

Competition in Generative AI -Call for contributions

Telefonica welcomes the opportunity to contribute to this call for contributions on the competition of generative AI.

The use of artificial intelligence has positively revolutionized numerous aspects of our daily lives and society in general: medicine, education, business, etc. In order to continue sharing these benefits within the society, it is advisable to identify potential obstacles on the competition field of the AI ecosystem, especially on generative AI.

For the purposes of this contribution, we refer to a *Foundation Model (FM)* as a type of AI models that are trained on vast amounts of data that can be adapted to a wide range of tasks and operations. Also, we distinguish between ‘*upstream FM development (FM Infrastructure) and deployment (FM as-a-service)*’ and ‘*downstream FM services*’. We define the former as the level in the supply chain at which FM developers produce and distribute FMs, and the latter as the markets in which FMs are deployed.

Even if currently our concerns are more theoretical, we don’t discard that in the near-future some players could engage in some of the practices mentioned along this contribution.

1) What are the main components (i.e., inputs) necessary to build, train, deploy and distribute generative AI systems? Please explain the importance of these components.

- **upstream FM development (FM infrastructure).** To build a FM is needed: **vast computing capacity** (cloud services or supercomputers with **accelerator chips** as GPUs, TPUs), **data** (during the pre-training phase and during the fine-tuning phase), **technical expertise** and **access to funding** or huge economic resources.
- **upstream FM deployment/ AI-as-a-service.** To provide a FM as-a-service is needed a FM (pre-training general models) or Fine-tuned model (trained for a particular use where the specialized data is key). A firm could deploy its own FM (built in-house from scratch (see above), but also can deploy third parties FM, by partnering with a FM provider to enhance an existing FM (fine-tuning the model with its own data to tailor it to its business needs), or buy API access to a third party FM and deployment tools, or provide a third party plug-in.
- **Downstream services.** There are different options and business models to provide generative AI services or products to users. Some firms integrate their FM into their existent products or create new products and services standalone using FM of third parties or their own. The main component will be again a FM and even some relevant services or applications.

Open source data or open source FM can favor the deployment of generative AI, but even free for use, the use of open source can be restricted for commercialization or have other quality and confidentiality limitations. We believe providers could be inclined to set a price in the future.

2)What are the main barriers to entry and expansion for the provision, distribution or integration of generative AI systems and/or components, including AI models? Please indicate to which components they relate.

As explained in Q1, to build a generative AI infrastructure, a provider would require huge **computing capacity**, **accelerator chips** as GPUs, TPUs, **data** (during the pre-training phase and during the fine-tuning phase), **technical expertise** and **access to funding** or huge economic resources. These resources are scarce and in hands of few. Also, to provide AI services or to offer AI products, access to a generative FM would be required.

The **computing cost** depends on a number of variables including the type of model and data size, the hardware used and the selected cloud provider, but only a few players have been able to develop the biggest FM in the market. In addition, there is a shortage of server GPUs for AI purposes.

In terms of **data**, although it is true that commonly the data for pretraining is used from publicly available sources such as web crawling or open datasets, it seems that proprietary data would be more accurate and of best quality. And it would be the preferred option for fine-tuning the model to **prevent biased, false or harmful content**. In this vein, generative AI systems raise ethical concerns related to bias, transparency, and accountability. Ensuring fairness and transparency in AI algorithms is crucial to gaining trust from users and regulatory bodies.

Europe has data privacy regulations, such as the General Data Protection Regulation (GDPR), which govern the collection, storage, and processing of personal data. Complying with these regulations adds complexity and additional budget to AI initiatives, especially when dealing with sensitive data that powers generative AI models. Ensuring data privacy and security throughout the AI lifecycle requires significant investments in technology and compliance measures.

In terms of AI- as- a -service, a provider would depend on access to the FM of third parties, the **prices for that access and the conditions established**, including conditions to switch to other providers. Access to data for fine-tuning is also a relevant at this level in the value chain.

Finally, at the **downstream services level**, it remains to be seen if consumers would prefer FM services offered with integrated ecosystems and if would be easy to switch providers once the service has adapted to the consumer. FMs appear to be an increasingly important input to **productivity software services** (i.e Microsoft and copilot) and for **search engines** (i.e Bard different from Google's search engine, or Bing unified experience of Microsoft).

As mentioned, the provision, distribution or integration of generative AI systems and/or components requires a deep understanding of machine learning algorithms, neural networks, and complex mathematical models. Companies need **substantial expertise** in areas such as deep learning, reinforcement learning, and natural language processing to create effective AI models. At all levels, technical expertise is a relevant component. **Larger firms may be able to acquire this talent more easily.**

3)What are the main drivers of competition (i.e., the elements that make a company a successful player) for the provision, distribution or integration of generative AI systems and/or components, including AI models?

It could be argued that the same elements that make a company a successful player in this market, are the ones that could be used to impose barriers to entry and expansion for competitors (see Q2).

4) Which competition issues will likely emerge for the provision, distribution or integration of generative AI systems and/or components, including AI models? Please indicate to which components they relate.

Having access to a number of resources and elements is essential for the development of generative AI services. Companies who might be in a position to offer them might be “tempted” to, due to their potential high market power, **impose commercial conditions and obligations on their clients which could be contrary to competition law.**

For instance, having your own **distributed computing infrastructure (cloud)** could be considered an essential input in order to build and provide generative AI services. This is also true for **the models as a service**, which are very difficult to develop as they require an investment of billions to build an LLM (Large Language Model). Therefore, instead of creating them from scratch, companies need to access LLMs (i.e. from Open AI, Google, Meta, etc.) and customize them with their data or integrate them into their product through APIs to incorporate AI functionality into them. Since these models or the access to them **could be considered an essential facility**, if companies who control them (gatekeepers) refuse to grant such access to third parties, or impose a high price for the use, competition could be substantially lessened. As a result, in order for third parties to be able to compete in the market, access to the mentioned resources could be granted—at a reasonable price and non-discriminatory conditions. In relation to the above, cloud “infrastructure” is key for the development of foundation models. The suppliers of foundation models that do not have access to their own infrastructure would need to engage with cloud service providers. The main cloud providers are Azure, AWS and GCloud with very high market shares. Also, the providers of AI services and products that do not have their own FM would need to engage with FM providers which in most cases are the big tech cloud providers.

In addition, **GPU (Graphics Processing Unit)** are also of utmost importance in the provision of AI services since they are cornerstone for training and deploying generative AI models. Nvidia is currently the main supplier of GPUs that are used for AI purposes. It could be argued that, due to their very high market shares (potentially exceeding 70%), such companies might have a so-called “super dominant” position¹ in markets of great relevance— or even essential— for the downstream or upstream provision of generative AI services. As we’ll explain throughout this contribution, such market power or quasi-monopoly positions of some companies might serve as a facilitator to distort competition by engaging into a number of conducts which could be in breach of antitrust rules.

Such companies might **leverage their dominant position from one market to an adjacent market** (upstream or downstream) or might prevent the development of a new market. In particular, they may try to **foreclose its competitors by tying**, this is, by requiring customers that purchase one product (the tying product) to also purchase another product (the tied product)².

¹ The recognition of the concept of “super-dominance” (first advanced by Advocate General Fenelly in *Compagnie Maritime Belge* (1998)) could be used by antitrust authorities as a basis to impose a heightened responsibility not to weaken competition on other quasi-monopoly companies. See also the judgment of the General Court of the EU of 10 November 2021, Case T-612/17, *Google and Alphabet v Commission* (Google Shopping) where the General Court upheld the fine of €2.42 billion imposed on Google for abusing its dominant position.

² “Tying” practices are assessed by the European Commission (EC) in its Communication on “Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary

This could prevent the client from purchasing such second product from alternative competitors. Considering these companies might be **vertically integrated**, they may intentionally design their generative AI services (tying product) that need to be integrated with other products, in a way that they only work properly with the tied product/services (and not with the alternatives offered by competitors). Taking a look to previous European Commission (EC) decisions about abuses of dominant position in the digital sector, it is not difficult to conclude that the AI might be another example where certain **dominant firms** might try in the near future to **favour their own products and services to the detriment of smaller players (self-preferencing practices)**, and ultimately, of consumers and competition. In this respect, at the **downstream services level**, as previously mentioned, it remains to be seen if consumers would prefer FM services offered with integrated ecosystems and if it would be easy to switch providers once the service has adapted to the consumer. FMs appear to be an increasingly important input to **productivity software services** (i.e Microsoft and copilot) and for **search engines** (i.e Bard different from Google's search engine, or Bing unified experience of Microsoft). Hence, dominant undertakings could impose technical conditions in order to be able to integrate third parties' services with their owns, make payments subject to the condition that their customers exclusively install/use such dominant undertaking's services and carry out self-preferencing conducts benefitting its own services. In other words, competition concerns may arise if such companies engage into any conduct that could impair genuine competition by leveraging their market power on a market to an adjacent one .

These last points are particularly illustrative as regards the **access to data and to generative AI models** that could have companies offering generative AI services to the extent such "inputs" could be indispensable for the provision of AI services in the downstream market. If such companies are vertically integrated, they could have the incentive and ability to benefit their own AI services in a downstream market by giving preferential access to data and the wider use of data feedback. Similarly, since foundation models are an **essential input** for the development of generative AI services, the companies owning such "capabilities" could engage into **self-preferencing conducts**. These potential anticompetitive practices could be replicated in the next level of the value chain by, for instance, the developers of fine-tuning models. To the extent foundation models can be adapted to particular needs, they are subject to transfer learning techniques such as fine-tuning. The providers of these services could equally benefit their own services hindering the development of other alternative players.

It is worth mentioning that the Digital Markets Act (DMA) might have introduced fairness and contestability into the digital markets. However, generative AI is not included in the list of core platform services, and even if cloud services and search engines have been identified as core platform services, the EC has not designated any gatekeeper for the cloud market as of today.

7)What is the role of data and what are its relevant characteristics for the provision of generative AI systems and/or components, including AI models?

Like in any other digital service, data is an essential instrument in order to be able to be competitive in the provision of AI services. And this is because data serves as the foundation for the development and deployment of generative AI systems and models, influencing their performance, reliability, and ethical considerations.

conduct by dominant undertakings" which are currently under review further to a Call for Evidence launched by the EC.

The availability of access to **data** that certain platforms currently have is an important competitive advantage that they can extend to **the new market for AI algorithms**.

The **volume and the quality of training data** may have an essential effect on the performance of generative AI services. Not only the access to existing databases but also being able to generate new data could confer companies a competitive advantage. As it has been mentioned, companies designated as gatekeepers (big techs) further to the obligations imposed by the DMA, or the Data Act (which only relates to access to IoT data), might have an advantage due to the vast amount of data in their possession, which could not be achieved by any other player in the market. In this regard, they could act as a gateway for the provision of generative AI services creating barriers of entry for third parties.

These data gatekeepers should not unfairly restrict access to essential datasets that are necessary for training AI models. **Open access** to relevant data promotes competition and innovation by enabling a level playing field for all participants.

Requiring data gatekeepers to be **transparent** about their data policies, usage practices, and decision-making algorithms promotes accountability and enables regulators to assess whether data gatekeepers are engaging in fair and non-discriminatory behavior.

By addressing competence considerations in data governance and regulation, policymakers can help ensure that the AI market remains competitive, dynamic, and conducive to innovation while also safeguarding against anti-competitive practices and monopolistic behavior among data gatekeepers.

8)What is the role of interoperability in the provision of generative AI systems and/or components, including AI models? Is the lack of interoperability between components a risk to effective competition?

Interoperability refers to the ability of different systems or components to communicate, exchange data, and work together seamlessly. In the context of generative AI, it involves ensuring that various AI models, tools, and platforms can collaborate effectively. Moreover, generative AI systems often consist of multiple components, such as language models, image generators, and recommendation engines so interoperability ensures that these components can work together harmoniously, **leading to more robust and versatile AI solutions**.

Hence, interoperability plays a crucial role in the realm of generative AI systems and their components. When AI components are interoperable, it becomes easier to **scale up systems** by integrating new models or features and this flexibility allows organizations to **adapt to changing requirements**. In addition, for end-users, interoperability means a **seamless experience**.

Lack of interoperability can lead to **isolated silos of AI functionality**. When AI components are not interoperable, it can create **barriers to entry for new players**. Established companies with proprietary systems may dominate the market, hindering healthy competition. Also, lack of interoperability can lead to **vendor lock-in**, where users become dependent on a specific provider's ecosystem. This reduces choice and innovation. Finally, without interoperability standards, the AI landscape may become fragmented, with incompatible models and tools. This **fragmentation hampers collaboration and slows down progress**.

A company with a dominant position might refuse to supply interoperability that could be essential for its competitors to compete in the market³. Therefore, the lack of interoperability between different services/products could be a barrier to entry in the market for new players as well as an obstacle for effective competition for third parties already active in the generative AI value chain. For instance, in the cloud sector— which is an essential part of the AI value chain in order to provide AI services downstream— different competition authorities⁴ have identified antitrust concerns as regards the **possibility of switching from one provider to another** due to a number of commercial conditions and obligations imposed by the leading providers of these services. Amongst other factors (such as complex tariff structures and discounts, egress fees etc.), the low level of interoperability and data portability is one of the issues which might hinder competition. We understand that as regards the cloud market, the lack of interoperability as well as the difficulties for the simultaneous management and procurement of different cloud providers, could hinder and reduce competition.

To reduce competition concerns, the **adoption of open standards** could be explored to ensure that AI components can communicate seamlessly across different platforms. Also, **well-defined APIs (Application Programming Interfaces) and communication protocols** facilitate interoperability.

In summary, interoperability is not only essential for effective competition but also for fostering innovation, scalability, and user satisfaction in the dynamic world of generative AI systems.

9) Do the vertically integrated companies, which provide several components along the value chain of generative AI systems (including user facing applications and plug-ins), enjoy an advantage compared to other companies? Please elaborate on your answer.

As explained above (Q4), vertically integrated companies could have the ability and incentives to engage into self-preferencing conducts to the detriment of their competitors. Being active in the provision of services in the different levels of the value chain could give them a competitive advantage that could distort competition since they would have access to data, know-how, technical requirements and etc. As mentioned before, they could use such “tools” for their own benefit by limiting or denying such access to competitors, granting it under unfair or disproportionate conditions— for instance by degrading the access conditions to foundation models or upstream services needed for the deployment of generative AI services — and, overall, being able to offer “better” products than its competitors due to their privileged position as vertically integrated entities. In any case, even if vertically integrated companies would not carry out self-preferencing conducts, the mere fact of being vertically integrated could grant them an undisputed position for the reasons previously described. As a result, we believe that potentially, there could be a number of antitrust infringements carried out by companies vertically integrated which could foreclose competitor’s services and products.

³ Note that on March 2004, the EC imposed a fine on Microsoft for abusing its dominant position in the market for operating systems. In order to alleviate the competition concerns identified on Microsoft’s anticompetitive conduct, the EC imposed some remedies which referred to (i) the disclosure and interoperability of interface specifications to undertakings interested and (ii) the offer of a version of Windows Operating System which did not include Windows Media Player.

⁴ OFCOM, CMA, ACM, AdC and etc. On November 2023 the CNMC also launched a study on the cloud market in Spain since it has preliminarily identified several antitrust challenges such as the tendency towards concentration in a few operators and the difficulty of changing suppliers.

In this regard, in June 2023, the EC sent a Statement of Objections to Google over abusive practices in online advertising technology. According to the EC, Google might be favouring its own online display advertising technology services to the detriment of competing providers of advertising technology services, advertisers and online publishers. We believe companies with a dominant position in the generative AI sector could engage into similar practices whereby they could favour their own service by gaining a competitive advantage and foreclosing rival's services. These conducts might reinforce dominant companies' position in the AI value chain as well as their ability to engage into anticompetitive conducts.

10)What is the rationale of the investments and/or acquisitions of large companies in small providers of generative AI systems and/or components, including AI models? How will they affect competition?

In line with what we have explained in Questions 4 & 9, **being vertically integrated** could give companies a competitive advantage to outperform in the market. Vertical integration might give companies access to more production inputs, distribution resources and process and retail channels which could offer companies opportunities to distinguish themselves from competitors. If this is done by not complying with antitrust rules, competition will not be fostered in the market to the detriment of consumers and economy.

On the one hand, companies might be interested in acquiring smaller firms that may be active in a different level of the AI value chain or are specialized in some niche markets, so that they can benefit from **reduction of costs and improve efficiency** through economies of scale. Considering their ability and incentives to engage into self-preferencing practices due to such vertical integration, competition could be affected to the extent they might breach competition rules. On the other hand, eliminating a competitive force by investing in or acquiring a competitor could be another explanation for such investments. As mentioned before, some companies could engage in vertical integration solely to increase advantages over competition and to block competitors from gaining access to scarce resources or important markets. Therefore, antitrust authorities should be aware of the rationale of companies and the implications it could have for the establishment of an effective competition in the AI sector.

In addition, note that antitrust authorities may not be legally entitled to assess some of these transactions to the extent the jurisdictional thresholds would not be met due to the low turnover of the targets (this is, the small providers of AI components, systems or models). It could be understood that this issue is solved by the obligation imposed by the DMA on gatekeepers to inform the EC of any intended transaction irrespective of whether they are notifiable under EU merger laws⁵. However, we believe **there should be a change in the EU Merger Regulation (EUMR) thresholds precisely to adapt them to new market realities and to the globalized world**. In our opinion, Art. 22 of the EUMR has proved to exert a huge legal uncertainty for companies to understand if their transactions might be requested for review by the EC. A more reliable and predicable threshold such as the value-transaction threshold should be reconsidered in substitution of Art. 22 of the EUMR **to capture “killer acquisitions”** in nascent markets like the AI sector.

⁵ Article 14 paragr. 1 DMA states that a “gatekeeper shall inform the Commission of any intended concentration [involving] core platform services or any other services in the digital sector or enable the collection of data, [...]” To this, Article 14 paragr. 4 DMA adds that “[t]he Commission shall inform the competent authorities of the Member States of any information received pursuant to paragraph 1 and publish annually the list of acquisitions [...]”

11) Do you expect the emergence of generative AI systems and/or components, including AI models to trigger the need to adapt EU legal antitrust concepts?

Overall, **we do not expect the need to adapt EU legal antitrust concepts**. In our opinion, the existing antitrust framework is fit for purpose as regards the new services and competition interactions that would be created in relation to generative AI. We believe that in order to face new market realities, the current concepts are sufficiently solid and wide enough as to capture any issue that might emerge. In fact, the basic principles of what is considered a competitive behaviour in the market and its importance as an enabler for innovation and consumer welfare should remain unchangeable. This means the new services and the inherent potential antitrust issues and “debates” that would take place should be adequately addressed and managed with the existing antitrust terms. It is our view that irrespective of the novelty of a given AI service, the underlying applicable competition principles and rules on market behaviour should be the current ones. As it happens with the provision of any other recent digital services, the market participants active in the provision of new generative AI products, would need to comply with the existing obligations— not only competition related ones— and the creation of new EU legal antitrust concepts does not seem necessary.

In relation to the above, we acknowledge the review of EU competition framework carried out by the EC over last years to ensure that EU competition legislation gives response to new market realities and globalization⁶. Such review has helped to launched better regulation initiatives to identify opportunities to simplify laws, streamline procedures and eliminate unnecessary burdens without undermining the objectives and benefits of the policy in question. While we support the view that such a review is necessary to be able to adapt the existing framework to the new digital world, as already mentioned, we do not expect generative AI systems and/or components, including AI models, to require a modification of traditional competition concepts.

In a nutshell, we would welcome an evaluation of the rules, from time to time, in order to check that the existing framework is still adequate and up to date, but do not foresee any need to adapt existing concepts. The current regime is robust and flexible enough so as to comply with the challenges the fledgling AI will bring about.

Closely related to the above, there are, however, some general antitrust issues which, in our opinion, have not been adequately addressed so far. In fact, we believe that some of the antitrust concerns related to the digital world have just partially been alleviated by the DMA which sets out that companies that qualify as gatekeepers (mostly big tech companies) are to be subject to ex ante obligations, concerning transparency rules, rights and duties, consumer protection and etc.

Considering the dynamic nature of digital markets as well as the interconnection between competition law and other areas such as IP rights, data protection and etc. there are still a number of challenges which merit the attention of antitrust authorities in order to ensure a level playing field for all companies. For instance, there are still difficulties related to the analysis of relevant markets, to the matter of proving dominance of companies as well as abuses of dominant position under art. 102 TFEU and to the acknowledgements of efficiencies by antitrust authorities not only in merger transactions but also in antitrust cases.

⁶ Note that last year the EC approved a package of reforms to streamline the procedural aspects of EU merger control. In addition, it is worth mentioning the current review of Regulation 1/2003, the Guidance on enforcement priorities of Article 102 TFEU, the market definition notice and etc.

12) Do you expect the emergence of generative AI systems to trigger the need to adapt EU antitrust investigation tools and practices?

As part of the digitization of the economy and the EC's priority of creating a Europe that is fit for the current technological and geopolitical framework, **it is key that antitrust authorities remain vigilant *vis à vis* the emerging AI ecosystem**. In line with the point of the question above, we believe the **existing EU antitrust investigation tools and practices are appropriate** to face the challenges the generative AI will create.

We cannot think of any changes to the current tools neither of any new instruments that could be put in place to identify potential infringement of competition rules. We believe that, irrespective of the fact that the services the AI would offer would be brand-new, the "old" investigative tools are suitable to address the potential breaches and to identify the issues that could create competition concerns or require the attention of the authorities. Likewise, as for the practices, as mentioned in the previous question, considering the principles of a fair competition remain unalterable, the potential anticompetitive conducts should not suffer alterations in relation to the current ones. The "modality" or the way companies might not comply with competition rules might vary according to the new services to be offered and may be specific to the sector or service in question and to the inputs and drivers needed to offer them. However, the potential damage for competition would be consistent with the old traditional principles. As a result, in our opinion, the generative AI systems would not trigger the need to adapt EU antitrust investigation practices.

Irrespective of the above, it is crucial that antitrust authorities review their tools in order to have in place investigative elements consistent with the technological developments. It could be advisable, for instance, that they could have their own AI systems in order to better understand the complexities of such digital sector. Authorities should have a deep knowledge of how these services work including from a technical perspective, so we think that resources should be dedicated by antitrust entities in order to be able to properly investigate and participate in the challenges brought about by the new AI landscape.

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