

What's next?

Mike Muller
CTO

Arm story

1990

Joint venture between
Acorn Computers and
Apple.



Designed into first
mobile phones and
then smartphones.

**1993
onwards**



Today

Now all electronic
devices can use
intelligent Arm
technology.



A photograph of two young children sitting on a sandy beach, looking at their mobile phones. They are positioned under a makeshift shelter made of driftwood. The background shows a calm sea and distant hills under a soft, overcast sky. The overall mood is quiet and focused on the children's interaction with technology.

70%

of the world's
+population uses
Arm technology

Radio Shack AMERICA'S TECHNOLOGY STORE™

PRESIDENTS' BIRTHDAY SALE!

 <p>All-Weather Stereo Cut 34% 1188 Realistic STEREO-MATE™ AM/FM personal receiver shrugs off sand, water, #12-142. <small>Reg. 1795</small></p>	 <p>AM/FM Clock Radio 30% Off 1388 Chronomatic™-261 clock radio's compact size cuts right-hand clutter. #12-142. <small>Reg. 1985</small></p>	 <p>In-Ear Stereo Phones HALF PRICE! 788 Realistic™ in-ear phones weigh just 0.6 ounce! With carry pouch. #13-917. <small>Reg. 1575</small></p>	 <p>Micro-Thin™ Calculator 39% Off 488 Radio Shack EC-413 is almost the size of a credit card! Solar powered. #13-918. <small>Reg. 795</small></p>
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- 20MB SmartDrive™ Hard Drive
- Easy-to-Use 10-in-1 DeskMate™ Software

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Low As \$15 Per Month. Reg. 299.00

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159.95

Low As \$10 Per Month. Reg. 199.95

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Save \$60
79.95

Reg. 139.95

Compact 10-Channel Desktop Scanner

Save \$30
99.95

Reg. 129.95

Mobile CB With Channel Controls on Mike

HALF PRICE! **49.95**

Reg. 99.95

Our Easiest-to-Use Phone Answerer

Cut 17% **49.95**

Reg. 59.95

VHS Camcorder

Save \$100 **\$799**

Low As \$699 Per Month. Reg. 899.00

20-Memory Speed-Dial Phone

Cut 33%
29.95

Reg. 44.95

Handheld Voice-Actuated Cassette Tape Recorder

40% Off
29.95

Reg. 49.95

3-Way Speaker With Massive 15" Woofer

Save \$110 **149.95**

Low As \$100 Per Month. Reg. 259.95

- Mobile Cellular Telephone
- Deluxe Portable CD Player
- 20-Memory Speed-Dial phone
- Phone Answerer
- 10-Channel

- Desktop Scanner
- All weather personal stereo
- AM/FM clock radio
- In-Ear Stereo Phones
- Tandy 1000 TL/3
- Handheld Cassette Recorder
- VHS Camcorder

http://www.huffingtonpost.com/steve-cichon/radio-shack-ad_b_4612973.html

1997



1997



2007



1997



2007



2017

Radio Shack
AMERICA'S TECHNOLOGY STORE

PRESIDENTS' BIRTHDAY SALE!

ALL-Weather Stereo **Cut 34% OFF 1199**
Features: STEREO, MP3/MP4, AAC, Full power receiver, storage all levels, radio, auto, transportation

AM/FM Clock Radio **30% OFF 1399**
Chromatone™ 281 clock radio's compact clock radio, nightstand clock, all colors

In-Ear Stereo Phones **HALF PRICE! 788**
Headset (over-ear), headset (over-ear), headset (over-ear), headset (over-ear), headset (over-ear)

Micro-Thin™ Calculator **39% OFF 488**
Radio Shack EC-412 is about the size of a credit card. Super compact, easy-to-use, and accurate.

3-DAY SPECIALS ABOVE GOOD SATURDAY THRU MONDAY ONLY!

0% INTEREST!
NO PAYMENTS UNTIL MAY!
NO DOWN PAYMENT!

HURRY! OFFER ENDS TUESDAY FEBRUARY 19

COME IN AND TAKE ADVANTAGE OF THESE OTHER FANTASTIC VALUES!

INTRODUCTORY SPECIAL!
TANDEM™ 1000 TL'S Computer System **Save \$670 \$1599**
• 2GB Based PC Computer
• Color Monitor
• 20GB SuperDrive™ Hard Drive
• Easy-to-Use 10-in-1 Desktop™ Software
• 2-Year Warranty

BONUS PACKAGE
• Lotus Spreadsheet For Desktop
• DeskMate O&A Write
• QuickKey
• 2-Button Mouse

Mobile Cellular Telephone **Save \$100 \$199**
Look For In-Store

Deluxe Portable CD Player **Save \$40 \$159.95**
Look For In-Store

Tiny Dual-Superhet Radar Detector **Save \$60 799.95**
Award Patrol 887™ detector lets you drive with confidence. Secretly it's also a Super scanner. 500 MHz.

Compact 10-Channel Desktop Scanner **Save \$30 999.95**
Features: 100-240 channels, 10 bands, 10 MHz, 1000 Hz resolution, 100 MHz, 100 MHz, 100 MHz

VHS Camcorder **Save \$100 \$799**
Features: Model: 822, 1/4" color video, 1/4" color video, 1/4" color video, 1/4" color video, 1/4" color video

Mobile CB With Channel Controls on Mike **HALF PRICE! 499.95**
Features: 19C-480, 19C-480, 19C-480, 19C-480, 19C-480

Our Easiest-to-Use Phone Answerer **Cut 17% 499.95**
SUPPORT™ 19A-241 answerer, 10 bands, 10 MHz, 1000 Hz resolution, 100 MHz, 100 MHz, 100 MHz

3-Way Speaker With Massive 15" Woofer **Save \$110 1499.95**
Features: Model: 827, 1/4" color video, 1/4" color video, 1/4" color video, 1/4" color video, 1/4" color video

20-Memory Speed-Dial Phone **Cut 33% 299.95**
Features: Model: 827, 1/4" color video, 1/4" color video, 1/4" color video, 1/4" color video, 1/4" color video

Handheld Voice-Activated Cassette Tape Recorder **40% OFF 299.95**
Features: CTR-45, 1/4" color video, 1/4" color video, 1/4" color video, 1/4" color video, 1/4" color video

The architects of global opportunity

Leader in licensable technology

R&D outsourcing for semiconductor companies

Focused on freedom and flexibility to innovate

Technology reused across multiple applications

With a partnership based culture & business model

Licensees take advantage of learnings from a uniquely collaborative ecosystem

21.3bn

Arm-based chips shipped in FY2017

> 500 licensees

Industry leaders, start-ups; chip companies and OEMs

E-Sports Stadium Zhongxian, Chongqing



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SPORT

Esports 'set for £1bn revenue and 600 million audiences by 2020'

21 March 2017 Sport 259 [Share](#)



Forbes



Erik Kain, CONTRIBUTOR

[FULL BIO](#) ▾

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A truly astonishing number of cheaters were banned in *PUBG* last month according to anti-cheat service BattleEye. The company reports that 1,044,000 cheaters were banned in January, 2018 alone.



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Science & Environment

'Internet of animals' spreads its wings

By Jonathan Amos

BBC Science Correspondent

Internet predictions

Eli M. Noam

Professor and Finance and Economics Director,
Columbia University

November 2001, Camden, Maine

The Internet facilitates International Manipulation of Domestic Politics

People have started to worry about computer attacks by terrorists. They should worry more about state-sponsored interferences into other countries' electronic politics.

The Internet will make politics more expensive and raise entry barriers

Direct democracy puts a premium on resources of mobilization, favoring money and organization. It disintermediates elected representatives. It favors sensationalized issues over "boring" ones.

The Internet will make reasoned and informed political dialog more difficult

Political information becomes distorted, shrill, and simplistic.

Information does not necessarily weaken the state

Direct access to public officials will be phony



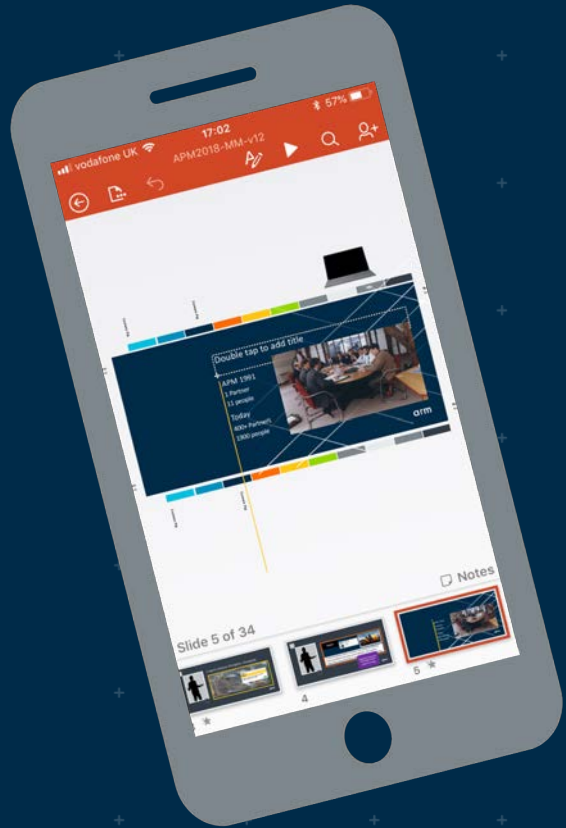
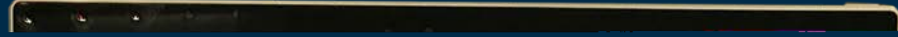
APM 1991

1 Partner
11 people

Today

500+ Partners





ARM Design Philosophy

Mission

Design competitive, low power consumption, high performance, low cost processors which become the accepted standard in the market they address.

In support of this mission ARM Ltd will develop peripheral cell designs, software, and software tools and provide a design service to third parties.

Performance

Price

ARM Processors are:-

- Small in size
- Low cost
- Suitable as macrocells
- Efficient
- low power consumption
- low heat generation

ARM

MICROPROCESSOR FORUM

ARM
ARMEXX core
3.25 - 2.2 mm
33,494 transistors
VLSI Technology
GEC Plessey Semiconductor

IDT R3081
9.7 - 13 mm
1.3 million transistors
Integrated Device Technology Inc.

Am29200™
8.56 - 8.76 mm
192,000 transistors
Advanced Micro Devices

National
NS32AM160
7.6 - 7.6 mm
70,000 transistors

HEWLETT PACKARD
PA7100
14 - 14 mm
850,000 transistors

MOTOROLA
88110
14.96 - 14.96 mm
1.3 million transistors

WAX
14.6 - 18.2 mm
1.3 million transistors

DECchip 21064
(Alpha AXP)
13.9 - 18.8 mm
1.68 million transistors

TEXAS INSTRUMENTS
SuperSparc
TMS390250
15.98 - 15.98 mm
3.1 million transistors

Tsunami
TMS390510
15 - 15 mm
800,000 transistors

IBM
IBM 486SLC2
7.7 - 9 mm
1.43 million transistors

Cyrix
C4480LC SLC
10.5 - 10.5 mm
600,000 transistors

intel
Intel386™ SL
13.1 - 13.1 mm
855,000 transistors

Intel960™ CF
11.7 - 16.1 mm
818,000 transistors

Intel486™ DX2
6.9 - 11.8 mm
1.2 million transistors

1992

MICROPROCESSOR FORUM

ARMv6 core
3.25 - 2.2 mm
33.454 transistors

ARM
ARM Technology
GEC Power Semiconductor

IDT R3061
9.7 - 13 mm
1.3 million transistors
Integrated Device Technology Inc.

Am29200™
8.56 - 8.76 mm
192,000 transistors

Advanced Micro Devices

National Semiconductor NS32M160
7.6 - 7.6 mm
70,000 transistors

HEWLETT PACKARD MOTOROLA
PA7100 88110
14 - 14 mm 14.96 - 14.96 mm
850,000 transistors 1.3 million transistors

Intel
NVAX 14.6 - 16.2 mm
1.3 million transistors

DECchip 21064 (Alpha AXP)
13.9 - 16.8 mm
1.68 million transistors

TEXAS INSTRUMENTS
SuperSparc TMS390250
15.98 - 15.98 mm
3.1 million transistors

Tsutomu TMS390610
15 - 15 mm
800,000 transistors

IBM IBM 486SLC2
7.7 - 9 mm
1.43 million transistors

Cyrix
C486DLC/SLC
10.5 - 10.5 mm
600,000 transistors

intel
Intel386™ SL 13.1 - 13.1 mm
855,000 transistors

Intel960™ CF 11.7 - 16.1 mm
818,000 transistors

Intel486™ DX2 6.9 - 11.8 mm
1.2 million transistors

1992

MICROPROCESSOR FORUM

ARM
MIPS
29K
N32x16
PA 88xxx
NVAX Alpha
SPARC
x86
x86
x86 i960 x86
2018



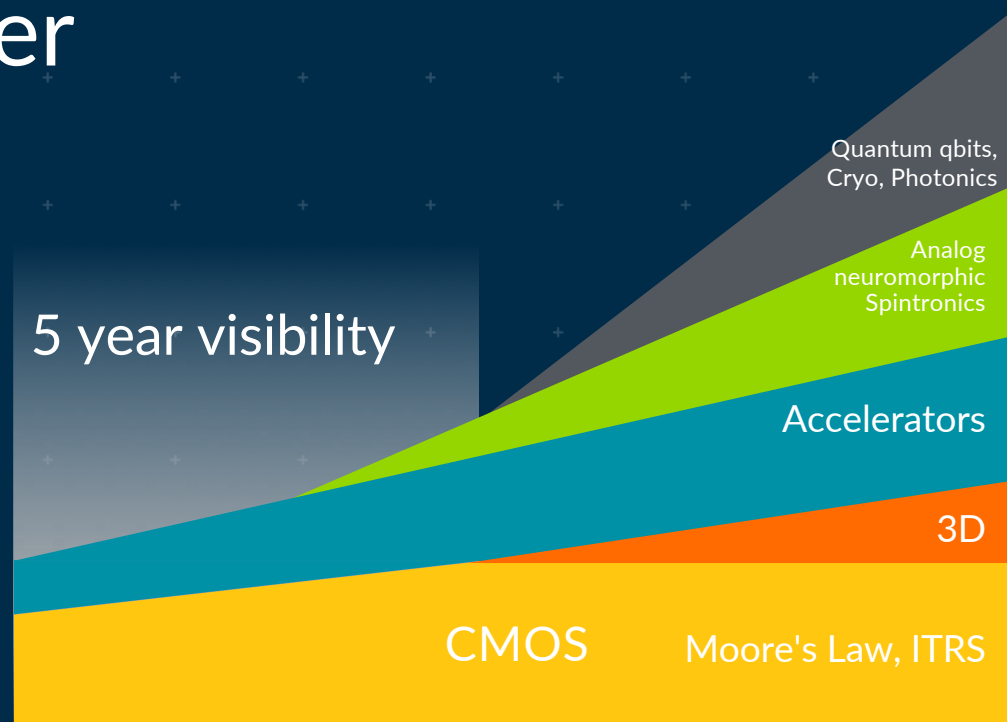
3u to 10nm scaling gives $300^2 = 90,000$
 1985 to 2018 doubling every = 2.04 years



Moore's law
is slowing...

...and we
don't care

End products will keep getting better



Graphic adapted from IRDS "ITRS2.0"

Mobile
Infrastructure
Embedded

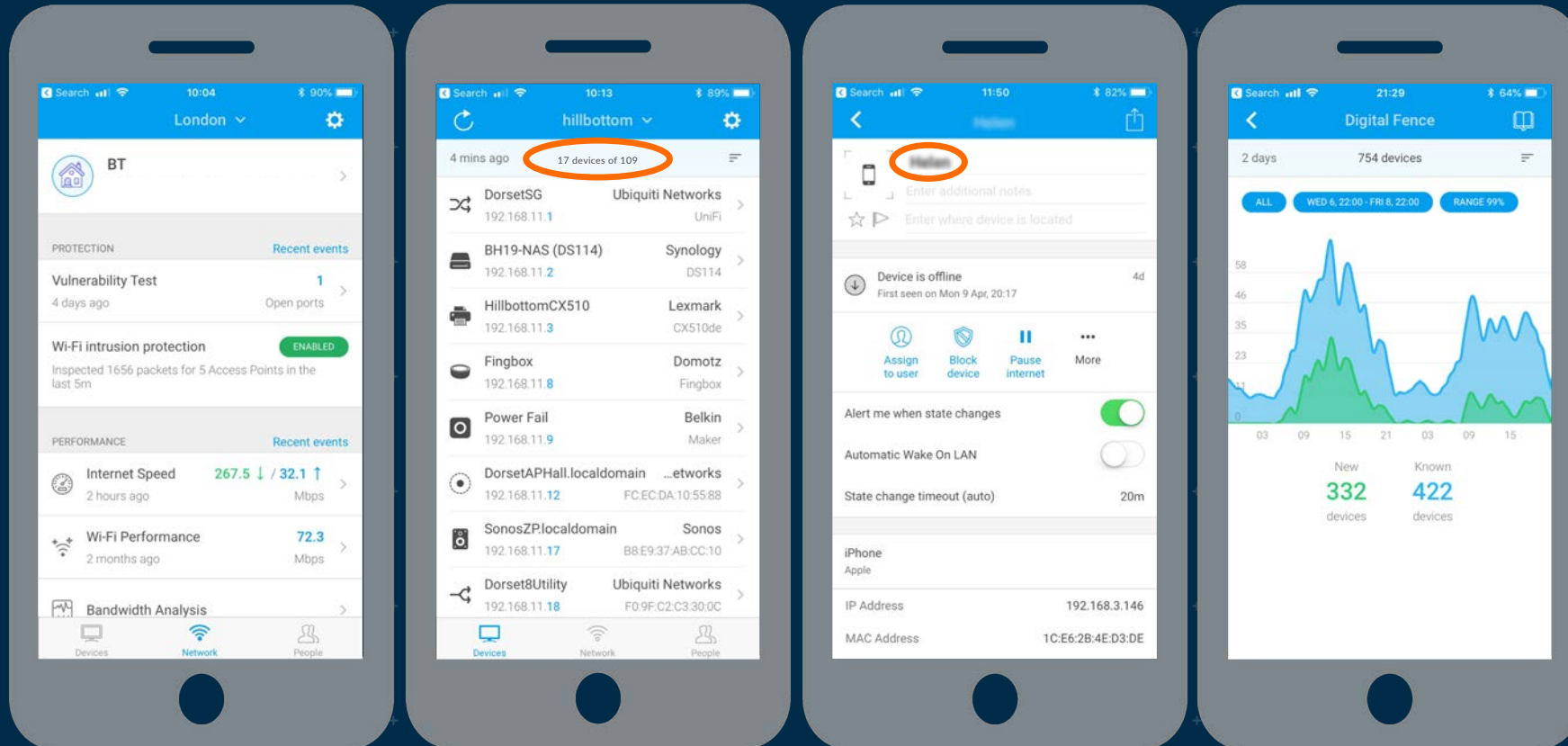
Police

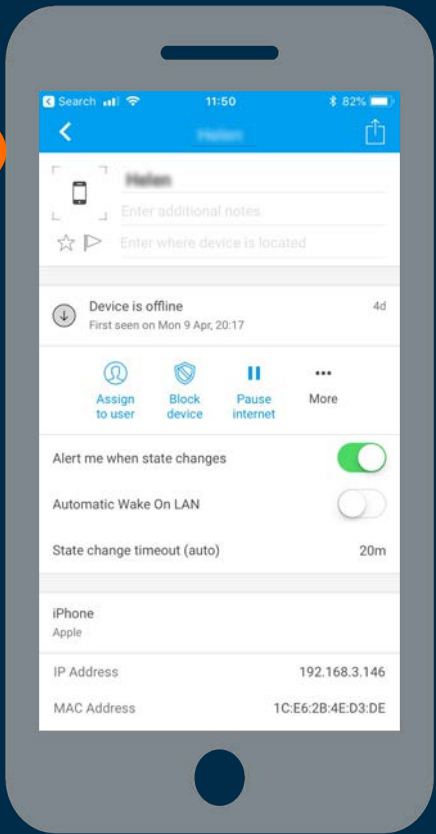
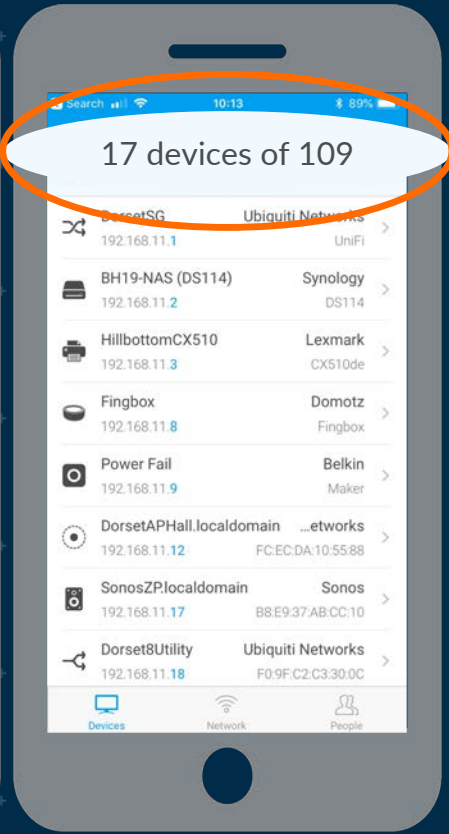
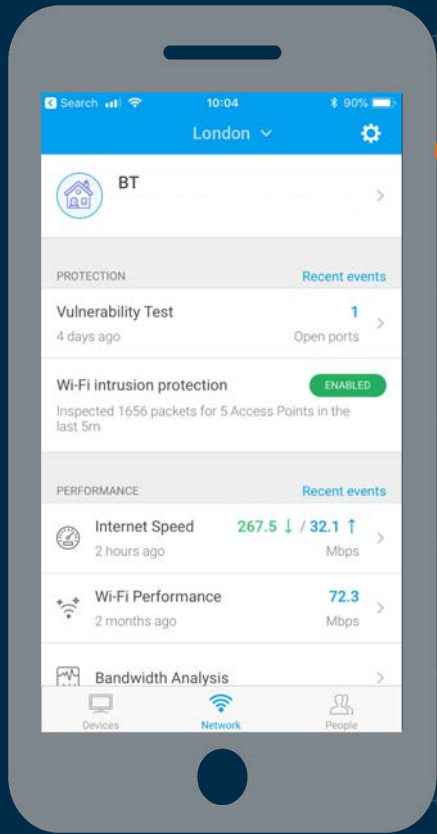
Online fraud costs public billions but is still not a police priority, says watchdog

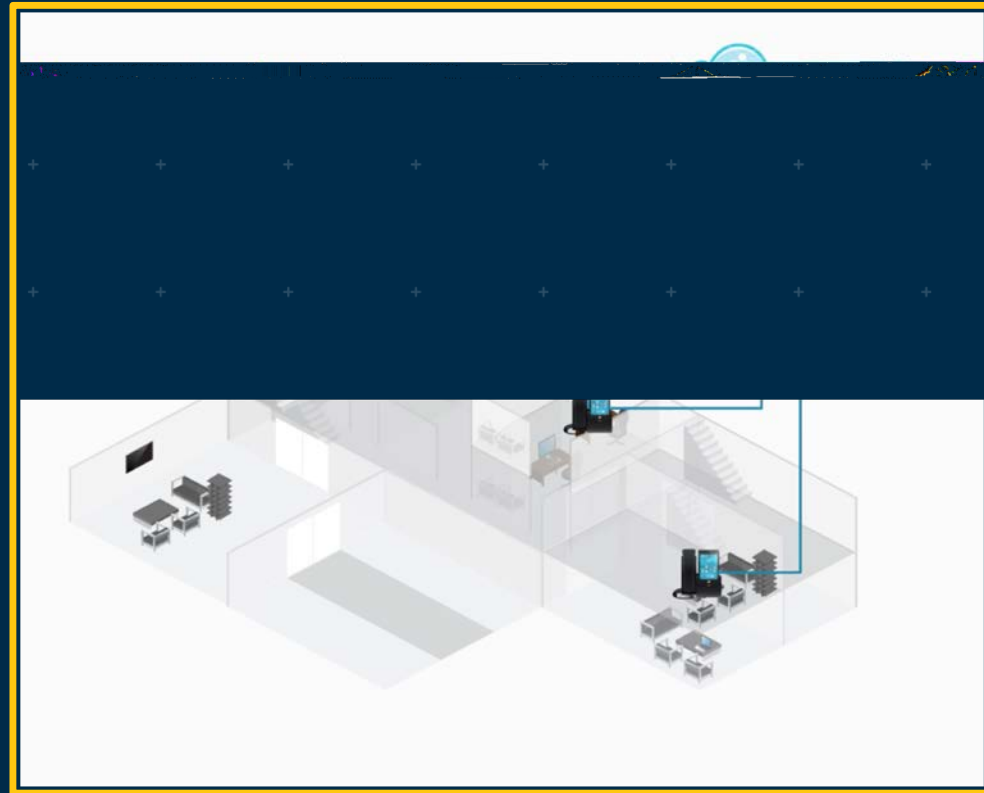
It is the most common crime for people in England and Wales to experience and requires an urgent response, says National Audit Office

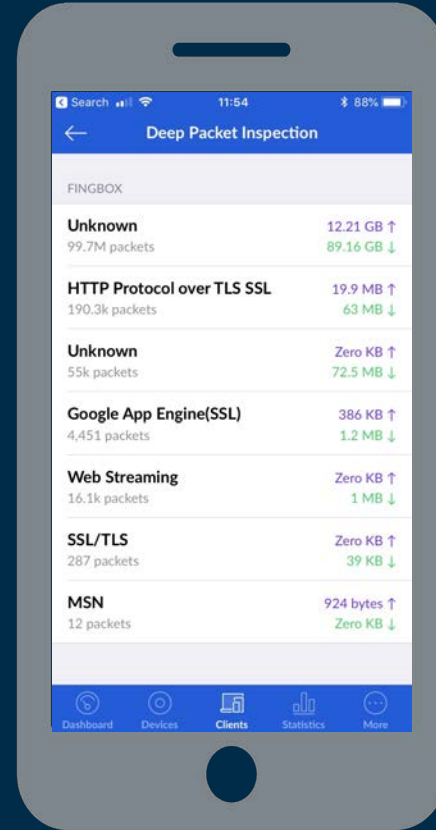
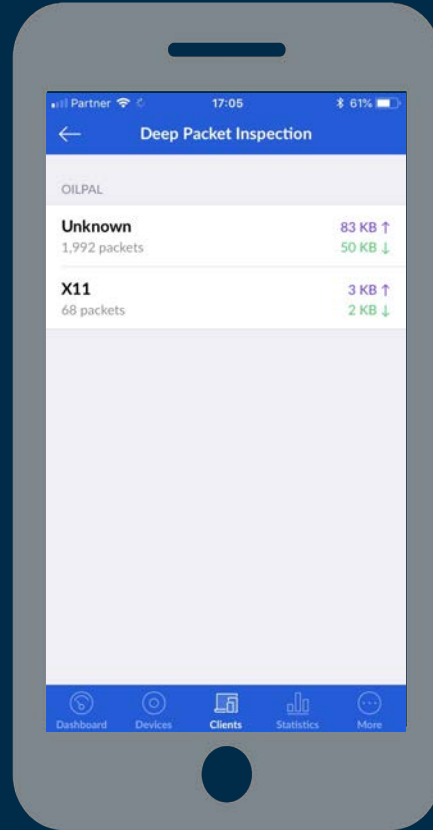
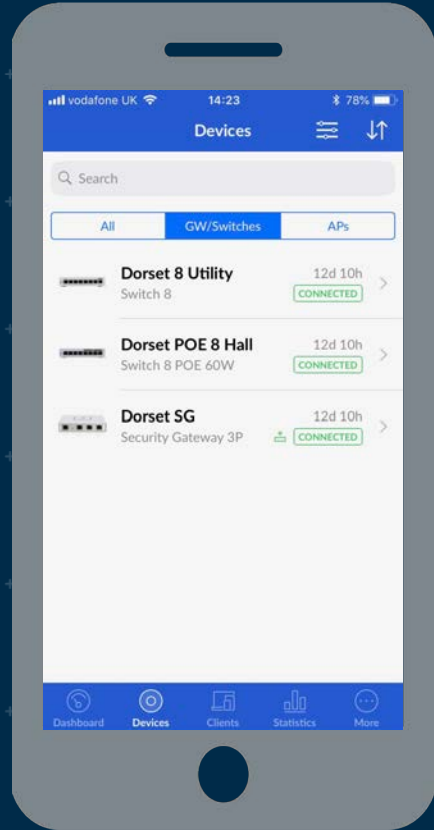
This year's
favorite
product

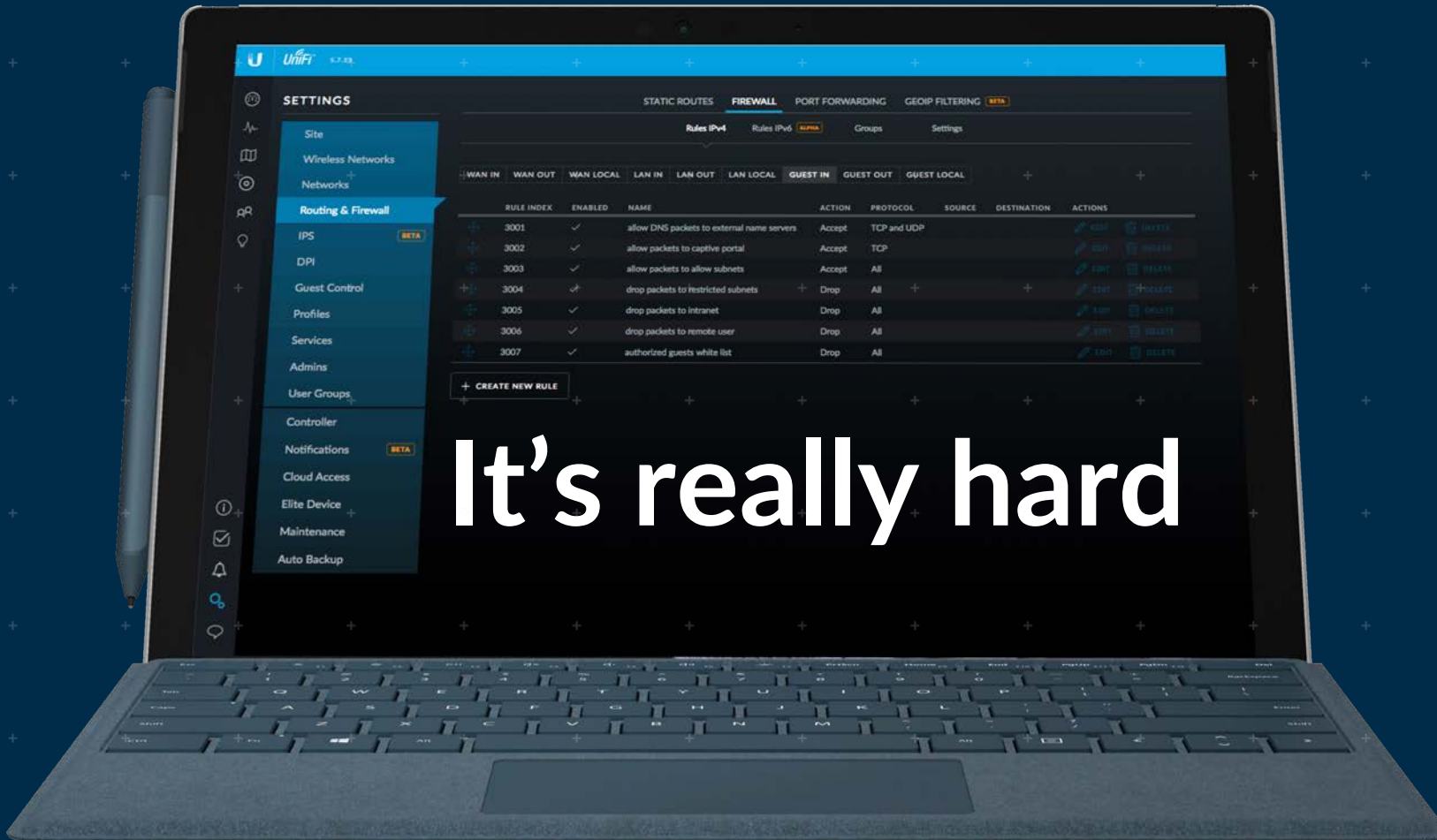




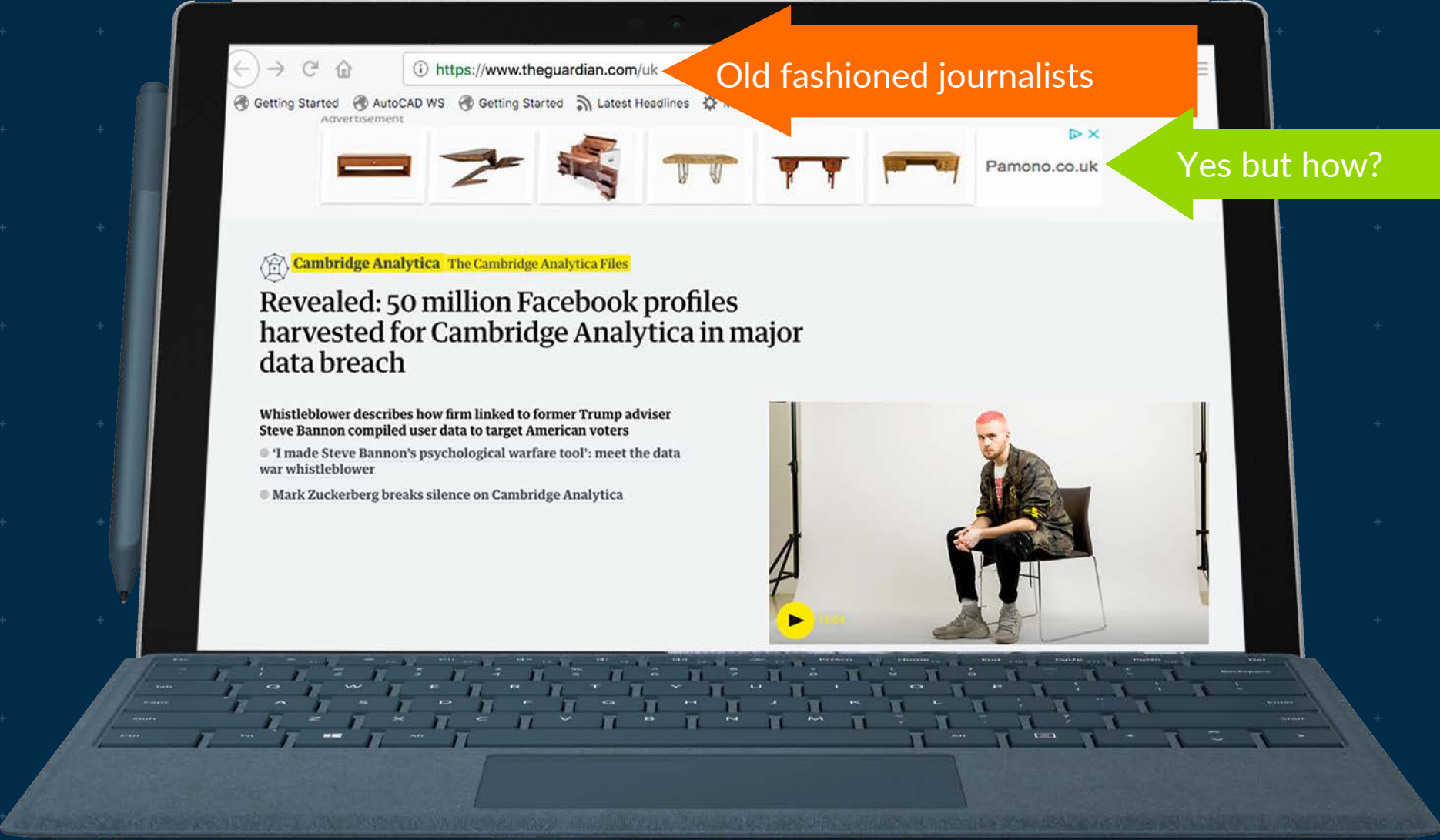








It's really hard



Old fashioned journalists

Yes but how?

Cambridge Analytica The Cambridge Analytica Files

Revealed: 50 million Facebook profiles harvested for Cambridge Analytica in major data breach

Whistleblower describes how firm linked to former Trump adviser Steve Bannon compiled user data to target American voters

- 'I made Steve Bannon's psychological warfare tool': meet the data war whistleblower
- Mark Zuckerberg breaks silence on Cambridge Analytica



Medical – payment on results



Consent to share
patient data across
health continuum



Identity of patient,
device and data



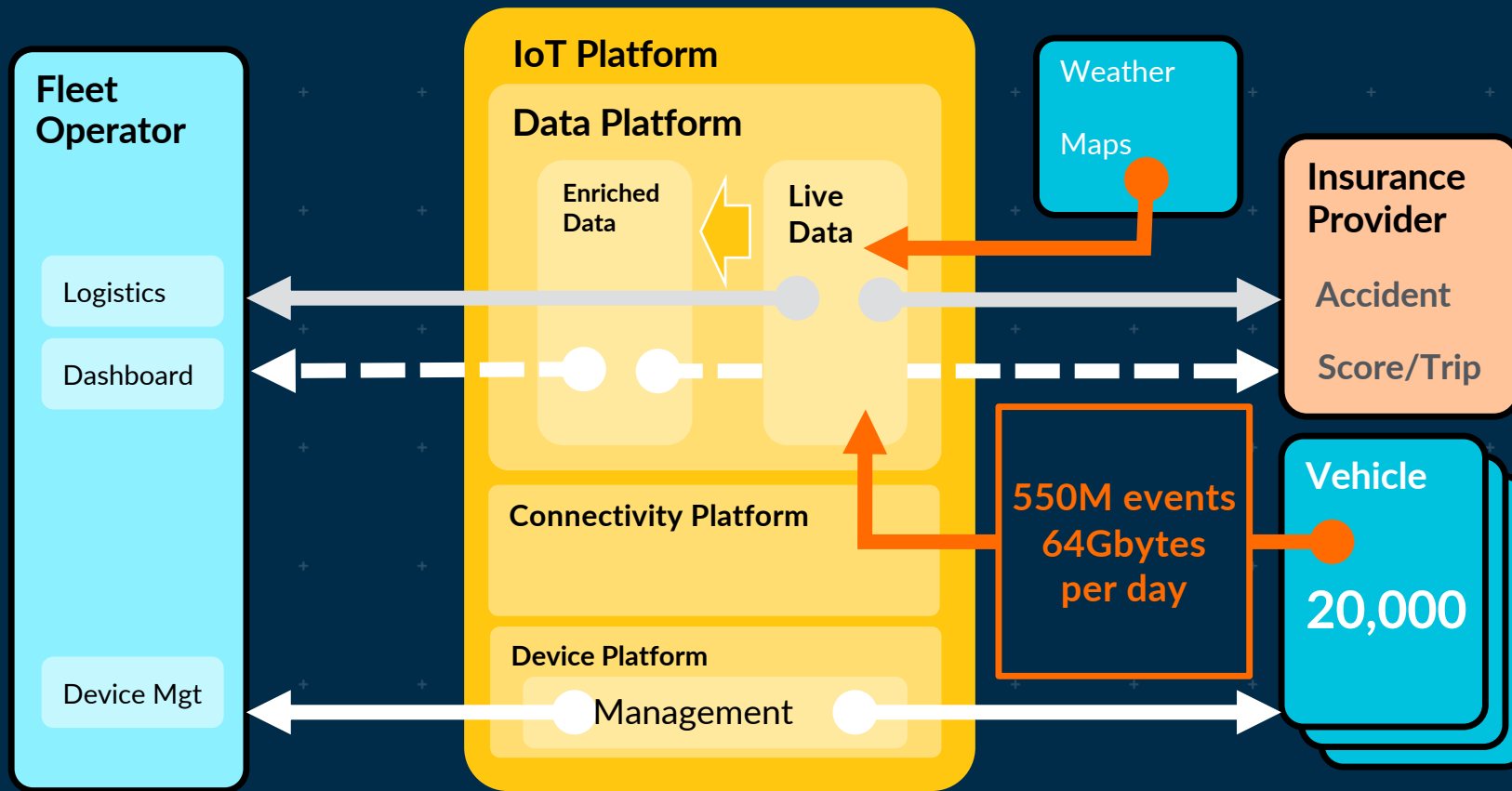
Trust of patient
attribution with
device data



SPECTRE



MELTDOWN



What's next?

No slowing in
product
innovation

Data is a new
horizon that's
already here

Security and
trust are
everything



arm
Research
Summit