# Test & Test Consumables Market Report

## Ira Feldman
## Feldman Engineering Corp.

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FELDMAN ENGINEERING
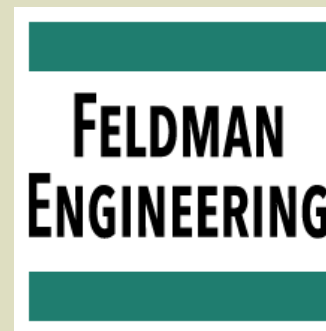
# TestConX

21st annual – virtual May 2020

Live workshop:
    March 7-10, 2021
    Mesa, Arizona
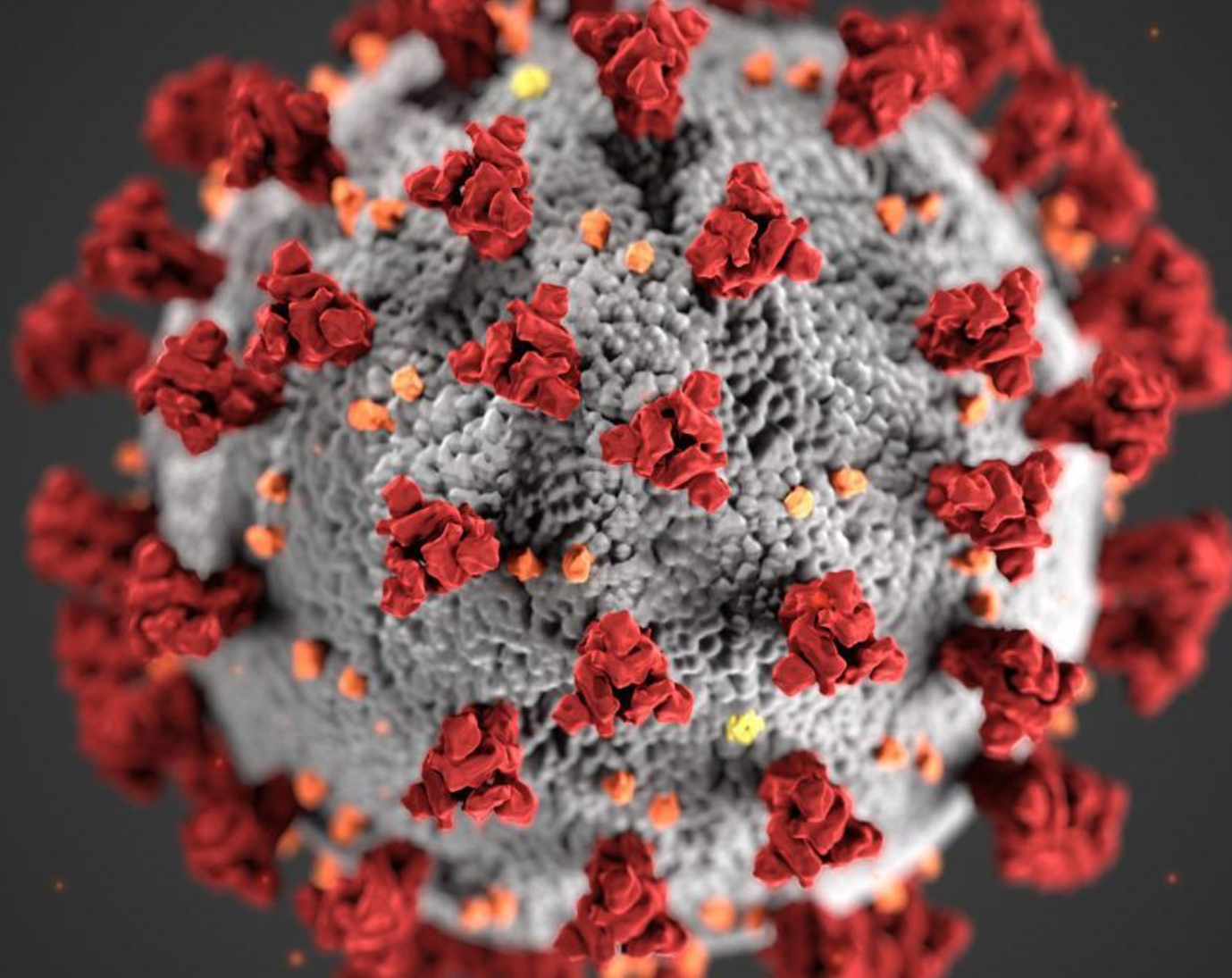
# TestConX 中国 China

6th annual event in China

Virtual event
Week of October 26, 2020
Call for Presentations open

- Preeminent event for **test consumables, test cell integration, and test operations**.
- Expanded scope from packaged semiconductor functional / "final" test and burn-in to encompass all **practical aspects of electronics testing** including validation, advanced packaging testing, system level test, module test, and beyond to finished product test.

## *Connecting electronic test professionals to solutions*

### **www.testconx.org**

# TestConX

2020

fda.gov

# SARS-CoV2

**The New York Times**

# White-Collar Companies Race to Be Last to Return to the Office

Google, Facebook, Amazon, Capital One and others are extending work-from-home policies to September and sometimes far beyond.

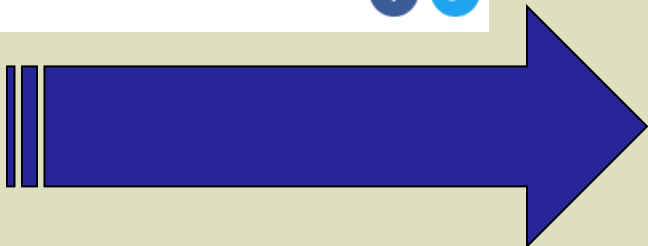**THE WALL STREET JOURNAL.**

CIO JOURNAL

# Employers Face Shortages of Tech Gear as Coronavirus Forces Shipment Delays

The technology that has enabled the sudden shift to remote work is in short supply

**Money**

Facebook Is Paying Workers to Move Closer to the Office

FAMILY FINANCE › HOUSING

BY KARA BRANDEISKY DECEMBER 17, 2015

Frank Gehry
designed
~ $1B
West Campus

Dezeen.com

THE VERGE

FACEBOOK

FACEBOOK SAYS IT WILL PERMANENTLY SHIFT TENS OF THOUSANDS OF JOBS TO REMOTE WORK

Up to half of employees could work remotely within five to 10 years, CEO Mark Zuckerberg says in an interview

By Casey Newton | @CaseyNewton | May 21, 2020, 1:15pm EDT

# OpenVault Broadband Insights Report (OVBI)

**"COVID-19 IMPACT: Broadband usage surges 47% IN Q1, nearing YE2020 expectations, with exponential rise in >1TB/2TB power users"**

## Data Usage % Growth YOY



Median Usage / Total Usage

Source: OVBI Broadband Insights Report Q120

OpenVault

**Forbes**
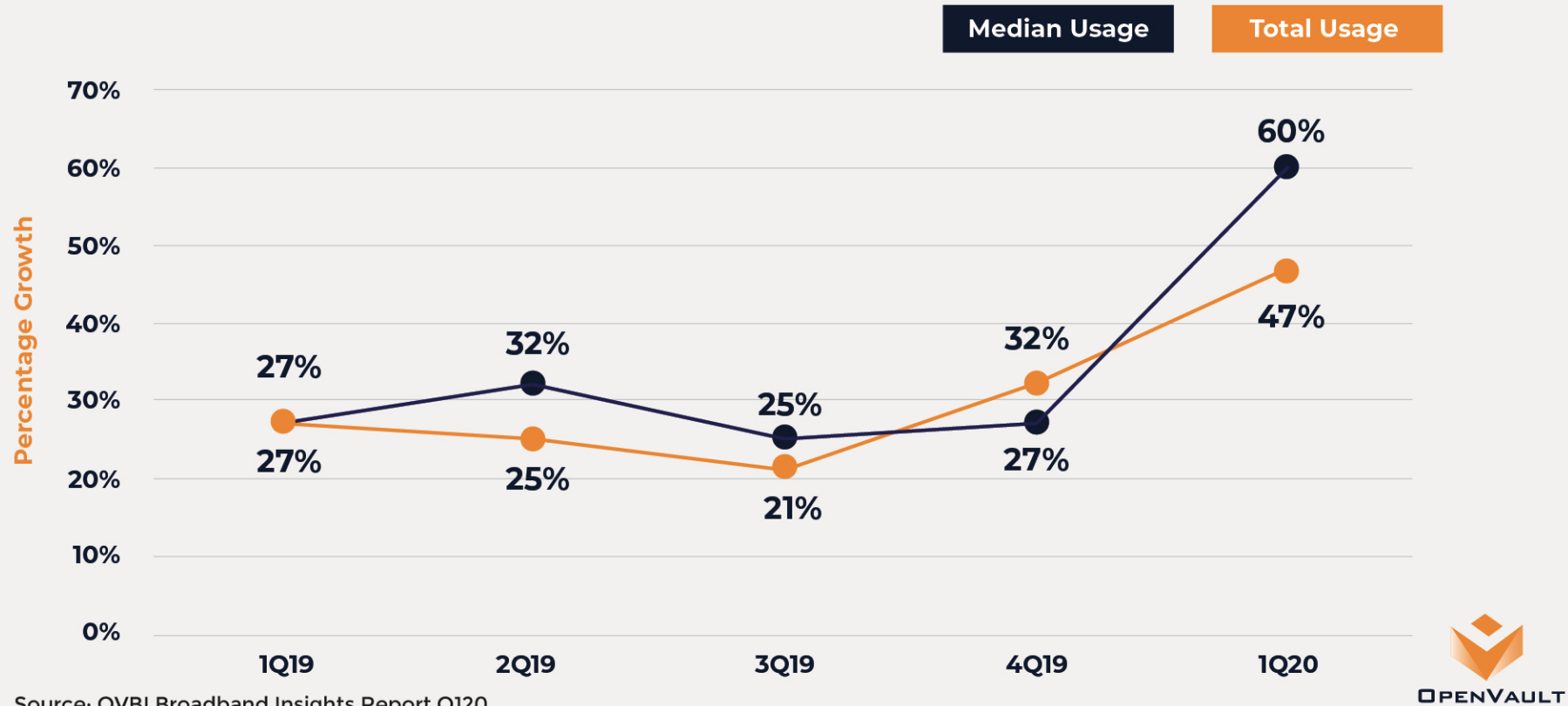
# Coronavirus Won't Kill Leisure Or Business Travel, But It Will Change Them Significantly, Perhaps Forever

**Dan Reed** Senior Contributor ⓘ
Aerospace & Defense
*I write about airlines, the travel biz, and related industries*

**THE POINTS GUY** ↗

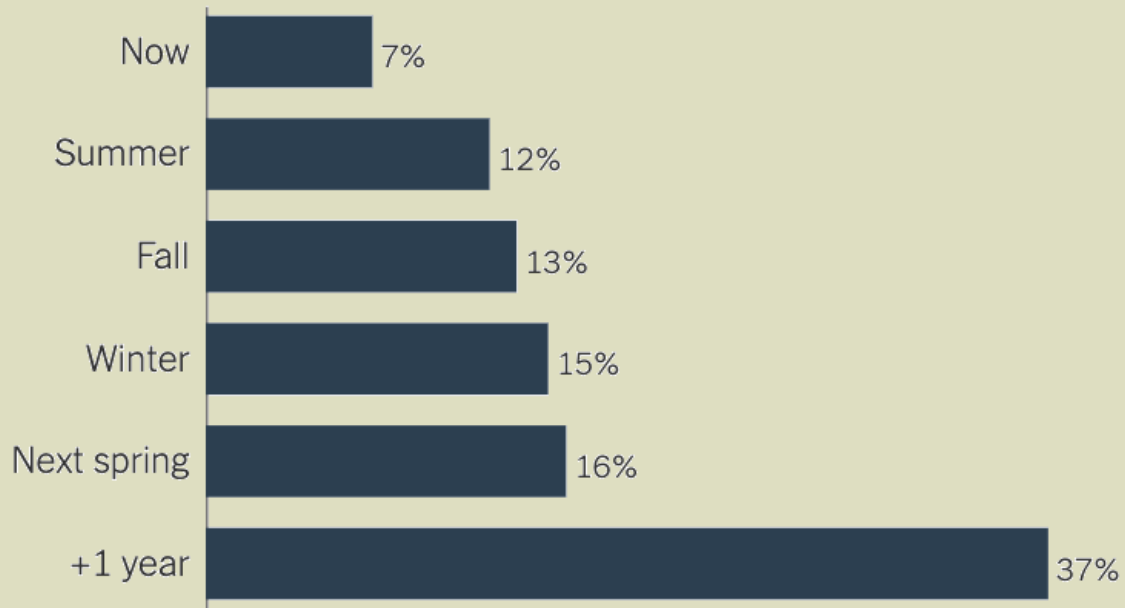# The Critical Points: What does the future of business travel look like?

Richard Kerr
Apr 3, 2020

**TestConX™**     **2020**

# When Will You Travel? It depends…



**On airplanes:**

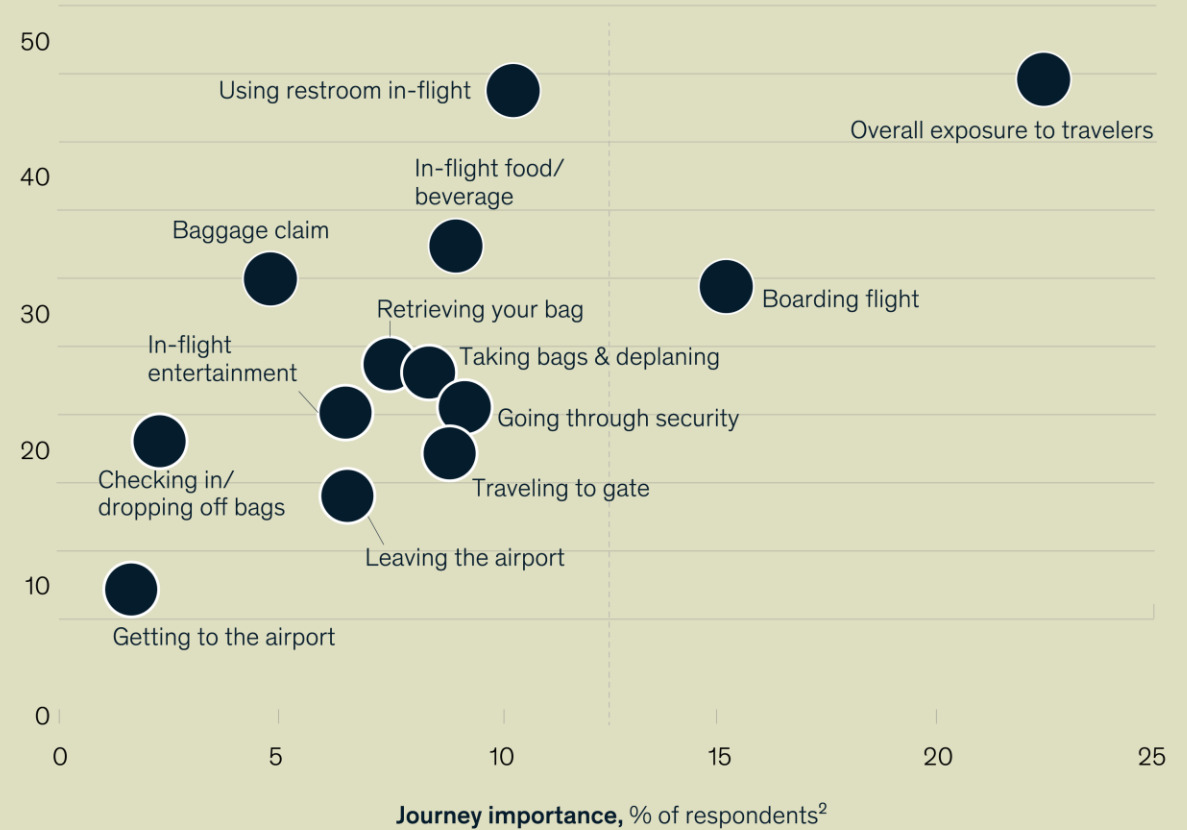| | |
|---|---|
| Now | 7% |
| Summer | 12% |
| Fall | 13% |
| Winter | 15% |
| Next spring | 16% |
| +1 year | 37% |

NY Times: 511 Epidemiologists; 6/8/2020

Overall exposure to travelers and boarding the flight are driving most of travelers' anxiety.

**Journey anxiety, T2B,** % of respondents[1]

- Using restroom in-flight
- Overall exposure to travelers
- In-flight food/beverage
- Baggage claim
- Boarding flight
- Retrieving your bag
- In-flight entertainment
- Taking bags & deplaning
- Going through security
- Checking in/dropping off bags
- Traveling to gate
- Leaving the airport
- Getting to the airport

**Journey importance,** % of respondents[2]

McKinsey & Company – May 2020 survey, n=455

# COVID-19 Implications

| Area | Short/Mid Term | Longer Term |
|---|---|---|
| Work from Home & Distance Learning | Continued as long as required / practical | Hybrid model – in office / on campus part time |
| Offices | If reopened – short term modifications for isolation | End of open offices? Hoteling/hot desks? Smaller office campuses |
| Meetings | Very selective as to size, duration, and necessity of in person. Otherwise via web/conference call | |
| Business Travel | None except extremely critical ("line down") | Heightened scrutiny (Is it essential? No other way?) with reduced budgets |
| Test Floors | Restricted to absolute essential employees. Greater emphasis on remote test development & debug | Increased automation |

➔ Greater demand for computers, mobile devices, bandwidth

→ Growth for (select) semiconductors

→ Accelerated 5G rollout

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# McKinsey & Company – 5 Rs Framework



**Companies need to think and act across five horizons.**

**The five horizons**
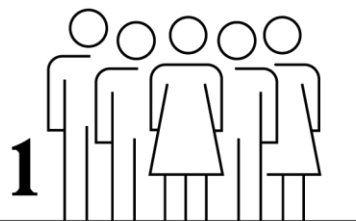
**1 Resolve**

Address the immediate challenges that COVID-19 represents to institution's workforce, customers, technology, and business partners
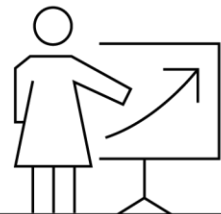
**2 Resilience**

Address near-term cash-management challenges and broader resiliency issues during virus-related shutdowns and economic knock-on effects

**3 Return**

Create detailed plan to return business to scale quickly as COVID-19 situation evolves and knock-on effects become clearer

**4 Reimagination**

Reimagine the next normal: what a discontinuous shift looks like and implications for how institutions should reinvent
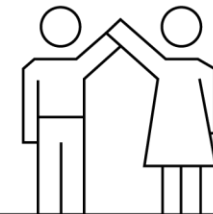
**5 Reform**

Be clear about how regulatory and competitive environments in industry may shift

https://www.mckinsey.com/business-functions/risk/our-insights/covid-19-implications-for-business#
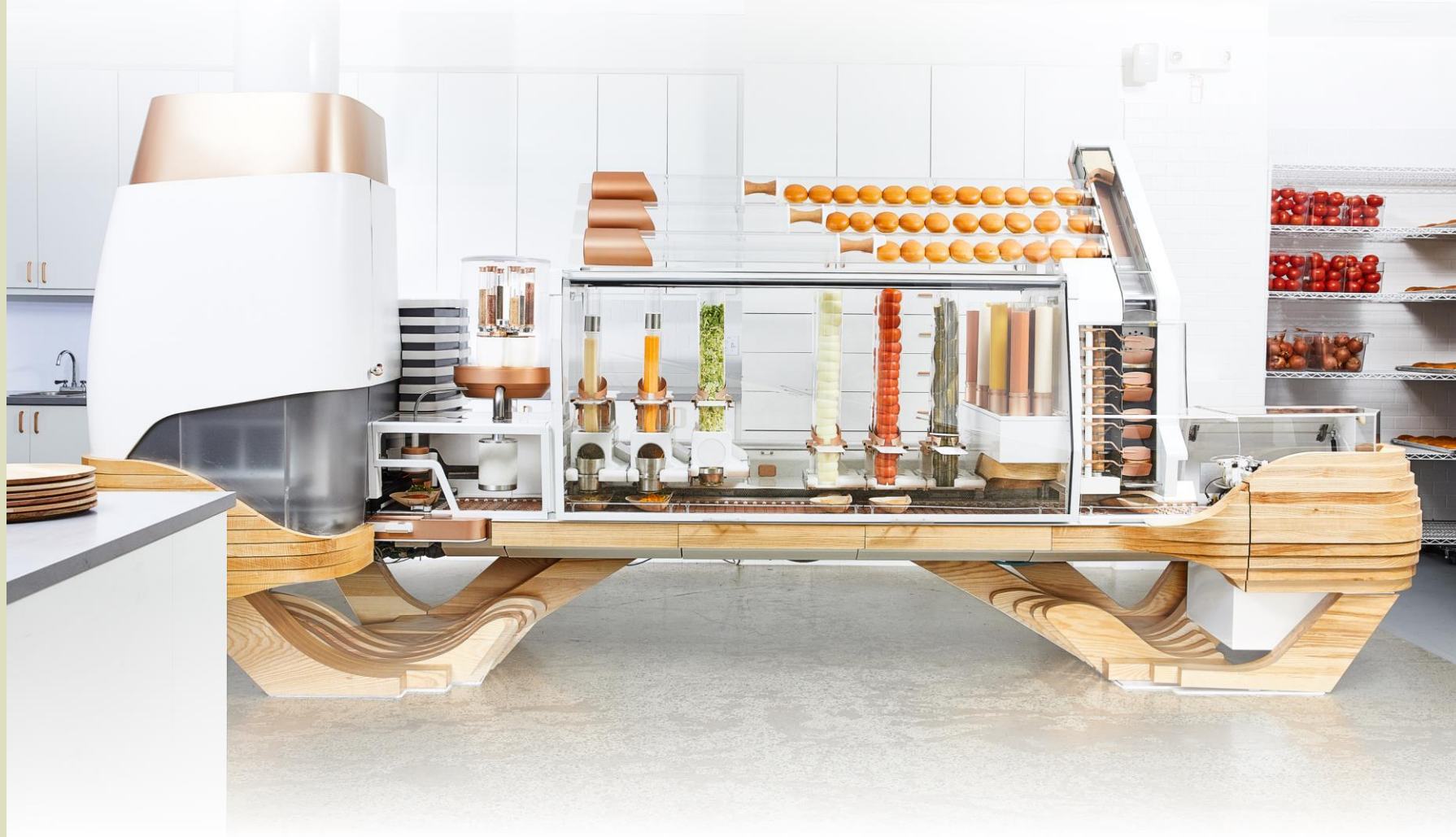
# Future Food Automation?



CafeX

Bloomberg.com

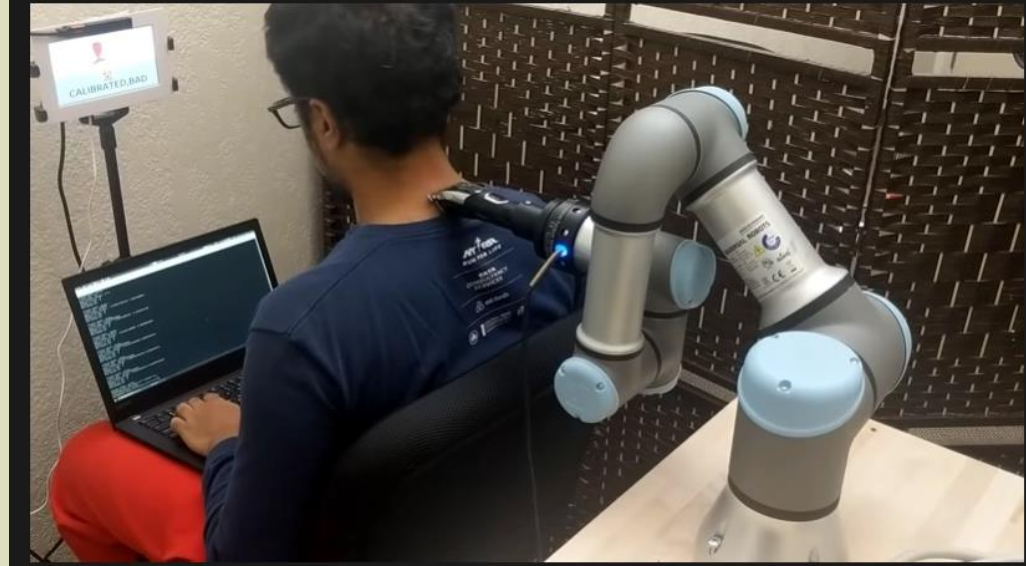dishcraft

Dishcraft.com

creator.

# More 'Personal'?



YOU MAY TRUST DRIVERLESS CARS, BUT DO YOU TRUST DRIVERLESS BARBERS?

by: Al Williams

45 Comments

December 19, 2019

Rethink Robotics

hackaday.com

https://www.youtube.com/watch?v=rkai5AcyG8M

# *Chitty Chitty Bang Bang (1968)*

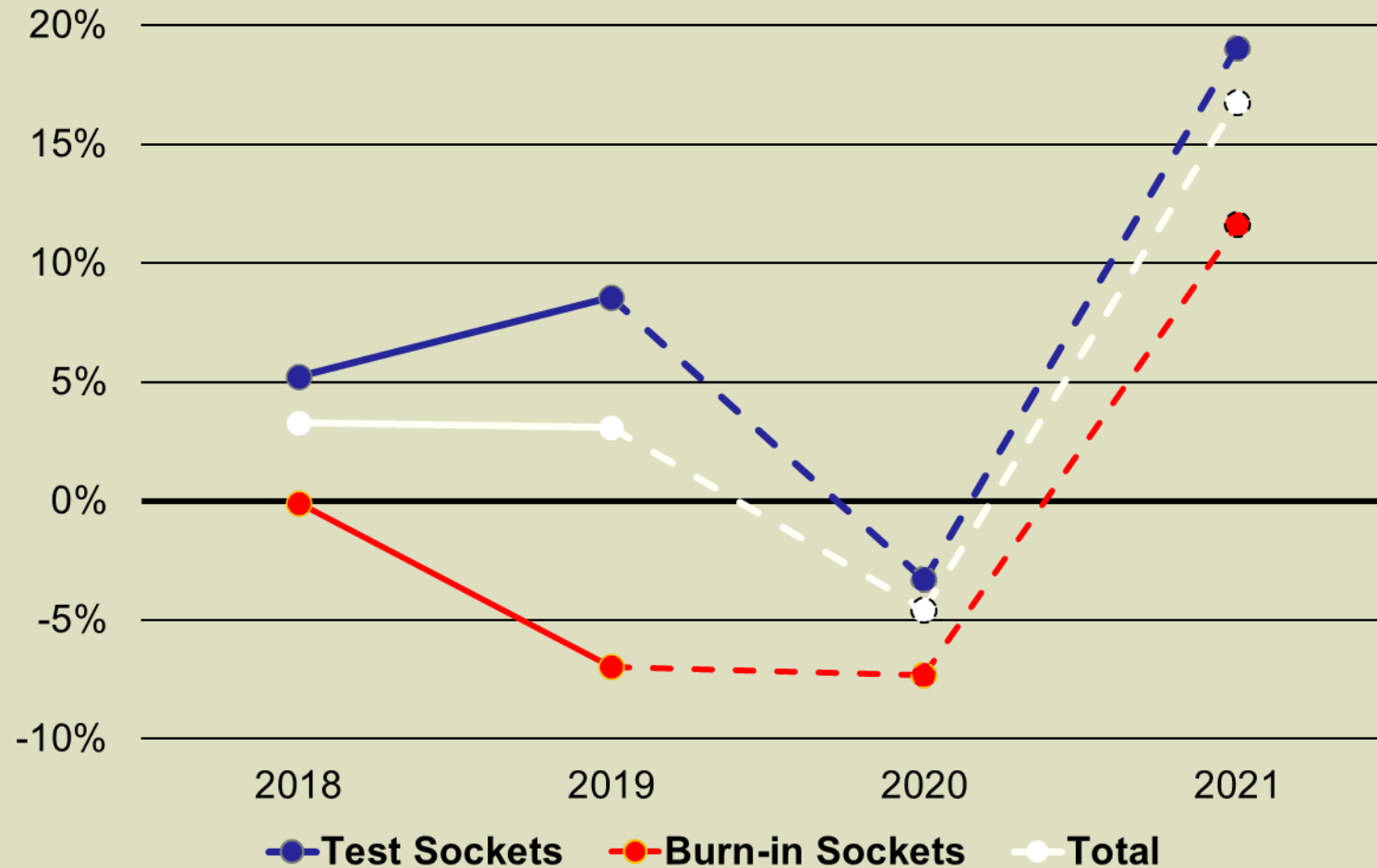# Panasonic Shampoo Robot (2012)



cnet.com

# SOCKET MARKET

# Test and Burn-In Socket Market
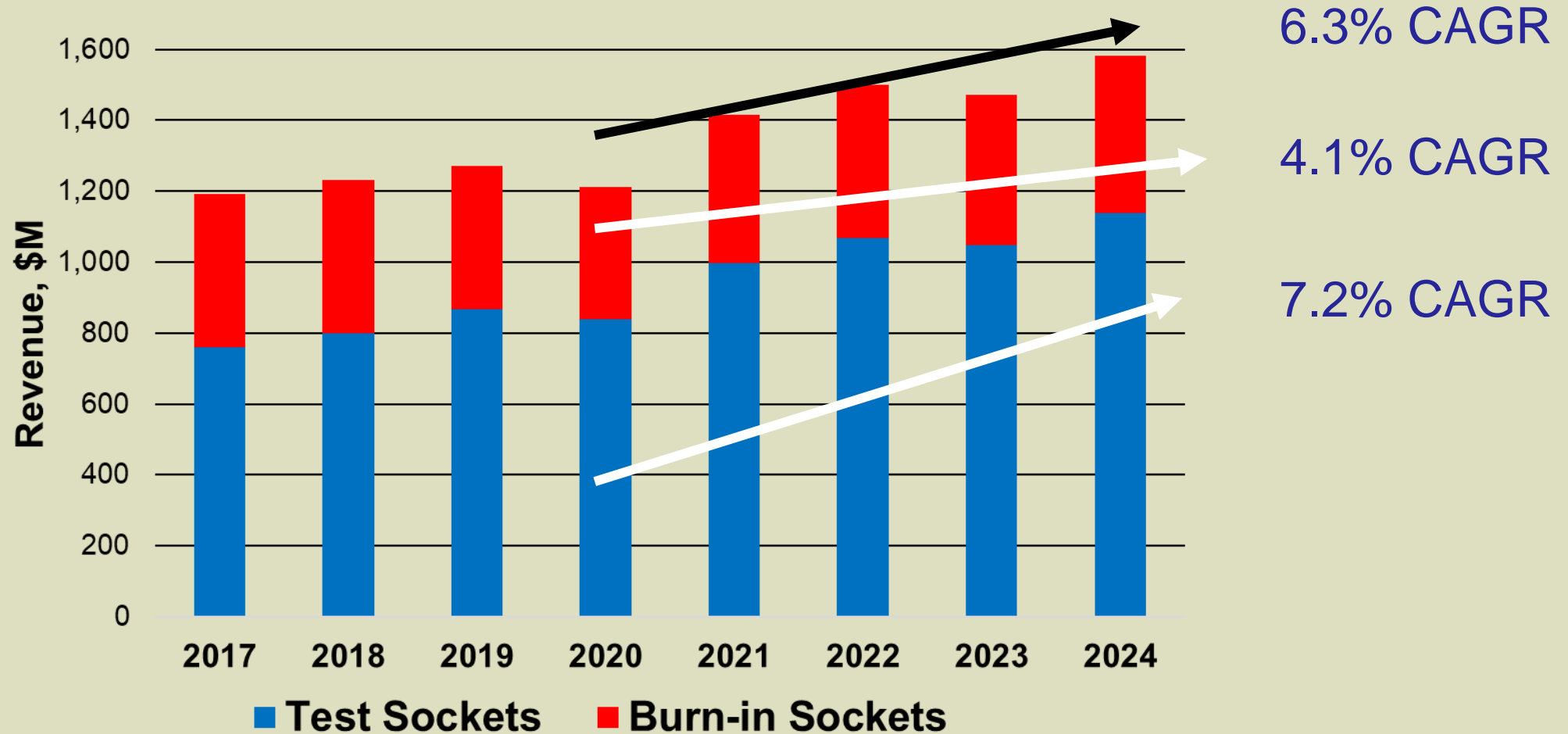


VLSI Research 2019

# Short Term Year Over Year (YOY) Change



VLSI Research 2019

# Top Test & Burn-in Vendors 2019

| Rank | 2018 Overall |
|------|--------------|
| 1 | Yamaichi Electronics |
| 2 | Enplas |
| 3 | ISC |
| 4 | Smiths Interconnect |
| 5 | LEENO Industrial |

| Rank | 2019 Overall |
|------|--------------|
| 1 | Enplas |
| 2 | Cohu |
| 3 | Yamaichi Electronics |
| 4 | Yokowo |
| 5 | WinWay |

VLSI Research 2018 & 2019

# Top Test & Burn-in Vendors 2019

| Rank | Overall | Test Socket | Burn-in Socket |
|------|---------|-------------|----------------|
| 1 | Enplas | Cohu | Enplas |
| 2 | Cohu | Yokowo | Sensata Technologies |
| 3 | Yamaichi Electronics | WinWay | Yamaichi Electronics |
| 4 | Yokowo | LEENO Industrial | Micro Contact Solution |
| 5 | WinWay | ISC | Loranger |

VLSI Research 2019

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# Conclusions

- Dynamic Environment
  - Make the best decisions you can
  - Tactics – focus on what you can do
  - Strategy – plan for the future
- Adjust & Adapt
  - Update Tactics & Strategy as required

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2020

# "Engineered Solutions"



Cnn.com

news.wbfo.org

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You can't change the way the wind blows but you *can* adjust your sails

- Cora L.V. Hatch 1859/paraphrased

- Socket Market Data courtesy of VLSI Report
  – Thank you Lin Fu & John West

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