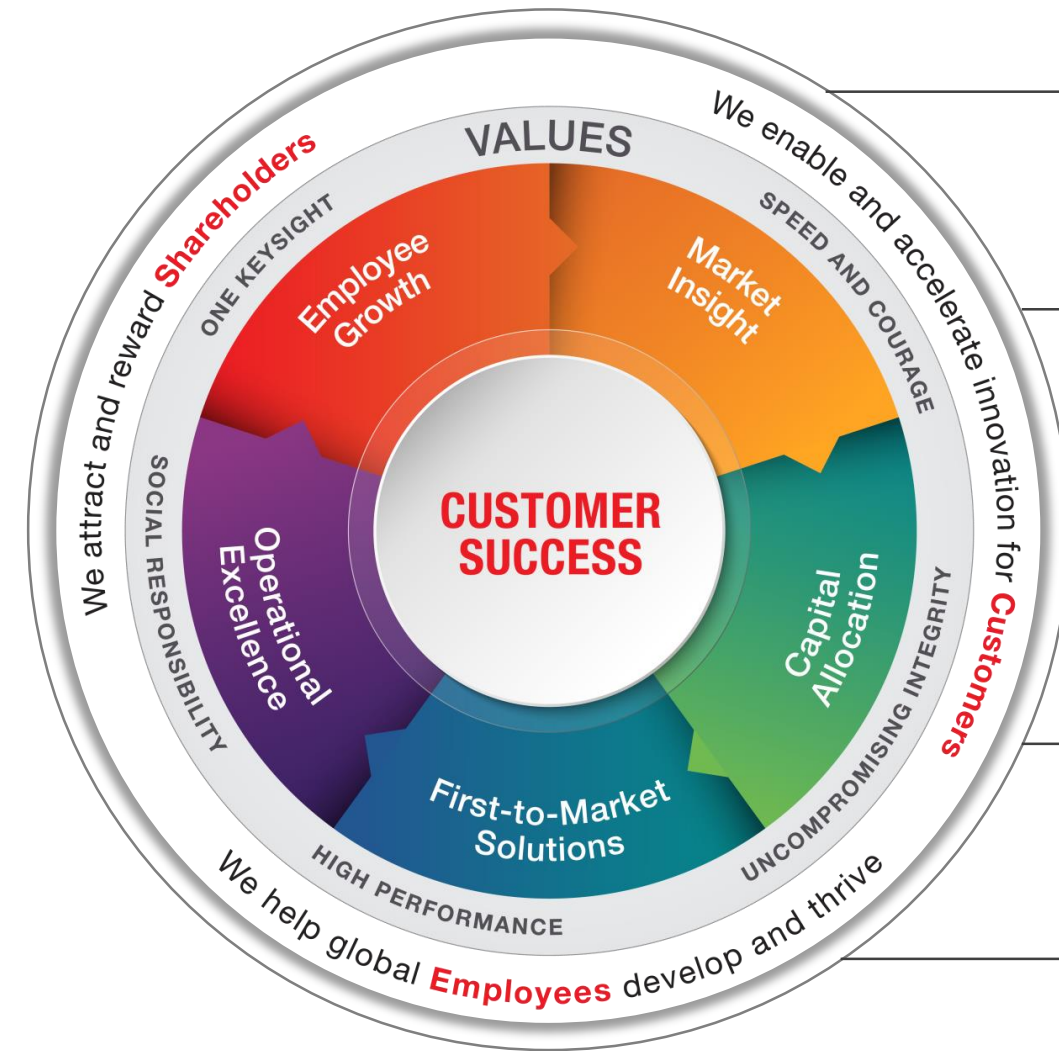


Closing Remarks

Ron Nersesian

Chairman, President and Chief Executive Officer

Track Record of Creating Value with More Opportunity Ahead



1. Strong leadership team and employees successfully executing to deliver on commitments



2. Delivering first-to-market solutions aligned to key growth areas and end markets



3. Executing on our software-centric solutions strategy to meet customer needs and increase recurring revenue



4. Applying the Keysight Leadership Model, a sustainable competitive advantage, to win through strong execution



5. Tremendous opportunities for continued value creation

Appendix

Reconciliation of GAAP to Non-GAAP Revenue

(\$M)

GAAP revenue

Amortization of acquisition-related balances

Non-GAAP Revenue

FY19	FY18	FY17	FY16	FY15
\$ 4,303	\$ 3,878	\$ 3,189	\$ 2,918	\$ 2,856
9	36	60	12	6
\$ 4,312	\$ 3,914	\$ 3,249	\$ 2,930	\$ 2,862

Reconciliation of Income from Operations to Non-GAAP Income from Operations

(\$M)	FY19	FY18	FY17	FY16	FY15
Income (loss) from operations, as reported	\$ 711	\$ (394)	\$ 148	\$ 375	\$ 390
Goodwill impairment	-	709	-	-	-
Amortization of acquisition-related balances	224	265	256	56	23
Share-based compensation	82	59	56	49	55
Acquisition and integration costs	9	49	57	18	16
Separation and related costs	-	2	20	24	20
Legal Settlement	-	25	-	-	-
Gain on divestitures	(1)	(20)	-	-	-
Acquisition-related compensation expense	-	-	28	-	-
Northern California wildfire-related impacts	-	7	16	-	-
Restructuring and related costs	9	17	11	-	14
Other	3	16	6	(7)	-
Non-GAAP income from operations	\$ 1,037	\$ 735	\$ 598	\$ 515	\$ 518
GAAP Operating Margin	16.5%	(10.2)%	4.6%	12.9%	13.7%
Non-GAAP Operating Margin	24.0%	18.8%	18.4%	17.6%	18.1%

Reconciliation of Gross Profit to Non-GAAP Gross Profit

(\$M)

Gross Profit, as reported

Amortization of acquisition-related balances
Share-based compensation expense
Acquisition and integration costs
Acquisition-related compensation expense
Northern California wildfire-related impacts
Restructuring and related costs
Separation and related costs
Other

Non-GAAP Gross Profit

GAAP Gross Margin

Non-GAAP Gross Margin

	FY19	FY18	FY17	FY16	FY15
\$	2,534	\$ 2,111	\$ 1,697	\$ 1,616	\$ 1,576
	177	219	217	613	21
	14	12	11	37	12
	-	6	4	10	1
	-	-	1	1	-
	-	5	5	10	-
	1	-	1	2	4
	-	-	-	-	2
	-	12	7	19	1
\$	2,726	\$ 2,365	\$ 1,943	\$ 1,681	\$ 1,617
	58.9%	54.4%	53.2%	55.4%	55.2%
	63.2%	60.4%	59.8%	57.4%	56.5%

Reconciliation of Non-GAAP Net Income and Diluted EPS

(\$M, except per share amounts)

	FY19	FY18	FY17	FY16	FY15
GAAP Net income (loss)	\$ 621	\$ 165	\$ 102	\$ 335	\$ 513
Non-GAAP adjustments:					
Goodwill impairment	-	709	-	-	-
Amortization of acquisition-related balances	224	265	256	56	23
Share-based compensation	82	59	56	49	55
Acquisition and integration costs	11	49	67	17	15
Legal Settlement	-	25	-	-	-
Acquisition-related compensation expense	-	-	28	-	-
Separation and related costs	-	2	20	24	20
Pension curtailment and settlement expense (gain)	2	1	(69)	-	-
Gain on divestitures	(1)	(20)	-	-	-
Northern California wildfire-related impacts	-	7	16	-	-
Restructuring and related costs	9	17	11	-	14
Other	(17)	16	(4)	(7)	5
Adjustment for taxes	(29)	(677)	(21)	(55)	(213)
Non-GAAP Net income	\$ 902	\$ 618	\$ 462	\$ 419	\$ 432
Weighted average shares outstanding - diluted	191	191	182	172	171
GAAP Diluted EPS	\$ 3.25	\$ 0.86	\$ 0.56	\$ 1.95	\$ 3.00
Non-GAAP Diluted EPS	\$ 4.72	\$ 3.24	\$ 2.53	\$ 2.43	\$ 2.52

Free Cash Flow as a Percent of Non-GAAP Net Income

(\$M)

Net Cash Provided by Operating Activities

Less : Investments in PP&E

Free Cash Flow

Non-GAAP Net Income

FCF/NI

	FY19	FY18	FY17	FY16	FY15
	\$ 998	\$ 555	\$ 328	\$ 420	\$ 388
	(120)	(132)	(72)	(91)	(92)
	\$ 878	\$ 423	\$ 256	\$ 329	\$ 296
	\$ 902	\$ 618	\$ 462	\$ 419	\$ 432
	97%	68%	55%	79%	69%

Reconciliation of Gross Debt, Net Debt and Total Capital

(\$M)	As at January 31, 2020
Senior notes, par value	\$ (1,800)
Gross Debt	\$ (1,800)
Less:	
Cash and cash equivalents	\$ 1,691
Restricted cash	2
Net Debt	\$ (107)
Gross Debt, as above	\$ 1,800
Add: Shareholders' equity	3,127
Total Capital	\$ 4,927

Reconciliation of Net Income to LTM Adjusted EBIDTA

(\$M)	LTM January 31, 2020
Net Income	\$ 670
Add: Provision for income taxes	127
Income before taxes	<u>\$ 797</u>
Add:	
Interest Income	(25)
Interest Expense	79
Depreciation and amortization	312
EBITDA	<u>\$ 1,163</u>
Add back: Non-GAAP adjustments	
Amortization of acquisition-related balances	16
Share-based compensation expense	94
Acquisition and integration costs	11
Northern California wildfire-related impacts	(32)
Restructuring and related costs	11
Other	(12)
Adjusted EBITDA	<u>\$ 1,251</u>

Reconciliation of GAAP to Non-GAAP Revenue by Segment

(\$M) <u>Revenue by Segment</u>	GAAP Revenue	Amortization of acquisition- related balances	Non-GAAP Revenue
	FY19		
Communications Solutions Group	\$ 3,168	\$ 9	\$ 3,177
Electronic Industrial Solutions Group	1,135	-	1,135
Keysight	\$ 4,303	\$ 9	\$ 4,312

Non-GAAP Financial Measures

Management uses both GAAP and non-GAAP financial measures to analyze and assess the overall performance of the business, to make operating decisions and to forecast and plan for future periods. We believe that our investors benefit from seeing our results “through the eyes of management” in addition to seeing our GAAP results. This information enhances investors’ understanding of the continuing performance of our business and facilitates comparison of performance to our historical and future periods.

Our non-GAAP financial measures may not be comparable to similarly titled measures used by other companies, including industry peer companies, limiting the usefulness of these measures for comparative purposes.

These non-GAAP measures should be considered supplemental to and not a substitute for financial information prepared in accordance with GAAP. The discussion below presents information about each of the non-GAAP financial measures and the company’s reasons for including or excluding certain categories of income or expenses from our non-GAAP results. In future periods, we may exclude such items and may incur income and expenses similar to these excluded items. Accordingly, adjustments for these items and other similar items in our non-GAAP presentation should not be interpreted as implying that these items are non-recurring, infrequent or unusual.

Non-GAAP Revenue includes recognition of acquired deferred revenue that was written down to fair value in purchase accounting. Management believes that excluding fair value purchase accounting adjustments more closely correlates with the ordinary and ongoing course of the acquired company’s operations and facilitates analysis of revenue growth and business trends.

Non-GAAP Core Revenue is non-GAAP revenue (see *Non-GAAP Revenue* above) excluding the impact of foreign currency changes and revenue associated with businesses acquired and divested within the last twelve months. We exclude the impact of foreign currency changes as currency rates can fluctuate based on factors that are not within our control and can obscure revenue growth trends. As the nature, size and number of acquisitions can vary significantly from period to period and as compared to our peers, we exclude revenue associated with recently acquired businesses to facilitate comparisons of revenue growth and analysis of underlying business trends.

Non-GAAP Income from Operations, Non-GAAP Net Income and Non-GAAP Diluted EPS may include the following types of adjustments:

- *Acquisition-related Items:* We exclude the impact of certain items recorded in connection with business combinations from our non-GAAP financial measures that are either non-cash or not normal, recurring operating expenses due to their nature, variability of amounts and lack of predictability as to occurrence or timing. These amounts may include non-cash items such as the amortization of acquired intangible assets and amortization of items associated with fair value purchase accounting adjustments, including recognition of acquired deferred revenue (see *Non-GAAP Revenue* above). We also exclude other acquisition and integration costs associated with business acquisitions that are not normal recurring operating expenses, including amortization of amounts paid to redeem acquires’ unvested stock-based compensation awards, and legal, accounting and due diligence costs. We exclude these charges to facilitate a more meaningful evaluation of our current operating performance and comparisons to our past operating performance.
- *Share-based Compensation Expense:* We exclude share-based compensation expense from our non-GAAP financial measures because share-based compensation expense can vary significantly from period to period based on the company’s share price, as well as the timing, size and nature of equity awards granted. Management believes the exclusion of this expense facilitates the ability of investors to compare the company’s operating results with those of other companies, many of which also exclude share-based compensation expense in determining their non-GAAP financial measures.
- *Goodwill Impairment charges:* We exclude goodwill impairment charges from our non-GAAP financial measures, as such charges are non-recurring and do not reduce company's liquidity. In addition, the company's peer industry group companies may record impairment charges at different times, excluding such charges permits more accurate comparison of company's financial performance with those of its peers.
- *Restructuring and Related Costs:* We exclude incremental expenses associated with restructuring initiatives, usually aimed at material changes in the business or cost structure. Such costs may include employee separation costs, asset impairments, facility-related costs, contract termination fees, and costs to move operations from one location to another. These activities can vary significantly from period to period based on the timing, size and nature of restructuring plans; therefore, we do not consider such costs to be normal, recurring operating expenses. We believe that these costs do not reflect expected future operating expenses and do not contribute to a meaningful evaluation of the company’s current operating performance or comparisons to our operating performance in other periods.
- *Northern California wildfire-related costs and Other Items:* We exclude certain other significant income or expense items that may occur occasionally and are not normal, recurring, cash operating, from our non-GAAP financial measures. Such items are evaluated on an individual basis based on both quantitative and qualitative factors and generally represent items that we would not anticipate occurring as part of our normal business on a regular basis. While not all-inclusive, examples of certain other significant items excluded from non-GAAP financial measures would include net unrealized gains on equity investments still held, and significant non recurring events like litigation settlements, realized gains or losses associated with our employee benefit plans, costs and recoveries related to unusual disaster like Northern California wildfires, gain on sale of assets and small divestitures, separation and related costs, etc.

Management recognizes these items can have a material impact on our cash flows and/or our net income. Our GAAP financial statements, including our Condensed Consolidated Statement of Cash Flows, portray those effects. Although we believe it is useful for investors to see core performance free of special items, investors should understand that the excluded costs are actual expenses that may impact the cash available to us for other uses. To gain a complete picture of all effects on the company’s profit and loss from any and all events, management does (and investors should) rely upon the Condensed Consolidated Statement of Operations prepared in accordance with GAAP. The non-GAAP measures focus instead upon the core business of the company, which is only a subset, albeit a critical one, of the company’s performance.



Management Biographies

Biographies



RON NERSESIAN

CHAIRMAN, PRESIDENT AND CHIEF EXECUTIVE OFFICER

Ron Nersesian is chairman, president, and chief executive officer of Keysight Technologies. In November 2011, he was named executive vice president and chief operating officer of Agilent Technologies. The following year, in November 2012, he was promoted to president and chief operating officer.

When Agilent announced the separation of its electronic measurement business in 2013, Nersesian was appointed Keysight president and CEO and led the launch of the new company. Keysight became a public, independent company in November 2014. Nersesian was appointed chairman of Keysight in 2019.

Nersesian began his career in 1982 with Computer Sciences Corporation as a systems engineer for satellite communications systems. In 1984, he joined Hewlett-Packard and served in a range of management roles during his tenure.

In 1996, Nersesian joined another industry player as vice president of worldwide marketing. He subsequently assumed other senior management roles through 2002, including senior vice president and general manager of the company's digital storage oscilloscope business.

Nersesian joined Agilent Technologies in 2002 as vice president and general manager of the company's Design Validation Division. In 2005, he was named vice president and general manager of the company's Wireless Business Unit and manager of Agilent's Santa Rosa, California site. In 2009, Nersesian was named president of Agilent's Electronic Measurement Group.

Nersesian holds a bachelor's degree in electrical engineering from Lehigh University and an MBA from New York University, Stern School of Business. He also serves as an independent director on the Board of Directors of Trimble Inc. and as a member of Georgia Tech's Advisory Board.

Biographies



INGRID ESTRADA

SVP – CHIEF ADMINISTRATIVE OFFICER AND CHIEF OF STAFF

Ingrid Estrada is chief people and administrative officer at Keysight Technologies, as well as chief of staff. Estrada's responsibilities include directing Keysight's global policies and programs for leadership and talent development, compensation, benefits, staffing and workforce planning, human resources systems, education and organization development, workplace strategies, global sourcing and indirect procurement, and ensuring effective and efficient internal company operations.

Estrada joined Hewlett-Packard in 1990 where she held a number of procurement, order management and order fulfillment positions. From 1995 through 2004, she served a variety of senior management roles in manufacturing, materials, and supply chain management, at both the division and business unit levels at Hewlett-Packard and then Agilent Technologies. In 2004, Estrada was named a senior manager of manufacturing for Agilent's Wireless Business Unit and launched the transformation of the Electronic Measurement Group supply chain.

In 2006, Estrada was promoted to vice president and general manager of the Remarketing Solutions Division. In 2011, she was named vice president and general manager of Global Sourcing for Agilent Technologies. In 2014, she was named senior vice president of Human Resources for Keysight.

Estrada holds an MBA from Santa Clara University and an Executive MBA from Stanford University.

Biographies



JAY ALEXANDER

SVP AND CHIEF TECHNOLOGY OFFICER

Jay Alexander is senior vice president and chief technology officer of Keysight Technologies.

Alexander leads Keysight's centralized technology development team to focus on addressing top opportunities and market trends. His role is to optimize Keysight resources to grow in areas that provide competitive advantage across the electronic design and test ecosystem, and to leverage Keysight's world-class technology and platform offerings.

Prior to Keysight, Alexander held numerous leadership positions within Agilent's Electronic Measurement Group, including serving as vice president and general manager and previously as R&D manager for the Oscilloscope and Protocol Division.

Alexander joined Hewlett-Packard (HP) in 1986 as a manufacturing and test engineer. During his tenure, he has served as test engineering manager for HP's Oscilloscopes and Logic Analyzers business, product planning manager for Agilent's Design Verification Division, marketing manager for Agilent's Network and Digital Solutions Business Unit, and architecture and business intelligence manager for Agilent's Electronic Measurement Group.

Alexander earned a bachelor's degree in electrical engineering from Northwestern University and a master's degree in computer science from the University of Colorado at Boulder. He is a licensed professional engineer and a senior member of the Institute of Electrical and Electronics Engineers (IEEE). Alexander currently serves on the Visiting Committee on Advanced Technology for the National Institute of Standards and Technology (NIST). He holds 24 U.S. patents.

Biographies



SATISH DHANASEKARAN

SVP, PRESIDENT – COMMUNICATIONS SOLUTIONS GROUP

Satish Dhanasekaran is senior vice president, Keysight, and president of the Communications Solutions Group (CSG) at Keysight Technologies.

Satish leads the \$3.1 billion global business that addresses the communications ecosystem including wireless and wireline, as well as aerospace defense. The group focuses on enabling customers to accelerate their technological innovations to connect and secure the world. Satish's team is making significant contributions to accelerate technology adoptions like 400G, 5G, and quantum.

In his previous role, Satish served as vice president and general manager for CSG's Wireless Devices and Operators business segment, where he managed solution conception, development, and go-to-market strategies of design and test solutions for the wireless industry. He also led the transformation of Keysight's portfolio to test software layers in mobile devices.

Satish has more than 20 years of experience in the communications industry spanning business leadership, product, and technical roles at Keysight, and Agilent prior to the company's separation, as well as Motorola. Throughout his career, he has been at the forefront of communications ecosystem advances. While at Motorola, he led development for first-generation smartphone devices. During his early years at Agilent, his team produced industry-leading performance products in the radio frequency (RF) space.

Satish is passionate about progressing technology adoptions rapidly through active industry body participation. He is a member of the United States Federal Communications Commission (FCC) Technological Advisory Committee and sponsors Keysight representation in standards bodies such as 3GPP, CTIA – The Wireless Association, GCF/PTCRB, and industry consortia including IMT-2020 and the International Wireless Industry Consortium (IWPC).

He holds a master's degree in Electrical Engineering from Florida State University and an Executive Education certification from The Wharton Business School.

Biographies



GOOI SOON CHAI

SVP, PRESIDENT – ELECTRONIC INDUSTRIAL SOLUTIONS GROUP

Gooi Soon Chai is senior vice president, Keysight, and president of the Electronic Industrial Solutions Group (EISG) which addresses the automotive, energy, general electronics, manufacturing, and semiconductor businesses.

Gooi is also responsible for Keysight's Order Fulfillment, Global Procurement and IT functions. This includes the end-to-end supply chain that encompasses Manufacturing Operations, Engineering, Technology Centers and Worldwide Logistics; Global Procurement and Strategic Supplier Management; as well as IT infrastructure and application services.

Gooi was previously the president of Agilent Order Fulfillment for the company's Life Sciences, Chemical Analysis and Electronic Measurement business groups. He was responsible for leading efforts to leverage the company's strength in supply chain and engineering operations across the three business groups.

In 2006, he was named the vice president and general manager of the Electronic Instruments Business Unit (EIBU) at Agilent Technologies. In this role, he managed a diverse portfolio of businesses serving the general purpose, semiconductor, board-test and nanotechnology markets.

He holds a bachelor of science degree, with first class honors, in electrical and electronics engineering from University of London, and a master of science degree in computing science from the Imperial College of Science and Technology, London.

Biographies



JOHN PAGE

SVP, PRESIDENT – GLOBAL SERVICES

John Page is senior vice president, Keysight, and president of global services.

Page, most recently vice president of Keysight's business finance organization, has over 25 years of financial and corporate leadership, including CEO and founder of a cloud-based computing company as well as CFO and senior management roles at leading semiconductor and electronics firms.

Page joined Hewlett-Packard (HP) in 1988 where he served in a variety of finance and operational positions. Page helped lead the creation and spinoff of Lumileds as its first CFO. He was also one of the founders and executive staff of Agilent's Imaging Electronics Division, which he helped lead from inception to over \$1B in revenue.

Page served as a member of the executive team at Nanosys from 2010-2014, where he was instrumental in the company's transition from a technology research powerhouse with over 800 patents into a growing commercial business in the electronics industry.

Page holds an MBA from the Simon School of Business at the University of Rochester, and a B.A. in economics from the University of Rochester.

Biographies



MARIE HATTAR

SVP – CHIEF MARKETING OFFICER

Marie Hattar is chief marketing officer of Keysight Technologies. As CMO, Hattar is responsible for Keysight's brand and global marketing efforts. She drives Keysight's corporate positioning, messaging and communications to both internal and external audiences. Hattar has more than 20 years of marketing leadership experience spanning the security, routing, switching, telecom and mobility markets.

Before becoming Keysight's CMO, Hattar was chief marketing officer at Ixia and at Check Point Software Technologies where she reestablished those companies as leaders in their industries. Prior to that, she was vice president at Cisco where she led the company's enterprise networking and security portfolio and helped drive the company's leadership in networking. Hattar also worked at Nortel Networks, Alteon WebSystems, and Shasta Networks in senior marketing and CTO positions.

Hattar received a master's degree in Business Administration in Marketing from York University and a bachelor's degree in Electrical Engineering from the University of Toronto.

Biographies



MARK WALLACE

SVP – GLOBAL SALES

Mark Wallace is senior vice president, global sales for Keysight. As the leader of the company's global sales function, Wallace is responsible for orders and customer satisfaction for the company.

Most recently, Wallace was vice president and general manager of the Americas Field Operations for Keysight. Prior to that position, Wallace held a variety of leadership positions across sales, marketing, and channel management.

Wallace joined Hewlett-Packard in 1985 as a field engineer selling test and measurement products to the wireless industry. In 1995, he was named global business development manager responsible for sales and business development in Asia and Europe for major wireless accounts. Two years later, he was promoted to wireless sales manager for major accounts in the U.S.

Following the Agilent split from Hewlett-Packard in 1999, Wallace joined the wireless business unit as channel manager responsible for global account management and business development in the wireless industry worldwide. He was later promoted to worldwide marketing manager responsible for all inbound and outbound marketing within the wireless business unit. In August 2004, he was named national sales manager within North America and, through several assignments, has managed all portions of the US and Canadian test and measurement sales organizations, until his promotion to Americas Field Operations vice president in November 2011.

Wallace graduated from the Illinois Institute of Technology with a bachelor's degree in electrical engineering in 1987 and has attended the University of Chicago for executive studies. He is a member of IIT's Armour College of Engineering Advisory Board.

Biographies



NEIL DOUGHERTY

SVP AND CHIEF FINANCIAL OFFICER

Neil Dougherty is senior vice president and chief financial officer of Keysight Technologies. As CFO Dougherty leads the company's global finance operations including tax, treasury, and investor relations.

Dougherty joined Hewlett-Packard in 1996 as a financial analyst. He subsequently held division and business unit controllership positions with both H-P and Agilent before becoming Agilent's assistant treasurer in 2006. In 2010, Dougherty joined Corporate Development as a senior director where he was responsible for domestic and international acquisitions and divestitures. Dougherty was most recently Agilent Technologies' vice president and treasurer.

Dougherty holds an MBA from the University of Chicago Booth School of Business, and a B.A. in economics from the University of California, San Diego.