

Tech in 2020: Standing on the shoulders of giants

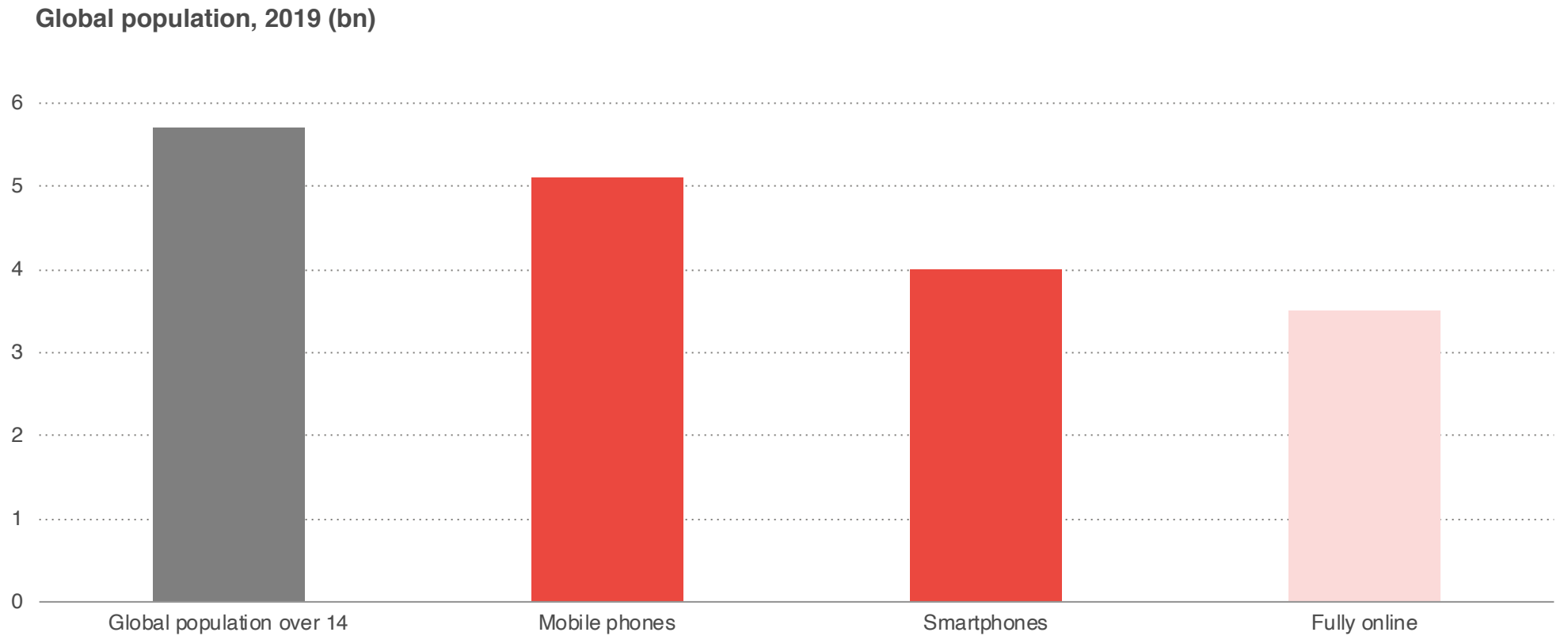
Benedict Evans

January 2020

www.ben-evans.com

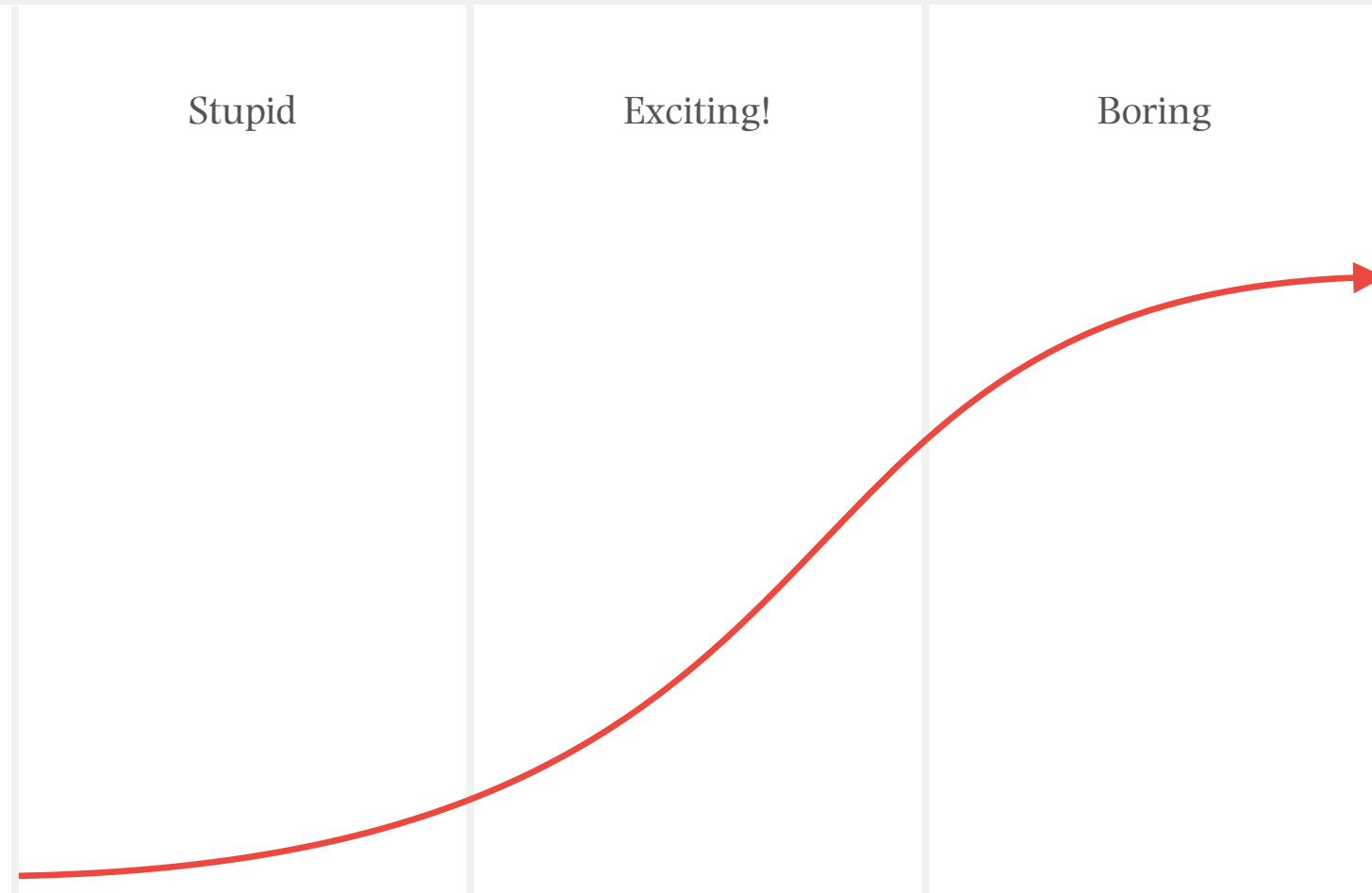
We connected (almost) everyone

There are 5.5bn adults on earth, 5bn have a phone and 4bn have a smartphone



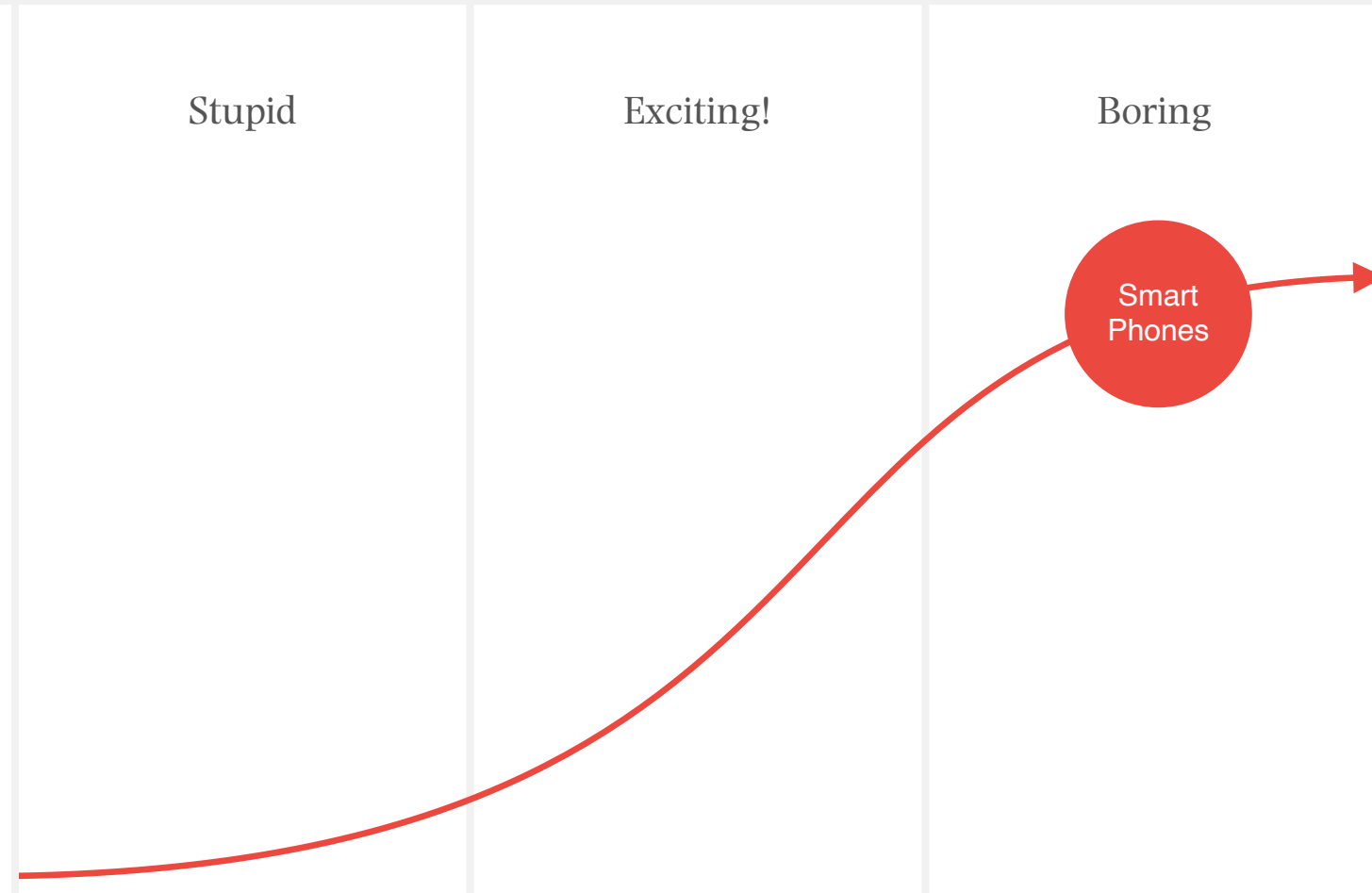
New technologies come in S Curves

New tech generally goes from stupid to exciting to boring



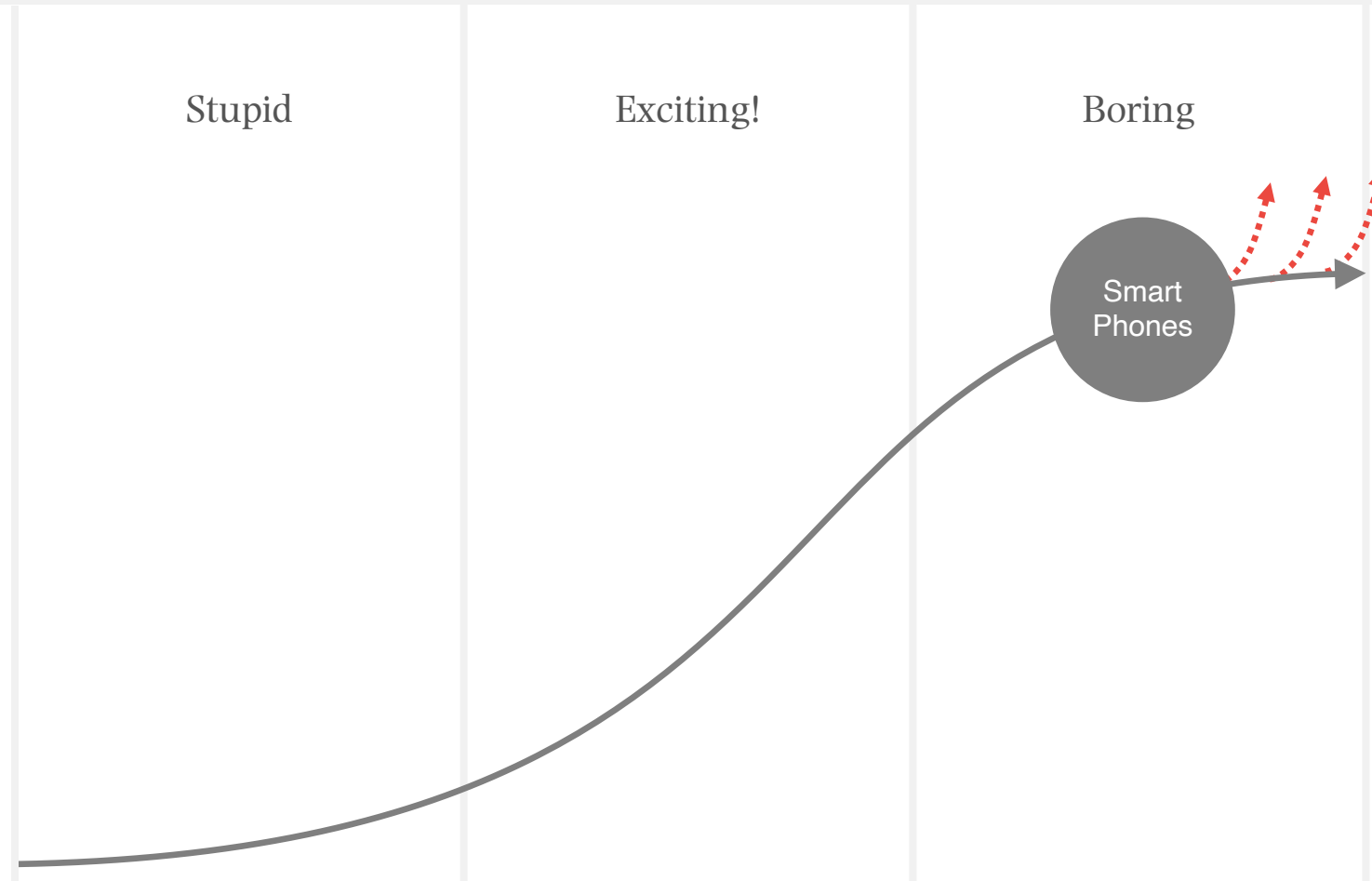
And smartphones reached 'boring' (mostly)

As the product matures, the easy and obvious things have been done and marginal improvement tends to slow



At this stage, we ask how we can use it...

What becomes possible now that smartphones are mature and widely deployed?



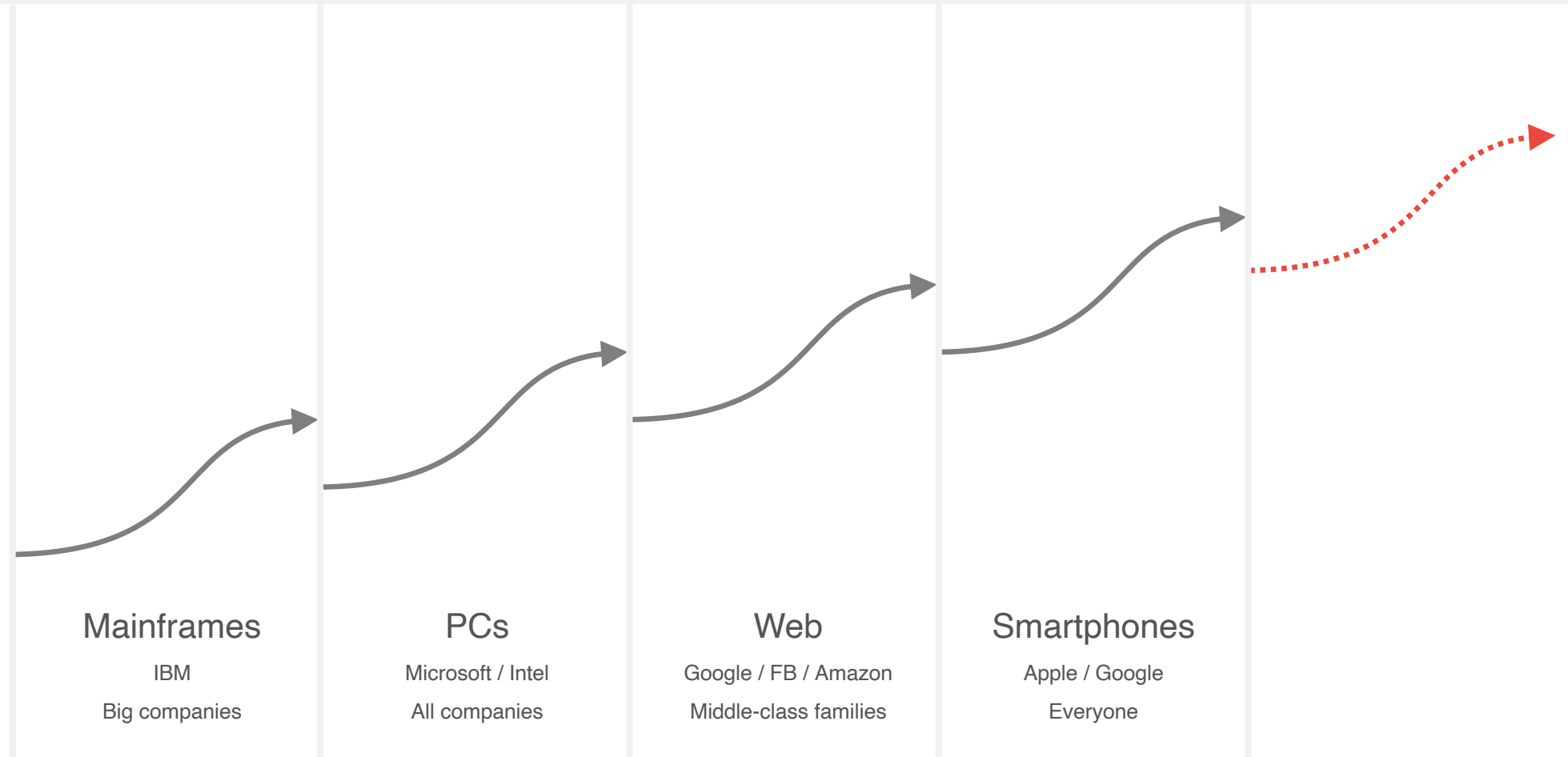
And we ask what the next S Curve will be

What is the next generational change?




Because that's been the model for 50 years

The tech industry has had a new centre roughly every 15 years

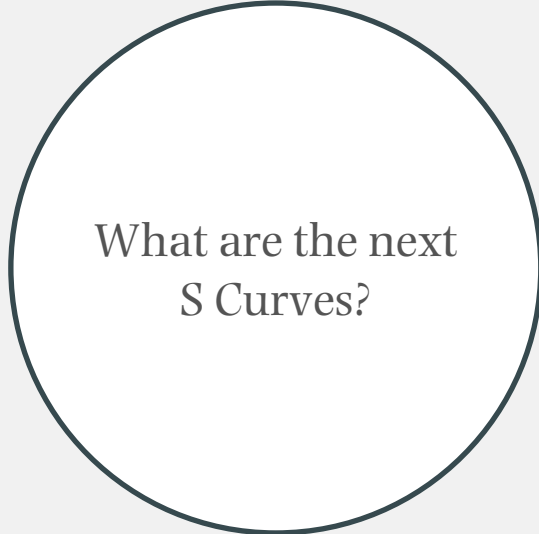


So, two conversations today

What now and what next?



What happens
when everyone is
online?



What are the next
S Curves?

So, ~~two~~ three conversations today

Connecting the world has had consequences far outside tech

What happens
when everyone is
online?

What are the next
S Curves?

Regulation and
policy

What happens when
everyone is online?

Standing on the shoulders of giants

New possibilities at new scale



Density &
penetration

Consumer
expectation

Platforms

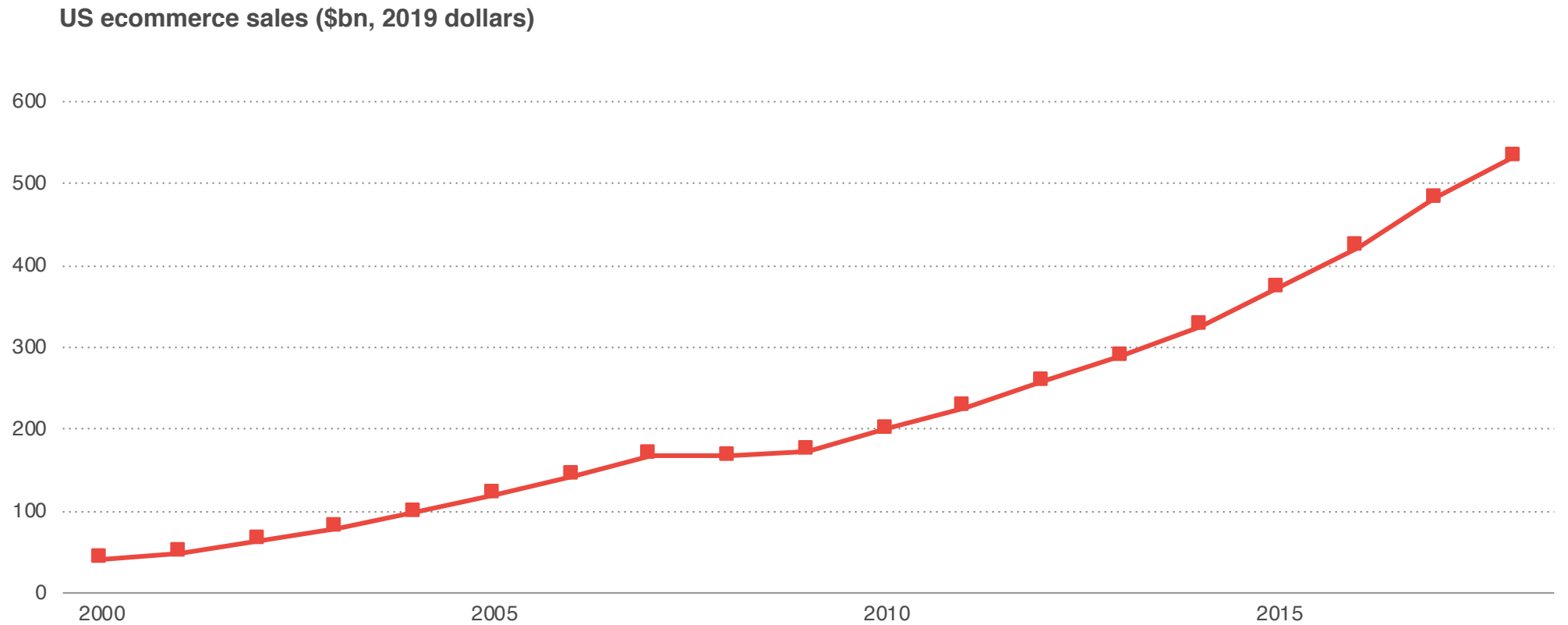
“Every failed idea from
the dotcom bubble would
work now”

- Marc Andreessen

Front of mind: ecommerce

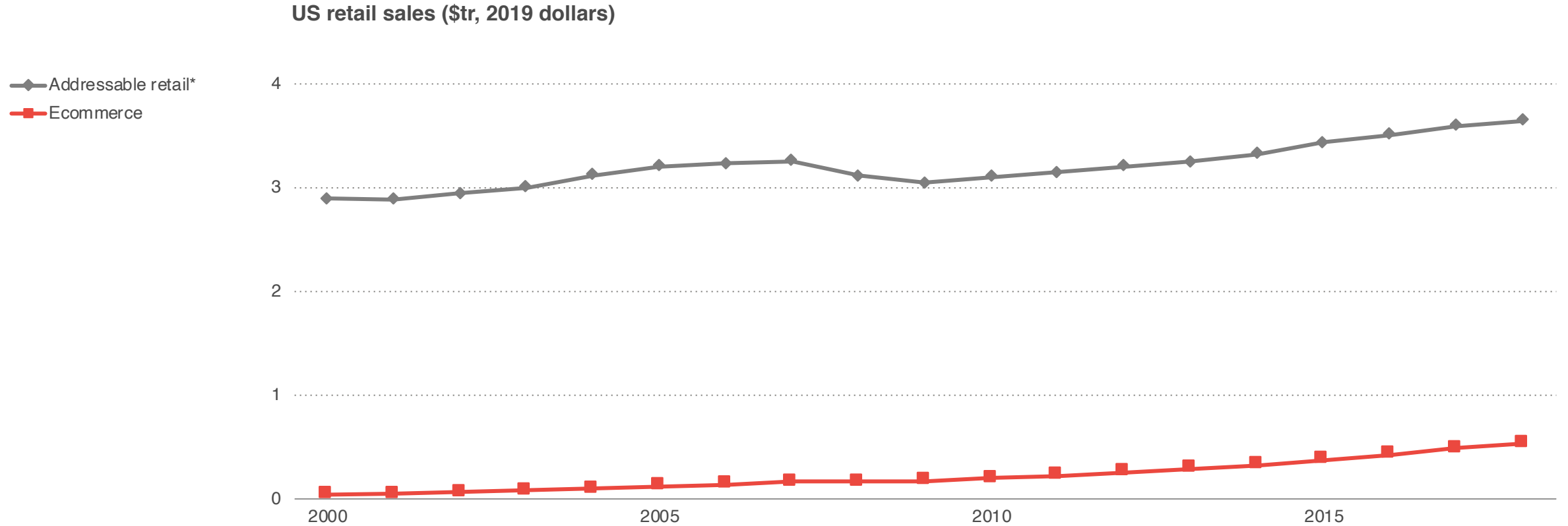
Front of mind: ecommerce is big...

US ecommerce is now over \$500bn



But still 'only' 15% of addressable retail

\$500bn is a big number, but US addressable retail is \$3.6tr



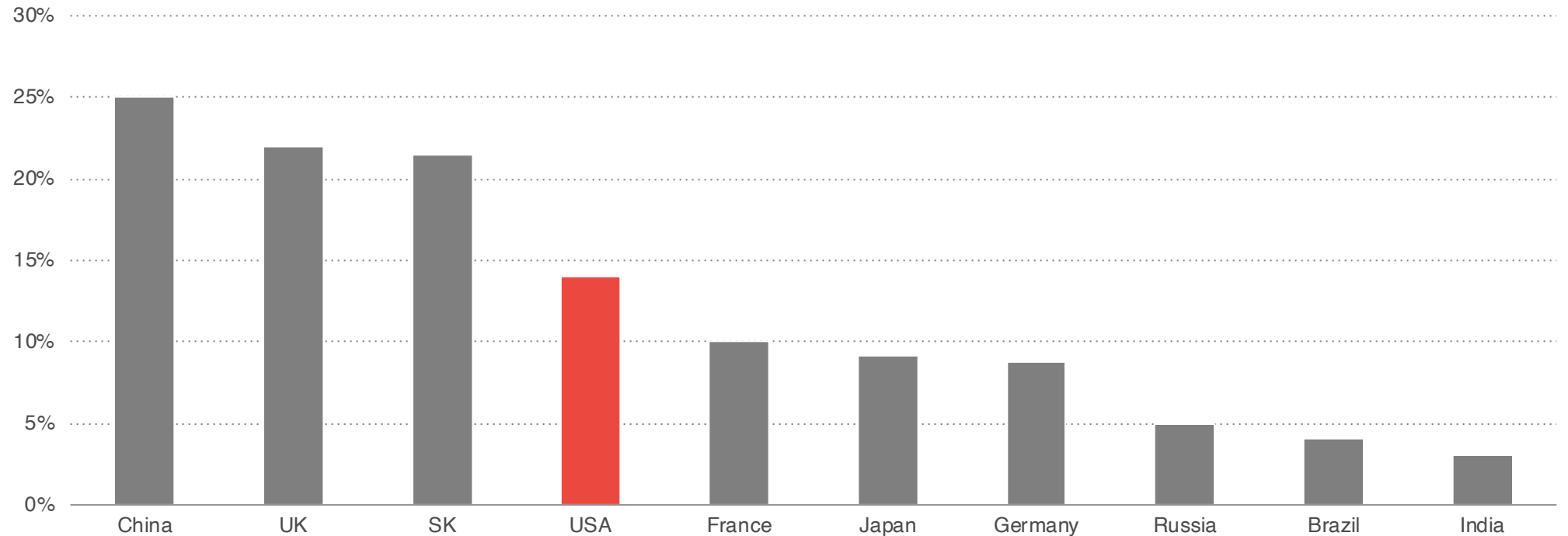
Source: US Census

*Addressable retail = ex. cars, car parts, gasoline, restaurants & bars

Globally, the USA is in the middle of the pack

China leapfrogged physical retail, while the UK and SK are also far ahead of the USA

Ecommerce share of retail (2019)



Expanding what ecommerce means

Ecommerce has evolved past commodity products in brown cardboard boxes

Books, commodities



Anything

One model



Many models

Capital



Platforms

Powering the 'D2C' explosion...

Several hundred (at least) new online-only or online-first brands



APPAREL & FASHION	BABY CARE & PARENTING	HOBBIES & LIFESTYLE
APPAREL & FASHION	BEAUTY	HOME & APPLIANCE
BEER/WINE/ALCOHOL	EDUCATION	PERSONAL CARE
FOOD/BEVERAGE/HOUSEHOLD/PET	WELLNESS & FITNESS	

And huge new ecommerce platforms

Independent ecommerce is now so big that the enabling platforms are worth tens of billions



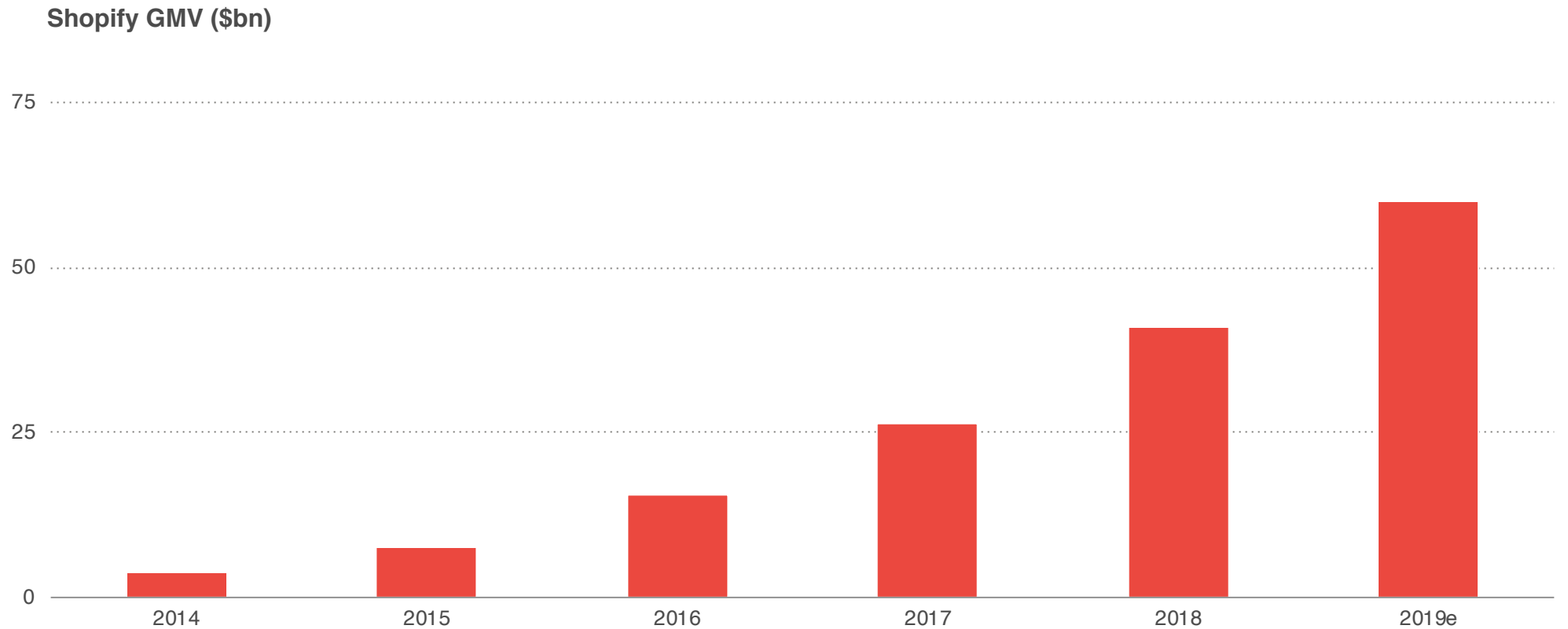
Shopify market
cap is \$46bn

Stripe valued at
\$35bn

Instagram,
YouTube...

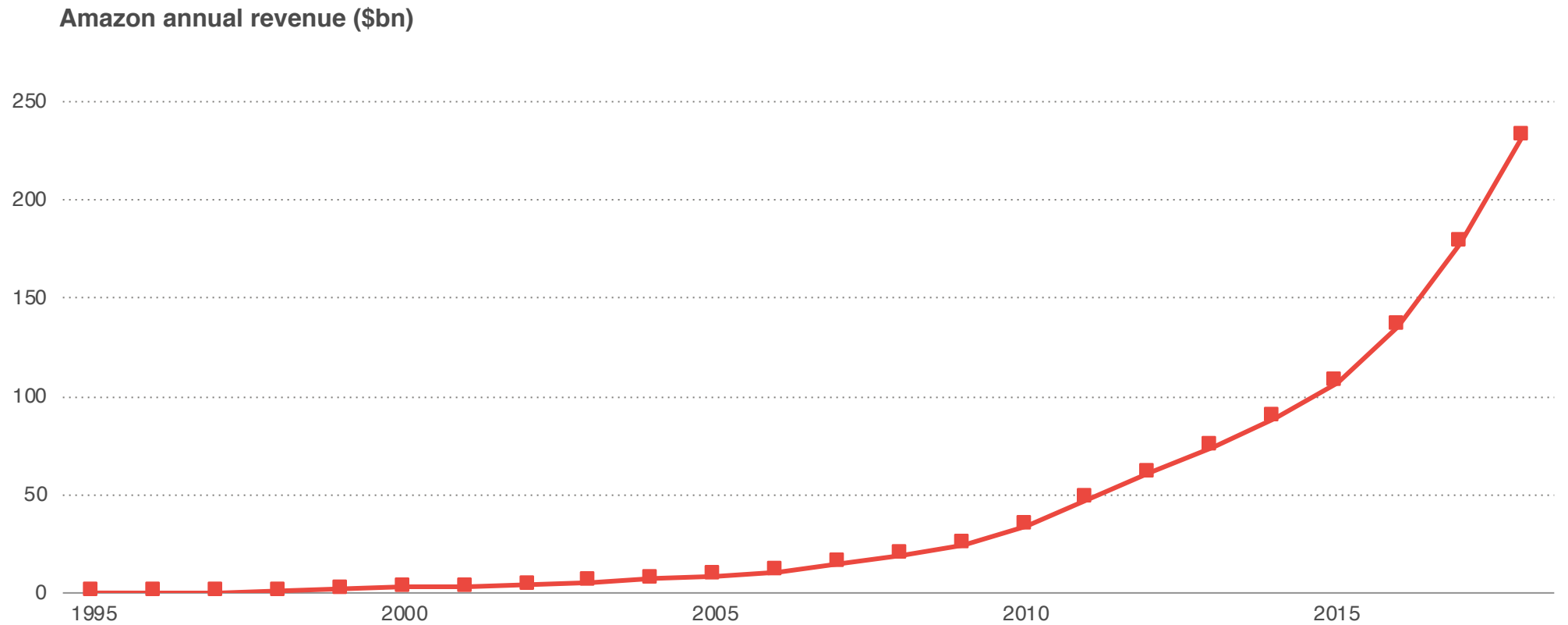
Shopify has come from nowhere to \$60bn of GMV

\$60bn of sales on the platform, with over a million merchants, from the long tail to Unilever and Pepsico



Meanwhile: Amazon!

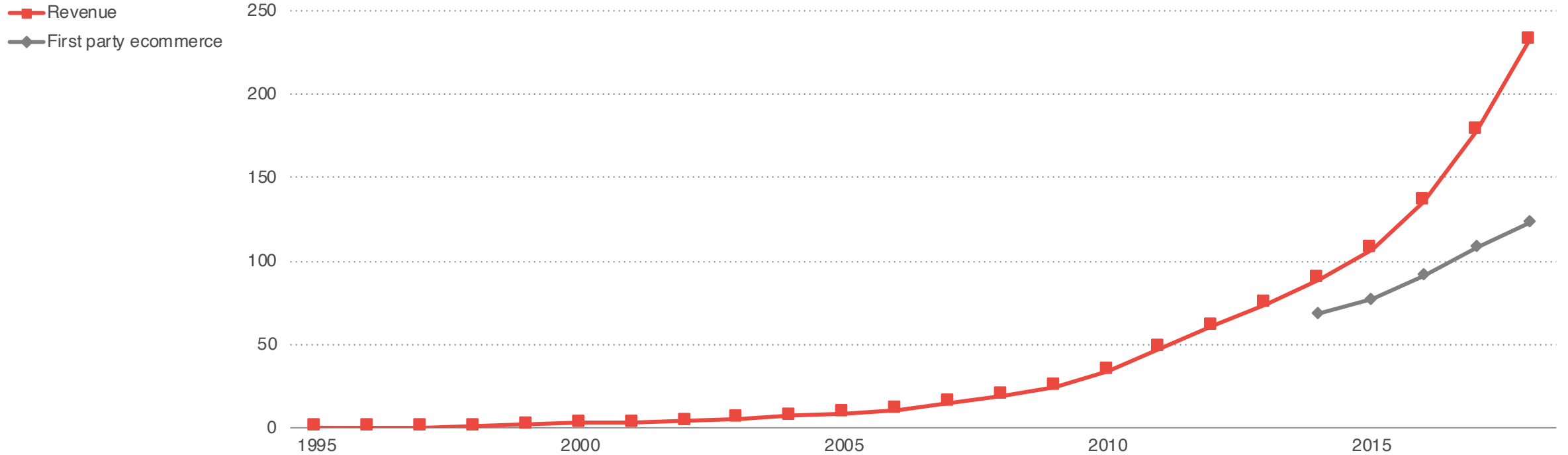
Amazon's revenue continues to grow at 30% a year



Though only half is direct ecommerce

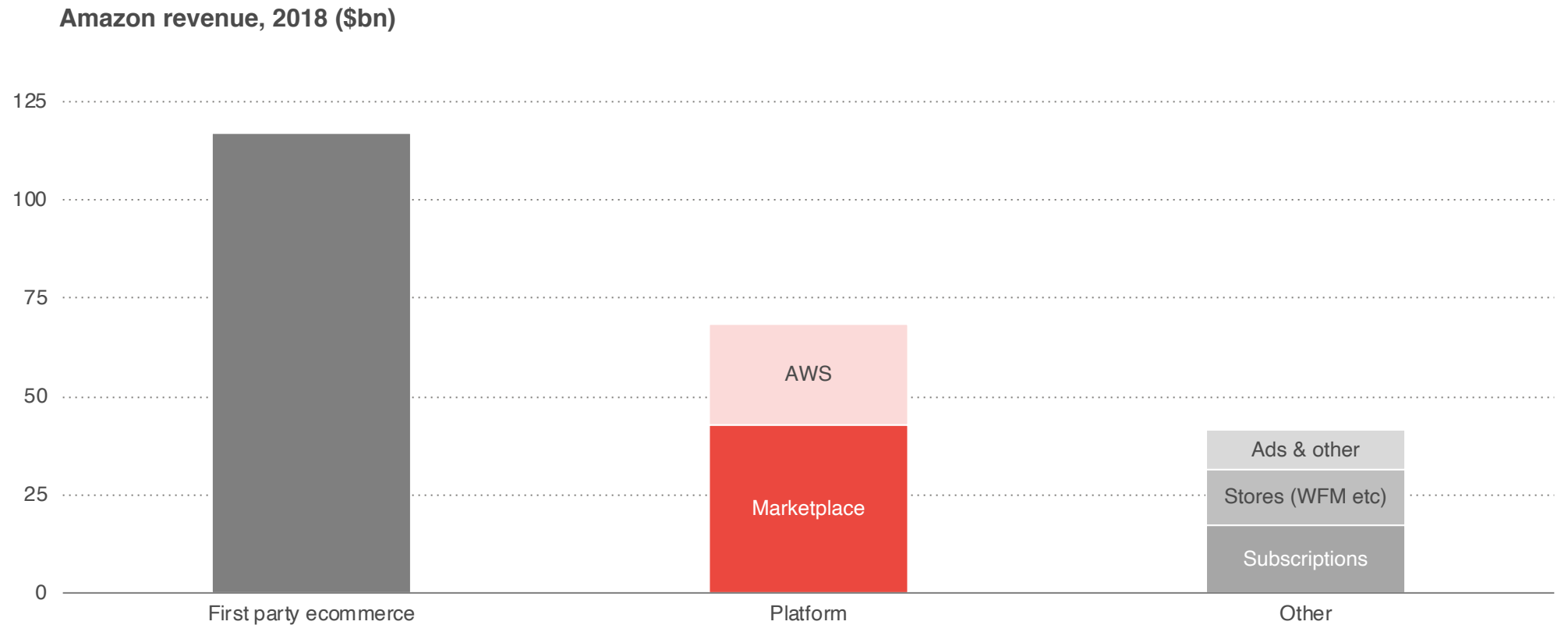
But it has become about more than just plain ecommerce

Amazon annual revenue (\$bn)



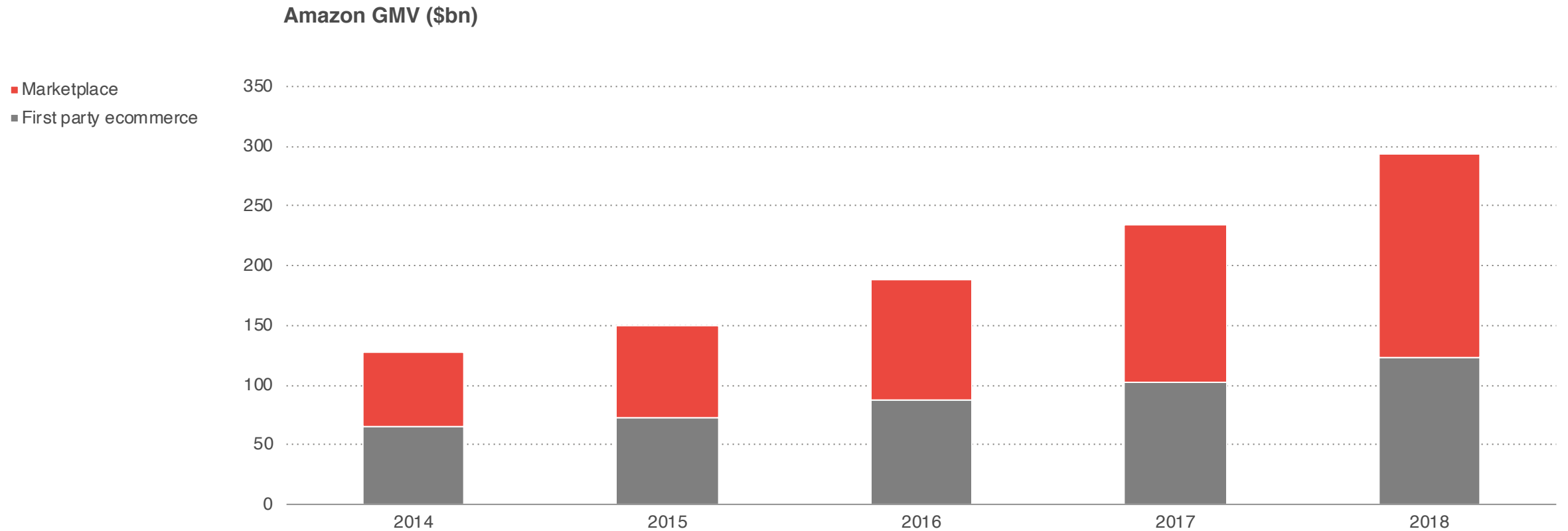
Platforms for others are now a third of Amazon revenue

Amazon is building growth by leveraging its platforms for other companies



Amazon is a platform for others

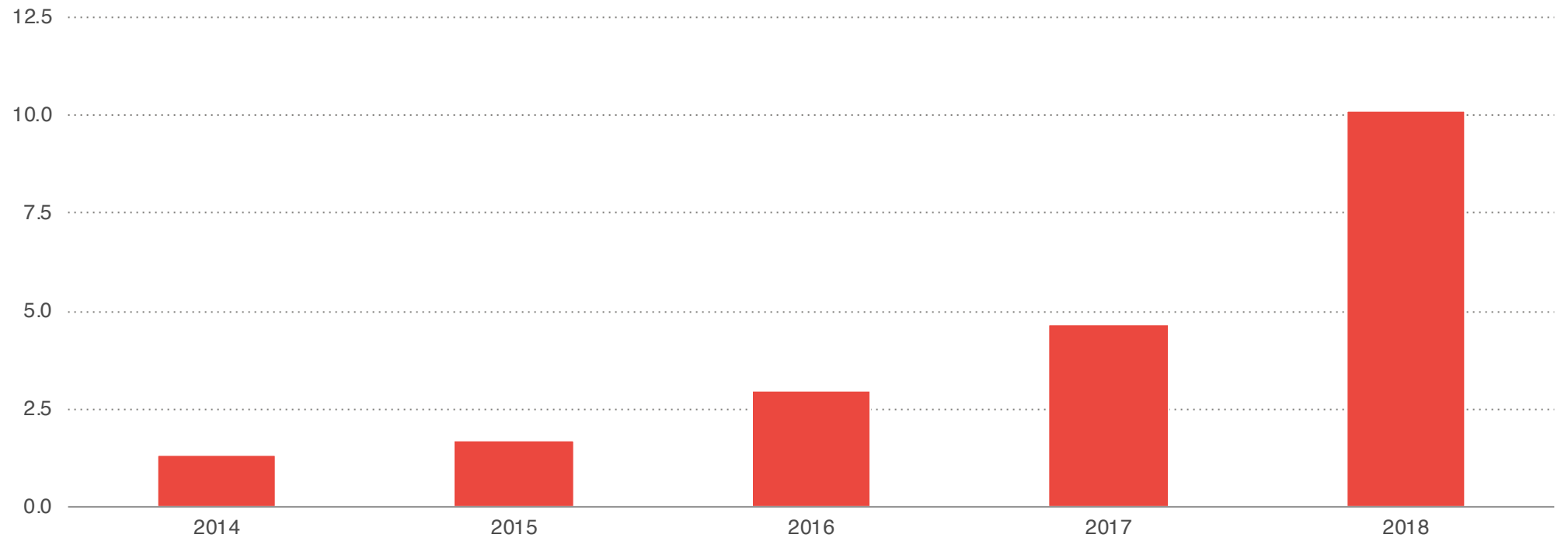
60% of sales on Amazon are through the third party marketplace



Amazon is now taxing product search

Amazon has built a \$10bn 'search ad' business – retailers just call this marketing

Amazon 'Advertising & other' revenue (\$bn)



New retailing means new taxes

If you're not paying rent for a store (or in one), how do people hear about you?



Amazon sells
placement for
\$10bn

Booking &
Expedia pay
Google \$10bn

~~New~~ retailing means ~~new~~ taxes

If you're not paying rent for a store (or in one), how do people hear about you?



Amazon sells
placement for
\$10bn

Booking &
Expedia pay
Google \$10bn

But Macy's &
Walmart did
this too

Unless you have a new route to awareness

If you're not paying rent for a store (or in one), how do people hear about you?



Amazon sells
placement for
\$10bn

Booking &
Expedia pay
Google \$10bn

But Macy's &
Walmart did
this too

Kylie Jenner's
make-up
business:
\$1.2bn

Get it wrong? Go to the mattresses

A vacuum-packed mattress was a brilliant idea until everyone else did it



2019: there are 175 online mattress companies

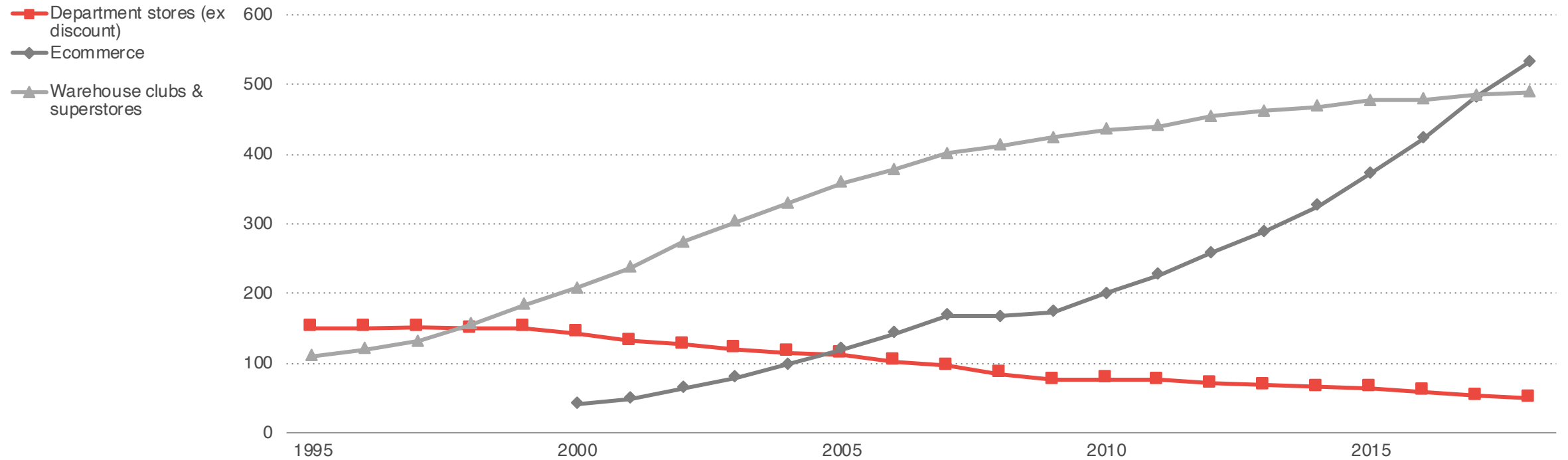
Is that a 'tech' company?

Or is it a mattress company with a website?

Welcome to retail

The internet is not the first time that retail has a new format

US retail sales, \$bn (2019 dollars)



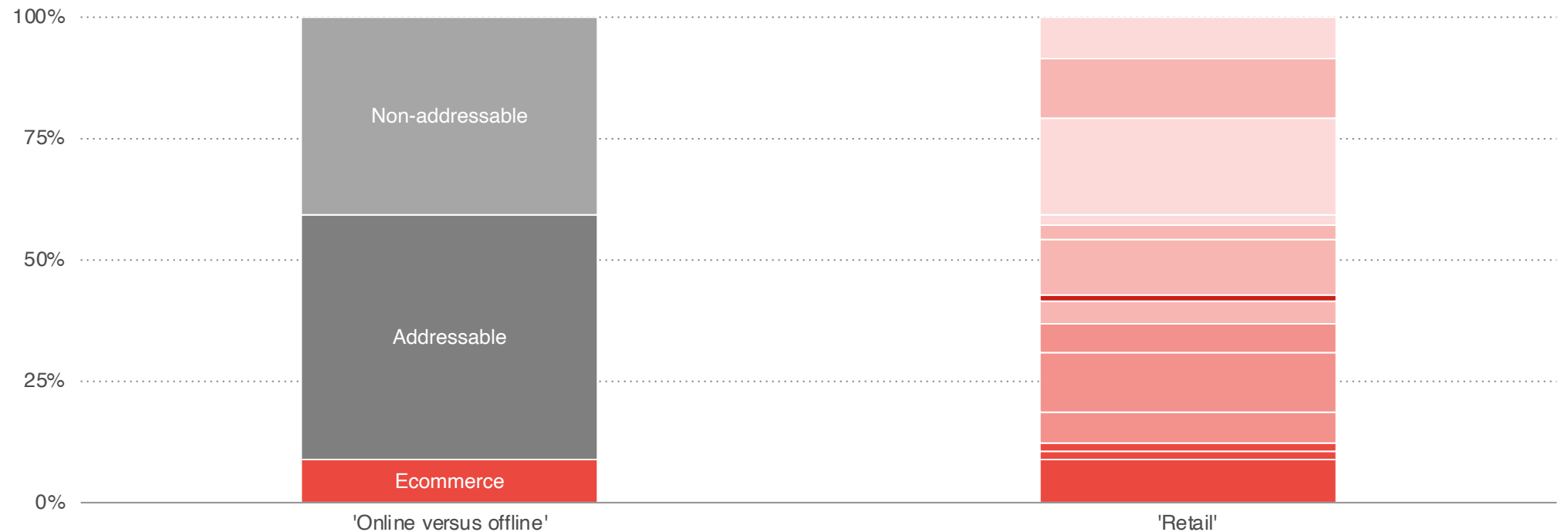
“Over half of our store sales involve an online journey, and over a third of our online sales involve a store experience”

- Erik Nordstrom

Retail isn't as binary as 'online' and 'offline'

Online, yes, but also rent, distance to customer, service, selection, staff costs, urgency, margin, inventory, etc, etc

US retail sales by retailer category, 2018



Source: US Census, @BenedictEvans

*Addressable retail = ex. cars, car parts, gasoline, restaurants & bars.

Is that a 'tech' company?

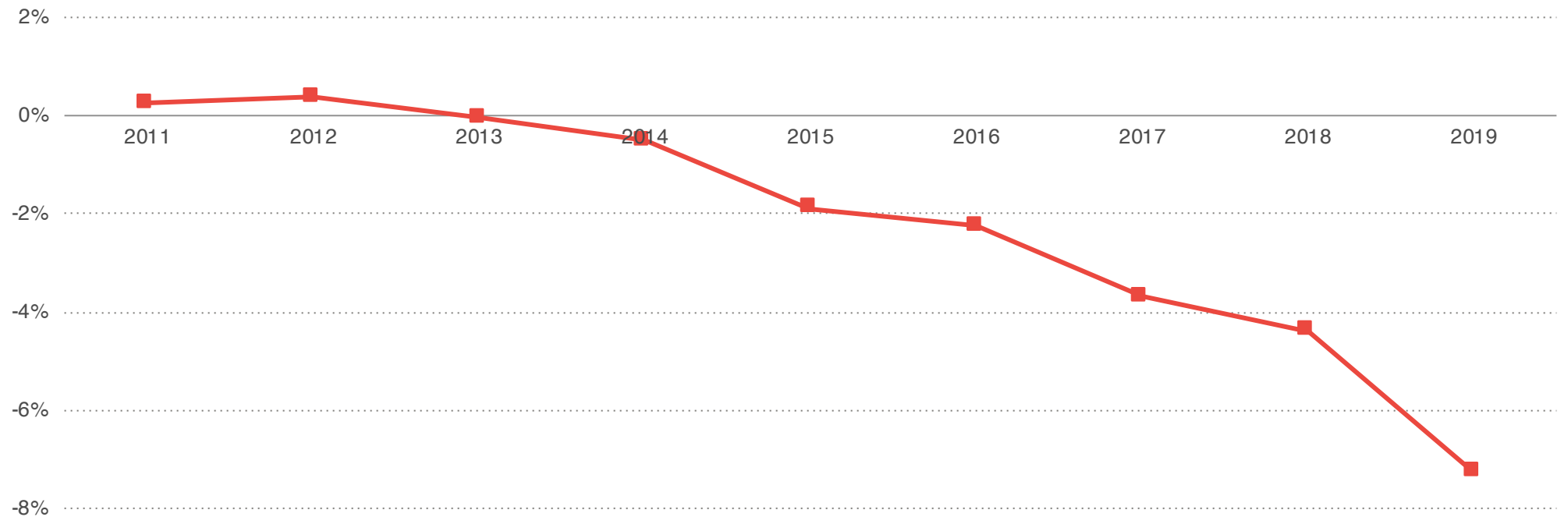
Or is it a retailer using a new channel?

Front of mind:
TV

Front of mind: unbundling TV

YouTube launched in 2004 – a decade later, US TV finally unlocked

Annual change in US pay TV subscriptions

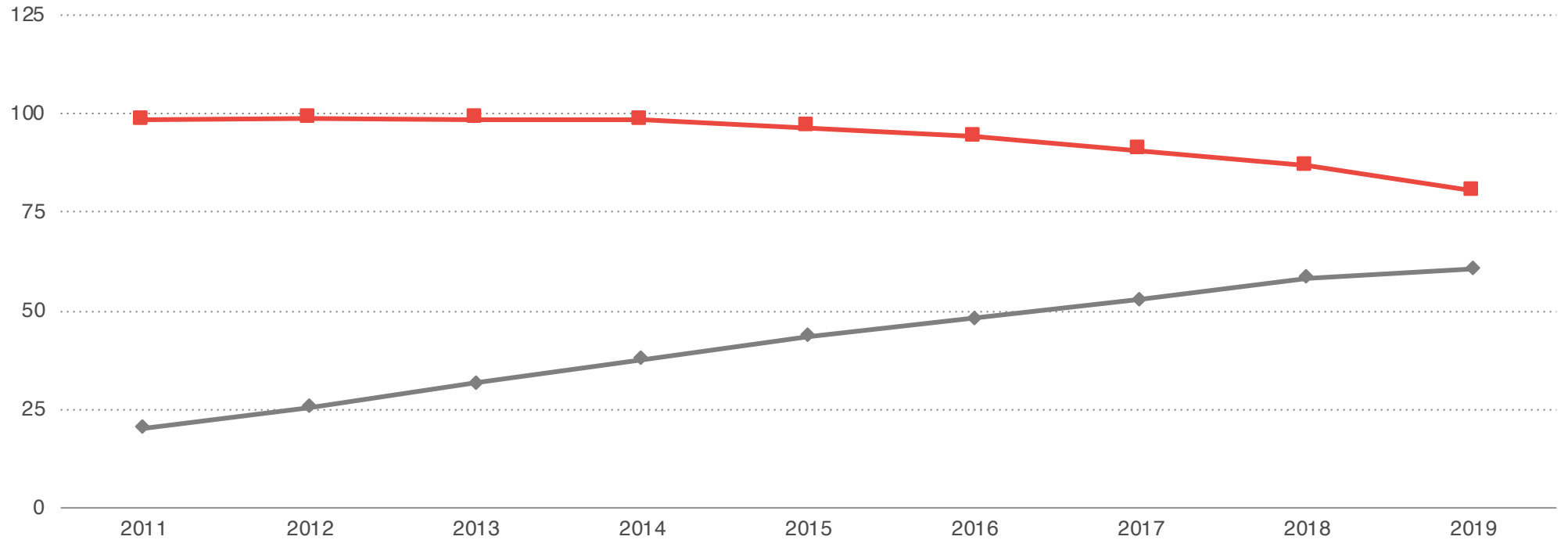


US pay TV subs down 20% and falling

For generations, most of the US was sold a big and expensive pay TV bundle - this is now breaking apart

US pay TV subscriptions (m)

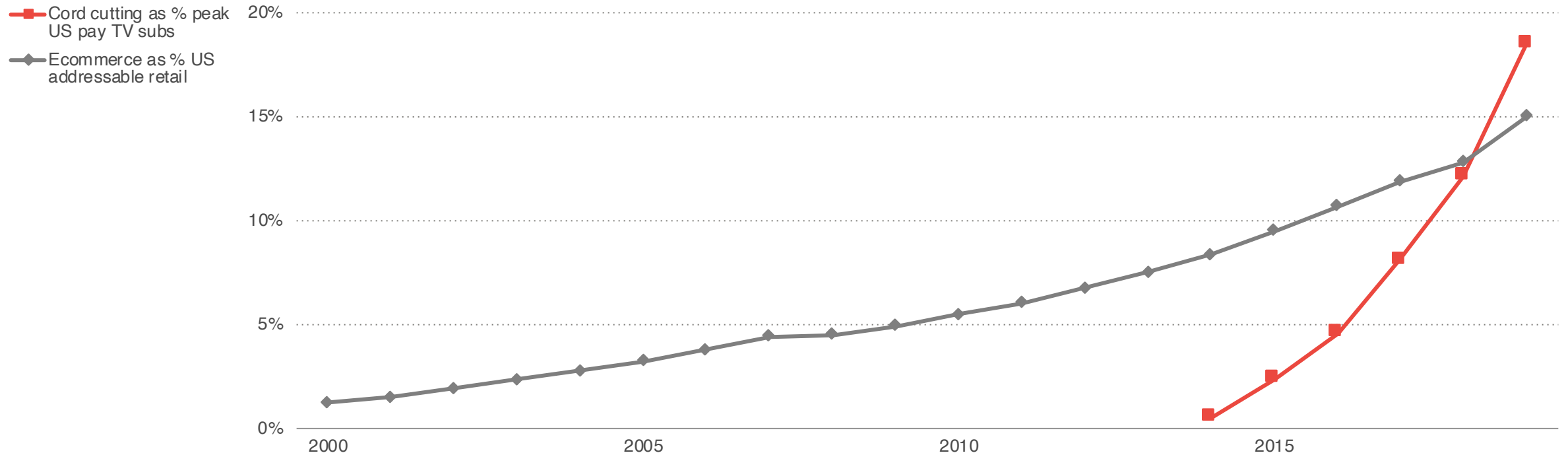
■ Incumbents
◆ Netflix



And TV is changing a lot faster than retail

US cord-cutting percentage has passed ecommerce percentage in just 5 years.

Digital change in US retail and TV

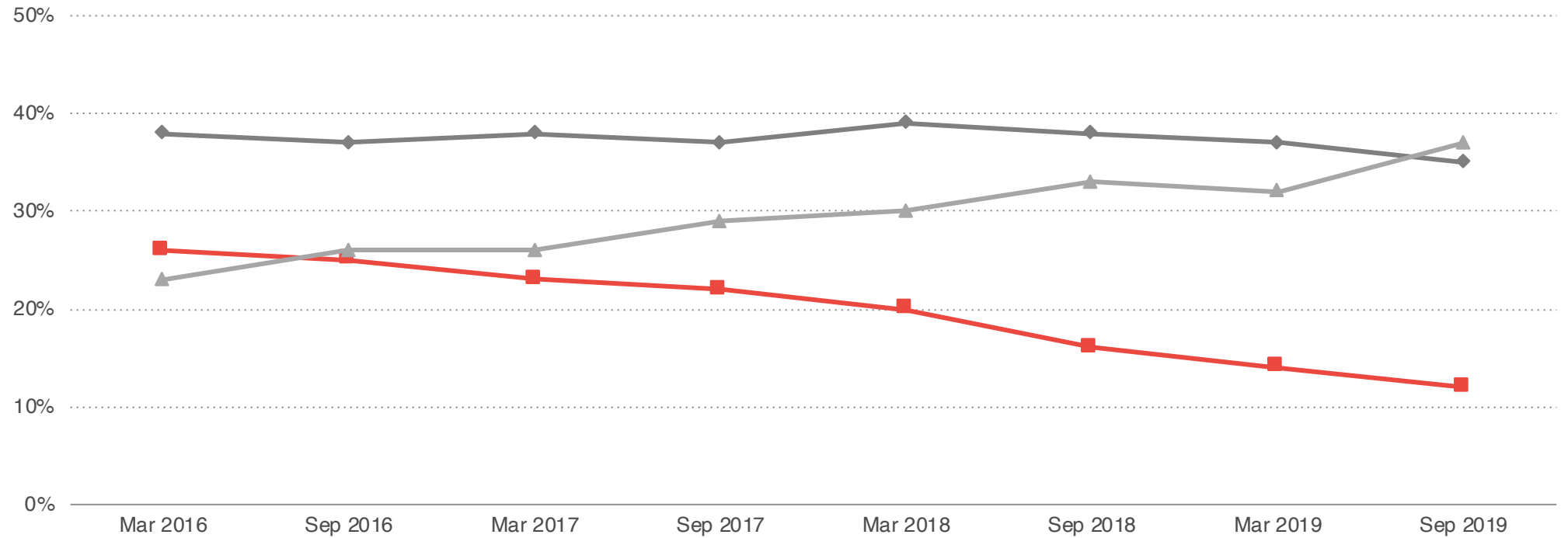


Teen share down by half

Pay TV share of US teen viewing hours is down by half in three years

US teen daily video consumption share

—■— Pay TV
—◆— Netflix
—▲— Youtube

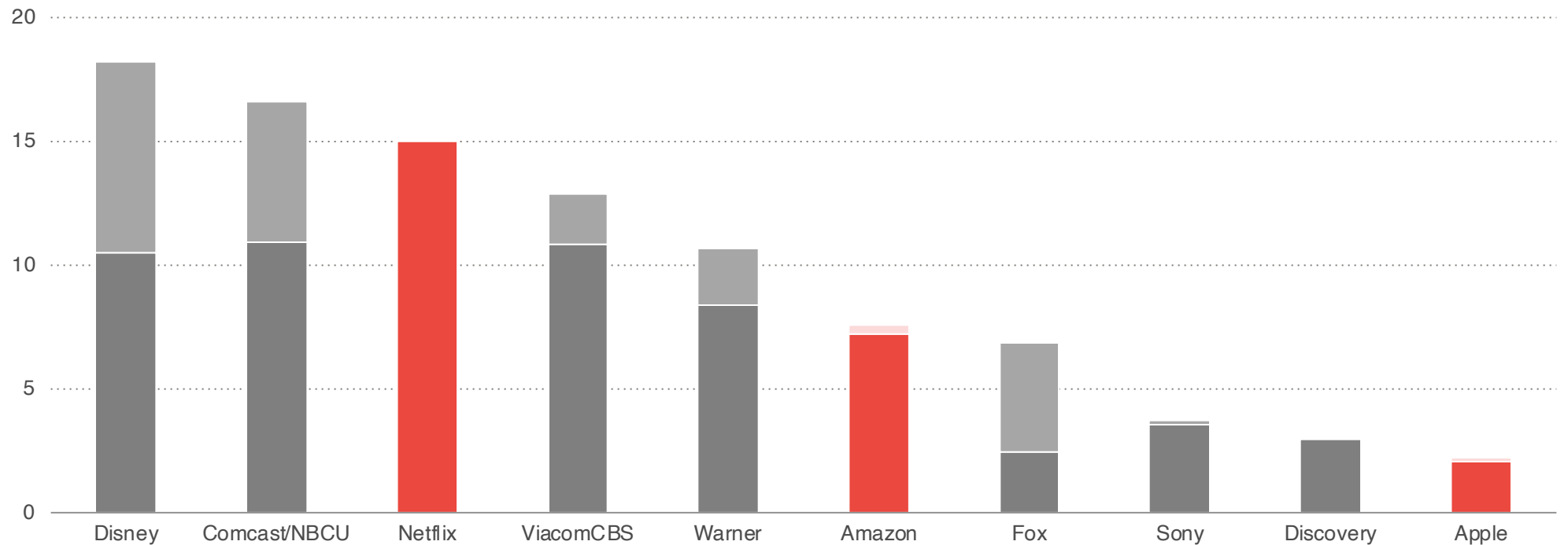


Begun, the content wars have

A third of US 2019 content spending came from streaming companies

US annual content budgets, 2019 (\$bn)

- Sport
- Entertainment

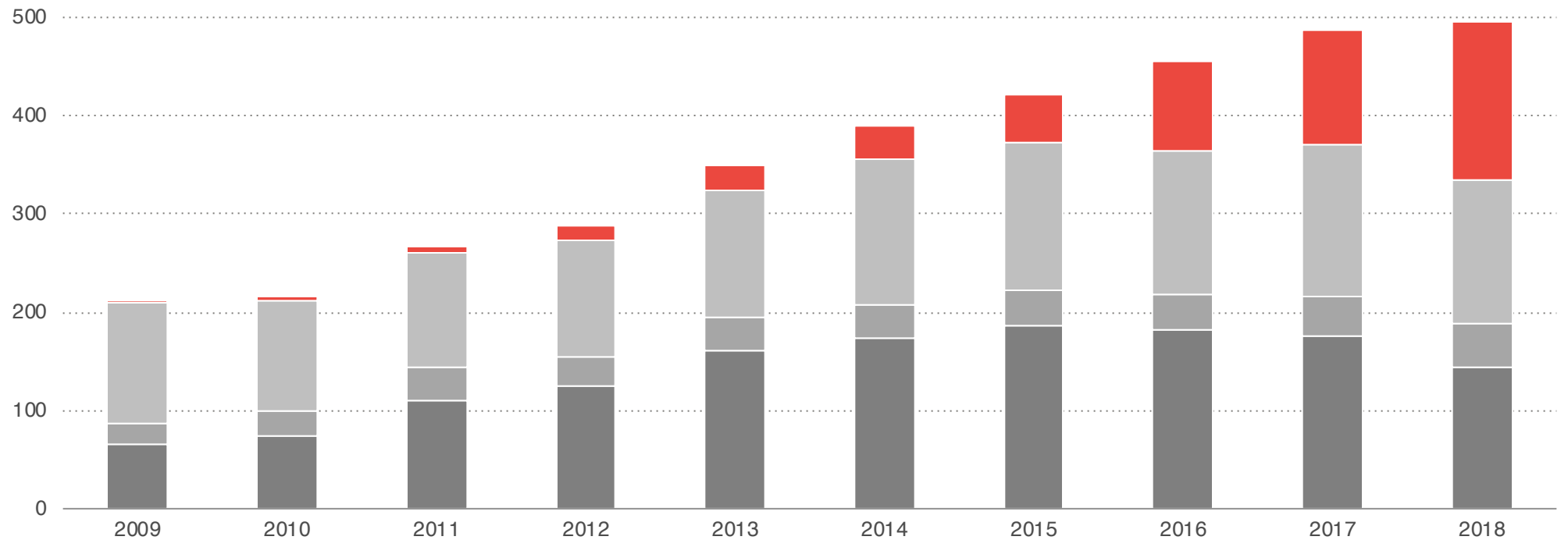


Streaming is a third of US TV production

A third of original series in the USA are now from Netflix, Amazon and other new entrants

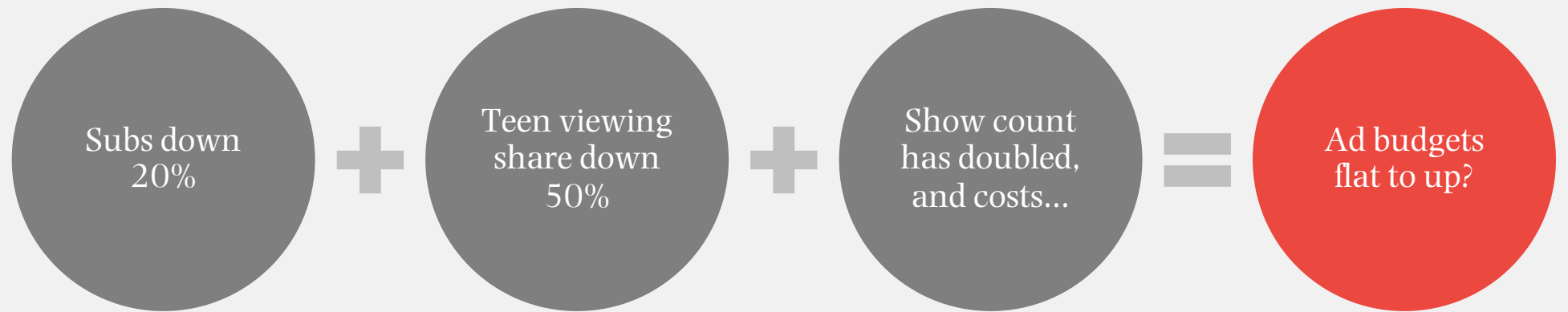
US scripted original series

- Online
- Broadcast
- Pay cable
- Basic cable



Now what?

Old model is gone, but not yet clear what the new equilibrium will look like



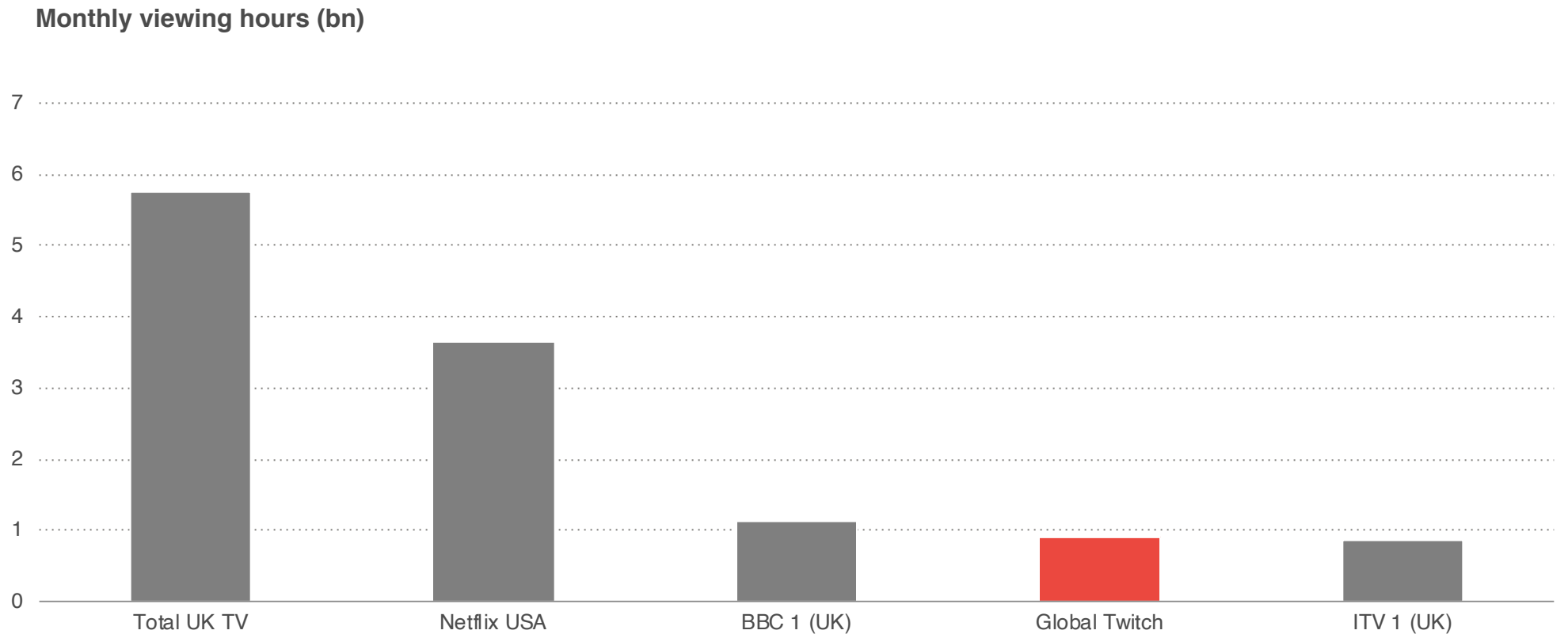
New forms of video emerging

Twitch (90% of live games viewing) hit 1bn monthly hours in Q3 2019



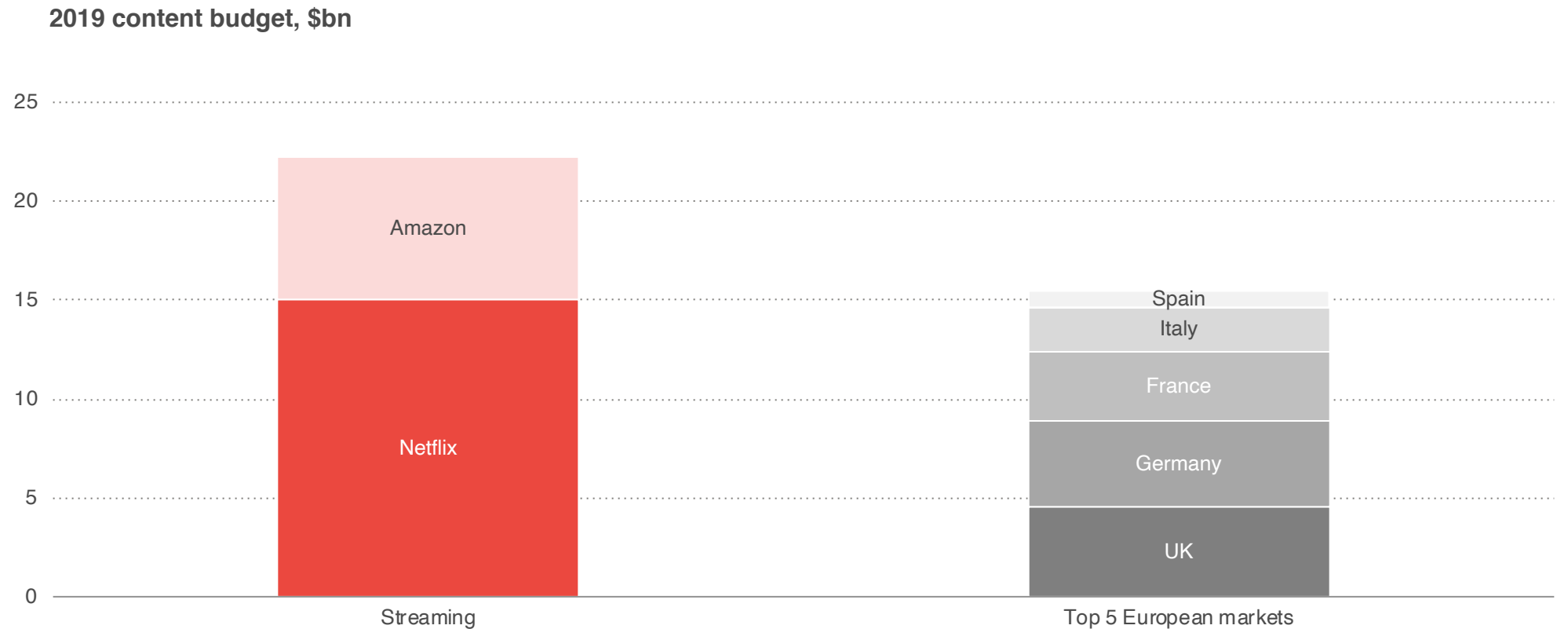
Twitch is already/only the size of a UK TV channel

Glass half empty, or half full?



Meanwhile, global effects from the US streaming war

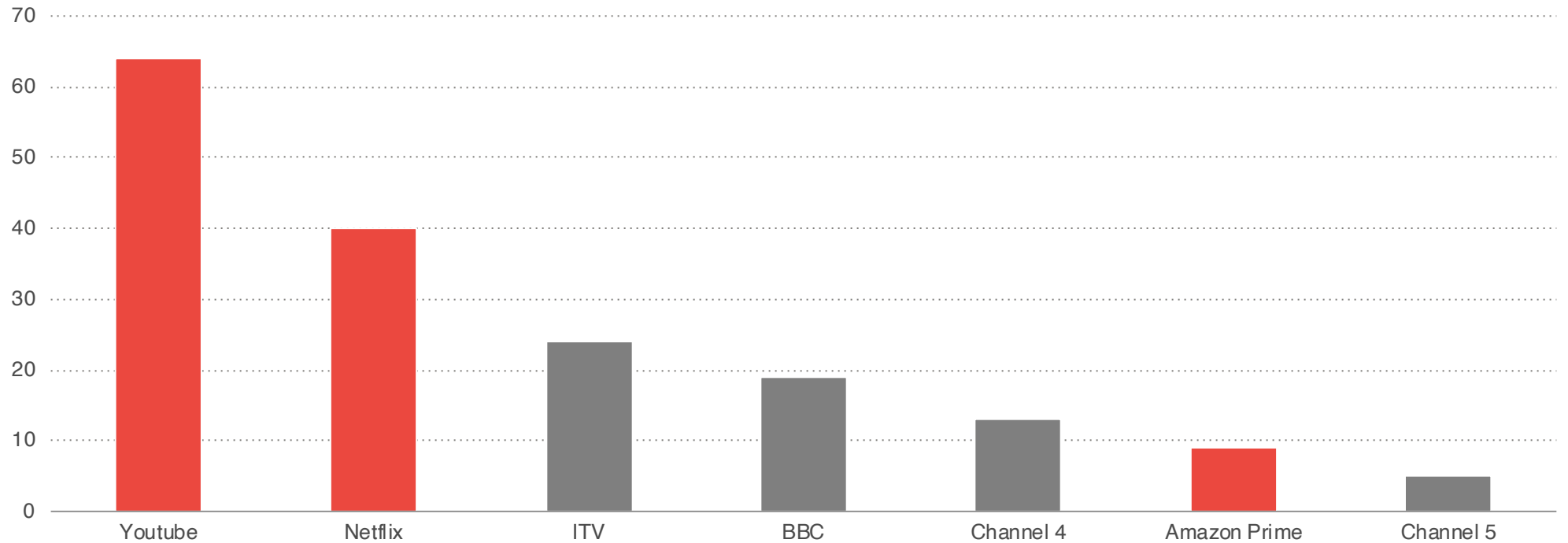
US budgets were always bigger, but they sold the shows abroad: Netflix goes direct



Netflix is the UK's biggest TV channel

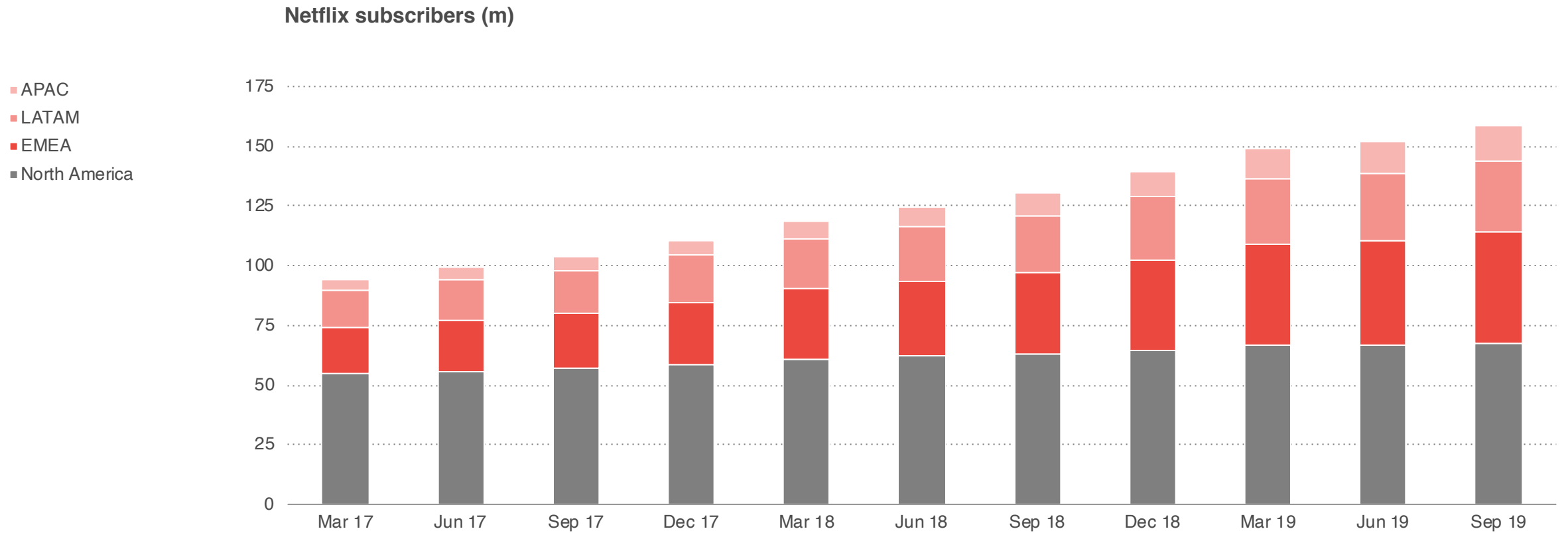
Netflix is the UK's biggest TV channel for 18-34s, and YouTube is even bigger

Video minutes per person per day, UK 18-34s, 2018



Unbundling countries, not just cable

More than half of Netflix's base and most of the user growth is now outside the USA



“In business, there are two ways to make money. You can bundle, or you can unbundle.”

- Jim Barksdale

Now: the great unbundling. Next: the great rebundling

For TV and retail, the old bundles are going, but we will get new ones

New distribution channels break apart old aggregation models

Everyone wants to unbundle and go direct

But!

There can only be so many brand relationships

Aggregators exist for a reason

Many big brands are actually B2B businesses anyway

Lots of rebundling coming

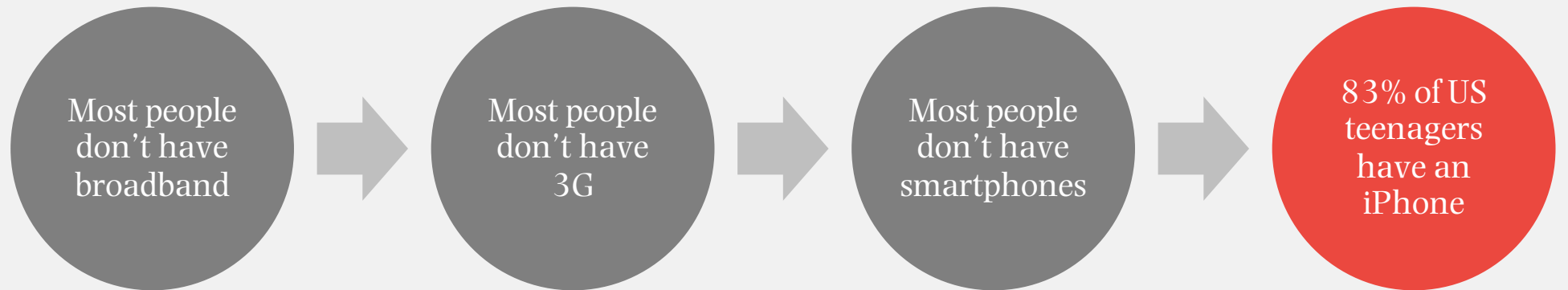
Is that a 'tech' company?

Or is it a TV company using a new channel?

OK, ecommerce and TV.
But what else?

“Remember, most people don’t have that”

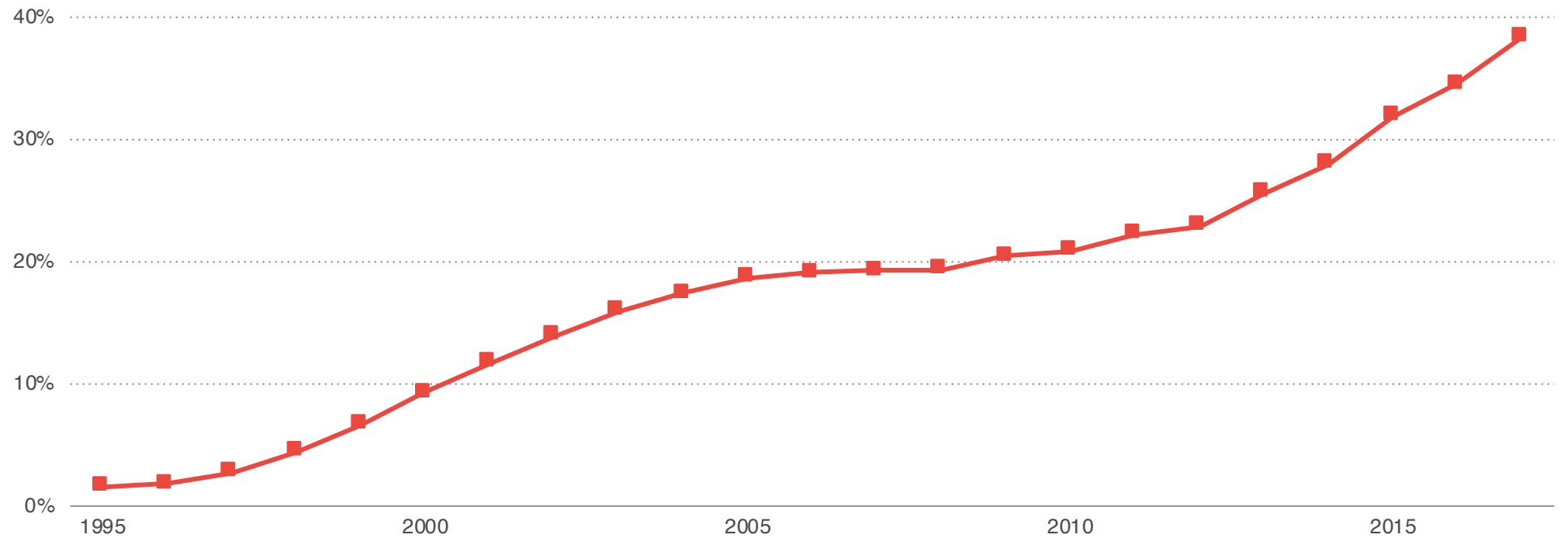
For 25 years, we’ve had to remind ourselves that most people are not early adopters



Today, anyone does anything online

In 2017, 40% of Americans met their partners online

US heterosexual couples who met online, by year of meeting





Sharon Stone ✓

@sharonstone



I went on the [@bumble](#) dating sight and they closed my account. 👁️ 👁️

Some users reported that it couldn't possibly be me!

Hey [@bumble](#), is being me exclusionary ? 🧑

Don't shut me out of the hive 🐝

12:38 am · 30 Dec 2019 · [Twitter for iPhone](#)

4K Retweets **43.1K** Likes

Models for market expansion

Penetration and consumer acceptance drives expansion

Vertical integration

The full stack' model: from
booking.com to Airbnb



Horizontal expansion

Taking established online
models to new segments



Example: expanding the 'two-sided marketplace' model

A model that only worked for narrow segments a decade ago now expands into the whole economy



Is that a 'tech' company?

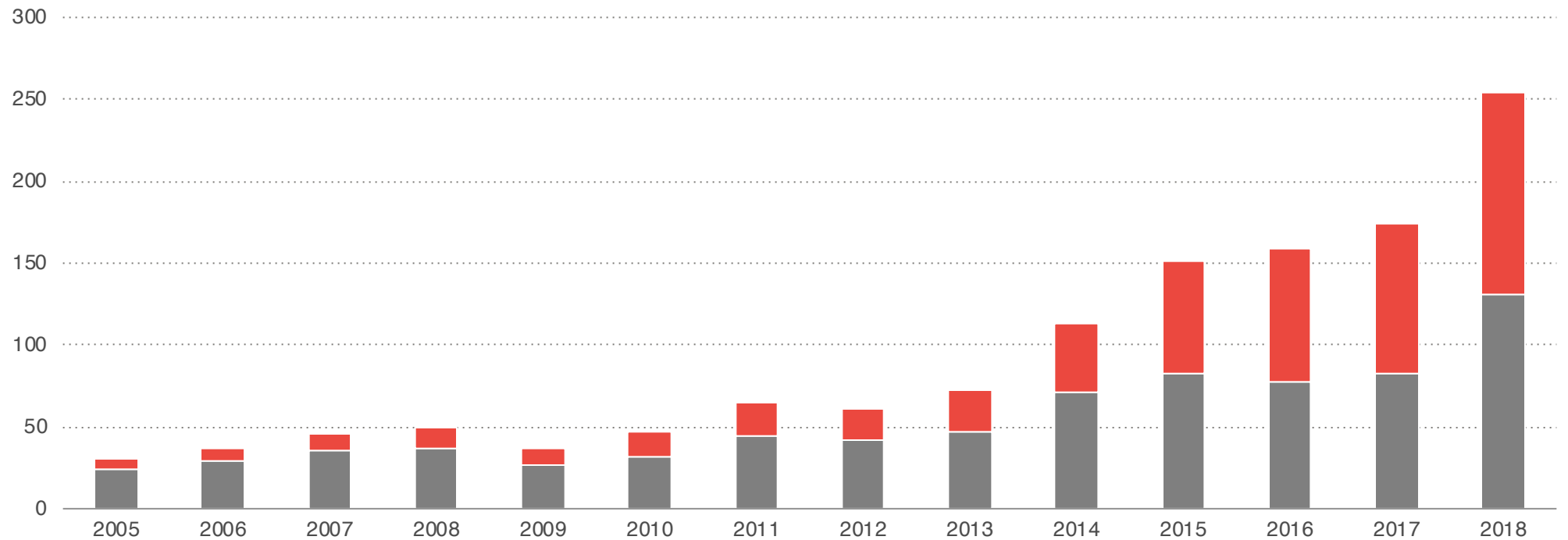
Or is it a travel / insurance / employment / taxi
/ dating / banking / restaurant company using
a new channel?

Growth and global diffusion

More and more investment in company creation around the world

Venture capital investments (\$bn)

■ RoW
■ US



Expanding software and tools from work to everyday life

Software, automation, workflow, and tools...

From work and big business to everyone's lives

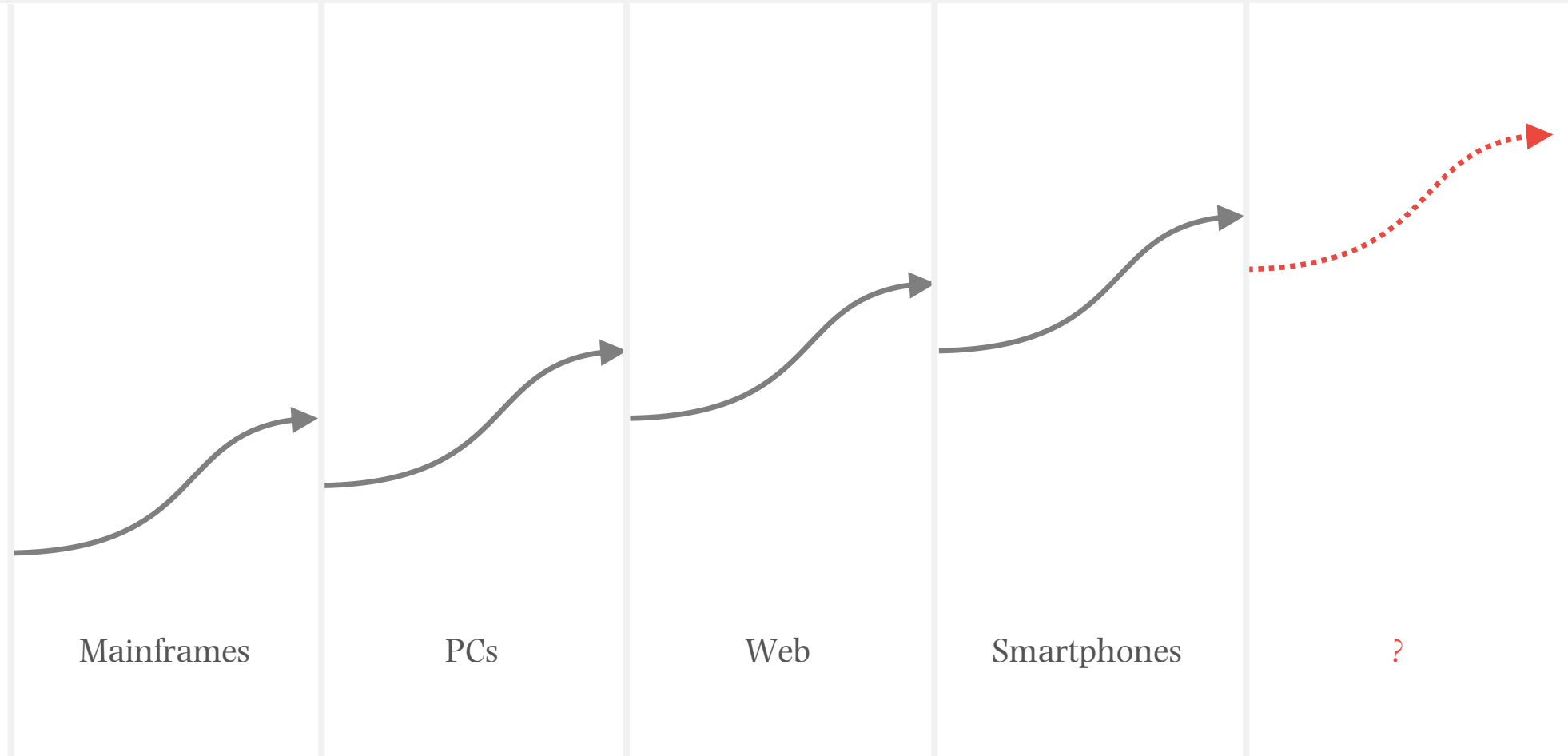
From mainframes, to LinkedIn, to Tinder and Rigup



The next S Curves

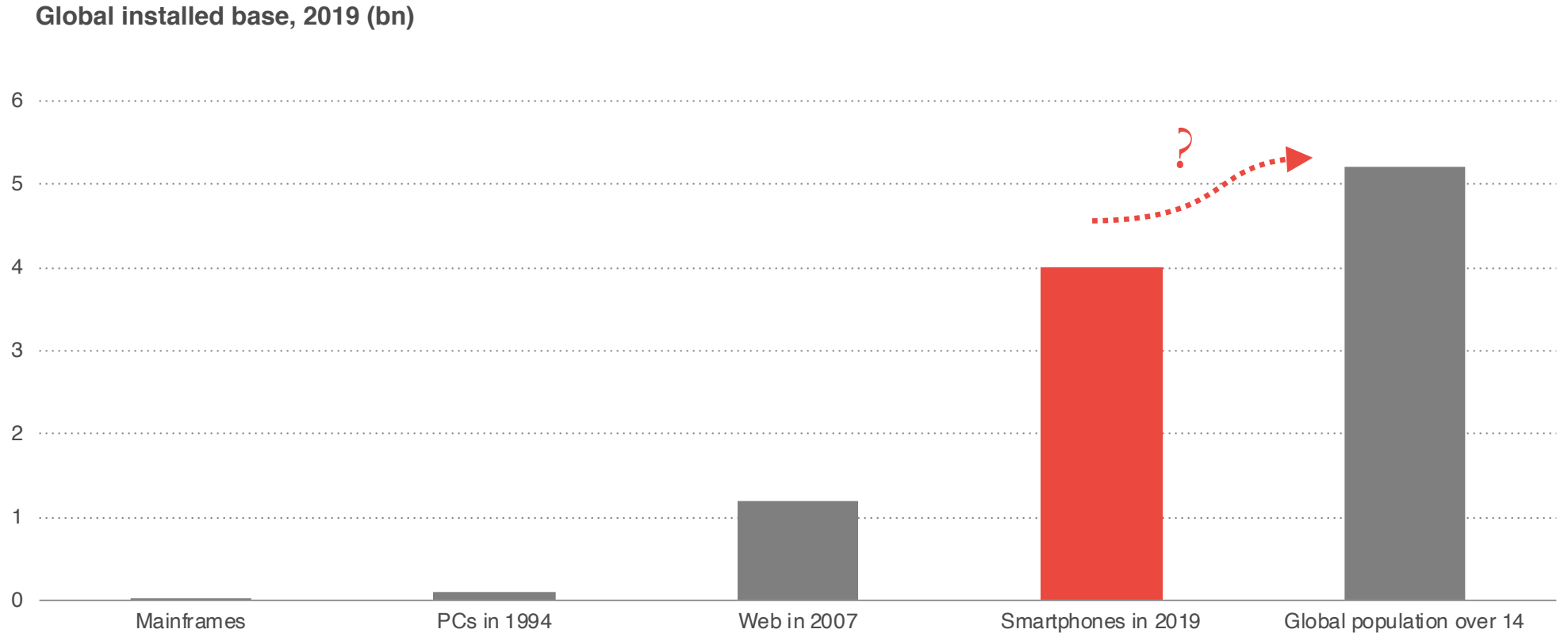
What's the next generational change in scale?

The tech industry has had a new centre roughly every 15 years



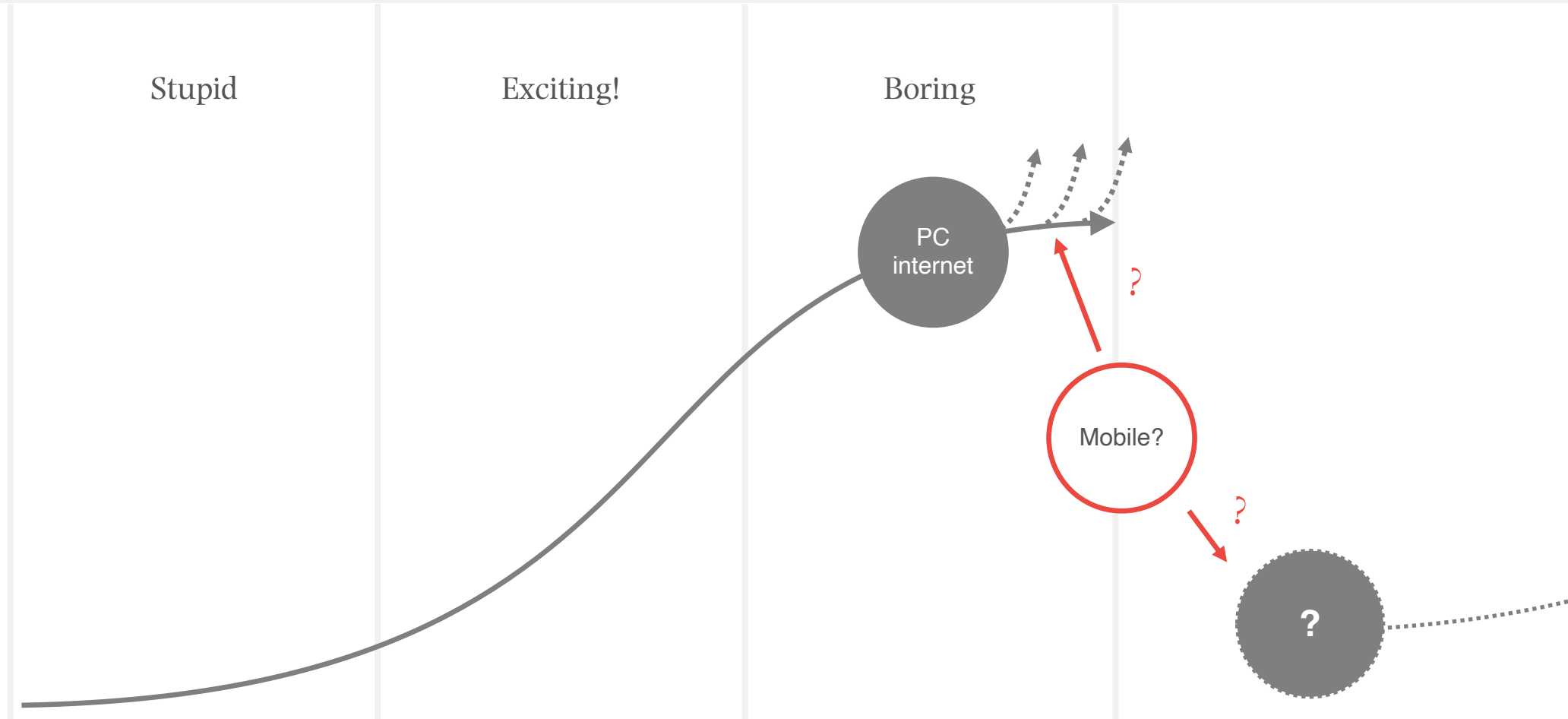
Can there be another massive increase in scale?

Once you've connected everyone, how do you create a bigger market?



And is this the new thing, or part of the old thing?

Smartphones began as a PC accessory, but now PCs are a smartphone accessory



Lots of new things going on, but which is THE thing?

Many new things happening, but what's their scope?

Frontier tech

Quantum, new battery chemistry, neural interfaces, autonomy, AR optics

Important but narrow

Drones, IoT, voice, wearables, robotics, esports, 3D printing, VR, micro-satellites

Structural layers

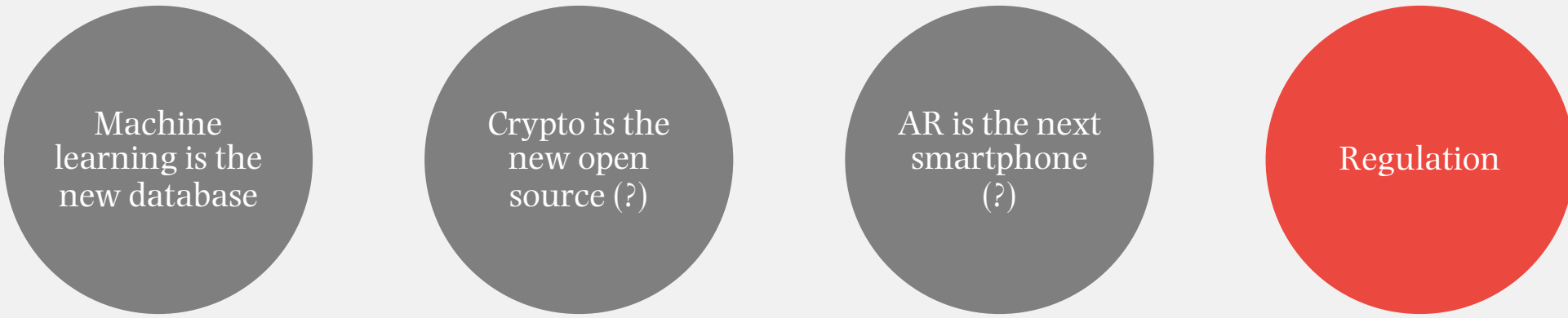
Machine learning
Crypto?
(3G/4G/5G)
(Cloud, still)

The next platform?

AR glasses?

Tech for the 2020s

A lot of innovation is happening inside tech, but that's no longer the only focus



Machine
learning is the
new database

Crypto is the
new open
source (?)

AR is the next
smartphone
(?)

Regulation

The Next Big Thing?

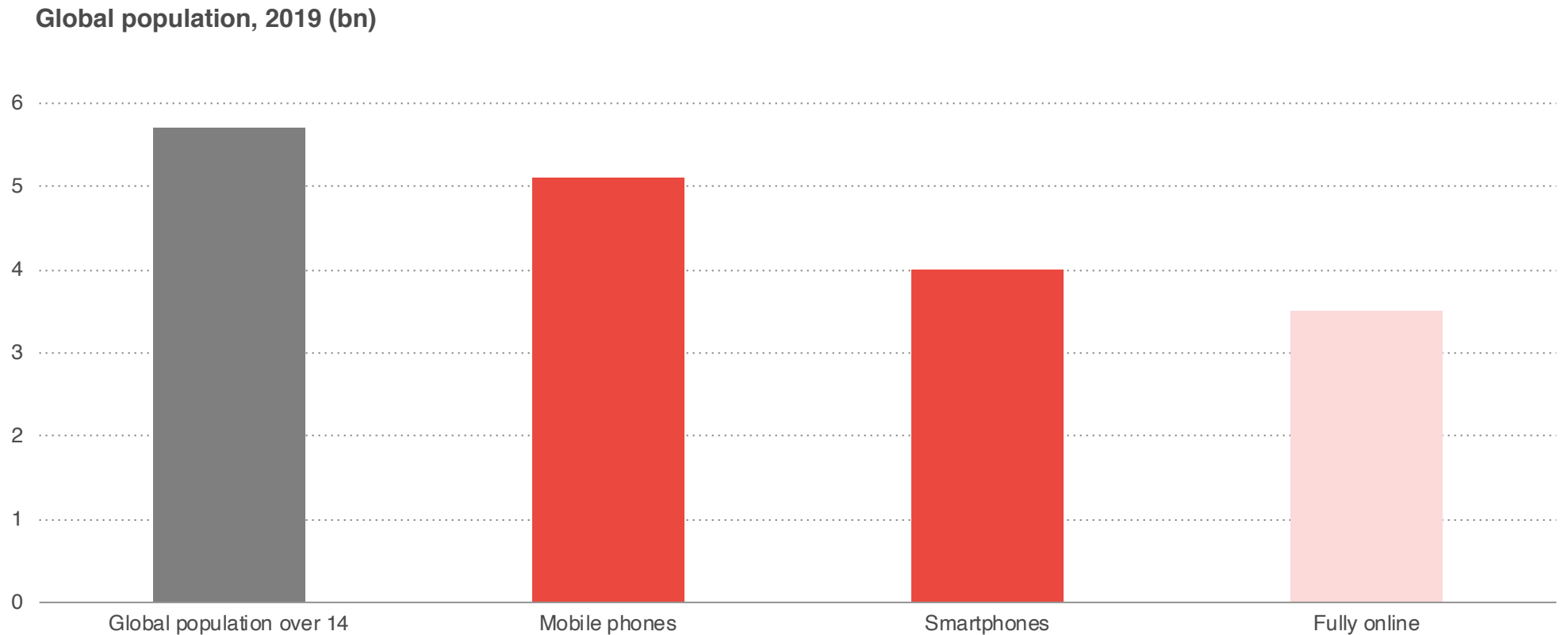
Regulation and policy

Governments of the Industrial World, you weary giants of flesh and steel, I come from Cyberspace, the new home of Mind. On behalf of the future, I ask you of the past to leave us alone. You are not welcome among us. You have no sovereignty where we gather.

- John Perry Barlow, 1996

Then we connected everyone, including the bad people

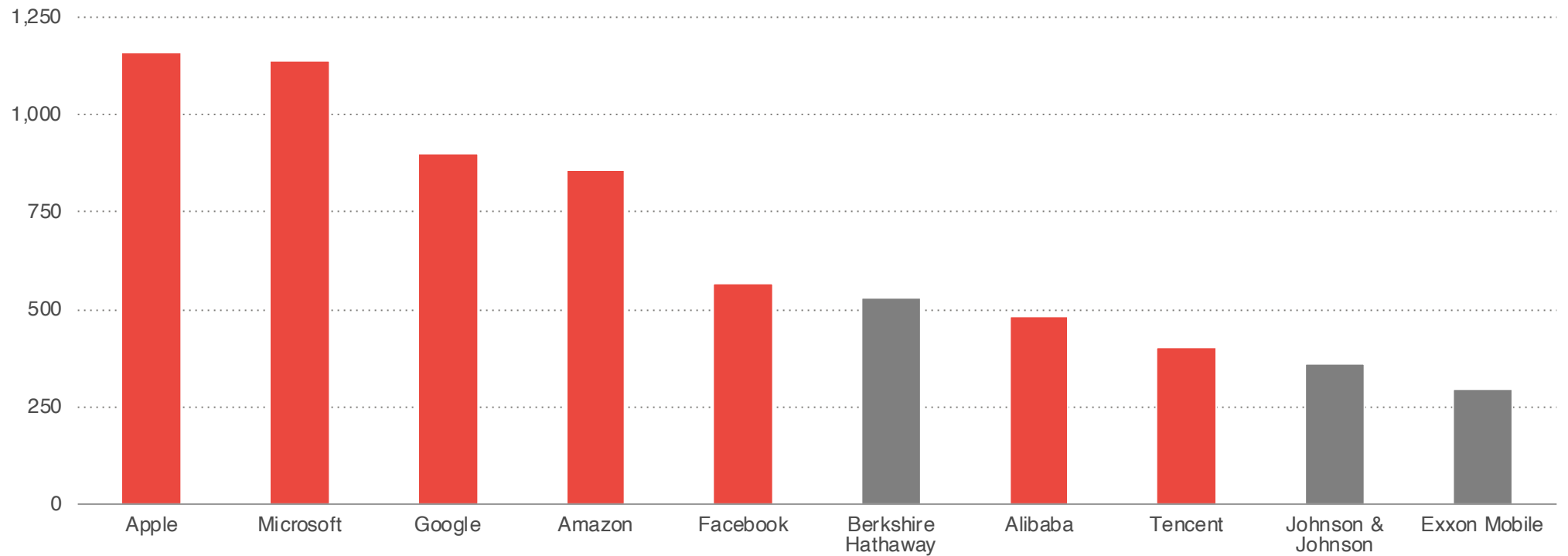
There are 5.5bn adults on earth, 5bn have a phone and 4bn have a smartphone



Which also meant creating huge, scary companies

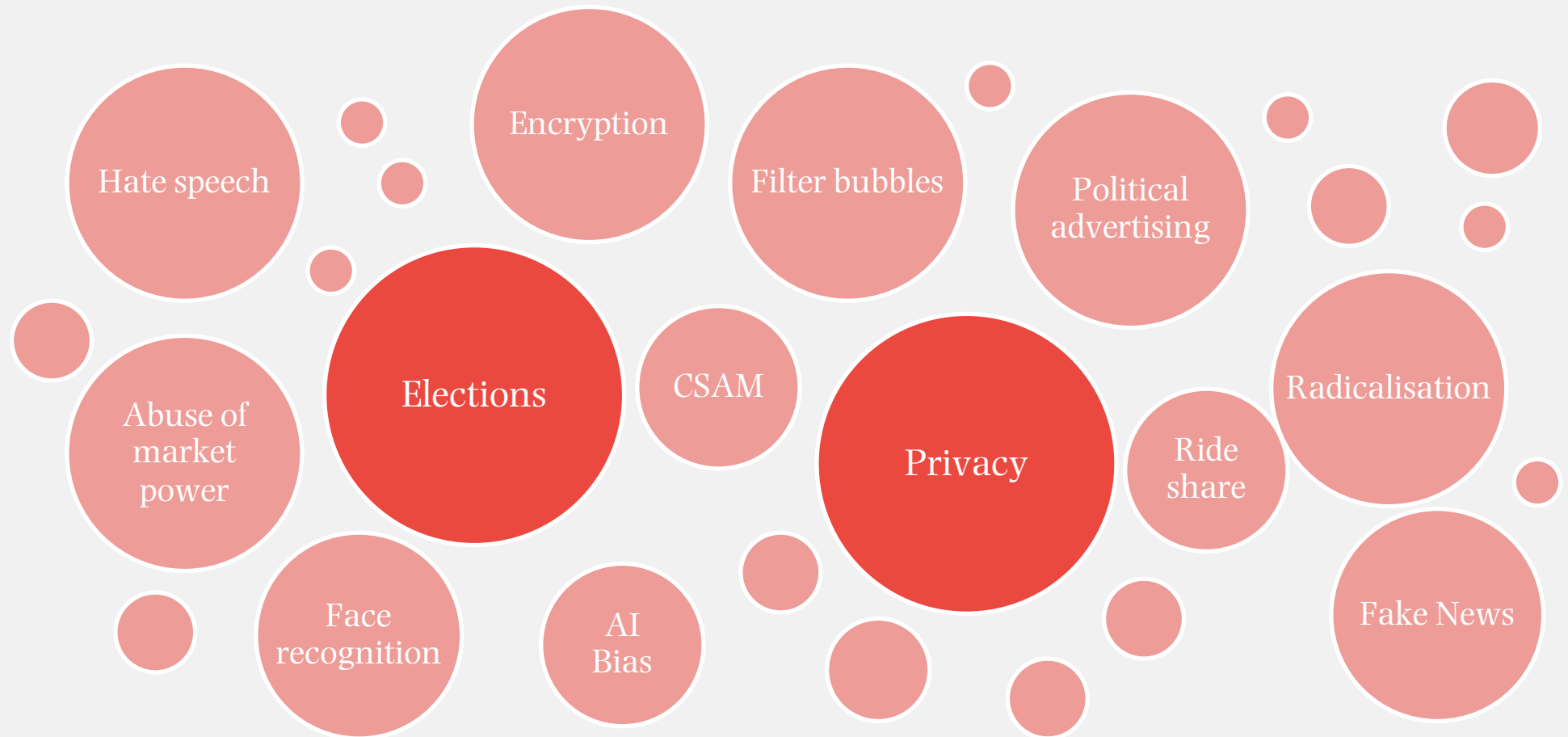
7 of the 10 largest global companies by market cap are tech

Ten largest global companies by market cap, December 2019 (\$bn)



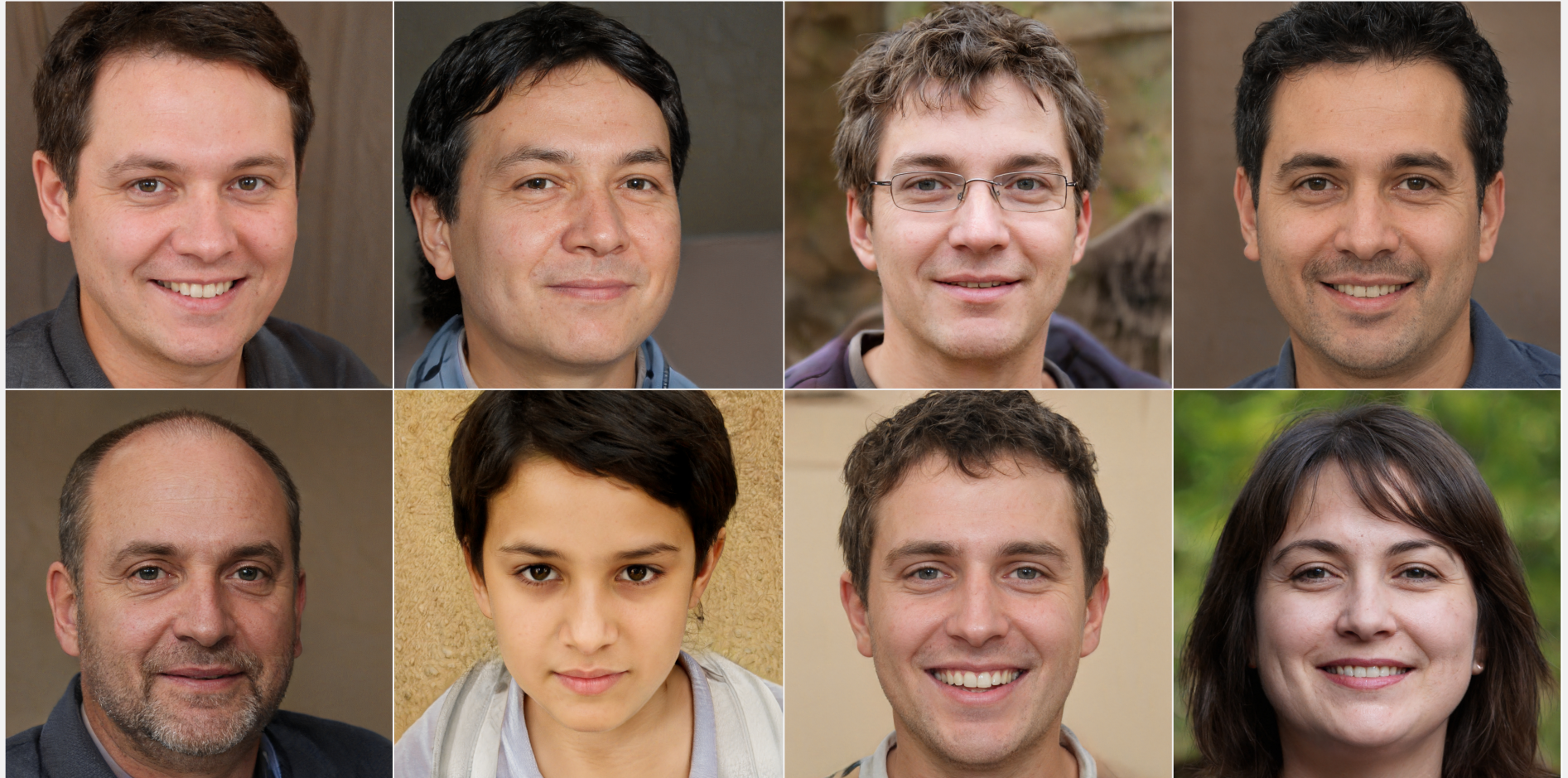
Now we have issues. So many issues

Every month there's something else to worry about



And this won't get simpler

None of these people exist: these faces are algorithmically generated by a machine learning system



Naturally, there must be a simple answer

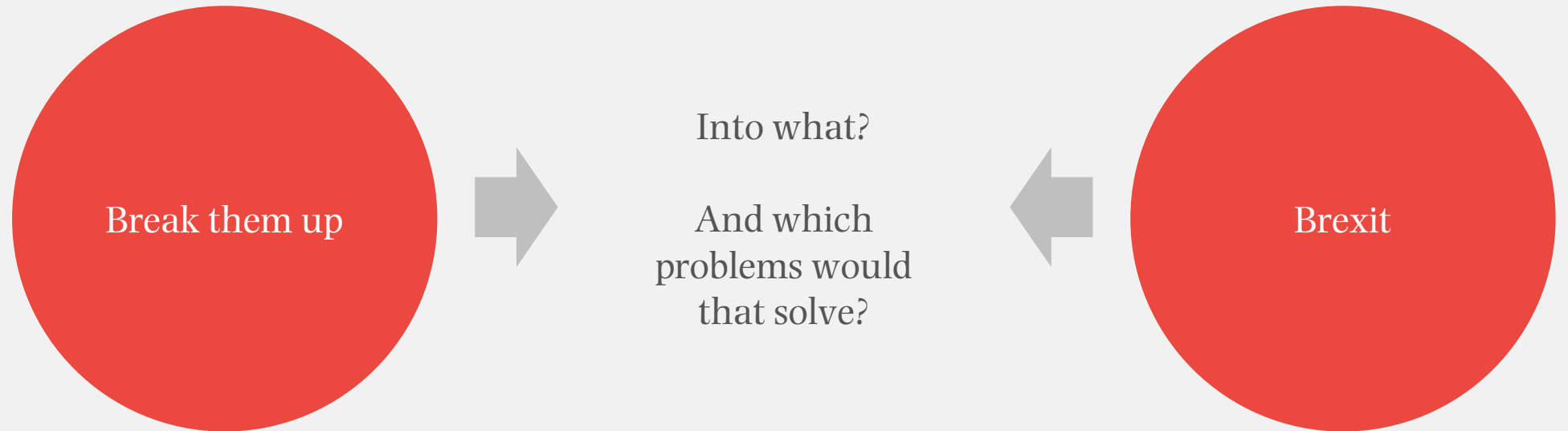
Every complex question has a simple answer



Break them up

‘Break them up’ – the Brexit of tech

Every complex question has a simple answer



Also included: a classic moral panic

Coverage of real issues is accompanied by a steady flow of stories that don't stand up to scrutiny

'Google makes \$4.7bn
from Google News!'



Extrapolated from a
2008 guess of '\$100m?'

'The NHS gave Amazon
our health data!'



Alexa can read bits of the
public website to you

'Amazon has private label!'

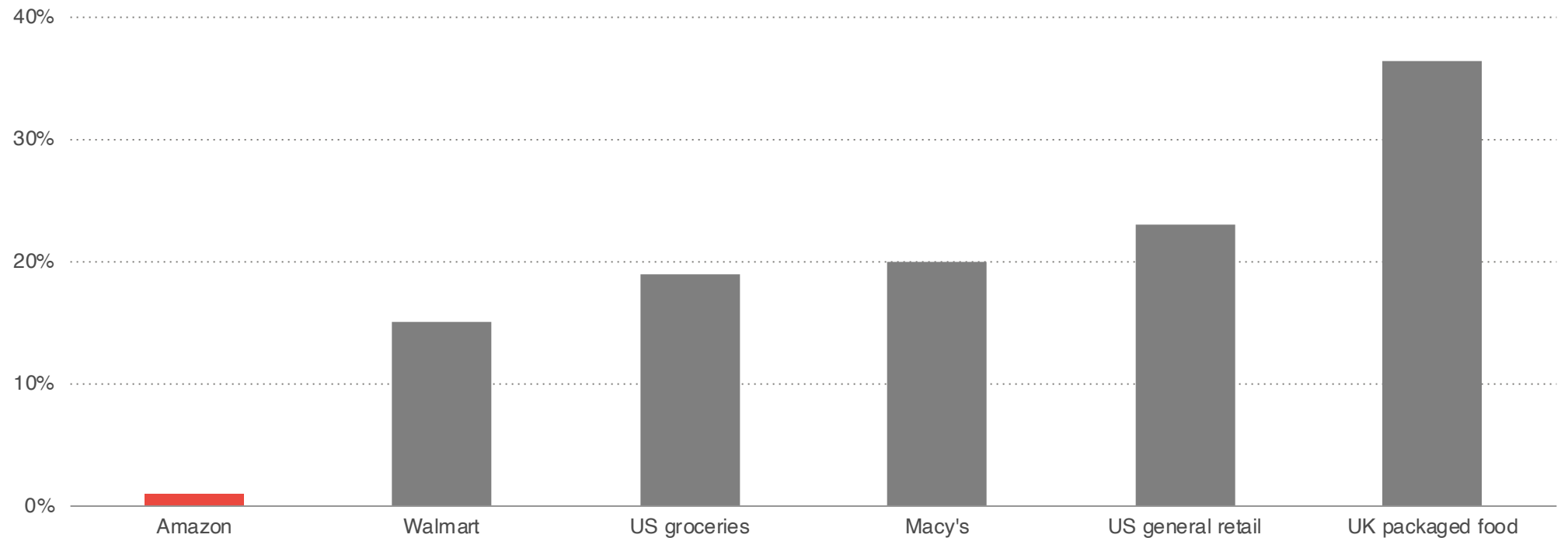


Like all retailers for a
century

Moral panic: Amazon does private label

'Well done – you just discovered retail'

Private Label as % revenue, 2018

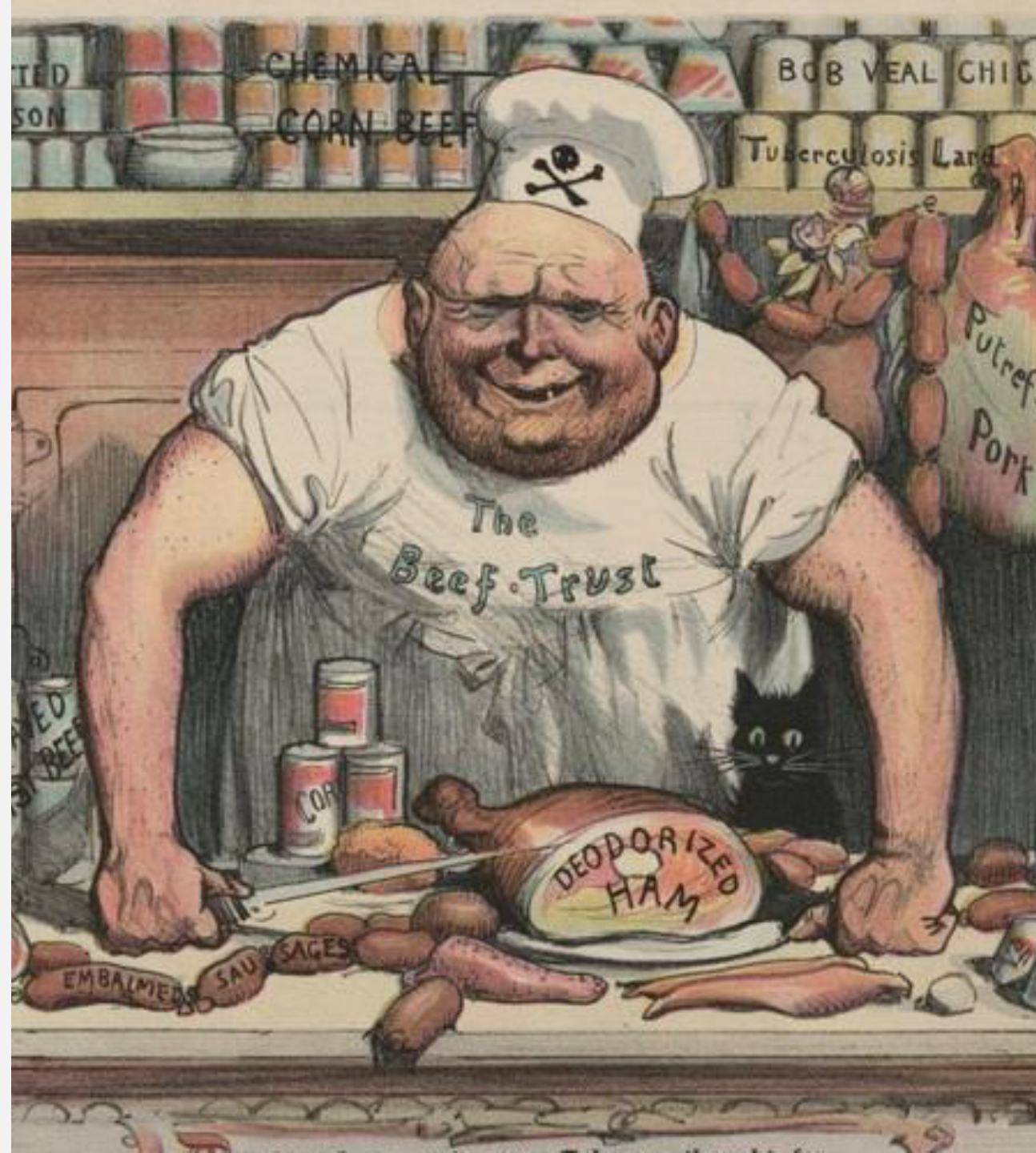


But panics have causes, and consequences

“Industrial food is a good thing, but what’s in the sausages?” - *The Jungle*, 1906

Maybe we should break up ‘the beef trust’...

But we also need an FDA, ingredient lists, veterinary inspections, hygiene rules...



So, which problem are you trying to fix?

Different types of problem have fundamentally different solutions

Tech companies
being bad to
other companies

Search, app stores,
ad pricing

Tech companies
being bad to us

Privacy, security
(but not pricing)

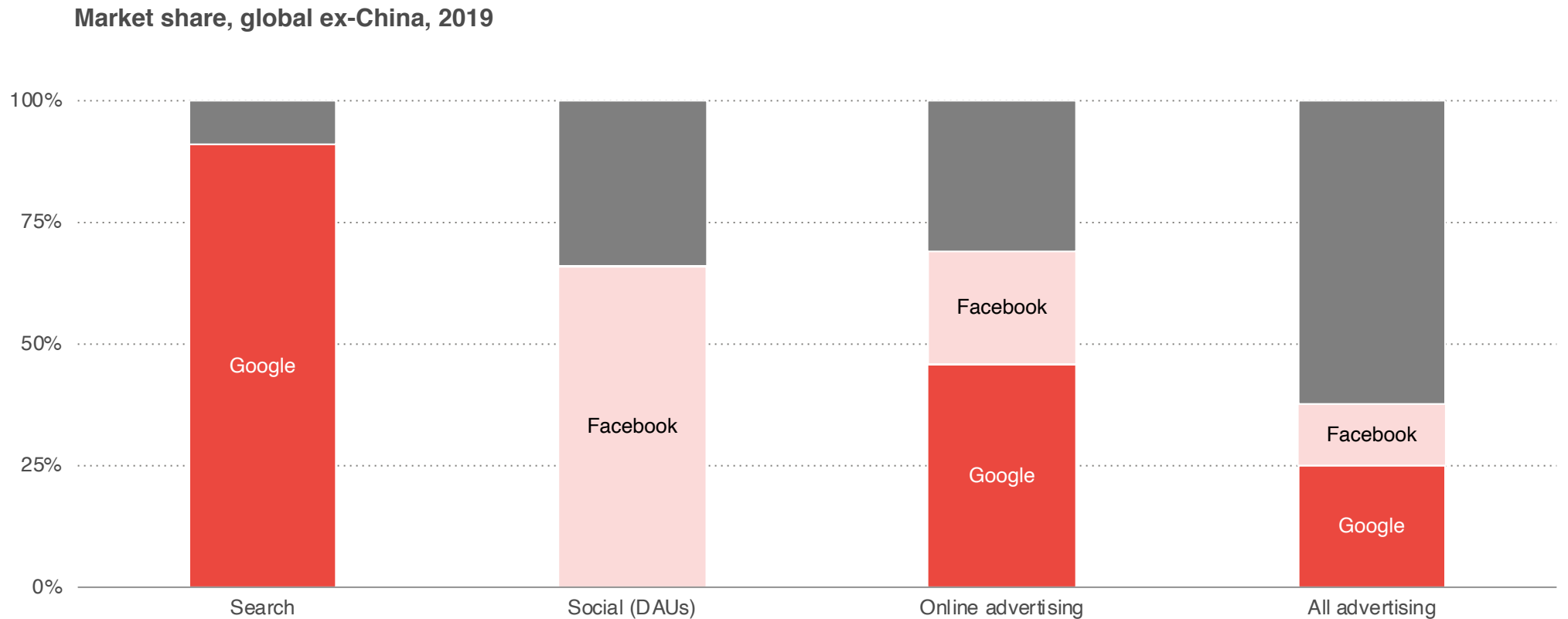
Bad people
using tech

Abuse, fake news,
elections...

Anti-trust:
Mostly beside the point

Google and Facebook clearly have market dominance

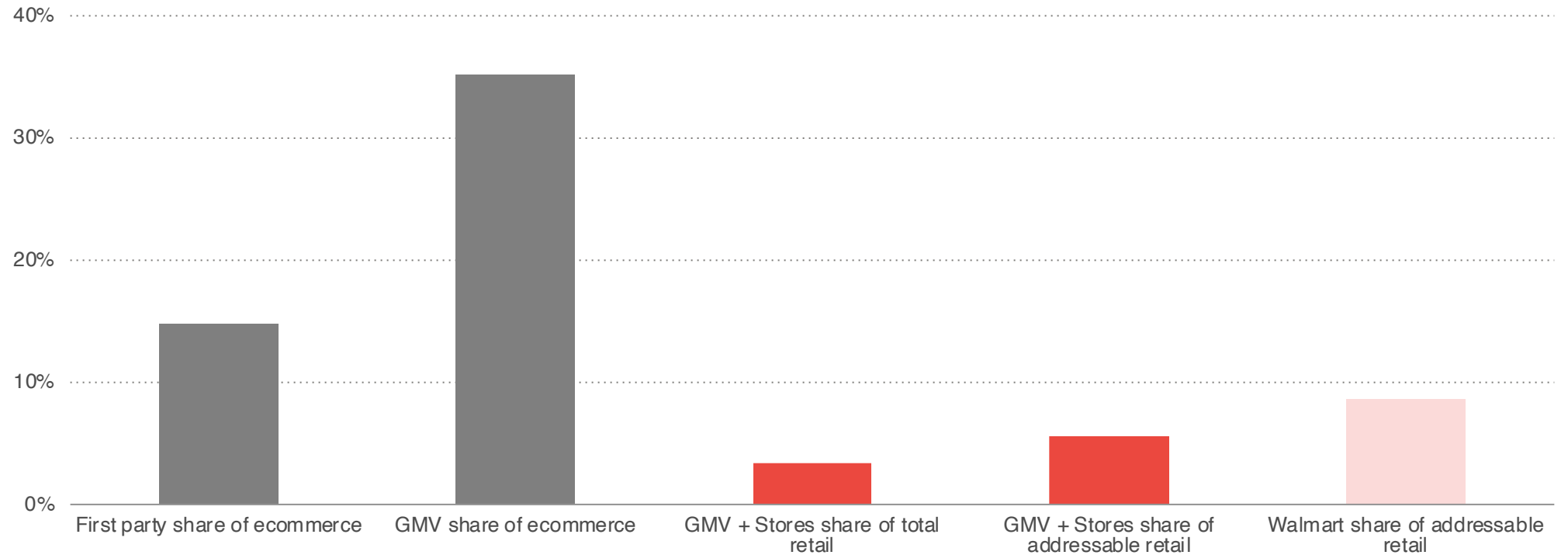
Google and Facebook clearly have dominance in major markets: the question is what (if anything) to do



What's Amazon's market share: 35% or 5%?

Amazon has a third of ecommerce, but is that really the competition?

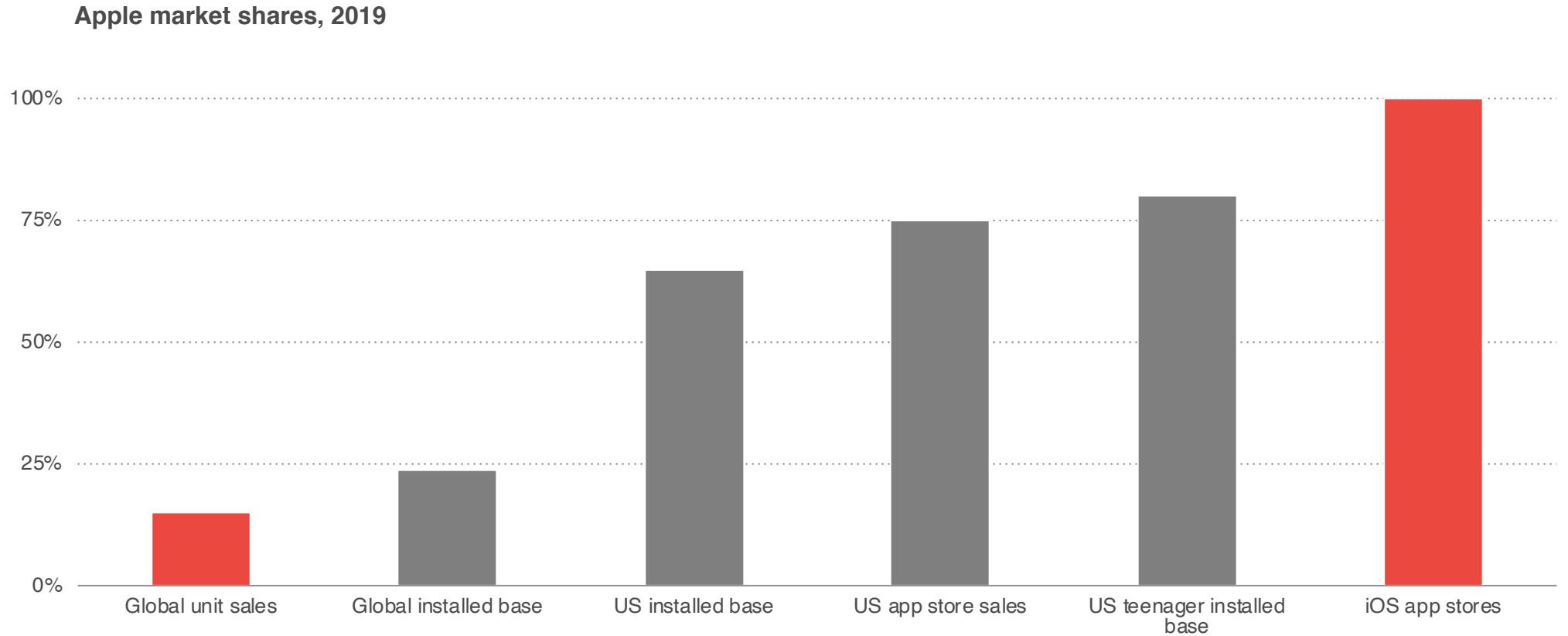
Amazon US market shares, 2018



Source: @BenedictEvans, Amazon, Walmart, US Census
Addressable retail = ex. cars, car parts, gasoline, bars & restaurants

What's Apple share? Depends which regulator you ask

Apple is the minority player globally, but has 100% of the market for 'iOS app stores'



Market definition is everything

Regulators make their own decision on what the 'relevant market' is for anti-trust purposes

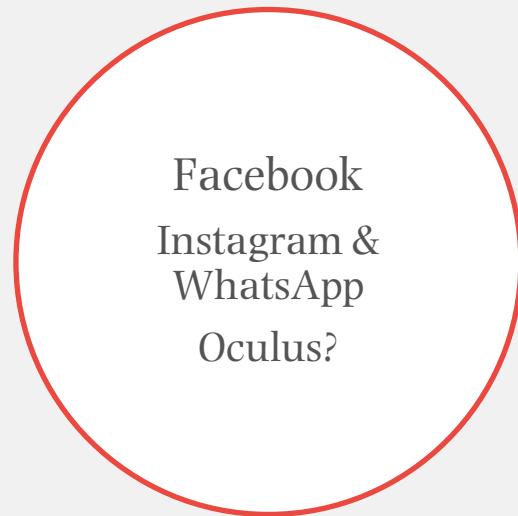
IBM had 100% of the IBM mainframe market

Apple has 100% of the iPhone app store market



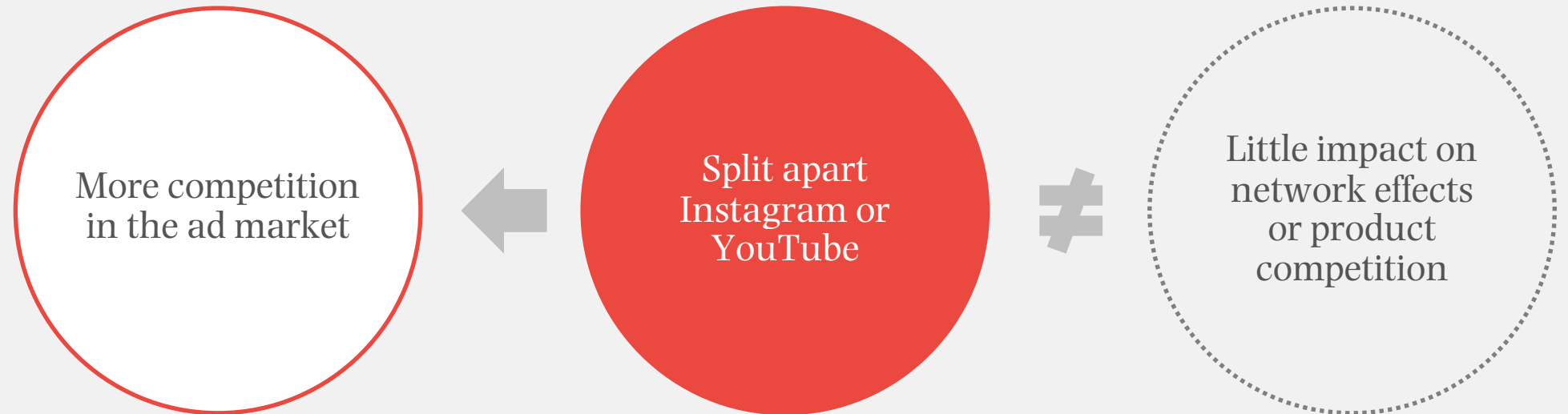
What could feasibly be split apart?

Coherent case that YouTube, Instagram & WhatsApp, and AWS are viable stand-alone businesses



But what kinds of competition would breakups affect?

Breakups would affect ad competition, but not product competition – unlikely to create a flood of YouTube alternatives




And...

Do people worry about 'big tech' because Google & Facebook might be overcharging WPP, and Apple is mean to Spotify?

Or are the real concerns elsewhere?

Which problem are you trying to fix?

Few of the issues that make people worry about 'big tech' relate to anti-trust



Tech companies
being bad to
other companies

Solved by anti-trust:
either breakups or
conduct regulation



Tech companies
being bad to us

Limited anti-trust
relevance



Bad people
using tech

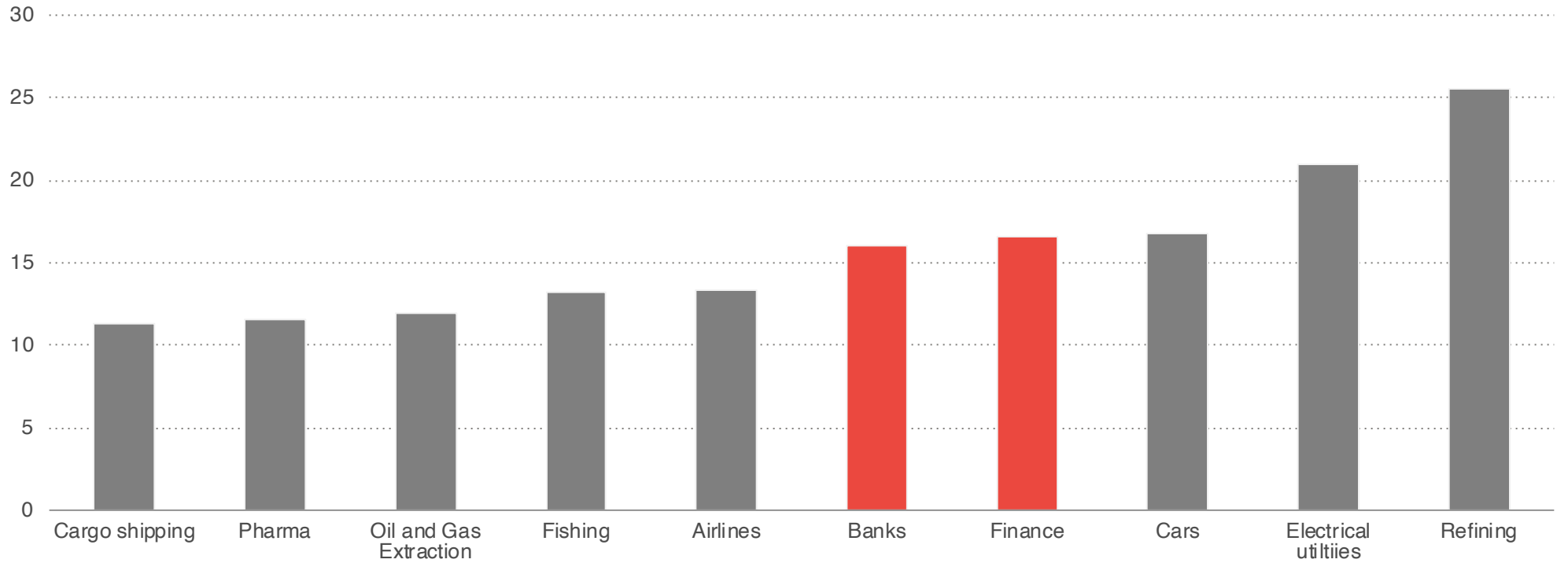
No anti-trust relevance

Regulation:
Boring, complex,
somewhat effective

'Tech' becomes a regulated industry

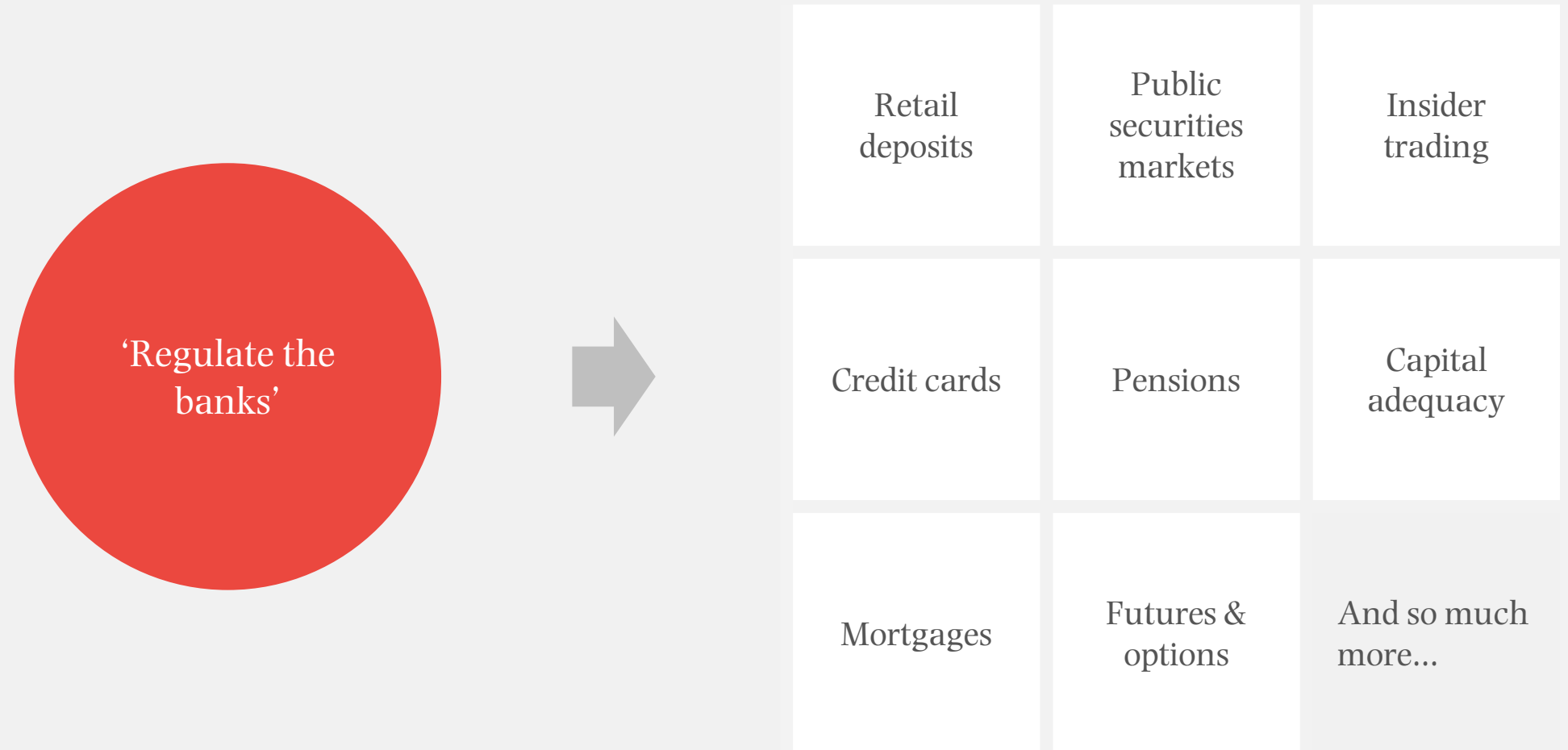
Lots of industries are subject to specific, technical regulation, and tech will become one of them

US Federal industry-specific regulation index, 2014



We don't actually regulate 'banks'

We won't regulate 'tech' – we'll have lots of different regulation for different issues and companies



Is this a 'tech' problem?

Is this a new problem, or an old problem expressed in a new way?



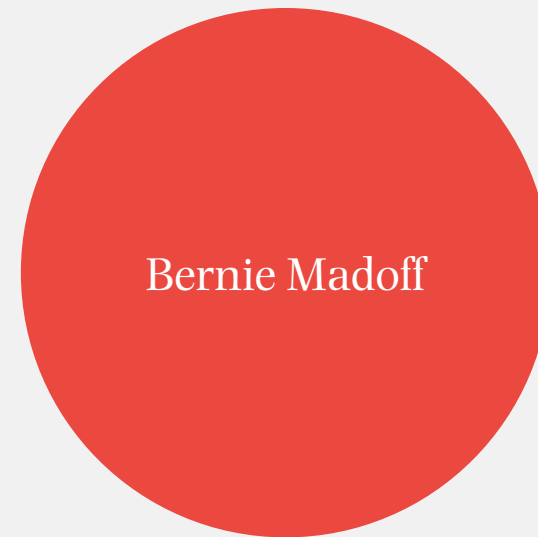
Is that a 'tech' company?

Or is it a bank, but with a website?

Where is the liability?

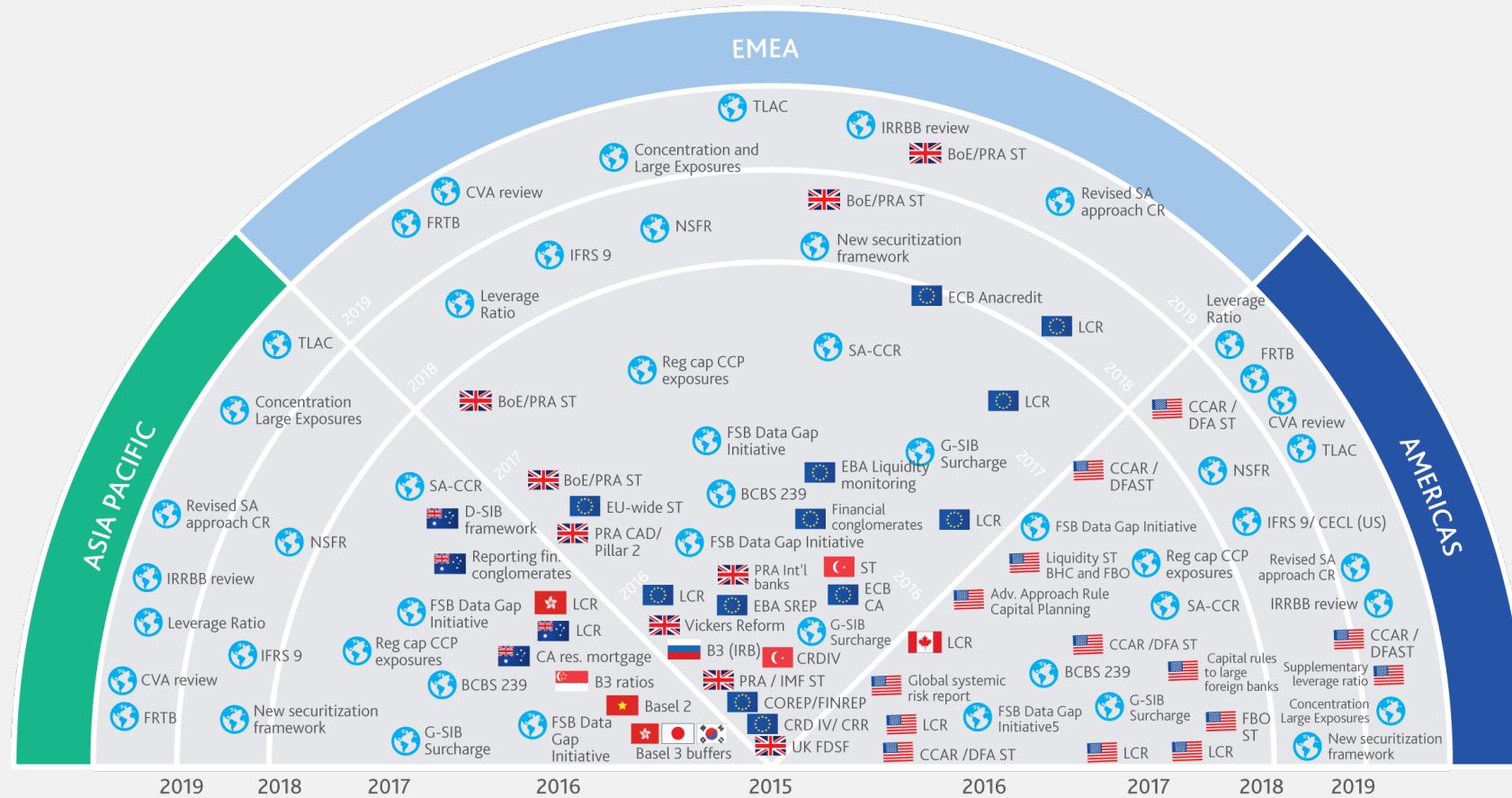
In a massively disaggregated industry, there are many parties that might touch a problem at some point

Landlord
IRS
Market counterparties
Auditor
Microsoft Excel
SEC
Phone company
Suspicious peers



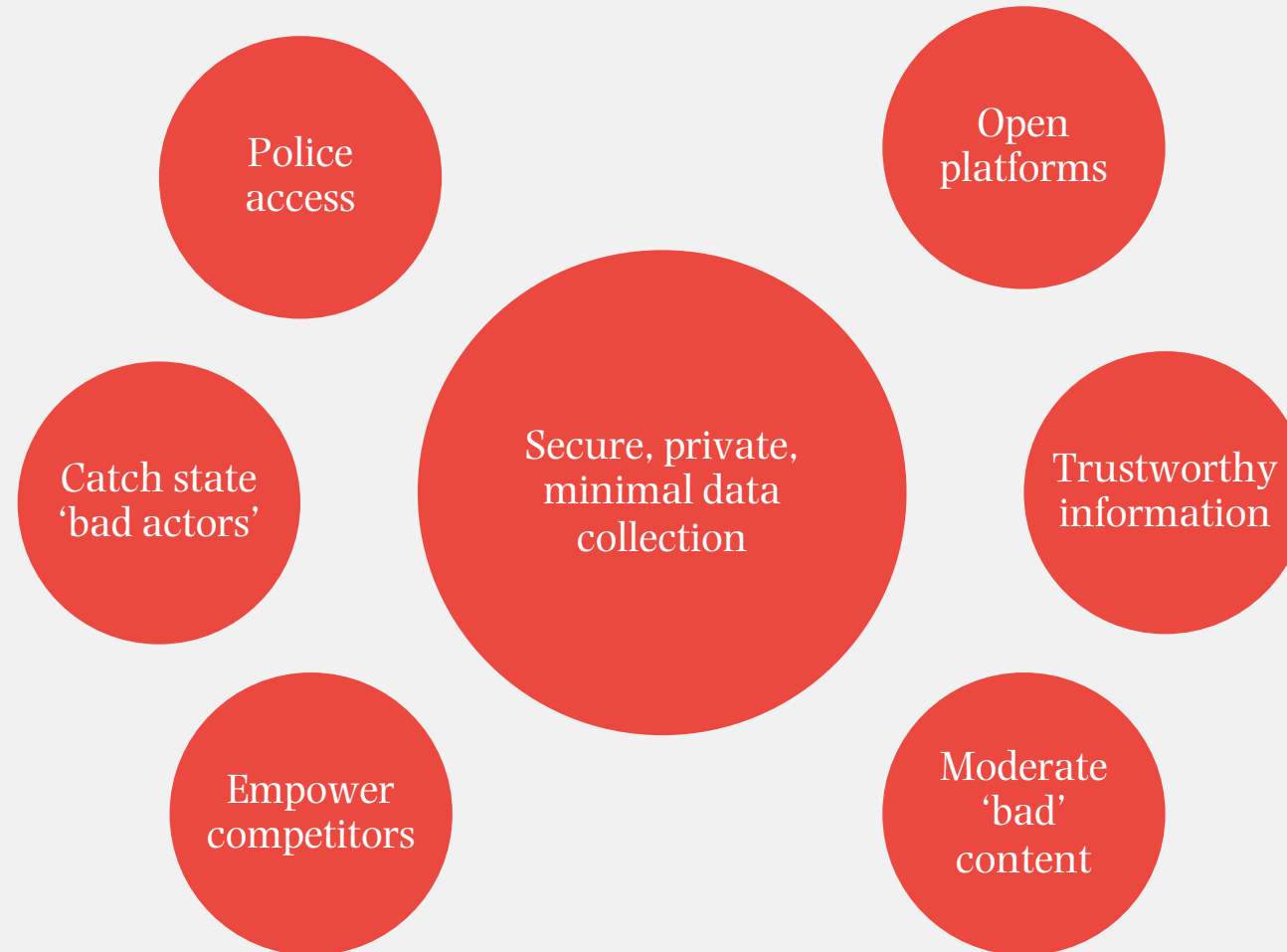
Presume complexity, across domain and country

The reality of regulation is complex and multimodal



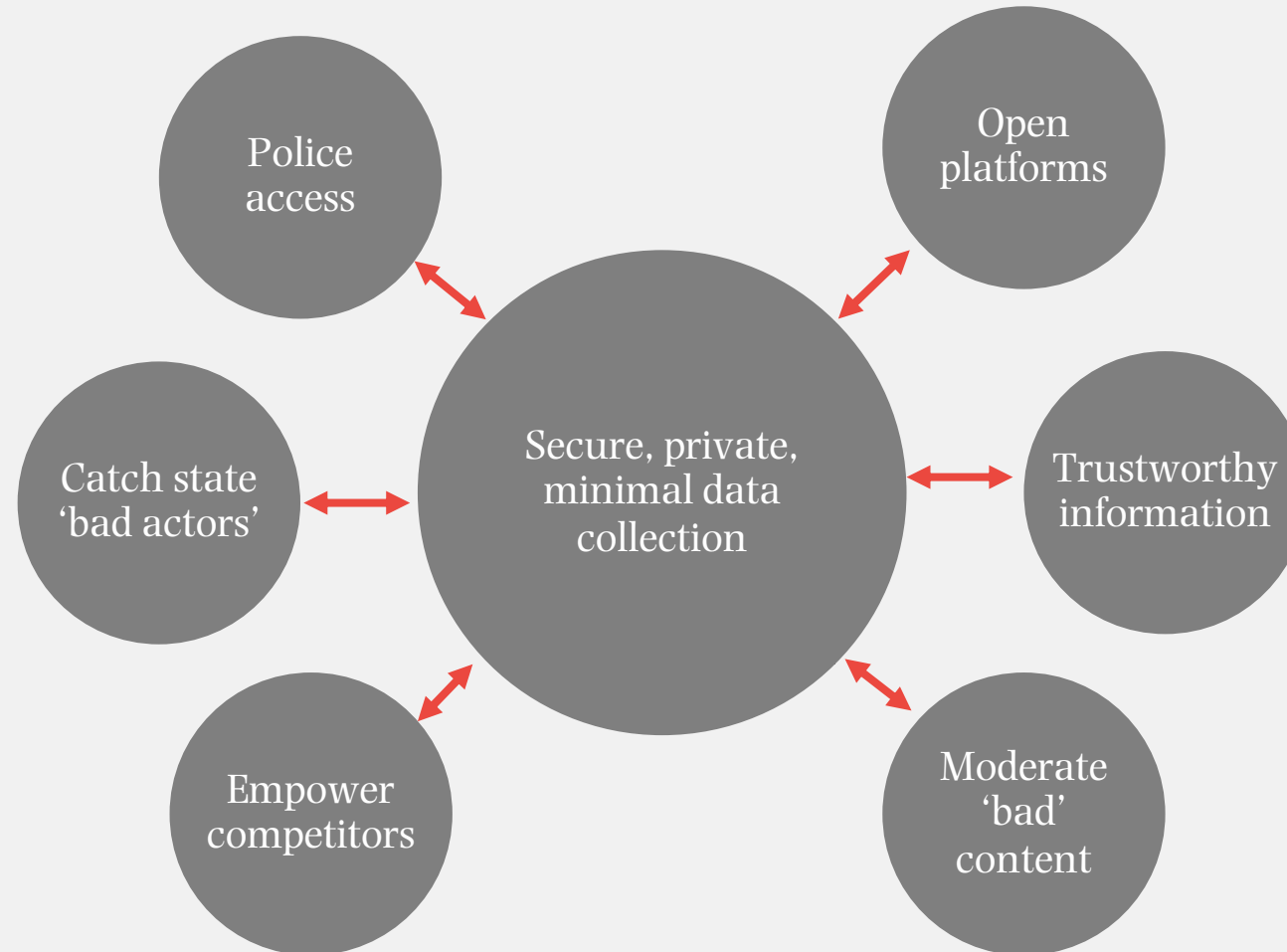
Do we know what we
want?

Where to start? We have a wish list...



All of these are trade-offs

Do we want platforms to know and control what happens on their networks, or not? Or both?



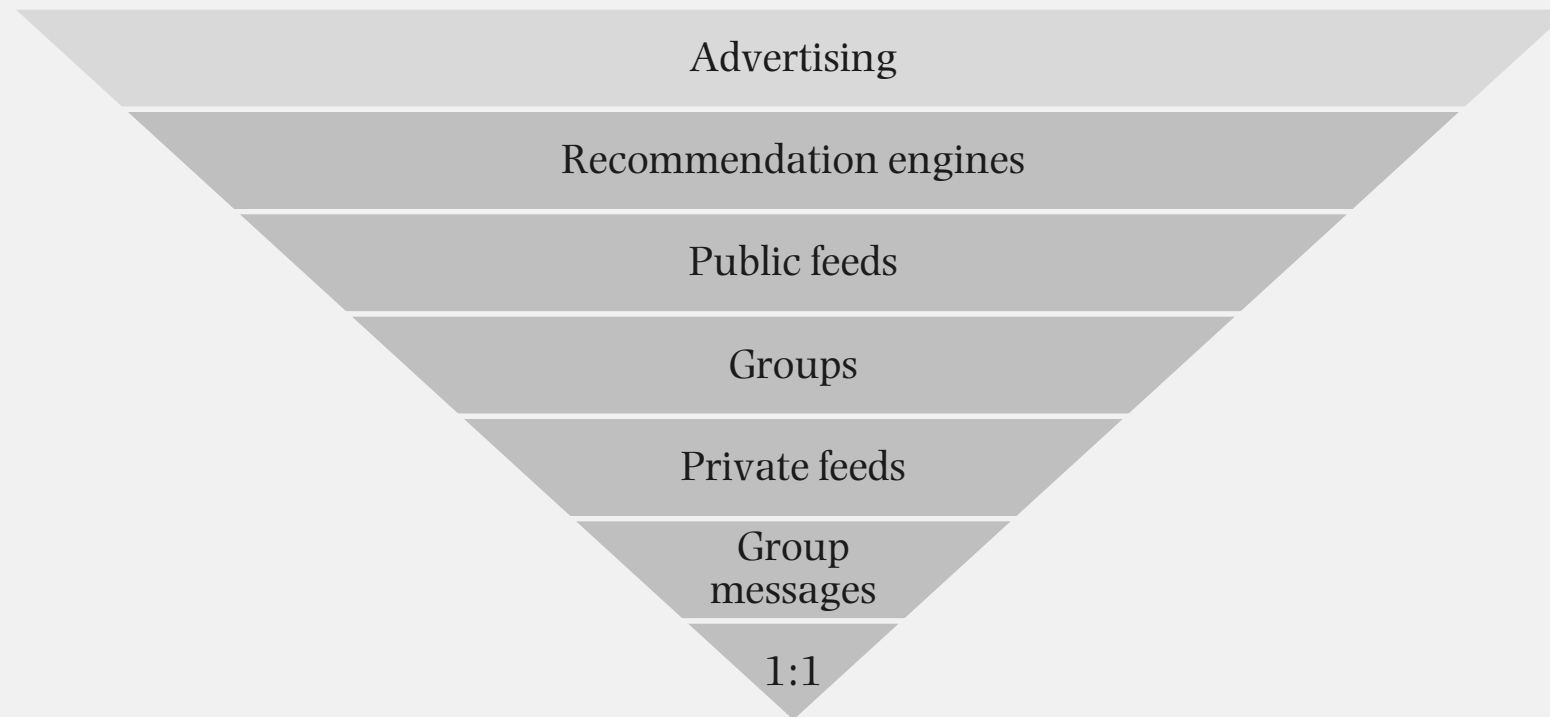
Case study: content moderation

Easy to say, but do we know what we want?

There's bad stuff on your platform – take it down

What does 'take down' mean?

'Social networks' are a mix of many publishing forms with different speech and distribution models

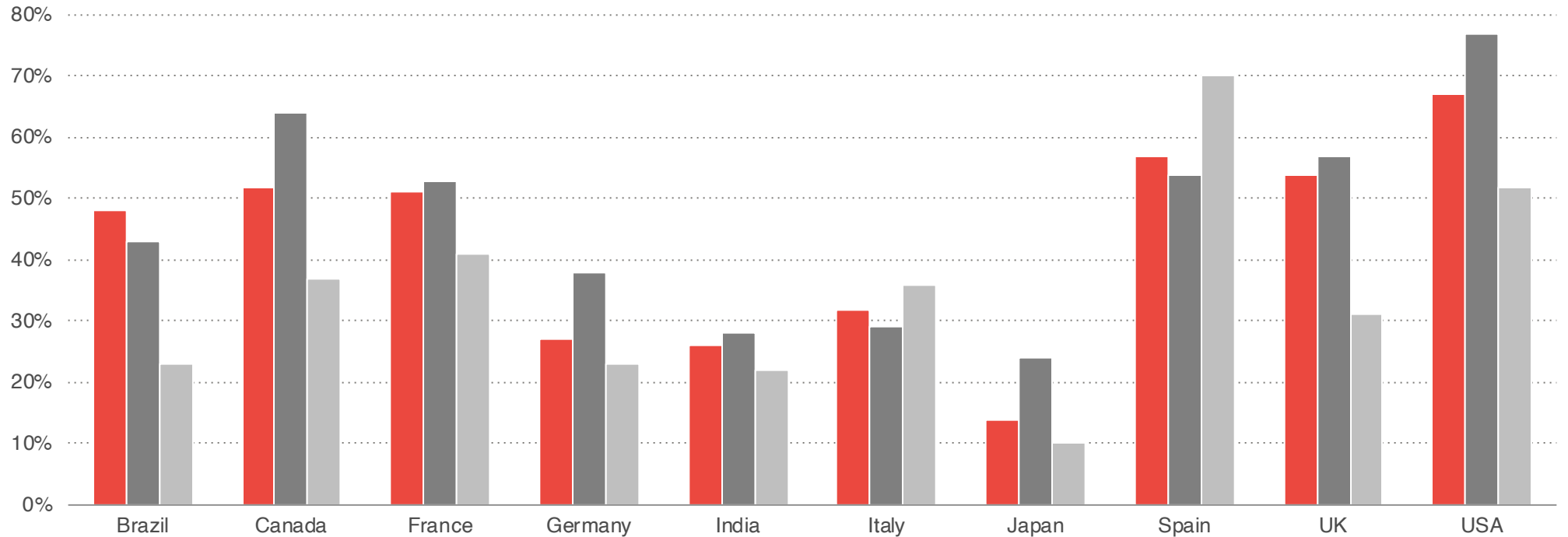


What does 'bad' mean?

It's not just 'China' - liberal democracies have widely varying attitudes to free speech

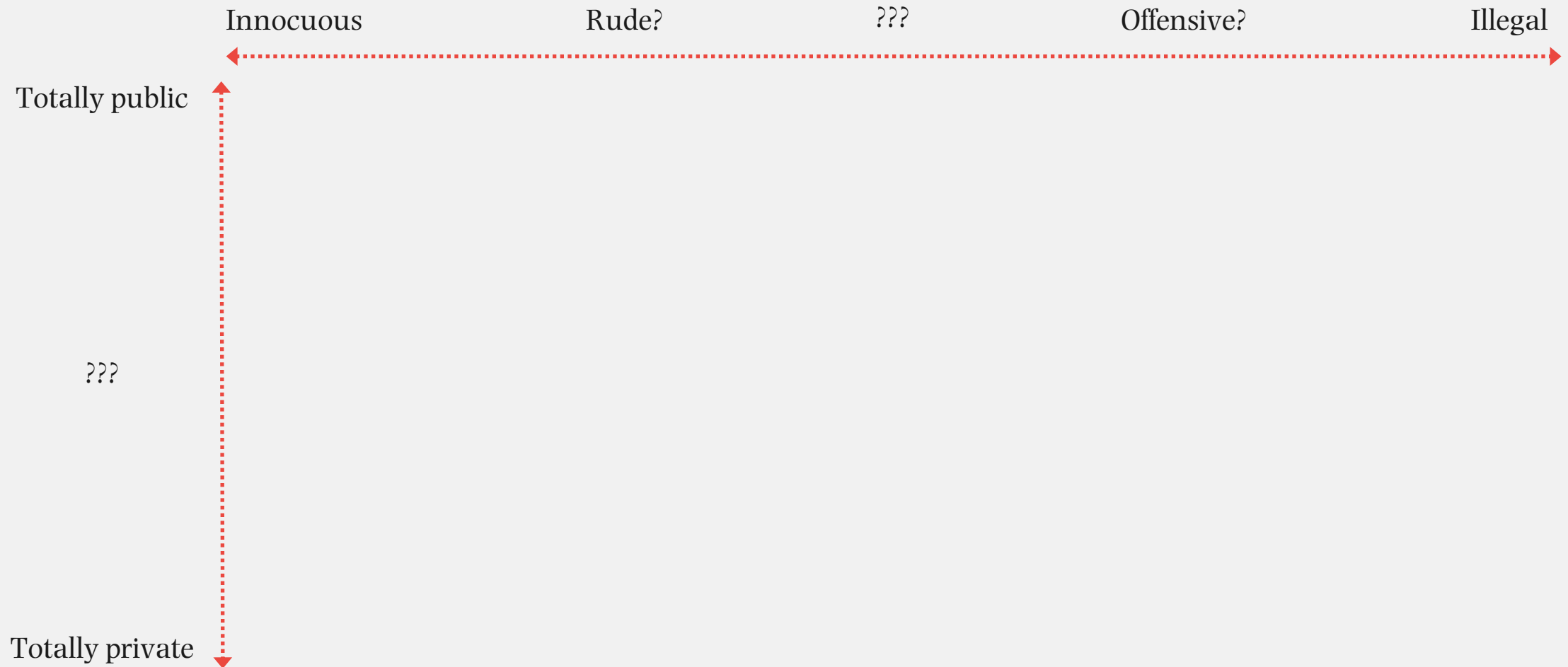
Percentage believing that people should be free to:

- Offend minorities
- Offend religion
- Be sexually explicit



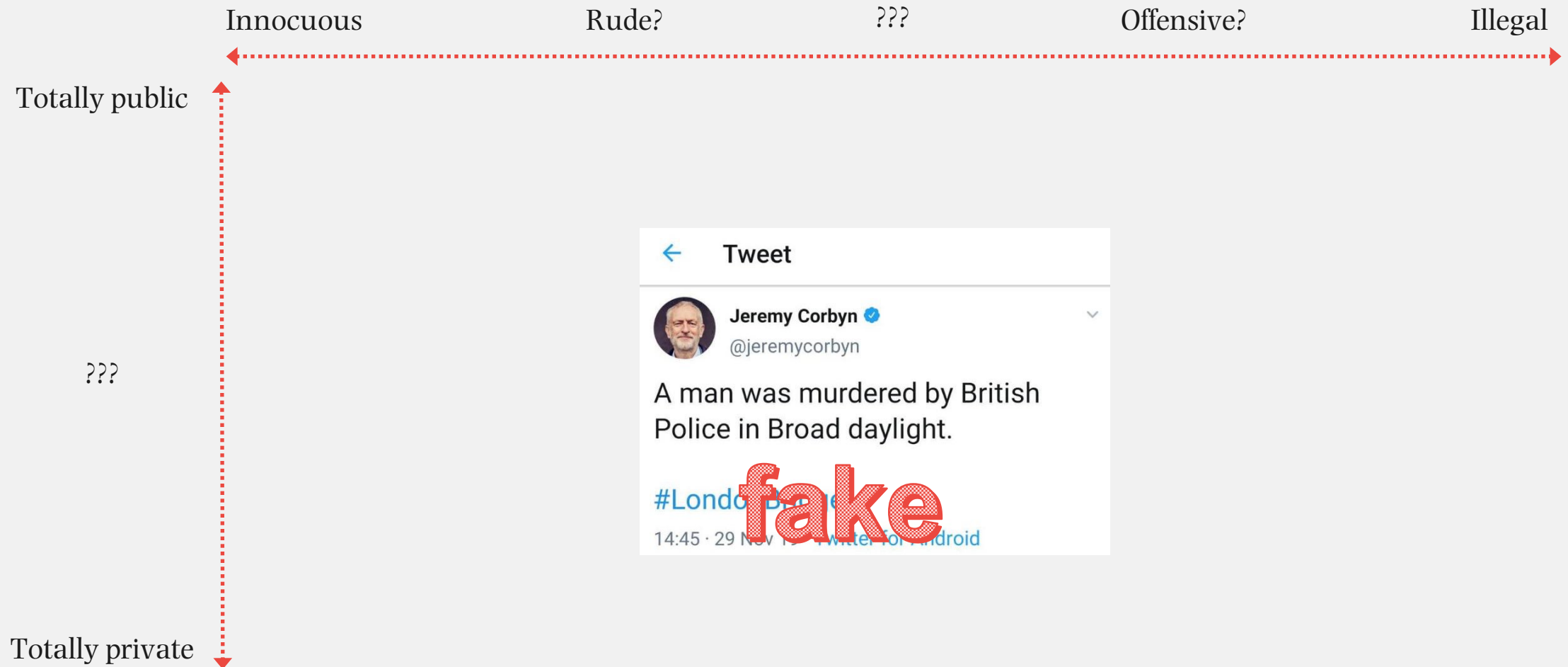
Do we know what we want?

We lack consensus on what's bad enough to 'take down', and on what 'take down' even means



Do we know what we want?

We lack consensus on what's bad enough to 'take down', and on what 'take down' even means

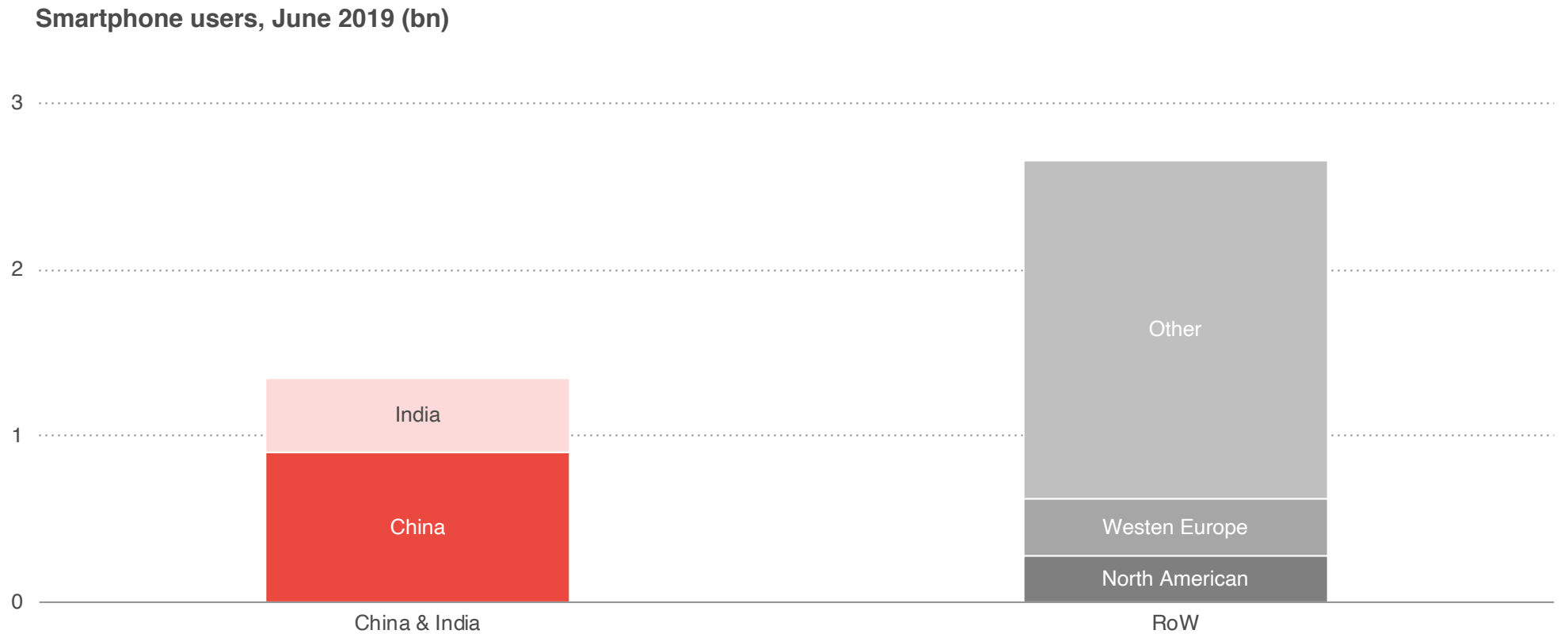


China, digital sovereignty and digital extra- territoriality

“War is God's way of teaching
Americans geography.”

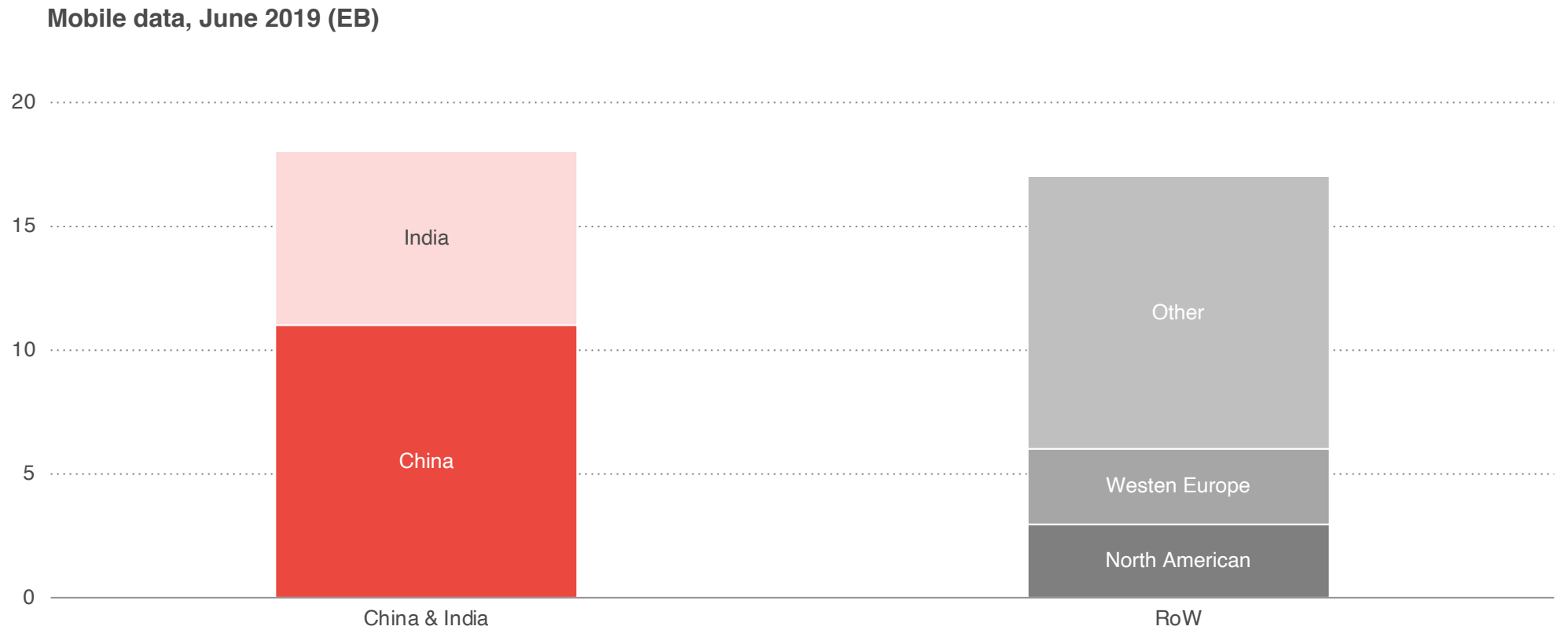
The end of the American internet

China and India have 5x more smartphones than the USA



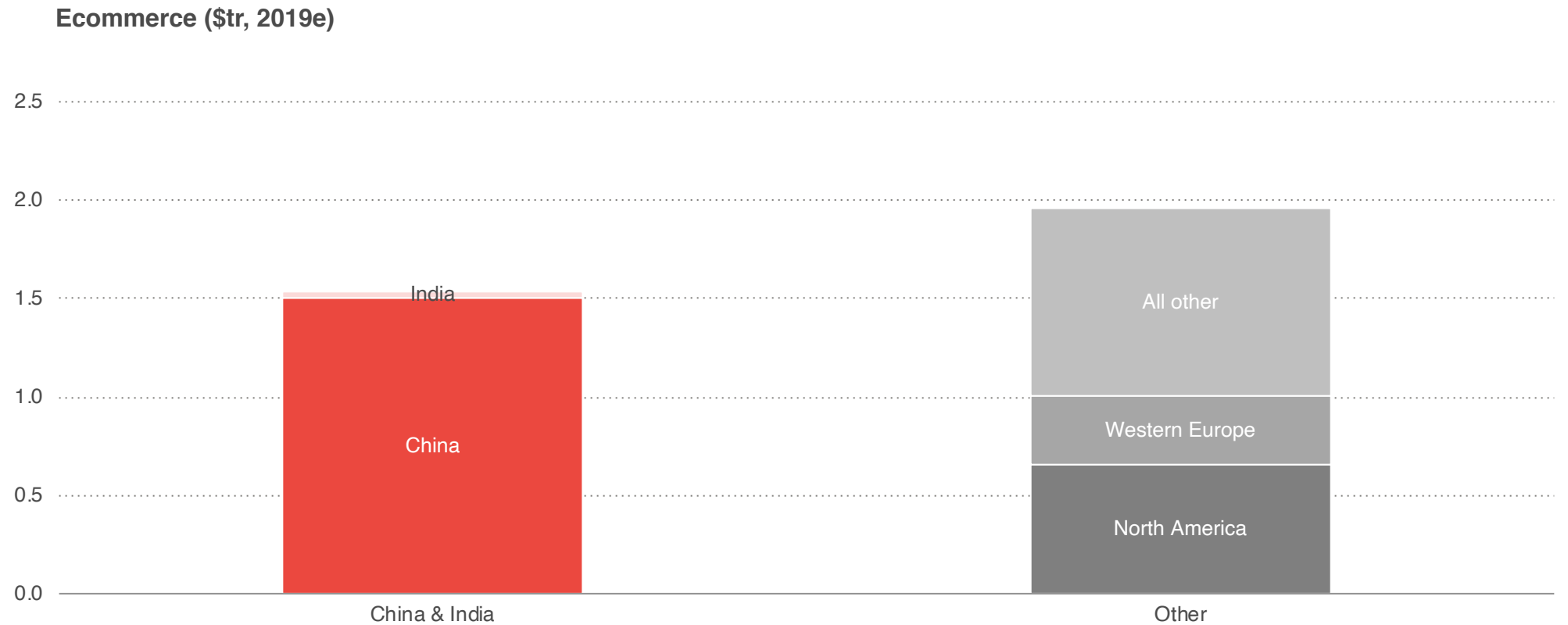
The end of the American internet

China and India use more mobile data than the rest of the world combined



The end of the American internet

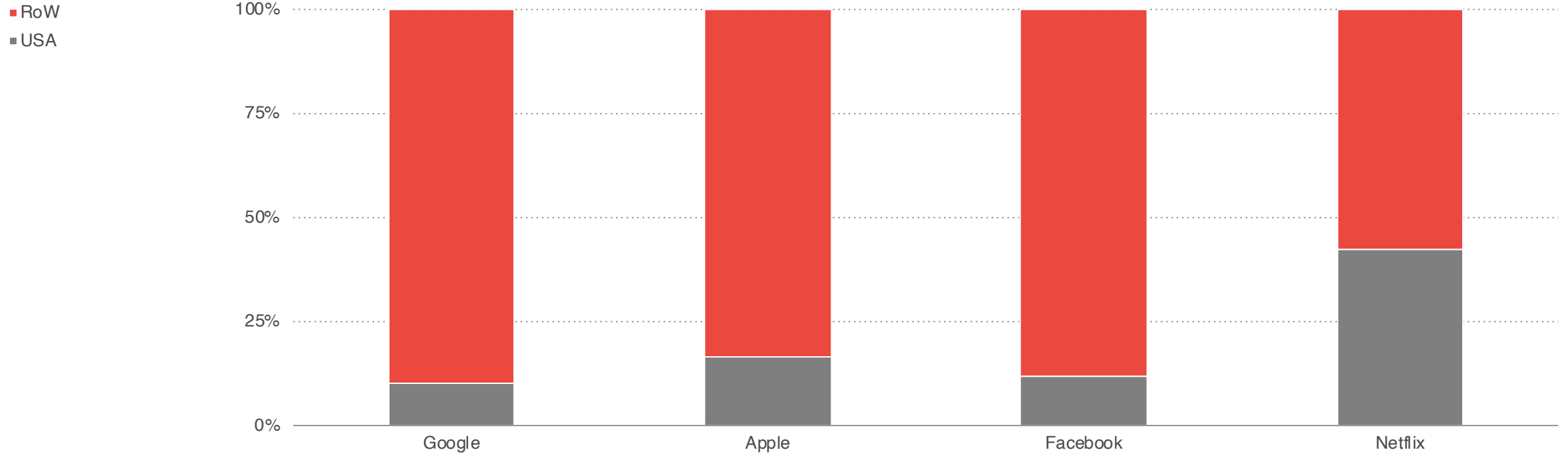
40% of global ecommerce value is in China



American companies, global reach

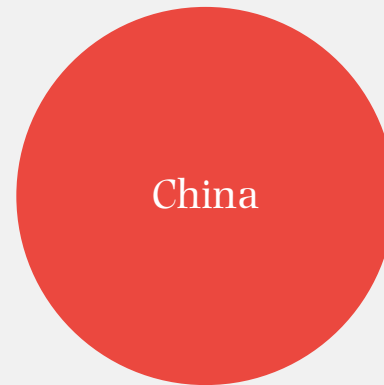
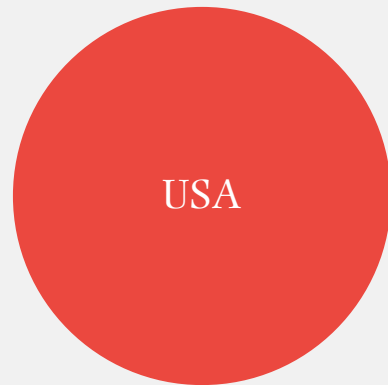
“But the US constitution says!” is no longer an adequate answer

Global user base, Q3 2019



Regulatory competition?

At least three jurisdictions competing, with different politics but also different regulatory cultures



Digital extraterritoriality

How do you apply domestic laws to a global medium, and to citizens who may be abroad?

Austria

EU court holds that
an Austrian libel
take-down order
applies globally

Singapore

State's right-of-
reply must be
applied to posts
seen in Australia

GDPR & CCPA

Laws apply to
EU/CA citizens
wherever they are

Global reach means a lowest common denominator

Extra-territorial regulation means companies start complying with the harshest rule that applies, wherever it is

Los Angeles Times

Unfortunately, our website is currently unavailable in most European countries. We are engaged on the issue and committed to looking at options that support our full range of digital offerings to the EU market. We continue to identify technical compliance solutions that will provide all readers with our award-winning journalism.

Chicago Tribune

Unfortunately, our website is currently unavailable in most European countries. We are engaged on the issue and committed to looking at options that support our full range of digital offerings to the EU market. We continue to identify technical compliance solutions that will provide all readers with our award-winning journalism.

Tiktok: not just your standards?

When the community standards being enforced may not be your community's standards

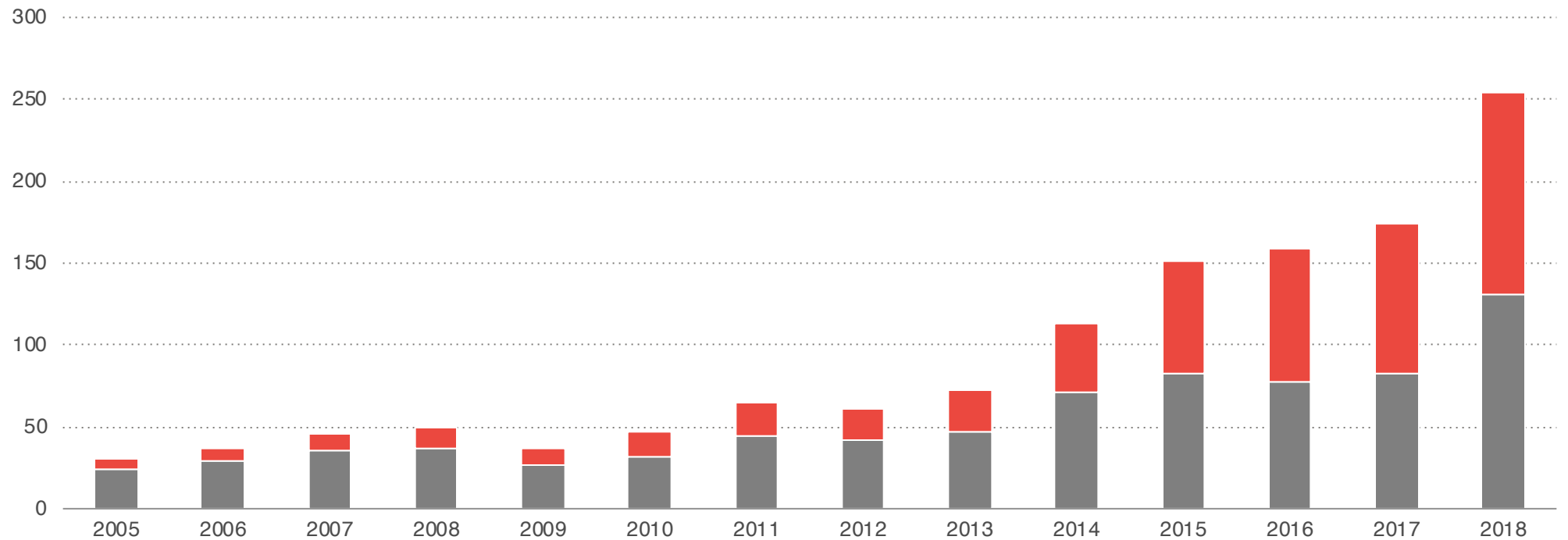


There will be many more TikToks

The US can no longer assume that every hot new thing will be made in the US

Venture capital investments (\$bn)

■ RoW
■ US



China and the NBA...



And every other brand

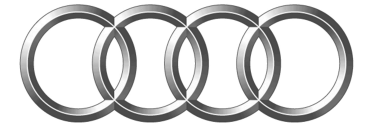
'Don't forget Taiwan is part of China'



VALENTINO



VERSACE



Calvin Klein

fresh®

GAP

From sovereignty (or protectionism) to extraterritoriality

Again, how do local rules apply to global systems?



The future – compliance and moderation as a service?

GCP/AWS/Azure all now rolling this out – will Facebook join them?

The image shows three overlapping web pages. The top-left page is the Microsoft Azure Content Moderator landing page, featuring a 'Sign Up' button and a 'Machine - Assisted Moderation' section. The middle page is the Google Cloud AI & Machine Learning Products page, specifically the 'Detect explicit content (Safe Search)' guide, which lists 'Safe Search detection requests' and includes a note about new features. The right page is an AWS blog post titled 'Enhanced Content Moderation is now available for Amazon Rekognition Video', dated February 13, 2019, describing the service's capabilities and benefits.

Microsoft Azure Content Moderator

Sign up for the Content Moderator service to help you moderate content with human review, automated moderation, and machine learning. Configure your moderation rules, and configure your colleagues, and configure your moderation rules.

Sign Up

Machine - Assisted Moderation

Google Cloud AI & Machine Learning Products

AI & Machine Learning Products > Cloud Vision API > Documentation > Guides

Detect explicit content (Safe Search)

Contents

- Safe Search detection requests
 - Set up your GCP project and authentication
 - Explicit content detection on a local image
 - Explicit content detection on a remote image

★ **Note:** We've recently added new features or fields to Safe Search Detection. See the [release notes](#) for details.

Safe Search Detection detects explicit content such as adult content or violent content within an image. This feature uses five categories (`adult`, `spoof`, `medical`, `violence`, and `racy`) and returns the likelihood that each is present in a given image. See the [SafeSearchAnnotation](#) page for details on these fields.

aws

Contact Sales Support English My Account Create an AWS Account

Products Solutions Pricing Documentation Learn Partner Network AWS Marketplace Customer Support

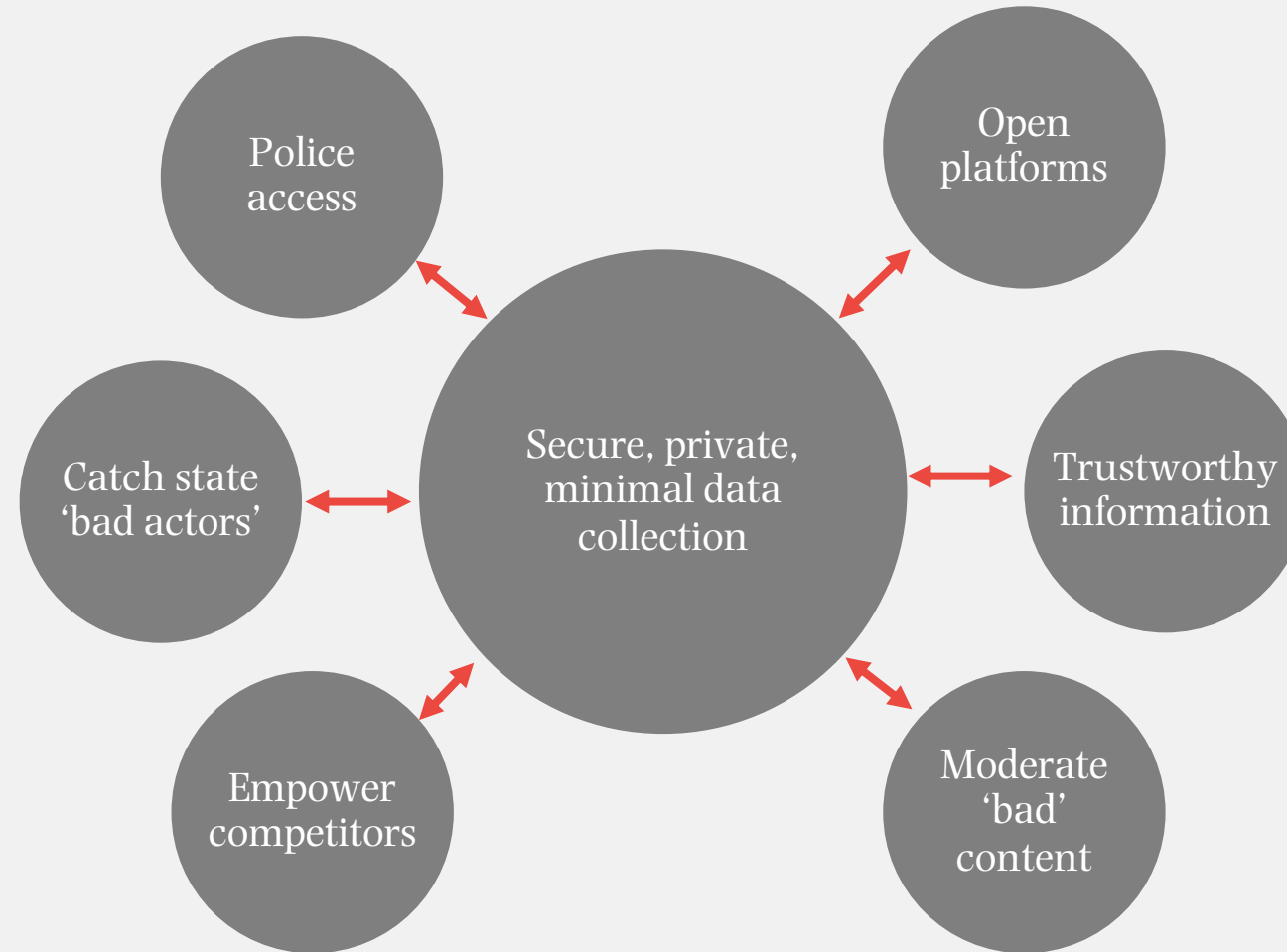
Enhanced Content Moderation is now available for Amazon Rekognition Video

Posted On: Feb 13, 2019

Amazon Rekognition Video is a deep learning-based video analysis service that can identify objects, people, text, scenes, and activities, as well as detect unsafe content. Content Moderation for Amazon Rekognition Video can identify various types of explicit and suggestive content, as well as timestamps for where such content appears during the video. Amazon Rekognition Video now comes with an enhanced moderation model that reduces false positive rates by 40% on average without any reduction in detection rates for truly unsafe content. Lower false positive rates imply lower volumes of flagged videos to be further reviewed by human moderators, leading to higher efficiency and more cost savings. Moreover, Amazon Rekognition provides a hierarchical set of moderation labels that can be used to create business rules to handle different geographic and demographic requirements. For more details on supported labels, please see [this page](#). No machine learning experience is required to get started.

But what will happen when regulators conflict?

When local regulators assert global coverage and make incompatible demands, who yields first?



And this may get even more complicated

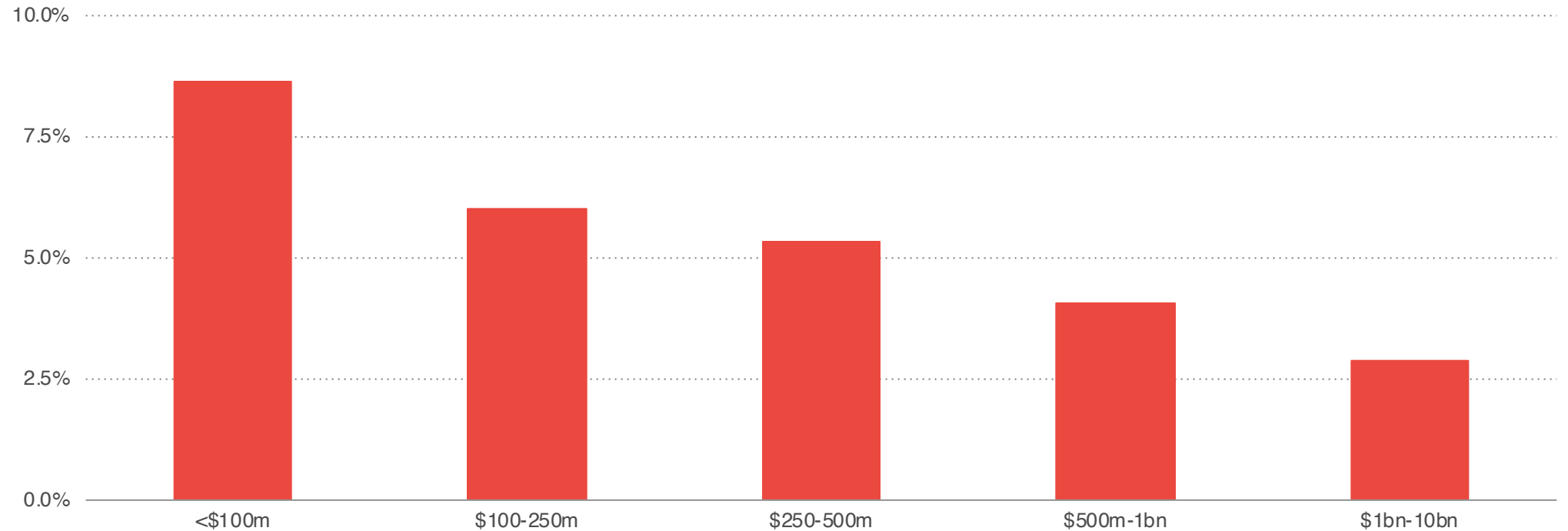
Part of the point of crypto is to remove central control – and hence sovereignty



The only certainty: regulation as a regressive tax

Much of regulation is a fixed cost that affects new entrants disproportionately

Mean compliance costs at US financial institutions by size



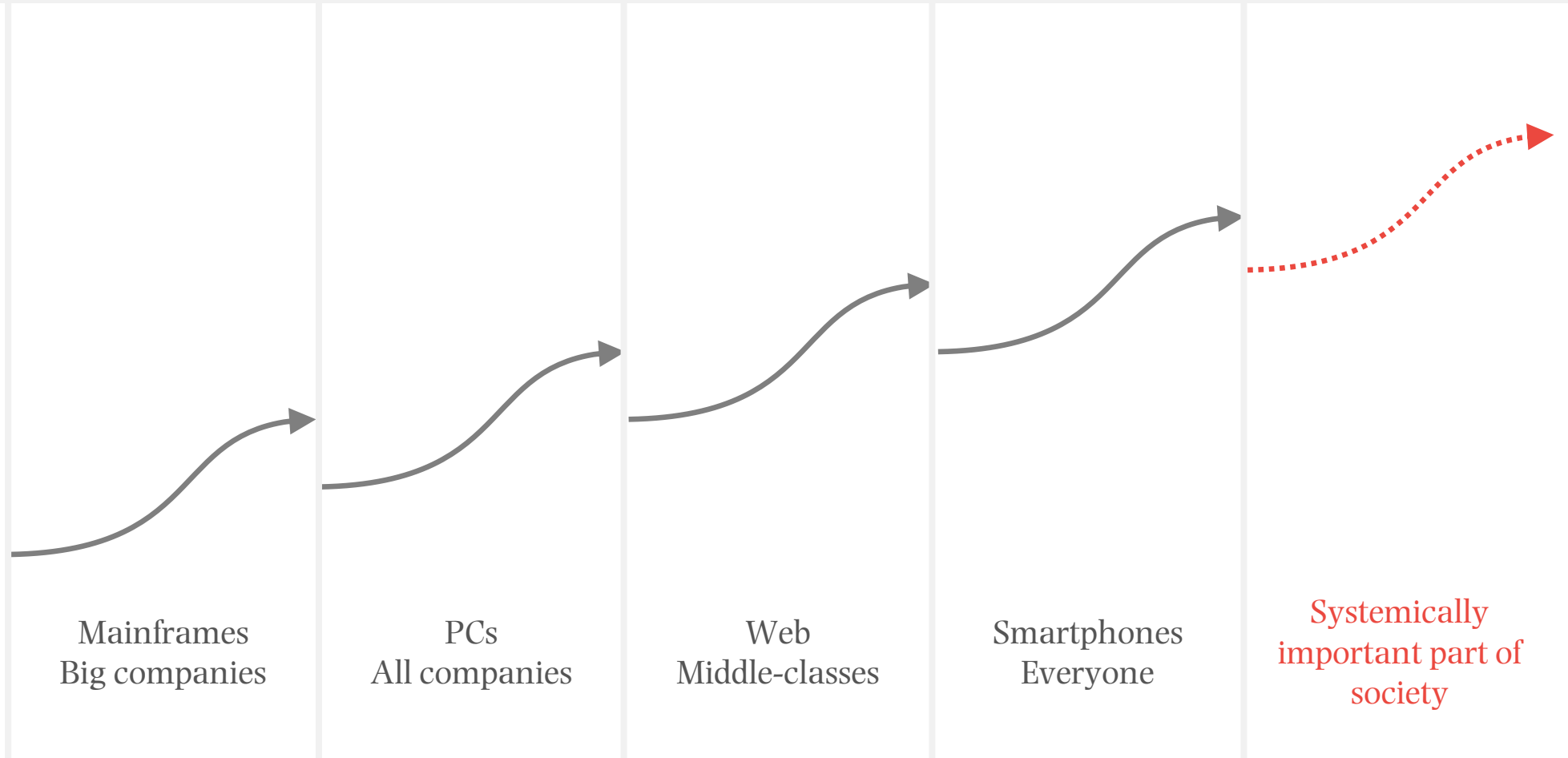
Conclusion:
welcome to the world

Software ate the world, so all the world's
problems get expressed in software

(We connected everyone, including the bad
people)

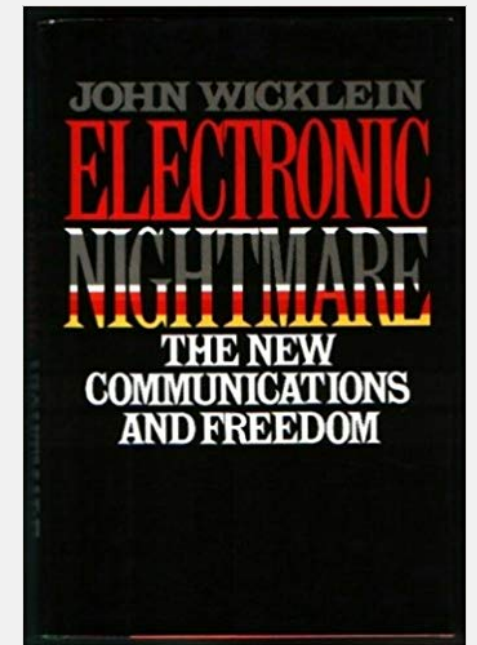
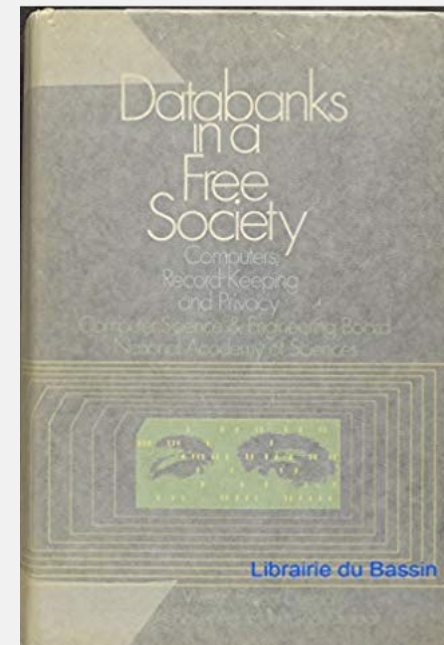
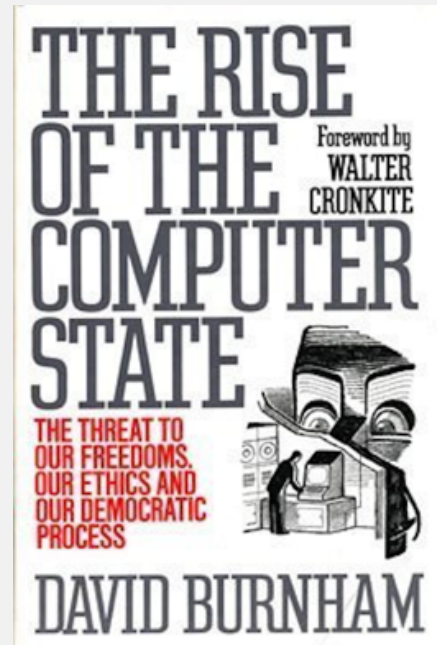
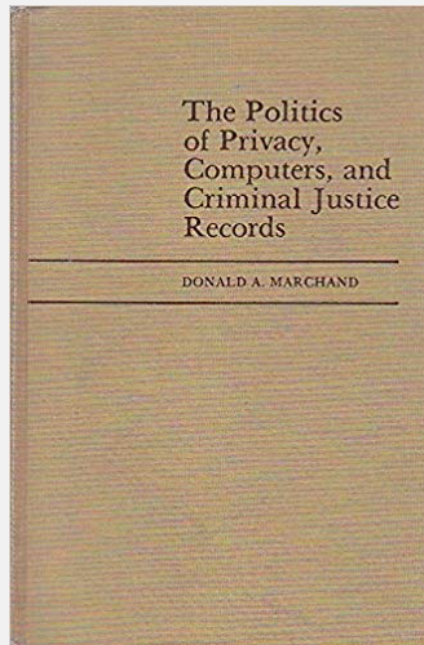
What's the next cycle?

Tech has become part of the world, so it gets regulated as part of the world



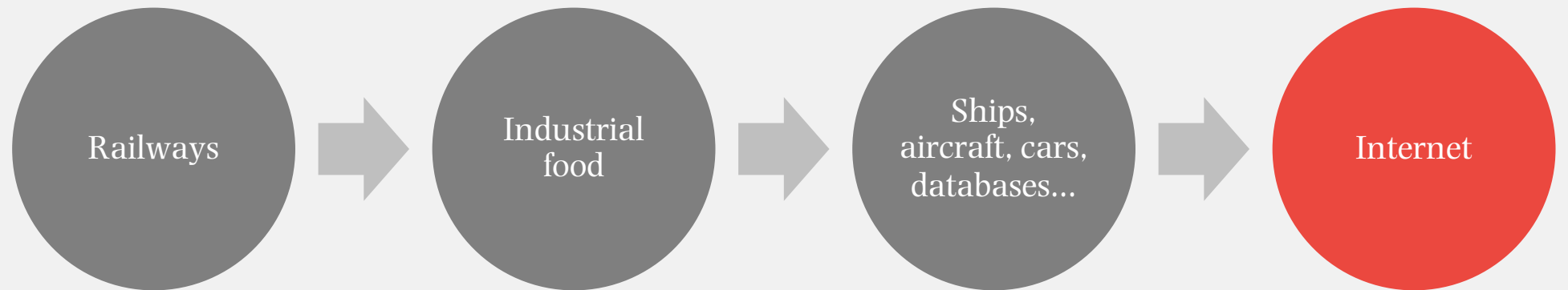
Worrying about tech isn't new

The late 70s and early 80s saw another wave of concern around computing and automation



Every wave of tech changes the world, and gets regulated

Every important tech gets industry-specific regulation



Tech has changed its attitude...

The ideology of tech has changed, and AI has changed what's possible, but some things remain impossible

“Censorship is bad”



Yes to moderation...
But whose decision is it?

“We can't moderate 100bn
messages a day”



AI changes this...
If we also hire 30k human
moderators

“You can't build a secure
platform with a back door”



You can't build a secure
platform with a back door

And this also needs new understanding in policy...

Regulating tech is complex and full of tradeoffs. But, this is true of all regulation – law and policy are the art of the possible

Some regulation
is binary
Ban tobacco ads
Open banking APIs

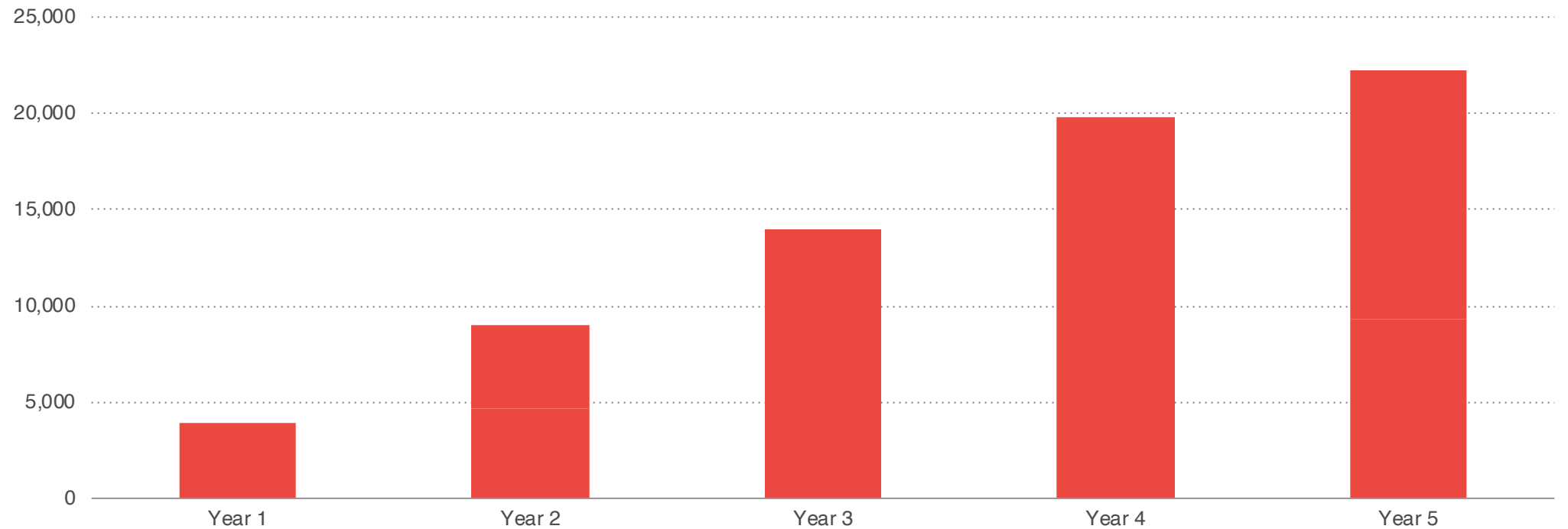
Most is 'best
reasonable effort'
Try to prevent fraud
Try to block CSAM

Some things are
just not possible
Ban inflation
Block all bad content
instantly

The growth chart for the 2020s

Welcome to a regulated industry

Pages of rules related to Dodd-Frank banking regulation



Thank you

Benedict Evans

January 2020

www.ben-evans.com
