The New Economy
Top Technology Trends

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KEYSIGHT
TECHNOLOGIES

35 Years Ago: Concept of The New Economy

This Decade… Realization of the New Economy

What is the New Economy?

Industrial, Manufacturing-Based Economy

More Services and Information-Based Economy

What Has it Meant?

STRONG BUSINESS MODELS WHERE COMPANIES MAKE UP TO 40% PROFIT

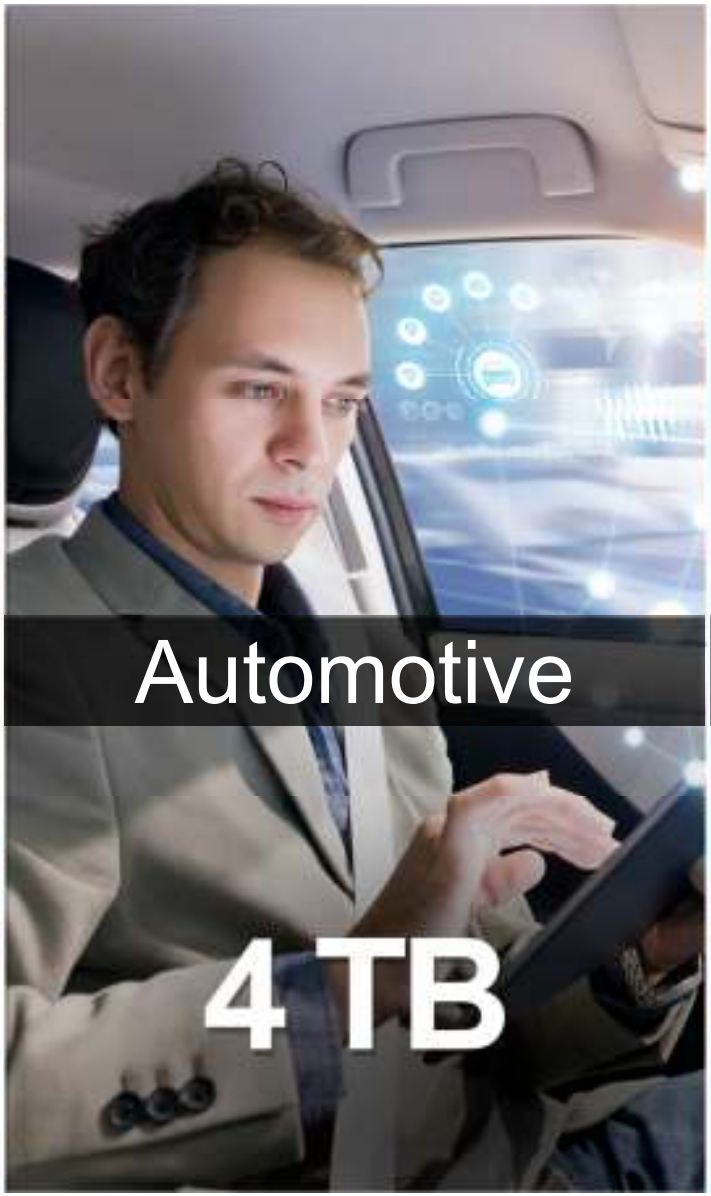
The Secret: Incremental Margins

VERSUS

ANY BUSINESS WITH MORE FIXED COSTS THAN VARIABLE COSTS BENEFITS FROM ECONOMIES OF SCALE

WHAT'S FUELING
the New Economy Trends?

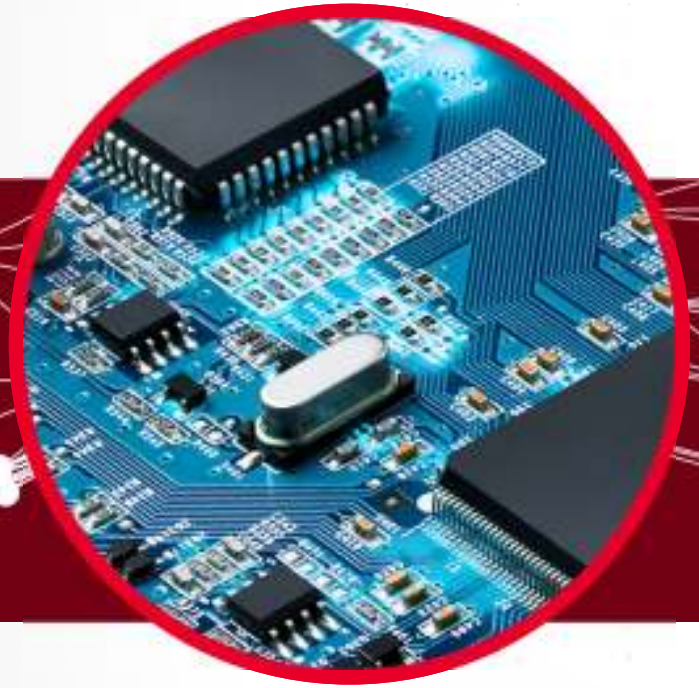
People
1.5 GB


Automotive
4 TB

Manufacturing
1 PB
of data/day

Inflection Points Transforming Innovation

BUSINESS AND TECHNOLOGY ARCHITECTURES CONVERGE EVERY ~25 YEARS



1965:
Moore's Law

1993*:
Metcalfe's Law

Inflection Points Transforming Innovation

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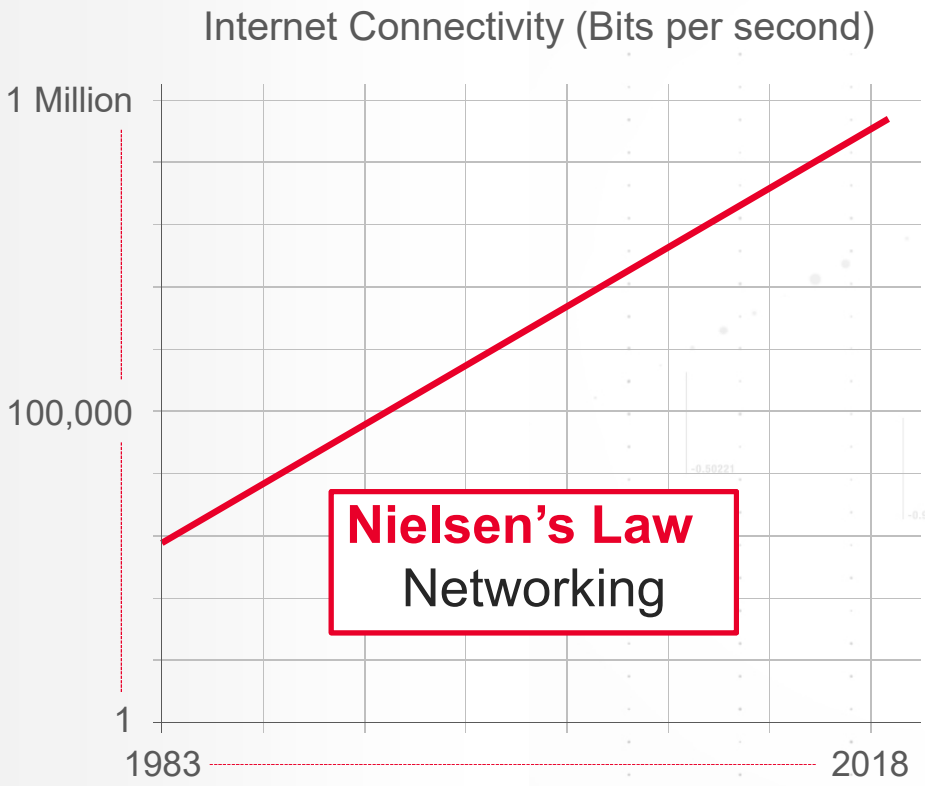
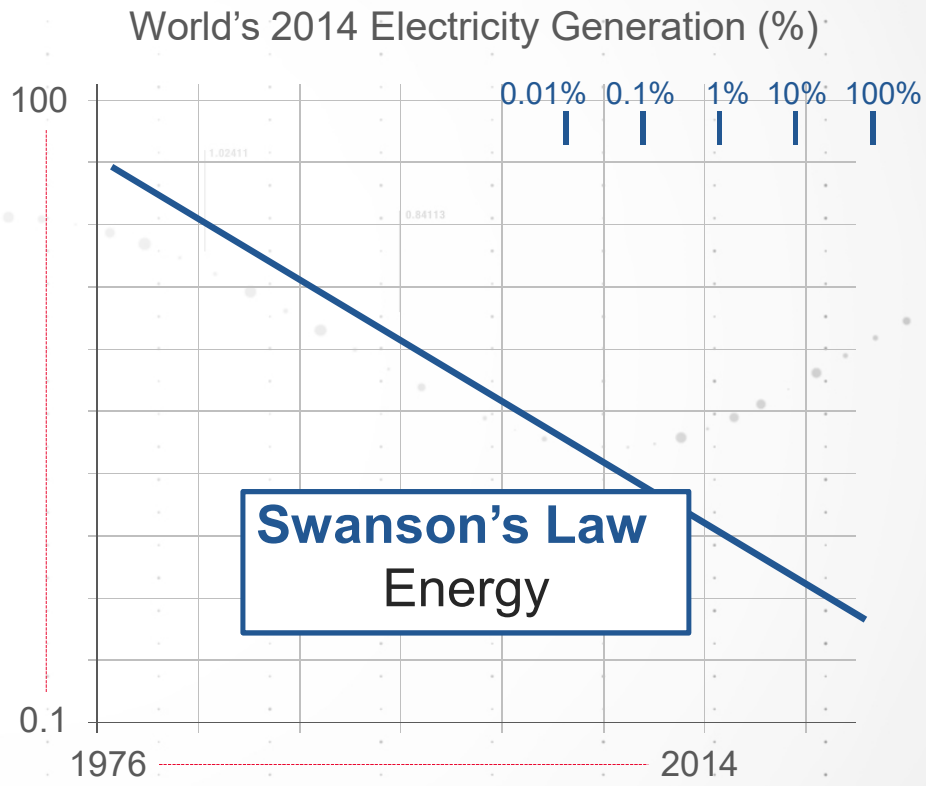




KEYSIGHT TECHNOLOGIES

Inflection Points Transforming Innovation

BUSINESS AND TECHNOLOGY ARCHITECTURES CONVERGE EVERY ~25 YEARS

OUTCOME: MAN + MACHINE
EXPONENTIAL LEARNING WITH AI

Artificial Intelligence Applied to Big Data

PREDICTING ILLEGAL FISHING THROUGH DATA

CARGO SHIP

FERRY VESSEL

LEISURE VESSEL

FISHING BOAT

22 Million Data Points Per Day of Automatic Ident. Systems

+

Cloud Computing

+

Machine Learning

KEYSIGHT TECHNOLOGIES

Artificial Intelligence and Machine Learning

TAKING MACHINE LEARNING MOBILE

22 Trillion Operations
Per Second

+

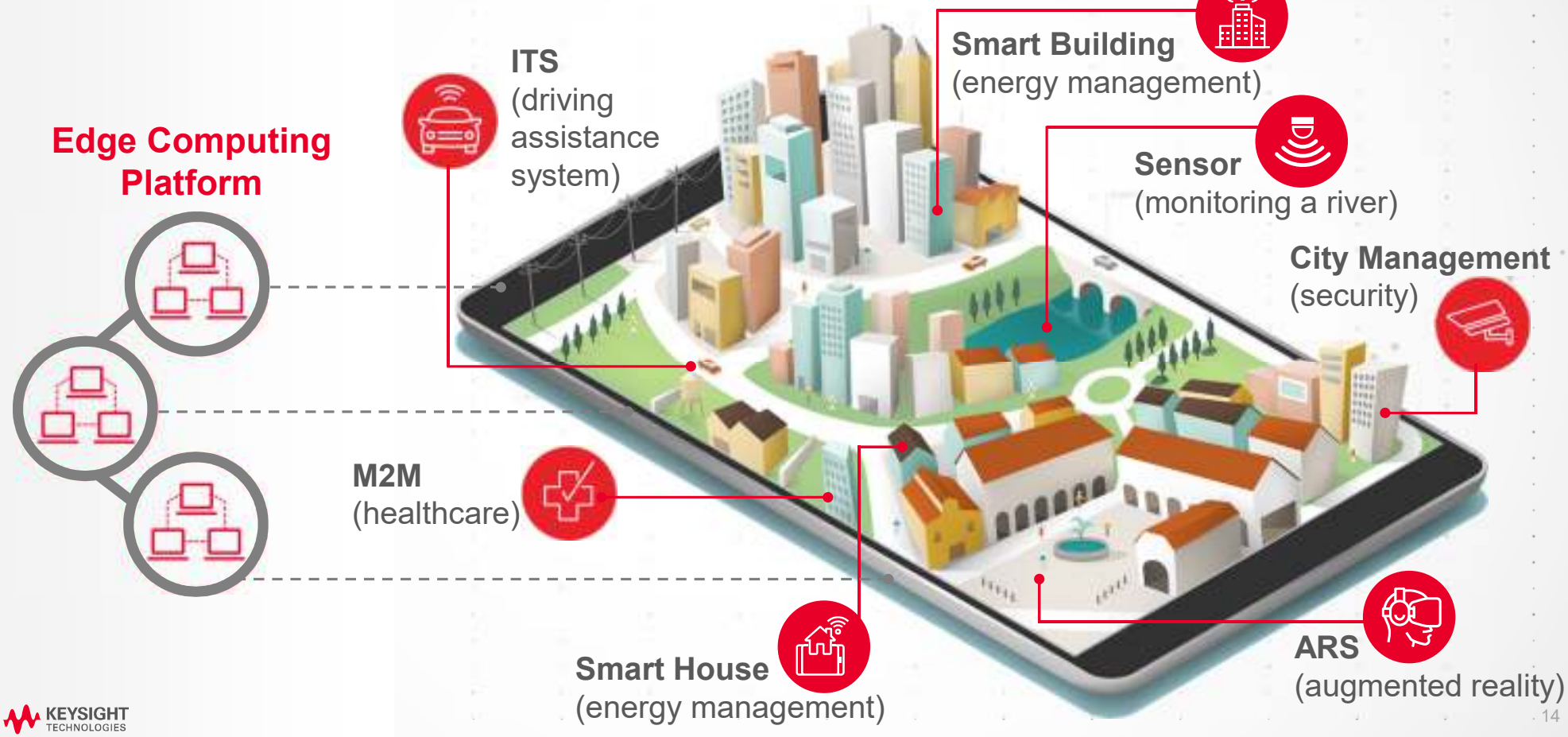
Cameras,
LIDAR, RADAR

+

Machine Learning

Distributed Intelligence

DISAGGREGATION AND 5G



KEYSIGHT TECHNOLOGIES

The World Tomorrow?

FUTURIST PREDICTIONS

1. Transportation Revolution – Hyper Loop 2025
2. Communication Revolution – Smartphones obsolete by 2025
3. Car Revolution – Driverless Cars 2030
4. Galactic Revolution – Mars by 2030
5. Learning Revolution – VR/MR replaces books by 2030
6. The end of Fossil Fuels – 2050
7. Mind Revolution – Man + Machine become one (Neural Race)

KEYSIGHT TECHNOLOGIES

Moving Faster Than Expected

Hyperloop

Communications

Driverless Cars

Mars

End of Fossil Fuels

Mind Revolution

We Are at the Heart of the Revolution

SMART TECHNOLOGY CONNECTS THE WORLD

INNOVATION IS EVERYWHERE

- ✓ Devices
- ✓ Infrastructure
- ✓ Cities
- ✓ Defense
- ✓ Vehicles
- ✓ Wearables

ACCELERATING INNOVATION TO CONNECT AND SECURE THE WORLD

Safety and Transportation: Autonomous Driving

1.25M lives
could be saved as a result of fewer fatal accidents

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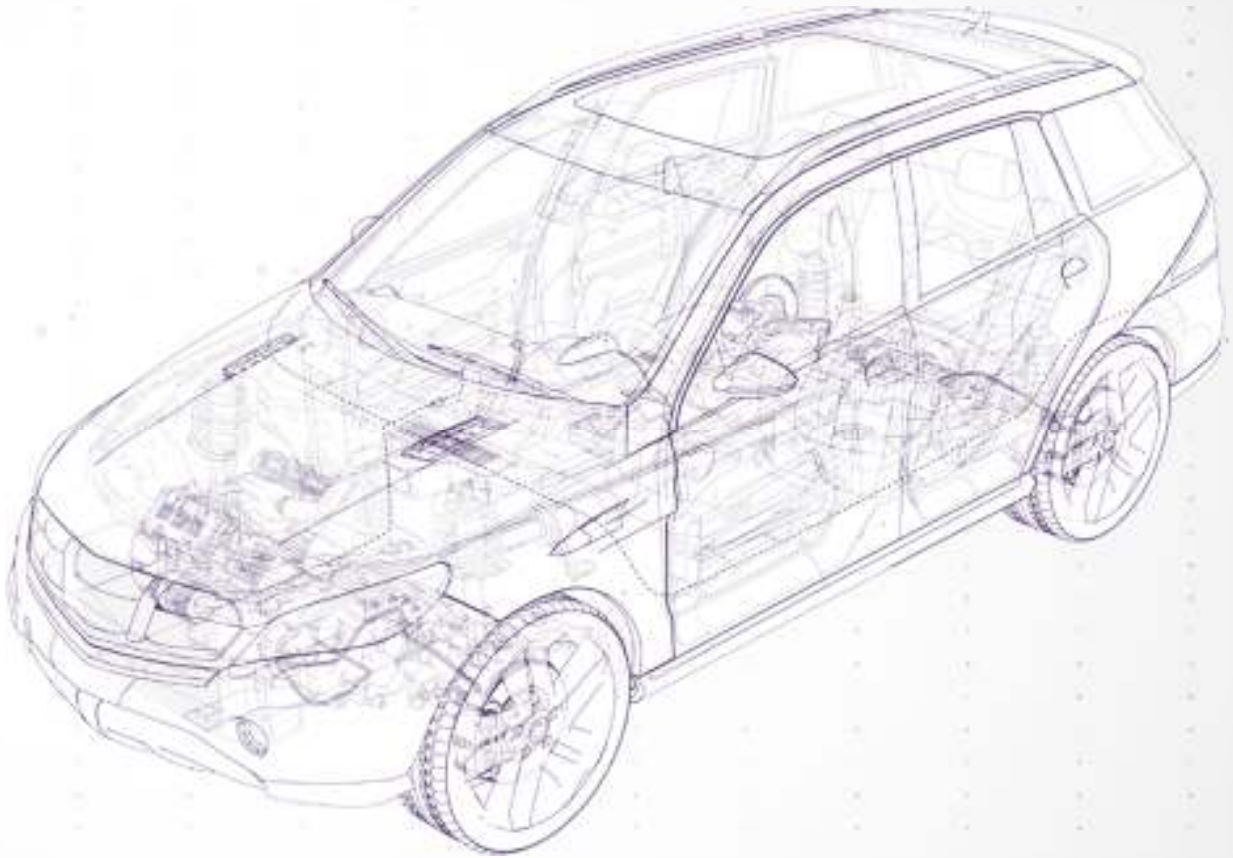
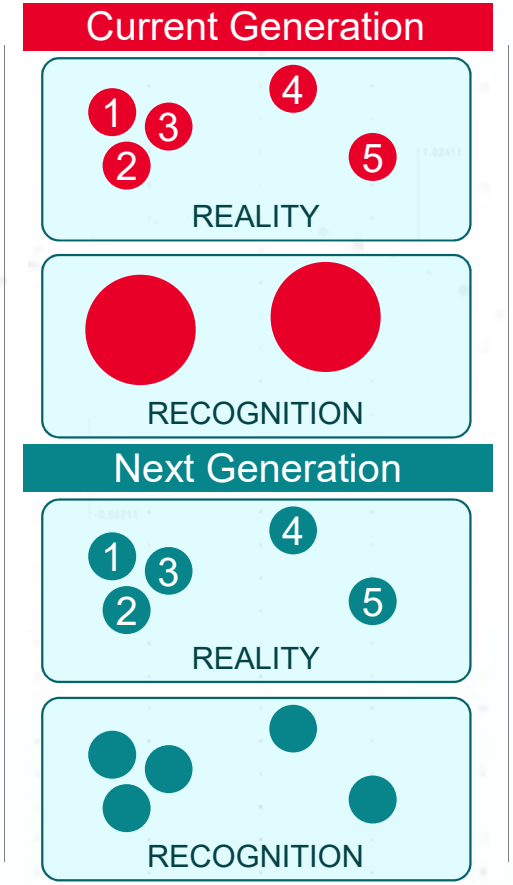
157 hours
of commute time per person every year

$150B in fuel
costs in US in a year



New Generation of Automotive Radars Increase Safety

HIGHER RESOLUTION INCREASES SENSOR VISIBILITY



20x Better Range Resolution

3x Better Velocity Resolution

3x Smaller Antennas

Reaching the Next Generation of IoT

AREAS WHERE WE HELP IOT INNOVATORS

Processors
Low-power processors for miniaturization

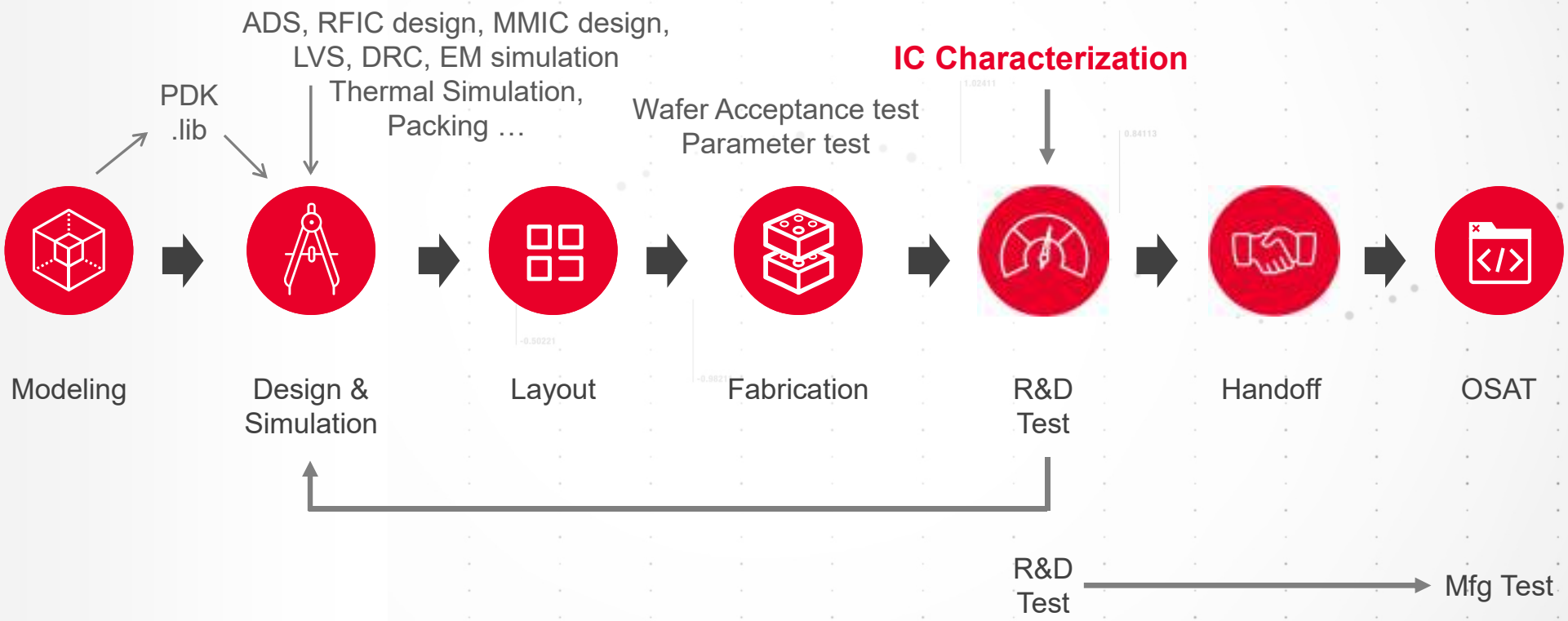
Sensors
Accuracy of measurements, reliability and cost concerns

Energy
Power consumption, signal and power integrity analysis

Wireless
Conformance and EMI/EMC compliance test

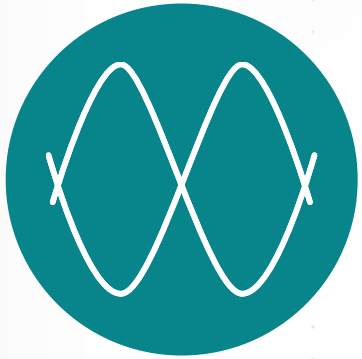
Innovation Starts with the Semiconductor

KEYSIGHT IC TOTAL SOLUTION – FROM DESIGN TO TEST

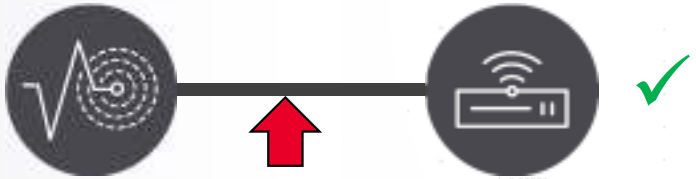


Higher Density Drives Testing Innovation

PAM2
(2-State)

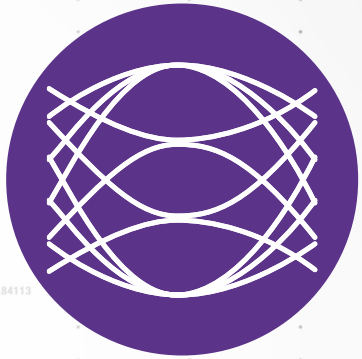


2-State Testing



Send | Noise | Receive ***without*** errors

PAM4
(4-State)



4-State Testing

Send | Noise | Receive ***with*** errors

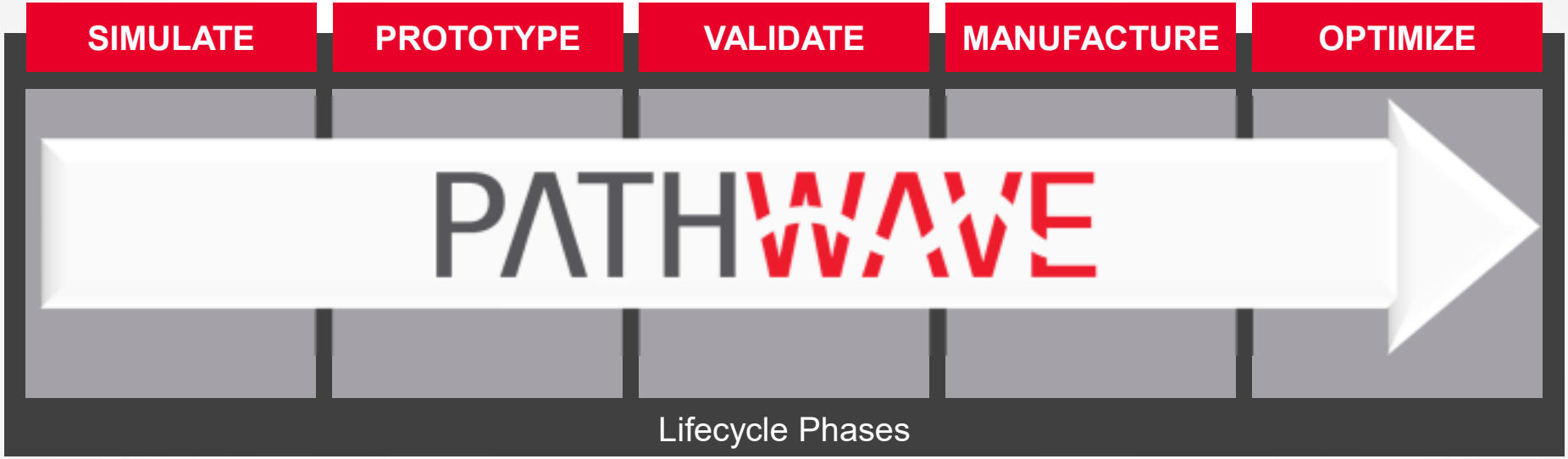
4-State Test with FEC

Send **FEC-encoded** | Noise | Receive **FEC-encoded** ***with*** errors | ***Correct*** errors with FEC | Receive corrected ***without*** errors

FEC: Forward Error Correction

PathWave: Breakthrough Design and Test Software

INCREASE PRODUCTIVITY ACROSS THE ENTIRE WORKFLOW



CONNECTED DEVELOPMENT ENVIRONMENT

Quantum Computing

MASSIVE PARALLEL PROCESSING

Deep Customer Relationships & Market-Leading Positions

CUSTOMER COVERAGE[1] (2017)

10 of 10 Top Telecom Equipment Companies

10 of 10 Top Semiconductor Suppliers

23 of 25 Top Aero and Defense Contractors[2]

25 of 25 Top Technology Companies

25 of 25 Top Auto Electronics Suppliers

25 of 25 Top Telecom Operators

25 of 25 Top Engineering & Tech Universities

BREADTH OF CUSTOMERS[3]

ADI Hittite • Alphabet • Amazon • Arris • AT&T
BAE Systems • Boeing • Broadcomm • Cisco
Continental Auto • Daimler • Datang • Delphi
Denso • Facebook • Finisar • Fujitsu • Harris
HP • HTC • Infineon • Innolight Tech • Leonardo
LG • Lumentum • Marvell Semiconductor
MediaTek • Microsoft • muRata • Naval Research Lab
Nvidia • Qorvo • Qualcomm • SAIC Motor
Samsung • Schneider • Siemens • Skyworks
Sporton International • Spreadtrum • Tesla
Thales • Toyota • Tsinghua University
TSMC • Wistron Neweb • ZheJiang University

LEADING POSITIONS[4]

#1 Software Revenue For Electronic Design and Test

#1 Hardware Revenue For Electronic Design and Test

#1 Commercial Comms, Aerospace and Defense, Electronic Industrial, Network Test (Ixia)

HARDWARE + SOFTWARE + PEOPLE = INSIGHTS

KEYSIGHT TECHNOLOGIES

[1] Source: Defense News, Forbes, IHS Markit, IHS Technology, Statista, Times Higher Education [2] Two of the top 25 defense companies are on the U.S. Gov't embargoed list [3] Select customers from 32,000+ customers [4] Market-leading Positions Source: Prime Data, IHS Technology and Company estimates

Your Role and Ours

INNOVATION THAT ADVANCES AND PROTECTS THE WORLD

Our Biggest	Our Toughest	Our Greatest
Questions	**Challenges**	**Advances**

Require Us to:

Nurture	**Secure**	**Partner**
Innovation	Technology	for Our Future

KEYSIGHT TECHNOLOGIES

KEYSIGHT
TECHNOLOGIES