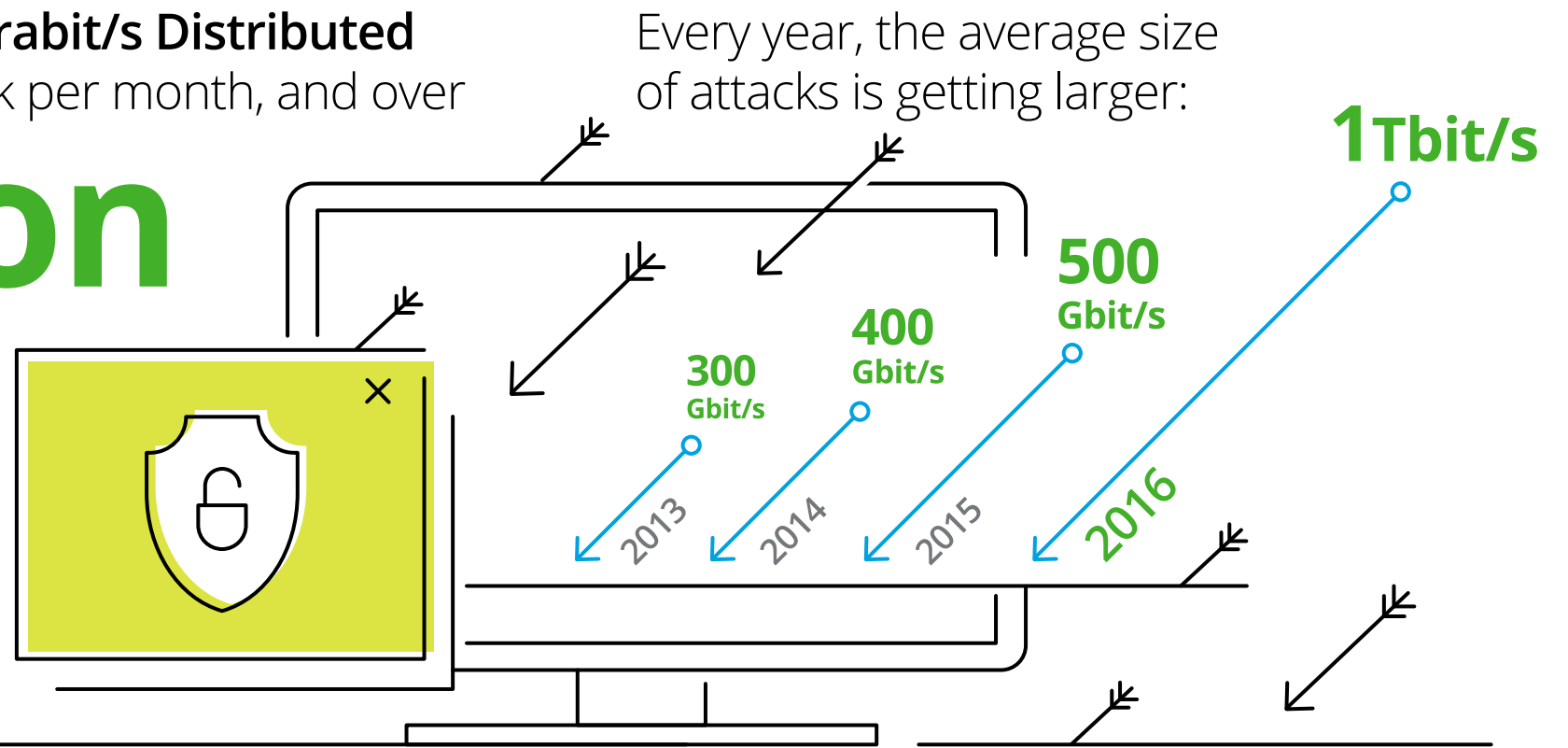
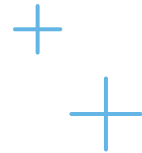


DDoS attacks enter the terabit era

Deloitte Global predicts **one Terabit/s Distributed Denial of Service (DDoS)** attack per month, and over

10 million attacks

during the year



The escalation of DDoS is due to:



the growing base of insecure IoT devices

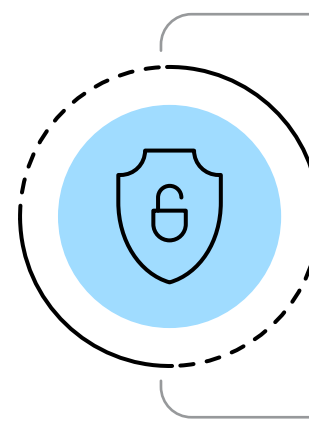


online instructions for unskilled attackers



rising uplink data speeds – each connection can effect more damage

Solutions to the problem include:



- decentralization
- dynamic defense
- geographic filtering
- certification marks for connected devices

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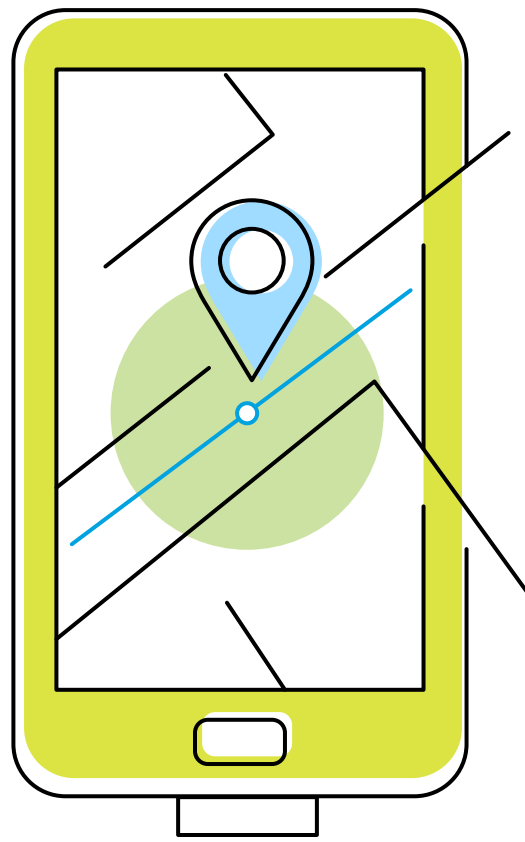
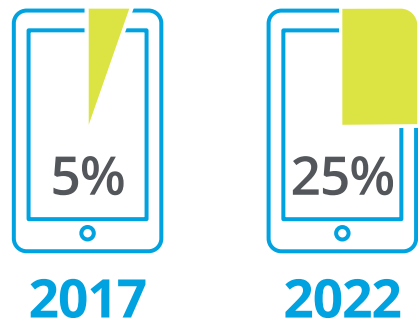
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The great indoors: the final frontier for digital navigation

Deloitte Global predicts that by 2022,

at least **a quarter**

of human and machine uses of digital navigation will include or exclusively be indoors



Enabled by growing availability of:

- Wi-Fi hotspots
- dense cellular networks
- beacons
- LED lighting
- ultra-wideband (UWB)
- magnetic positioning

It should have

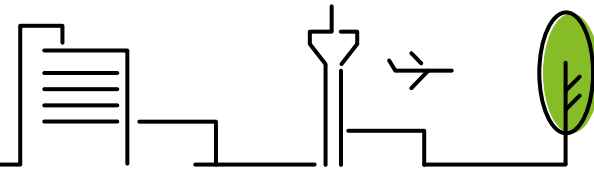
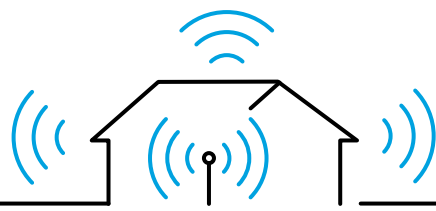
the same disruptive impact

as outdoor navigation

It will enable:

new business models

improved existing ones



over the next decade

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Vinyl: the billion-dollar nostalgic niche

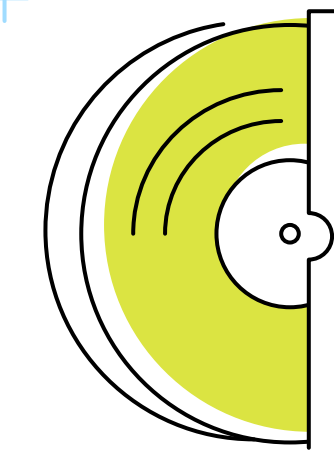
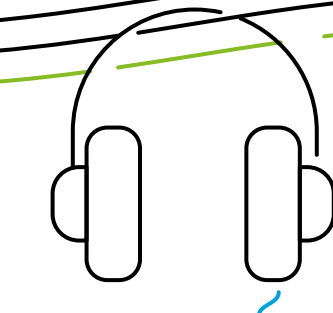
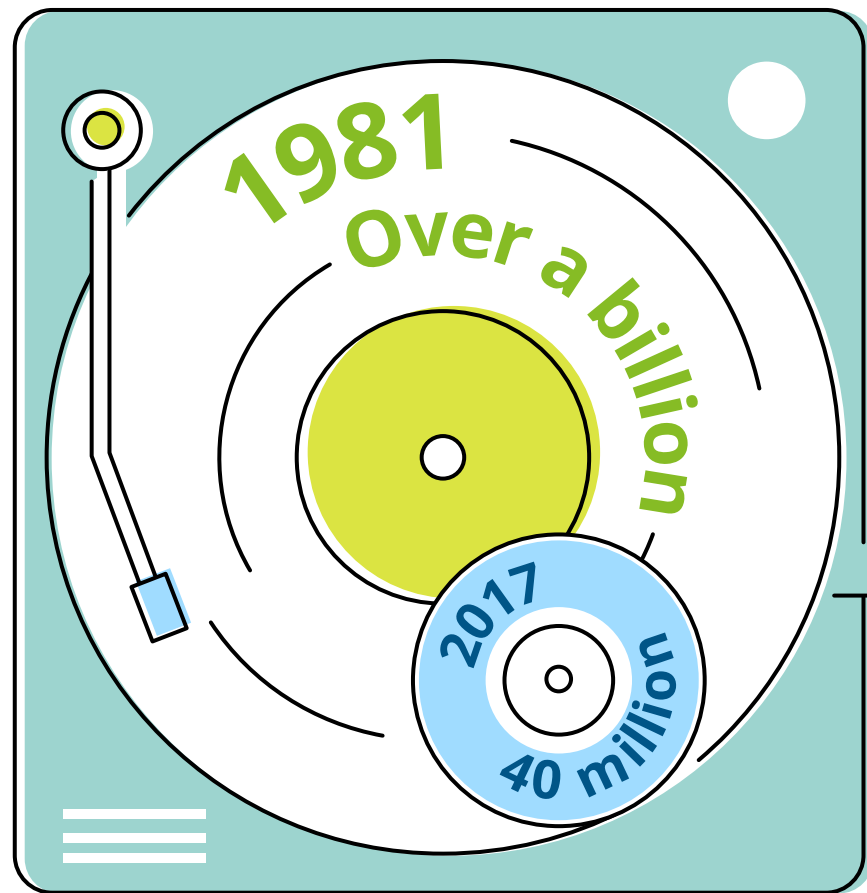
Deloitte Global predicts that vinyl in 2017 will approach

\$1 billion

in sales

mostly from new records, but also from used discs and record players

Number of albums sold:



It will generate globally:

15%

of all **physical** music sales

6%

of all **recorded** music revenues

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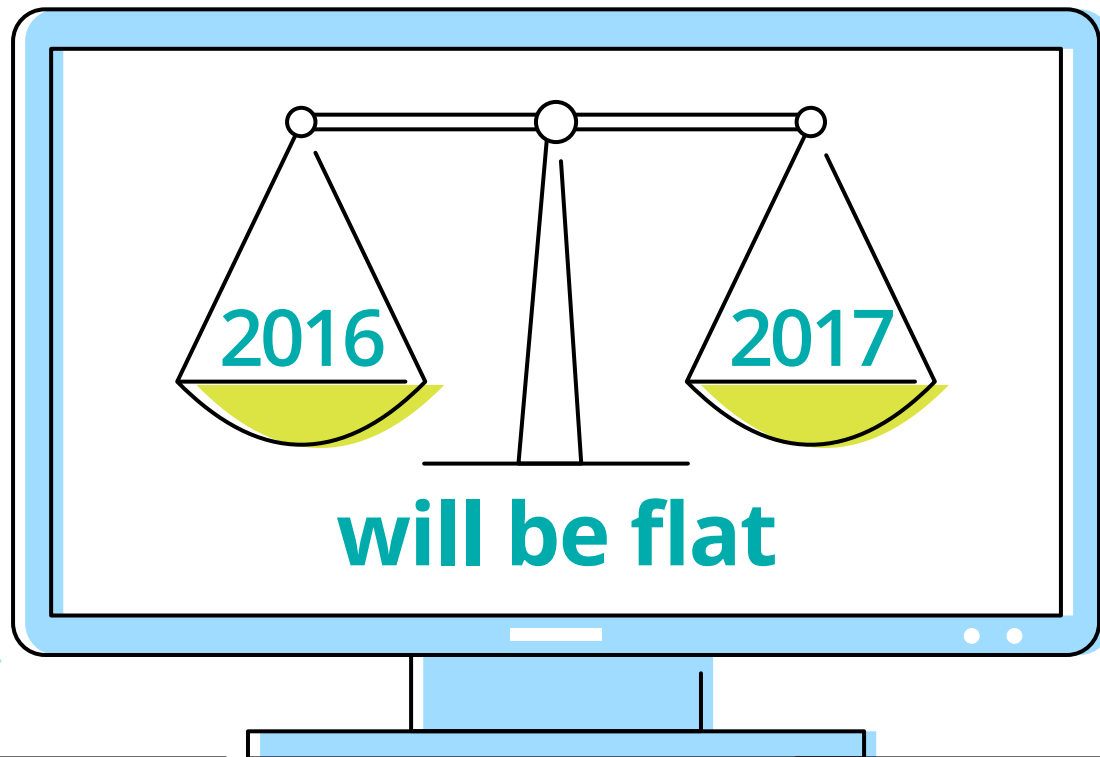
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TV advertising in the US: flat is the new up






Deloitte Global predicts that US TV advertising revenue



\$72 billion

or almost a third of global TV ad revenues

Ad spend's strength is due to:

-  broad reach (monthly reach of 93% among US adults)
-  stable high viewing volumes (~5 hours a day)
-  a rise in CPM (up to 12.5%)
-  low and stable time shift minutes (29 minutes)
-  minimal cord-cutting (1-2% in 2016)

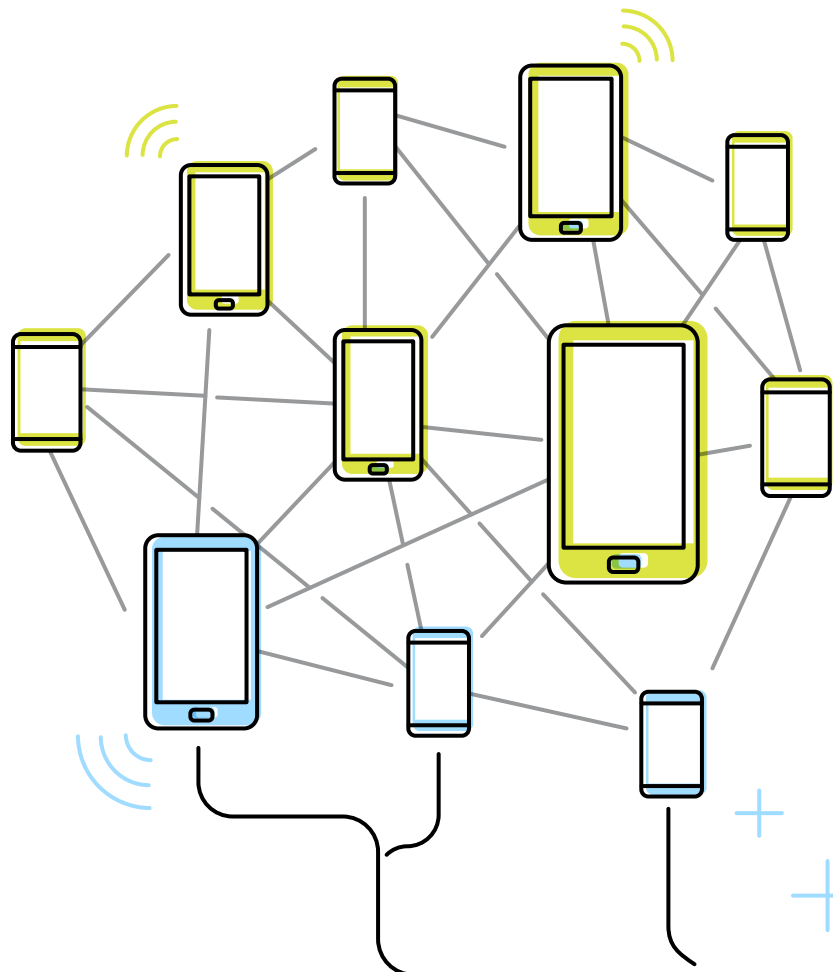
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Brains at the edge: machine learning goes mobile



Deloitte Global predicts that in 2017 over

300 million smartphones

(more than **a fifth of units sold**)

will have on-board neural network machine-learning capabilities

This will allow smartphones to perform machine-learning tasks



This functionality will enhance applications including:



indoor navigation



augmented reality



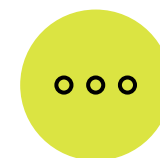
language translation



image classification



speech recognition



and many more currently unknown applications

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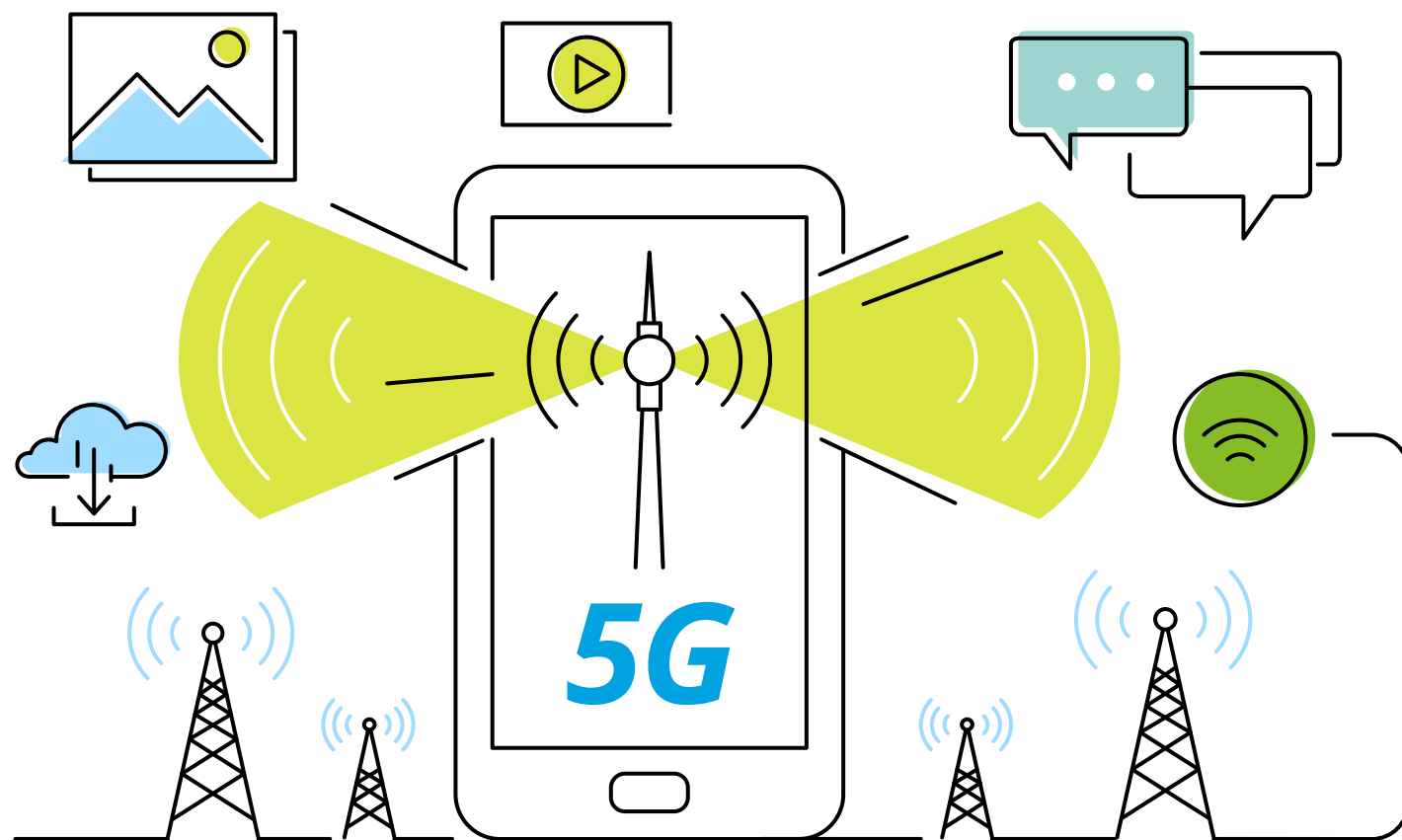
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5G: A revolution in evolution, even in 2017

Deloitte Global predicts that over

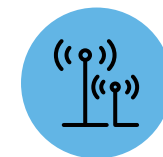
200 mobile networks

will include elements of 5G network architecture in 2017



These will be found among upgraded **4G (LTE-A and LTE-A Pro) networks**, which will provide a steady progression to the full launch of 5G in 2020

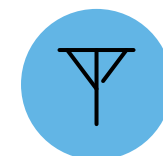
Advanced 4G networks introduce network components including:



Carrier aggregation



Licensed Assisted Access



MIMO



QAM



Beamforming

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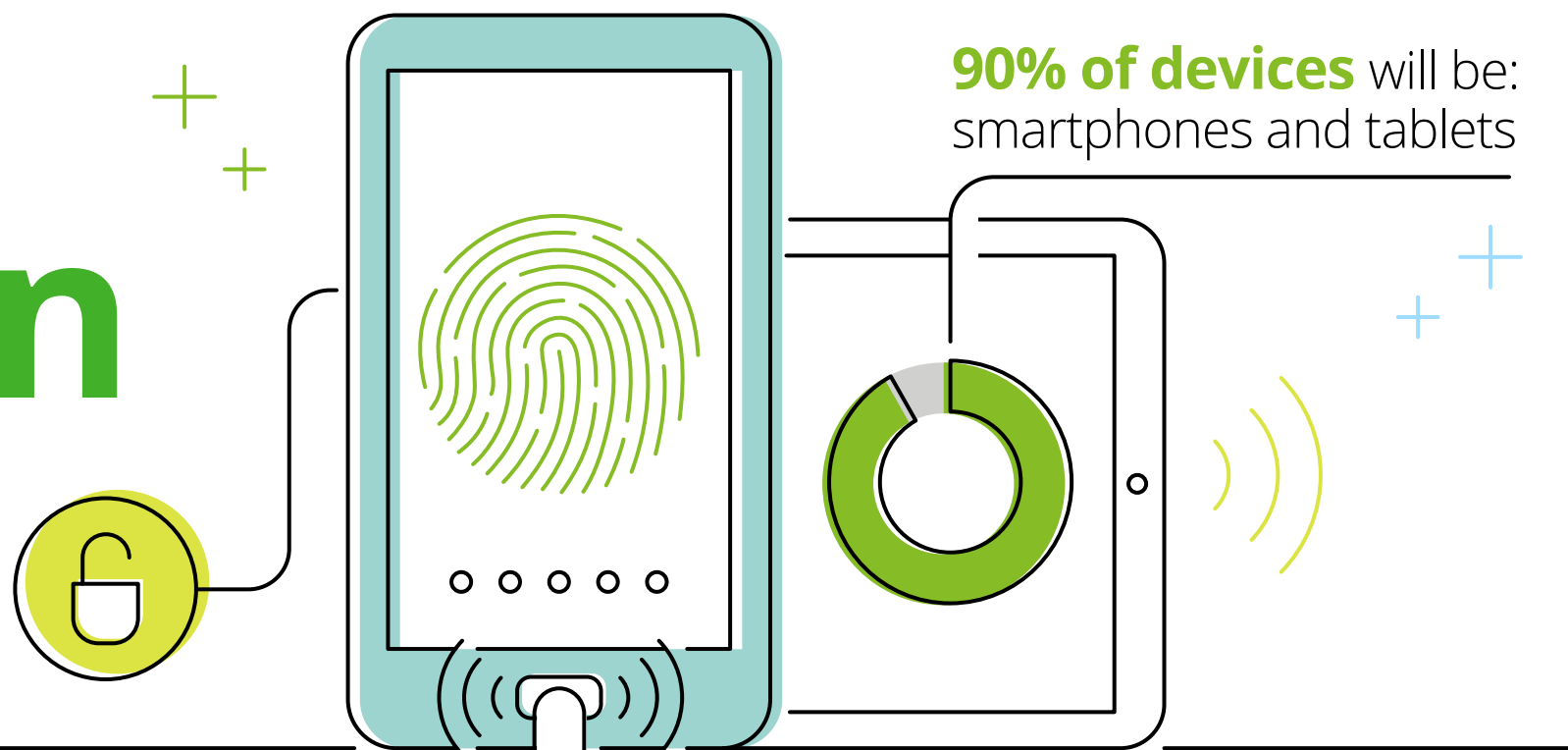
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Prints charming: biometric security reaches the billions

Deloitte Global predicts that the active base of fingerprint reader-equipped devices will top

1 billion
for the first time
in early 2017



90% of devices will be: smartphones and tablets

Each active sensor will be used an average of

30 times a day

over **10** trillion times a year

Catalyst for the deployment of biometric sensors in other environments and across multiple industries including:



retail



financial institutions



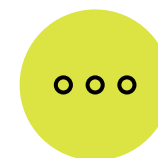
government



schools



media companies



many more

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Safety first: the road to self-driving starts with a stop

By 2022, Deloitte Global estimates that

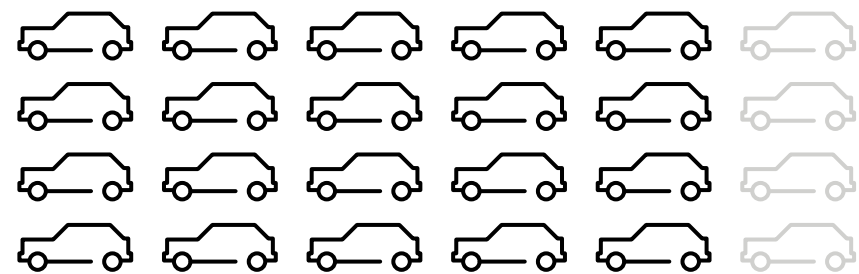
a sixth of the US cars and light trucks

will be equipped with automatic emergency
braking (AEB)



Deloitte Global predicts AEB will contribute
to a reduction of annual US motor vehicle deaths

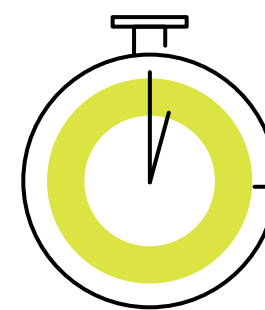
by 6,000



16% decline

compared
to 2017

AEB technology can enable the vehicle
to react to an obstacle



in 1-2 milliseconds

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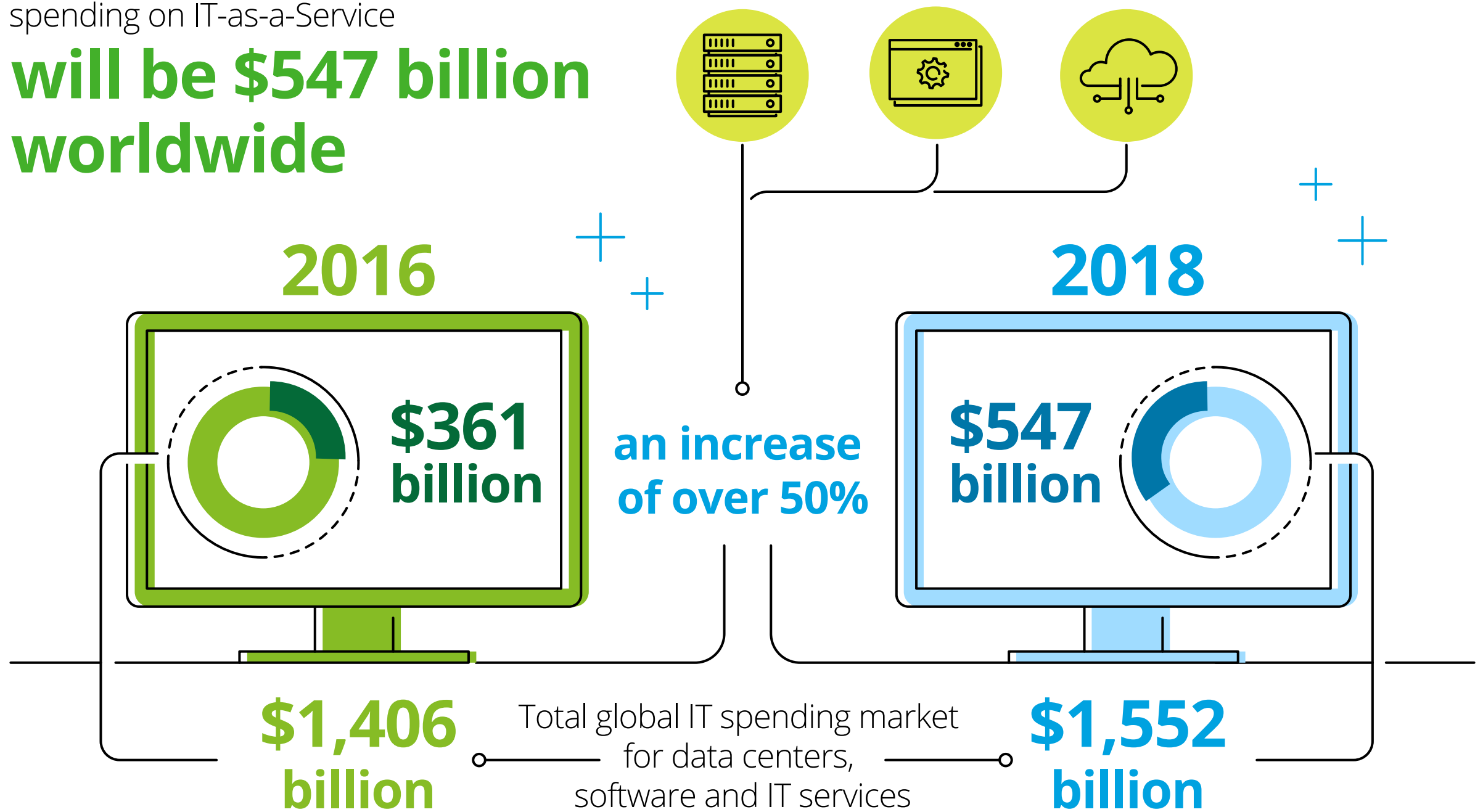
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IT-as-a-Service: the half trillion dollar 'niche'

Deloitte Global predicts that by the end of 2018,
spending on IT-as-a-Service

**will be \$547 billion
worldwide**



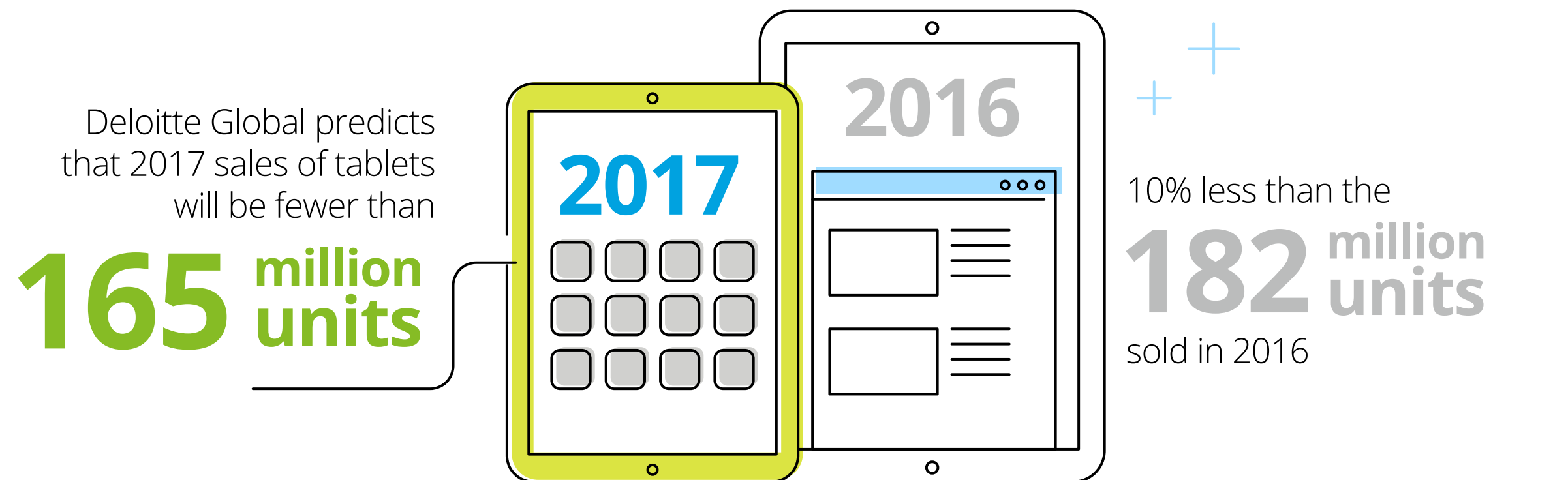
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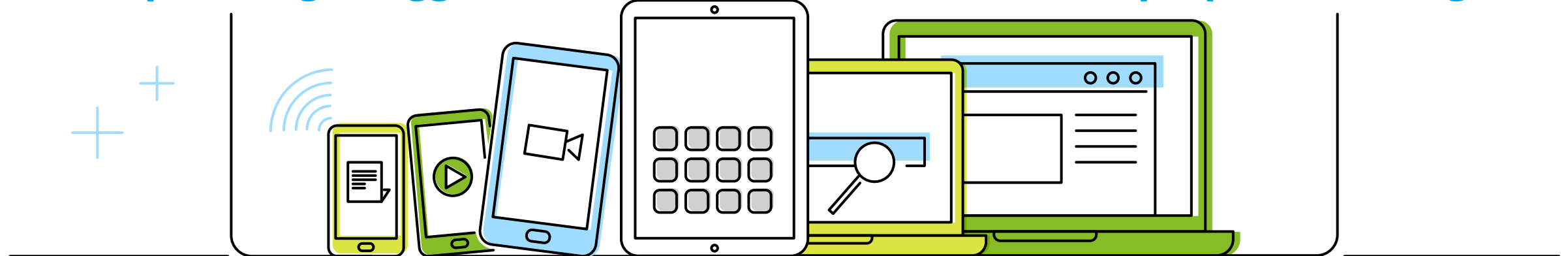
Have we reached peak tablet?



Their position as the device filling the gap between laptop/desktop computers and smartphones has been squeezed by

smartphones get bigger

laptops become lighter



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