Three Steps to the Future

Benedict Evans
January 2022
www.ben-evans.com
Three steps to the future

Three trends in 2021 - visions versus deployment and disruption

**Future**
Tech visions for 2030

**Present**
Startups deploy the ideas of the 2010s

**Past**
Old economy disrupted by ideas from the 2000s
Future
Tech visions for 2030

What do tech people think about for the next decade?

Web3

Metaverse

Everything else

LEO satellites, plant-based meat, AI, ESG, quantum, robotics, ASICs, 3D printing, China, edge computing, neural interfaces, computational biology, vertical farming, autonomous cars, drones, EVs,....
The great rebranding
Redefine the vision and set a broader goal, for both VR and crypto

**Cryptocurrencies**
Store of value, payments, money transfer (and speculation)

**Web 3**
New models for building software, internet businesses and networks

**VR/AR**
Gaming headsets, niche industrial tool, science projects

**Metaverse**
The next platform after smartphones

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Web3
“The Holy Roman Empire is neither holy, nor Roman, nor an empire” - Voltaire

‘Cryptocurrency’ is neither secret nor (only) a currency, ‘blockchain’ or ‘DLT’ are not databases...
Web3 - a dream of a next version of the internet

A blockchain is a distributed, open computing system - or at least, that’s the plan

Web
Users read
Publishers create and make money

Web 2.0
Users create
Networks control & make money

Web3
Users create
Users control networks & money
Web3 = Open Source 2

Open source changed how code is written - Web3 tries to change where it runs

**Open Source**
- Open, distributed code creation
- No direct revenue

**Web & SaaS**
- Mostly powered by Open Source
- But controlled, run & sold centrally

**Web3**
- Open code
- Open & distributed execution
- Integrated revenue
A messianic vision for tech

Like open source and the internet in their early days, a tech movement with a strong dose of religion

<table>
<thead>
<tr>
<th>Closed and centralised</th>
<th>Open and decentralised</th>
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<tbody>
<tr>
<td>Companies make money</td>
<td>Users make money</td>
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<tr>
<td>All the old problems</td>
<td>All the old problems, in exciting new ways</td>
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Obligatory market cap chart

Speculation and lots of market mechanics - but also billions of dollars of real money invested

Market capitalisations for the two largest crypto networks ($bn)

Source: CoinMarketCap
The ‘store of value’ use case

Digital assets as a store of value are now taken somewhat seriously in financial markets

Source: CoinMarketCap, US Federal Reserve, World Gold Council, Bloomberg
Traction for software use cases?

Behind the speculation and market caps, what’s the traction for applications?

- 3-4m addresses & $60-70bn linked to DeFi apps (?)
- 10m+ Metamask MAUs
- 200k OpenSea accounts
- 450k ENS domains

Source: Dune Analytics @rchen8, DeFi Pulse, Companies
NFTs, today’s white-hot idea

Explosion of interest and quoted value

‘Cultural value’ versus ‘intrinsic value’ is not a problematic concept - ask Supreme

But tiny absolute numbers of people so far - by design! - and lots of noise and circularity

Interesting as experiments in digital property...

But also a tech building block with broader use cases

Source: OpenSea
New incentive structures

Helium is a distributed network of low power, low bandwidth, IoT radio access points

Decentralised incentives, tracking and payment

Source: Helium
A nice adoption curve

Helium proposes a scalable incentive and payment model for a public wireless network

Source: Helium
What are we looking at?
Massive noise, hype and irrational criticism from all directions

**Market caps?**
A share price is an opinion of the future; operating metrics are data about the present
A token price is neither, and both
So - is speculation validation?

**Ponzi schemes?**
Currencies, art and social networks are based on collective adoption
And early adopters benefit most...
But this is also true of Ponzi schemes
Early (still!), exciting, unclear

Looks much like the early consumer internet, or open source (but also like lots of other things that never worked)

- Deep technical understanding still needed
- Fragmented & complex
- Massive creative energy, but also huge uncertainty
Is an iPhone open or closed?
Yes

The iPhone is full of open source software...
And yet it’s closed...
And yet there are millions of apps and billions of app installs
So what do open or decentralised mean? Where, and how, at what layers?

Source: Apple
Metaverse
The metaverse thesis

A vision of a universal screen

- VR & AR as the next universal device after smartphones
- Games break out far beyond games
- Self-expression, place, identity, pop culture
Mood boards for the future?

Many of these words will probably mean something - but not necessarily like that

1994: “Information Superhighway”
Multimedia, GUIs, CD-ROM, interactive TV, convergence, broadband networks, voice recognition, digital... and VR
Disney, AT&T, Bertelsmann, Viacom

2021: “Metaverse”
VR and AR, plus games, creator economy, Roblox, digital self, spatial internet & place... (and web3)
Facebook?
VR traction so far?

Growing interest, and Oculus Quest 2 sold 10m units in 12 months, but it didn’t surge in lockdown

Source: Google Trends
Small beginnings
So far, Roblox is a far bigger story (and Apple is keeping quiet)
Roblox as a model for the future?

A platform for social and for creating games and experiences, not just the latest hit game

Changing ‘games’
Self-expression & social, beyond 1p shooting games

Ecosystem
Thousands of apps and devs with real use & revenue

Platform value?
Can this last for a decade, instead of fading like hit games?
Games are still relatively small

There are probably 250-350m active ‘core gamers’ - the same size as Snap and a fraction of the 1bn+ iPhone users.

Source: Companies
* Except Consoles and Oculus, as stated
Though mobile has changed the games TAM

Popular estimates of market size show dramatic growth in mobile

Source: NewZoo
How universal do VR & AR become?

Moore’s Law took ‘mobile internet’ to everyone - but only took games consoles to a 200m unit installed base

The technology can always get better...

But that doesn’t guarantee universal appeal
“This is amazing - it must be part of the future”

Tech determinism - for both VR and ‘crypto’ the tech is great, so it must be useful, but how?

- Internet, web, open source, smartphones
- But also drones, 3D printing, games consoles...
- And now web3 and metaverse
The future can take a very long time

Mobile data didn’t take off outside Japan until a decade after the dream began

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Graph: Smartphone unit sales (m)

- Proto-smartphones*
- iPhone & Android

Source: IDC, Companies

* S60, Palm, RIM, Windows Phone

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And you can have a winter (or two) on the way

Both AI and VR went through prolonged ‘Winters’ as the tech lagged behind early enthusiasm

Source: Google Ngram
No-one knows anything

In 1995, the future shape of the ‘internet’ still looked very unclear

Is it just the internet, or will there still be lots of other networks?
How will FTP, Gopher, Telnet, WAIS and Web interact?
How will the web work? Should the browser be an editor? A server? Should it have images?
But some things do seem universal

How do we take ownership of digital?

New ways to make software, networks and ownership?

Identify, self-expression, place and self

New ways to make screens immersive and universal?
Present
Deployment

What are companies building today?

Deploying all the great ideas from the last decade

SaaS, cloud, machine learning, digital transformation, workflows, automation, image recognition, fintech, voice, video, live streaming...

Web3, Metaverse... and everything else
‘Digital transformation’

Sounds like a parody of marketing gibberish - but describes a generational change in enterprise tech
The move to cloud is still just beginning

Only 10-15% of enterprise IT spending has moved to the cloud so far, and 20-30% of workflows

Source: Gartner
Old paradigms have a long half-life

Mainframes are still out there, decades after the rest of tech moved on to bigger things

IBM Mainframe installed computing capacity (million MIPS)

Source: IBM
Rise of the ‘hyperscalers’

Alphabet and Microsoft alone are spending over $40bn this year on cloud infrastructure

- Includes both data centres and delivery fulfilment. Cash capex and lease obligations.
How much software?

SaaS / cloud deployment model plus expansion of industry and capabilities means a step change in the opportunity

- **Mainframes**: IBM supplies you with a hardware/software system
- **Client server**: Dozens of applications in your data centre
- **SaaS**: Hundreds of applications (that you know about)
SaaS means far more software

SaaS operating model has meant a structural change in the amount of software companies can use

Average number of SaaS applications per Okta customer, by industry

Source: Okta
Even within teams

SaaS operating model has meant a structural change in the amount of software companies can use

Average number of SaaS applications per team

Source: Productiv
Data includes both SaaS SSO and proprietary analysis
The cloud means workflows, not better file shares

Don’t put your spreadsheet on the web - find a better way to do the job
Frame.io

Workflow for professional video

Replaces email, Slack, file share, Google sheets and lots more email

Machine learning everywhere - but invisible

Source: Frame.io
Frame.io - welcome to 2005

15-year-old concept (‘Google Docs for video!’) but the tech and the market are finally ready

Source: Frame.io
Remaking companies

Vodafone had 2.6m invoices, 40k queries & 1k payments FTEs - how would you change that?

Applying digital: Purchase to Pay process

<table>
<thead>
<tr>
<th>Process</th>
<th>Traditional approach</th>
<th>Digital</th>
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<tr>
<td>2.6m invoices a year</td>
<td>Mix of e-invoices + paper invoices</td>
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<td></td>
<td>Manual paper invoice processing</td>
<td>Intelligent OCR and robotics</td>
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<td></td>
<td>Automatic invoice processing</td>
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- **Before:** > 1,000 FTEs managed supplier payments worldwide
- **Now:** 400 FTEs in Shared Services
- **Target:** <100 next year

Source: Vodafone (2019)
Mass deployment

Thousands more companies deploying everything we learned in the last decade, in ever more places

Platforms
SaaS, cloud, mobile

Building blocks
Networks, marketplaces, workflows, machine learning

Creation
So many more companies to build
Past
Everything the internet did to music or newspapers is now happening to everyone else
When do the atoms stop mattering?

As the internet removes physical barriers to entry, one industry after another is disrupted

Source: BLS, US Census, Companies
And how fast?

If pay TV fell ‘gradually, then suddenly’, retail has been a boiled frog

Source: BLS, US Census, Companies
The great unbundling

“The internet breaks apart old value chains and creates new ones” - and we could have said that in 1995

Value chains & gate-keeping based on physical break apart

New models
New entrants
New channels
Destabilisation

New gatekeepers
New winners
TV unbundles...

US pay TV penetration is down a third from the peak

Source: Company data, FCC, US Census, Netflix, @BenedictEvans
“Is the Albanian army going to take over the world? I don’t think so”

Jeff Bewkes, CEO of Time Warner, on Netflix, 2010
New entrants and aggregators emerge

New entrants outspending most legacy content manufacturers

Source: Morgan Stanley, Ampere
Big fish become small fish

For UK 16-34s, streaming from US companies is now bigger than total viewing for the entire UK TV industry

Source: Ofcom
New control points?

Apple announced the Apple TV and iPhone at the same event in 2007...

But TV software was a backwater for a decade

Now the TV has become a battleground, powered by the shift from live to streaming

And the target is $200bn of legacy TV advertising

Source: Sky
Welcome to 2007

YouTube launched in 2005, and Hulu in 2007

Deploying old ideas that are finally ready to work

Source: Techcrunch
Retail unbundles

Lockdown has pulled forward future adoption - but much less in the USA than elsewhere

Ecommerce as a share of addressable retail*

Source: ONS, US Census
* Excluding cars, car parts, fuel, bars & restaurants. Seasonally adjusted
(The future is unevenly distributed)

Over 80% of people in Britain buy online regularly, but less than a third of Italians

Source: Eurostat. Data for France in 2020 not available
Retail unbundles

Excluding grocery, 40% of UK retail spending is now online

Source: ONS
* Excluding cars, car parts, fuel, bars & restaurants. Seasonally adjusted
Everyone buys anything online - the question is how

Cardboard boxes versus hand delivery, trucks and bikes

New logistics models

Amazon spent $74bn on shipping in the last 12 months, and expects to be larger than UPS or Fedex in the USA by 2022

Source: Pitney Bowes, Amazon
New channels, new aggregators

The e-commerce leader is on track to overtake the car-commerce leader

Retail revenue ($bn)

Source: Amazon, Walmart, @BenedictEvans
New channels have new toll booths

‘Merchant media’ - Amazon has >$25bn of ad revenue, possibly producing more cash than AWS

Source: Amazon
Endless waves of new competitors
Shopify powered over $160bn of e-commerce in the last 12 months

Source: Shopify
And new ways to unbundle

60% of Amazon is now Marketplace - and Shopify is now 45% as large as Marketplace

Ecommerce GMV ($bn)

Source: Amazon, Shopify, @BenedictEvans
New gatekeepers

“We personalise ads; you track your users; they violate fundamental human rights”

Smartphones are not a neutral platform...

And this has a big impact on D2C brands

Conflict between privacy and competition regulators

Source: Apple
Because changing the channel changes what’s bought

Smaller brands have dramatically larger share online

Source: IRI
Brands go digital

B2B businesses learning new channels

Ecommerce as % sales, 2021

Source: Companies
New experiences break in

Shein breaks in to fast fashion with a new UX and new data models (and a massive acquisition budget)

Source: Google Trends
Shein captures US mindshare
Now a major teenage online shopping brand

Female US teenagers' top 10 favourite online shopping brands

Source: Piper Sandler
Shein now leads US fast fashion?

On some estimates, Shein is now the largest US fast fashion retailer

![US fast fashion market share chart]

Source: Earnest Research
This has all happened before

Department stores were Amazon, once - this is another generational change

Source: BLS

Share of US retail sales

- Department stores
- Superstores
- Ecommerce
Is this about good tech?  
Or good retailing?
Questions from 1995?
Or questions from 1900?
Is this tech?

Is a good ‘digital’ experience a digital problem, or a company problem?

Taps to open a new UK bank account online, 2020

Source: Built for Mars
How do you serve your customers?

US brands & retailers spend $7-800bn to reach their customers - rent is the new CAC

Source: Pitney Bowes, Zenith, Costar, US Census
Conclusion
All the things I left out

When software eats the world, everything becomes a software question
Past, future, present

While tech builds the future, industries in its wake try to adjust

Tech dreams for 2030

Building tech startups today

Old economy adjusts to tech disruption
The fall and rise of music

Music was one of the first industries to be overturned by the internet - how’s it doing?

Global recorded music revenue ($bn, 2020 dollars)

Source: IFPI, BLS
The scale of platform rents

Apple makes more from platform rents than the entire global music industry, or Netflix

![Bar chart showing annual revenue comparison between global recorded music, Netflix, and Apple platform rent.]

Source: IFPI, Netflix, Apple, DoJ
*2020 for music, September 2021 TTM for others
Platform leverage

Over $100bn in revenue from leveraging the platform and installed base

Source: IFPI, Netflix, Apple, DoJ
*2020 for music, September 2021 TTM for others
How much does Apple care about music or TV?

Total Apple revenue is close to 20x recorded music

Source: IFPI, Netflix, Apple, DoJ
*2020 for music, September 2021 TTM for others
Moving to bigger opportunities

Tech has gone from selling accounting tools to big companies to replacing those companies

Music: $21bn
Books: $90bn

Advertising & marketing: $1tr+

Retail: $20tr+

Consumer spending: $50tr

Source: IFPI, PwC, World Bank
Unprecedented investment in tech

A firehose of money into the tech startup ecosystem

Source: NVCA
(Well, almost unprecedented)

Tech investing now matches levels seen in the bubble, but based on reality rather than promise

Source: Capital IQ, Jay Ritter, University of Florida, NVCA, a16z, BLS
Hot money

Seed Rounds At $100mm Post Money

We have been seeing quite a few seed rounds getting done in and around $100mm post-money and that concerns me for a few reasons:

- Seed stage is when a company has a good team, a good idea, but has not yet proven product market fit and a go to market model, and has not yet demonstrated a sustainable business model.
- These investments have a high failure rate. In my experience, roughly half of seed stage investments fail completely, wiping out everyone's investment, including the founding team's.
- There is a lot of dilution from the seed round to exit, in my experience, a seed investor will be diluted by around 2/3 between seed and exit.
- A power law distribution exists in outcomes in any early stage portfolio and a seed portfolio is no different.
And some excitement

Tesla’s current valuation presumes it will capture more value than the entire global car industry

Source: Bloomberg
First 50 years, second 50 years

Tech used to sell accounting tools to big companies - now it’s part of our life

- Mainframes
  - Big companies
- PCs
  - All companies
- Web
  - Middle-classes
- Smartphones
  - Everyone

Systemically important part of society
The last time this happened

GM, Ford and Chrysler were 20% of Fortune 500 earnings in the late 1950s

But who made more from the deployment of cars, and who made more from car-commerce - Detroit, or retailers?

Source: Sears, Roebuck
Thank you

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