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# Technology and telecoms outlook 2023

## The battle for digital supremacy

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## The battle for digital supremacy

- The metaverse will not become mass-market in 2023, but this will not stop heavy investment in the technology. The drive to standardisation and the battle with web3 will be at the forefront.
- Artificial intelligence (AI) will continue to develop, after several breakthroughs in 2022, but will encounter challenges from new regulations in key jurisdictions.
- Semiconductors will continue to be a geopolitical tool between the US and China, involving many other countries. Some companies producing the most advanced products and equipment will benefit.
- Asian telecommunications companies will continue to look for consolidation in 2023. Mobile markets with four or more mobile network operators, such as Sri Lanka, Japan and India, are the most likely to secure deals.

Mobile and broadband subscriptions will continue to rise in 2023, while fixed-line connections will continue their decline. The technology and telecoms sectors have so far weathered the pandemic storm effectively, but new macro headwinds—from weaker economic growth and higher inflation—will have an impact next year. Amid such a backdrop, here are some of the key trends to watch for in 2023.

### Metaverse will not become mainstream, but will receive heavy investment

The metaverse will not become mainstream in 2023, but it will still be at the forefront of tech innovation and investment. We continue to define the metaverse as immersive online platforms that use augmented and virtual reality technologies to enable users to socialise, work, play or shop virtually.

**The metaverse and web3 are different**

| | Metaverse | Web3 |
|---|---|---|
| Evolution | From PCs to smartphones to augmented glasses and headsets | From web 1.0 (reading) to web 2.0 (reading and writing) to web3 (reading, writing and owning) |
| Core principle | Immersive and virtual world | Decentralisation, trustless environment |
| Key technologies | Augmented, mixed and virtual reality | Blockchain, crypto assets (NFT, DAO...) |
| Competitive landscape | Big companies and siloed /different metaverses possible | Users in charge as opposed to corporate entities, with nobody having a dominant position |

Source: EIU.

New devices, whether augmented glasses or virtual reality (VR) headsets, will be launched in 2023, driving development of the overall ecosystem. They will include an Apple headset that is likely to offer augmented reality rather than full VR.

The tech industry will focus on standards to ensure that there are rules in place to allow for interoperability and interconnectedness of different metaverse platforms. It will also focus on creating products for industry and enterprise clients, such as advertisements for virtual forefronts, digital twins, and new types of education and learning services.

The metaverse will also prove to be a battleground for web3—the two, while often interchanged, are not the same. Web3 is an entirely new framework based on blockchain and crypto assets whose core principles are decentralisation and diffuse ownership among individual users as opposed to corporate entities; as such it can operate outside of the metaverse). Centralisation has always occurred in the past with new technologies, so the metaverse is also likely to happen in a centralised manner, but web3 will continue to gain ground as a potential alternative in the coming year.

## Developments in AI will come hand in hand with regulations

Artificial intelligence (AI) has seen some major developments in 2022—AlphaFold, an AI programme designed by DeepMind (Alphabet), has proven capable of breaking down the structure of a protein, underscoring the role of technology in scientific progress. AI models, which are trained on unlabelled data and capable of performing different tasks, and large language models, which learn from billions of words and phrases, will continue to evolve and provide solutions for multiple tasks across industries. But there is a debate as to whether these deep-learning models are too limited to attain human-like intelligence (if it is attainable), or whether there needs to be the development of other paradigms, such as ones where the context and the entire environment take the lead.

Although this debate will continue into 2023, that year will also be one of AI regulation. The EU is likely to push its own AI Act, which will seek to ban high-risk use cases before they enter the market, as opposed to taking a wait-and-see approach. This is in contrast to the US model, which focuses on innovation rather than regulation, although even the US Federal Trade Commission is pushing for companies to be held accountable for discriminatory algorithms. China will also continue to focus on algorithms, with greater scrutiny on how companies design and use them.

## Chips face market and geopolitical challenges

There will be two main semiconductor-related challenges in 2023. From a market perspective, there will be a shortage of certain components and a glut of others, longer lead times for the most sophisticated machinery, and increasing demand for custom rather than mass demand chips, all of which will impact the competitive landscape. Some companies will be major winners, such as Arm, whose blueprints are used in many designs, and TSMC, which can build the most advanced chips. Others will lose out, such as Intel, which is still lagging behind the leaders in manufacturing and whose traditional designs will be under even greater pressure. In the longer term, demand for chips will remain strong, even if traditional products such as PCs and smartphones plateau, because of the demand for digital transformation and the rise of the metaverse.

Geopolitically, semiconductors will continue to be the key element in the US-China tech supremacy battle. The US will continue to restrict China's access to key technologies, while China will double down on its attempts to be self-reliant. This will increasingly involve other countries, as they will need to make a choice between the two nations. Russia, having been banned from buying advanced chips since its invasion of Ukraine, and facing unprecedented sanctions on a country-level, will look to procure some by any means necessary.

## More telecoms operators in Asia will seek consolidation

Even as revenue growth slows, telecoms operators in Asia will need to invest in both 5G and fibre networks. This is why we expect that they will look for consolidation across their regional operations in 2023, especially in markets with four or more players. The trend started in 2022, where deals involving companies such as CK Hutchinson (Hong Kong) and Axiata (Malaysia) were announced in Indonesia, Thailand and Malaysia.

We forecast that companies in Japan and Sri Lanka (both four-player markets) will look for a similar way to grow inorganically in 2023.

- The ongoing economic distress in Sri Lanka has already led some companies to report losses since the first quarter of 2022. Rate rises implemented in 2022, increased telecoms levies and an ongoing SIM card registration drive will slow down cellular subscription in 2023, and companies may consider consolidation.
- Japan could also go back to being a three-player market as it was until 2020, when Rakuten, a low-cost player, entered the market. The new entrant's performance has worsened since May 2022 as its promotional free plans have ended. Other incumbents—SoftBank, NTT and KDDI—will look for ways to balance revenue decline and investment in 5G expansion and 6G trials in 2023.

Consolidation will not just involve private operators, but also public ones. For instance, the Indian government could renew its efforts to merge debt-ridden BSNL (mobile) and MTNL (fixed) in 2023.

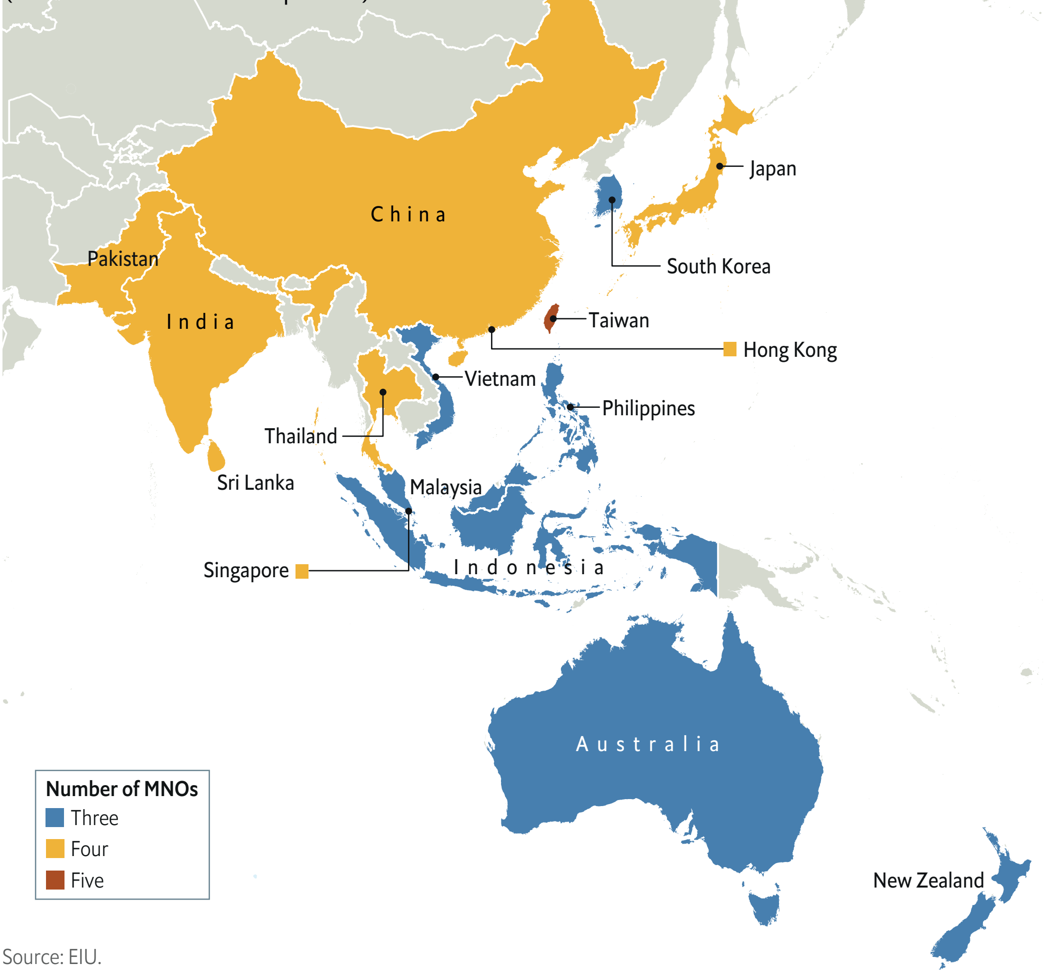
## To watch

**EU clout:** The EU's Digital Markets Act, which focuses on making the largest technology companies gatekeepers with specific obligations aimed at boosting competition, could be enforced as early as the spring of 2023. Other rules, focusing on data and AI, could also become laws this year, strengthening the EU's position as the global tech regulator.

**Data deals:** A March 2022 deal on US-EU data transfers will be ratified in 2023, granting a new legal framework for transatlantic data flows. As with its previous iterations, which were eventually invalidated because of the incompatibility between US surveillance rules and EU privacy rights, we expect a lawsuit to reach the European Court of Justice, which will rule on the legality of the deal in 2025.

**Ad-supported tiers:** Both Netflix and Disney will start rolling out their ad-supported plans in key markets from late 2022, but the bulk of the roll-out internationally will happen in 2023. Advertising will increasingly come to streaming as companies look to boost their revenue and consolidate their customer bases.

**Mobile markets in Japan and Sri Lanka hold potential for consolidation**
(number of mobile network operators)




Source: EIU.

## Key risk scenario: Inter-state cyberwar cripples state infrastructure in major economies

Cyberwar can have a major impact on the global economy, especially if it involves major players. A major short-term issue is the increased risk of cyberattacks as more and more companies undertake digital transformation and become connected, increasing the attack surface for hackers. The Norwegian sovereign fund has recently highlighted that it suffers three major attacks a day. Regulators will have an increased role going forward, with the focus on mandatory reporting and critical infrastructure.

Indeed, infrastructure and healthcare systems will be extremely vulnerable to cyberattacks, as the 2020-21 attacks on Colonial Pipeline and Universal Health Services (both US) showed. Financial vulnerability will be an increasing concern, too, after Lloyd's of London, which underwrites reinsurance for many commercial insurance plans, said that it would require an exclusion for state-led cyberattacks from March 2023. This highlights the rising cyber risks from the Russia-Ukraine war.

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