Tech in 2020: Standing on the shoulders of giants
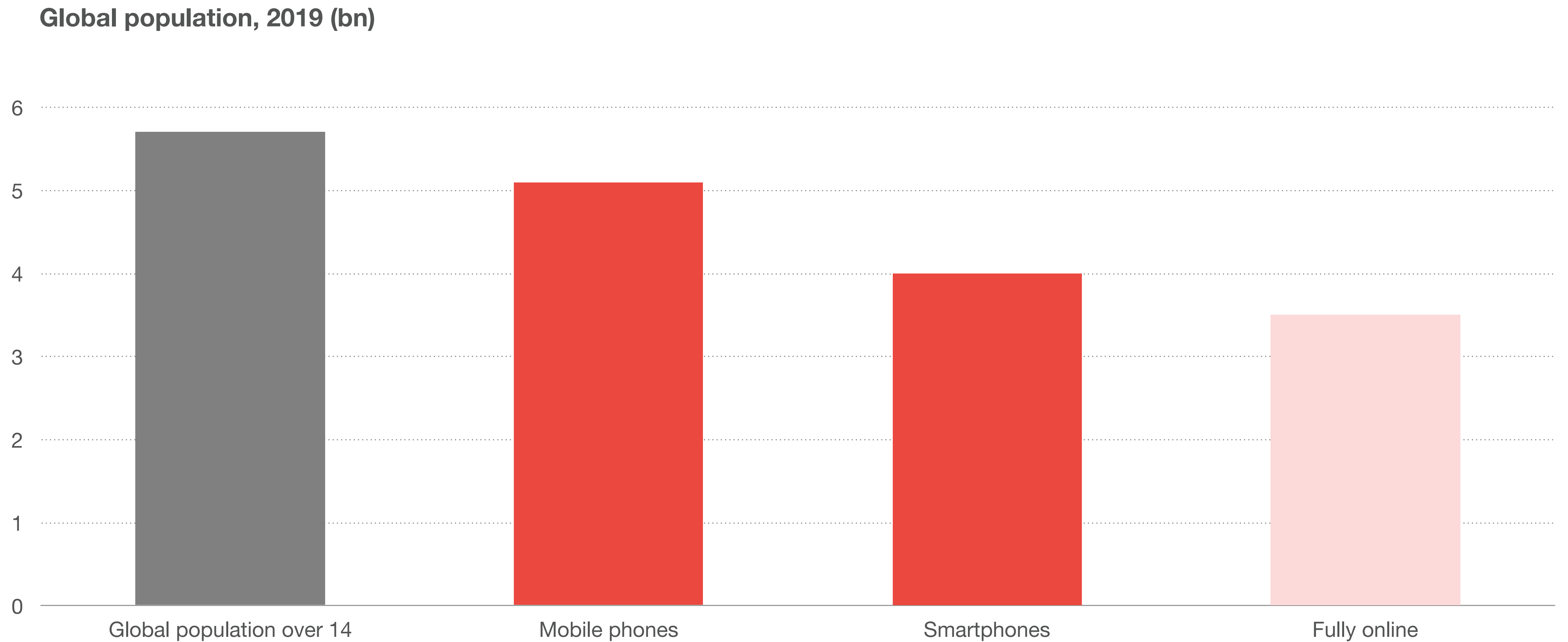
Benedict Evans

February 2020

www.ben-evans.com
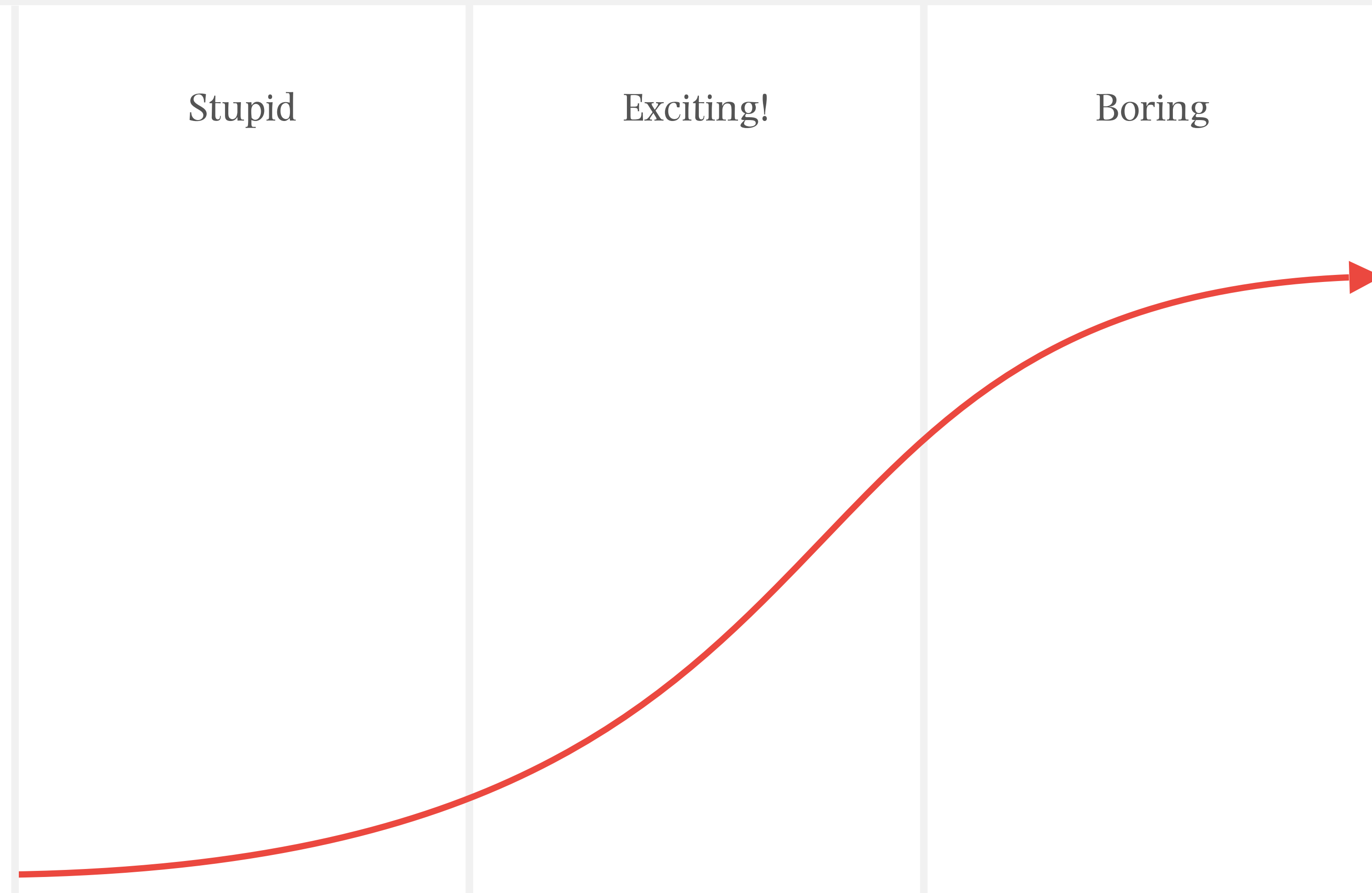
We connected (almost) everyone

There are 5.5bn adults on earth, 5bn have a phone and 4bn have a smartphone
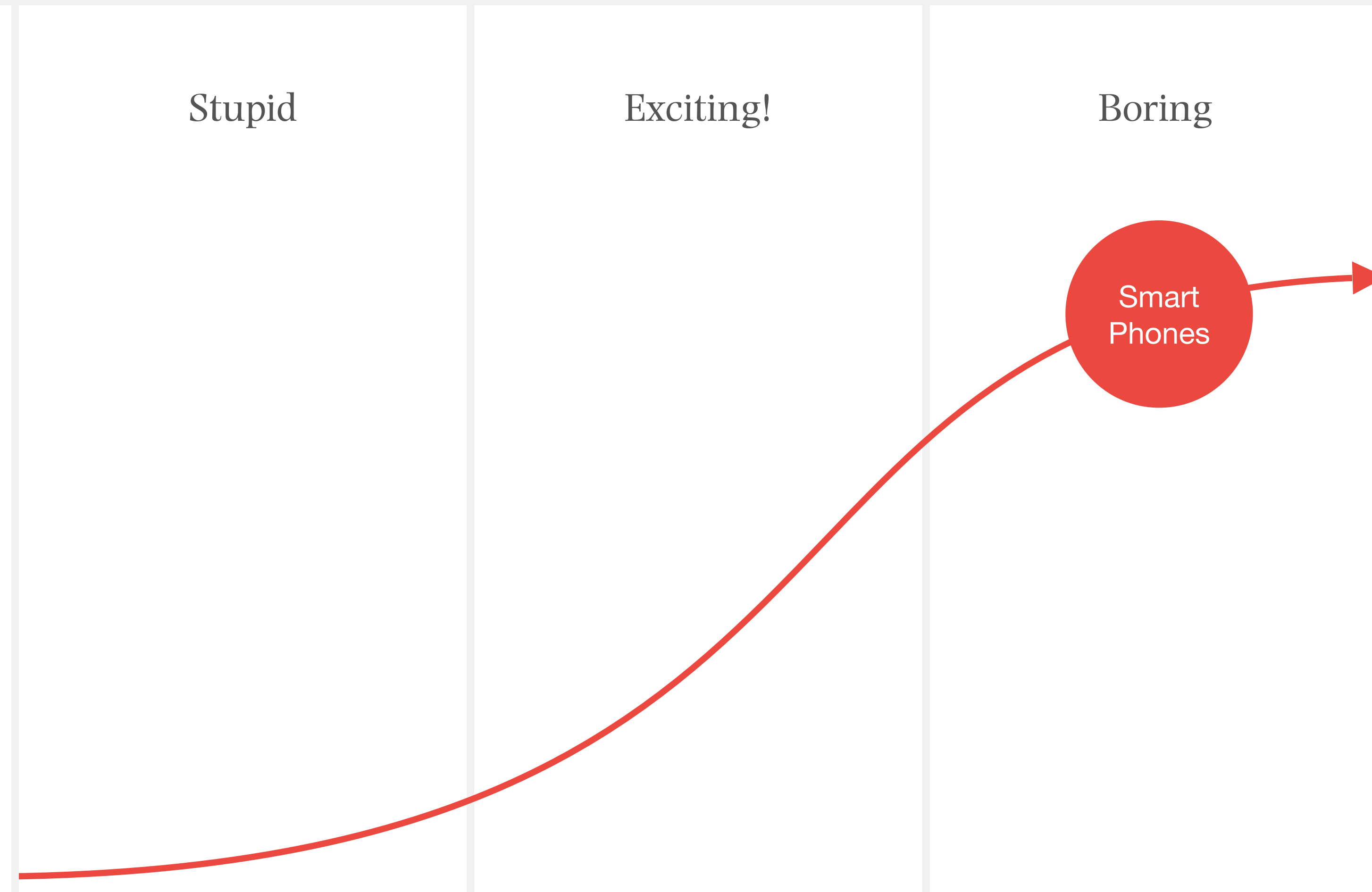
Global population, 2019 (bn)

New technologies come in S Curves

New tech generally goes from stupid to exciting to boring

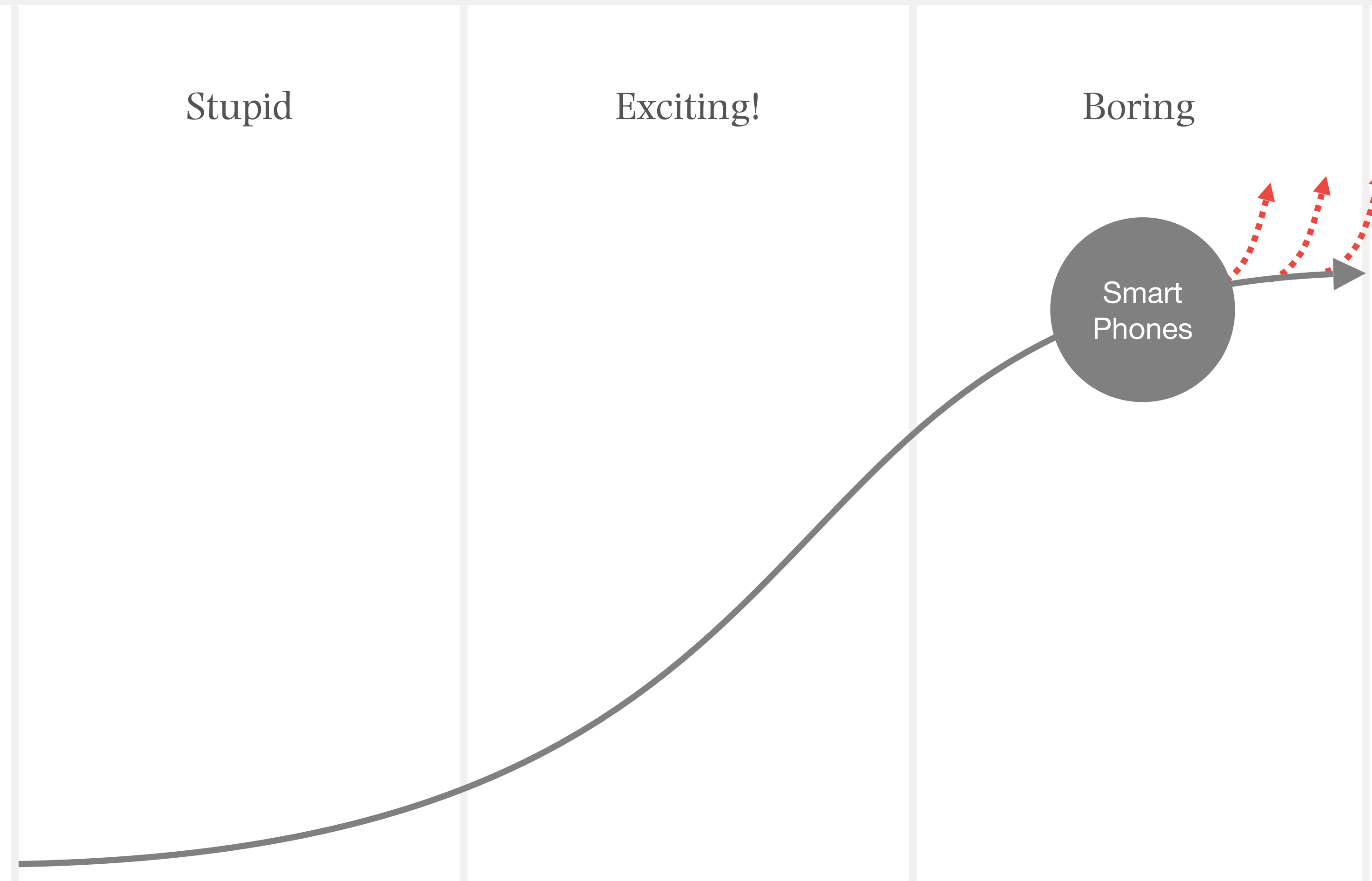Stupid

Exciting!

Boring

And smartphones reached 'boring' (mostly)

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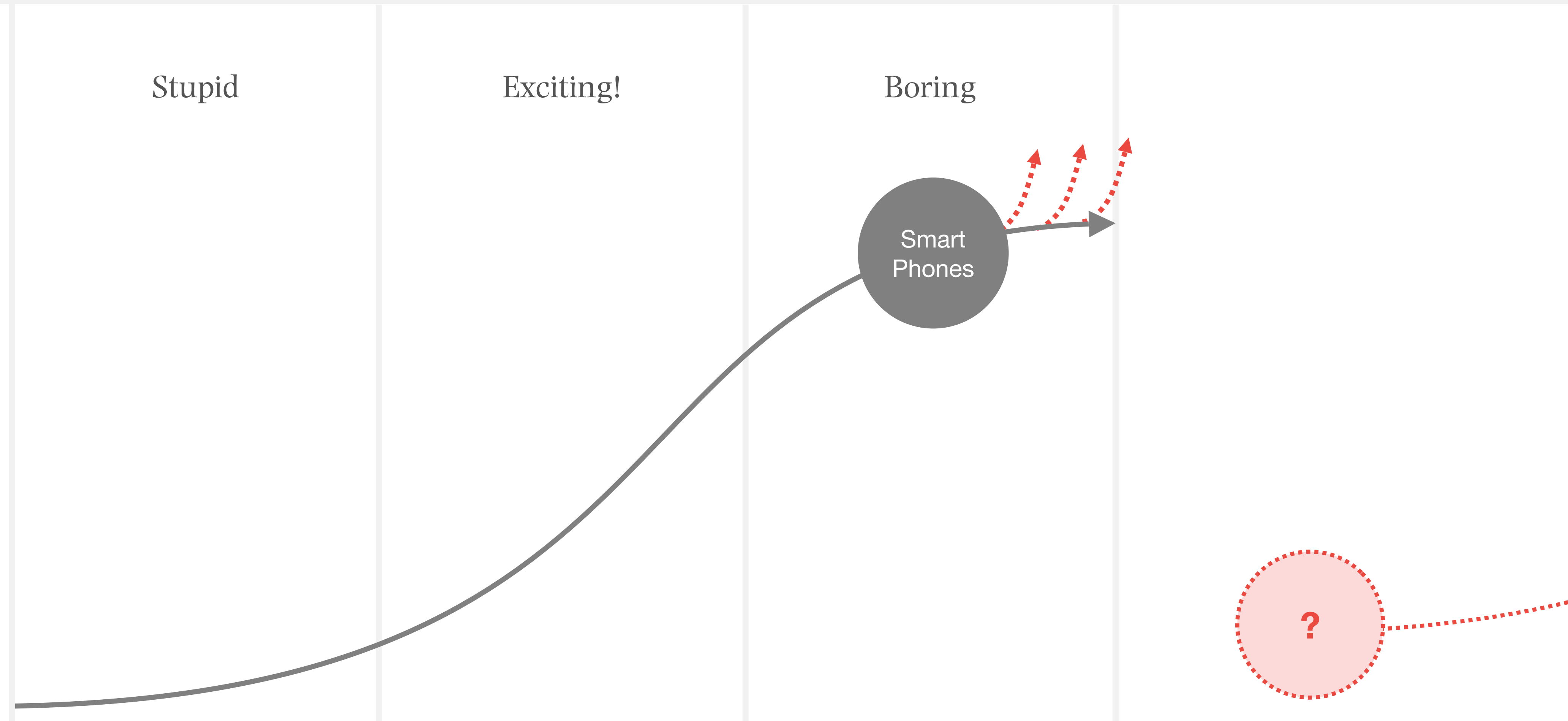
Stupid

Exciting!

Boring

Smart Phones

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

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

Stupid

Exciting!
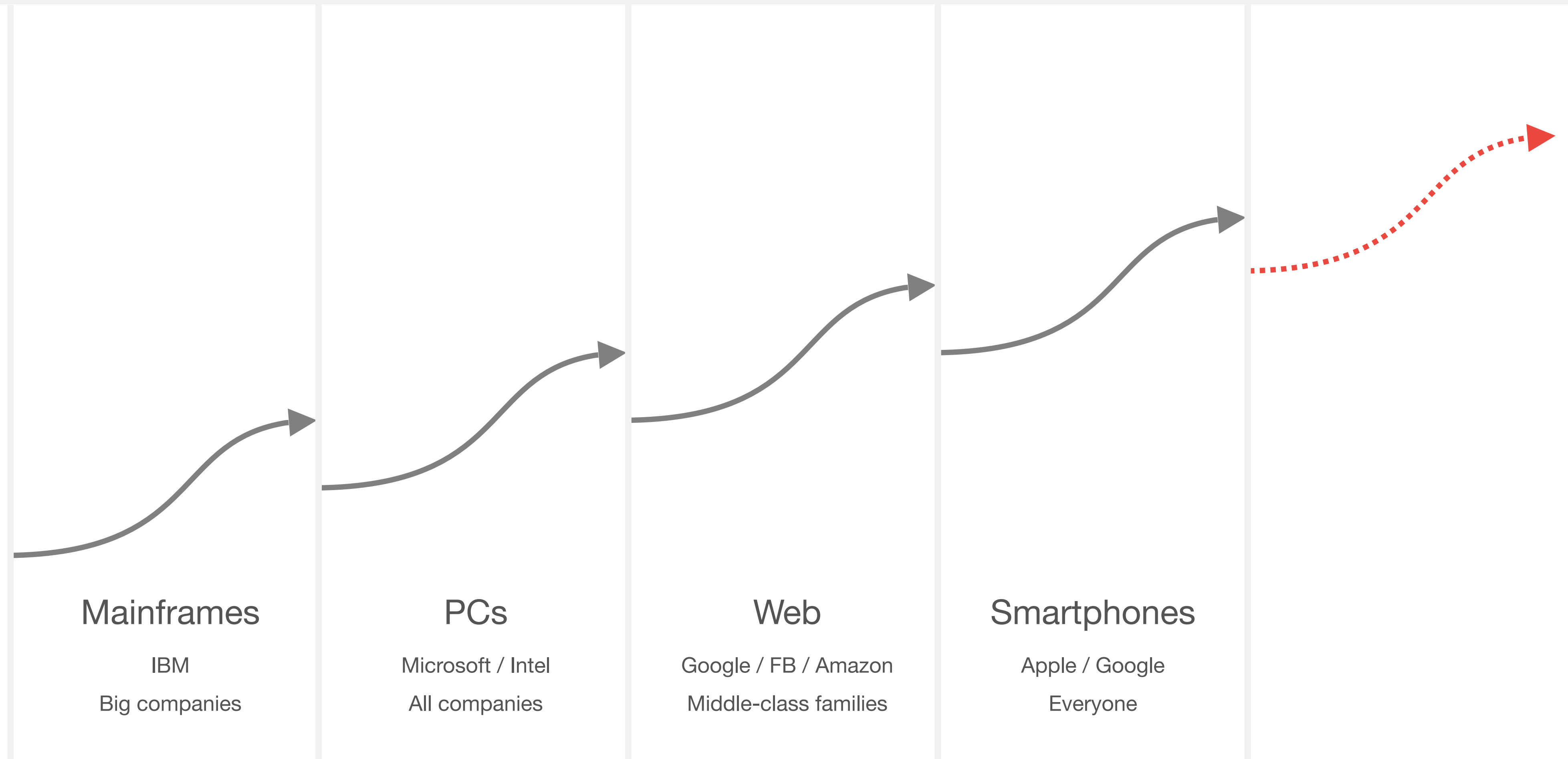
Boring

Smart Phones

And we ask what the next S Curve will be

What is the next generational change?

Stupid   Exciting!   Boring

Smart Phones

?

Because that's been the model for 50 years

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

Mainframes

IBM

Big companies

PCs

Microsoft / Intel

All companies

Web

Google / FB / Amazon

Middle-class families

Smartphones

Apple / Google

Everyone

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
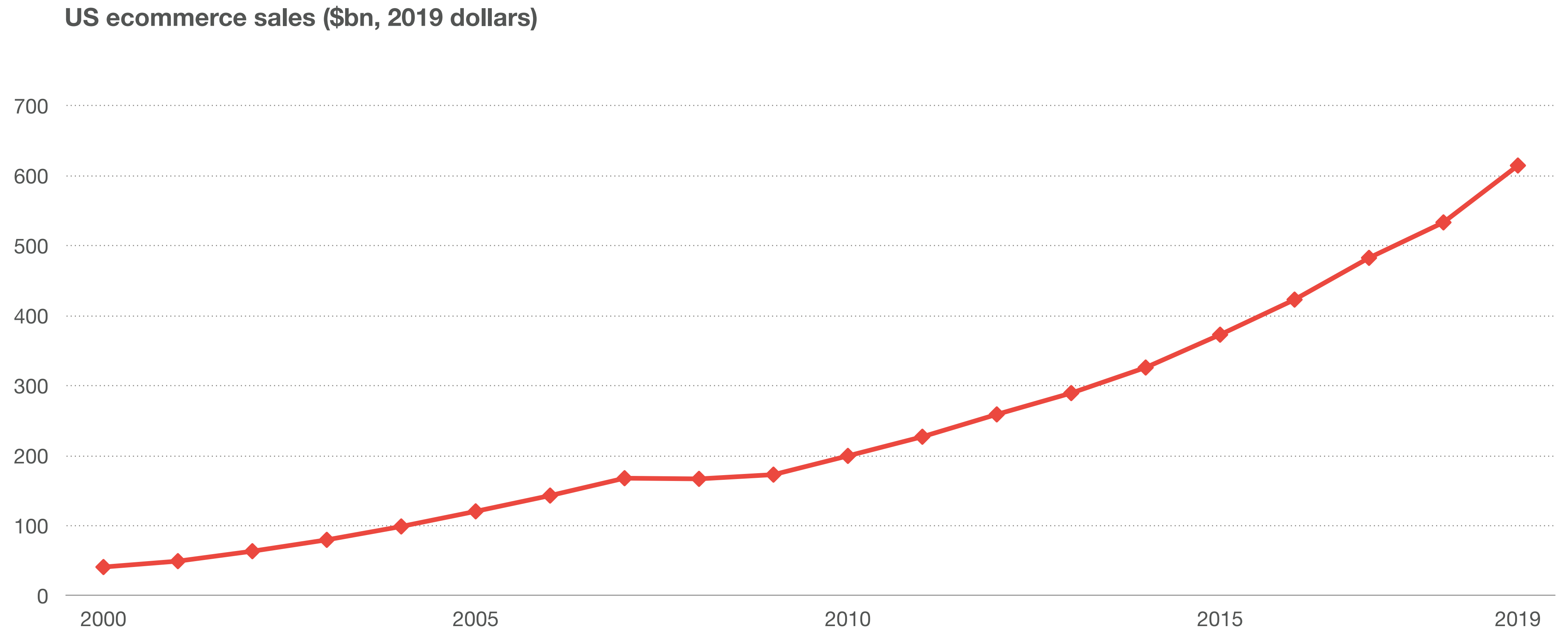
Consumer
expectation

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 $600bn

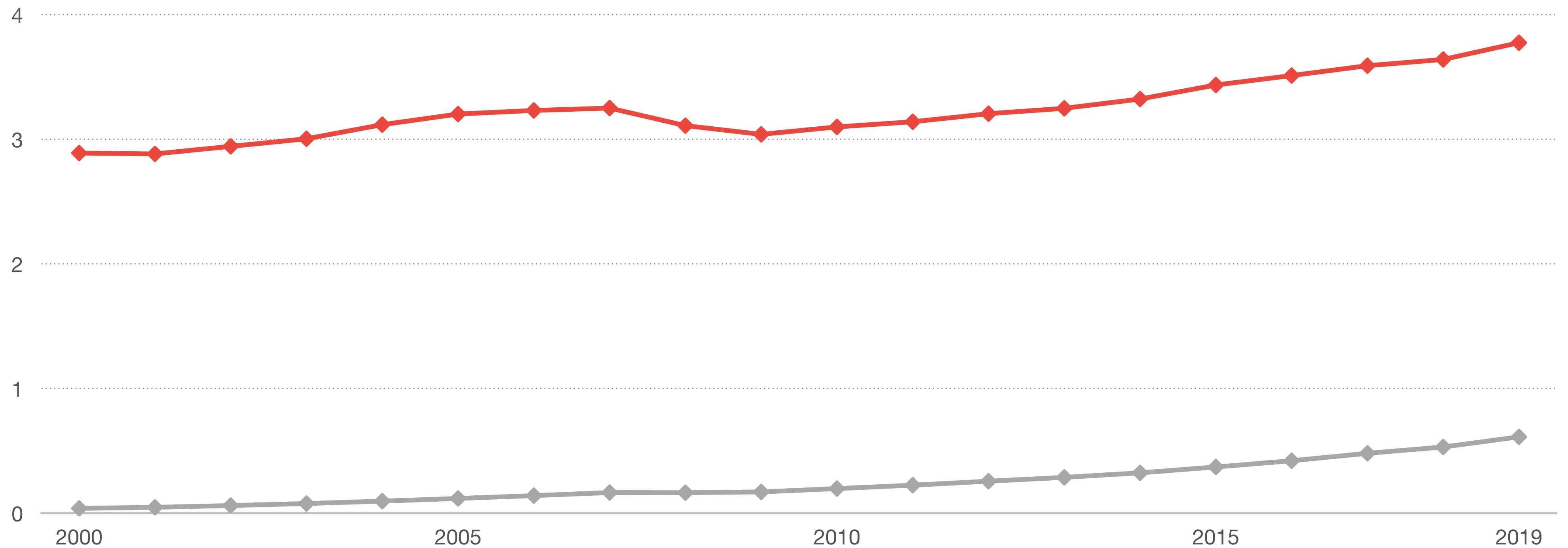**US ecommerce sales ($bn, 2019 dollars)**

But still 'only' 16% of addressable retail

$600bn is a big number, but US addressable retail is $3.8tr

US retail sales ($tr, 2019 dollars)
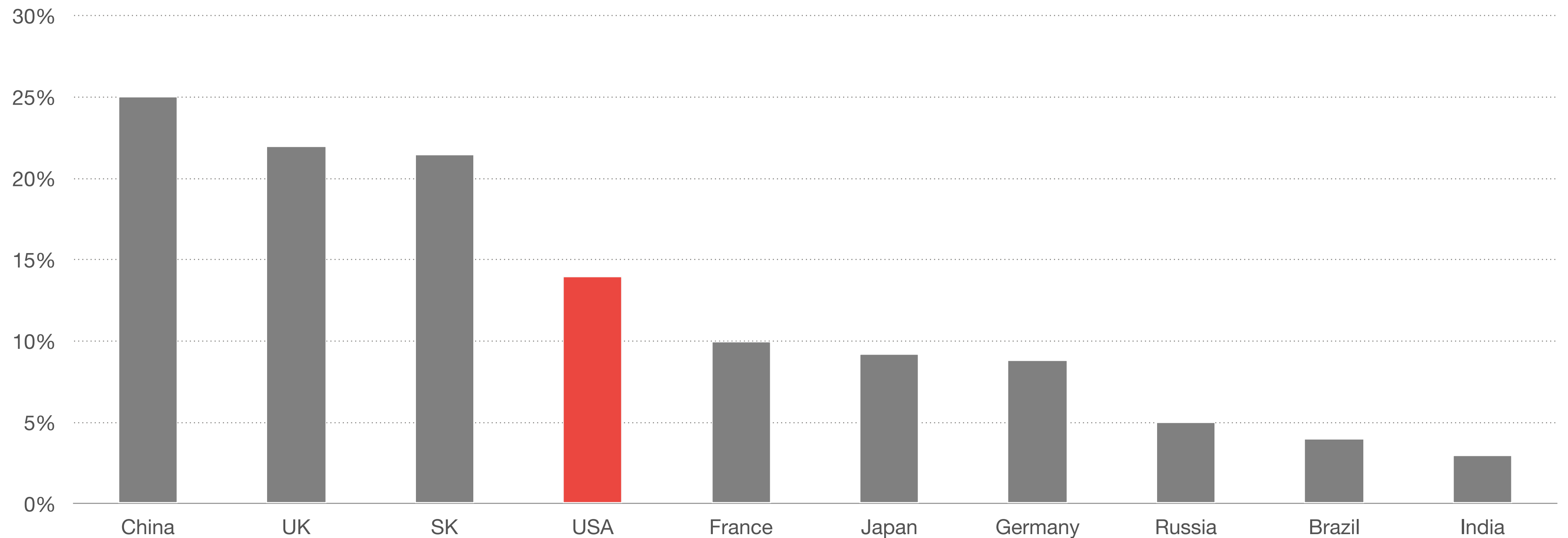
◆ Addressable retail*
◆ Ecommerce

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

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

Shopify GMV ($bn)

Year	
2014	~4
2015	~7.5
2016	~15
2017	~26
2018	~41
2019	~61

Source: Shopify
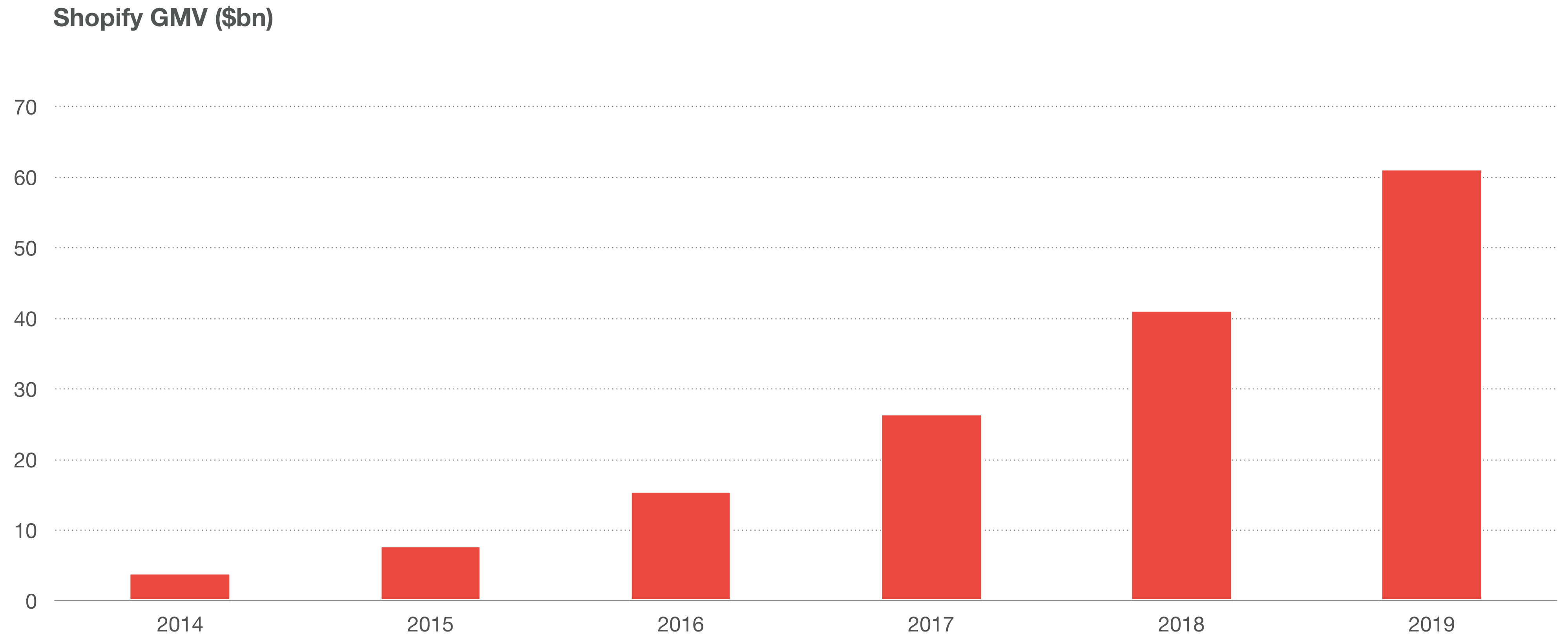
Meanwhile: Amazon!

Amazon's revenue continues to grow at 20% a year

Amazon annual revenue ($bn)
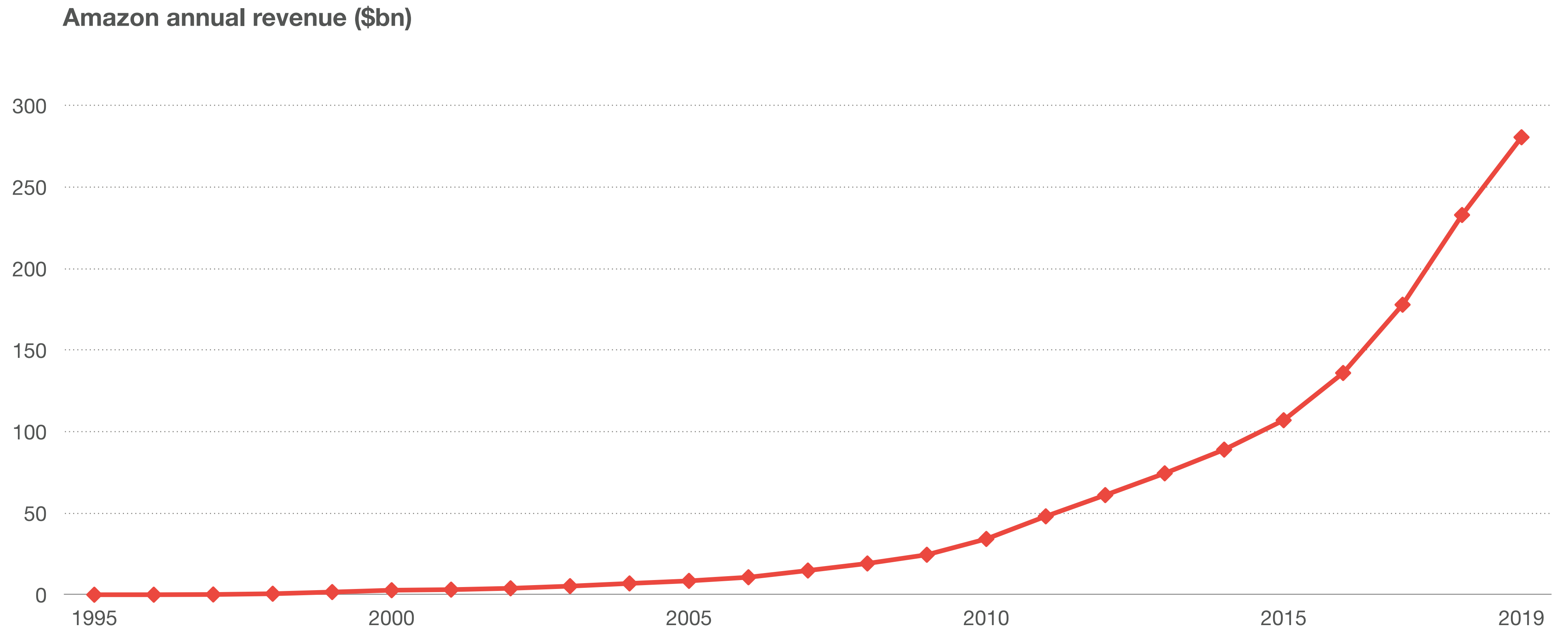
Though only half is direct ecommerce

But it has become about more than just plain ecommerce

Amazon annual revenue ($bn)

Revenue
Ecommerce
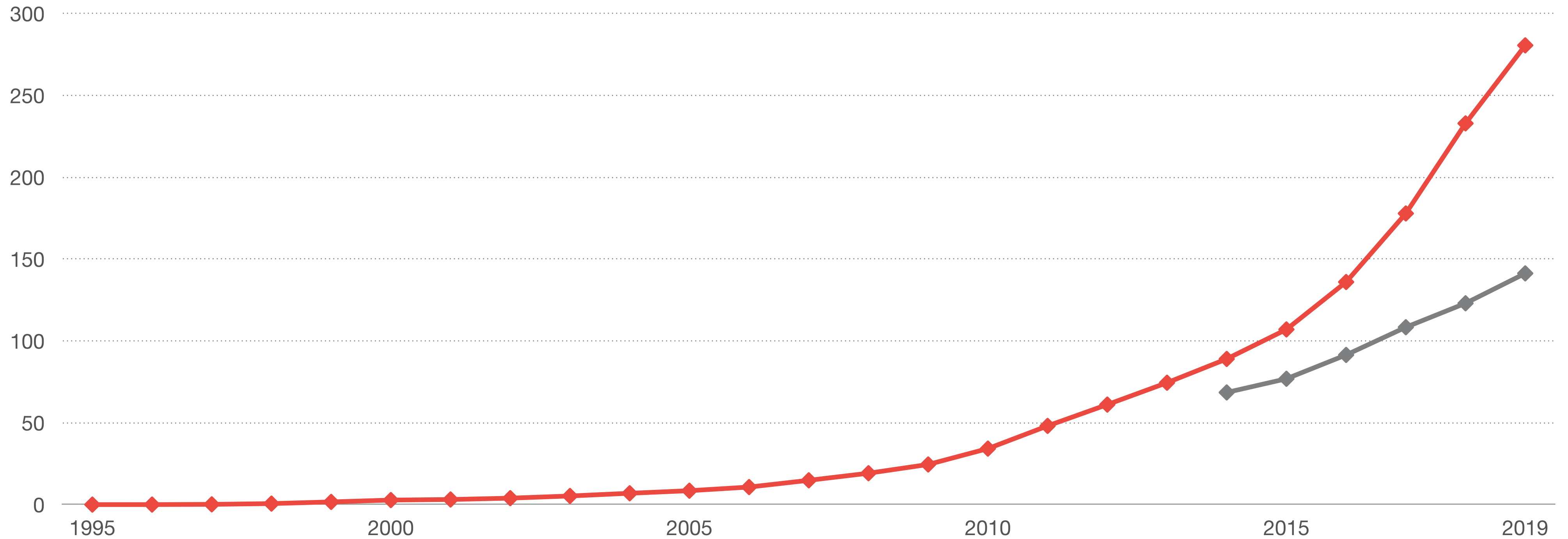
Platforms for others are now a third of Amazon revenue

Amazon is building growth by leveraging its platforms for other companies

Amazon revenue, 2019 ($bn)
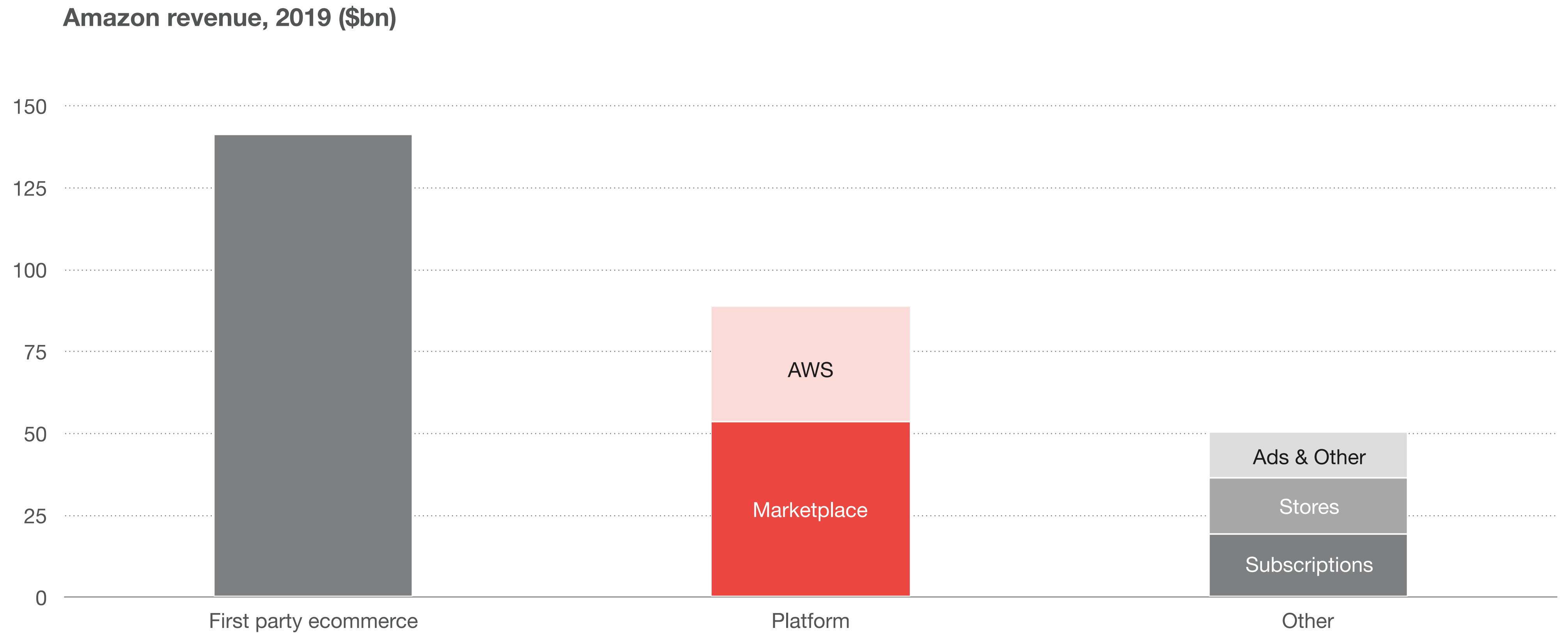
Amazon is a platform for others

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

Amazon GMV ($bn)

■ Marketplace
■ First party ecommerce
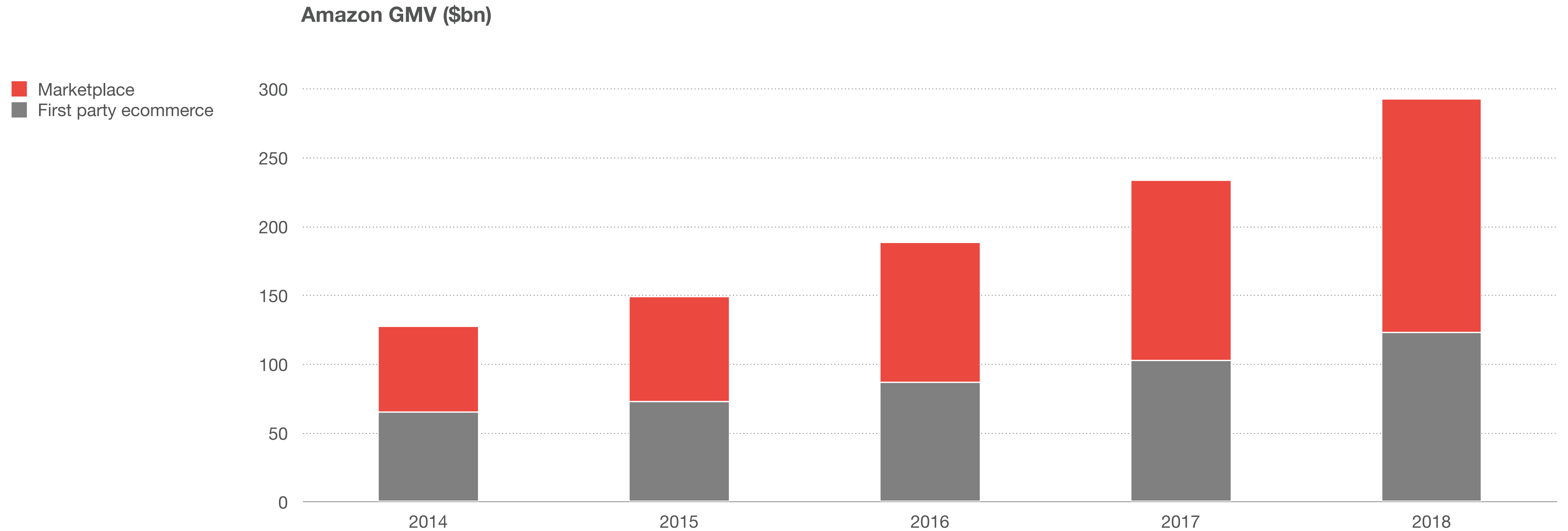
Amazon is now taxing product search

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

Amazon 'Advertising & other' revenue ($bn)
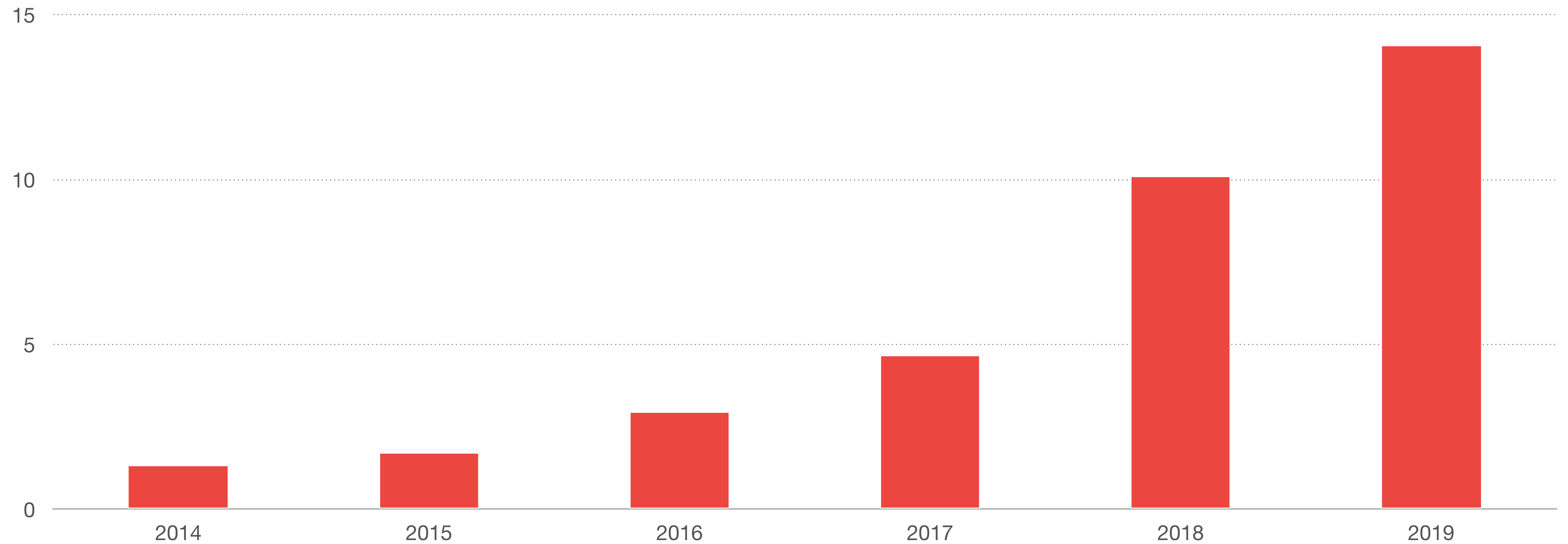
| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |

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

Source: Companies

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

Source: Companies

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

Source: Companies

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 new retail format

US retail sales ($bn, 2019 dollars)

- Department stores
- Ecommerce
- Warehouse clubs

Source: US Census
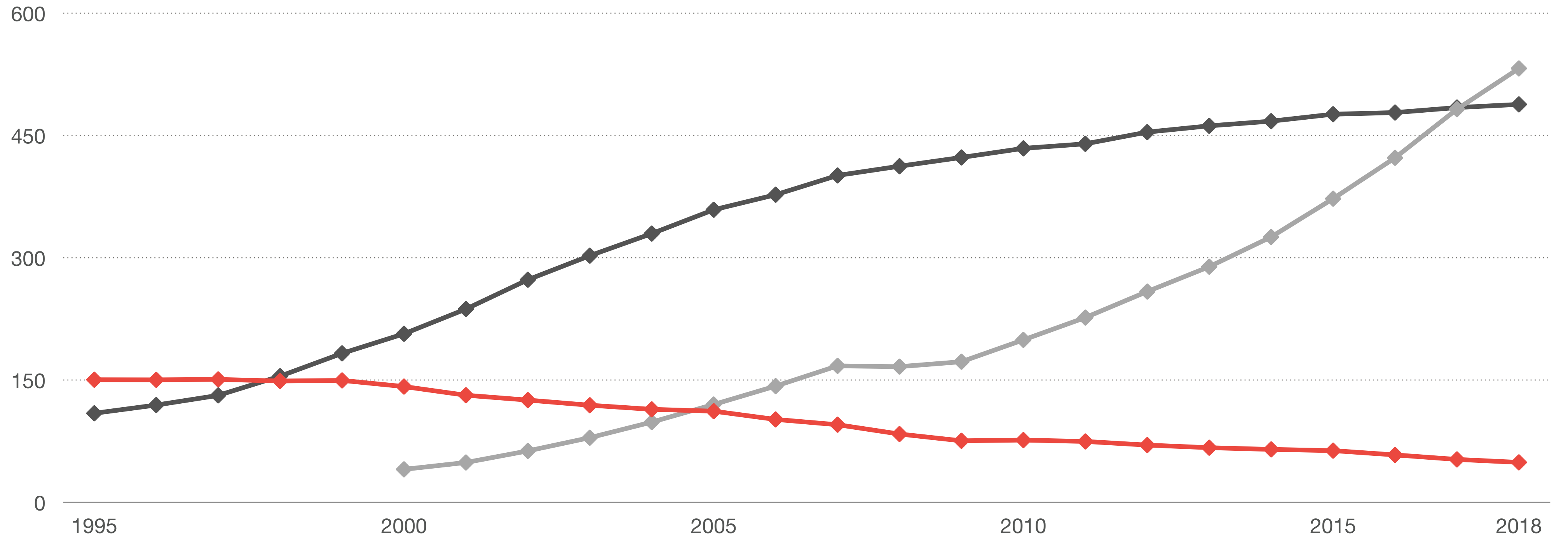
"Over half of our store sales involve an online journey, and over a third of our online sales involve a store experience"

- 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
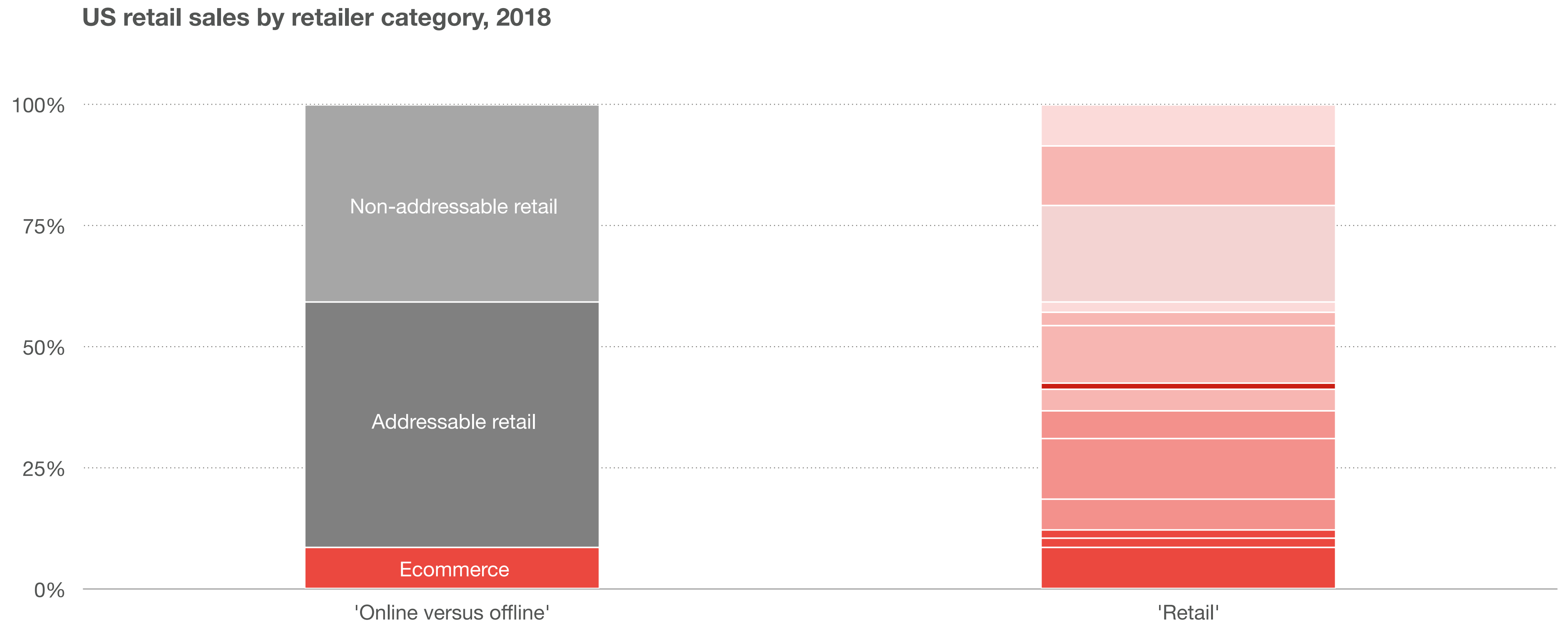
US retail sales by retailer category, 2018

100%

75%

Non-addressable retail

50%

Addressable retail

25%

0%

Ecommerce

'Online versus offline'

'Retail'

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

Source: JP Morgan
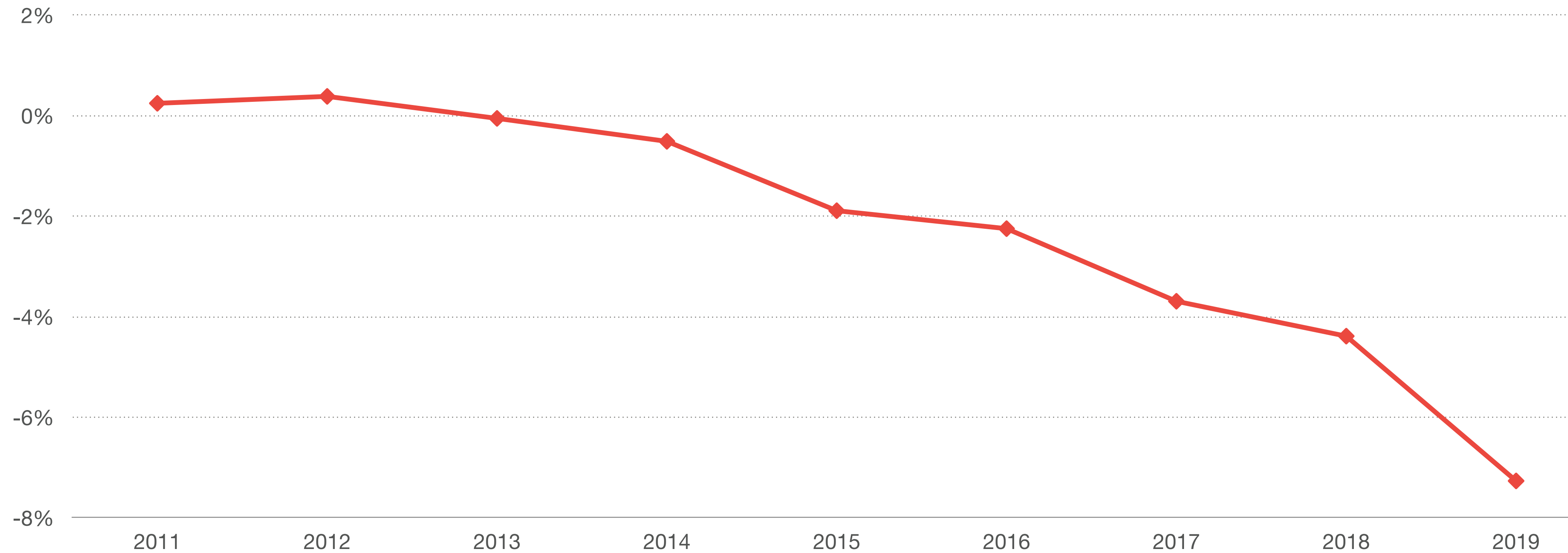
US pay TV subs down 20% and falling

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)

Legend:
- Incumbents
- Netflix
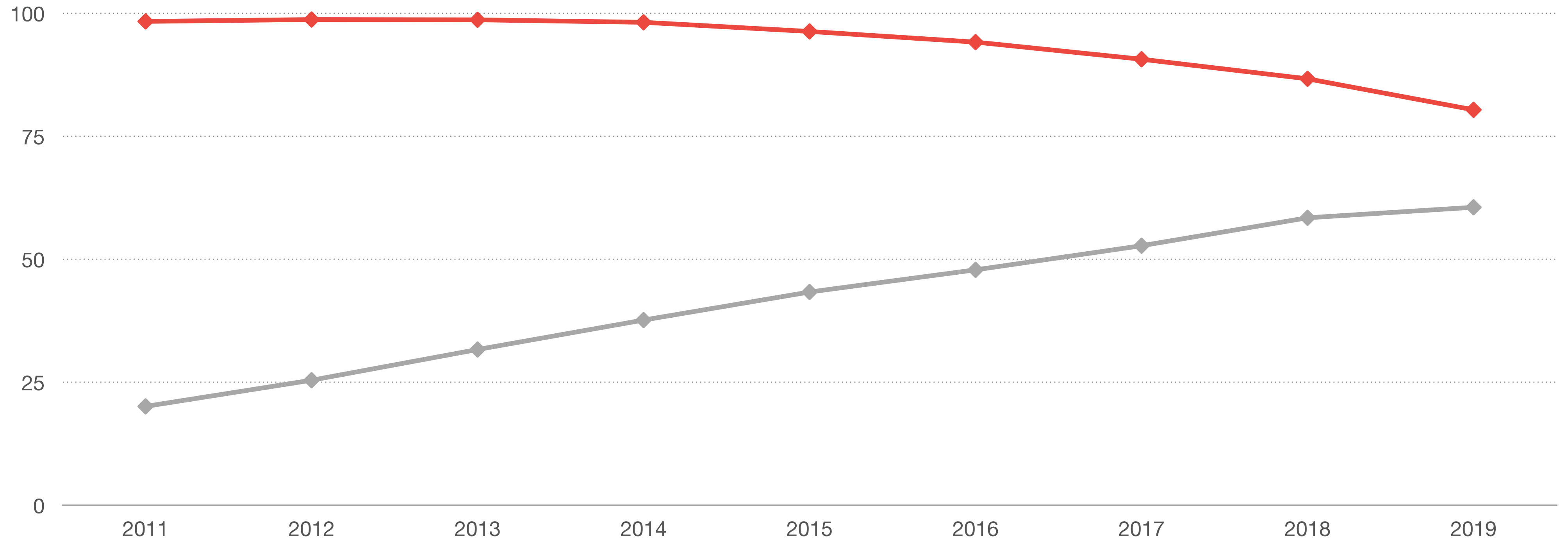
And TV is changing a lot faster than retail

US cord-cutting % has passed ecommerce % in just 5 years

Digital change in US retail and TV

Cord cutting
Ecommerce
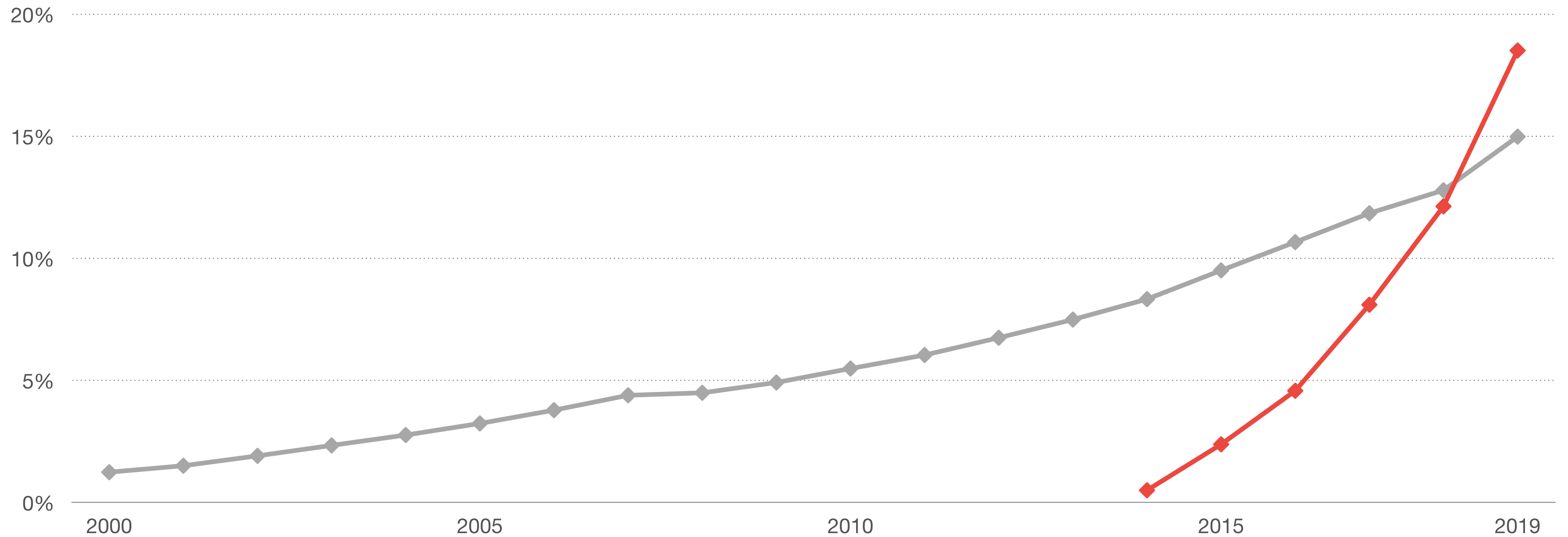
Teen share down by half

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

US teen daily video consumption share

Legend:
- Pay TV
- Netflix
- Youtube

Source: Piper Jaffray

Benedict Evans — February 2020
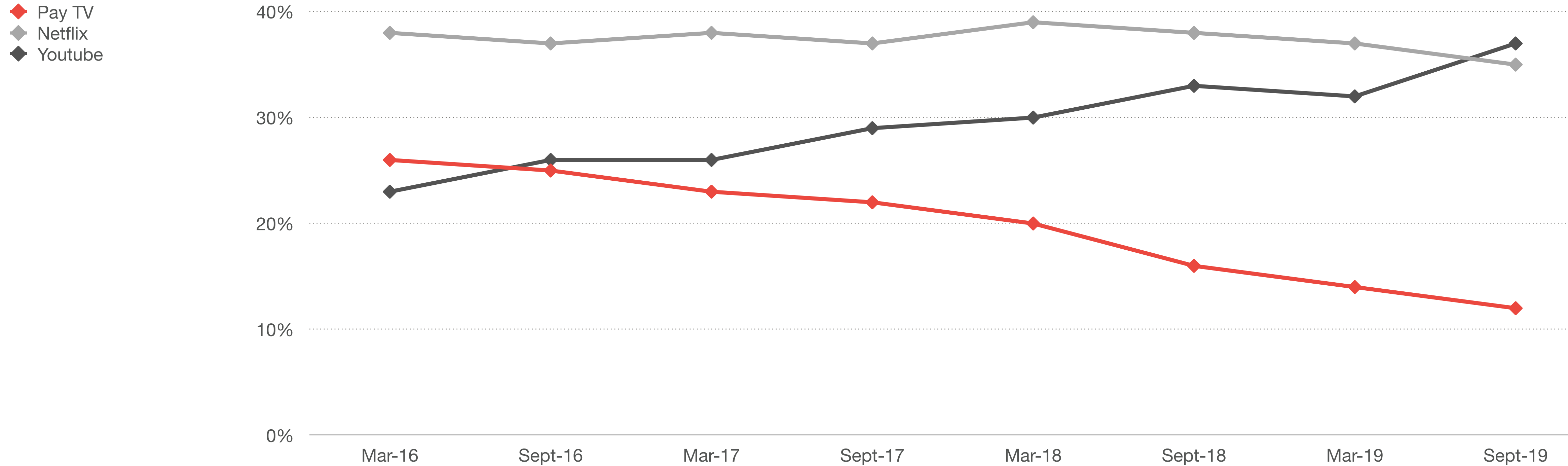
Begun, the content wars have

A third of US 2019 content spending came from streaming companies

US annual content budgets, 2019 ($bn)

Sport
Entertainment
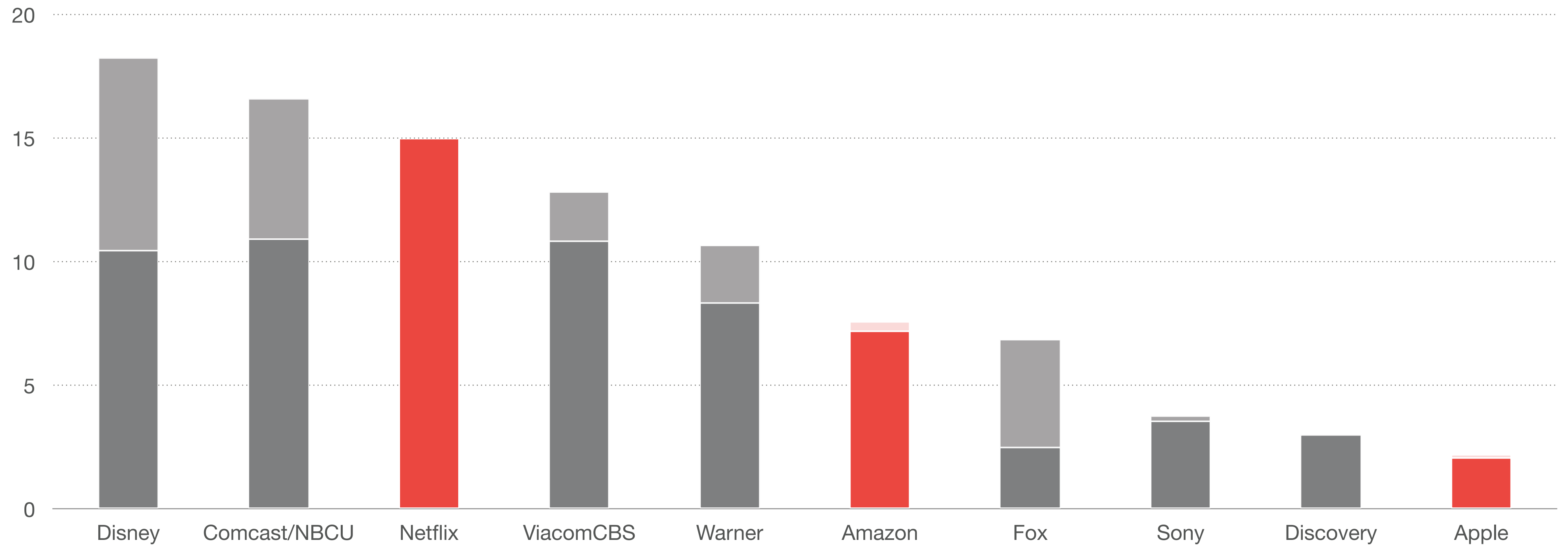
Streaming is a third of US TV production

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

US scripted original series

Legend:
- Online (red)
- Broadcast (light gray)
- Pay cable (medium gray)
- Basic cable (dark gray)

Source: FX Networks Research
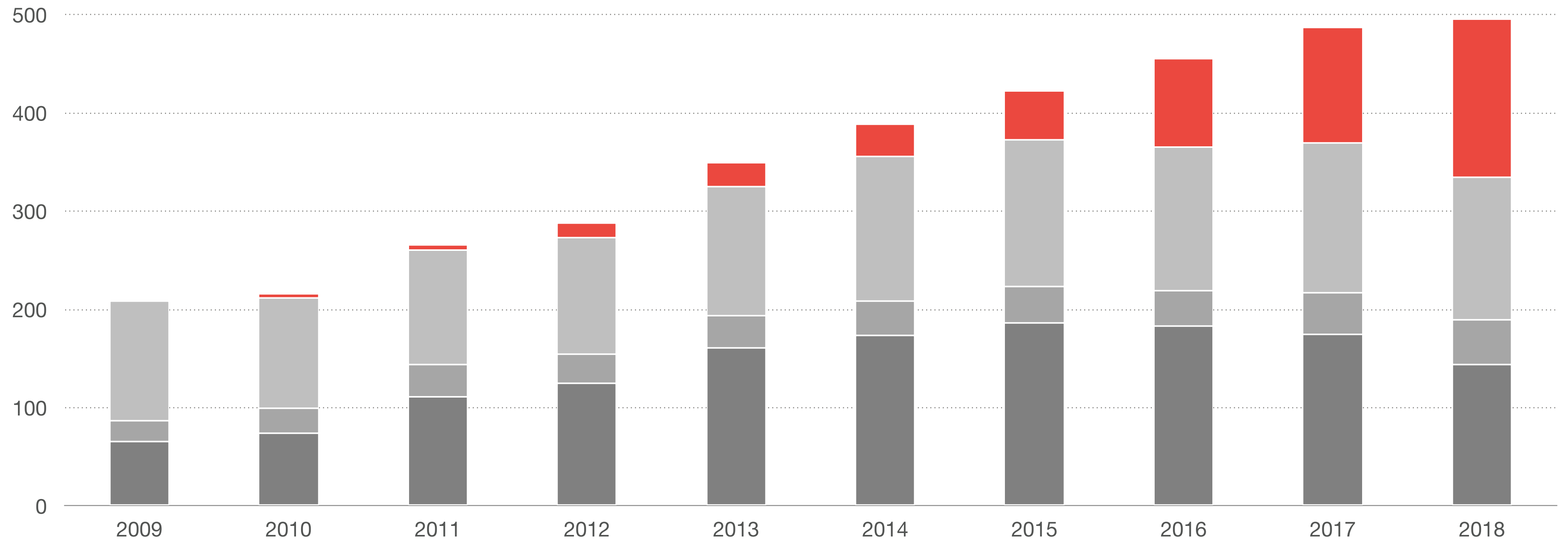
Now what?

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

Subs down 20% **+** Teen viewing share down 50% **+** Show count has doubled, and costs... **=** Ad budgets flat to up?
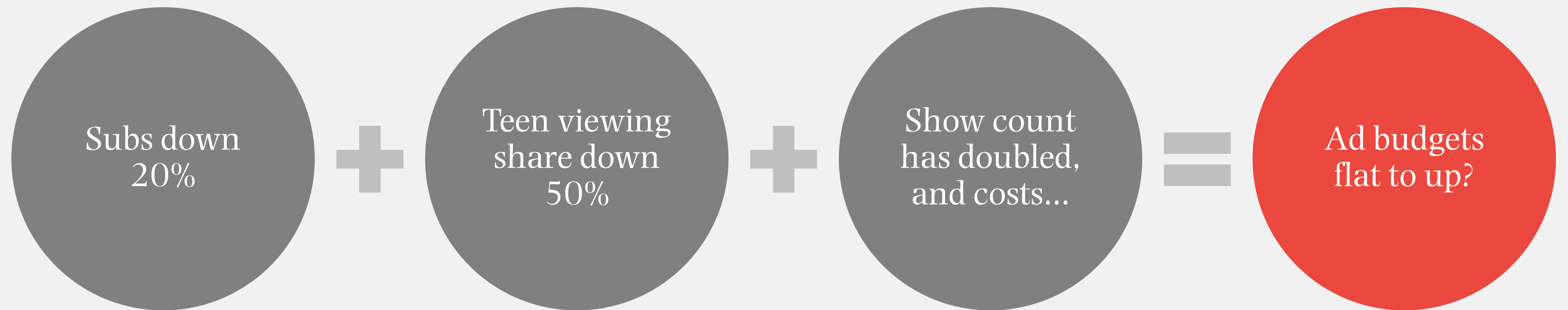
New forms of video emerging

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

Monthly Twitch viewing hours (m)

Amazon acquisition for $970m

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

Glass half empty, or half full?

Monthly viewing hours (bn)
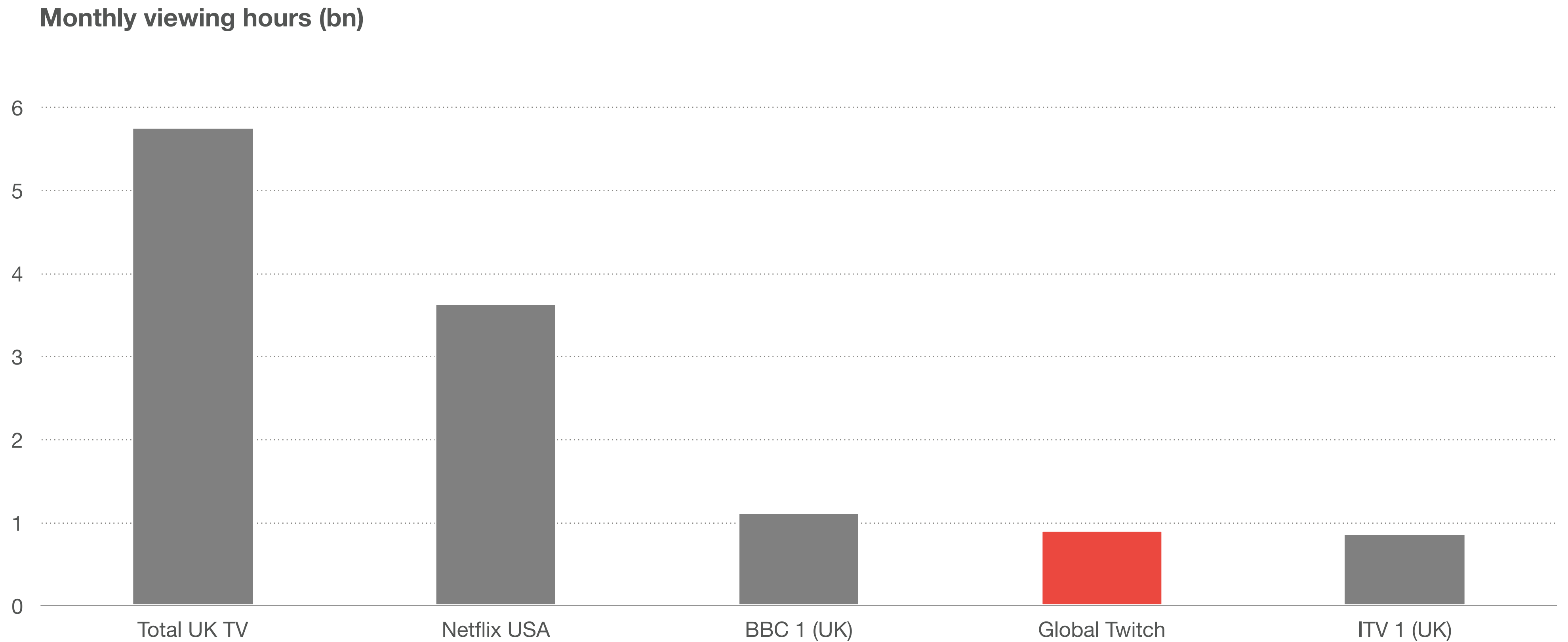
Meanwhile, global effects from the US streaming war

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

2019 content budget ($bn)
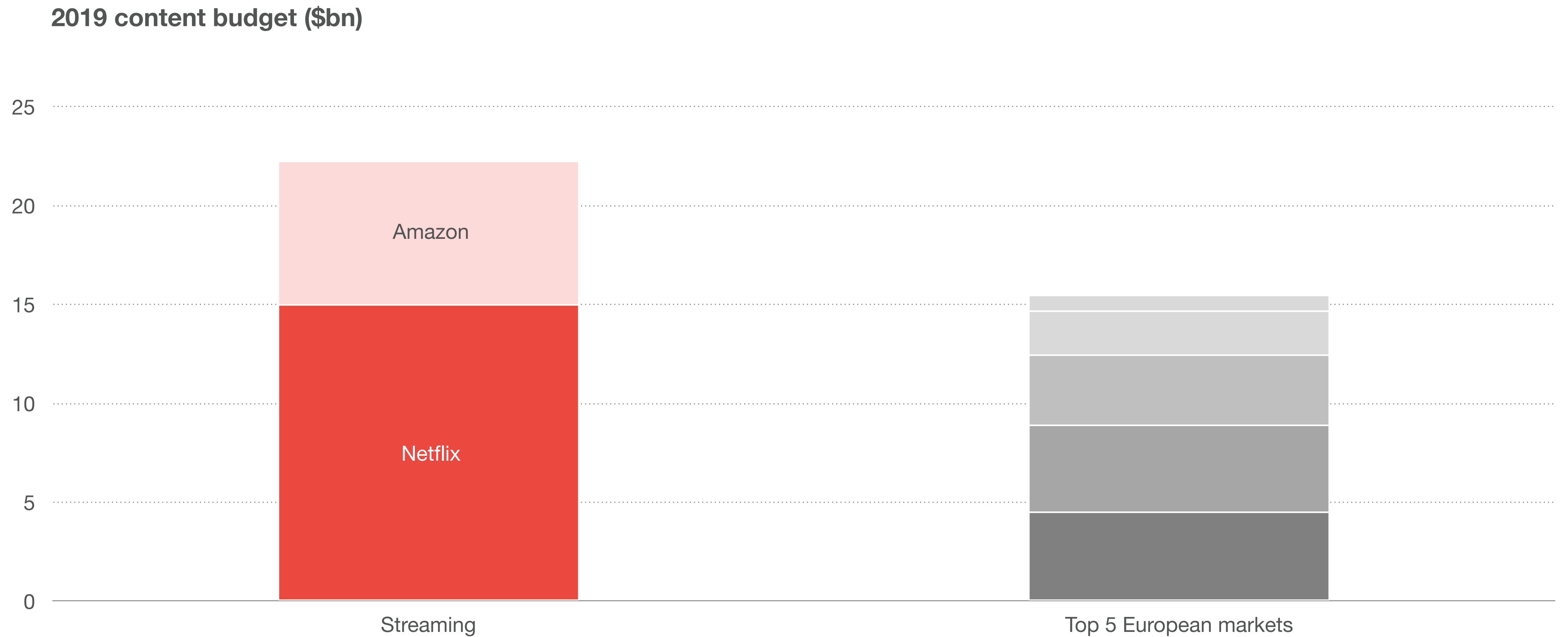
Netflix is the UK's biggest TV channel

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
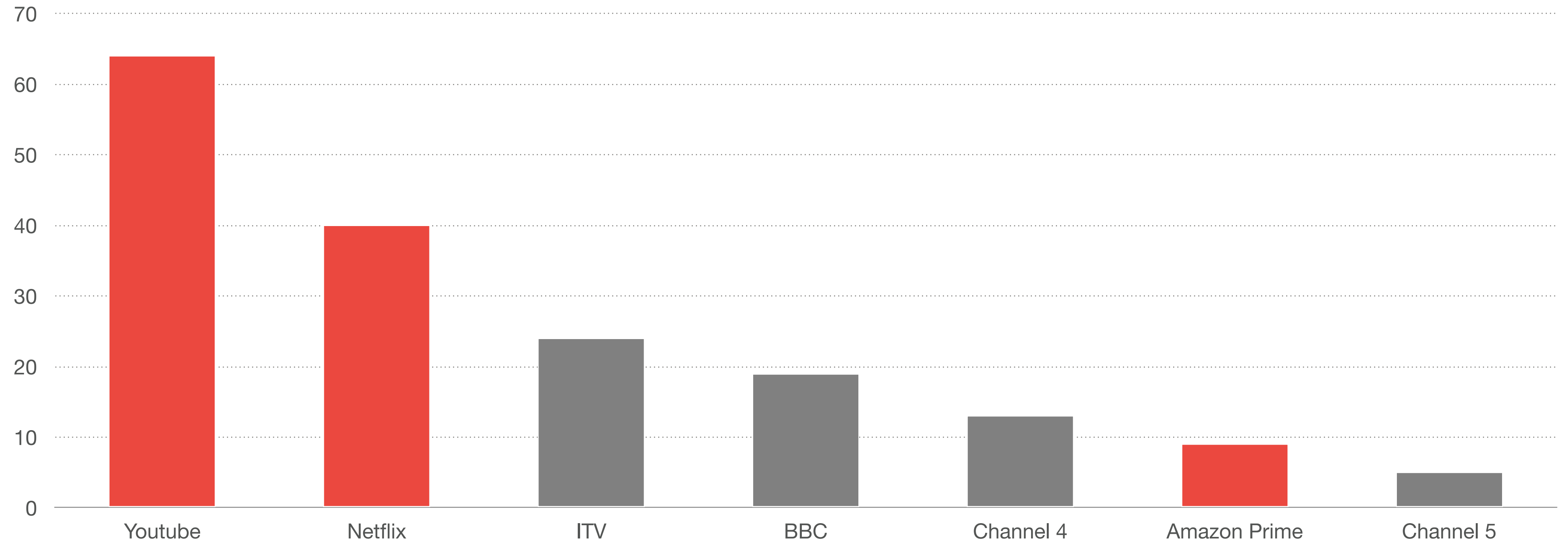
Unbundling countries, not just cable

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

Netflix subscribers (m)

Legend:
- APAC
- LATAM
- EMEA
- North America

X-axis: Mar 17, Jun 17, Sept 17, Dec 17, Mar 18, Jun 18, Sept 18, Dec 18, Mar 19, Jun 19, Sept 19

Y-axis: 0, 25, 50, 75, 100, 125, 150, 175

Source: Netflix
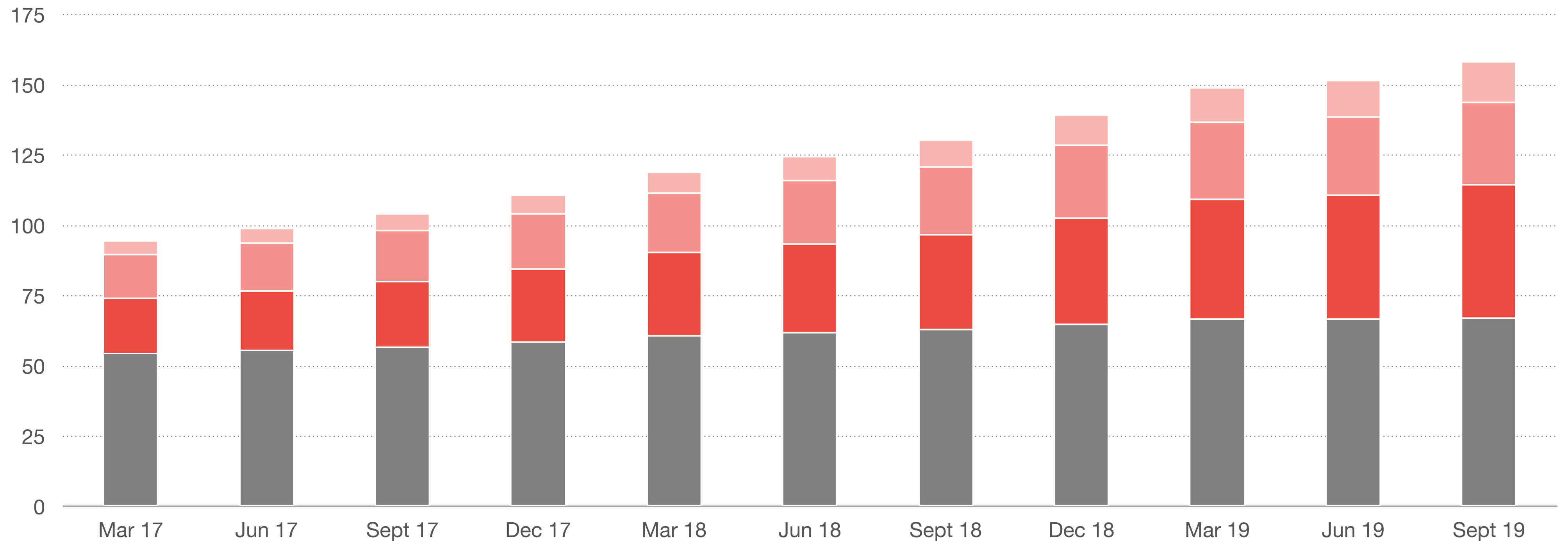
"In business, there are two ways to make money. You can bundle, or you can unbundle."

- 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

Most people don't have broadband ➔ Most people don't have 3G ➔ Most people don't have smartphones ➔ 83% of US teenagers have an iPhone*
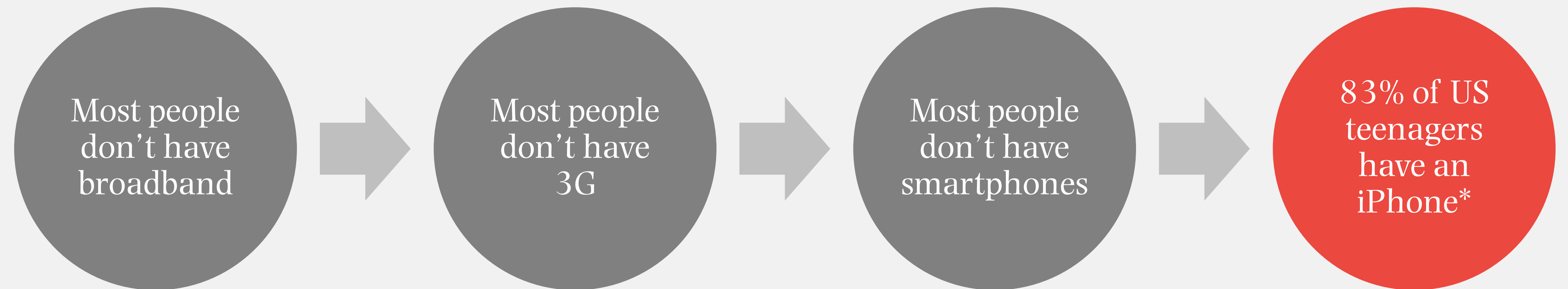
* Source: Piper Jaffray

Today, anyone does anything online

In 2017, 40% of Americans met their partners online

US heterosexual couples who met online, by year of meeting
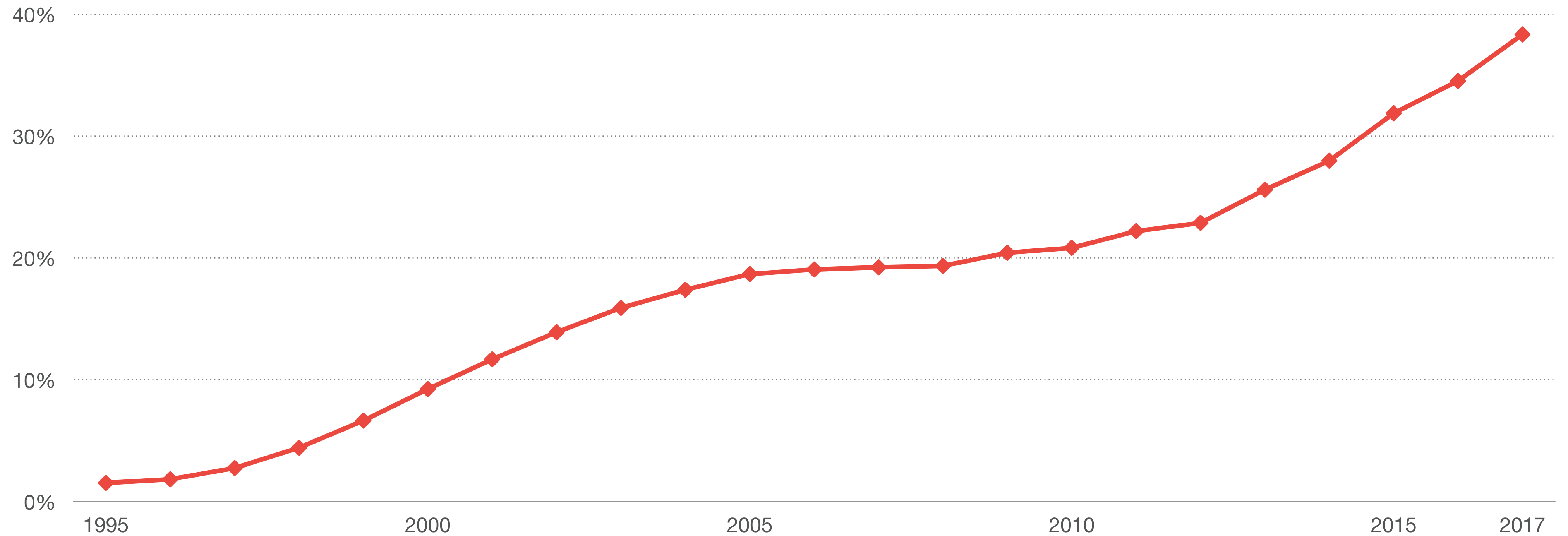
Sharon Stone ✔
@sharonstone

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

Old models, new targets

Internet models that only worked for narrow segments a decade ago now expand into the whole economy

Rigup

Oil field workers

Honor

Home help for the elderly

Incredible Health

Nursing
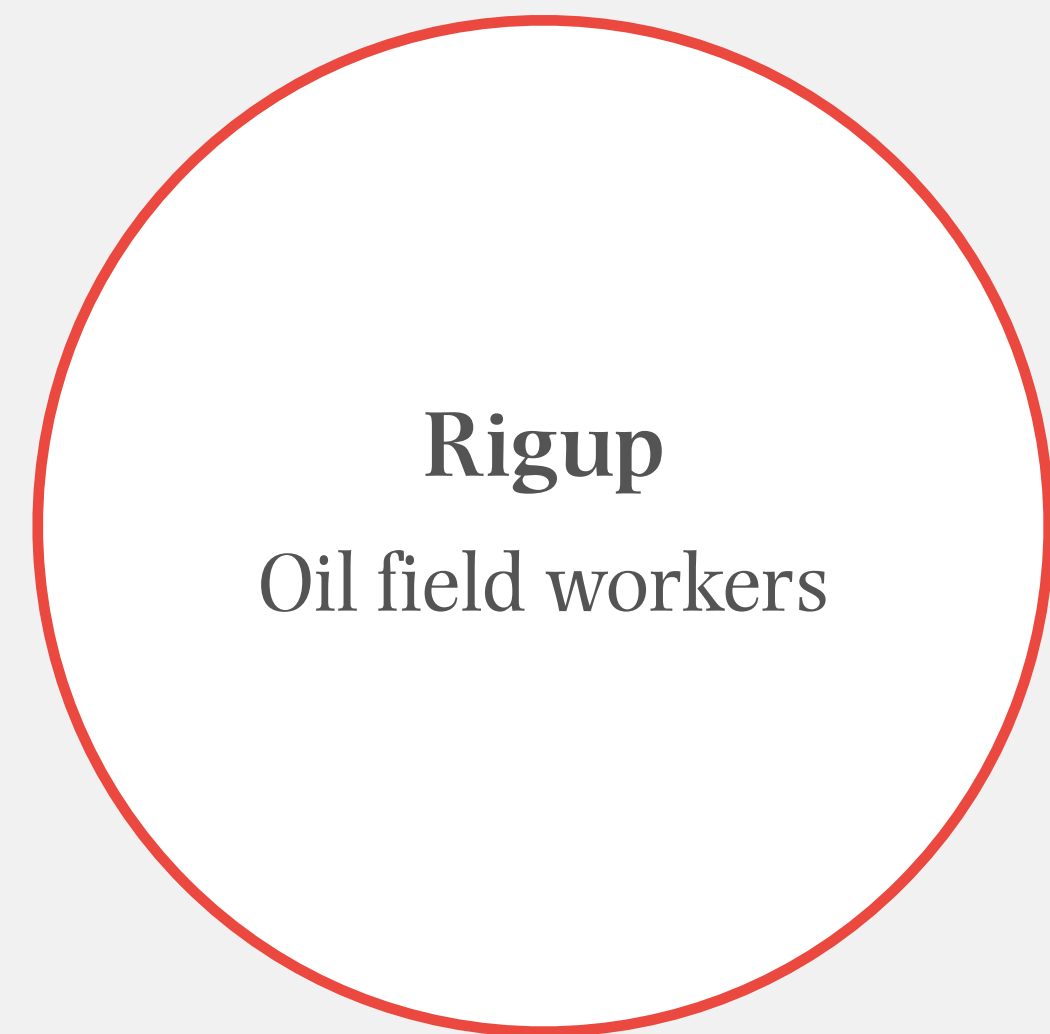
Is that a 'tech' company?

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)

■ Rest of World
■ USA
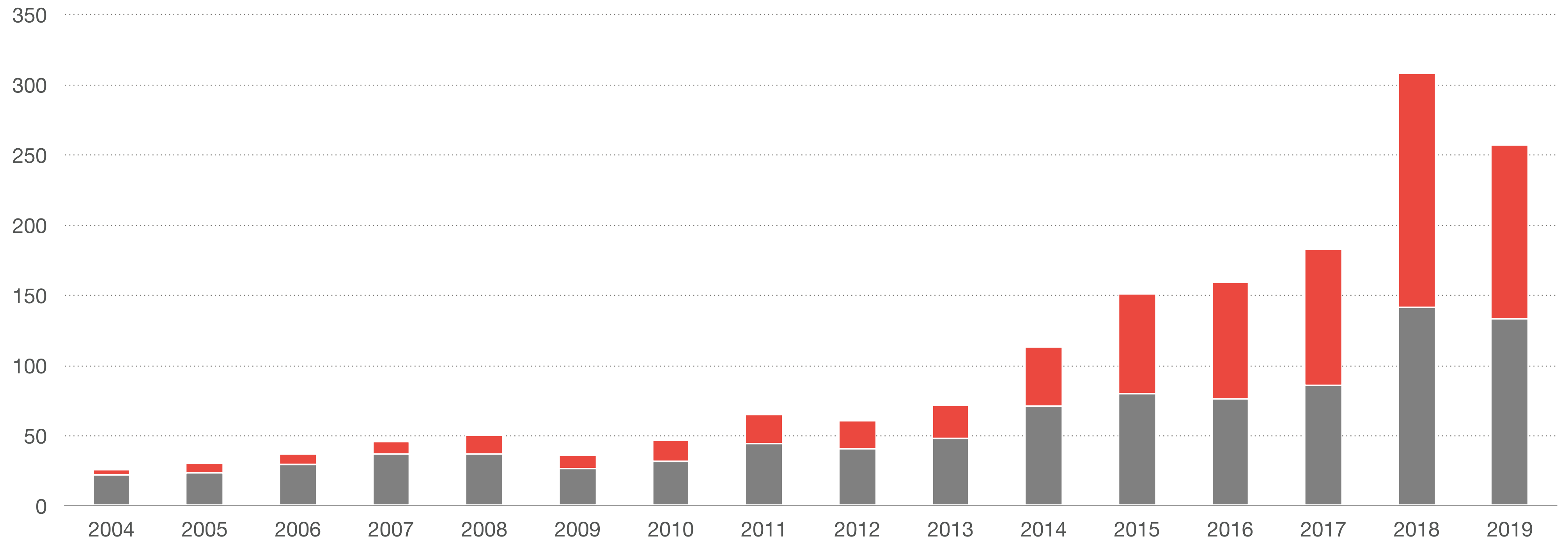
Expanding software and tools from work to everyday life

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

Mainframes   PCs   Web   Smartphones   ?
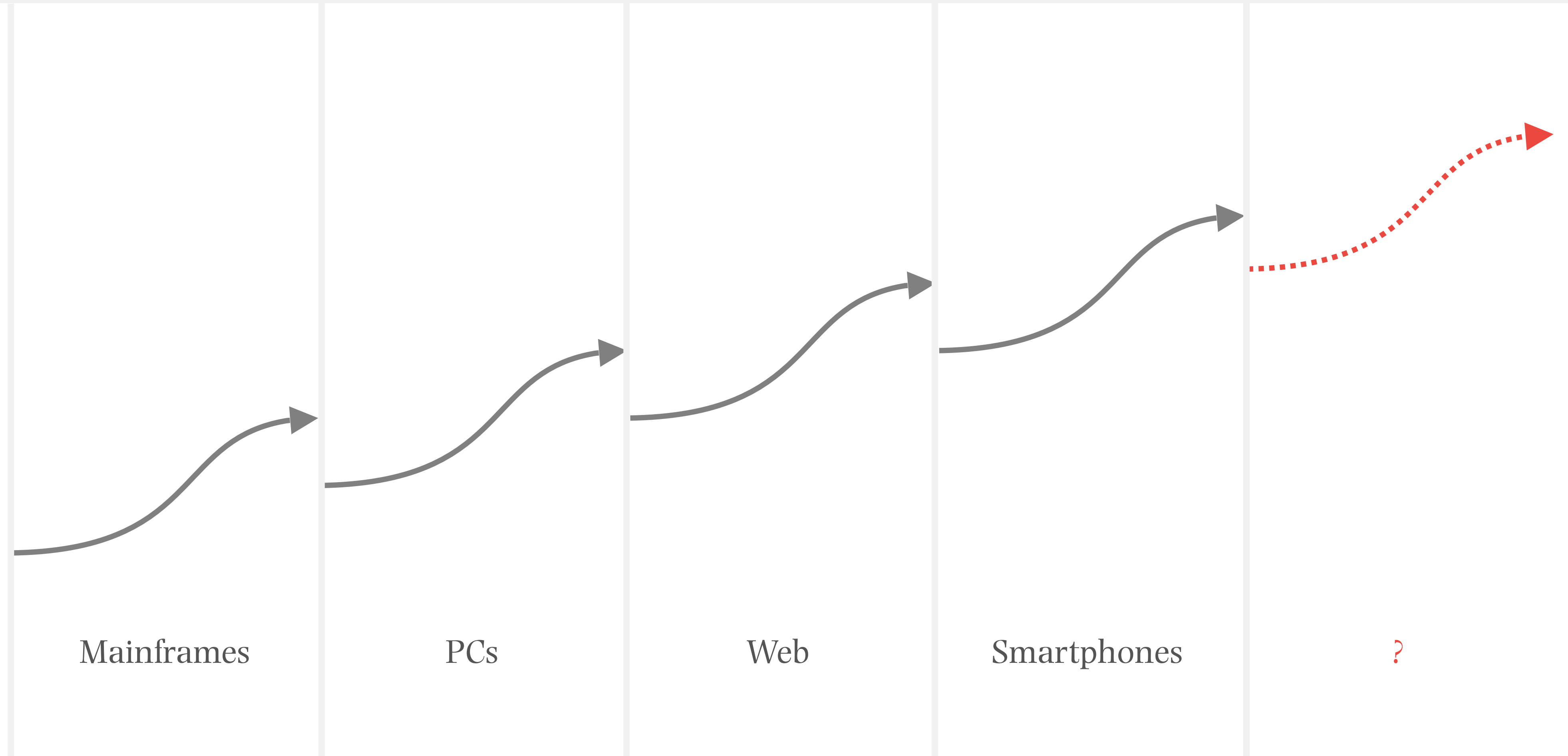
Can there be another massive increase in scale?

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

Global installed base, 2019 (bn)

Mainframes	PCs in 1994	Web in 2007	Smartphones in 2019	Global population over 14
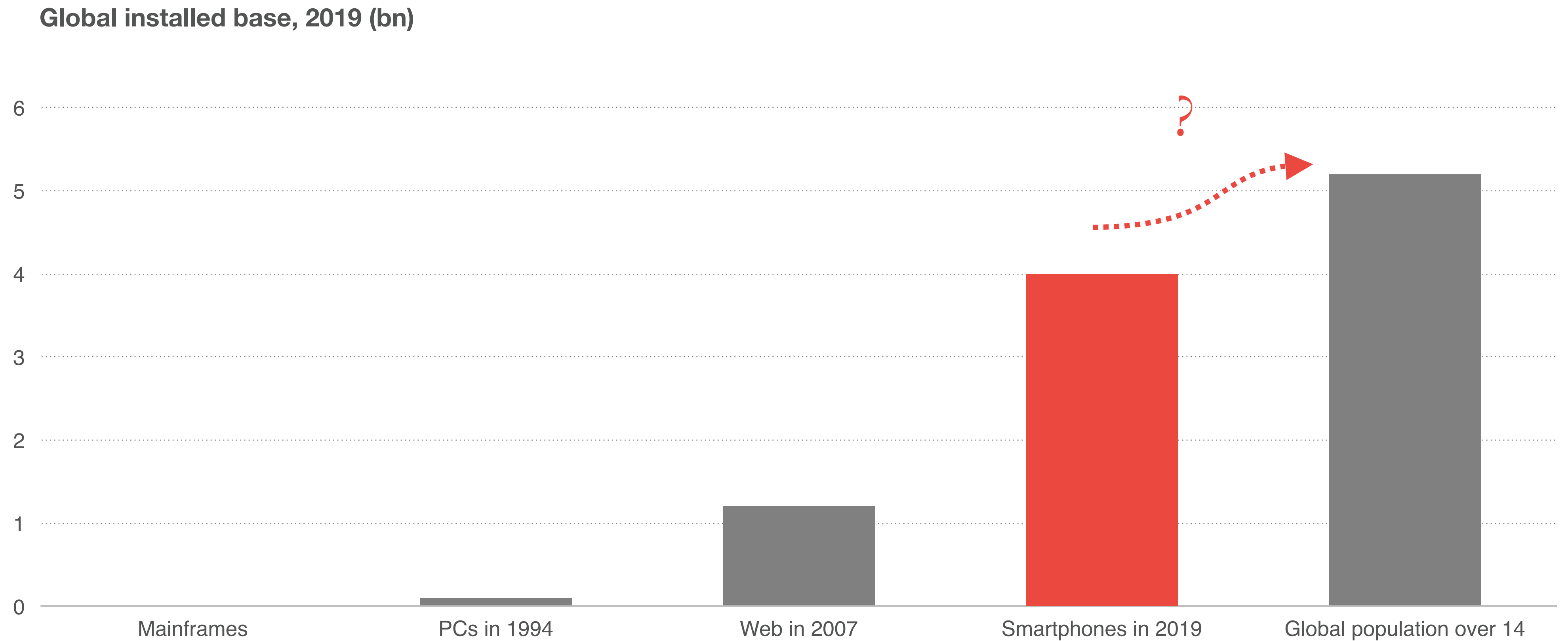
And is this the new thing, or part of the old thing?

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

Stupid

Exciting!

Boring

PC internet

?

Mobile?

?

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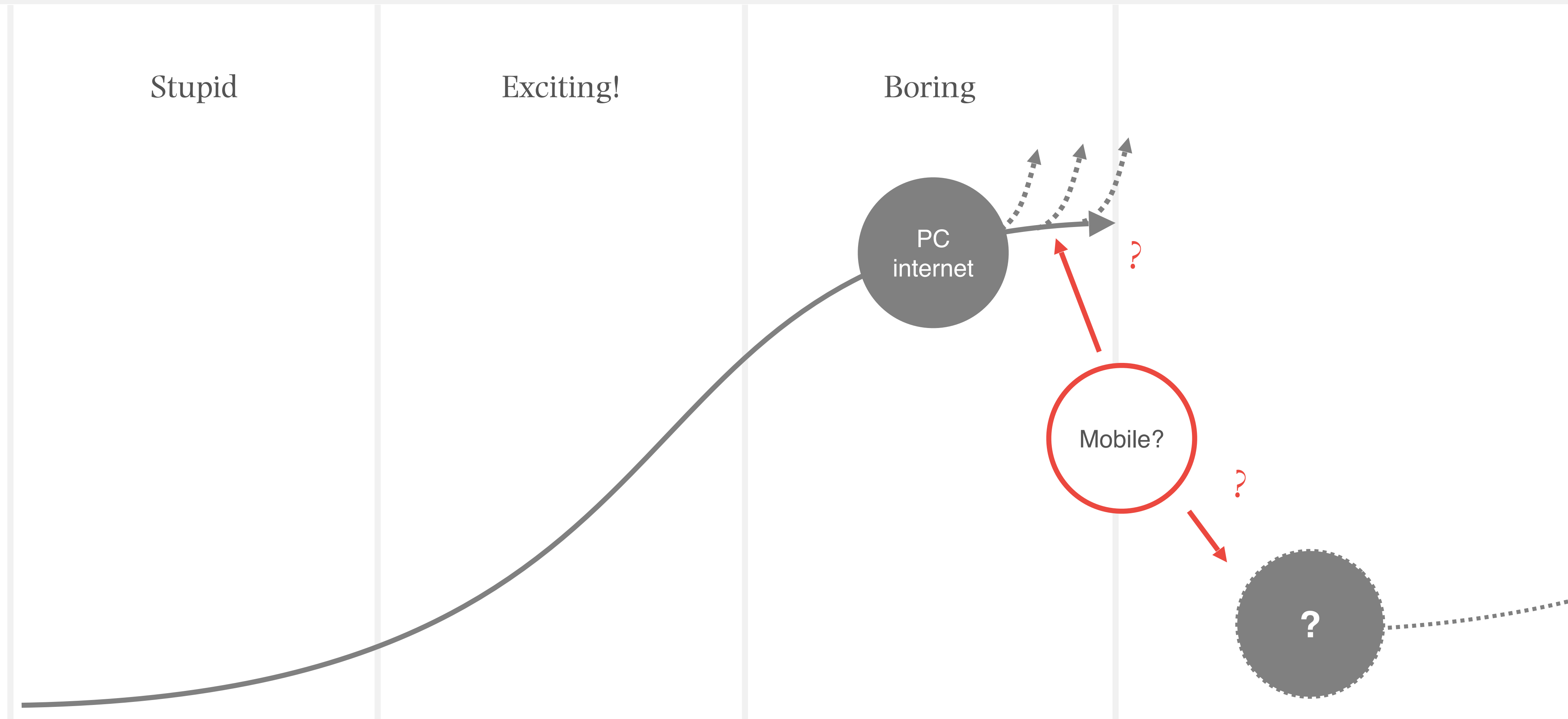
Lots of new things going on, but which is THE thing?

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

Global population, 2019 (bn)

Global population over 14	Mobile phones	Smartphones	Fully online
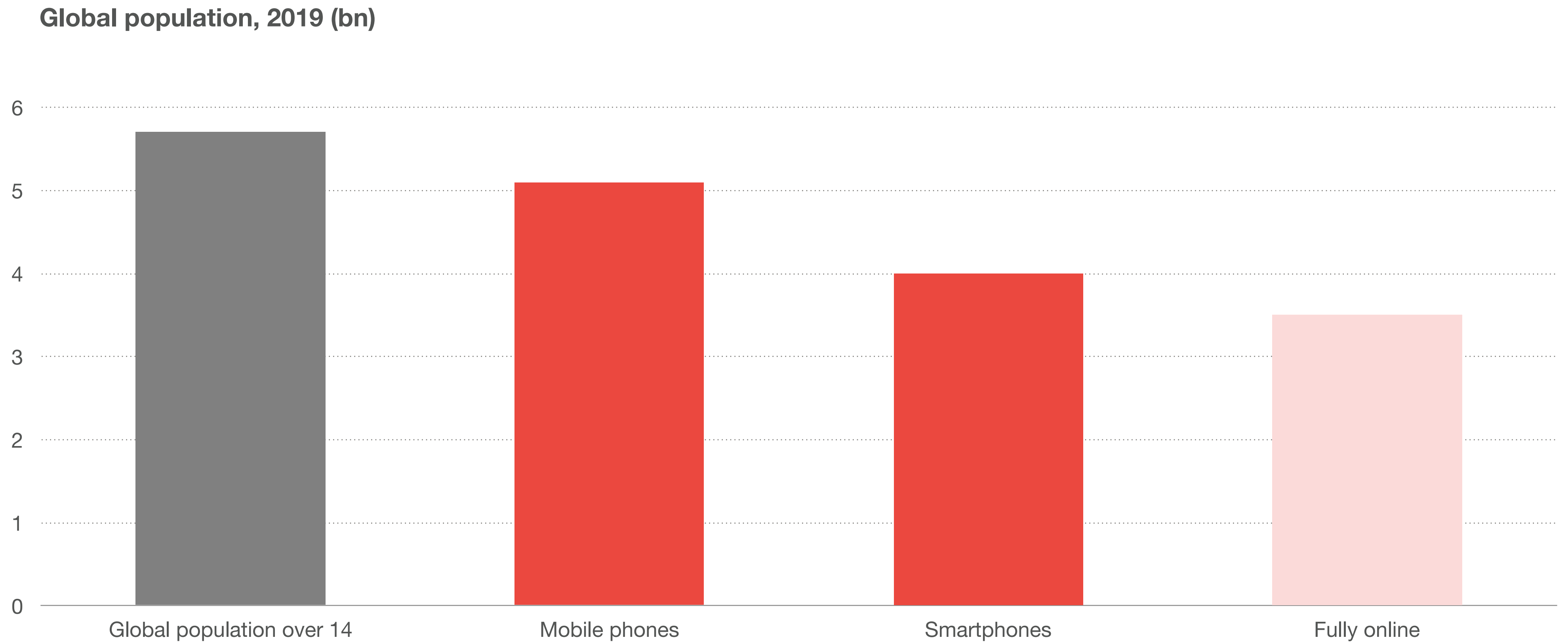
Which also meant creating huge, scary companies

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

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

Source: Bloomberg
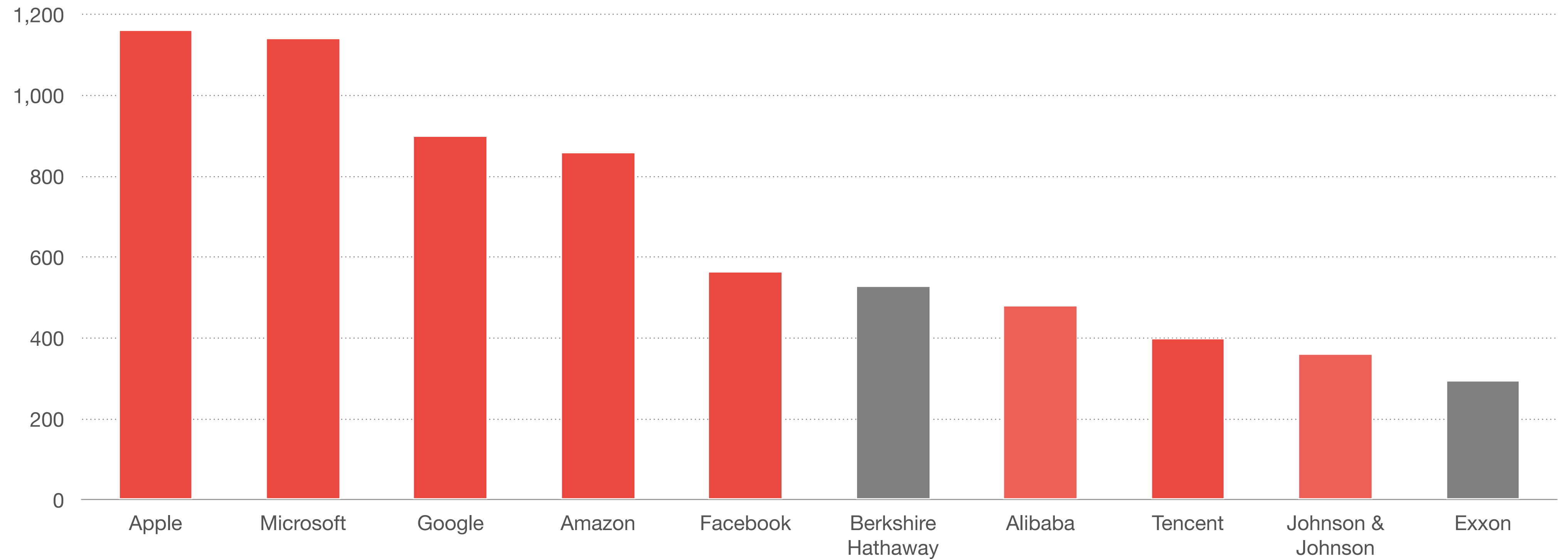
Now we have issues. So many issues

Every month there's something else to worry about
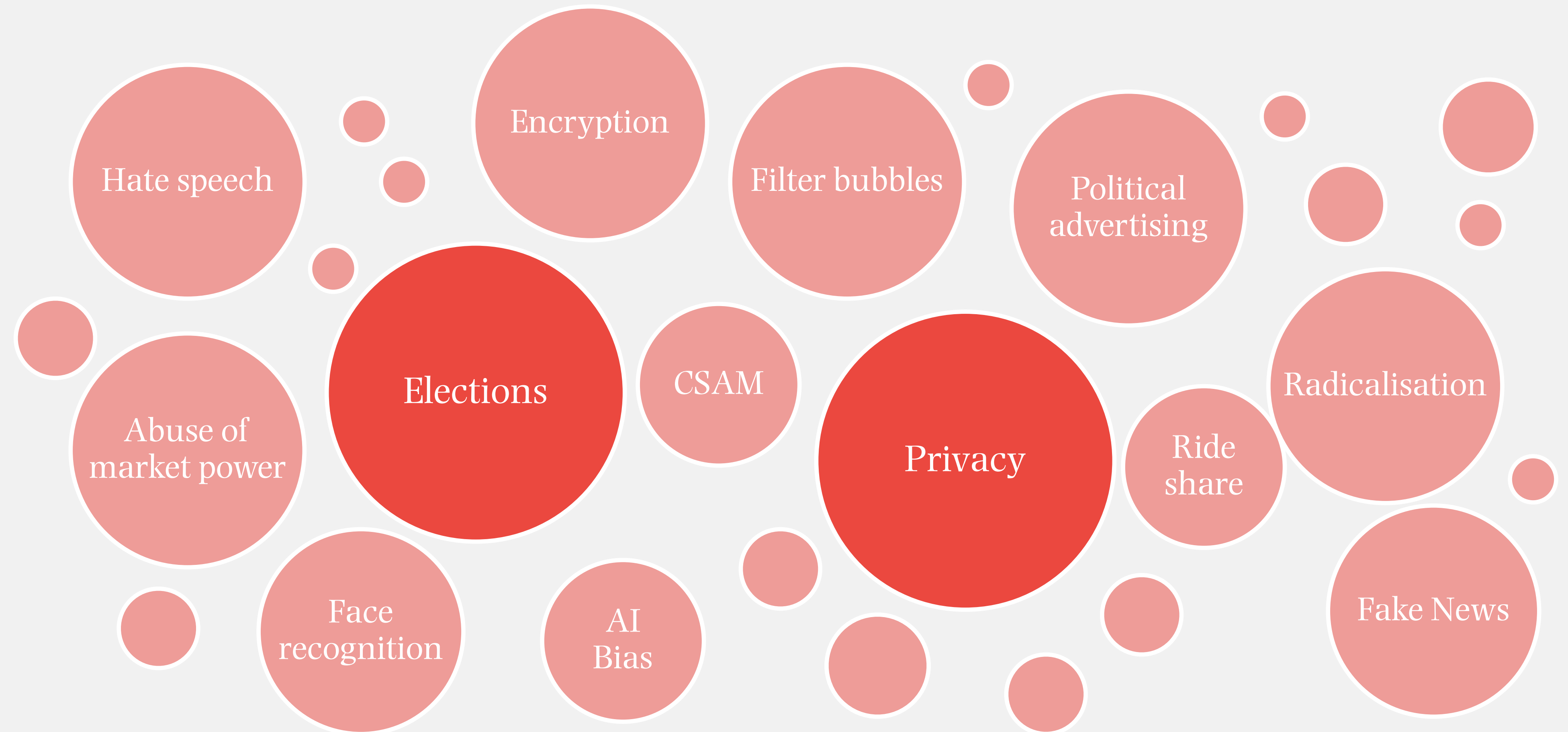
And this won't get simpler

None of these people exist: these faces are algorithmically generated by a machine learning system
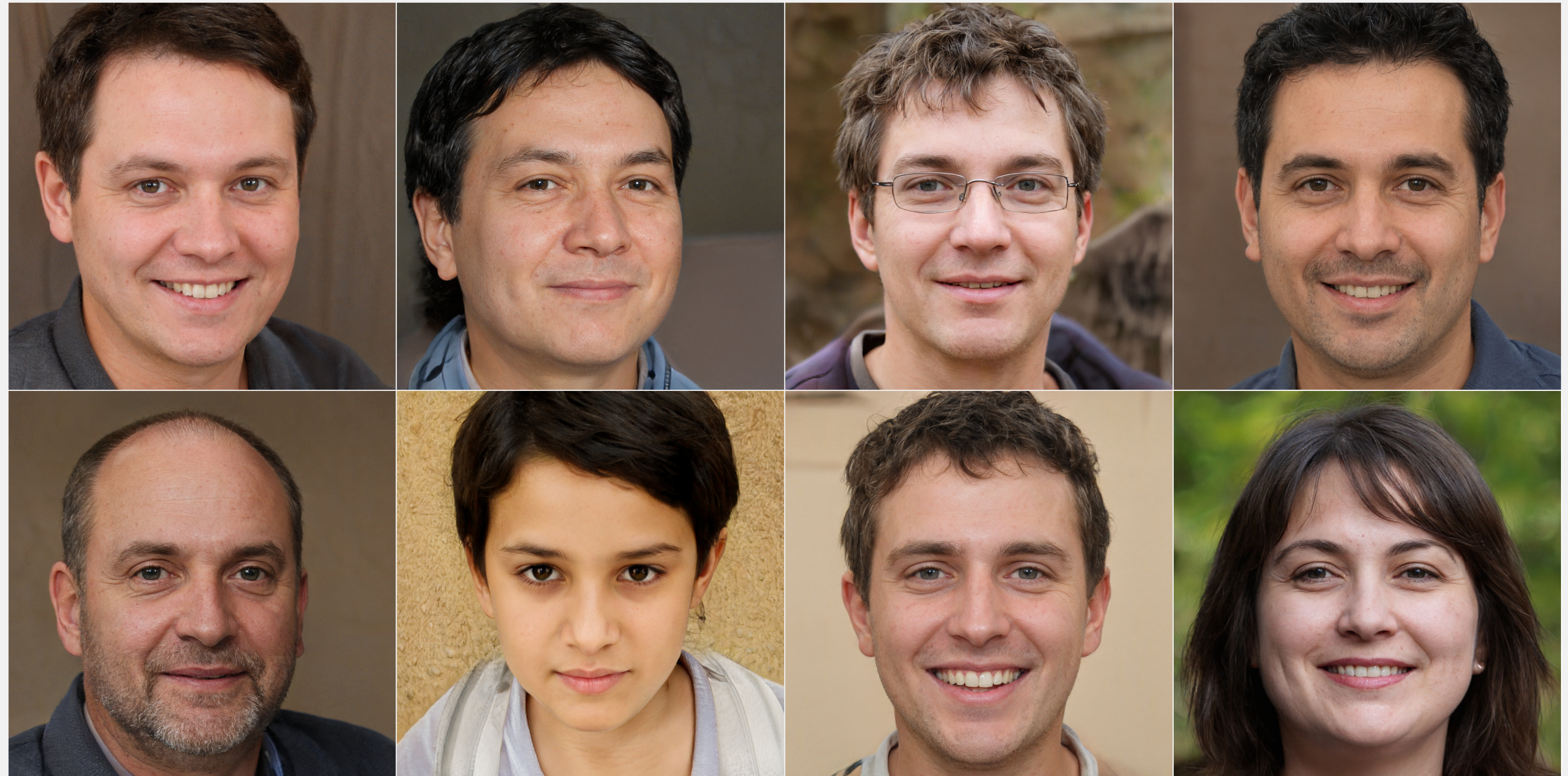
Naturally, there must be a simple answer

Every complex question has a simple answer

Break them up

'Break them up' – the Brexit of tech

Every complex question has a simple answer

Break them up

Into what?

And which
problems would
that solve?

Brexit
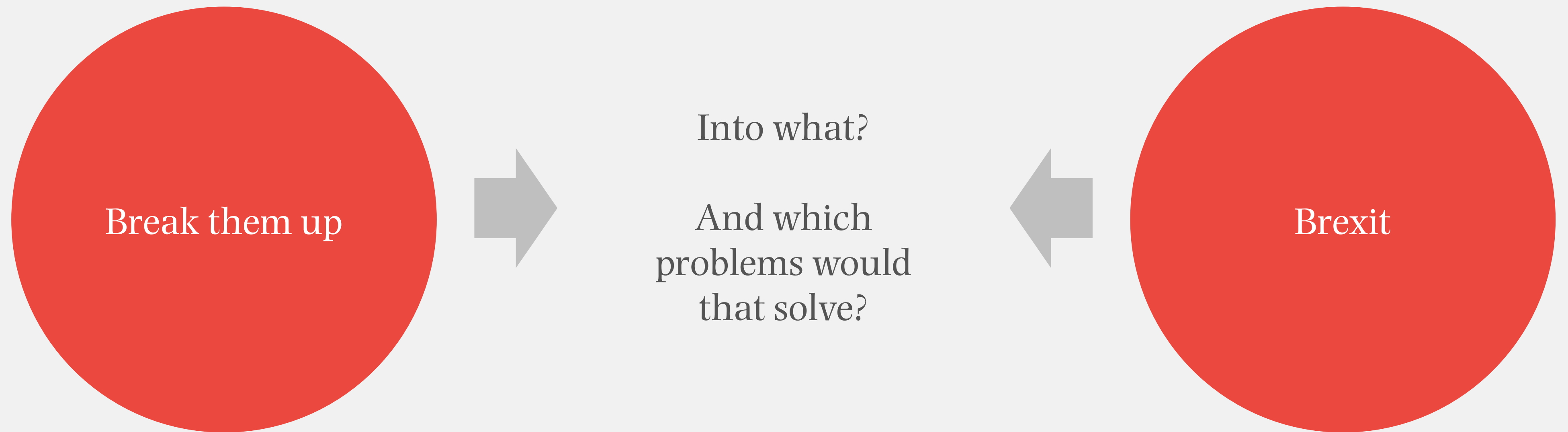
Also included: a classic moral panic

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

| | Amazon | Walmart | US groceries | Macy's | US general retail | UK packaged food |
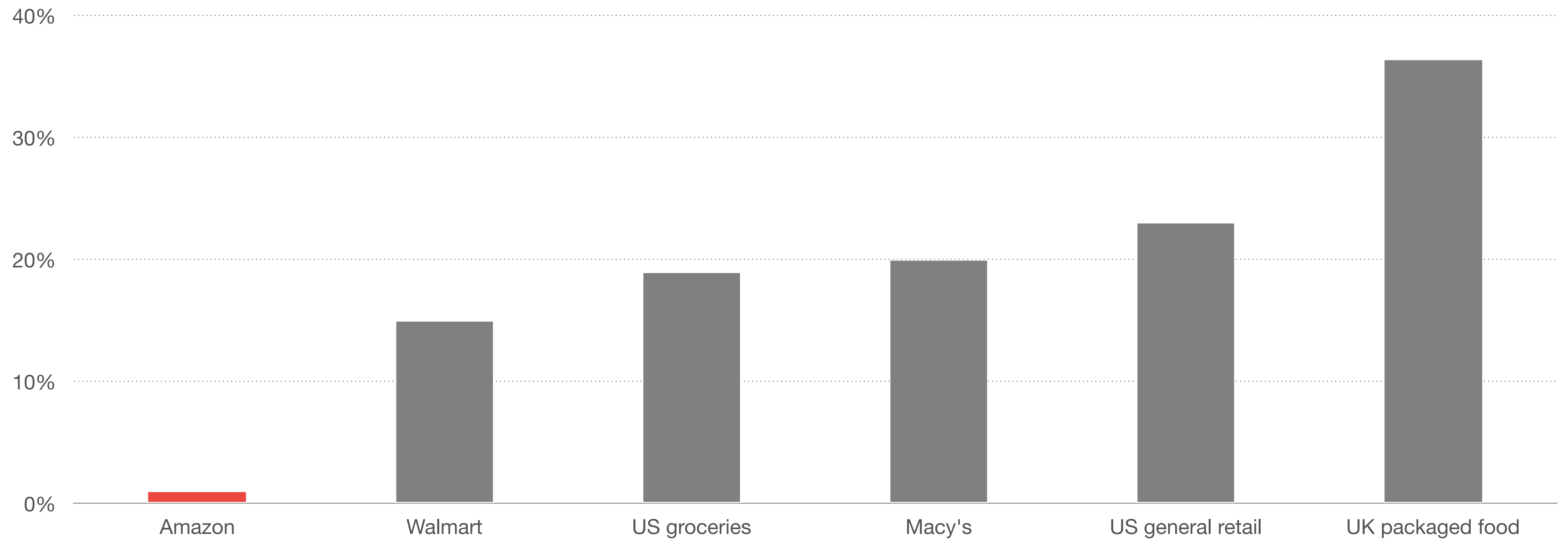
But panics have causes, and consequences

"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...
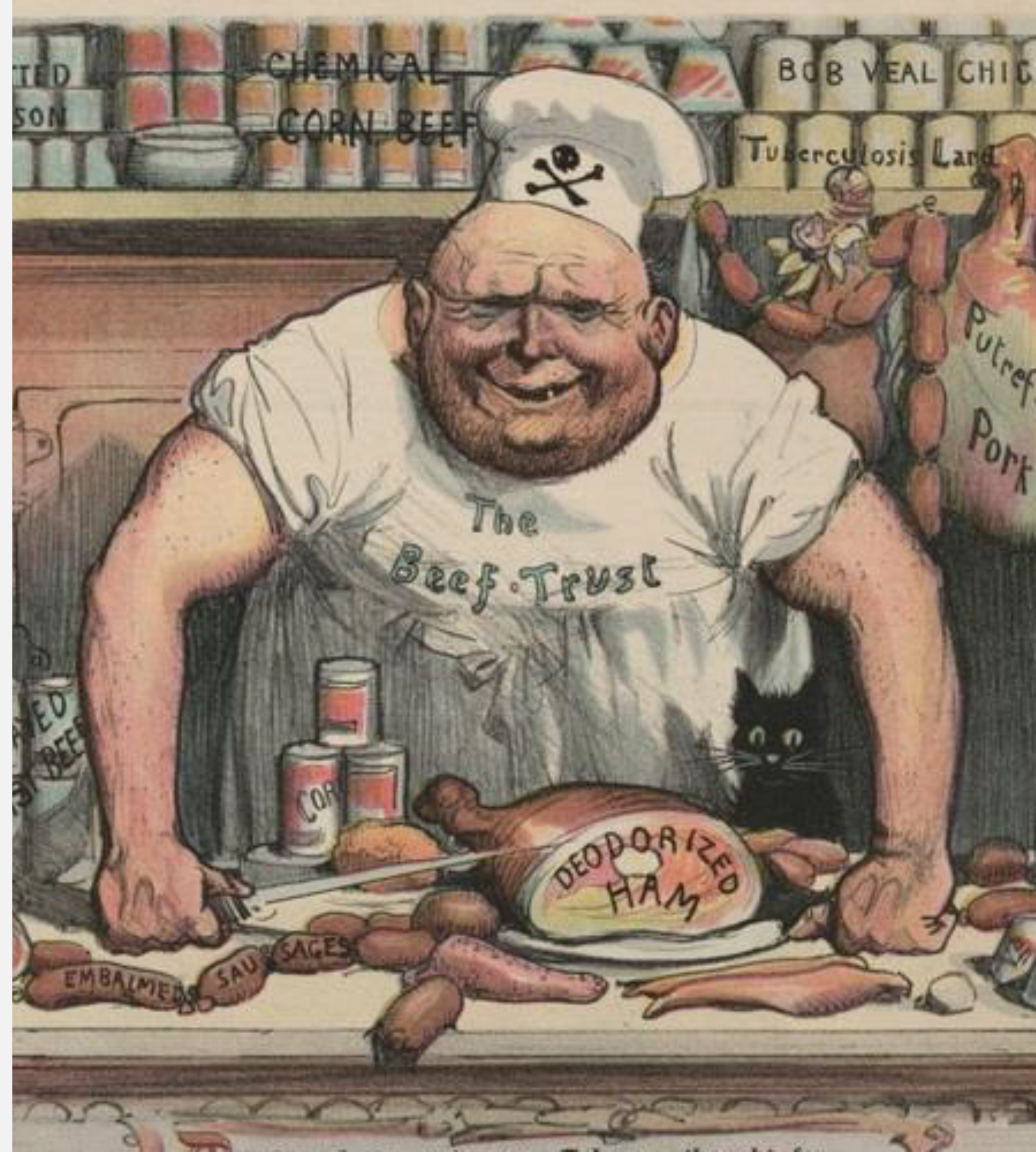
So, which problem are you trying to fix?

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

Market share, global ex-China, 2019

Legend:
- Other
- Facebook
- Google

Categories: Search, Social (DAUs), Online advertising, All advertising
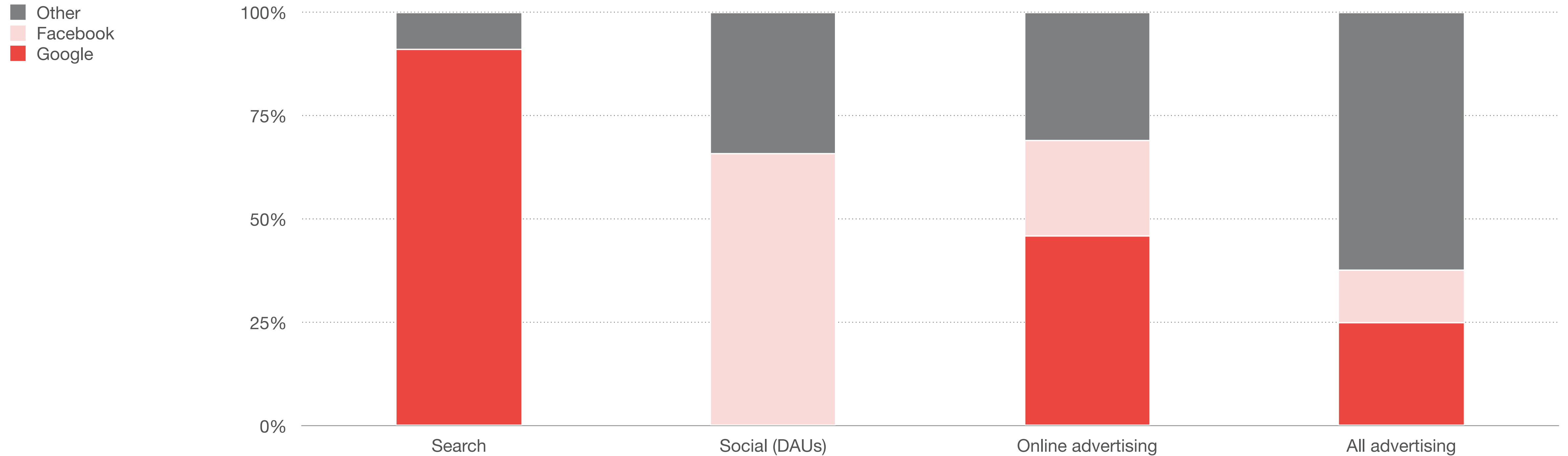
What's Amazon's market share: 35% or 5%?

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

Amazon US market shares, 2018
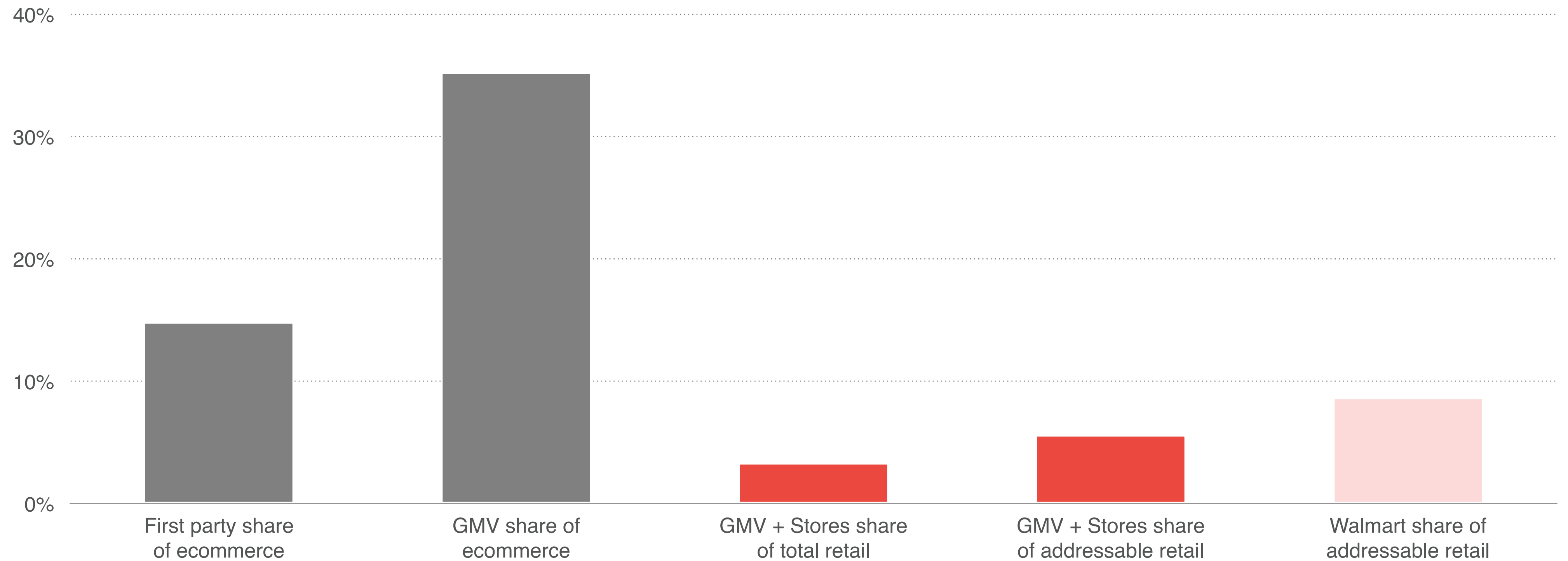
| | First party share of ecommerce | GMV share of ecommerce | GMV + Stores share of total retail | GMV + Stores share of addressable retail | Walmart share of addressable retail |

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'

Apple market shares, 2019
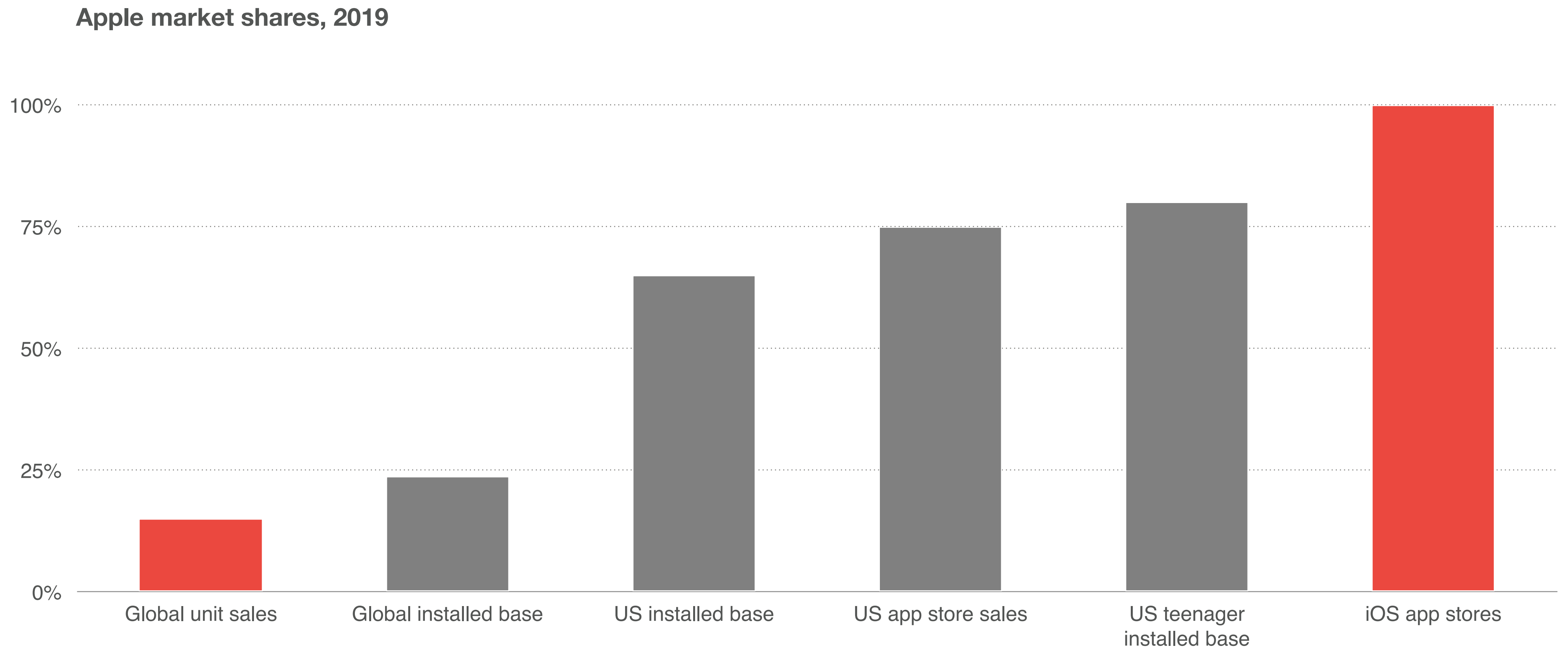
Market definition is everything

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

Google
YouTube
Android? Gmail?
Display ads?

Facebook
Instagram &
WhatsApp
Oculus?

Amazon
AWS (cash cow, but
not the only one)

Apple
Content stores?
Music?
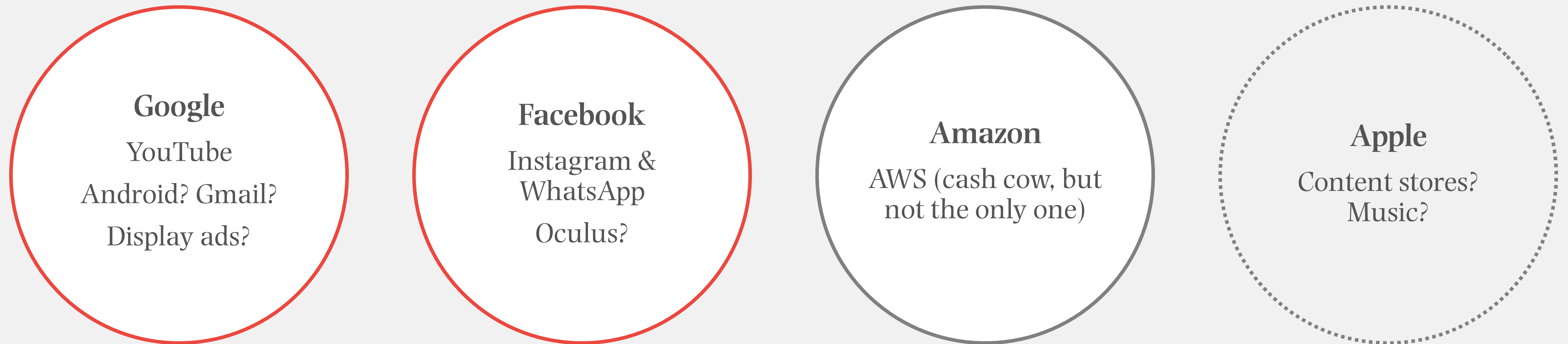
But what kinds of competition would breakups affect?

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

More competition in the ad market

← Split apart Instagram or YouTube

≠ Little impact on network effects or product competition

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

Tech companies being bad to us

Bad people using tech

Solved by anti-trust: either breakups or conduct regulation
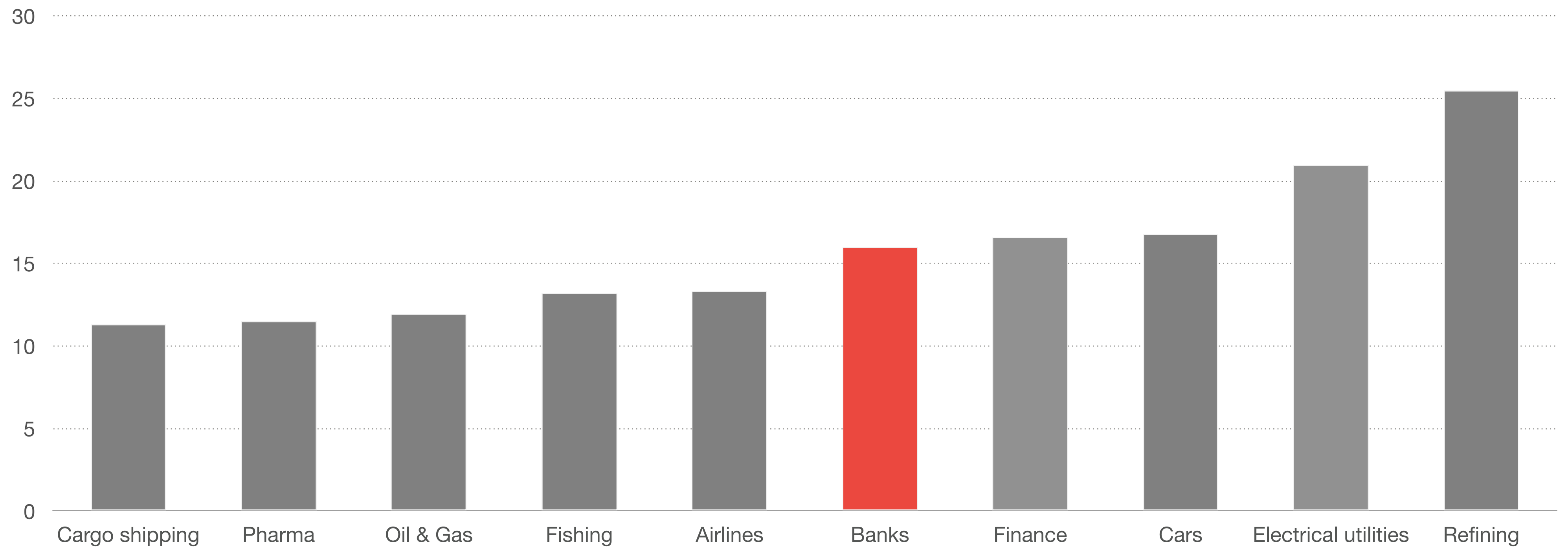
Limited anti-trust relevance

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', or 'money'

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

'Regulate the banks'

Retail deposits	Public securities markets	Insider trading
Credit cards	Pensions	Capital adequacy
Mortgages	Futures & options	And so much more…

Is this a 'tech' problem?

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

**Old issues,
old solutions**

Online-only banks

→

**Old issues,
new questions**

Uber

→

**New issues,
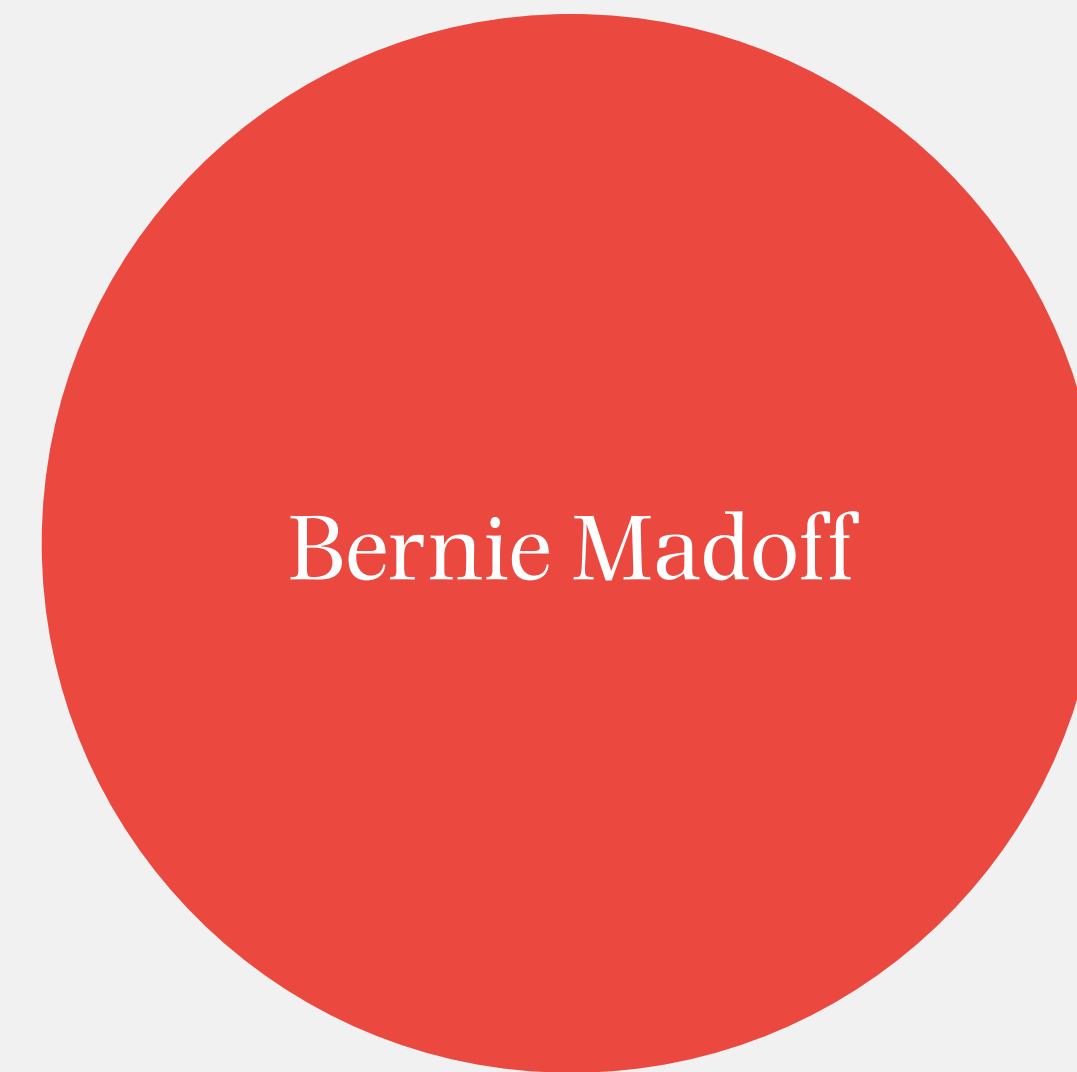new solutions**

Airbnb, Facebook

Is that a 'tech' company?

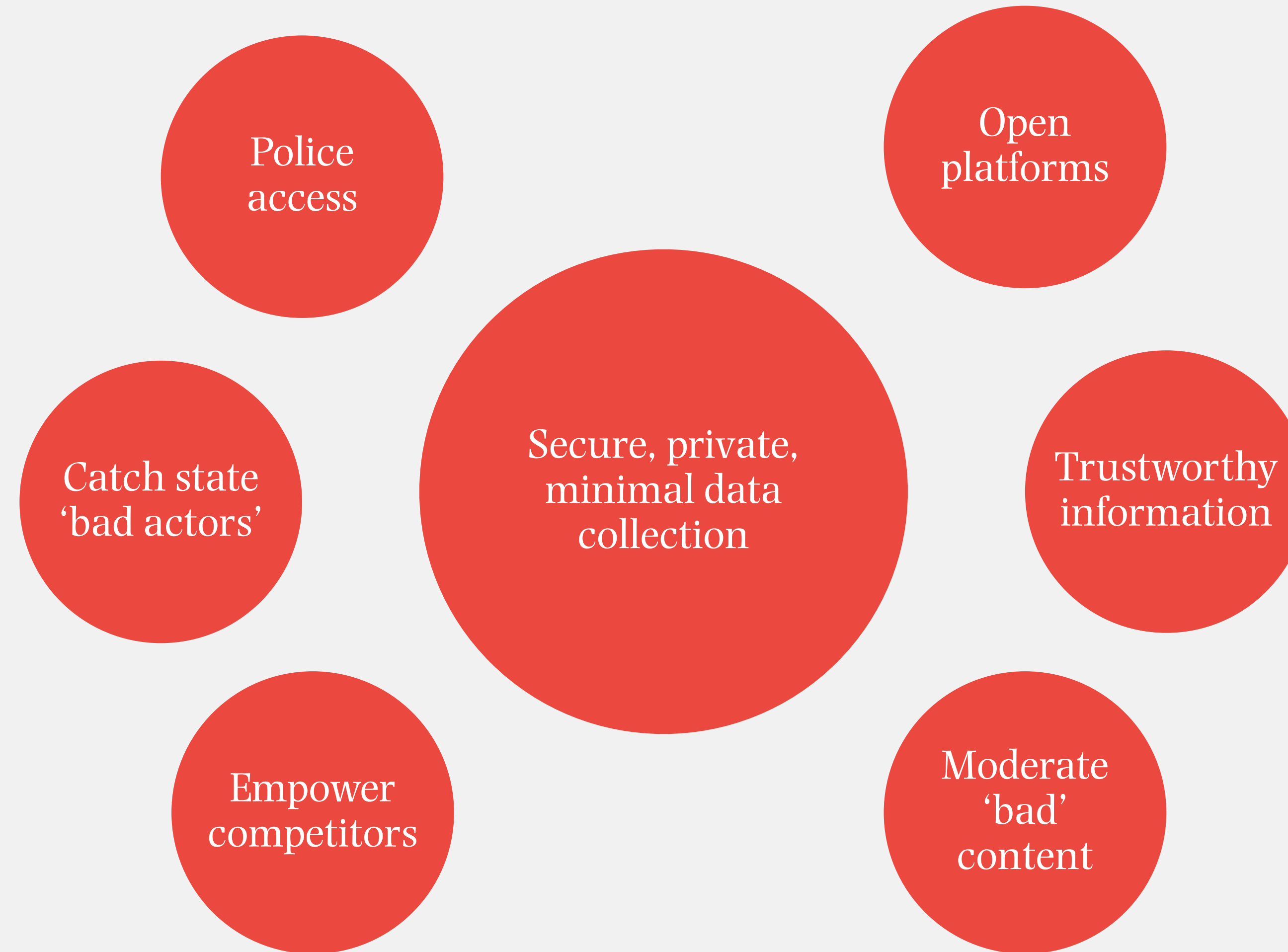Or is it a bank, but with a website?

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

Bernie Madoff

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...

Police access

Open platforms

Catch state 'bad actors'

Secure, private, minimal data collection

Trustworthy information

Empower competitors

Moderate 'bad' content

All of these are trade-offs

Do we want platforms to know and control what happens on their networks, or not? Or both?
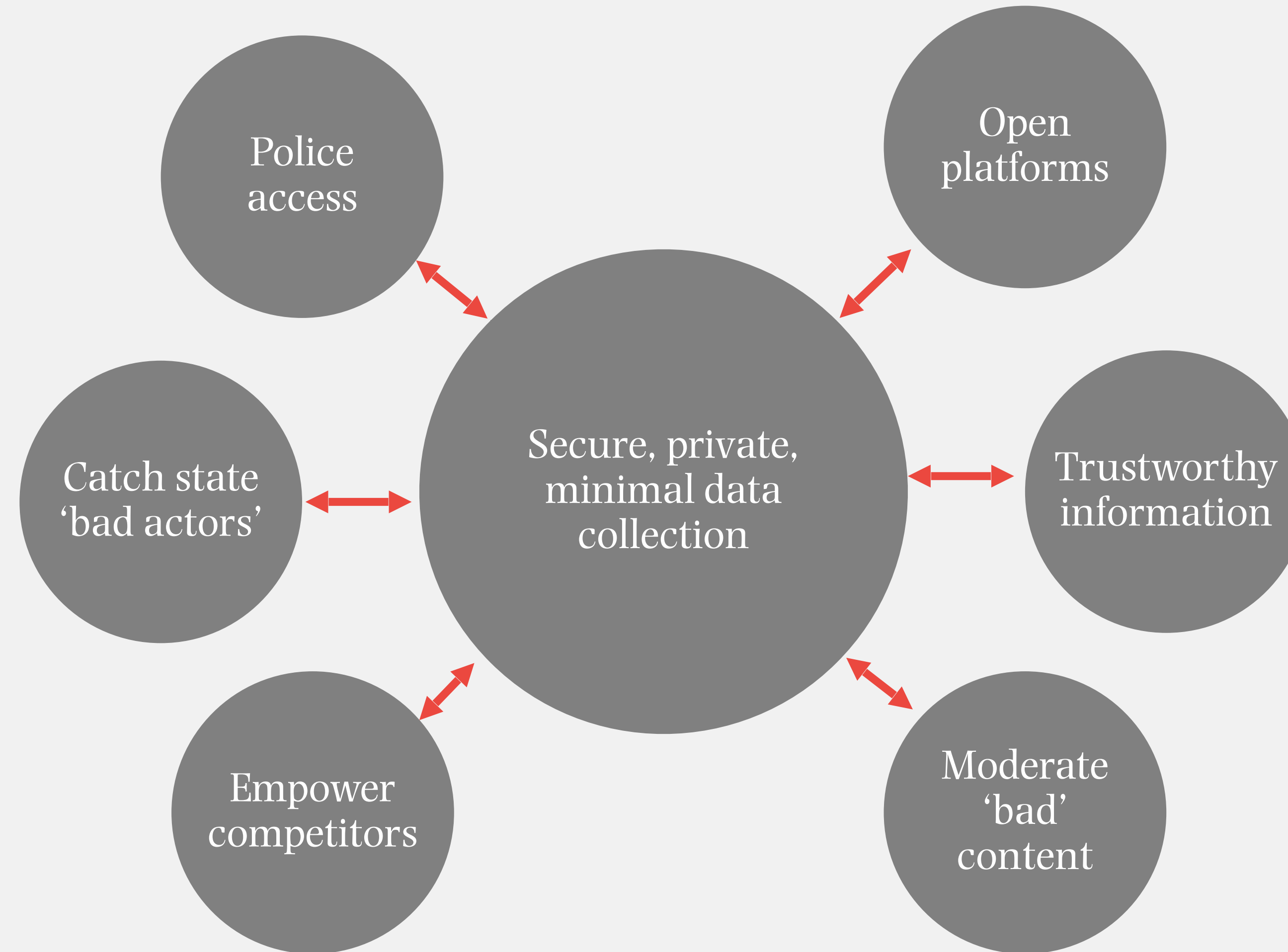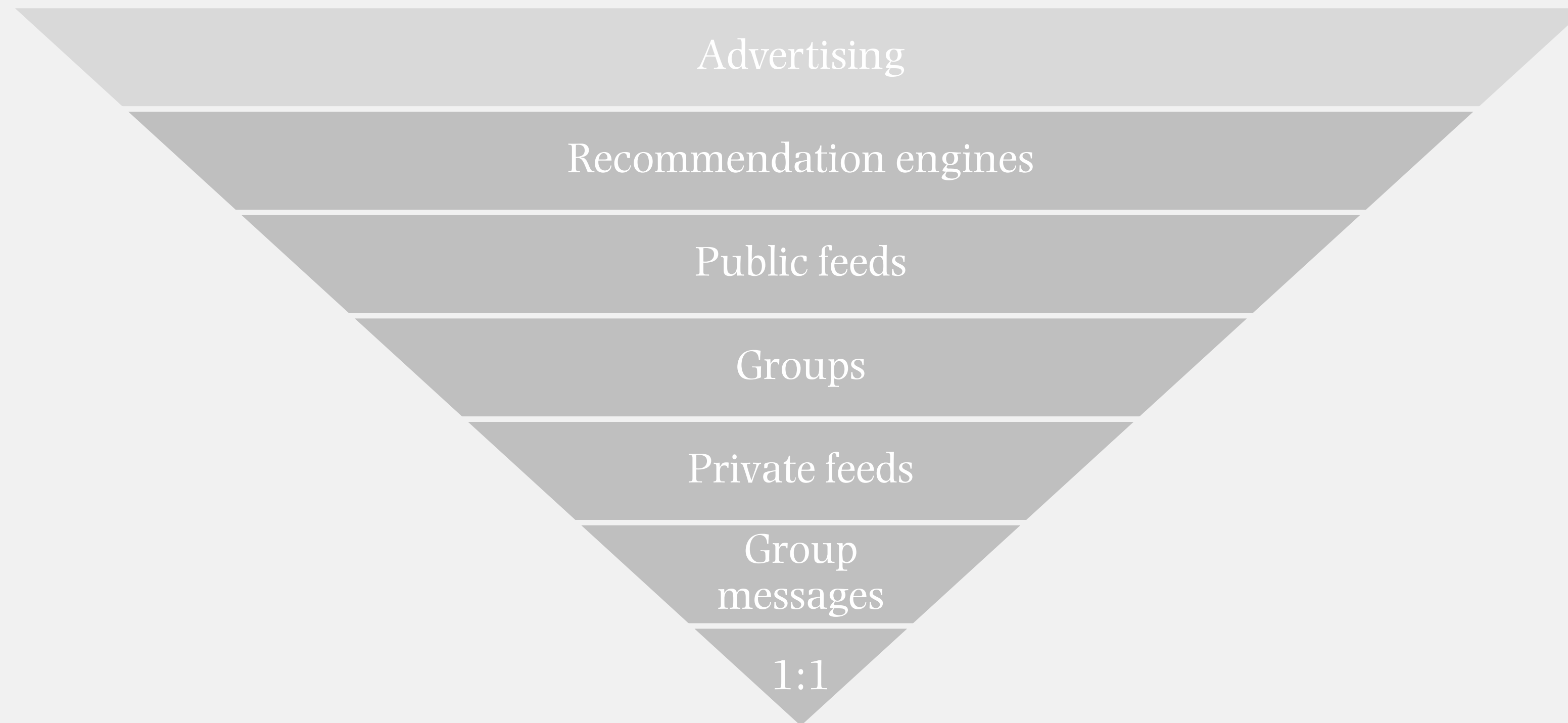
Case study: content moderation

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

Advertising

Recommendation engines

Public feeds

Groups

Private feeds
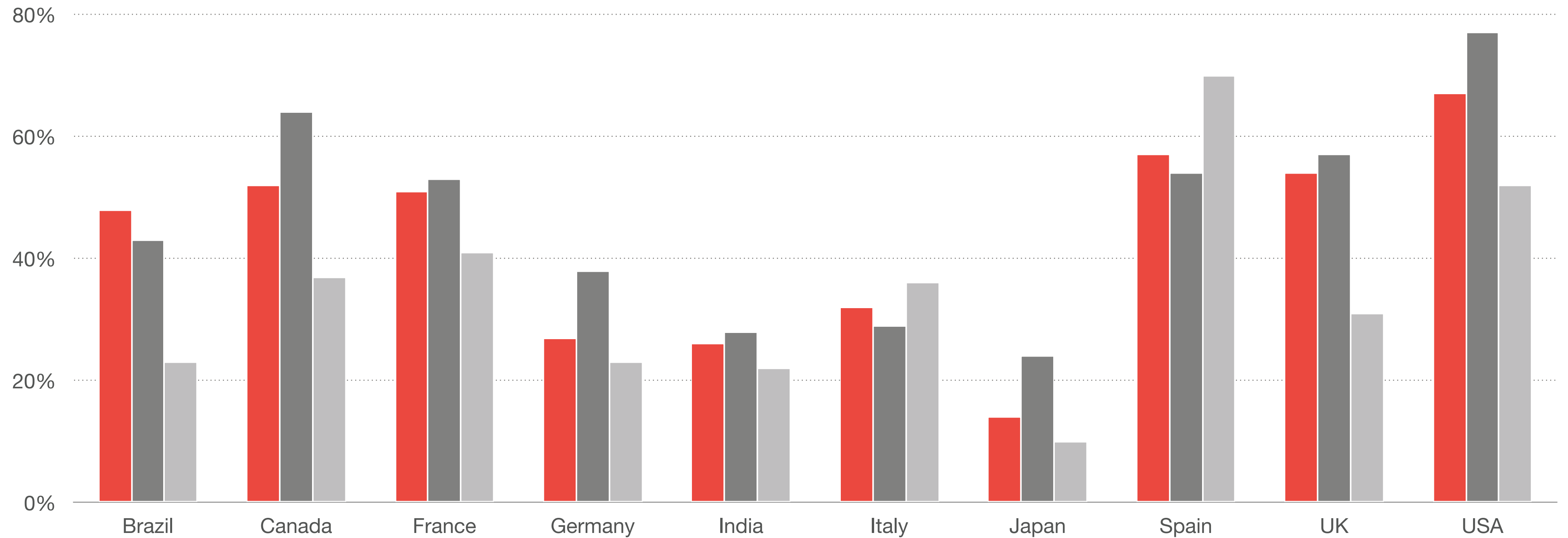
Group
messages

1:1

Source: Alex Stamos

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:**

Legend:
- Offend minorities
- Offend religion
- Be sexually explicit

Countries: Brazil, Canada, France, Germany, India, Italy, Japan, Spain, UK, USA

Source: Pew Global Attitudes Survey, 2015

Do we know what we want?

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

Totally public

Innocuous   Rude?   Offensive?   Illegal
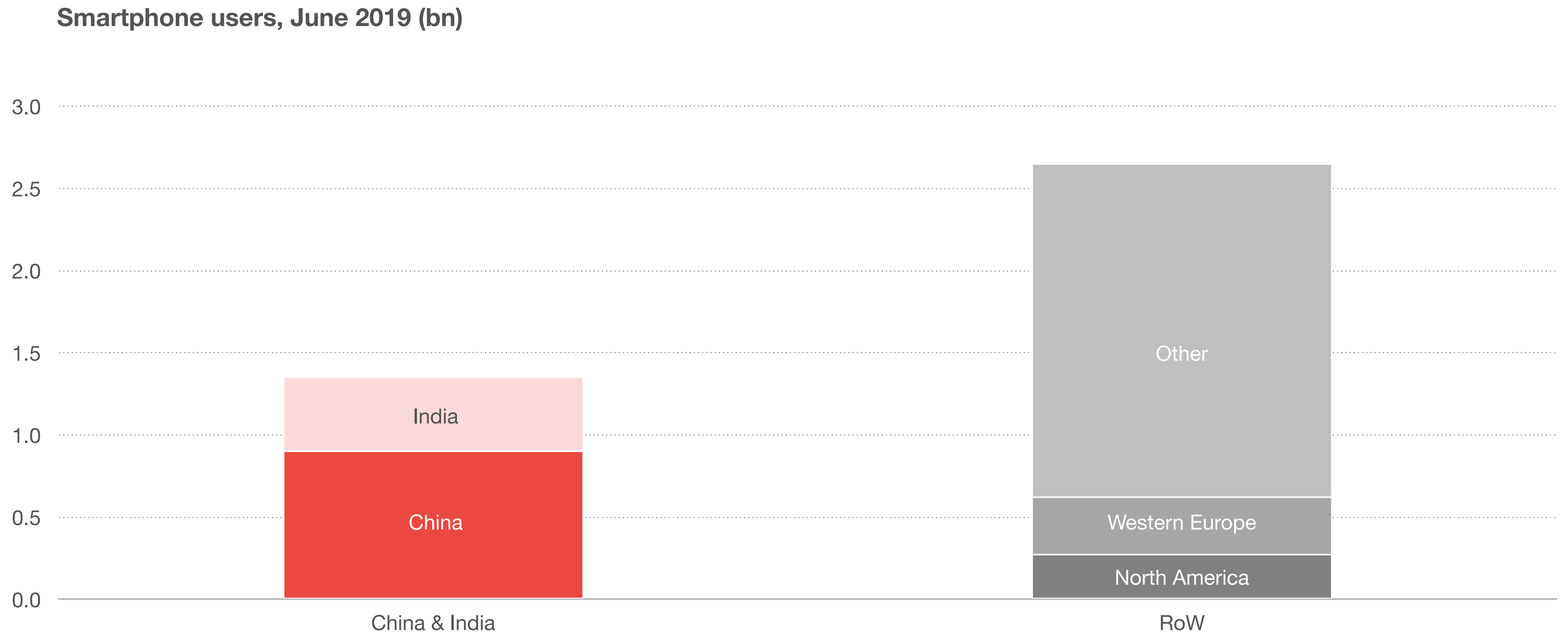
Totally private
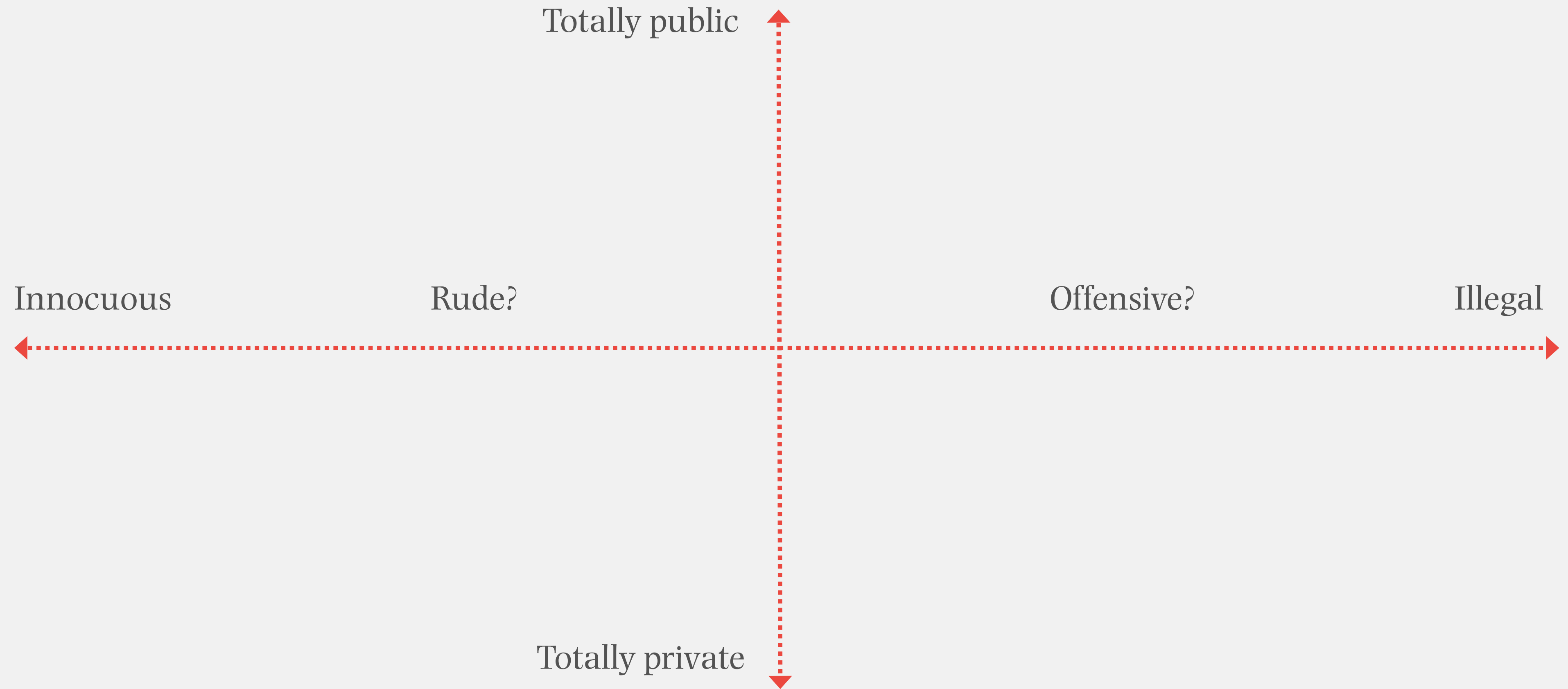
China, digital sovereignty and digital extra-territoriality

"War is God's way of teaching Americans geography."

The end of the American internet
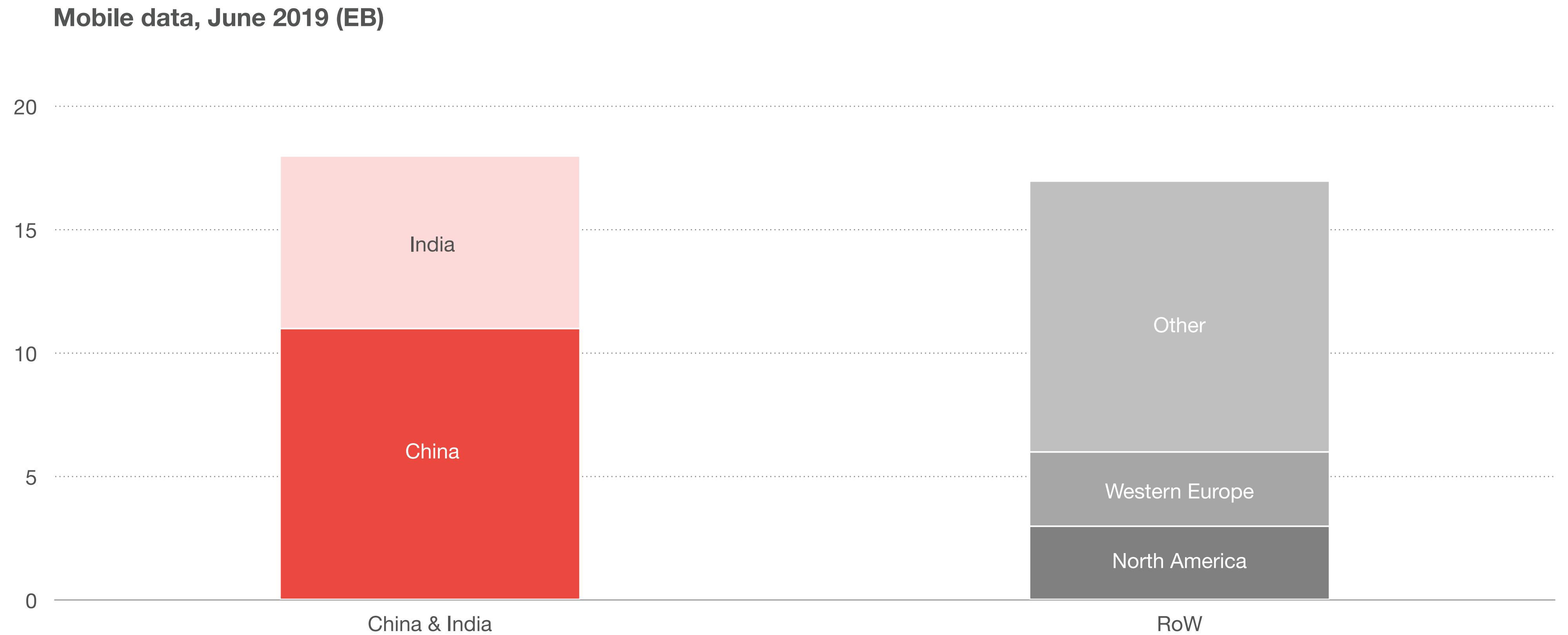
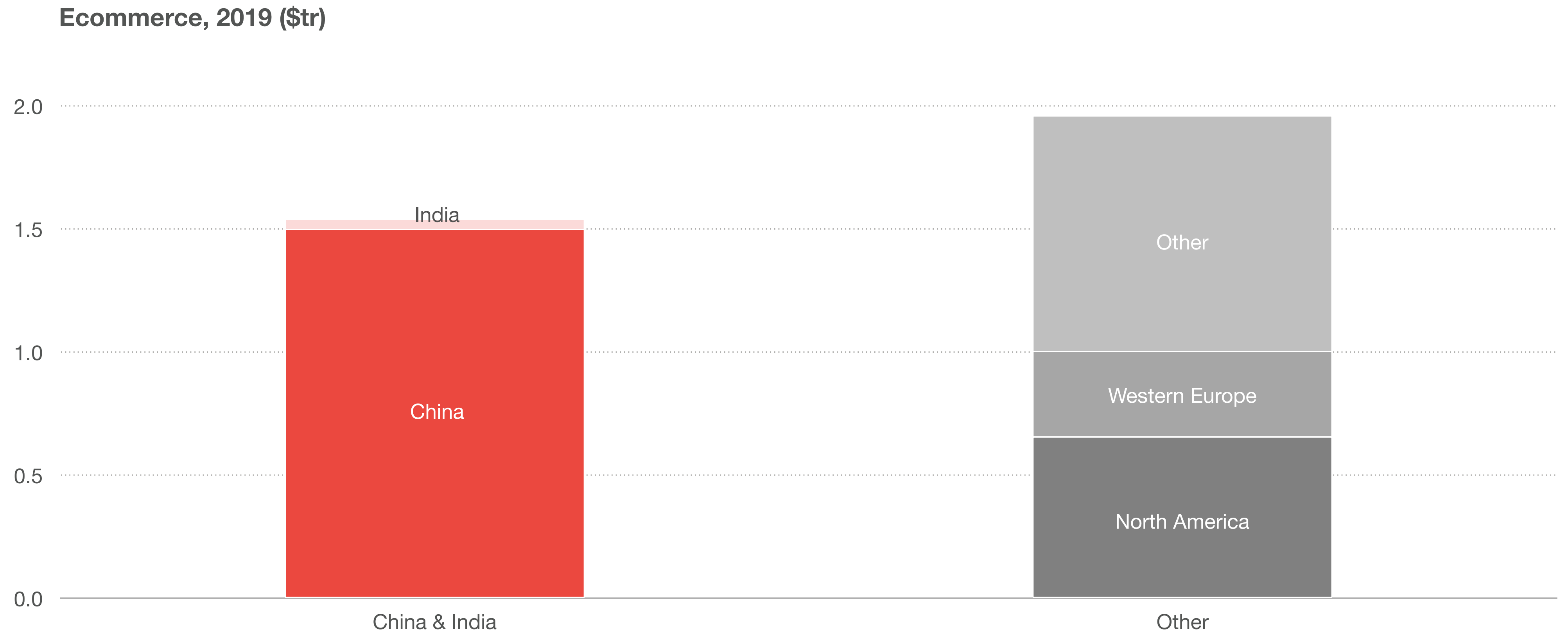China and India have 5x more smartphones than the USA

Smartphone users, June 2019 (bn)

Bar chart comparing smartphone users. China & India: China (~0.9bn) and India (~0.45bn). RoW: North America, Western Europe, Other, totaling ~2.65bn.

The end of the American internet

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

Mobile data, June 2019 (EB)

China & India stacked bar: China (red), India (light red)
RoW stacked bar: North America (dark gray), Western Europe (medium gray), Other (light gray)

The end of the American internet

40% of global ecommerce value is in China

Ecommerce, 2019 ($tr)

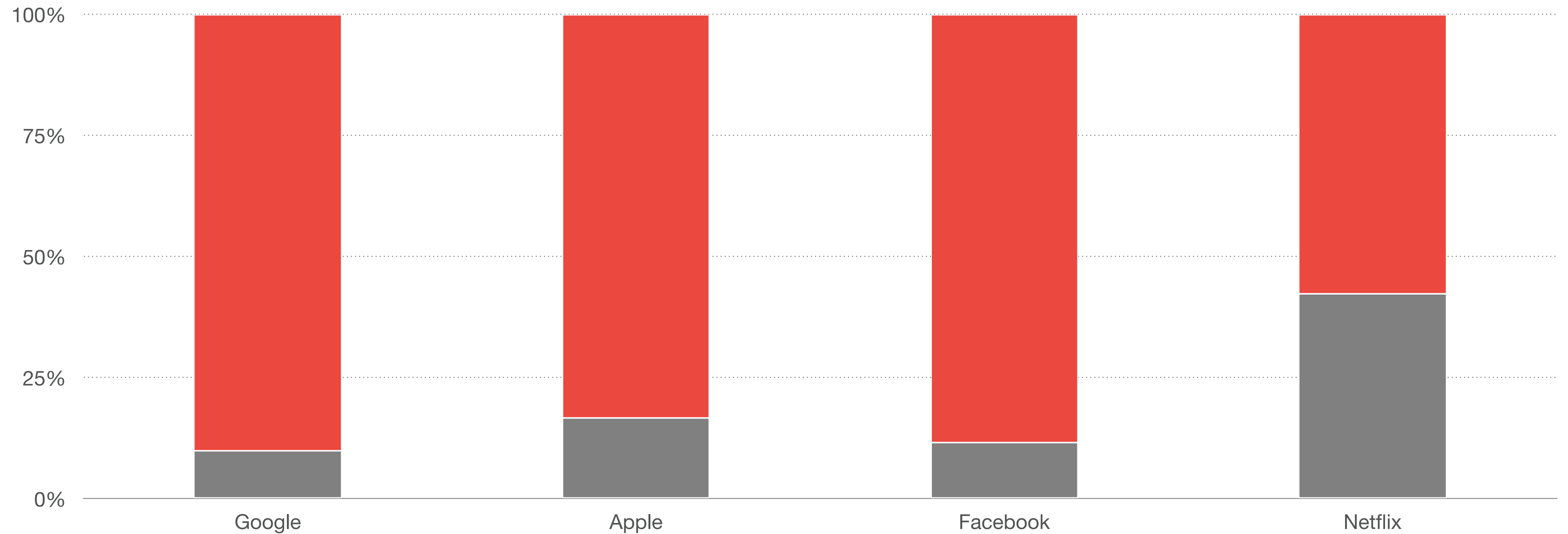|	
India	
China	Other
	Western Europe
	North America
China & India	Other

American companies, global reach

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

Global user base, Q3 2019

Legend:
- Rest of World (red)
- USA (grey)

Y-axis: 100%, 75%, 50%, 25%, 0%

X-axis: Google, Apple, Facebook, Netflix

Regulatory competition?

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

USA

EU

China

California, Singapore, UK, etc
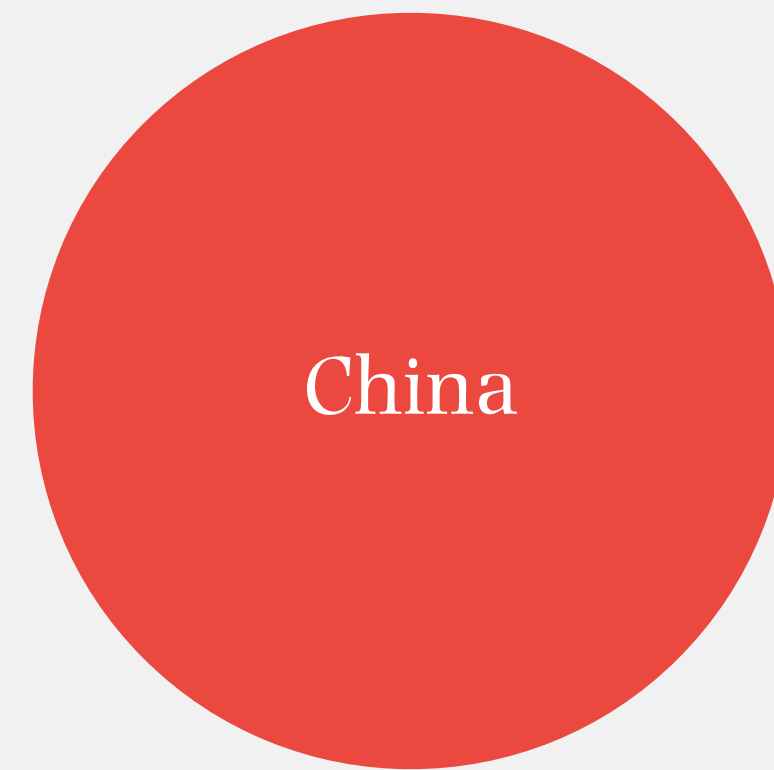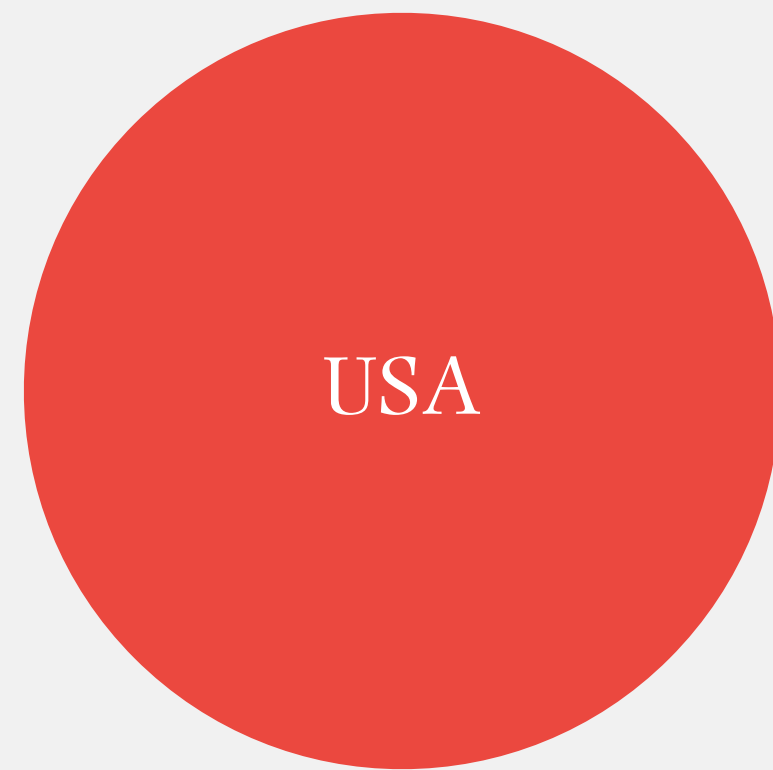
Digital extraterritoriality

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

Tiktok: not just your standards?

When the community standards being enforced
may not be your community's standards
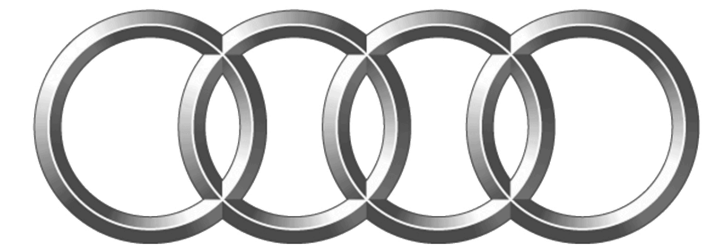
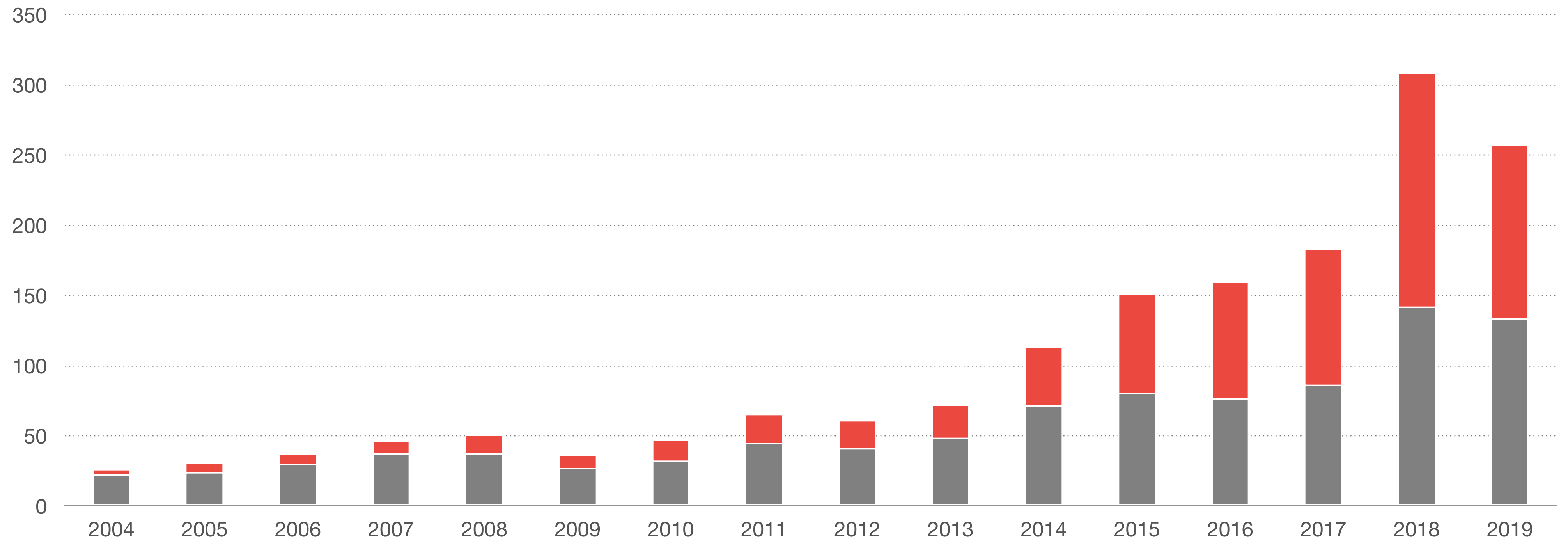# China's global content moderation

‘Don't forget Taiwan is part of China’

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)

■ Rest of World
■ US

From sovereignty (or protectionism) to extraterritoriality

Again, how do local rules apply to global systems?

Old
Store your data in our country

New
Follow our rules in our country

Future
Use our country's rules outside our country

The future – compliance and moderation as a service?

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

But what will happen when regulators conflict?

When local regulators assert global coverage and make incompatible demands, who yields first?
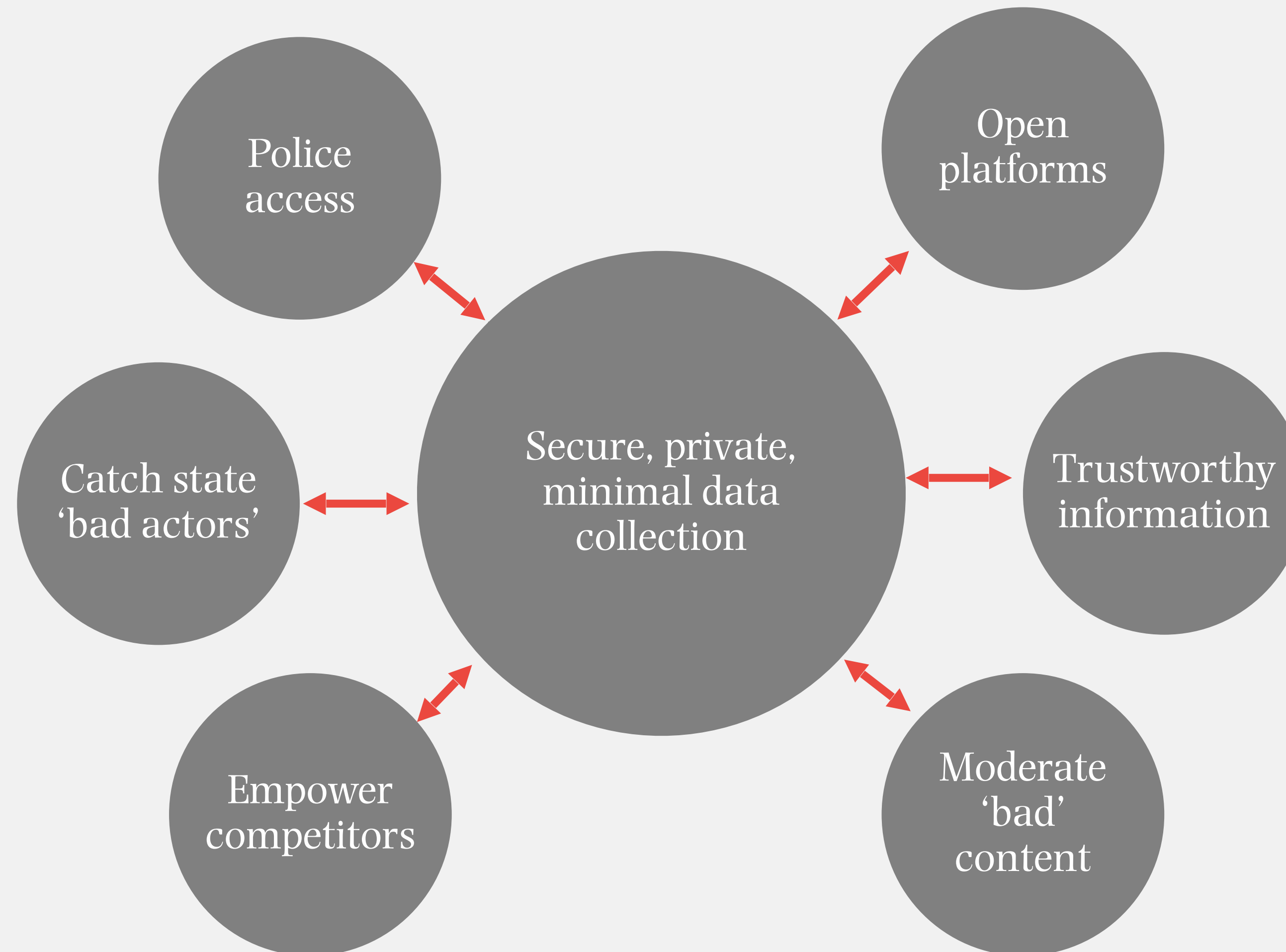
And this may get even more complicated

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

Old
Mark Zuckerberg won't come to Parliament

New
Will the CEO of Tiktok come to Congress?

Next
A distributed Blockchain system that has no CEO?

The only certainty: regulation as a regressive tax

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

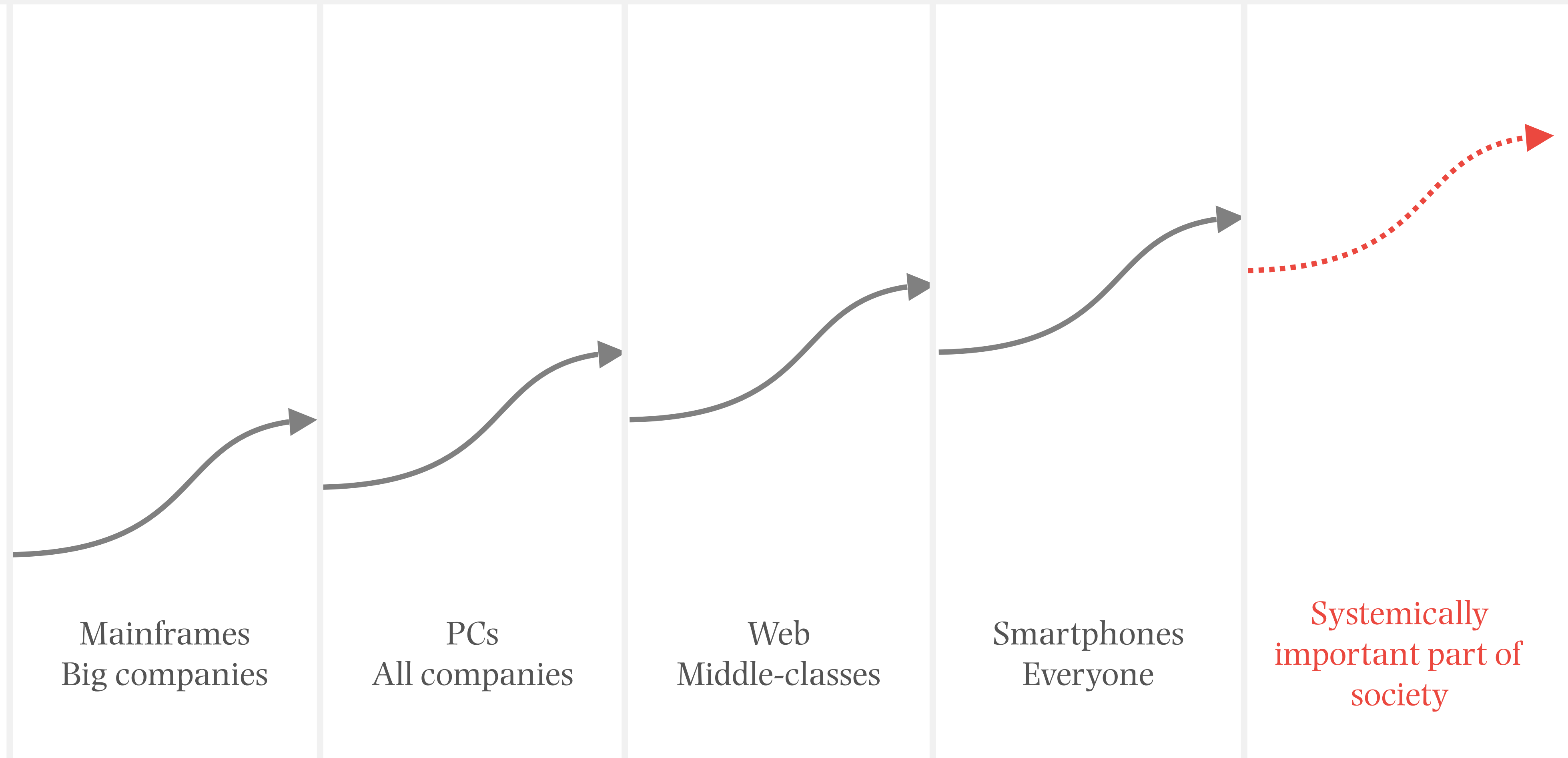**Mean compliance costs at US financial institutions by size**
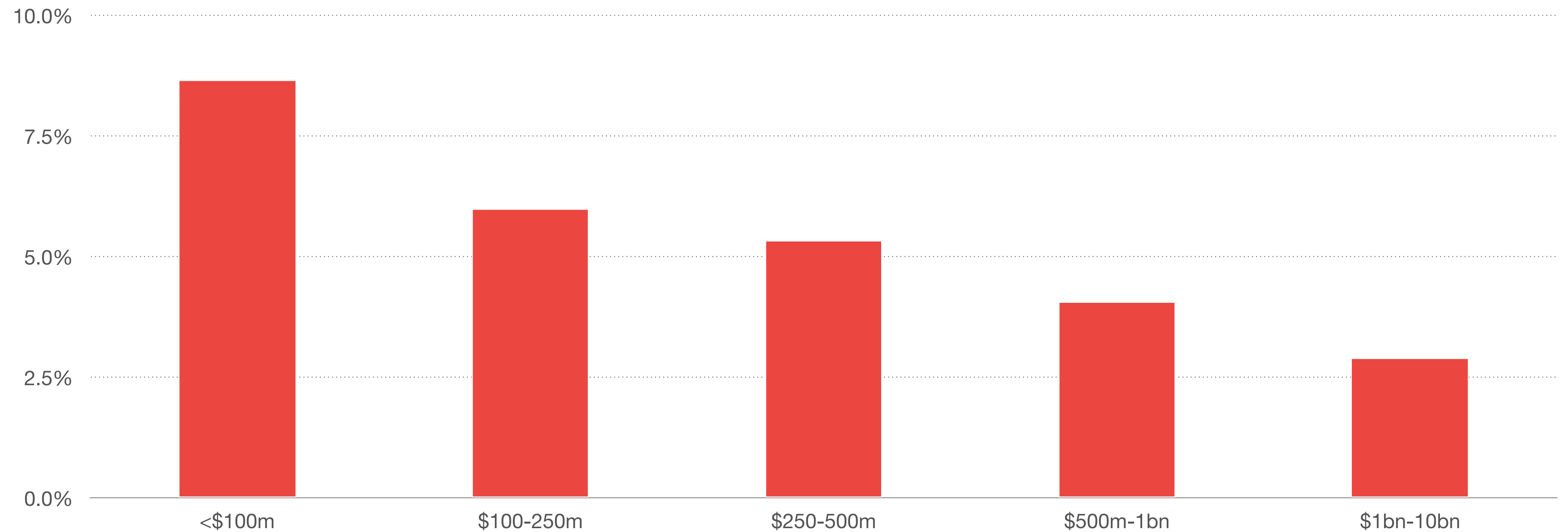
Conclusion:
welcome to the world

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

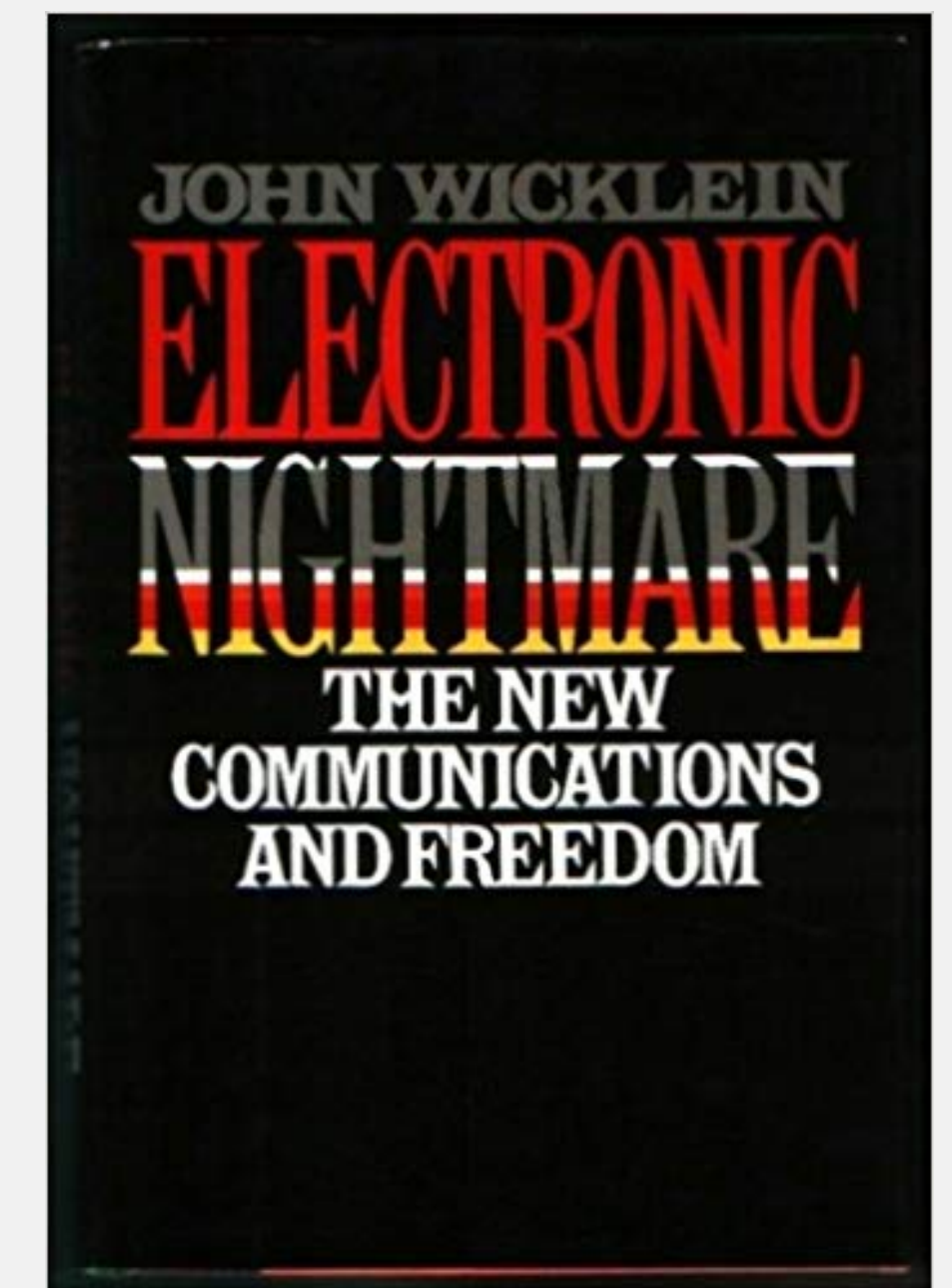(We connected everyone, including the bad people)
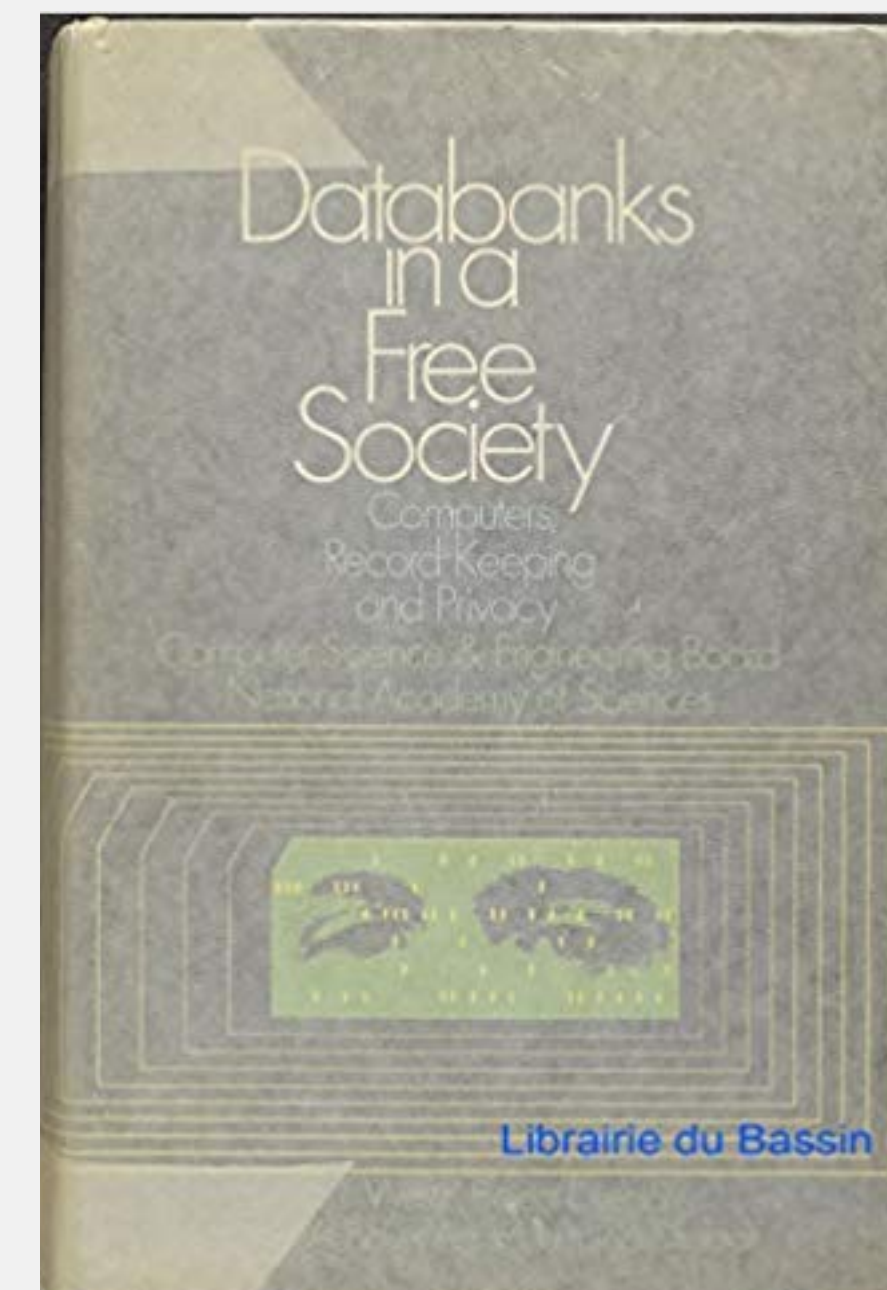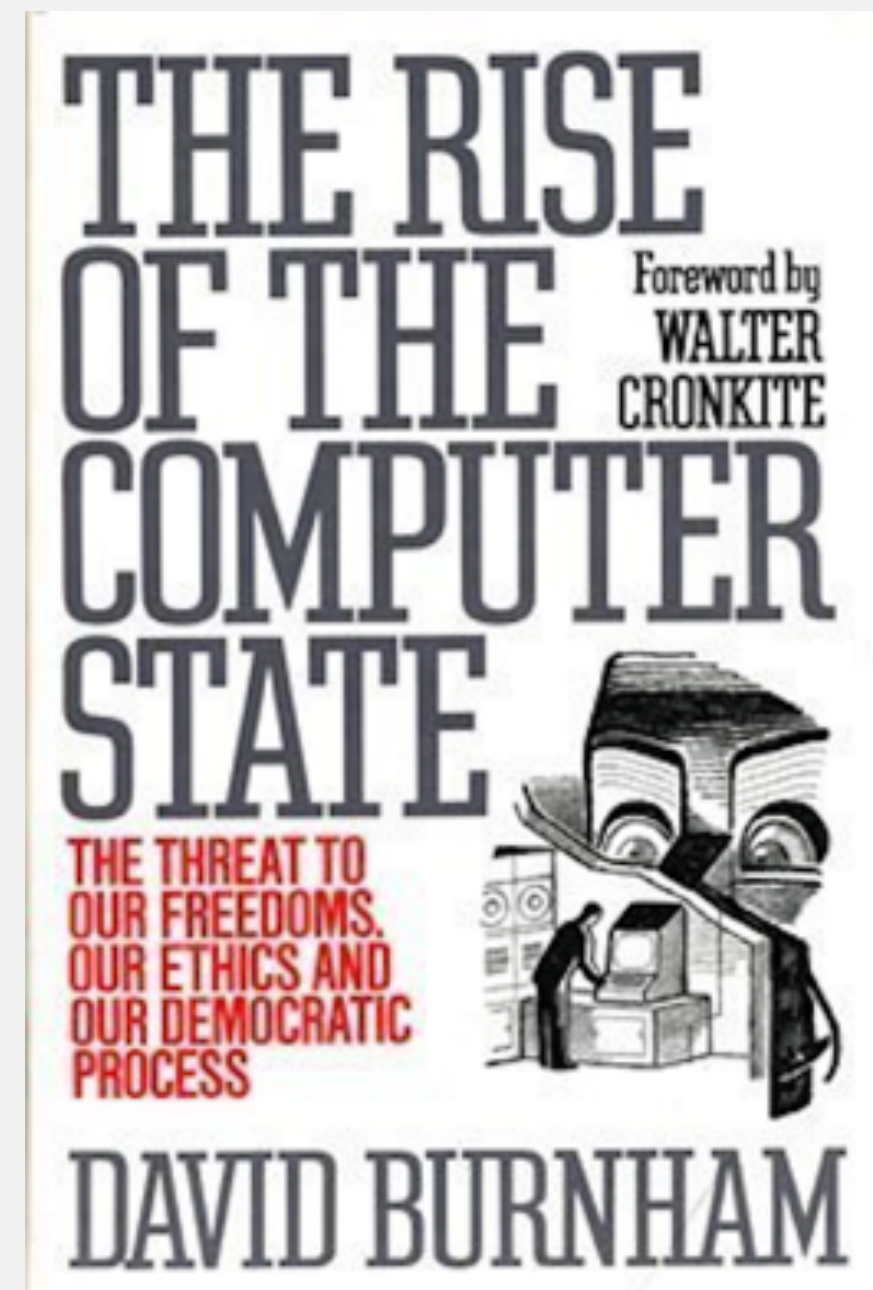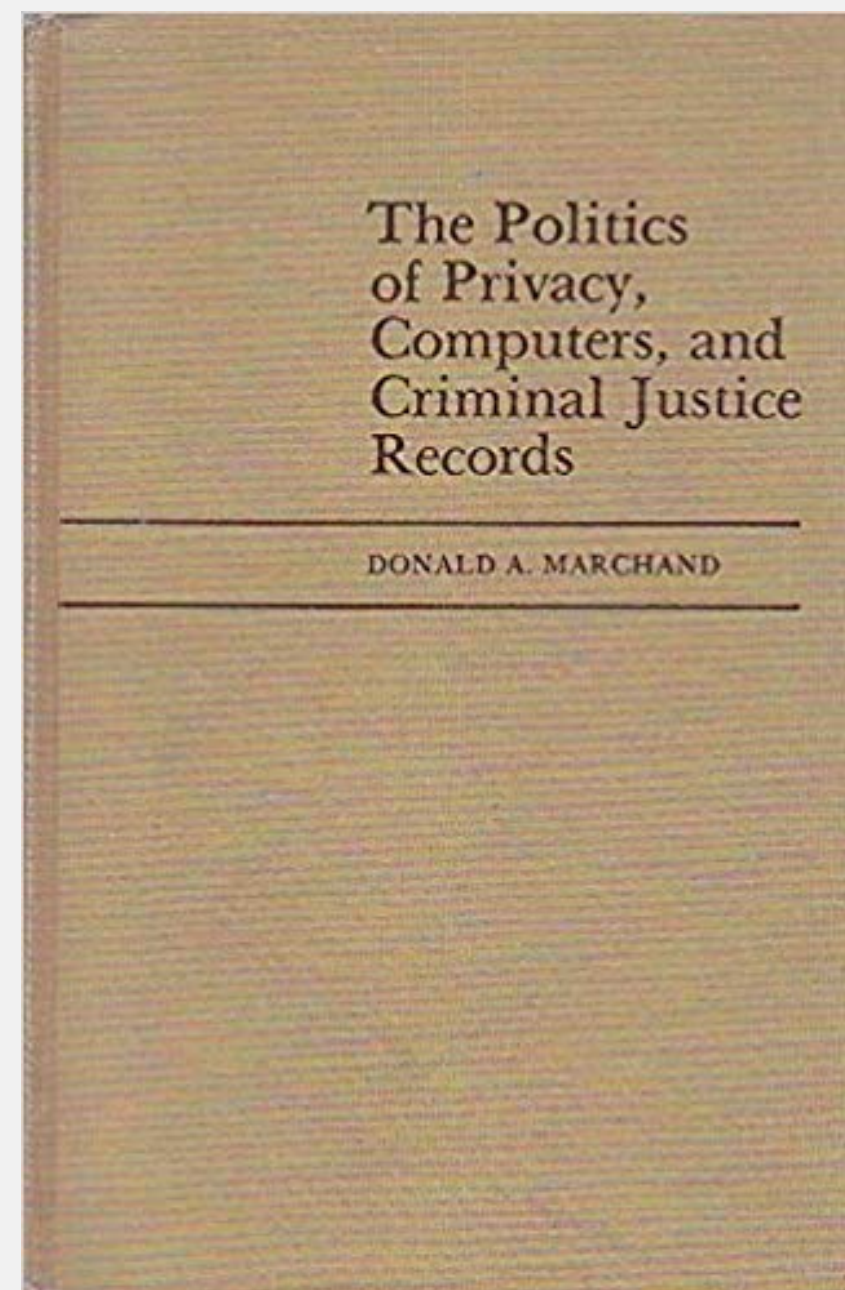
What's the next cycle?

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

Mainframes
Big companies

PCs
All companies

Web
Middle-classes

Smartphones
Everyone

Systemically
important part of
society

Worrying about tech isn't new

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

The Politics of Privacy, Computers, and Criminal Justice Records

DONALD A. MARCHAND

THE RISE OF THE COMPUTER STATE

Foreword by WALTER CRONKITE

THE THREAT TO OUR FREEDOMS, OUR ETHICS AND OUR DEMOCRATIC PROCESS

DAVID BURNHAM

Databanks in a Free Society

Computers, Record Keeping and Privacy

Computer Science & Engineering Board
National Academy of Sciences

Librairie du Bassin

JOHN WICKLEIN

ELECTRONIC NIGHTMARE

THE NEW COMMUNICATIONS AND FREEDOM

Every wave of tech changes the world, and gets regulated

Every important industry gets industry-specific regulation

Railways → Industrial food → Ships, aircraft, cars, databases… → Internet
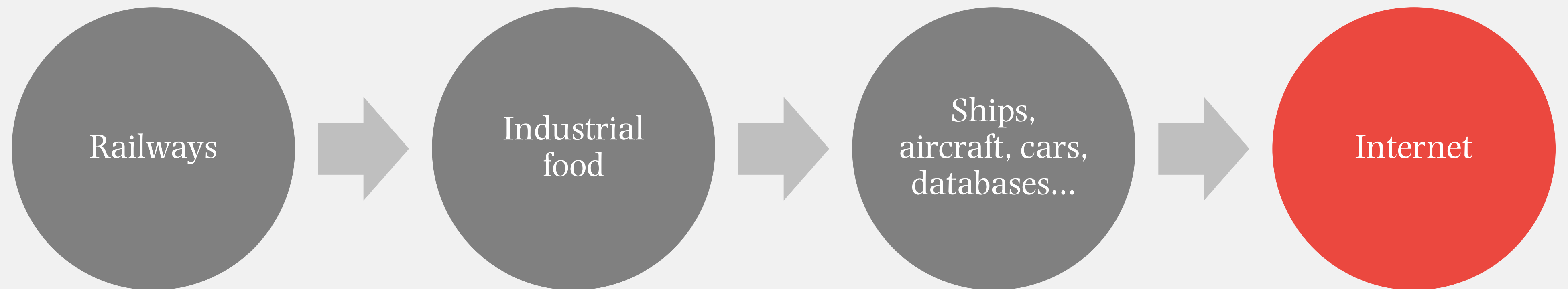
Tech has changed its attitude...

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
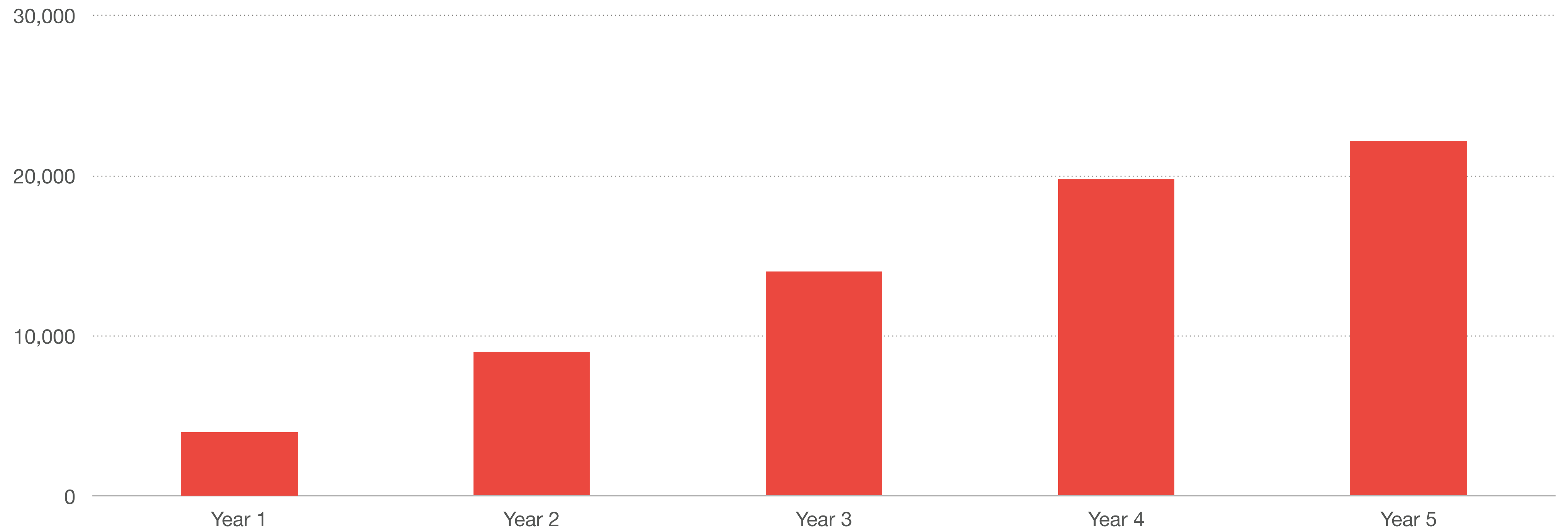is binary
Ban tobacco ads
Open banking APIs

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

Source: Davis Polk & Wardell LLP

Thank you

Benedict Evans

February 2020

www.ben-evans.com