



# AI AND MUSIC

MARKET DEVELOPMENT OF AI IN THE MUSIC SECTOR  
AND IMPACT ON MUSIC AUTHORS AND CREATORS IN GERMANY AND FRANCE

PICTURE: MIDJOURNEY

A REPORT COMMISSIONED BY



CONDUCTED BY

**GOLDMEDIA**



*Dr. Tobias Holzmüller*  
CEO at GEMA



*Cécile Rap-Veber*  
CEO at SACEM

*The rapid development of generative Artificial Intelligence (AI) is confronting the music sector and the entire cultural and creative industries, which employ more than 7.6 million people in Europe and generate a turnover of more than EUR 640 billion per year, with major challenges and fundamental transformations. This can open up new opportunities, but also bring uncertainties and risks.*

*Music, texts, images and videos created by human authors are the source material for generative AI systems. At the same time, the content generated by the AI in this way enters into direct competition with the original human-made works. The stakes are therefore double as high for creative professionals. They face a challenge from two sides, on the input side and on the output side, which can quickly become a threat to their economic livelihood if the right regulatory conditions are not in place.*

*The emergence of a fair, virtuous and sustainable market for generative AI will only succeed within a reliable legal framework that empowers human creators and protects their intellectual property rights. Transparency is a basic prerequisite for setting this development in motion and it is encouraging that the EU is taking first steps in this direction with the AI Act.*

*This report is the first major analysis to take a comprehensive look at the interplay between music and AI, the economic dimension and trends in this fast-growing market, as well as the attitudes of creative professionals. In addition to numerous expert interviews conducted by Goldmedia, over 15,000 members of GEMA and SACEM took part in the survey for this study. The high level of participation alone shows how much creative professionals are concerned about the challenges posed by AI. It is important to make their voices heard in this debate and place them at the heart of the discussion.*

*The economic potential of generative AI is enormous, in music and beyond. We hope that France and Germany, two major economies with vibrant creative sectors, and united in the pursuit of cultural diversity and technological ambition, will join forces to ensure that generative AI will become an opportunity for everyone involved – including human creators. We are convinced that the report prepared by Goldmedia can support this process by providing an empirical basis to enable an informed debate on one of the central technologies of our time.*



# CONTENTS

Key Facts	6
Part 1: The Market for AI and Music	12
Part 2: AI in the Music Creation Process	24
Part 3: Challenges	58
Fields of Action	114
Appendix	120

# ABOUT THE STUDY

On behalf of GEMA and SACEM, Goldmedia conducted this study on the use of artificial intelligence in the music sector between July 2023 and January 2024.

## STUDY METHODOLOGY:

Goldmedia conducted an extensive secondary data analysis on the opportunities and challenges of artificial intelligence in the field of music and other aspects of creation.

A key part of the study was an online survey of GEMA and SACEM members conducted between 30 October and 20 November 2023.

A total of n=15,073 people who work full-time or part-time as authors or for music publishers took part. Many respondents also work as performing artists, producers or for music labels.

In addition, 16 expert interviews were conducted with artists, scientists, AI software providers, streaming services and other parties of the music sector. The interviews were conducted by (video) telephone and partly in writing.

## STUDY FOCUS:

The main focus of this study is on the impact and implications of generative AI (gen AI) in the music sector. However, the range of applications of AI in music is broad and the creation of complete pieces of music is only the tip of the possible fields of application.

Thus, the study also looks at applications that relate to the editing and post-processing of music as well as supporting aspects of AI such as marketing, promotion and distribution.

Furthermore, many questions and topics in this study not only include the creation of music in the narrower sense, but creative processes in general.

## ABOUT GEMA AND SACEM

GEMA and SACEM are Collective Management Organisations (CMOs) based in Germany and France representing authors, composers and music publishers and, in the case of SACEM, also dubbing and subtitling authors as well as writer-directors.

# OVERVIEW

## PART 1

### The Market for AI in Music

The first part of the study provides an overview on the history and milestones of AI and music and its technical background as well as AI models and music applications.

It also delivers figures for AI investments, market volume and forecasts.

## PART 2

### AI in the Music Creation Process

The second part shows opportunities and use cases as well as the use and assessment of AI among music creators according to the survey conducted for this study in three sub-chapters:

1. Creative Aspects of Music
2. Recording, Editing, Mixing, Mastering
3. Supporting Aspects of Music such as Marketing, Promotion and Distribution.

## PART 3

### Challenges

The third part identifies the main challenges in the context of AI and music in four sub-parts:

1. Copyright, Credit and Consent
2. Remuneration and Economic Implications
3. Personal Rights
4. AI and Music Streaming



# KEY FACTS

# AI AND MUSIC: MARKET DEVELOPMENT

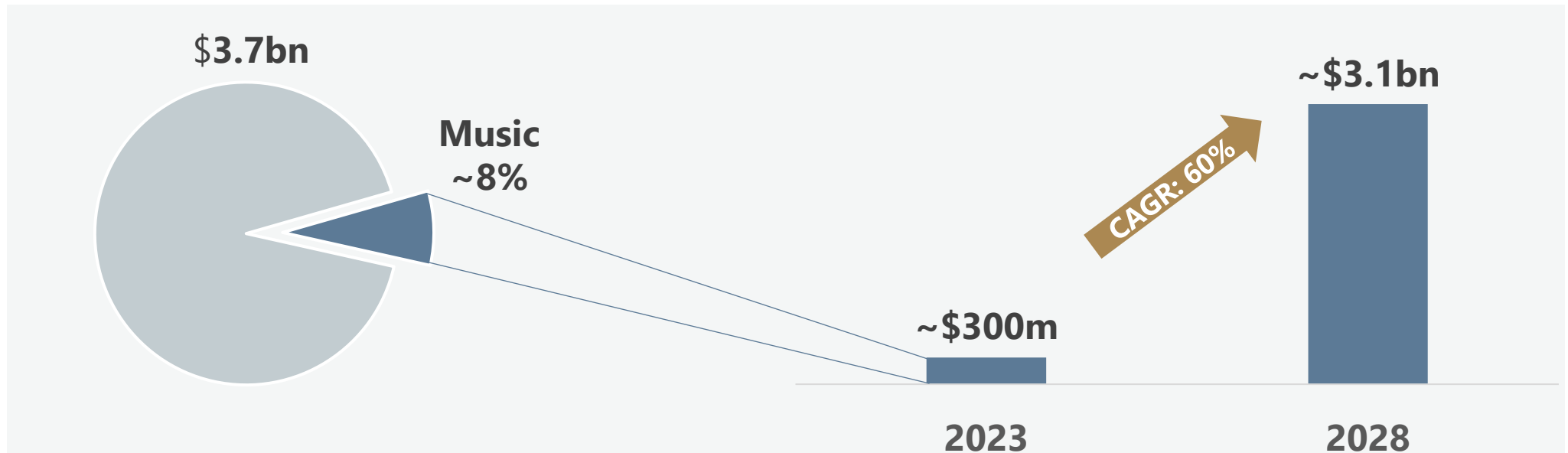
Since November 2022 and the advent of OpenAI's ChatGPT, generative AI and its rapid spread to the public has led to an exceptionally fast-paced AI boom. Around US\$50 billion will have been invested in AI technologies in Europe alone (thereof \$16bn in Germany and \$12bn in France).<sup>1</sup>

This development has also strongly influenced the music sector with large investments in AI applications in all fields of music, from creation to marketing.

The share of music applications is estimated at \$300m in 2023.<sup>2</sup> This corresponds to 8% of the total market for generative AI with already \$3.7bn in revenue in 2023<sup>3</sup>. The market for AI music solutions is expected to increase more than tenfold by 2028, with an average annual growth rate of around 60%<sup>4</sup> to over \$3bn for music AI alone.

This means that in only a few years the market will reach a size that corresponds to 28% of global music copyright collections in 2022.<sup>5</sup>

**GLOBAL GENERATIVE AI MARKET VOLUME AND SHARE OF GENERATIVE AI IN MUSIC, 2023**



**FORECAST: MARKET VOLUME OF GENERATIVE AI IN MUSIC IN US\$, 2023-2028**

# AN AI-GENERATED GAP OF UP TO 27% FOR MUSIC CREATORS' REVENUES WHILE THERE IS NO REMUNERATION FOR HUMAN-MADE INPUT TO DATE

Traditional revenue streams are under severe pressure from generative AI for many music creators. **It can be assumed that by 2028, 27% of music creators' revenues will be at risk due to generative AI. This corresponds to an estimated potential damage of €950m in 2028 alone and a cumulative total damage for the period 2023-2028 of around €2.7bn.**

An increasingly predatory competition is to be expected for creators, especially in areas where AI is particularly likely to replace existing human-made music.

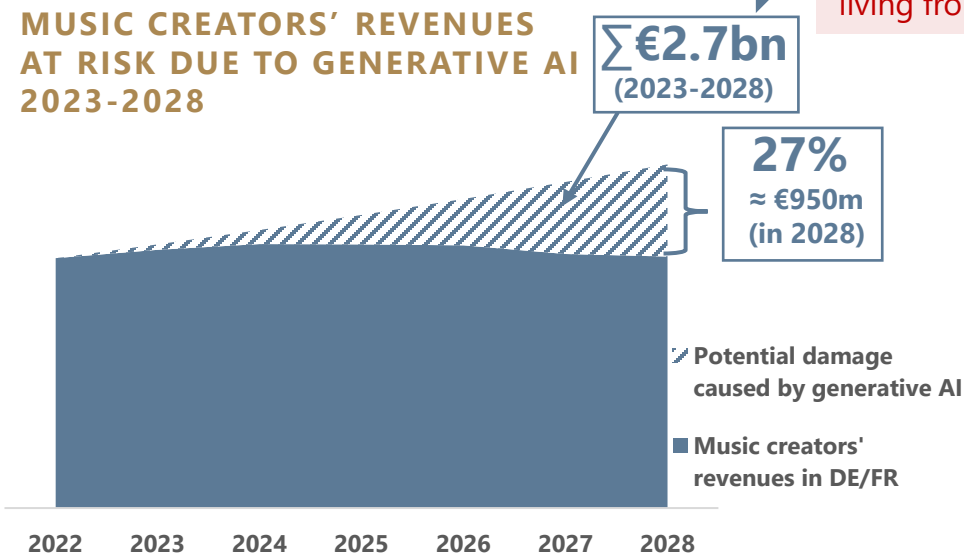
# 71%

of music authors and creators in France and Germany surveyed are afraid that the use of AI for music could lead to music creators no longer being able to make a living from their work.

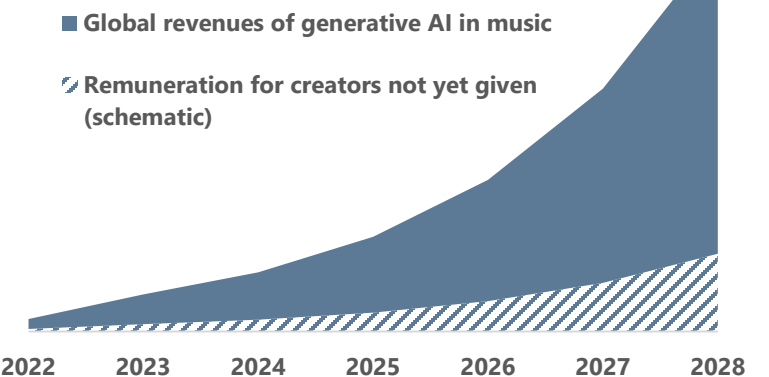
Despite the fact that copyrighted works are used as training data for generative-AI models and therefore form the fundamental basis for the origin and development of the market, authors and creators do not participate in the immense growth prospects.

**So far, there is no remuneration system that closes the AI-generated financial gap for creators.**

**MUSIC CREATORS' REVENUES AT RISK DUE TO GENERATIVE AI 2023-2028**



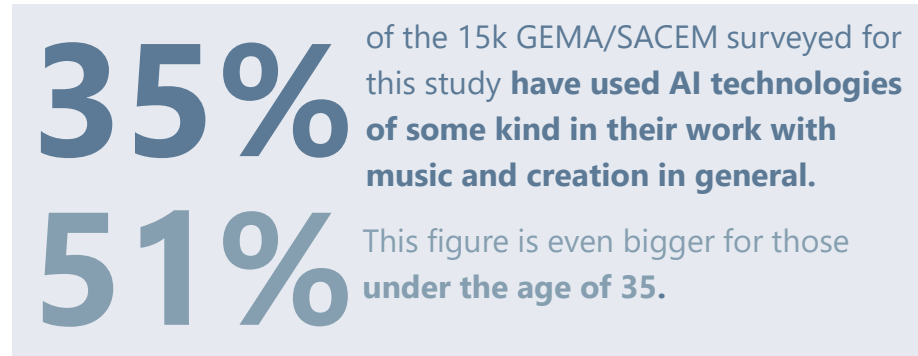
**REMUNERATION NOT YET GIVEN FOR COPYRIGHTED WORKS USED AS TRAINING DATA FOR GENERATIVE-AI 2023-2028 (SCHEMATIC)**



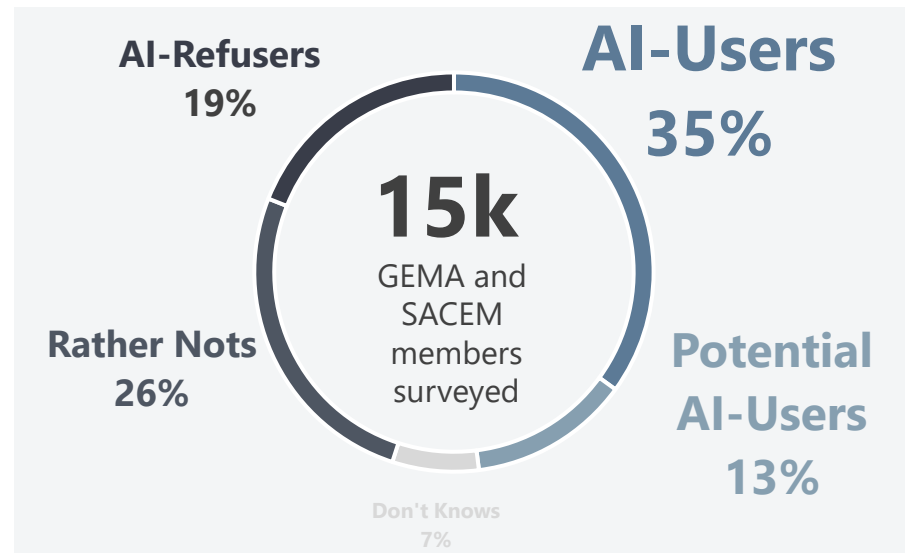


# USE AND ASSESSMENT OF AI IN MUSIC BY MUSIC AUTHORS AND CREATORS IN FRANCE AND GERMANY

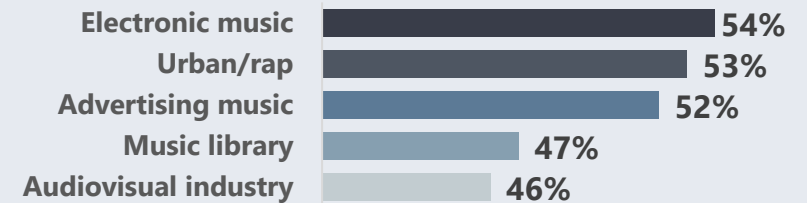
The use of AI is already a reality for many music authors and creators surveyed for this study:



## AI USE AMONG GEMA AND SACEM MEMBERS, 2023



The proportion of AI use among music creators surveyed differs significantly depending on the **genres or categories** in which they create music. **TOP 5 CATEGORIES, 2023**



**43%** agree that AI can open up **new forms of creativity.**

**63%** believe that AI will most likely be adopted in **composition, text writing and the creative process**, followed by recording, editing, mixing and mastering (58%) and the creation of promo content (55%).

Despite the already significant proportion of use, the creators surveyed are generally very sceptical when it comes to AI in music and creation in general.

**64%** of the respondents believe that the **risks of AI use outweigh its potential opportunities.** Only 11% believe that the opportunities outweigh the risks.

# LEGAL AND POLITICAL DEMANDS OF MUSIC AUTHORS AND CREATORS IN FRANCE AND GERMANY

There is currently much debate as to whether the generative AI systems offered by tech companies for commercial purposes may use copyrighted input in Europe and under which conditions the use of copy-protected input is permitted.

The attitude of GEMA and SACEM members surveyed for this study in this context is obvious:

**The overwhelming majority of the music authors and creators demand credit and transparency, consent and remuneration when their work is used in the context of generative AI in music.** According to them, the use of copyrighted works must follow clear rules.

## ATTENTION

93%

demand that policymakers should pay more attention to the challenges related to AI and copyright.

## CREDIT AND TRANSPARENCY

95%

of the 15k GEMA/SACEM members demand that AI providers should be obliged to disclose when they use copyrighted works as training data.

89%

request that AI-generated music tracks and other types of works should be identified as such.

## CONSENT

90%

claim that copyright holders must be asked for permission before their works are used as input for AI systems.

## REMUNERATION

90%

call for copyright holders to benefit financially when their works are used as input in AI training data sets (e.g. through a license agreement).



*"AI is an opportunity for creators but as always, it is our responsibility, us Europeans to define the ethic and economical framework in which intellectual property has to be respected.*

*Regulations are access to freedom and not the reverse. It's because we invented the rules of the road that we can travel safely."*

*Jean-Michel Jarre*

*Electronic music pioneer and former CISAC president*



# PART 1: THE MARKET FOR AI AND MUSIC

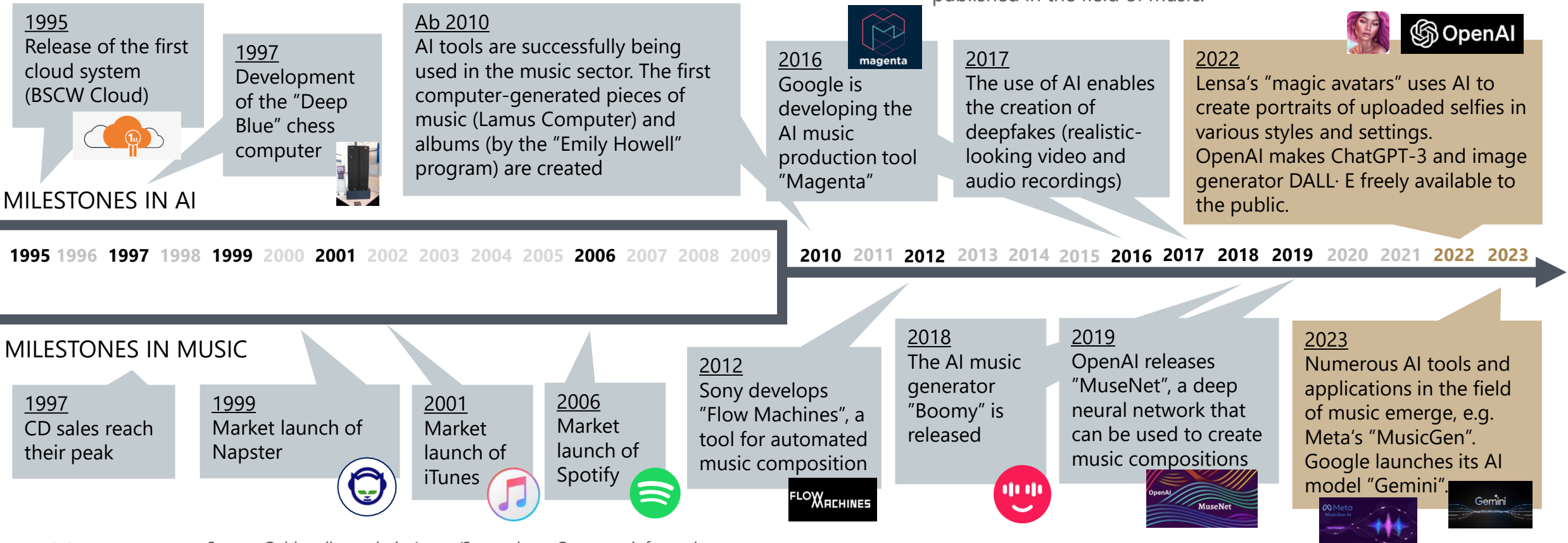
## Overview

Market Volume and Development

# MILESTONES IN AI AND MUSIC

As early as 1936, Alan Turing proved that a "calculating machine" could carry out cognitive processes. This laid the foundation for the development of artificial intelligence. The term was first used in 1956. In 1966, the first chatbot was developed, and in 1986 the first digital computer voice was created. With the rapid progress of digitalisation from the 1990s onwards, developments in the field of AI are accelerating.

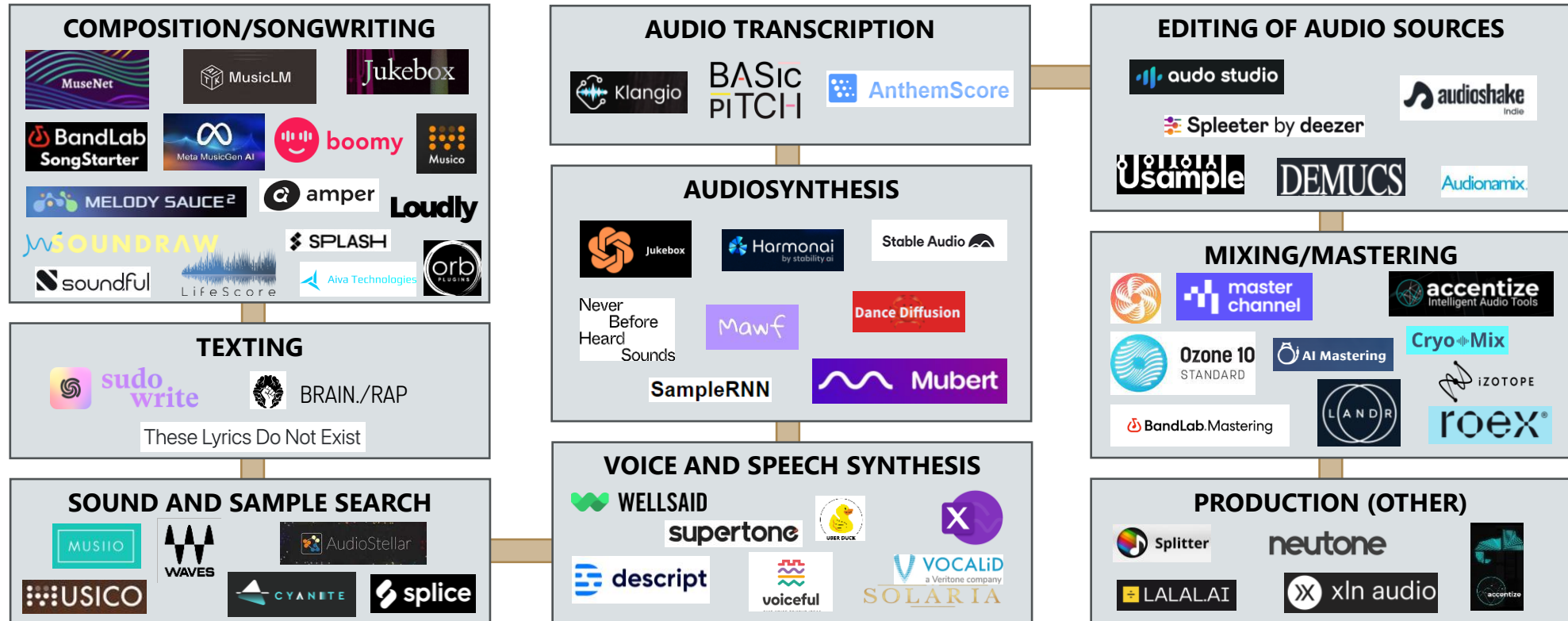
More recently, with the launch of the first music streaming platforms, AI has also found its way into the music sector via automated playlists and recommendations. The breakthrough of generative AI and its rapid spread to the public took place in November 2022, when ChatGPT was made freely available by OpenAI for the first time. Since then, numerous generative AI applications have also been created and published in the field of music.



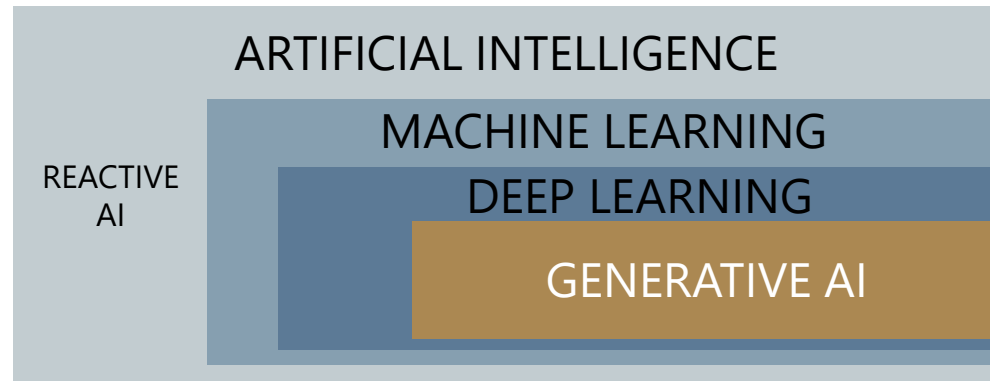
# THE MUSIC AI ECOSYSTEM

The release of ChatGPT in November 2022 triggered an “AI boom”, which is reflected in the large number of AI-specific start-ups and investments in AI by established companies. There are now also innumerable AI companies in the field of music creation, production and other areas of the music sector. The overview below gives an impression of this diversity, with new start-ups being added to the list every day.

## OVERVIEW OF AI COMPANIES IN THE AUDIO SECTOR, 2023



# FROM REACTIVE TO GENERATIVE ARTIFICIAL INTELLIGENCE



The field of AI encompasses information technology methods that normally require human intellect. In contrast to traditional information systems, their strength lies in the processing of unstructured data (i.e. continuous text, images and music) and in their cognitive potential - i.e., precisely in the human-like approach.<sup>1</sup>

The key to understanding AI lies in the transfer of a process that is actually a human process to technology – learning. The learning process is either rule-based or experience-based.

In the rule-based approach (also known as reactive or analytical AI), rigid rules and regulations are defined rules that are consistently applied by the machine to the data to be processed. However, this approach can quickly reach its limits, as countless rules would have to be defined for the various cases. One example of reactive AI is the chess program "Deep Blue", which defeated the world champion Garri Kasparov in 1997.

In contrast, the experience-based approach works the other way around, by creating and training a model based on examples<sup>2</sup> particularly in the form of big data.<sup>3</sup>

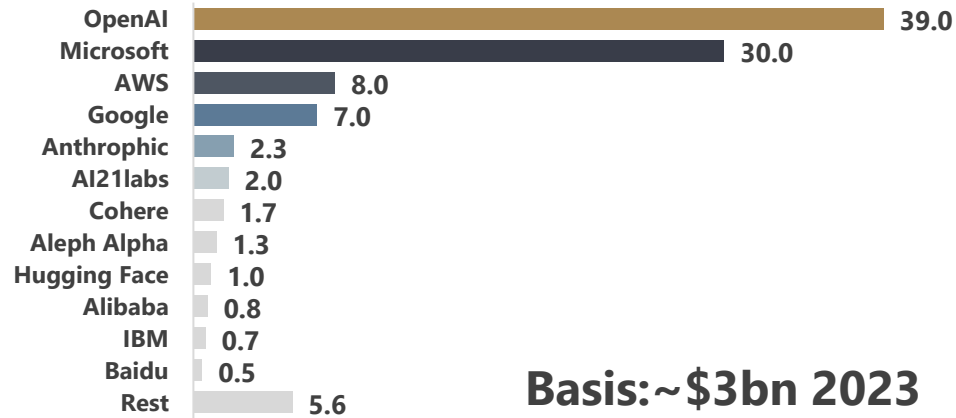
Machine learning (ML) is based on the fundamental idea that machines learn through experience and thus continuously improve their performance.<sup>4</sup> Based on data covering a specific subject area that the machine receives for learning, patterns are recognised, classified and transferred into a model that the machine can use to work with other data after training.

Deep learning (DL) is an advanced ML method. Artificial neural networks (ANN) are used to learn in depth and in a human-like manner.<sup>5</sup> The machine replicates neurons and their networking in the brain based on the human model. An input is processed in several stages, in so-called layers, until the machine achieves the desired output. This means that even very complex tasks can be solved. Deep learning is responsible for successes in speech, text, image and video processing.<sup>6</sup>

As the term suggests, generative AI is about not only recognising and classifying data, but also generating it. To this end, algorithms based on artificial intelligence are trained with huge datasets in order to recognize patterns. Generative models then attempt to imitate these patterns and create them themselves without being given explicit rules. The AI itself recognises which solution is most suitable for a problem.

# FOUNDATION MODELS AND MUSIC APPLICATIONS

## OVERVIEW AND ESTIMATED MARKET SHARES OF GENERATIVE AI MODELS AND PLATFORMS, IN %, 2023



## SELECTED GENERATIVE AI COMPANIES, THEIR MODELS AND MUSIC APPLICATIONS, DECEMBER 2023

COMPANY	MODEL	MUSIC APP.
Google	PaLM 2  BERT  Gemini	MusicLM
Meta	LLaMA	Meta MusicGen AI
OpenAI	DALL·E GPT-4	MuseNet  Jukebox
shutterstock	MPT-7B	amper music
stability.ai	Stable Diffusion XL	Harmonai Stable Audio

Foundation models are large-scale machine learning models pre-trained on extensive datasets. These models are trained to learn general-purpose representations across various types of data, including text, images, video and audio. Their key strengths lie in their size, pre-training, self-supervised learning, generalisability and adaptability.

Foundation models are not designed for one specific task but are built to understand and interact with data in a human-like manner. They can be customised to perform a wide variety of tasks, demonstrating their versatility and efficiency in applications designed, for example, for creating music.

OpenAI, as the fastest rising technical service ever, is considered the technical and quality leader. While it has the biggest share of the foundational models and platforms market in 2023 (39%), Microsoft as a shareholder in OpenAI has to be seen as by far the largest player in the market for generative AI with a combined market share of 69%. Amazon and Google follow with 8 and 7%. Both of these companies also invested large amounts into Anthropic, whose current market share is 2.3%.

There are numerous companies creating foundation models which are then used for AI music applications. Examples include MuseNet by OpenAI, MusicGen by Meta, the tools MusicLM by Google and Stable Audio by Stability AI. While some still have the status of research project, others are open access or, like Stable Audio, already have a business model and a stock pricing.





# PART 1: THE MARKET FOR AI AND MUSIC

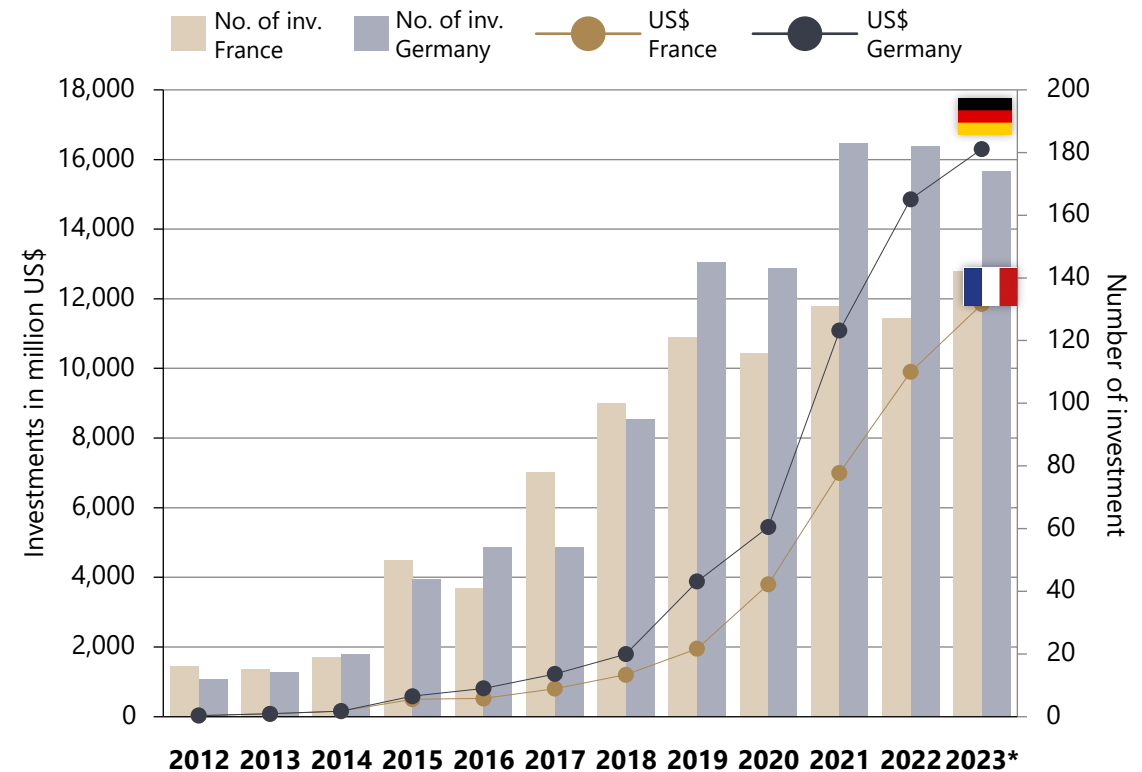
Overview

**Market Volume and Development**

# INVESTMENTS IN AI IN GERMANY AND FRANCE

Investments in artificial intelligence have picked up considerably, especially since 2020. There are different estimates for the market volume. According to the OECD, around US\$50 billion will have been invested in AI technologies in Europe alone (thereof \$16bn in Germany and \$12bn in France).







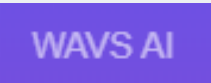


**DEVELOPMENT OF INVESTMENTS IN AI IN GERMANY AND FRANCE 2012-2023\* IN US\$ MILLION AND TOTAL NUMBER**



# INVESTMENTS IN MUSIC-RELATED GEN AI COMPANIES

Investment in artificial intelligence is growing worldwide to enable innovation and progress in this field. Investors are providing many millions to finance the further development of AI music companies.

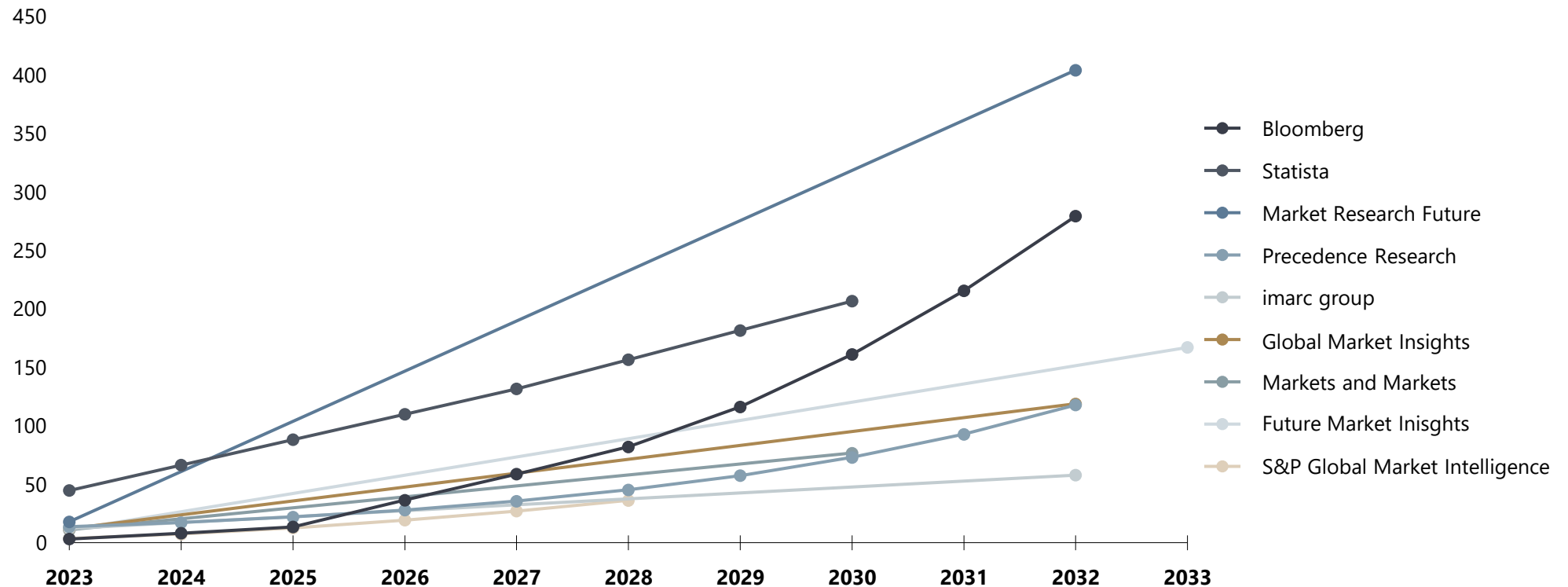
## SELECTED INVESTMENTS INTO MUSIC-RELATED GENERATIVE AI COMPANIES, 2018-2023

COMPANY	TYPE OF SERVICE	INVESTMENT	YEAR	INVESTMENT COMPANY
 amper music	AI music composition tool	<b>US\$9.1m</b>	2018	TechNexus Venture Collaborative, Horizon Ventures, Two Sigma Ventures
 LANDR	AI-powered music mastering service	<b>US\$26.0m</b>	2019	Sony Innovation Fund, Warner Music Group, Plus Eight Eighty Equity Group
 AIVA	Creation of soundtracks	<b>US\$2.2m</b>	2020	NetEase, Kima Ventures
 LifeScore	Creation of personalised playlists tailored to the listener	<b>US\$14.4m</b>	2022	Octopus Ventures, Warner Music Group, IDEO, 4 Good Ventures
 audioshake	Recognises and isolates different components in audio material	<b>US\$2.7m</b>	2023	Indicator Ventures, Precursor Ventures, Side Door Ventures
 enote	Digitised sheet music, conversion of audio files into sheet music	<b>US\$10.5m</b>	2023	DvH Ventures, EIC Fund, Rudolf Fuchs Family Office
 WAVS AI	Streaming platform for AI-generated music; tool for creating and distributing your own AI works	<b>US\$20.0m</b>	2023	Regal Investments
 synthesia	Automated creation of videos with synthetic avatars and voices based on prompts	<b>US\$90.0m</b>	2023	Accel, NVIDIA, Kleiner Perkins, GV, FirstMark Capital, MMC
 runway	Automated creation and editing of images and videos based on prompts	<b>US\$141.0m</b>	2023	Google, NVIDIA, Salesforce

# MARKET SIZE OF GENERATIVE AI MODELS

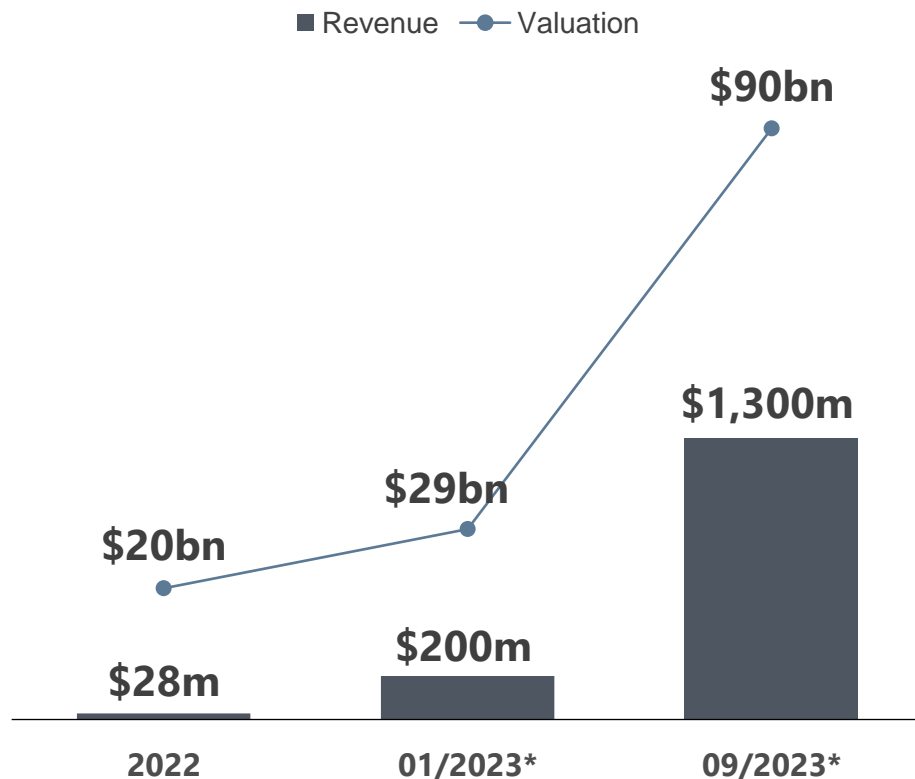
There is a great variety of evaluations of the global market volume for generative AI. The range for the estimated volume in the year 2023 goes from \$3.7bn up to \$44.9bn. Same goes for the forecasts up to the year of 2033, or the highest estimated market volume of \$405bn in the year 2032.

GLOBAL GENERATIVE AI MARKET VOLUME ESTIMATIONS, IN BN US\$, 2023-2033



## CASE: OPENAI'S REVENUE DEVELOPMENT INDICATES RISING DEMAND FOR AI

### OPENAI'S VALUATION AND YEARLY REVENUE IN US\$, 2022/2023\*



The rate at which demand for generative AI and thus sales volumes are increasing is rising sharply: since the release of ChatGPT, OpenAI has become a closely watched barometer of demand for generative AI.

In September 2023, OpenAI has been generating revenue at a volume of \$1.3 billion a year according to CEO Sam Altman. This implies the company is generating more than \$100 million per month, up 30% from summer 2023, when the Microsoft-backed start-up generated revenue at a \$1 billion-a-year pace and about \$80 million per month.

The revenue pace, largely from subscriptions to its conversational chatbot, represents remarkable growth since the company launched a paid version of ChatGPT in February. In 2022, the company's revenue was just \$28 million, meaning that the revenue for 2023 has risen by a factor of around 50.

Between 2022 and September 2023, OpenAI's valuation has risen from \$20 billion to \$80-90bn.

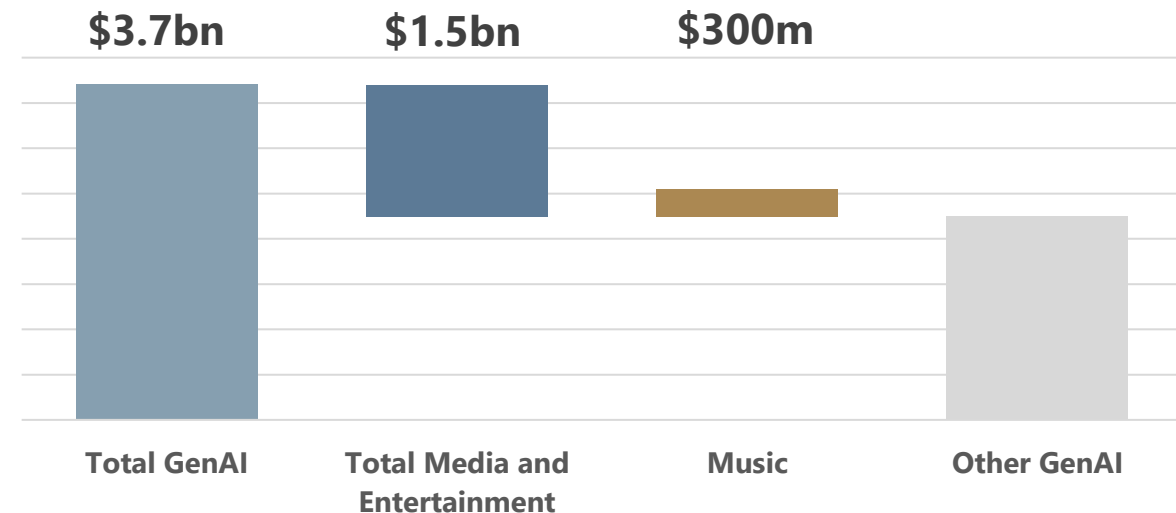
# MARKET VOLUME FOR GENERATIVE AI IN MUSIC

As described above, there are numerous estimates for the volume of the generative AI market. The following estimates are based on the market volume derived from a bottom-up analysis of a total of 260 companies providing generative-AI software products<sup>1</sup> and an estimate of the market volume in the media and entertainment<sup>2</sup> as well as the music sector<sup>3</sup>.

In aggregate, forecasted revenues for generative-AI technology offerings are expected to exceed \$3.7bn by 2023.

Meanwhile, the market for generative AI in the media and entertainment sector is estimated at around \$1.5bn which is 40% of the total market, while **revenues for generative AI in music are estimated at approximately \$300m which is 20% of the media and entertainment sector and 8% of the total market.**

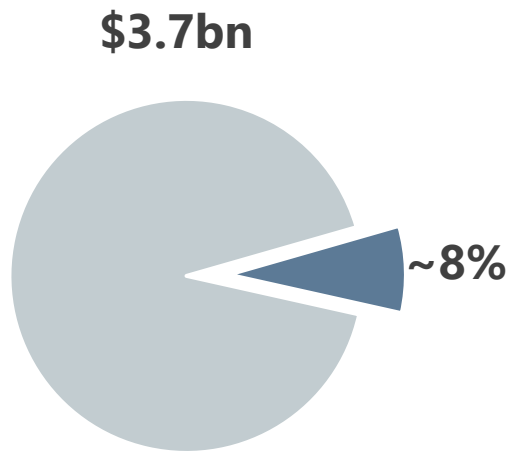
## GLOBAL GENERATIVE AI MARKET VOLUME AND SHARE OF GENERATIVE AI IN MUSIC, 2023



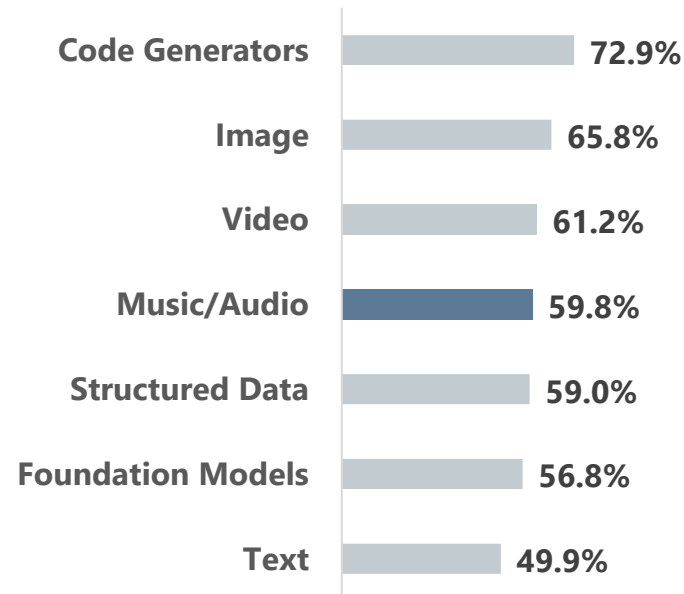
# MARKET FORECAST FOR AI IN MUSIC

The market for generative AI in music is set to increase more than tenfold by 2028 to over \$3bn. The average annual growth rate from 2023 to 2028 is estimated at 60%.<sup>1</sup>

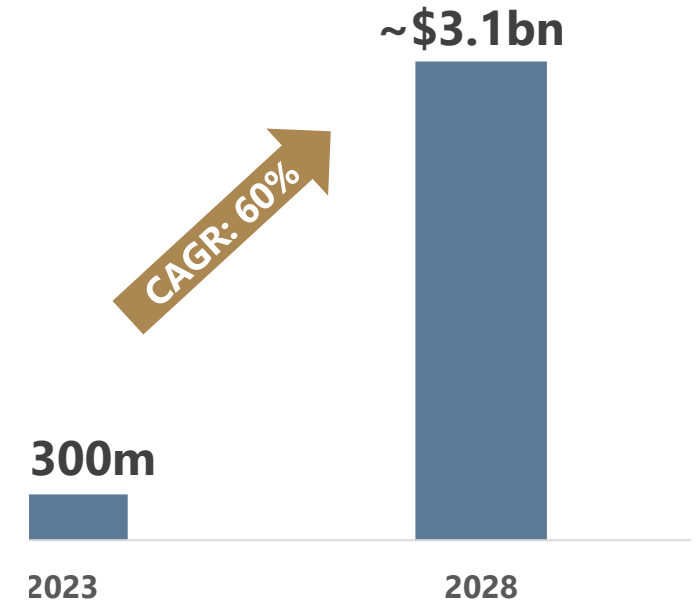
GLOBAL GENERATIVE AI MARKET VOLUME AND SHARE OF GENERATIVE AI IN MUSIC, 2023



GLOBAL GENERATIVE AI COMPOUND ANNUAL GROWTH RATE 2023-28 BY MARKET SEGMENT



GLOBAL MARKET VOLUME OF GENERATIVE AI IN MUSIC 2023-28





# PART 2: AI IN THE MUSIC CREATION PROCESS

## Overview

AI and the Creative Aspects of Music

AI in Recording, Editing, Mixing, Mastering

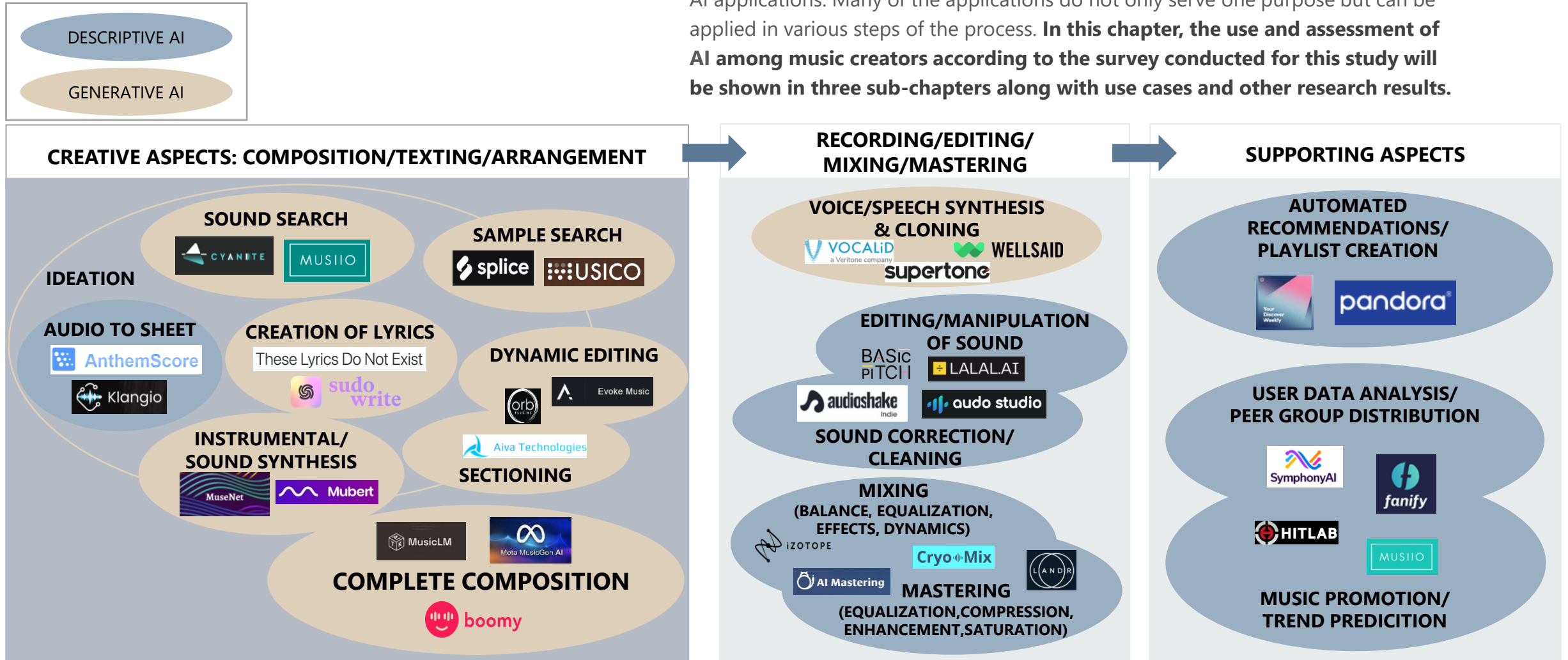
AI in the Supporting Aspects of Music

AI in Dubbing and Subtitling



# AI IN THE MUSIC-MAKING PROCESS

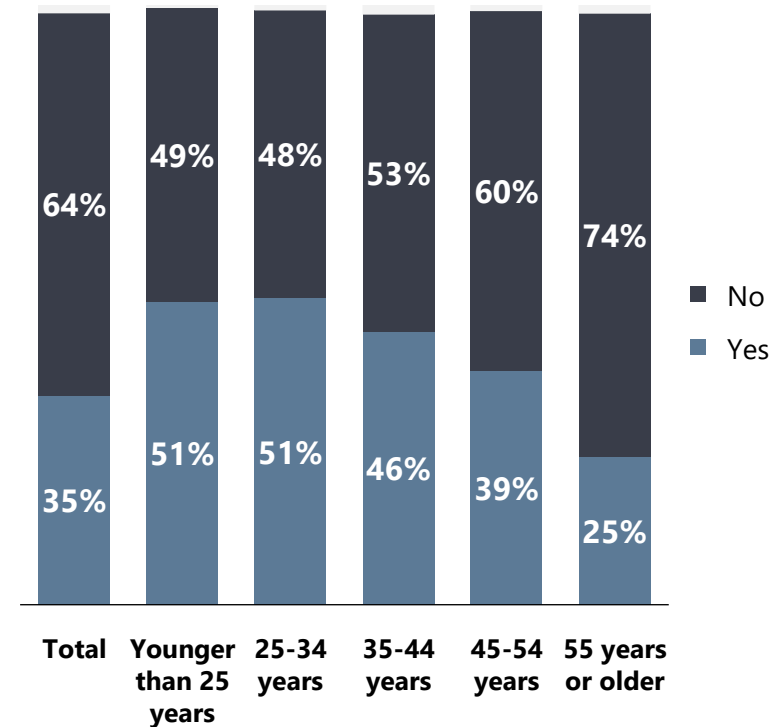
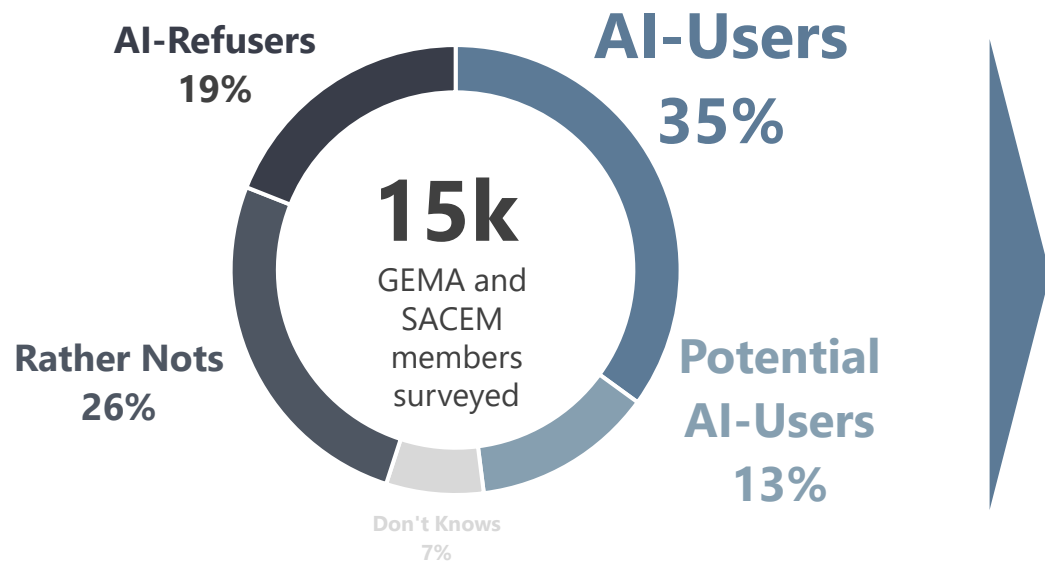
The range of AI tools for use in the music industry is diverse and vast. AI can be applied to every step of the creative process, from composition to distribution and marketing of music. The AI used ranges from simple, descriptive tools to generative-AI applications. Many of the applications do not only serve one purpose but can be applied in various steps of the process. **In this chapter, the use and assessment of AI among music creators according to the survey conducted for this study will be shown in three sub-chapters along with use cases and other research results.**



# USE OF AI AMONG MUSIC AUTHORS AND CREATORS SURVEYED

The use of AI is already a reality for many music authors and creators.<sup>1</sup> Of the 15k questioned GEMA/SACEM members surveyed for this study, 35% have used AI technologies in their work with music and creation in general, while the majority of members (64%) has not. Out of these, 13% are potential AI users, 26% who would rather not use AI in the future and 19% who refuse to use AI now or ever. The younger the members are, the more likely they are to have used AI technologies in their work.

***"Have you used AI technologies in your work with music and creation in general / can you imagine using AI in the future?"***



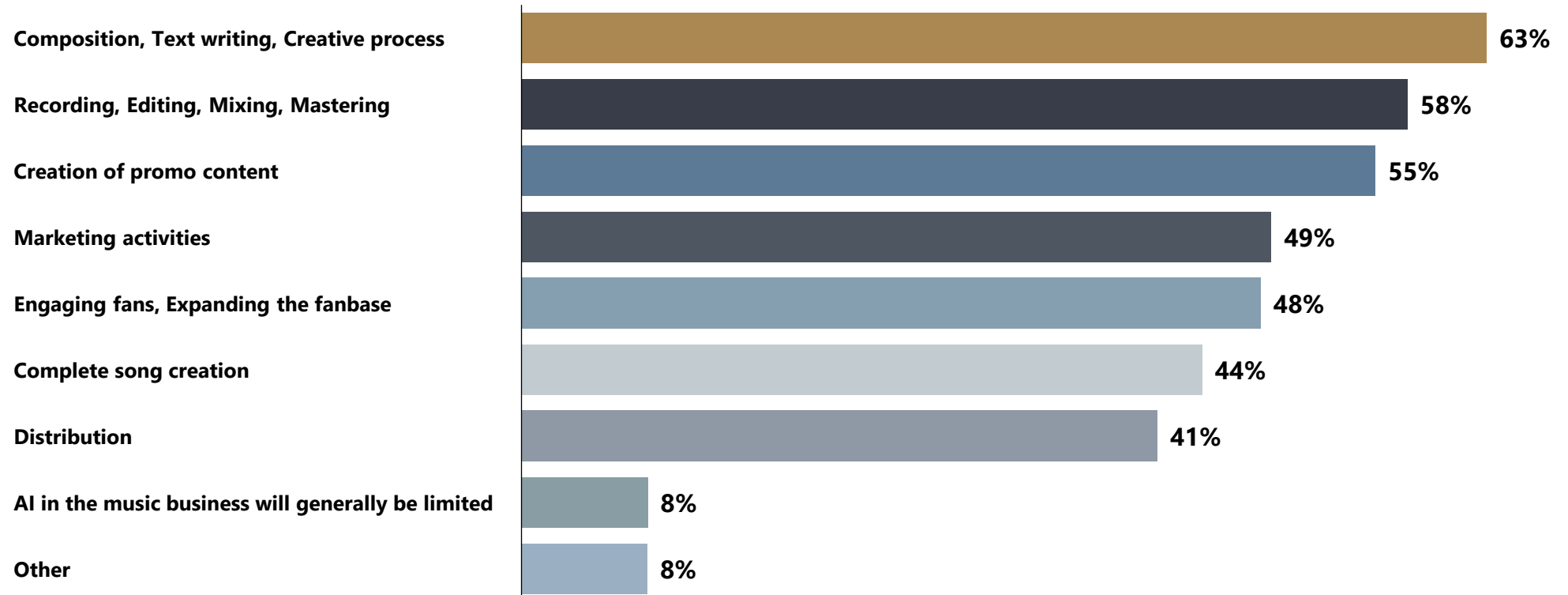
Source: Goldmedia survey on behalf of GEMA and SACEM 2023, n=14,795; Basis: GEMA and SACEM members. Rounding differences possible.

Difference to 100% = No answer. <sup>1</sup> A study conducted by TuneCore has shown that 27% of the surveyed 1,558 artists from more than 20 countries have used AI previously in their work, see [TuneCore \(2023\)](#), p. 7; a study conducted by the Finnish performance rights organisation "TEOSTO" shows that only 21% of 717 partaking artists have used AI in their music creation process.

## EXPECTED ADOPTION OF AI BY AREAS OF CREATION

63% of the music authors and creators surveyed believe that AI will most likely be adopted in the area of composition, text writing and the creative process. The larger share also believes the adoption of AI to be likely in more technical areas of the creation process, such as recording, editing, mixing and mastering (58%) as well as the creation of promo content (55%). Only 8% believe that AI in the music business will generally be limited.

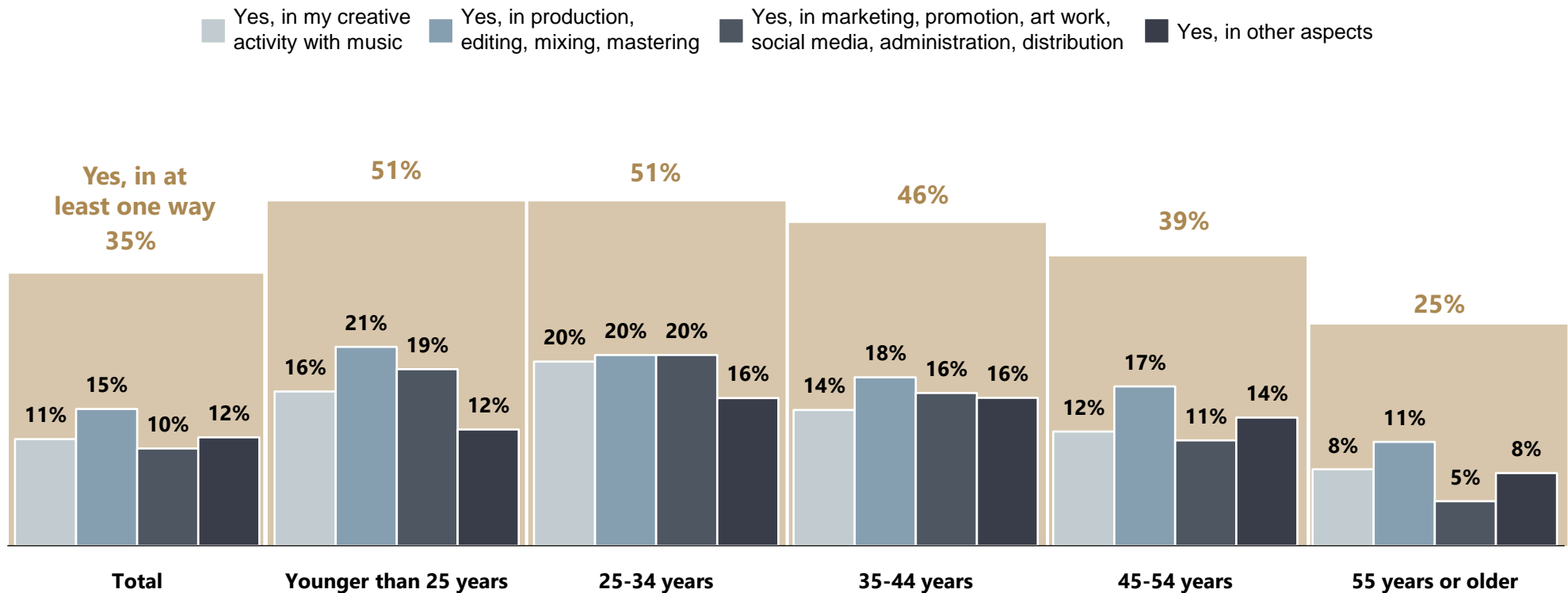
*"In your opinion, in what areas of creation will AI be most likely adopted?"*



# USE OF AI BY APPLICATION AREA

Even though its adoption is highly anticipated, AI has so far only been used by 11% of GEMA and SACEM members surveyed in connection with their creative activity with music. The value here is highest in the 25-34 age group at 20%. Across all age groups, the use of AI is slightly higher in the field of production, editing, mixing, mastering (15% overall). This figure is highest among those under 25 at 21%. When it comes to supporting aspects such as marketing, promotion and distribution, 10% have already used that in total, with the value highest in the 25-34 age group at 20%.

***“Have you used AI technologies in your work with music and creation in general?”***





*"AI is a theme that me and my colleagues, in terms of songwriting as well as at the producer level, have been extremely preoccupied with lately. There are pros and cons. In one corner are the savings on time and money and, in other corners, ChatGPT or apps for phonetics and alternative rhymes are often used by writers to gather inspiration for texts. The same goes for tools for mixing and mastering and/or producing demo-vocals.*

*So far, I haven't personally been using AI in songwriting at all, because I don't think any AI can ever capture and replace the creative process, the uniqueness, individuality and human connection with [all] their emotions and stories – in the studio and ultimately also between artists and the audience at live performances."*

*Karo Schrader*

*Songwriter*



# PART 2: AI IN THE MUSIC CREATION PROCESS

Overview

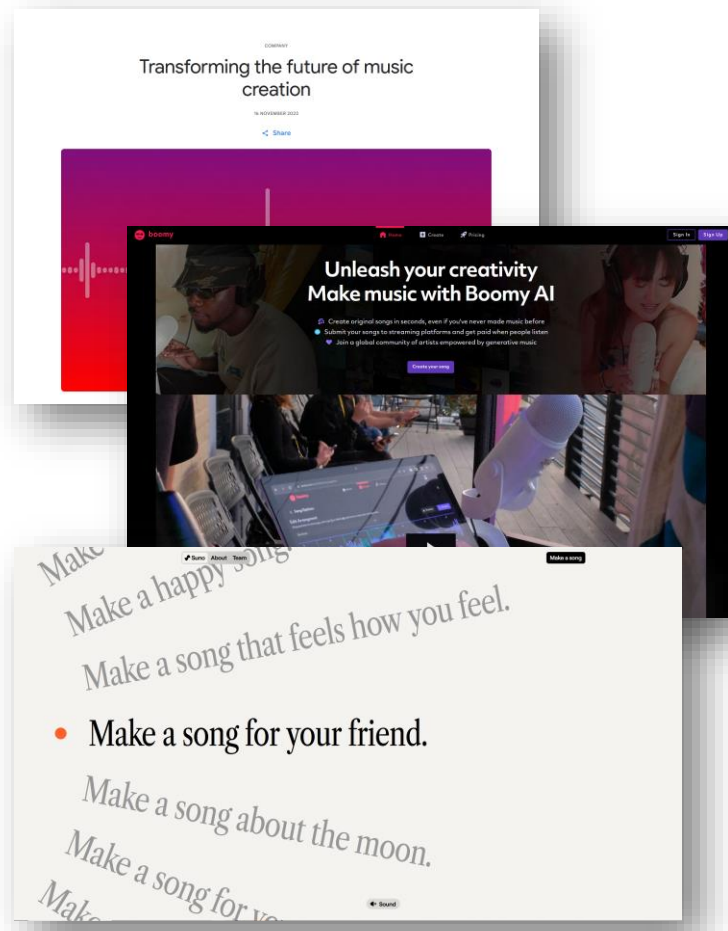
**AI and the Creative Aspects of Music**

AI in Recording, Editing, Mixing, Mastering

AI in the Supporting Aspects of Music

AI in Dubbing and Subtitling

# WHAT IS POSSIBLE WITH GENERATIVE AI IN MUSIC CREATION?



The promise of AI music generation models, and tools that are based on these models, is nothing less than “transforming the future of music creation” (Google DeepMind)<sup>1</sup>.

Platforms like Boomy or text-to-music-generators like MusicGen from Meta promise that people can “create original songs in seconds, even if you’ve never made music before” (Boomy<sup>2</sup>) or that small business owners can add “a soundtrack to their latest Instagram post with ease”. (Meta/MusicGen<sup>3</sup>). Text-to-song-generators like Suno even combine text-to-music with text generation and voice cloning to build “a future where anyone can make great music. Whether you’re a shower singer or a charting artist, we break barriers between you and the song you dream of making. No instrument needed, just imagination. From your mind to music” (Suno<sup>4</sup>).

One major argument for AI-facilitated music is that it may help people shrink what can be called “the gap”. “The gap is the difference between the idea that’s in our heads that’s obviously perfect and amazing versus what you can realistically create” (Cleo Abrams<sup>5</sup>).

**More and more GenAI models and tools and apps are emerging, allowing musicians as well as non-musicians to test their ideas and bring them to life. There are voices that assess this development in such a way that AI-generated music might lead to a democratization of content creation.**<sup>6</sup>



*"What I like about AI is that it's a collaboration, it's a co-creation with AI."*

*DeLaurentis*

*Musician, producer, composer, author and performer*

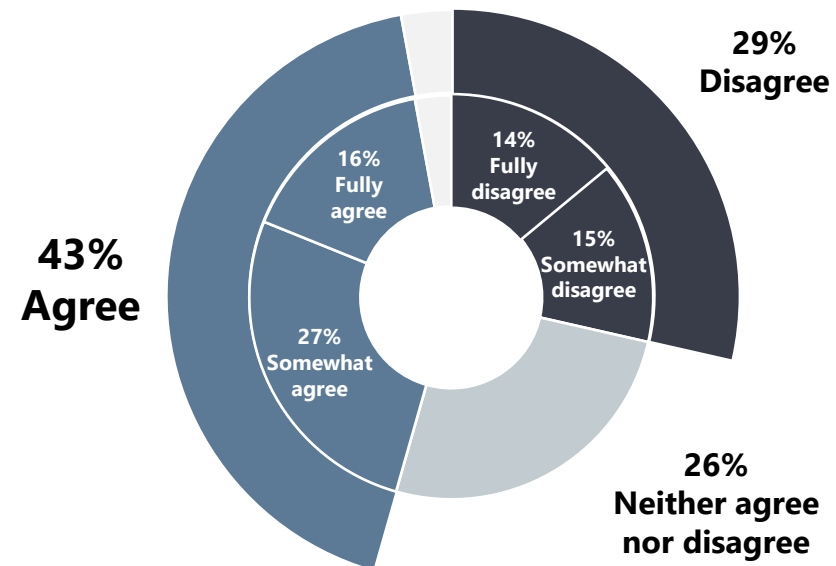


# NEW FORMS OF CREATIVITY THROUGH AI?

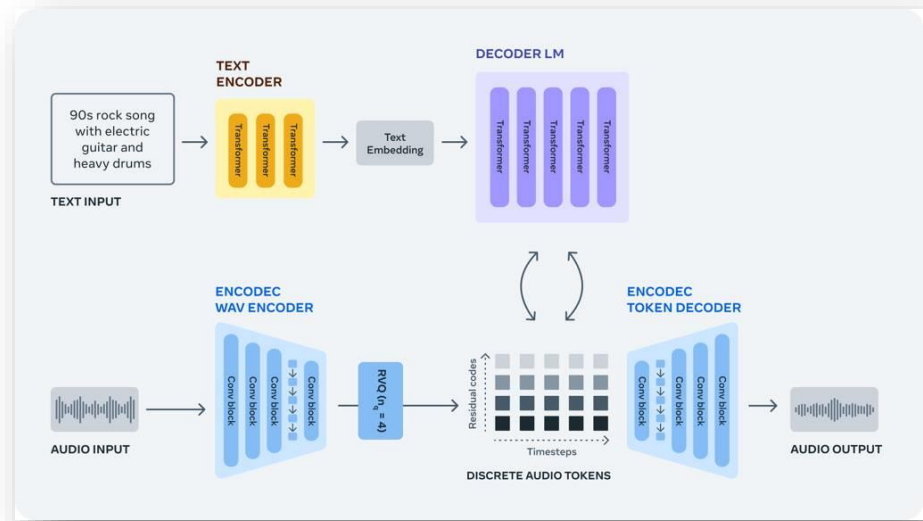
While a major promise of generative-AI tools is that virtually anyone can now create music, regardless of their abilities, the question arises as to what these tools and the associated developments mean for professional music makers. Artists may use generative-AI tools to generate music in an instant by describing the general idea behind their piece and its mood to see it "materialise in front of their eyes"<sup>1</sup>.

**A significant proportion of music professionals see creative potential in AI. When asked if AI can open up new forms of creativity, 43% of questioned members agree.**

**"AI can open up new forms of creativity."**



## CASE: TEXT-TO-MUSIC GENERATION (META MUSICGEN)



In August 2023, Meta open-sourced AudioCraft (for research purposes only) – their “simple framework that generates high-quality, realistic audio and music from text-based user inputs after training on raw audio signals as opposed to MIDI or piano rolls.”<sup>1</sup>

AudioCraft consists of three models: one of these is MusicGen, which was trained with “Meta-owned and specifically licensed music”. It generates music from text-based user inputs – the “prompts” that are used to instruct AI models like OpenAI’s ChatGPT to generate a specific text or perform a particular task.

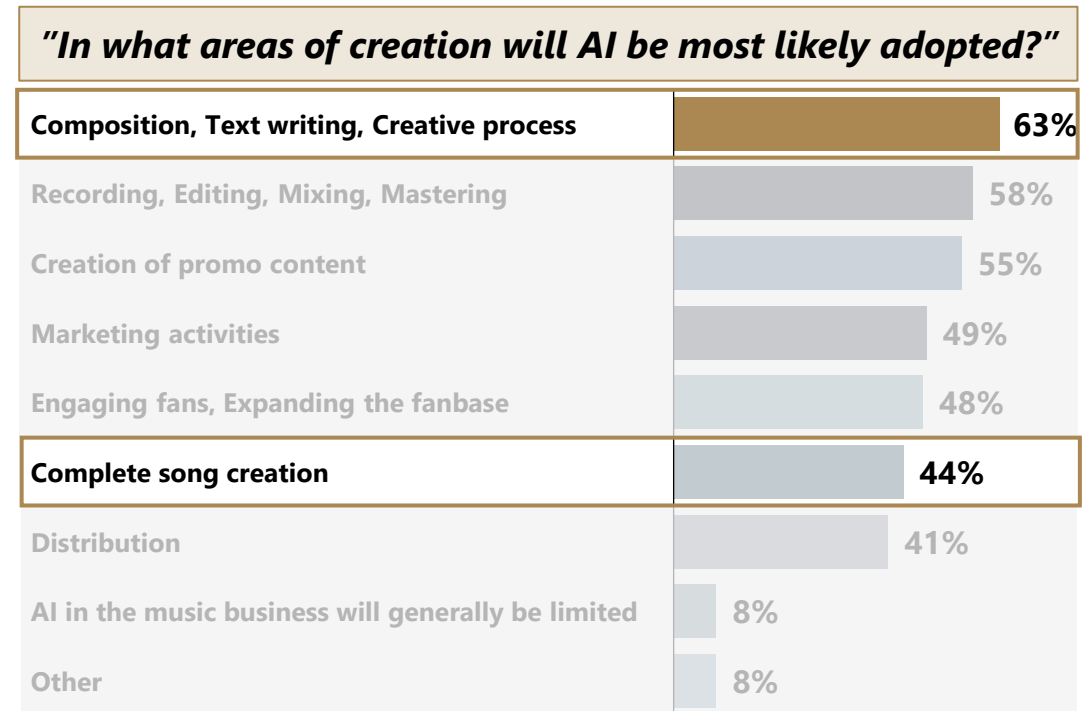
Users can generate music from text prompts in Meta’s MusicGen by selecting from a range of genre presets and then customising outputs with various parameters like tempo, instrumentation and mood; or, alternatively, by conditioning models with their own music files, which can be auto-completed or used to generate new compositions in a similar style.

With AudioGen, Meta showed that it can train AI models to perform the task of text-to-audio generation. Given a textual description of an acoustic scene, the model can generate the environmental sound corresponding to the description with realistic recording conditions and complex scene context.

# EXPECTED ADOPTION OF AI IN MUSIC CREATION

With the help of text-to-music-generators like Meta’s MusicGen or Stable Audio by Stability AI, musicians can turn words, images, and other references into music and change the pieces’ style and genre. AI’s adoption in composition, text writing and the creative process in general as well as, to a lesser extent, in complete song creation with music generators is viewed with deep suspicion by the respondents surveyed.

**On the other hand, the technical but also the musical and emotional abilities of AI in relation to music are viewed very sceptically. Results of text-to-speech are treated as “not to be production ready” and their “understanding” of musical forms as limited. Generative AI would always deliver something “averaged”. Furthermore, these models can currently only generate a comparatively short section (e.g. 30 or 60 seconds).<sup>1</sup>**





*"As music or sound creators, we need to understand what we're dealing with in AI! We must not anthropomorphize AI by attributing human characteristics like creativity or the ability to learn.*

*What AI does is identify patterns within a massive amount of data and then apply them in some form. The outcomes are stereotypes, clichés - essentially, the lowest common denominator.*

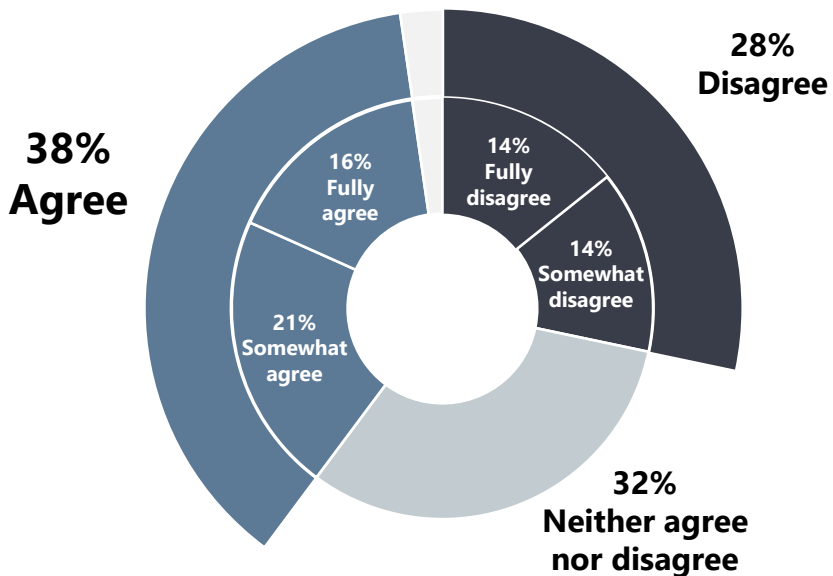
*This is easily retrieved. That's what generative AI does best."*

**Yevgeni "Jeff" Birkhoff**

*Music & sound designer and AI and music expert*

# DRIVING INSPIRATION AND IDEATION

***"AI technology can support the human creative process."***

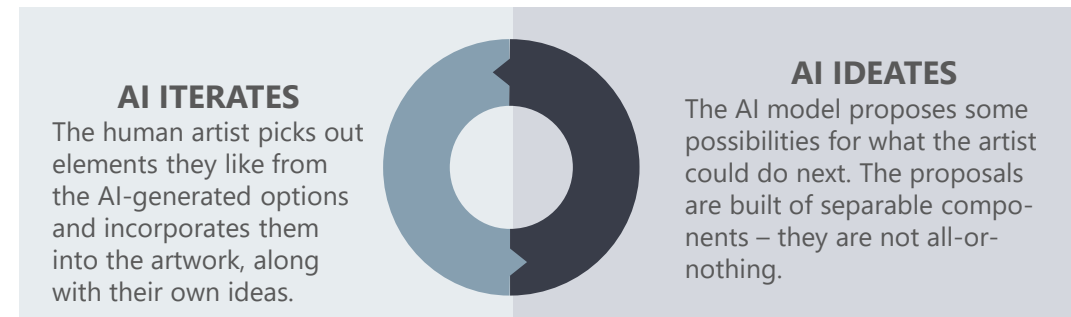


AI can also help artists overcome creative blocks such as the dreaded 'blank page syndrome' and push their boundaries. It does not replace the creatives, but rather adds a new angle to the creative process they can engage in.<sup>1</sup> Music generators can help them broaden their horizons and "are like a breath of fresh air when the deadlines are approaching and the audience is waiting for another release".<sup>2</sup>

***"There's a song that we wrote a chorus for in 2003 and we never finished because I couldn't think of anything for the verses, [...] But now with AI you could give it the bits you've written, press the button and have it fill in the blanks. You might then rewrite it, but it could nonetheless be a tool."***  
*(Neil Tennant, Pet Shop Boys, [TheGuardian.com](https://www.theguardian.com/music/2023/may/16/pet-shop-boys-ai), 16 May 2023)*

When asked, whether AI technology can support the human creative process, the answers of the questioned GEMA and SACEM members are quite balanced. While 38% agree with this statement, almost as many (31%) neither agree nor disagree. A further 28% disagree with the statement that AI can support the human creative process.

## THE HUMAN-AI FEEDBACK LOOP<sup>3</sup>



Source: Goldmedia survey on behalf of GEMA and SACEM 2023, n=14,770; Basis: GEMA and SACEM members. Rounding differences possible.

Difference to 100% = No answer (3%). <sup>1</sup> IFPI's global report also shows that 79% of over 43,000 music fans feel that human creativity remains essential to the creation of music, see [IFPI \(2023\)](#). <sup>2</sup> [Miquido \(2023\)](#); <sup>3</sup> [Brandt \(2023\)](#).



*"You have to separate: there's functional music ('elevator music'), but certainly also other, more sophisticated music that in future will be made by machines – and whose marginal costs will in fact be somewhere in the region of zero. And everything, on top of that, which will constitute some form of collaboration between person and machine.*

*But here it's also not a simple matter of black and white. I don't compose at all, but I write and I'm constantly aware of, say, ChatGPT as particularly fascinating when it's a kind of sparring partner that I can brainstorm with late at night and which can mentally catapult me in less than a minute in a direction that maybe I would've only have come to hours later otherwise.*

*And the absolute crème de la crème of music creators can also become better through using AI, and they'll be just as raised up as the amateurs below, who don't know anything."*

**Peter Kabel**

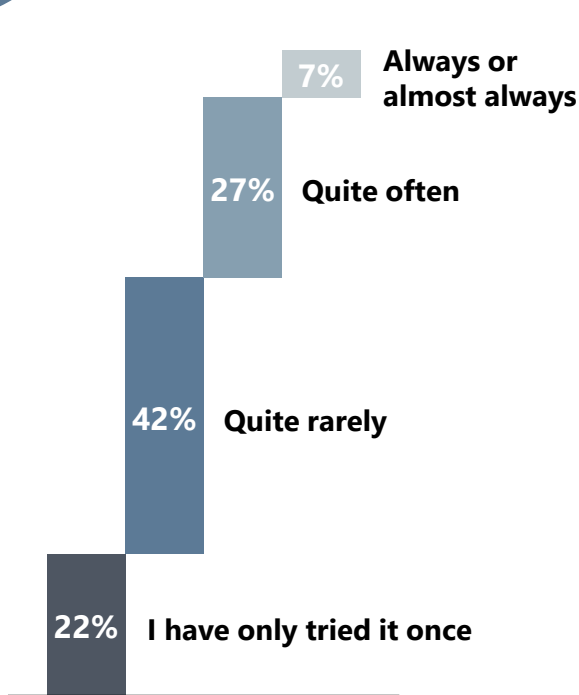
*Prof. at the Department Design at HAW Hamburg and founder of Cogniwerk*

# AI USE IN CREATIVE ACTIVITY IS STILL RELATIVELY LOW BUT SEEN CRITICALLY

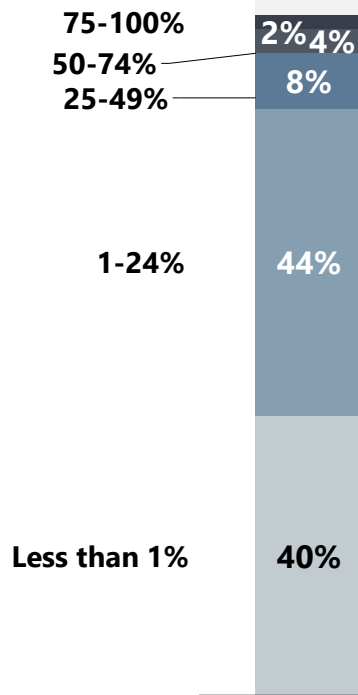
11% AI-Users in creative activities with music

Even though its adoption is highly anticipated, AI has so far only been used by 11% of GEMA and SACEM members surveyed in connection with their creative activity with music. Moreover, only about one third of these use AI technologies often or always and only a fraction say that these contribute significantly to their creative process. On the other hand, 78% of those who have already used AI, assume that they will do so again or continue to do so in the future. However, use in this area is still relatively low and is also rated very critically overall. Only 10% assess the use of AI in the creative aspects of the music sector to be positive.

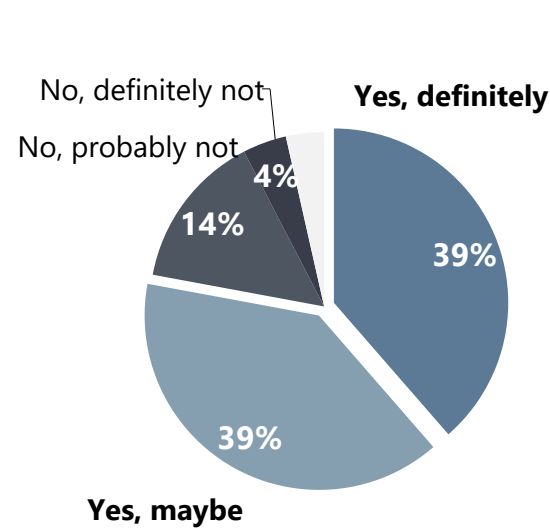
FREQUENCY OF AI USE IN CREATIVE ACTIVITY WITH MUSIC, TOTAL IN %



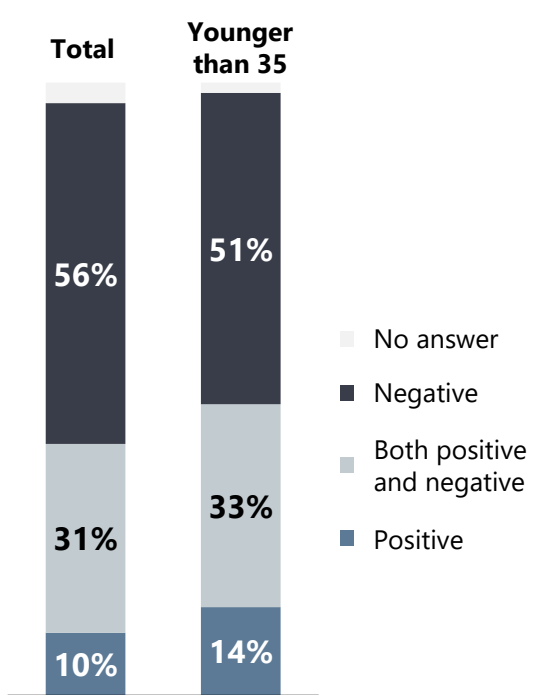
AVERAGE AI CONTRIBUTION TO WORK WITH MUSIC, TOTAL IN %



INTENTION TO CONTINUE WORKING WITH AI, TOTAL IN %



ASSESSMENT OF AI USE IN CREATIVE ASPECTS OF THE MUSIC SECTOR, IN %





# PART 2: AI IN THE MUSIC CREATION PROCESS

Overview

AI and the Creative Aspects of Music

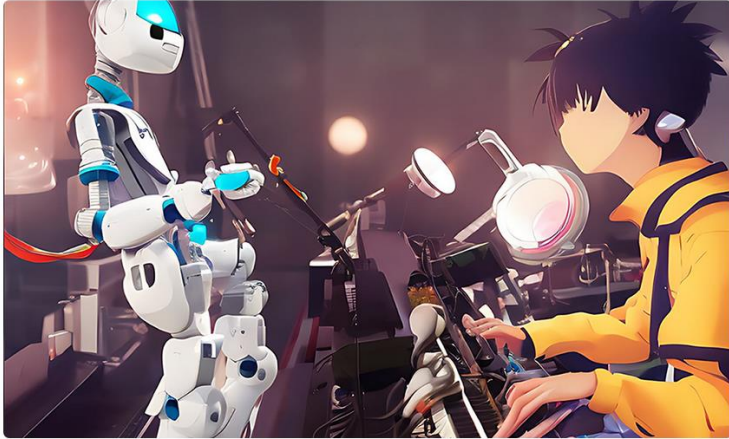
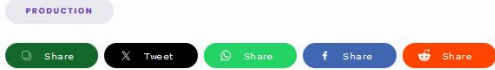
**AI in Recording, Editing, Mixing, Mastering**

AI in the Supporting Aspects of Music

AI in Dubbing and Subtitling



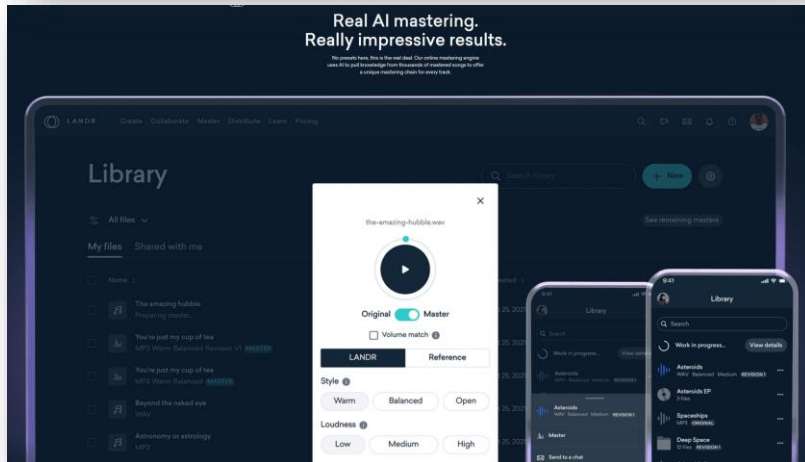
## AI for Music Production: 10 Tools to Produce Like a Pro



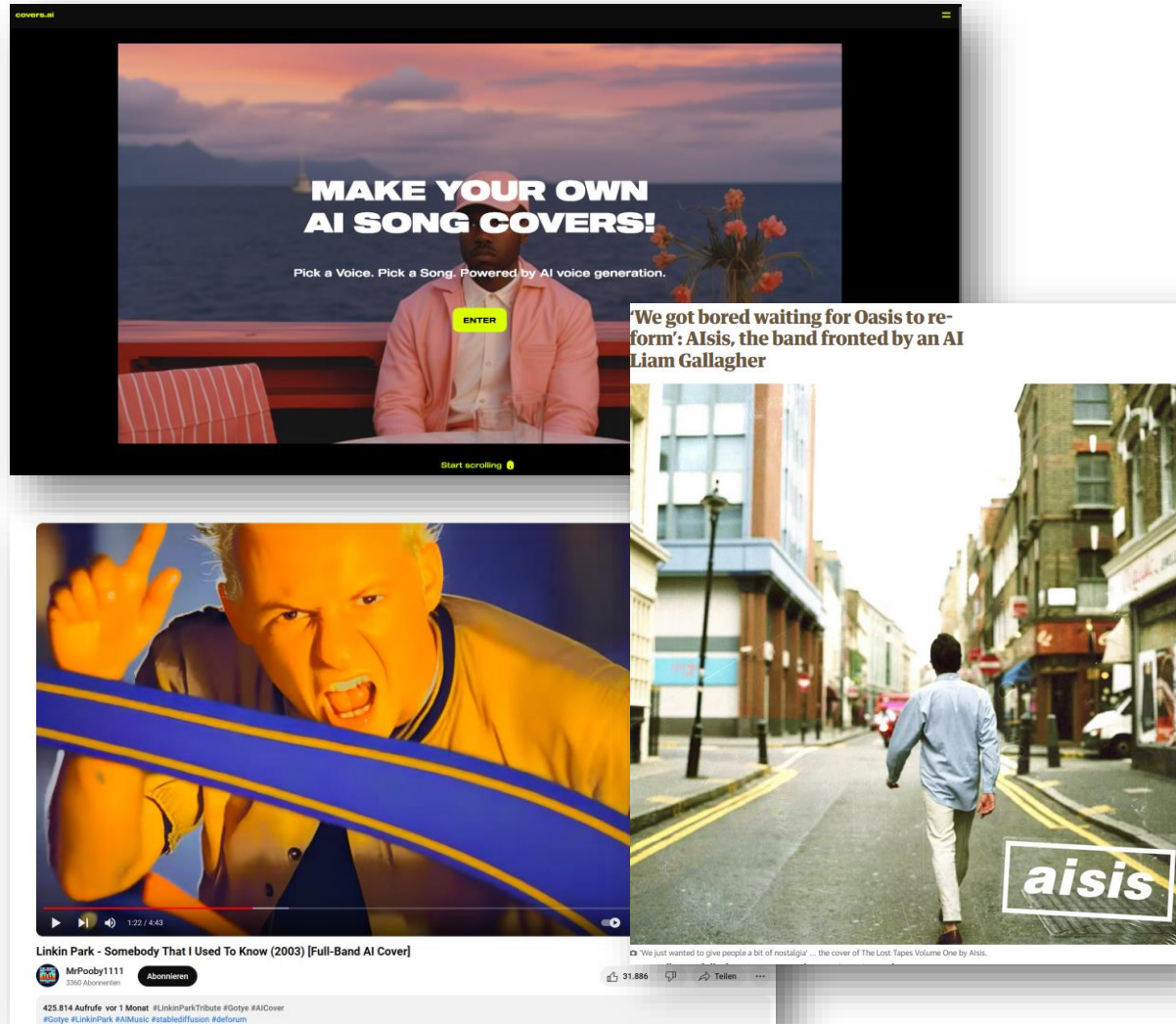
## AI IN MUSIC PRODUCTION HAS BECOME A STANDARD PRACTICE

Using AI in music recording and production has become a standard practice in many cases. However, it has to be said that *“in this context, a lot of things are now known as AI, which have been around for many years and are actually based on algorithms”*<sup>1</sup>. Artists can now automate the parts of the recording process that were once manual, like mixing. As a result, they gain more time to focus on the actual creative process instead of finessing the technicalities of their record.

AI tools increase productivity in some cases by substantially automating repetitive or time-consuming tasks. “As a natural outcome, this suggests faster project timelines, the need for fewer workers and downsized costs.”<sup>2</sup>



# VOICE CLONING HAS BECOME ONE OF THE MOST POPULAR APPLICATIONS OF AI IN MUSIC



YouTube and other platforms are currently flooded with thousands of AI deepfake cover songs, in which familiar songs are underlaid with well-known voices and instrumentations and suddenly Johnny Cash interprets “Barbie Girl” or Frank Sinatra “Gangsta’s Paradise”. Generators such as Cover.AI create interpretations with AI generated voices in no time at all.

Apart from these fully automated cover generators, vocal editing tools are also used for new songs. In May 2023, the band Breezer released musical instruments recorded by the band with an AI voice of Oasis frontman Liam Gallagher under the name “AISIS - The Lost Tapes/Vol. 1”.

According to the makers, the AI was only used to imitate the sound of Gallagher’s voice. The vocal track was recorded by a singer beforehand, so the modulations also come from a real person. The voice was created using So-Vits-SVC, an AI tool for vocal processing.



*"There's something that I made as a joke, and it worked so good I could not believe it! People went nuts"*

*David Guetta*

*Musician*

*3 February 2023 on X about playing a song during one of his sets that used AI technology to add the voice of Eminem*

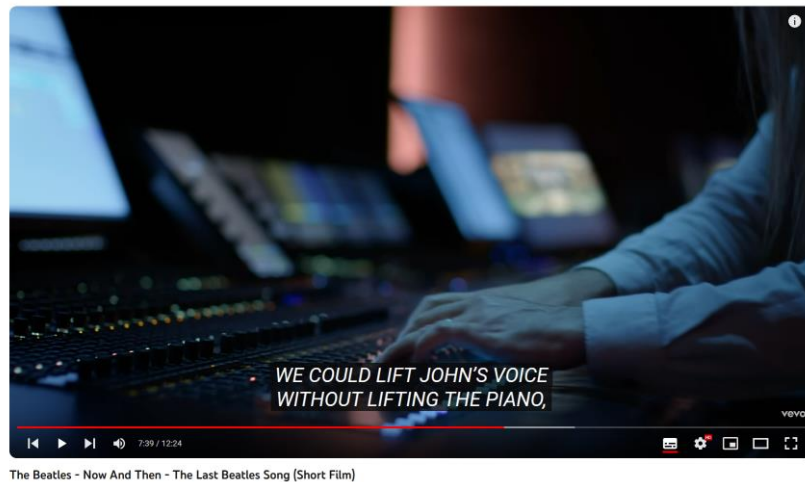
## CASE: "LAST BEATLES-SONG" BY AI AUDIO SEPARATION

With the help of an AI tool, the voice of John Lennon was separated from a cassette demo from 1978 and the song "Now and Then" was then produced in the traditional way and released in November 2023.

*"... when we came to make what will be the last Beatles' record, it was a demo that John had [and] we were able to take John's voice and get it pure through this AI. [...] We had John's voice and a piano and he [Peter Jackson] could separate them with AI. They tell the machine, 'That's the voice. This is a guitar. Lose the guitar'. [...] Then we can mix the record, as you would normally do. So it gives you some sort of leeway."*

Paul McCartney, in an interview with BBC Radio 4, on 13 June 2023

The long mythologised John Lennon demo was first worked on in February 1995 by Paul, George and Ringo as part of The Beatles Anthology project but it remained unfinished, partly because of the then insurmountable technological challenges involved in working with the vocals John had recorded on cassette tape in the 1970s. For years it looked like the song would never be completed. But in 2022 there was a stroke of serendipity. A software system developed by Peter Jackson and his team, used throughout the production of the documentary series *Get Back*, finally opened the way for the uncoupling of John's vocal from his piano part.<sup>1</sup>

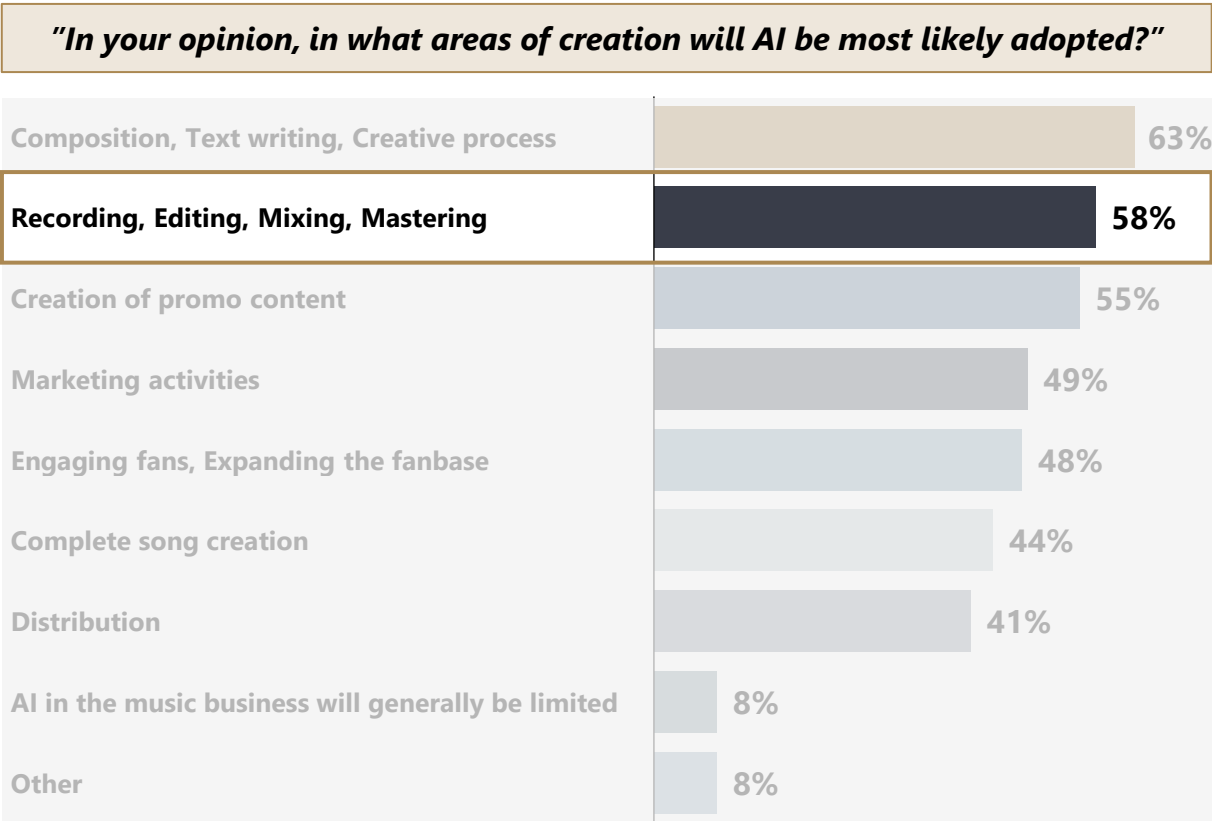


# AI USE IN PRODUCTION IS STILL RELATIVELY LOW BUT SEEN MORE OPTIMISTICALLY

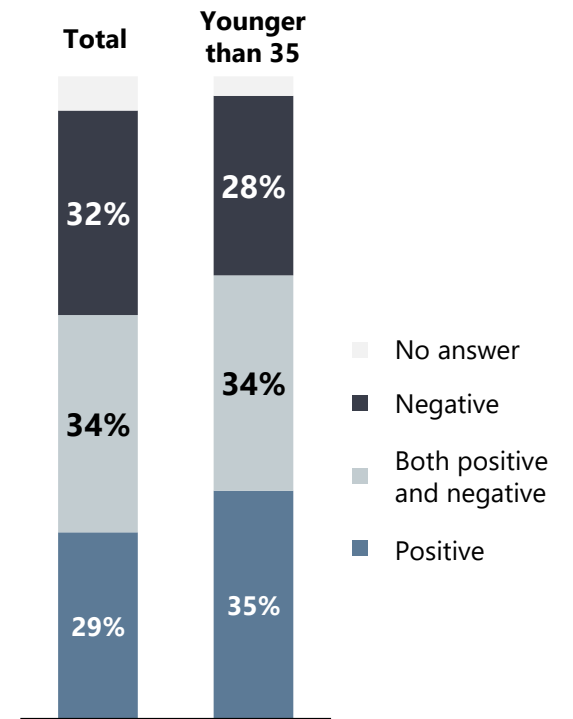
**15%**  
AI-Users  
In production,  
editing,  
mixing,  
mastering

Even though only 15% of the surveyed GEMA and SACEM members have so far used AI in connection with the production, editing, mixing and mastering of music, this still accounts for the highest AI use compared with its use in the areas of creativity (10%) and in supporting aspects (11%). Overall, the use of AI in this area is also rated positively by at least 29% of surveyed creators.

Furthermore, recording, editing, mixing and mastering is considered to be one of the most likely areas where AI will be adopted in the future (58% of respondents).



## ASSESSMENT OF AI USE IN PRODUCTION (ETC.), IN %



Source: Goldmedia survey on behalf of GEMA and SACEM 2023, n= 14,795; 14,769; 14,671; Basis: GEMA and SACEM members (Users of AI technologies in production, editing, mixing and mastering). Rounding differences possible. Difference to 100% = No answer. In a study conducted by Pirate (n= 1,141), 25% of musicians surveyed had already experimented with AI tools for music production, see [Pirate \(2023\)](#).



# PART 2: AI IN THE MUSIC CREATION PROCESS

Overview

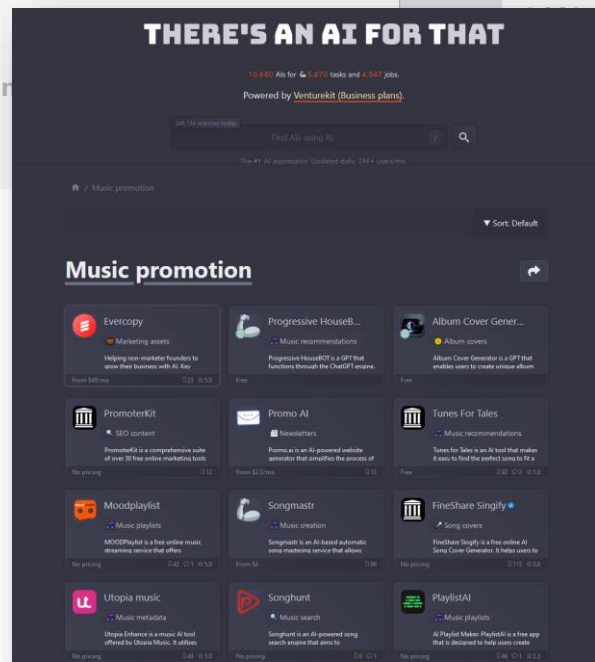
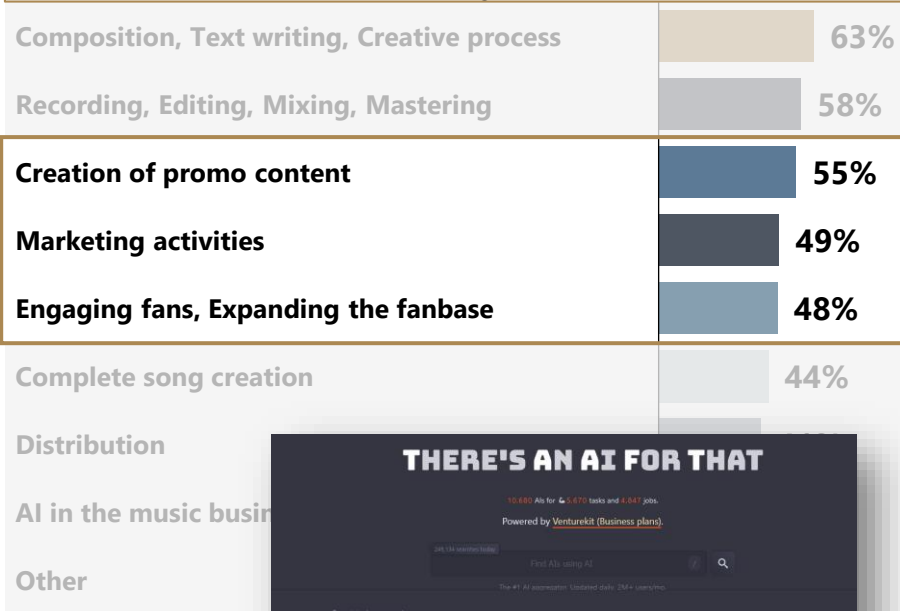
AI and the Creative Aspects of Music

AI in Recording, Editing, Mixing, Mastering

**AI in the Supporting Aspects of Music**

AI in Dubbing and Subtitling

**"In your opinion, in what areas of creation will AI be most likely adopted?"**



## PROMOTION AND MARKETING

Beyond the use of AI in the field of music creation and in the context of music production, there are numerous other areas of application in which AI can in principle provide support.

Promotion and marketing are areas where AI can streamline processes in the music sector. AI-powered tools can automate and optimise promotional campaigns, allowing artists to reach more potential fans in a more efficient way. With the help of AI, artwork concepts can also be created quickly and cost-effectively for smaller bands and artists.

**About half of the surveyed GEMA and SACEM members believe that AI will most likely be adopted for the creation of promo content (55%) and for marketing activities (49%).**

AI-driven algorithms can analyse data to identify target audiences, create tailored content and messaging, and schedule social media posts for optimal reach. AI-driven music promotion can save time and resources, promising to allow artists to focus more on their creative work.

AI-based tools can also analyse social media data to identify fans and potential fans, make ads and promotions more effective and create marketing content. This can be useful for artists and record labels, allowing them to reach more people and engage with audiences more effectively. **48% of the surveyed GEMA and SACEM members believe AI adoption for the purpose of engaging fans and expanding the fanbase to be very likely.**



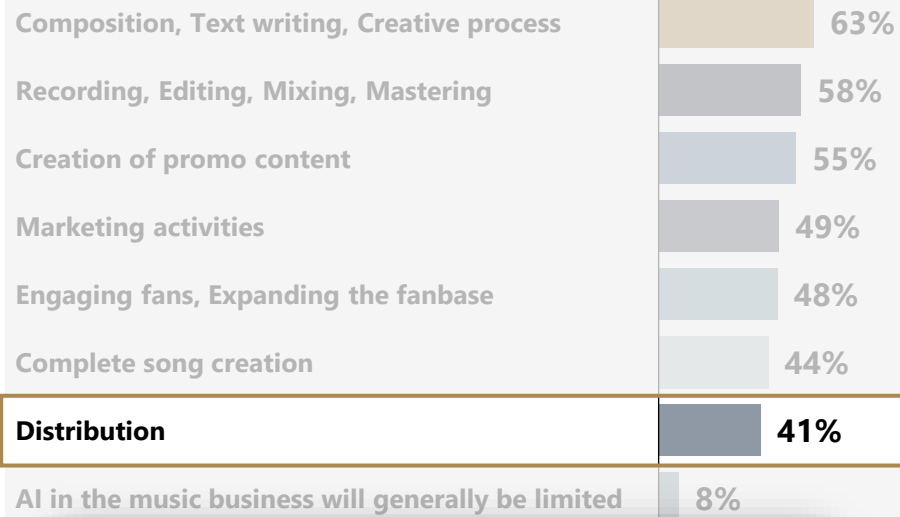
*"Artificial intelligence will transform all aspects of music creation, distribution and monetization – a vision we share at LANDR. By explaining the benefits of AI, we find that users are much more inclined to use it. An often underestimated but exciting aspect concerns the promotion of a song, especially its cover art. Artificial intelligence offers the possibility of designing such visuals – based on the lyrics, the rhythms or a combination of factors decided by the artist. In this way, AI can be used to tailor and visually enrich each album in a distinctive and innovative way."*

*Frédérick Ranger,*

*VP Marketing & Communications, LANDR, Montreal (CA)*



**"In your opinion, in what areas of creation will AI be most likely adopted?"**

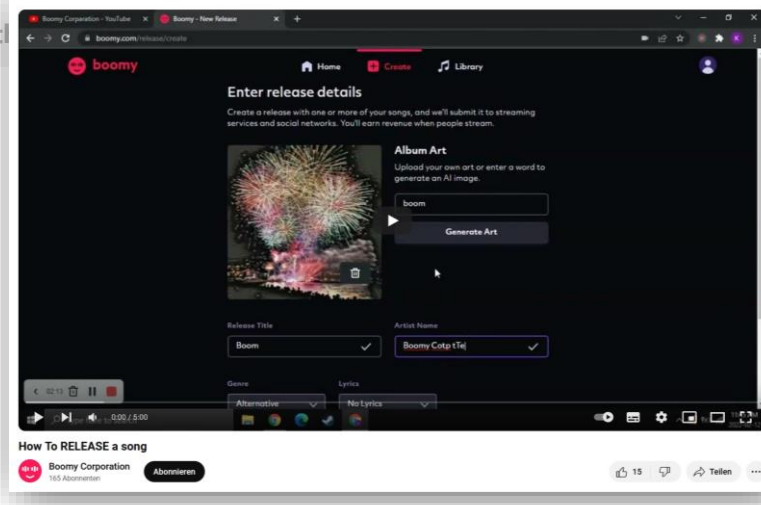


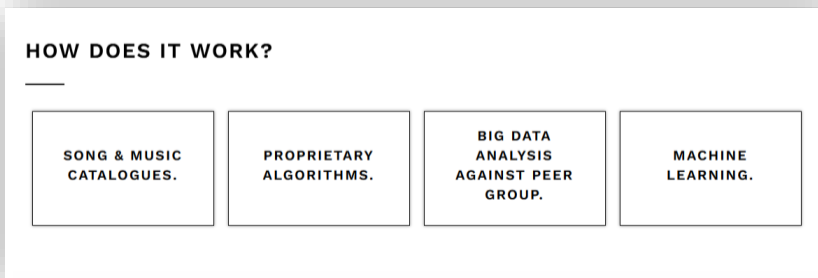
## THE IMPACT OF AI ON MUSIC DISTRIBUTION

One of the most significant impacts of AI in music distribution is the automation of various tasks that were previously time-consuming and labour-intensive.

For instance, AI-powered algorithms can now analyse vast amounts of data to identify trends and patterns in music consumption, enabling distributors to make more informed decisions about which artists and tracks to promote. This not only saves time and resources but also ensures that the right music reaches the right audience.

AI-powered platforms like Boomy also allow artists to distribute their music directly to the streaming platforms in an automated manner. The importance of AI in music distribution is also highlighted by the fact that **41% of the surveyed GEMA and SACEM members think that AI will most likely be adopted in the area of distribution.**





**Mary J. Blige - I'm Going Down (92.46%)**

Genre: Pop

Artist	Title	Week	Peak	Year	Proximity	Rank	Rating
Christina Aguilera	Hurt	60	9	2006	0.825	85.19	4
Leona Lewis	Better In Time	88	4	2008	0.801	92.458	4
The Pussycat Dolls	I Hate This Part	124	10	2008	0.756	89	4
A Rocket To The Moon	Like We Used To	5	81	2010	0.73	16.986	1.5
Cherish	Unappreciated	77	65	2006	0.722	31.856	2
Demi Lovato	Don't Forget	12	62	2009	0.721	21.839	2
Danity Kane	Ride For You	4	55	2006	0.72	19.657	1.5
Leona Lewis	Happy	1	90	2010	0.715	5.931	1.5
Keyshia Cole	I Remember	3	100	2008	0.7	0.624	1
Jason Mraz	Geek In The Pink	4	90	2006	0.676	6.768	1.5

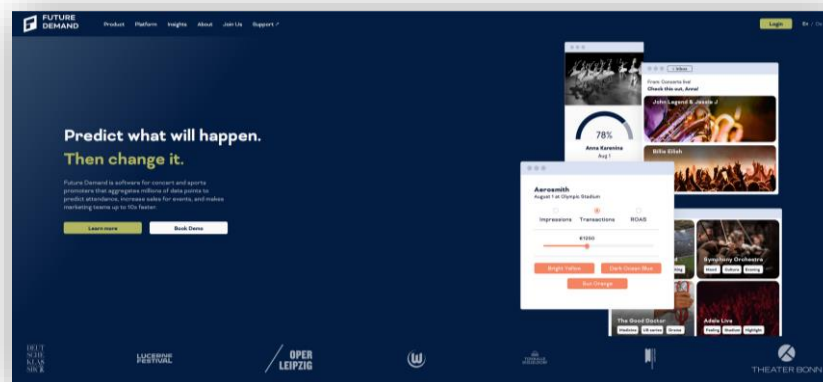
## USING AI FOR FORECASTING THE HIT POTENTIAL OF SONGS

AI can also be used to draw conclusions about the success prospects of new songs. The Canadian company Hitlab uses its "Music Digital Nuance Analysis (DNA)" tool to break down music tracks into 83 different attributes and compares these with the sound patterns of popular hits. "The human brain is wired in a certain way, to appreciate certain sound patterns classified as musical attributes. Each genre of music has songs that have succeeded and failed in the past" (Hitlab<sup>1</sup>).

A historical database of all music genres with millions of songs is analysed for this purpose in order to identify those common characteristics.

The main goal of the tool is to support A&R professionals. "With our AI, instead of having to listen to 1,000 songs or more a year, I can [analyse] 100,000, which will be [cut] down to maybe 100 – making sure I get the cream of the crop."<sup>2</sup>

There is also AI-based software for bookers to predict attendance for concerts and events.

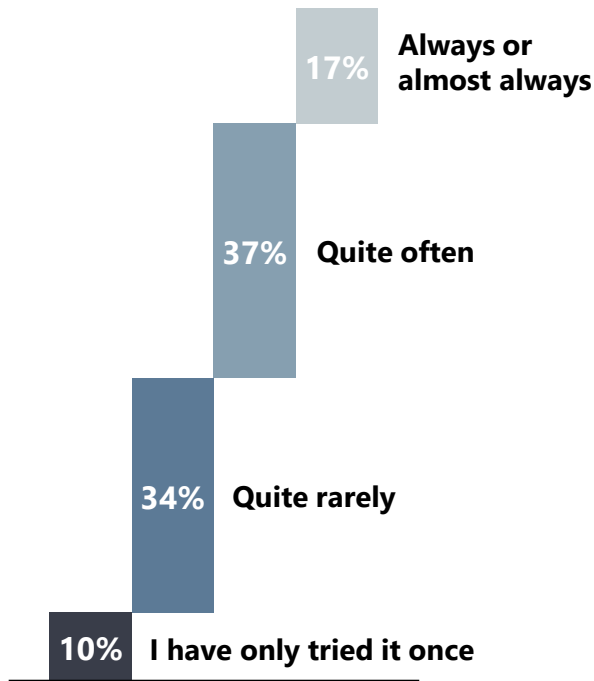


# AI USE IN SUPPORTING ASPECTS IS STILL RELATIVELY LOW BUT SEEN MORE OPTIMISTICALLY

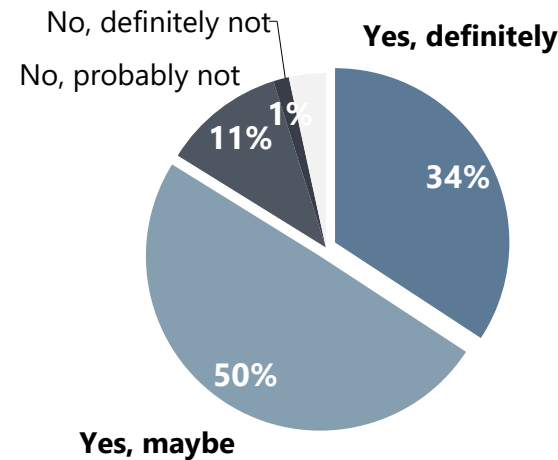
Despite a still low usage rate of only 10%, the music creators surveyed are comparatively open to the use of AI in supporting aspects of the music sector (like marketing, promotion, artwork, social media and distribution) with a total of 35% assessing it positively, while only 25% rate it negatively. More than half of the users work with AI technologies in supporting aspects often or always (54%). Furthermore, most of those who have already used AI in supporting aspects assume that they will do so again or continue to do so in the future (84%).

**10%**  
AI-Users  
in supporting  
aspects\*

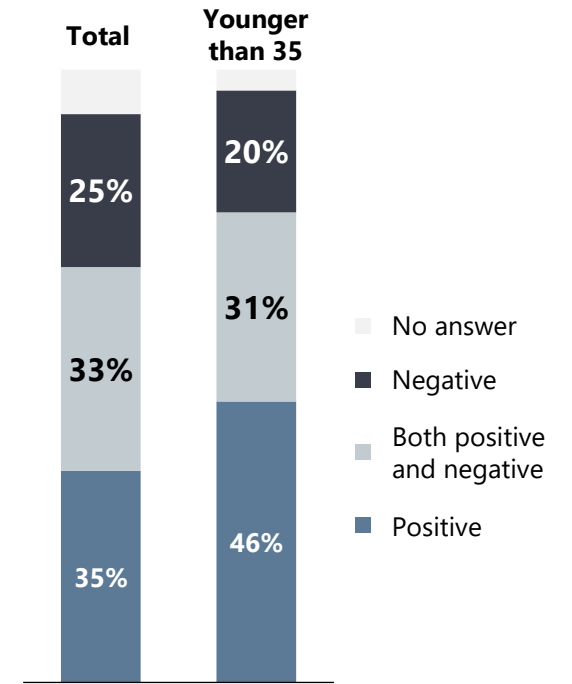
**FREQUENCY OF AI USE IN SUPPORTING ASPECTS, TOTAL IN %**



**INTENTION TO CONTINUE WORKING WITH AI, TOTAL IN %**



**ASSESSMENT OF AI USE IN SUPPORTING ASPECTS\*, IN %**





# PART 2: AI IN THE MUSIC CREATION PROCESS

Overview

AI and the Creative Aspects of Music

AI in Recording, Editing, Mixing, Mastering


AI in the Supporting Aspects of Music

**AI in Dubbing and Subtitling**



**FAST COMPANY**  
PREMIUM CO.DESIGN TECH WORK LIFE NEWS IMPACT PODCASTS VIDEO INNOVATION

**How AI for lip dubbing could change the film industry**  
New tools like LipDub AI from VFX studio Monsters Aliens Robots Zombies will expand the reach of foreign and domestic films.



[Source animation: simonkr/Getty Images]

BY **BURT HELM** 4 MINUTE READ

In Hollywood, big money is getting lost in translation.

Interesting topics  
Subtitles  
Transcription  
Streaming & Video Platforms  
Qualitative Research & Interview

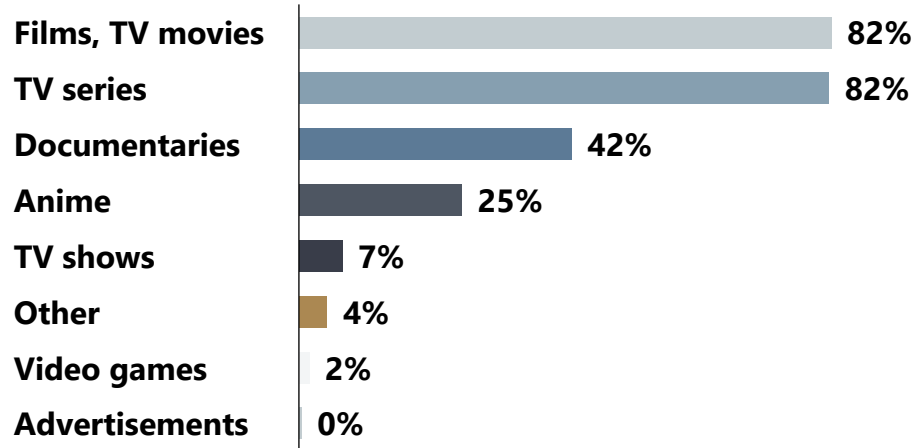
## AI IN DUBBING AND SUBTITLING

Dubbing and subtitling play an important role in ensuring that language is no barrier to understanding and enjoying diverse forms of entertainment and information. Whether this relates movies, documentaries or YouTube videos, dubbing and subtitling bridge linguistic gaps and allow people from all over the world to connect with content.

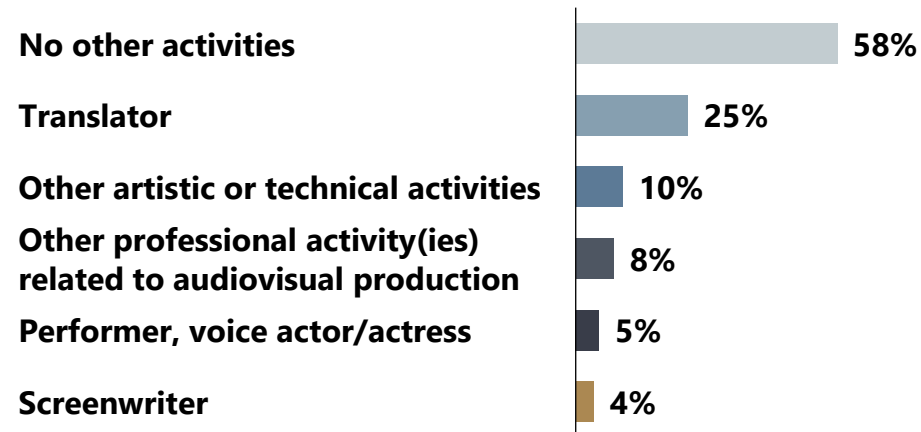
With advances in technology, AI is becoming increasingly important in the dubbing and subtitling process and can act as a useful tool but also as a challenge for professionals in this sector. AI in dubbing and subtitling can, on the one hand, support the work of authors and help with lengthy, tedious work as for e.g. the translation process, which isn't in the center of the authors work anyways. This allows faster working processes and more time for creative work. On the other hand, there is the danger of mistakes in AI's dubbing and subtitling work as well as their lack of emotionally and contextually accurate work. This could be counteracted by supervision of the AI's products through dubbing and subtitling authors, to help with fine tuning and the emotional dimensions.

The following section will provide an overview of AI in the creation process and also include insights from the survey of dubbing and subtitling authors represented by SACEM (n=255).

***“Which types of productions would you say you are (mainly) working on?”***



***“Do you carry out any other activities outside of dubbing and subtitling?”***

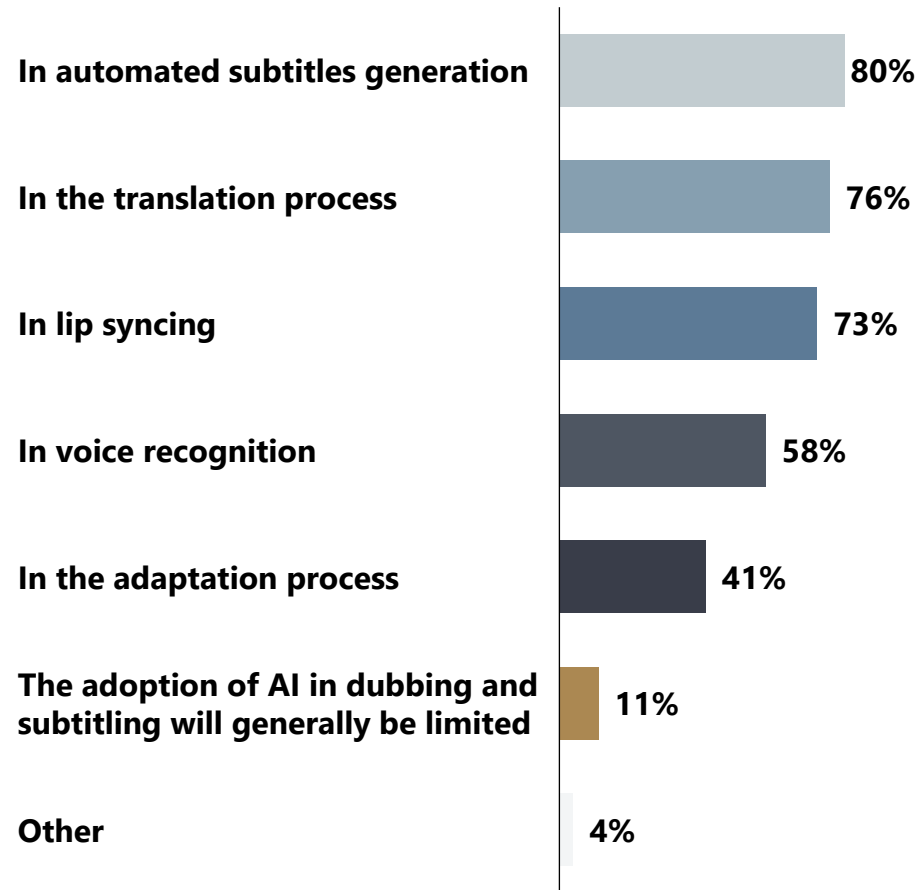


## TYPES OF PRODUCTION AND OTHER ACTIVITIES

Films and TV movies as well as TV series are the types of production which most of the dubbing and subtitling authors are mainly working on (82% each). At 42%, close to half of the questioned authors are mainly working on documentaries.

With 58% the majority of authors do not carry out other activities besides dubbing and subtitling, making it their main source of income. About a quarter of the authors carry out work in translation alongside their activities in dubbing and subtitling.

***"In your opinion, in what areas of creation will AI be most likely adopted?"***



## AI ADOPTION IN DUBBING AND SUBTITLING

There are already multiple AI tools that supplement or replace the work of dubbing and subtitling authors.

In the field of subtitling, AI is already common practice for the studios. 80% of questioned SACEM dubbing and subtitling authors would also evaluate AI to be most likely adopted for automated subtitle generation and the translation process (76%).

In dubbing, the application of AI technology is more complex. However, there are companies like the leading AI-based audiovisual dubbing and language localisation company Deepdub, that claims to revolutionize the market with "dubbing that stays true to the human-created original"<sup>1</sup>. In 2023, Deepdub achieved certification from the Motion Picture Association's Trusted Partner Network (TPN) and is now "certified to work with pre-release theatrical content, paving the way for the widespread adoption of AI-powered audiovisual dubbing in movies and television."<sup>2</sup>

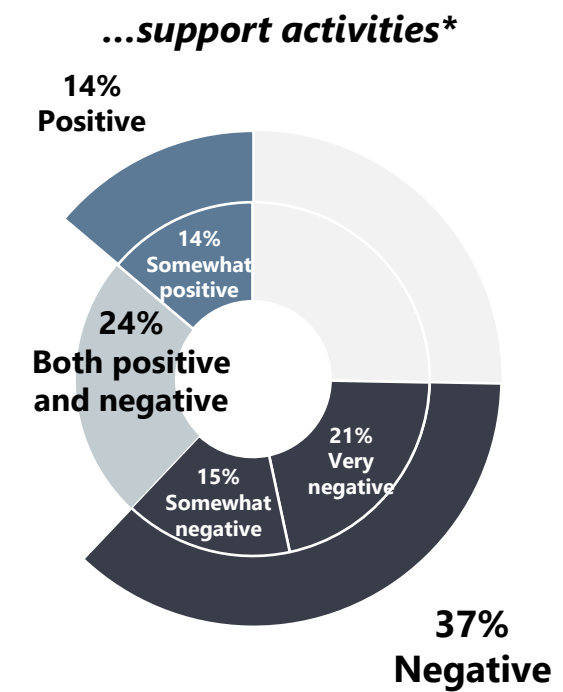
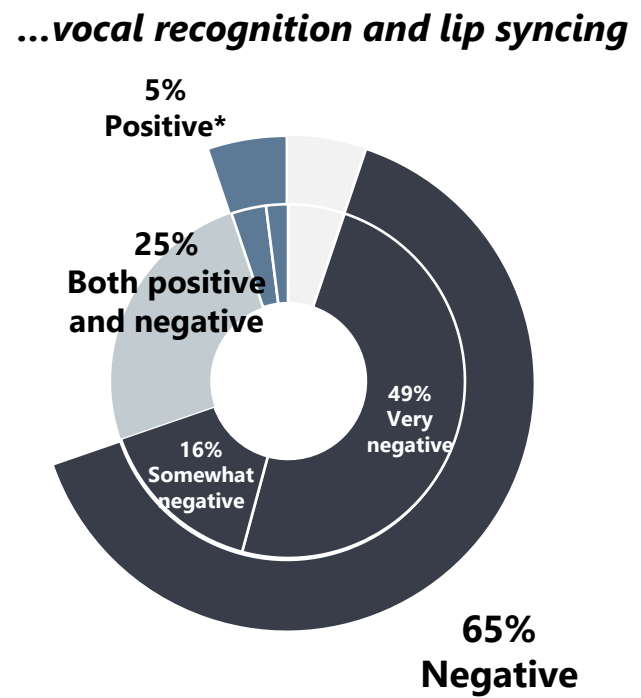
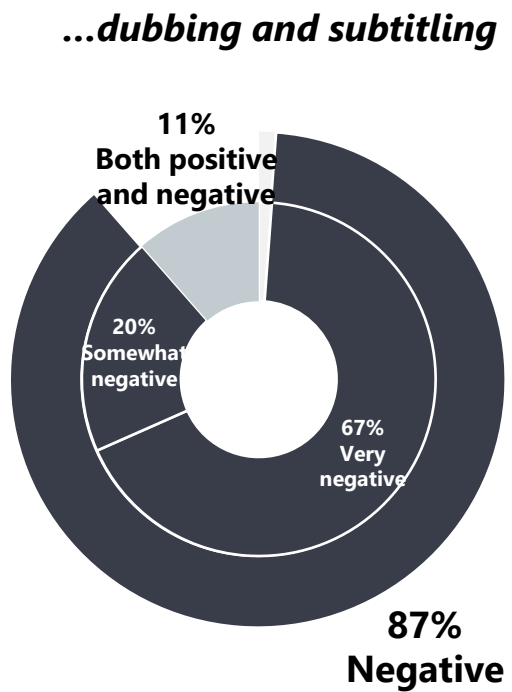
Majority of SACEM dubbing and subtitling authors (73%) also believe that AI is most likely to be adopted in lip syncing and in voice recognition (58%). Only 11% believe that the adoption of AI in dubbing and subtitling will generally be limited.

# ASSESSMENT OF AI USE IN DUBBING AND SUBTITLING

Only 18% of the questioned SACEM dubbing and subtitling authors have used AI in their work and creation in general previously. In dubbing and subtitling, AI use is assessed entirely negative, while in support activities it is evaluated more positively. The clear rejection of AI in their core business is rooted in the fear that authors will lose their status and will be seen as simple proofreaders or supervisors of AI without creative input.

**18%**  
AI-Users  
In dubbing  
and subtitling

**"How would you assess the use of AI in the translation and adaptation process in..."**







*“In the area of subtitling, Artificial Intelligence is already causing immense harm, because many labs are using subtitles generated by Artificial Intelligence which the author then reads and corrects.*

*Things are evolving more slowly in the field of synchronisation, as the technology is notably more complex. It's not enough just to convey the sense correctly – the dialogue has to be flowing and in sync.*

*Nonetheless, several programmes are already being synchronised with AI-generated texts. At the moment it's a side effect, especially for programmes for which the producers don't have the necessary budget and the necessary time for classic synchronisation, but it doesn't stop there and the solution will probably continue to evolve.*

*What's certain, however, is that so far there's no AI-generated subtitling or synchronisation coming out without the intervention of an author in post-editing the generated text; it always requires an author's individual signature to give it a human and sensitive dimension.”*

**Vanessa Bertran**

*Dubbing artist*



# PART 3: CHALLENGES

## Overview

Copyright, Credit and Consent

Remuneration and Economic Implications

Personal Rights

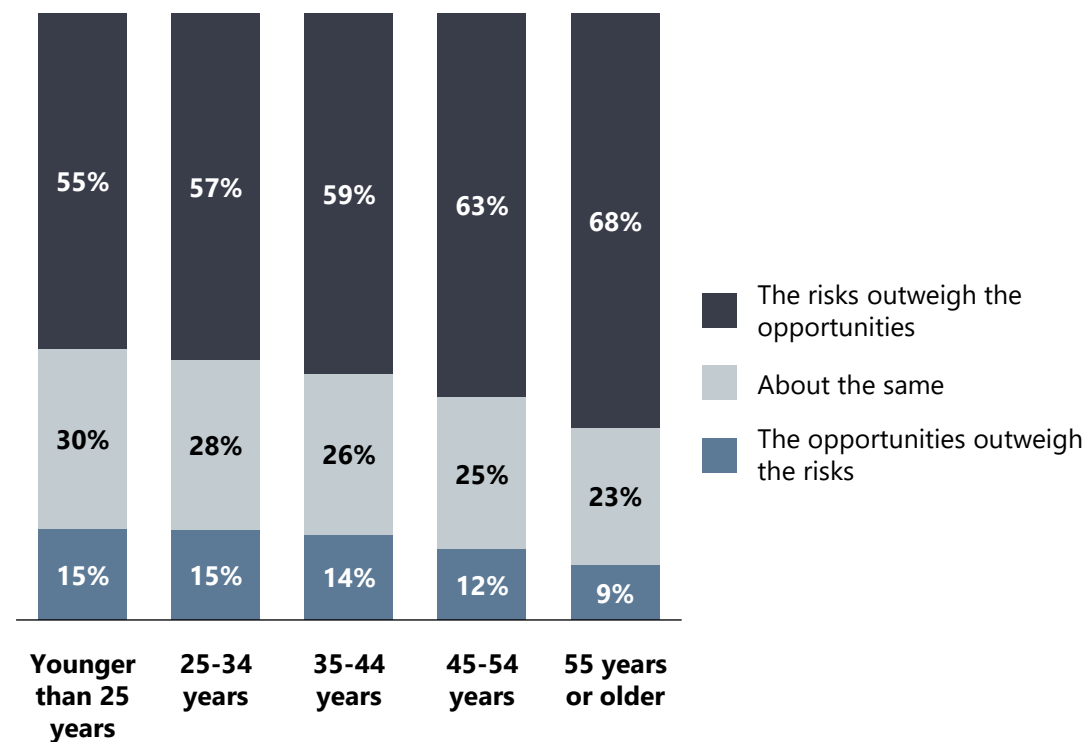
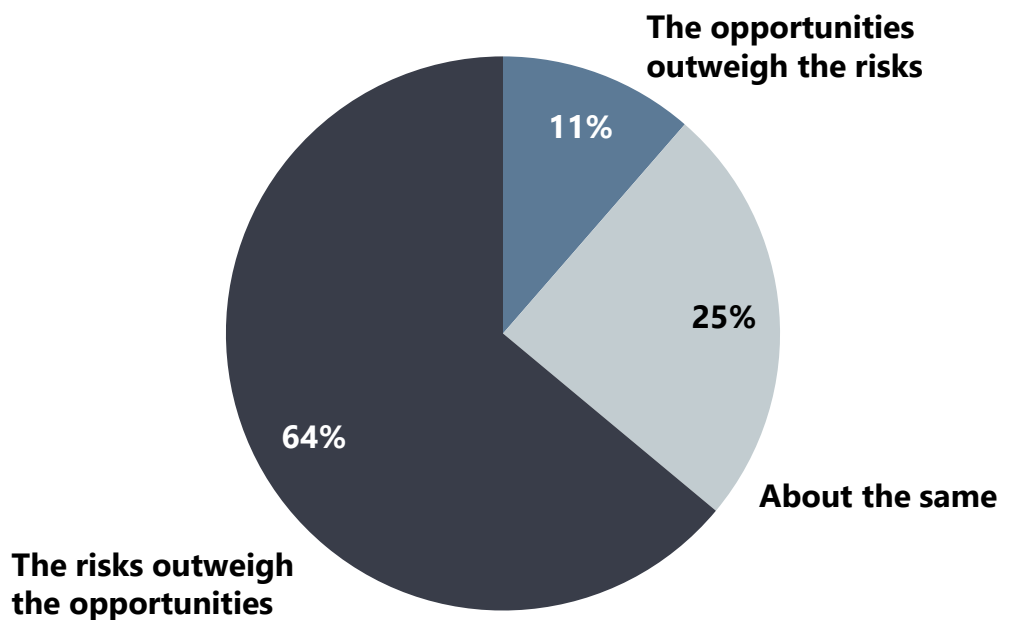
AI and Music Streaming

Outlook

# OPPORTUNITIES AND RISKS OF AI

Despite the various fields of applications and potentials of AI in music, about two-thirds (64%) of the music authors think that the risks of AI use outweigh its possible opportunities. Only 11% believe that the opportunities outweigh the risks, while about a quarter of the surveyed members (25%) think risks and opportunities of AI are roughly in balance. Among the age groups, the older the questioned members were, the more they assessed the risks of AI as outweighing the opportunities.

***"All in all, do you think the opportunities outweigh the risks when it comes to AI in music and creation in general or do the risks outweigh the opportunities?"***



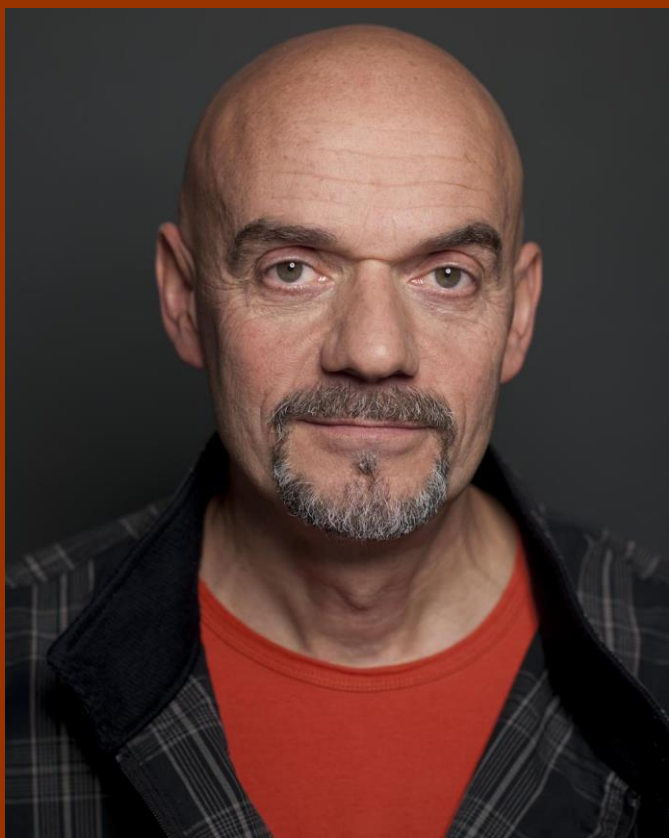


*"AI is already here and there are real opportunities for creators who will seize it and give rise to new musical genres, new production and distribution techniques, and new ways of connecting with their audiences..."*

*But with these opportunities also come crucial ethical, social and economic questions that we must collectively answer to ensure that AI acts responsibly and ethically on our works and that they are remunerated for their use by the training bases, that it leaves no one behind and benefits all creators."*

*Christine Lidon*

*Author and President of SACEM board*



*"It's actually not complicated at all: works created by human authors are being used en masse by AI providers to generate new content, which then enters into competition with the original works. There should be no question that copyright regulations must apply here to ensure that the rights of creators are respected.*

*Otherwise, there will simply no longer be any non-binary-based creativity that can innovatively feed the system in the near future."*

*Dr. Ralf Weigand*

*Composer and producer, Chairman of the GEMA Supervisory Board*



# PART 3: CHALLENGES

Overview

**Copyright, Credit and Consent**

Remuneration and Economic Implications

Personal Rights

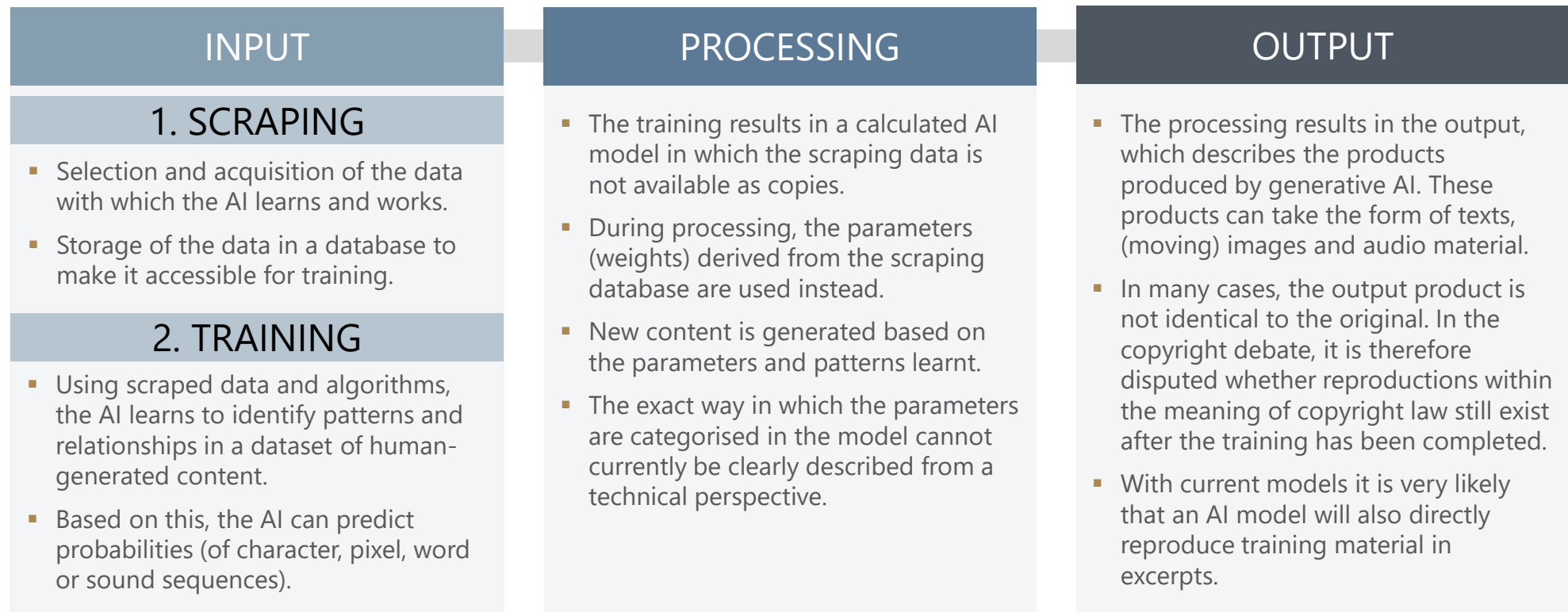
AI and Music Streaming

Outlook

# COPYRIGHT IN THE CONTEXT OF GEN AI HAS AN INPUT AND AN OUTPUT DIMENSION

Generative AI has three levels: input, processing and output. The input consists of two steps: scraping and training. Data of all kinds is first collected and stored so that the AI can be trained with it in the next step. This process is called scraping, whereby collected works and performances are stored in a database in order to be made available for training. In training, models are learned from the previously stored content, based on machine learning/deep learning. The output of generative-AI systems is based on the training that has taken place.

## GENERATIVE AI: SCHEMATIC PROCESS



# ARE GENERATIVE-AI MODELS ALLOWED TO USE COPYRIGHTED INPUT?

Copyright usually serves to protect against the copying of artistic works like music. From an economic point of view, copyright law should strike a balance between the benefits (creating an incentive to create a work) and the costs of copyright protection.<sup>1</sup> For this reason, European copyright law defines specific exceptions to copyright protection.<sup>2</sup>

There is currently much debate as to whether the generative-AI systems offered by private tech companies for commercial purposes may use copyrighted input based on these exceptions in Europe and under which conditions the use of copy-protected input is permitted.

**The attitude of copyright holders in this context is clear.  
The use of copyrighted input must follow clear rules regarding transparency, consent and remuneration.**

**CREDIT  
CONSENT &  
TRANSPARENCY  
REMUNERATION**





*"The use of AI raises the question of power: who is serving whom, and under what conditions?"*

*As creators of culture, we shouldn't allow others to make decisions affecting us on our behalf."*

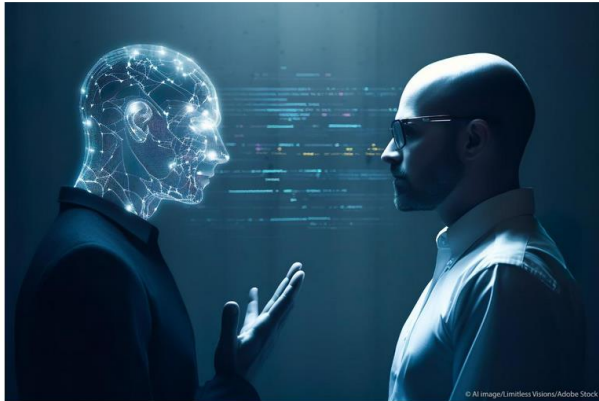
*Dr. Charlotte Seither*  
*Composer*

# AI ACT: EU COUNCIL AND PARLIAMENT STRIKE A DEAL ON THE FIRST RULES FOR AI IN THE WORLD

## EU AI Act: first regulation on artificial intelligence

Society Updated: 14-06-2023 - 14:06  
Created: 08-06-2023 - 11:40

The use of artificial intelligence in the EU will be regulated by the AI Act, the world's first comprehensive AI law. Find out how it will protect you.



This illustration of artificial intelligence has in fact been generated by AI

As part of its digital strategy, the EU wants to regulate AI to ensure better conditions for the development and use of the technology.

In April 2021, the **European Commission** proposed the first EU regulatory framework for AI in its EU Artificial Intelligence Act. In December 2022, **the Council of the EU** adopted its common position and, in June 2023, the **European Parliament** approved its version of a draft **EU AI act** and made the way clear for the trilogue.

**After talks with EU countries in the Council on the final form of the law, the EU Parliament reached a provisional agreement with the Council on the AI act on 9 December 2023. The agreed text will now have to be formally adopted by both Parliament and Council to become EU law.**

Parliament's priority is to make sure that AI systems used in the EU are safe, transparent, traceable, non-discriminatory and environmentally friendly. AI systems should be overseen by people, rather than by automation, to prevent harmful outcomes. Parliament also wants to establish a technology-neutral, uniform definition for AI that could be applied to future AI systems.

The new rules establish obligations for providers and users depending on the level of risk from artificial intelligence. They also include specific rules for generative AI that have not been addressed explicitly in the previous drafts.

### **Generative-AI would have to comply with transparency requirements:**

- Disclosing that the content was generated by AI
- Designing the model to prevent it from generating illegal content
- Publishing summaries of copyrighted data used for training



*“Artificial intelligences could, through the promoting of research projects in which creatives also participate, open pathways to a greater cultural diversity and to ethically supportable and creative types of use (transparency as an input) – as opposed to an AI that’s being developed only for the purposes of optimising production costs and which leads to an impoverishing of content.*

*The guarantees of data transparency that have acquired legal force in the AI Act are a real step forward. Now there remains the question of remuneration. I’m a believer in dialogue between legal experts, scientists and creatives, to come up with new conceptions that do justice to artificial intelligences, rather than being based on the idea of the uniqueness of a piece of art, which is the case today.*

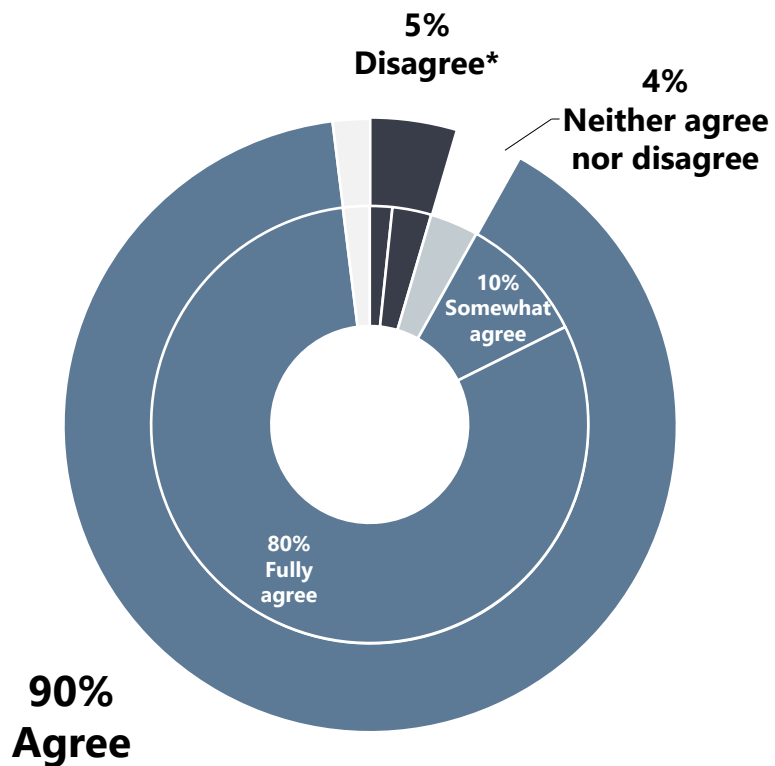
*From this viewpoint, the key concern lies in building up really well-referenced databases.”*

***Benoit Carré***

*Composer and producer (label 'Bruit Rose')*

# CONSENT FOR THE USE OF COPYRIGHTED CONTENT

***“Copyright holders must be asked for permission when their works are used as input for AI systems.”***



At the heart of the issue of whether generative AI may use copyrighted content as input for training is the question of the consent of the copyright holder.

**A clear majority (90%) of the questioned music authors and creators agree that copyright holders must be asked for permission before their works are used as input for AI systems.** Only about 5% disagree to some extent.

In principle, there are different measures for deciding against use and implementing this. Authors who do not wish their works to be used for AI training purposes can opt out. In such a case, the rights holder explicitly decides to exclude the use of their works for AI training purposes.

The organising of an opt-out regulation could be implemented and controlled via the collecting societies, e.g. through a collective opt-out.<sup>1</sup>

There are also opinions that prefer an opt-in to an opt-out “in the spirit of copyright law” in order to preserve the author’s personal right to decide.<sup>2</sup>



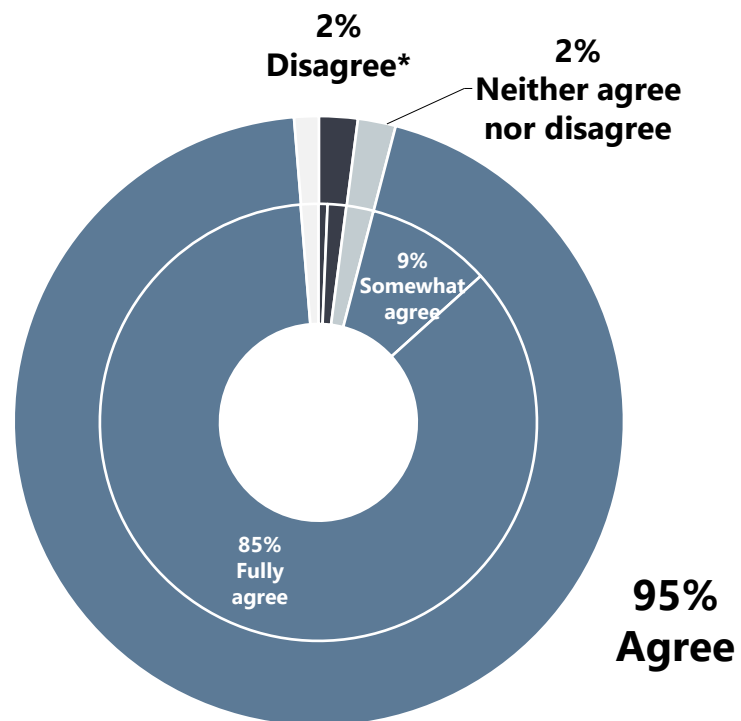
*"We need to be able to identify the components of an artistic work better. One should start off in a completely radical way with the principle – without qualification – that if you don't give consent, then no agreement exists, whereas generally the opposite is the case – that consent is, as it were, assumed a priori. That's a mistake."*

*Frank Madlener*

*Managing Director of Ircam-Centre Pompidou*

# TRANSPARENCY OF TRAINING DATA TAKEN FOR AI INPUT

***"AI providers should be obliged to disclose when they use copyrighted works as 'training data'."***



Consent for the rights holder presupposes the need for transparency obligations for AI developers.

After all, a rights holder would first have to be informed that their work is being used as the training data for a generative AI in order to opt out.

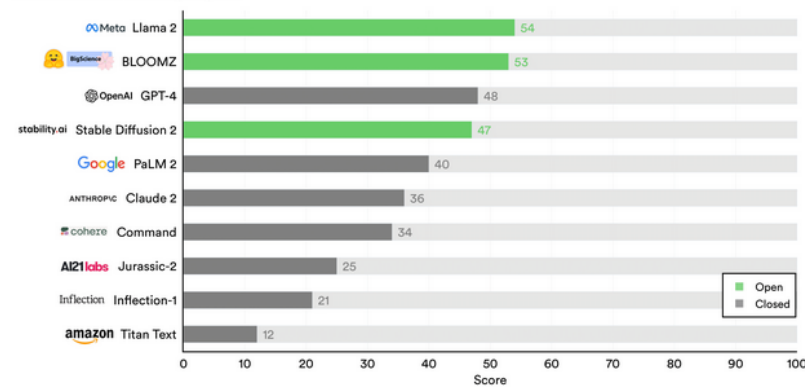
One of the key demands of music authors is therefore to ensure transparency about the **type and scope of training data that has been used by AI providers as input** for the development of their generative AI models.

**95% of the questioned GEMA/SACEM members agree that AI providers should be obliged to disclose when they use copyrighted works as 'training data'.**

# FOUNDATION MODELS SHOW LACK OF TRANSPARENCY

Foundation Model Transparency Total Scores of Open vs. Closed Developers, 2023

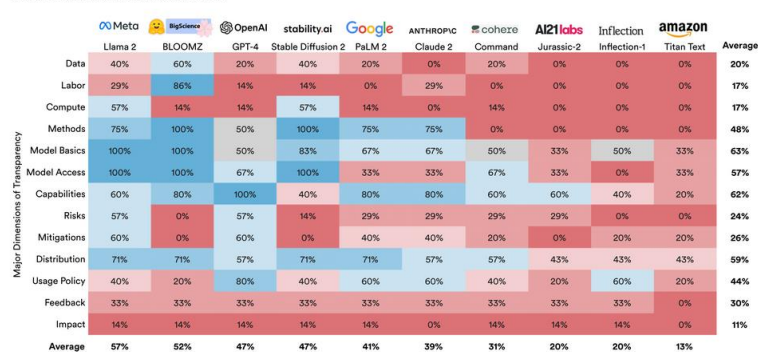
Source: 2023 Foundation Model Transparency Index



Open models (Meta's Llama-2, Hugging Face's BLOOMZ, and Stability AI's Stable Diffusion 2) lead the way.

Foundation Model Transparency Index Scores by Major Dimensions of Transparency, 2023

Source: 2023 Foundation Model Transparency Index



Scores for the 10 foundation model providers broken down by 13 subdomains, each of which have three or more indicators. Analysis at the level of major subdomains reveals actionable insight into what types of transparency or opacity lead to the above findings.

In October 2023, the Center for Research on Foundation Models at Stanford University released the **Foundation Model Transparency Index**.

It was designed around 100 transparency indicators, which codify transparency for foundation models, the resources required to build them, and their use in the AI supply chain.

Ten leading developers were scored against these indicators.

The main finding of this scoring was that **no major foundation model developer is close to providing adequate transparency, revealing a fundamental lack of transparency in the AI industry.**

**The top-scoring model scores only 54 out of 100. The mean score is just 37%. Yet 82 of the indicators are satisfied by at least one developer, meaning that developers can significantly improve transparency by adopting best practices from their competitors.**

Two of the three open foundation model developers<sup>1</sup> receive the two highest scores. Both allow their model weights to be downloaded. Stability AI, the third open foundation model developer, is a close fourth, behind OpenAI.



*"Faced with the unprecedented disruption caused by AI, we need to make it transparent and virtuous if we are to have any chance of seizing all the opportunities it offers."*

*Patrick Sigwalt*

*Composer and President of SACEM's strategic advice on innovation committee*

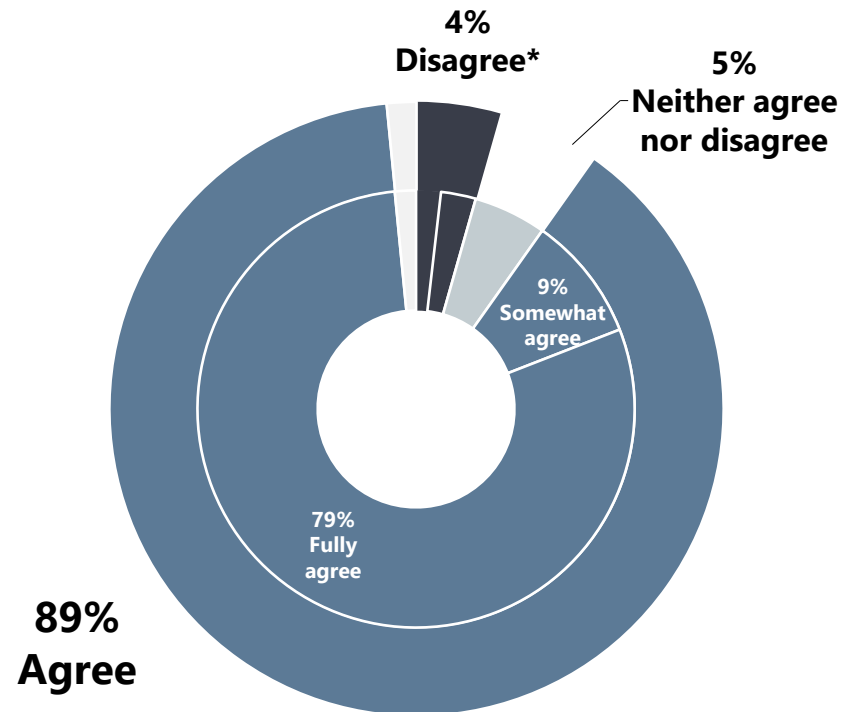


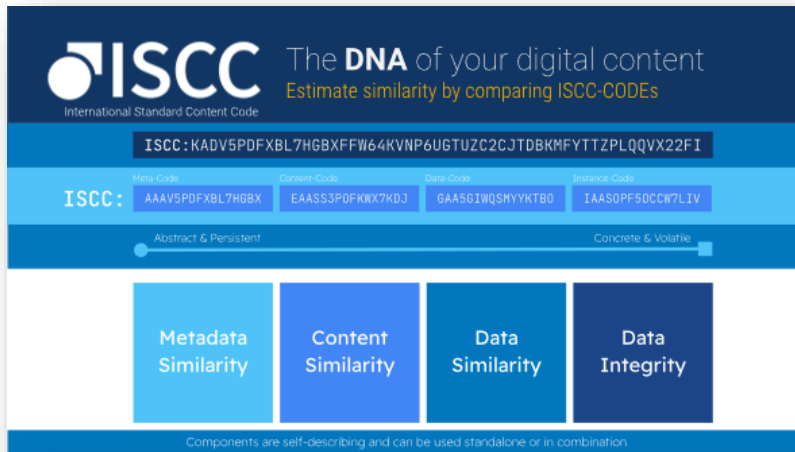
# IDENTIFICATION OF AI OUTPUT

Identification of AI-generated music is another important demand of music creators in the context of transparency when it comes to the output of generative AI.

Out of all questioned GEMA/SACEM members, **89% agree that AI-generated music tracks and other types of works should be identified as such.**

***"AI-generated music tracks and other types of works should be identified as such."***





## BELIEVE HAS DEVELOPED SOFTWARE THAT DETECTS AI-MADE MUSIC WITH 98% ACCURACY. WHAT MIGHT THIS MEAN FOR THE FUTURE?

NOVEMBER 13, 2023

BY DANIEL TENCER



Believe CEO Denis Ladegaillerie

## LABELING OF AI-GENERATED MUSIC

Transparency at the output level of music generated by or with the aid of AI primarily means clear and comprehensible labelling to prevent disinformation and to protect the interests of copyright holders as well as to give them due credit.

The ISCC standard<sup>1</sup> developed with EU funding could be helpful for this purpose, especially as it is decentralised and non-proprietary. This would be linked to the prohibition of deleting such a label; similarly, the separation of a metadata record potentially linked to the file (or its content) from the file (or its content) should also be prohibited – similar to the prohibition of circumventing copy protection measures.

Various companies work on solutions to detect whether a track had been entirely or partially made by AI.

For example, Believe has confirmed the launch of a proprietary “AI detection algorithm”, with its tool “AI Radar”. According to the company, it can detect AI-made master recordings with a 98% success rate, and deepfakes with about 93% accuracy – what the company describes as an “excellent detection rate”.<sup>2</sup> According to Deezer, the company has systems that leave sonic traces (‘audio fingerprinting’) and which are increasingly resistant to alterations like speeding up, slowing down, pitch changes and so on. In addition Deezer is in the process of setting up new tools specifically to recognise the use of voice cloning and generative AI.<sup>3</sup>



*“There’s no doubt that AI will be deployed more and more for creative processes. Composers in the audiovisual sector – be it film, television, radio, advertising or online formats – are particularly worried that their livelihoods will come under massive pressure from AI.*

*So it’s therefore vital, for composers’ and authors’ livelihoods, that we find a solution that identifies, retrospectively as well, original rights holders in an AI production.*

*Together with GEMA we should be creating a kind of ‘nano-fingerprinting’ that could make this possible.”*

*Helmut Zerlett*

*Film composer, producer and musician*



# PART 3: CHALLENGES

Overview

Copyright, Credit and Consent

**Remuneration and Economic Implications**

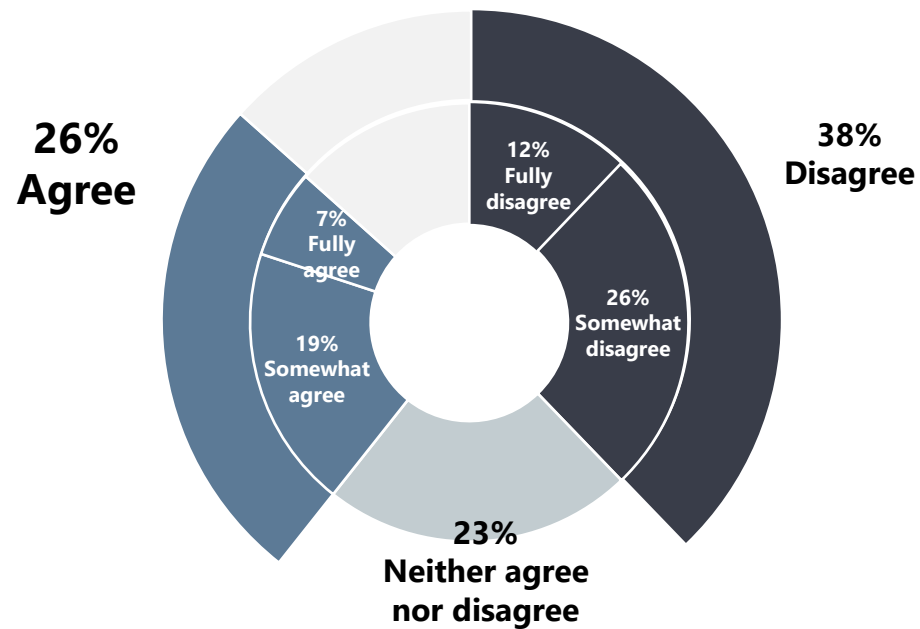
Personal Rights

AI and Music Streaming

Outlook

# WILL HUMAN-MADE MUSIC BE REPLACED?

***"Music made by humans is increasingly being replaced by AI music."***



Artists worldwide are increasingly concerned that their work is being replaced by AI. In May 2023, the 11,500 members of the Writers Guild of America went on strike for five months. Among other topics, writers were increasingly concerned that producers will use artificial intelligence to write scripts or at least fill in the blanks on unfinished screenplays. The guild characterised the issues behind the labour dispute as "an existential crisis."<sup>1</sup>

**Of the surveyed music authors and creators for this report, 26% agree that music made by humans is increasingly being replaced by AI music**, while a majority of 38% do not think that. The younger the members are, the less likely they are to think that AI music will replace human-made music.

Although this is already a significant proportion, other professional groups in the music sector are apparently even more concerned. A poll on the Bedroom Producers Blog asked 1,533 producers how they feel about AI and its expanding influence in the creative arts. While overall, 87% of those surveyed believe the technology will replace the existing tools of music production, 73% of surveyed producers think that AI music generators could replace human music producers in the future, at least to some extent.<sup>2</sup>

A study conducted by TuneCore<sup>3</sup> shows similar figures, where 77% of the surveyed artists are afraid of being replaced by AI-generated music.

# THERE ARE VARIOUS VULNERABLE SECTORS IN THE MUSIC BUSINESS



While it is hard to say how and to what extent artificial intelligence will impact the music industry as a whole, there are some sectors that are expected also by experts interviewed for this report to be more vulnerable than others. "Generally speaking, the more generic a subset of the music industry is, the more likely it is to be assisted or partially replaced by AI generation."<sup>1</sup>

## **Sync, Lo-Fi and other rather generic music**

Companies or businesses looking for more generic music to soundtrack their assets or commercials may already be satisfied with AI-generated music in the future. Generic Lo-Fi music, which is listed in DSP (digital streaming platform) playlists for concentration or meditation, for example, could also be a genre that can be replaced comparatively easily by AI-generated tracks.

## **Amateur texting**

Lyrics generators such as ChatGPT can already be used to generate ideas for music or song lyrics based on previous data. However, it is unlikely that these forms of AI can match the experience and value of professional songwriters – at least in the short term.

## **Video production**

Video production is expensive, especially for independent artists. We may see more and more artists turning to AI-powered videos to reduce the cost of creating music videos and marketing materials.

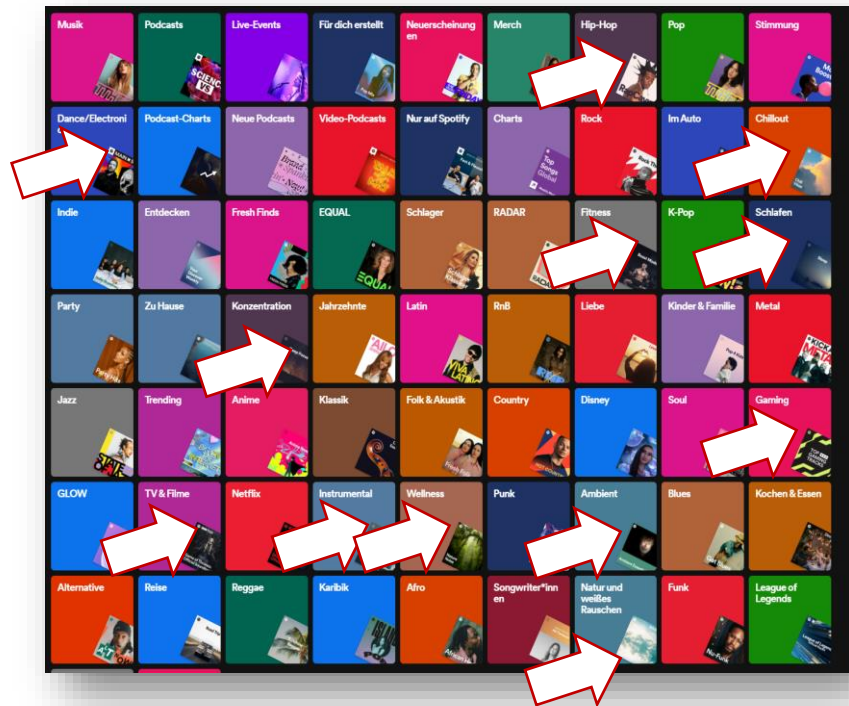
## **Session players**

Digital recreations of a wide variety of instruments are becoming more advanced, which could lead to fewer jobs for session players.

## **Automated technology in mixing/mastering**

AI-assisted mixing and mastering is already standard in many places and can replace manual work in this area. Specialists in this area will have to expand their skillset accordingly.

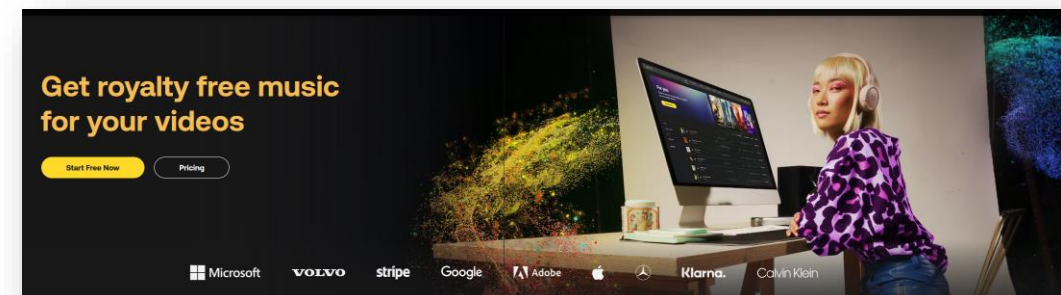
# GENERIC MUSIC CATEGORIES ARE PRIMARILY AFFECTED



When it comes to the question of which music categories and genres are primarily supported by AI, a clear picture emerged from the expert interviews conducted., that the more generic the music, the more likely it is to be replaced by AI.

For this reason, categories such as production music will increasingly no longer be created by hand, but with the aid of AI. The market for background music, e.g. for TV or social media, is also likely already in the process of being supplied by AI-generated music on a larger scale, meaning that a substitution of human-made music is already taking place here.

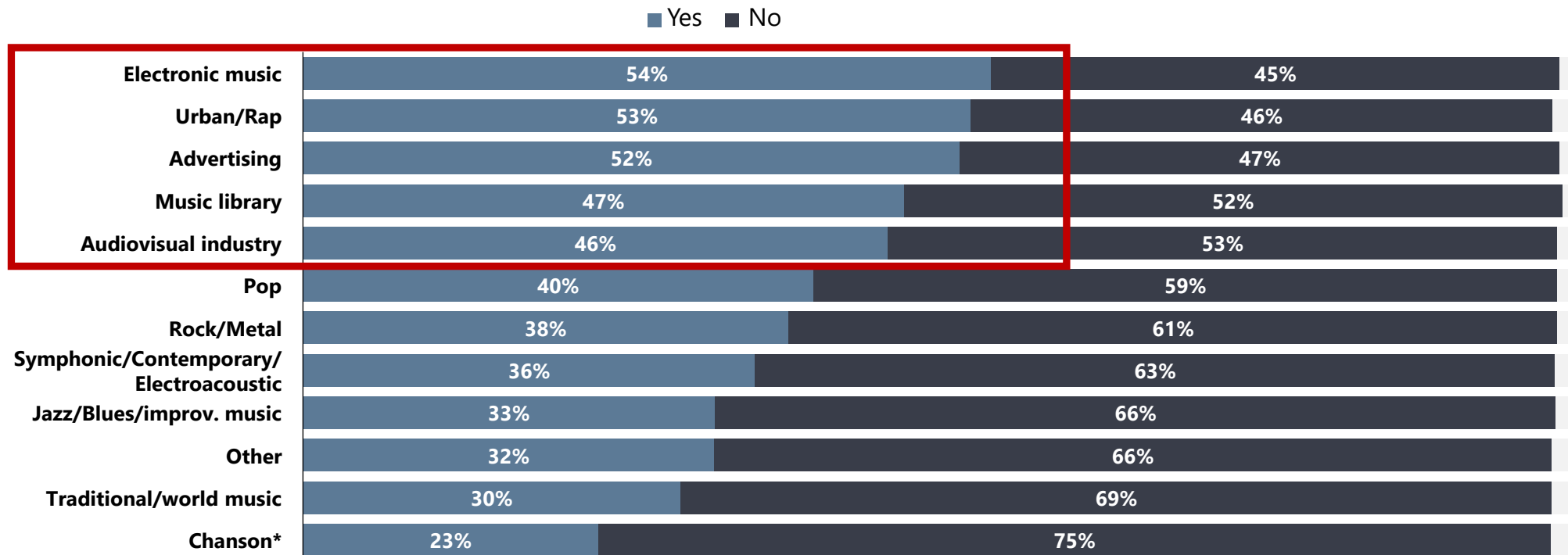
Relatively generic Lo-Fi music also plays a significant, albeit not clearly quantifiable, role on streaming platforms, in playlists for concentration, wellness or falling asleep, for example. In a further development, other music styles that have a comparatively high proportion of automation and artificiality are likely to be more strongly influenced by AI, e.g. elements of electronic music or hip hop, where voices that have been distorted by autotune have already played a role for some time.



## AI USE BY MUSIC GENRES

The proportion of AI use among the music creators surveyed for this study differs significantly depending on the genres or categories in which they create music. 55% of respondents who make electronic music have used AI, followed by urban/rap with 53%, advertising music with 52%, music library (background and stock music) with 48% and music for the audiovisual industry with 47%. **The genres/categories in which professional musicians already frequently use AI are also the music genres that are most at risk. AI lowers the barriers for non-professionals to market entry and greatly increases the number of available tracks.**

***"Have you used AI technologies in your work with music? And which genre(s)/categories would you say the works in your repertoire (mainly) belong to?"***



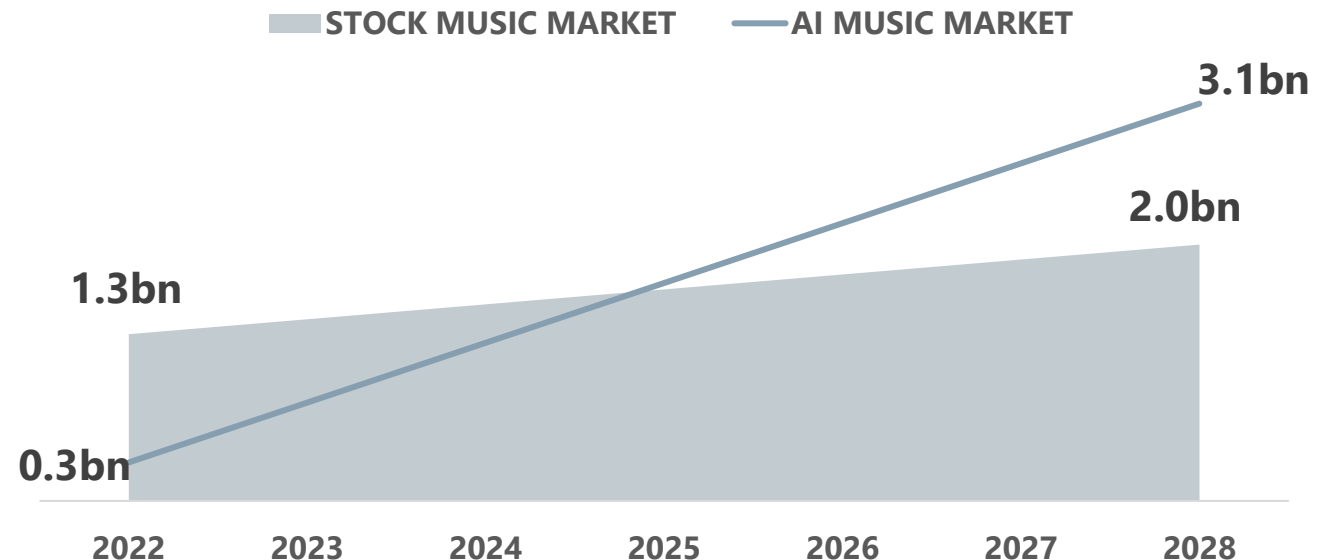


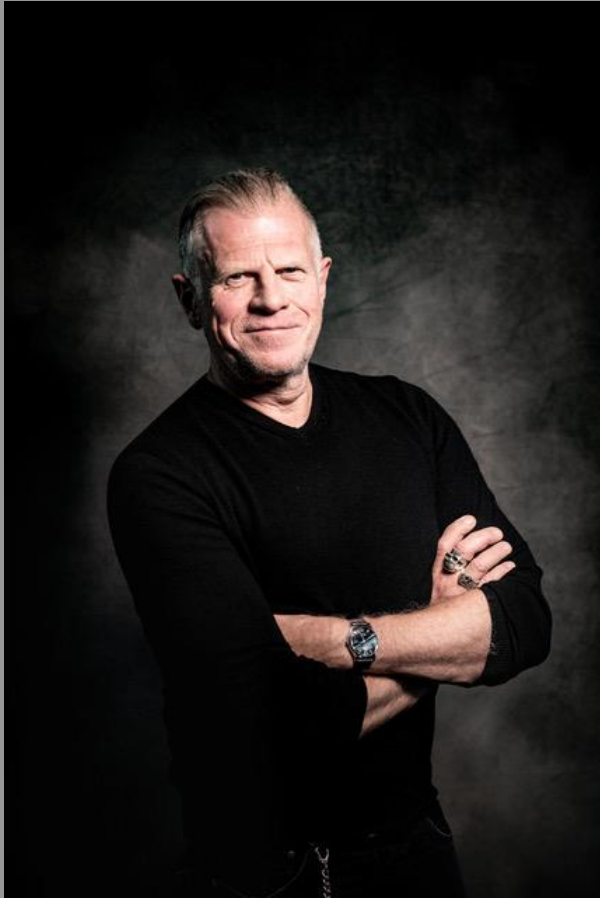
## CASE: STOCK MUSIC MARKET REVENUES AT RISK

Musicians who produce their music mainly for the stock music market (music libraries) are highly challenged by AI. The barriers to market entry for new human composers are greatly lowered by AI, “flooding” established stock music platforms with AI-generated music and hence reducing the share of revenues. AI tools or AI platforms, which generate and offer automated stock music, could jeopardize the business models of established companies.

The increasing popularity of audio and video streaming is driving the global stock music market growth: it was valued at US\$1.3 billion in 2022 and expected to reach US\$2.0 billion by 2028.<sup>1</sup> **While AI will not slow down that growth, it can however be expected that revenues are going to be redistributed – to the detriment of “traditional” human music composers.**

**GLOBAL FORECAST: STOCK MUSIC MARKET<sup>1</sup> AND AI MUSIC MARKET<sup>2</sup>, 2023-28, IN US\$**





*“There are already fields of application, for example in TV documentaries where only a musical ‘carpeting’ is needed to create a specific mood – whether that’s a sad, serious, exciting or positive one. AI already works really well in these cases. In this situation, a lot of career starters in not very lucrative positions are already losing their jobs. In branches where financial resources are limited and where the artistic and sound-related demands aren’t all that high, AI is expected to play a significant role quite quickly.”*

*Michael Beckmann*

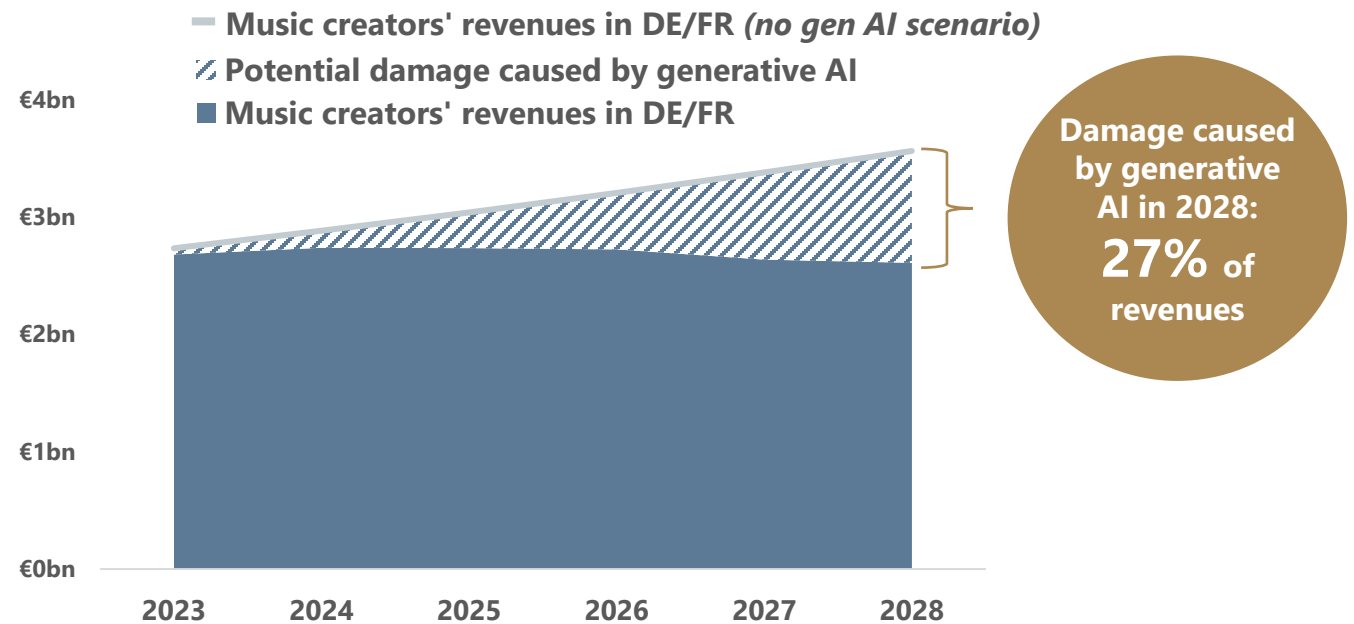
*Musician, film composer and music consultant*

# REVENUES OF MUSIC CREATORS AT RISK

Based on the surveyed GEMA/SACEM members and the statements from the interviews conducted, as well as data about the earnings distribution of GEMA/SACEM, it is possible to estimate the share of revenues that are most at risk for creators in Germany and France. These relate primarily to areas in which generic music plays a major role, such as production music in TV or social media and background music in commercial venues. Other income areas are also affected, but to a lesser extent.

**It can be assumed that by 2028, up to 27% of music creators' revenues are at risk of being impacted by generative AI. This corresponds to an estimated potential damage of €950m in 2028 alone and a cumulative total damage for the period 2023-2028 of around €2.7bn for music creators in Germany and France.**

## ESTIMATED DAMAGE CAUSED BY GENERATIVE AI AND REVENUES OF MUSIC CREATORS IN GERMANY AND FRANCE,<sup>1</sup> 2022-2028



# METHODOLOGY OF DAMAGE CALCULATION

- Each category of music copyright revenues (e.g. for streaming, social media, radio, TV, live music, background music in commercial venues) was assessed for the potential risk of being replaced by generative AI.
- To achieve this, it was estimated which share of revenue of each category of rights is likely to be substituted by generative AI during the period until 2028, based on expert interviews, research results and GEMA/SACEM data for 2022.
- A forecast for music creators' revenue in DE/FR in a *no gen AI scenario* was calculated. The forecast assumes a year-on-year growth that corresponds to the average growth in DE/FR from 2017 to 2022.
- The sum of the shares that are assumed to get replaced by generative AI corresponds to a total share of 27% of total revenues of music authors in Germany and France in 2028.
- Remaining music creators' revenues were then calculated by subtracting the potential revenues lost to generative AI from the revenues forecasted in the *no gen AI scenario*.



*"For now we should differentiate between musicians who work with AI and those who don't know how to, or don't want to, work with AI. Those who work with AI will be able more quickly to deliver end products and that's relevant for many fields, for example when it comes to music for TV.*

*The next phase will presumably see financial costs coming down more and more and eventually the music supervisor or the director themselves supply their music cues. It's still of course also an art to being able to provide prompts really well to get good results, but it's going to become ever more straightforward – that is, AI is getting better at understanding what I want."*

*Michael Haves*

*Theater and film composer*

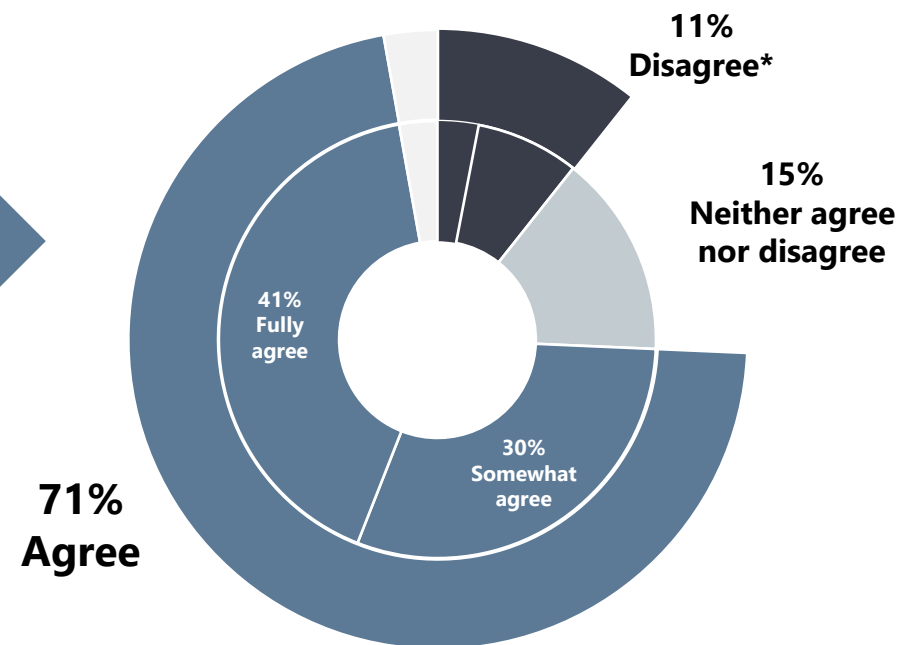
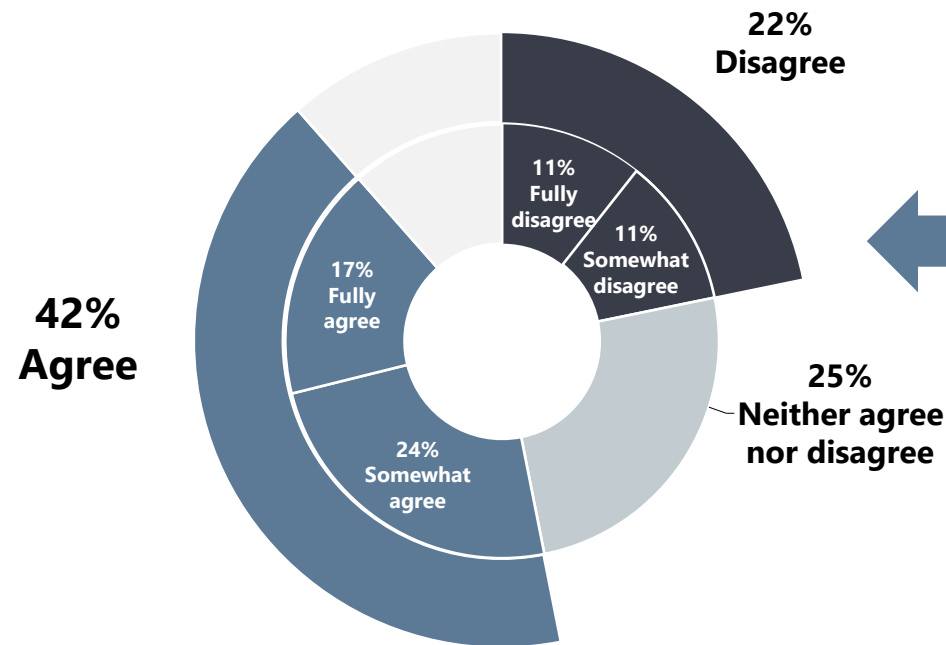
# DESPITE AI'S GREAT ECONOMIC POTENTIAL, MUSIC CREATORS HAVE FINANCIAL FEARS

While, of the roughly 15,000 music creators who were questioned for this study, at least 42% agree that *in principle*, AI technology in the music industry has great economic potential, only a few seem to be optimistic about participating.

On the contrary, a remarkably high proportion have existential financial fears, with 71% feeling afraid that the use of AI in music could lead to music creators no longer being able to make a living from their work.<sup>1</sup>

***"In principle, AI technology in the music industry has great economic potential."***

***"The use of AI in music could lead to music creators no longer being able to make a living from their work."***



Source: Goldmedia survey on behalf of GEMA and SACEM 2023, n=14,738/14,730; Basis: GEMA and SACEM members. Rounding differences possible. Difference to 100% = No answer (12%, 3%); \*Fully disagree = 3%; Somewhat disagree = 8%. <sup>1</sup> A survey conducted by TEOSTO (2023) similarly found widespread fear among the 717 participating music artists of decreased income from music due to AI, see [TEOSTO](#), p. 12.



*"I don't even know what to think about AI. I think it's a crazy thing but at the same time I'm afraid for my job."*

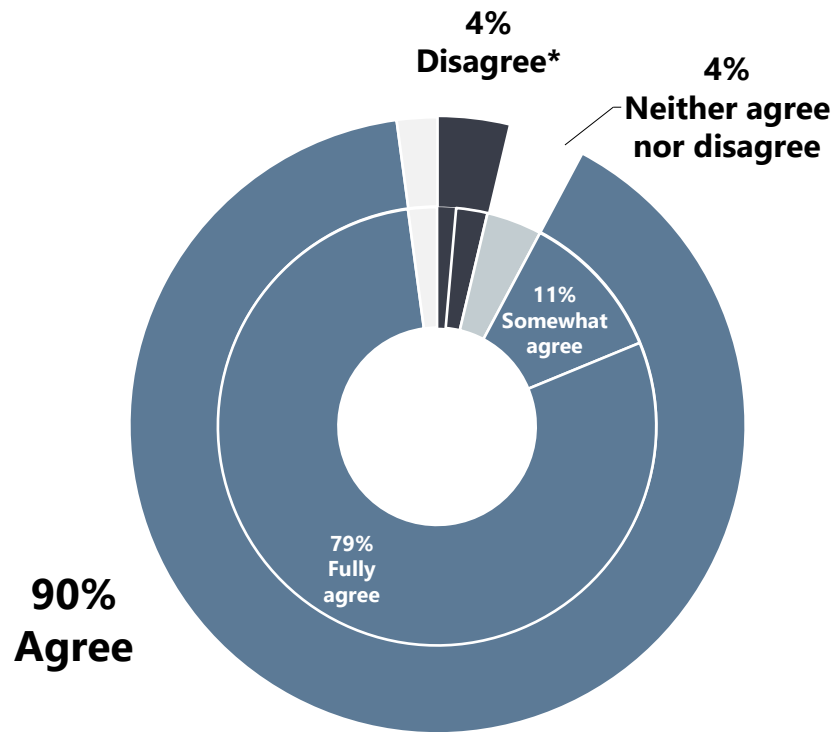
*Angèle*

*Singer-songwriter*

*On her TikTok account, 9 August 2023, about the fake cover of Gazo's hit "Saiyan", generated by AI with her voice dueting with Heuss L'enfoiré*

# REMUNERATION OF COPYRIGHT HOLDERS

***"Copyright holders must benefit financially when their works are used as input for AI systems."***

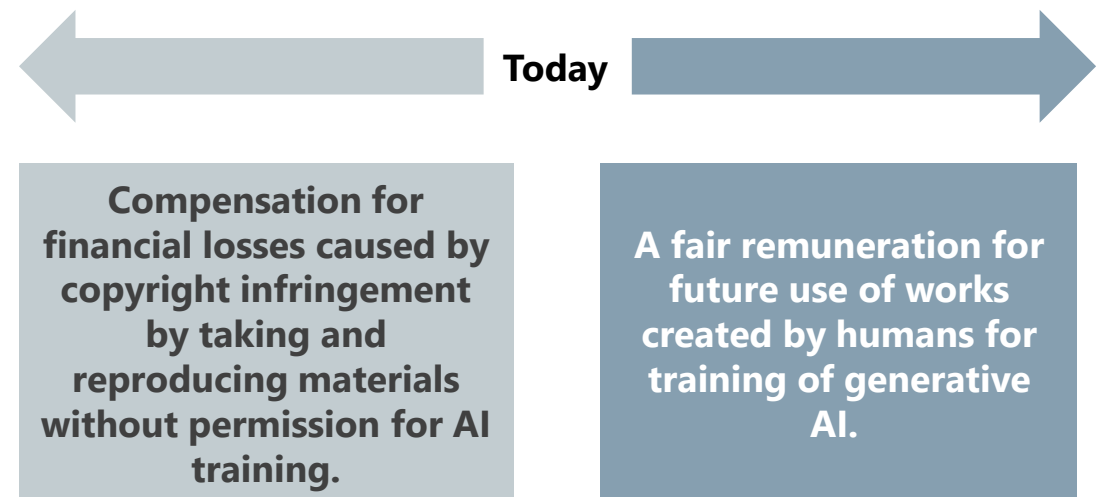


Given the fact that generative-AI systems are only capable of mimicking human creativity because human works have been used as training material<sup>1</sup>, the next obvious question is, in what form human authors are remunerated for their services, which ultimately comprise the fuel for these AI applications.

How and to what extent authors and creators, whose works form the basis for generative AI in music, can be fairly remunerated is one of the most pressing questions for music creators, and it is clear that a large majority (90%) of GEMA and SACEM members surveyed in this study call for commercial involvement when their works are used as input for AI systems.

This question generally covers two dimensions:

1. Compensation for financial losses already caused
2. A fair remuneration for future use





# COMPENSATION FOR COPYRIGHT INFRINGEMENTS ALREADY MADE

A significant proportion of the scraping that has taken place to date has already been done without there being any legal certainty or claims for compensation. **Solutions must be found for past uses and fair compensation should be provided.**

For determining the extent of the damage that AI has already caused to music creators, the following facts must be taken into account:

1. The existence of human-made music is absolutely crucial for generative AI in the context of music and their business models are based on this. AI cannot produce results resembling human works unless it has had the opportunity to analyse human creations.
2. The damage caused is irreversible. "Unlearning/forgetting what has been learned is not possible according to the current state of technology and statements by leading AI scientists. [...] In the US, there is talk indicating that if one of the pending lawsuits against generative AI providers is successful, their entire MODEL would have to be deleted and the training process would have to be restarted."<sup>1</sup>

3. Due to the lack of transparency regarding the type and scope of training data, it is often only possible to prove whether certain specific works were used for machine learning or to create the foundation models via the output, i.e. the products of the generative-AI models: "For example, if a prompt asks for the style of a particular artist, and the output is very close to that style ("proximity"), then it can be concluded that the works of that artist were used for training."<sup>2</sup>

4. Article 4(1) of the CDSM Directive contains a general exemption of text and data mining ("TDM"). Under this TDM rule, anyone, including commercial AI system developers and trainers, may make copies of works or databases for the purposes of TDM and retain them as long as necessary for the AI training process. "It is by no means clear that the reproductions made during scraping for use in massive machine learning algorithms and the creation of foundation models are covered by the legal permission for text and data mining."<sup>3</sup>

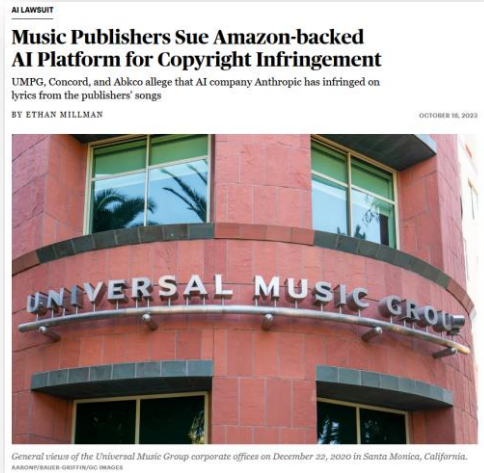


*"The only income for songwriters, i.e. the lyricists and composers, is the remuneration for their copyrights. Whether the training of AIs with the works of these songwriters was legal must be decided by the courts. One way or another, it is unacceptable that the use of the songs remains unremunerated. We also need transparency and the right to make decisions about our songs!"*

*Christopher Annen*

*Singer-songwriter*

# VARIOUS COPYRIGHT INFRINGEMENT LAWSUITS ARE ALREADY TAKING PLACE



Rights holders outside and inside the music business have already taken AI companies to court: several best-selling authors (with George R. R. Martin and John Grisham among them) have been suing OpenAI for copyright infringement since August 2023.<sup>1</sup> In December 2023, The New York Times sued OpenAI and Microsoft, accusing the companies of infringing on its copyrights by using millions of its articles to train AI technologies like the ChatGPT chatbot.<sup>2</sup>

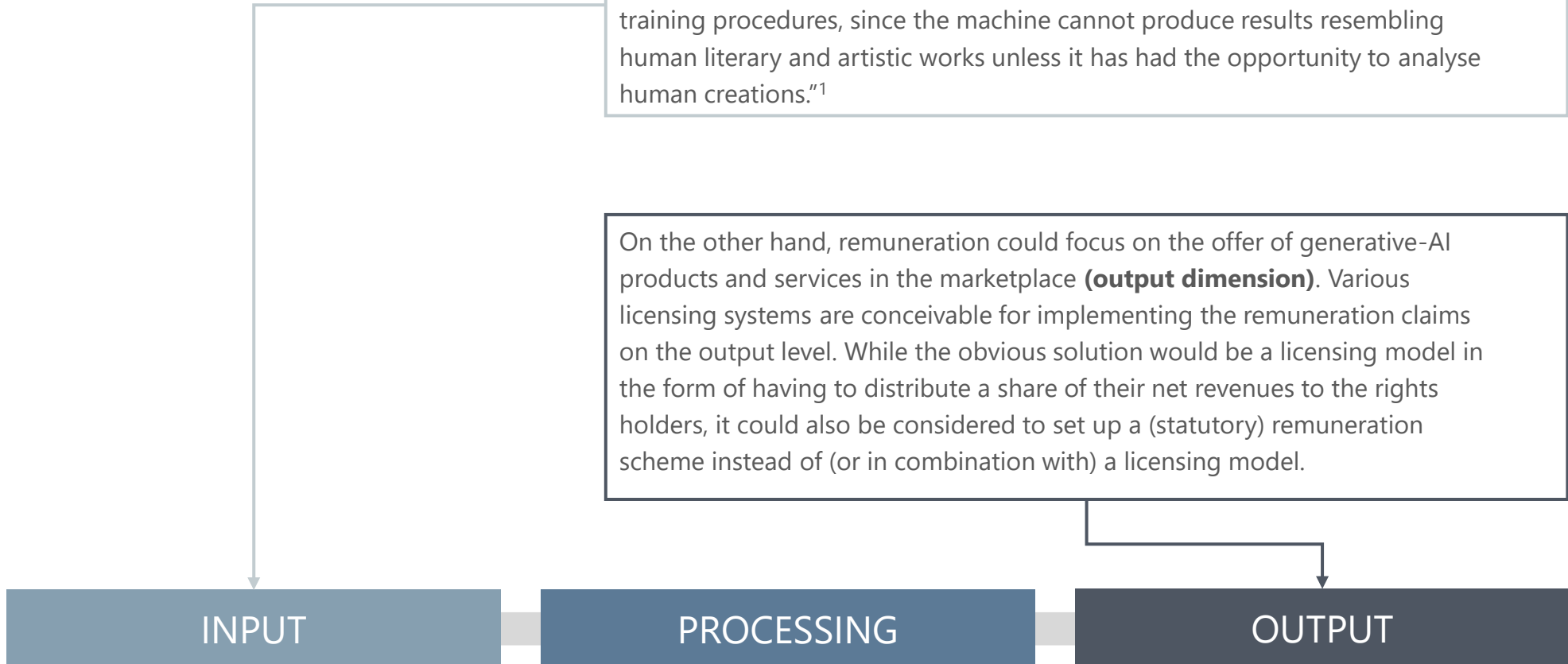
One of the first lawsuits in the music sector, filed in October 2023, is Universal Music Publishing Group, Concord, and Abkco against Anthropic, an Amazon-backed AI company, and its AI-assistant service Claude. The three publishers' claims for relief include direct copyright infringement, contributory infringement, vicarious infringement, and removal or alteration of copyright management information. The plaintiffs are seeking as much as \$150,000 per work infringed.<sup>3</sup>

# TOWARDS A FAIR REMUNERATION MECHANISM

With regard to the practical implementation of remuneration mechanisms, there are two different reference points.

On the one hand, it is conceivable to impose an obligation to pay remuneration at the stage of AI training (**input dimension**). "Arguably, human authors should be compensated for the use of their works in AI training procedures, since the machine cannot produce results resembling human literary and artistic works unless it has had the opportunity to analyse human creations."<sup>1</sup>

On the other hand, remuneration could focus on the offer of generative-AI products and services in the marketplace (**output dimension**). Various licensing systems are conceivable for implementing the remuneration claims on the output level. While the obvious solution would be a licensing model in the form of having to distribute a share of their net revenues to the rights holders, it could also be considered to set up a (statutory) remuneration scheme instead of (or in combination with) a licensing model.





*"To train their models, the operators of generative-AI systems are dependent on the use of enormous quantities of copyright-protected works and services: on the one hand, because the cultural knowledge they represent is indispensable for them and, on the other hand, because the systems suffer damage if they are not trained with human-generated content, but with AI-generated content.*

*The operators will have to make us offers as to how they intend to involve us in the value creation that takes place, which they would not be able to achieve without utilising our works and services. As long as they pay for electricity, water, processors and management salaries, this should be a matter of course."*

**Matthias Hornschuh**

*Film composer*



# PART 3: CHALLENGES

Overview

Copyright, Credit and Consent

Remuneration and Economic Implications

**Personal Rights**

AI and Music Streaming

Outlook

# DEEPAKES AND VOICE CLONING HAVE BECOME A TOP PRIORITY CONCERN IN THE MUSIC INDUSTRY



## ARTIFICIAL INTELLIGENCE: DEFINING ITS PLACE IN MUSIC

One area of opportunity that is still being defined is artificial intelligence (AI). It is a subject that currently sits at the top of the mainstream agenda, in culture and technology.

Dennis Kooker weighs things up: "We're supportive of uses of AI where it can help us to work smarter, for example, in helping us to support artists in analysing and understanding fan engagement trends. This is where AI is already a key component to the business and can play a really positive role.

"But there are other applications of AI that increasingly seem oppositional to the essential human factor at the core of artistry and originality that makes music so incredibly unique and beautiful.



**Ultimately, we are on the side of artists and their music. Our focus is on building their careers and supporting the authentic connections they want to make with their fans."**

**DENNIS KOOKER**  
President, Global Digital Business,  
Sony Music Entertainment

"In particular, we have serious concerns about the potential for AI-synthesised voice technology to be used at scale to cover songs and attempt to replace artists. This is something that we need to watch very closely.

"Ultimately, we are on the side of artists and their music. Our focus is on building their careers and supporting the authentic connections they want to make with their fans."

Michael Nash continues in a similar vein, "AI brings significant innovation potential for our artists. It can be used to help us identify new audiences for our artists in different markets around the world, enhance the quality of music experiences in terms of immersive sound and it can help really optimise technical aspects of audio production too.

"However, when you're talking about generative AI, there's a real significant risk for the entire creative community. We're talking about upholding the rights and interest of artists here, and about a threat to the community across categories.

"Most of these AI systems acquire the essential base of knowledge from which they develop their 'own' IP by essentially training on vast quantities of copyrighted content. And they're not providing any compensation to the people who produce that indispensable source material.

"The bottom line is, a lot of AI developers are just ignoring the ethics of ingesting the creative work of others, or they're simply justifying it with what we view as a dangerous distortion of the idea of fair use, that is absolutely not going to hold up.

"We're really excited about all the innovative ways that AI developers who respect artistry are moving culture and the industry forward. There's an incredible opportunity there. But unless creators are respected and properly compensated when and if their

works are used to train AI, then you're going to see the world's creative community potentially suffering a lot of damage in the evolution of generative AI.



**We're really excited about all the innovative ways that AI developers who respect artistry are moving culture and the industry forward."**

**MICHAEL NASH**  
EVP, Chief Digital Officer,  
Universal Music Group

"I would put that at the top of a list of industry issues because we need people to understand what's going on right now. We need to work very hard to define new models so that we can enable generative AI without looking away from what is essentially going to be wholesale hijacking of the intellectual property of the entire creative community." ♦

Generative AI is also a top priority for music labels:

"I would put this at the top of the list of industry issues because we need people to understand what's happening right now. We need to work very hard to define new models so that we can enable generative AI without looking away from what will essentially be a wholesale theft of intellectual property from the entire creative community," says Michael Nash, EVP and Chief Digital Officer, Universal Music Group.

On the one hand, the potential of AI in connection with marketing and target group identification as well as technical production is emphasised. On the other hand, the music industry sees serious dangers, including in the area of voice cloning:

"We have serious concerns about the potential for AI-synthesised voice technology to be used at scale to cover songs and attempt to replace artists," says Dennis Kooker, President of Sony Music Entertainment.

## CASE: „HEART ON MY SLEEVE“


The New York Times

The A.I. Race > | How It Began | Key Figures in the Field | One Year of ChatGPT | Regulating A.I. | Inside OpenAI's Crisis

### ***An A.I. Hit of Fake 'Drake' and 'The Weeknd' Rattles the Music World***

A track like “Heart on My Sleeve,” which went viral before being taken down by streaming services this week, may be a novelty for now. But the legal and creative questions it raises are here to stay.

Share full article | 209



Labels hope that fans will continue to prize the work of artists, including the real Drake, above that of A.I.-generated imitations. Adam Riding for The New York Times

**By Joe Coscarelli**

Published April 19, 2023 Updated April 24, 2023

On 4 April 2023, “Heart on My Sleeve” a song written and produced by TikTok user ghostwriter977, with deepfake AI-generated vocals made to sound like Canadian musicians Drake and The Weeknd, was self-released on TikTok, YouTube and various streaming platforms. It reached 15 million views on TikTok alone and 600,000 streams on Spotify.

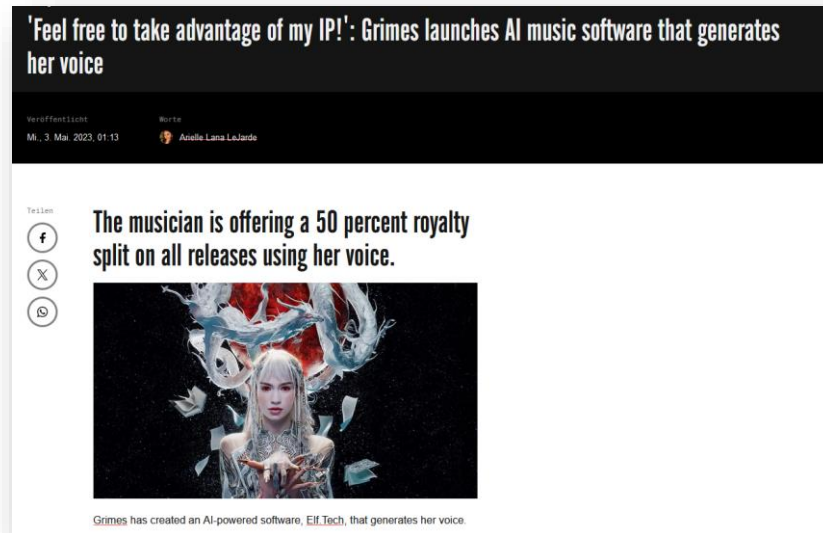
On 17 April it was taken down for “infringing content created with generative AI” by Universal Music Group.

UMG told Billboard magazine that the viral postings “demonstrate why platforms have a fundamental legal and ethical responsibility to prevent the use of their services in ways that harm artists”.

**This viral case sparked public awareness and drew labels’ attention to the perils of deepfakes and voice cloning. Debates around responsibilities, copyright and artists’ appreciation have since been a major concern for the music industry.**

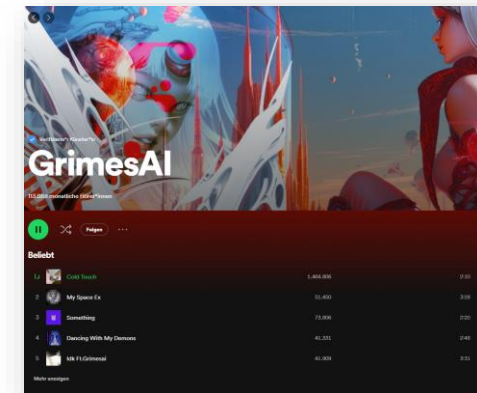
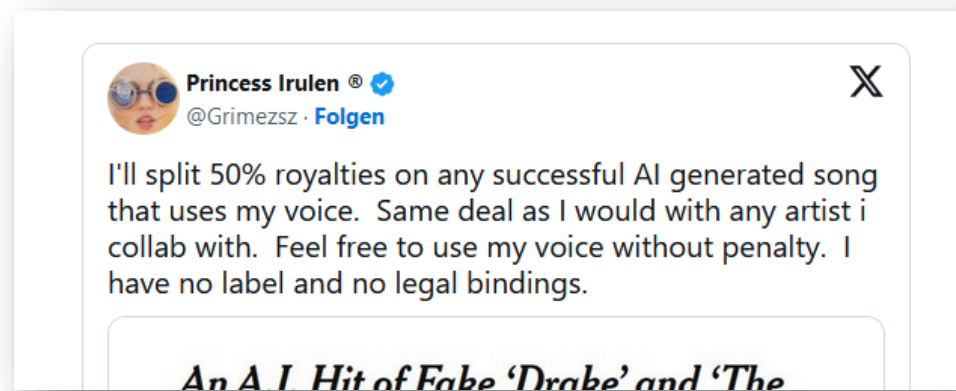


## CASE: GRIMES



Electronic Pop star Grimes encourages her fans to create AI songs with her voice and announces that she would split the revenue for such a song 50/50. This is more or less the same deal as a collaboration with another "real" artist. She also wrote that everyone should feel free to use their voice without being penalised, as she has no label and no legal obligations to anyone. According to her, she likes the idea of merging with a machine, treating art like open source and deliberately eliminating copyrights.

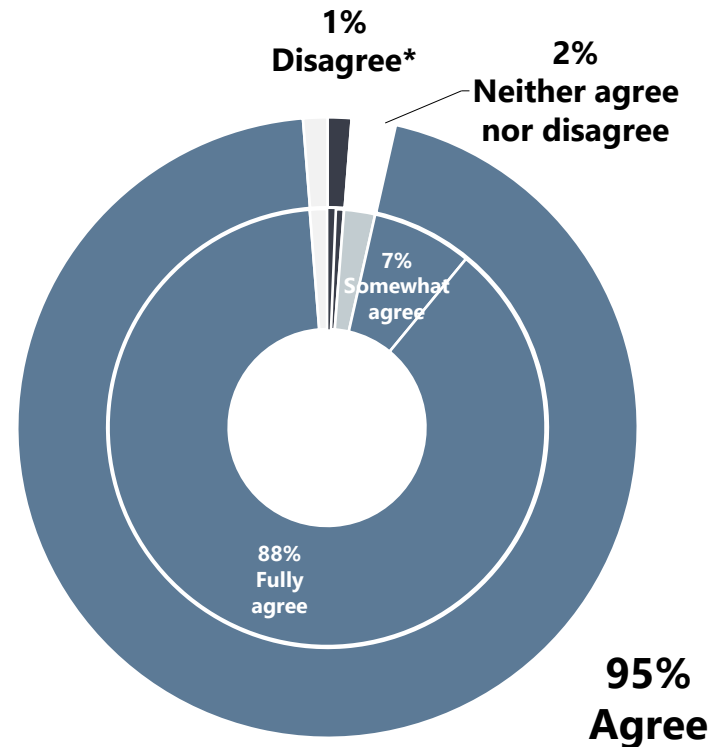
With her tool Elf.Tech, users have the option of either uploading audio or recording directly through the app. They will then receive the output of the file with the pop star's voice instead. Grimes can be listed as a main, secondary or featured artist in any music made using the software in exchange for 50% of royalty splits on the master recording. Elf.Tech offers distribution through its platform, but artists can also self-distribute or release through a label.



## PERSONAL RIGHTS OF COPYRIGHT HOLDERS

As seen in cases like "Heart on my Sleeve", infringement of personal rights by AI systems poses an issue for music creators. Almost all of the questioned GEMA/SACEM members (95%) agree that copyright holders must have the possibility to take action against such infringement of their personal rights by AI systems (e.g. deepfakes or voice cloning).

***"Copyright holders must have the possibility to take action against infringement of their personal rights by AI systems (e.g. deepfakes or voice cloning)."***





# PART 3: CHALLENGES

Overview

Copyright, Credit and Consent

Remuneration and Economic Implications

Personal Rights

**AI and Music Streaming**

Outlook



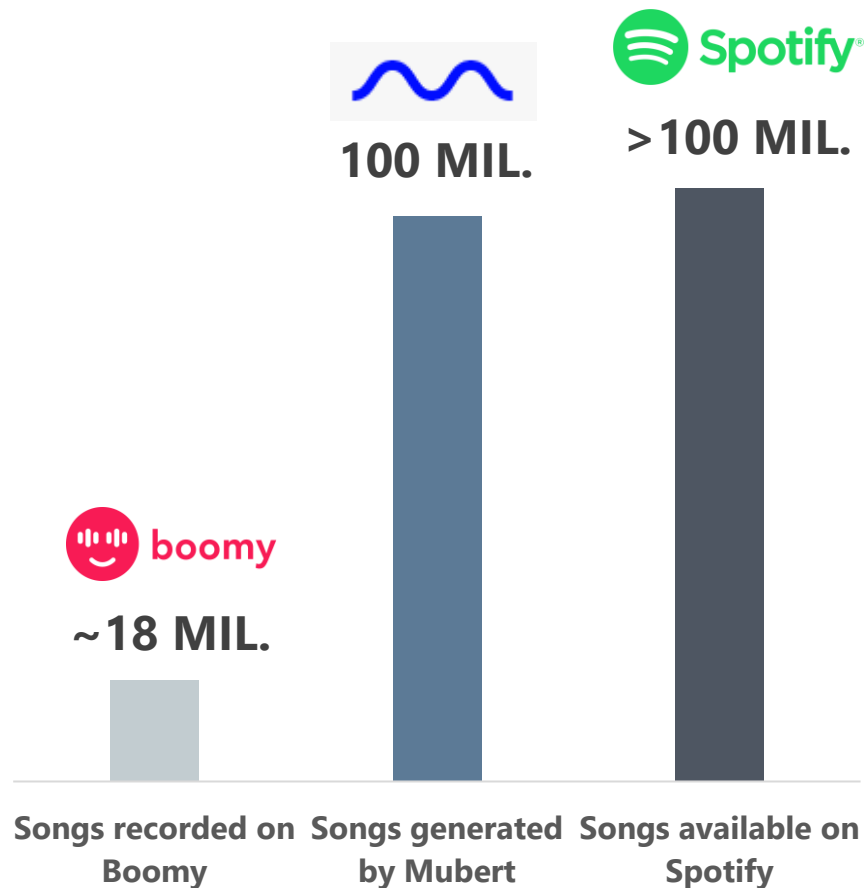
*"At Spotify, we believe that AI has the potential to bring real benefits to the audio industry. AI is not a new area for us.*

*Since 2011, our investments in artificial intelligence, and machine learning in particular, have made Spotify what it is today: a personalised experience for every user that drives discovery and connection through the power of recommendations. These Spotify recommendations come to life through innovative, personalised products like the Spotify Home feed, Discover Weekly, Blend and Made for You Mixes."*

*Conny Zhang*

*Head of Music DACH at SPOTIFY*

# AI-GENERATED MUSIC ALREADY ACCOUNTS FOR A SIGNIFICANT SHARE OF RECORDED MUSIC



AI has without doubt accelerated the creation of music, but that speed comes at a time when music streaming services are already inundated with content.<sup>1</sup>

According to information on the Boomy website (December 2023), around 18 million songs have already been created generated on the platform.<sup>2</sup> AI-generation platform Mubert announced in July 2023 that its AI has generated 100 million tracks.<sup>3</sup> This is roughly equal to the entire catalogue available on Spotify, which claims that listeners can “discover, manage, and enjoy over 100 million tracks” on Spotify.<sup>4</sup>

“What we’ve noticed over the past few years is that there’s a year-on-year growth in the number of pieces of music that are being delivered to us. Maybe there’s a correlation between this growth and the use of these technologies.” said Deezer CIO Aurélien Hérault in a Goldmedia interview.

## Spotify will not ban AI-made music, says boss

© 26 September 2023



| Spotify founder Daniel Ek with

**By Zoe Kleinman**  
Technology editor

**The boss of Spotify says he  
by artificial intelligence fro**



Vor 2 Monaten aktualisiert

Spotify CEO says AI music is 'tricky'  
By Sam Shead, Editor at LinkedIn News

Artificial intelligence is going to be a "tricky" technology for the music industry to deal with, according to Spotify CEO Daniel Ek. [Speaking to BBC News](#), the Swedish tech entrepreneur said using AI in music is likely to be debated by the industry for "many, many years". In April, [Spotify removed a track](#) featuring AI-cloned voices of Drake and The Weeknd, but Ek explained that Spotify has no plans to introduce an outright ban on AI-generated music. AI tools that auto-tune music are acceptable, Ek said, but tools that mimic artists are not. Meanwhile, AI systems that create music after being influenced by existing artists without directly impersonating them are more contentious, he added.

Spotify announced this week that it is using [AI to translate podcasts](#) into different languages. The Apple Music rival has also rolled out a [new AI-powered DJ](#), which recognises your listening habits and suggests new songs. For more coverage of the tech industry, [click here to subscribe to Tech Wrap-Up Europe](#), a newsletter from LinkedIn News.

*How do you think streaming services should treat AI-generated music? Share your thoughts via the posts below.*

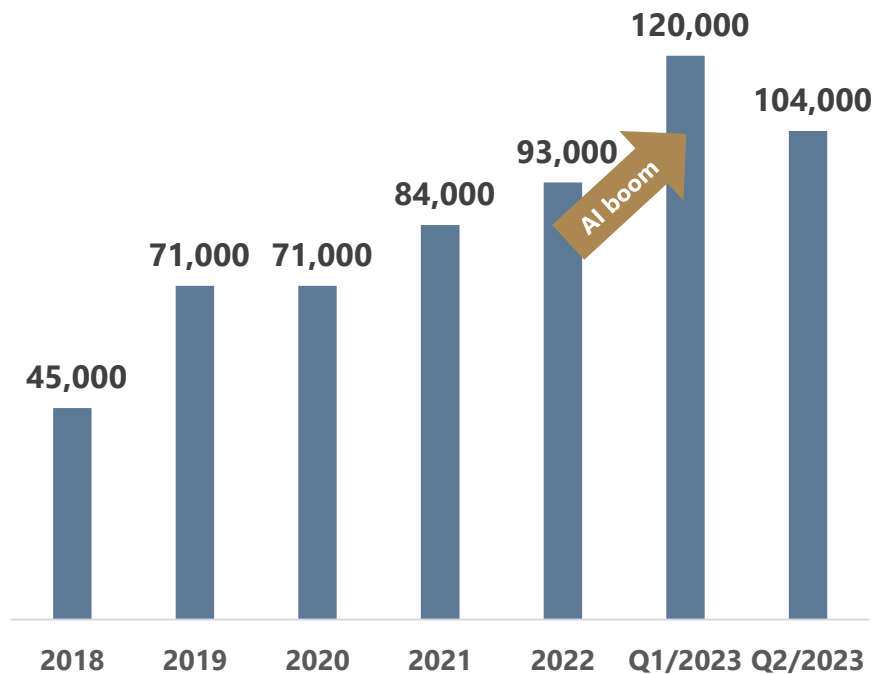
## DSPS' TREATMENT OF AI GENERATED SONGS

When Universal Music Group banned the AI-generated song „Heart On My Sleeve“ because of copyright infringement, Spotify had to take the song, which had already reached 20 million streams, down. In reaction to these events, Spotify's CEO Daniel Ek commented on the use of AI in the music world and especially on Spotify. In his opinion AI is going to be a "tricky" challenge the industry will be facing.<sup>1</sup> Still, he evaluates the use of AI in some areas to be helpful and has therefore no plans for banning AI-generated music completely.

This example shows that dealing with AI on streaming platforms is currently dependent on attitudes within those companies. This raises further questions about how streaming services should treat AI-generated music and who should be making such decisions.

# THERE ARE VARIOUS CONCERNS ABOUT THE LARGE NUMBER OF NEW AI-GENERATED TRACKS

GLOBAL NUMBER OF NEW TRACKS UPLOADED TO DSPS EVERY DAY 2018-Q2/2023



The number of new tracks that are uploaded reached a new peak in the first quarter of 2023, with 120,000 titles being uploaded to DSPs every day. After an upward surge in AI-produced songs in Q1, the figure has dropped slightly but has still stayed high.

Artists and experts interviewed for this study as well as music industry executives have become increasingly concerned about the large number of new tracks being uploaded to DSPs and worry this deluge of new content could erode the presence of professional artists.

It is feared that there will be a homogenisation of music, as similar recommendations are used by the AI models for all generated tracks. Prejudices and stereotypes in music are perpetuated by poorly trained AI models, which can lead to a restricting of musical diversity.

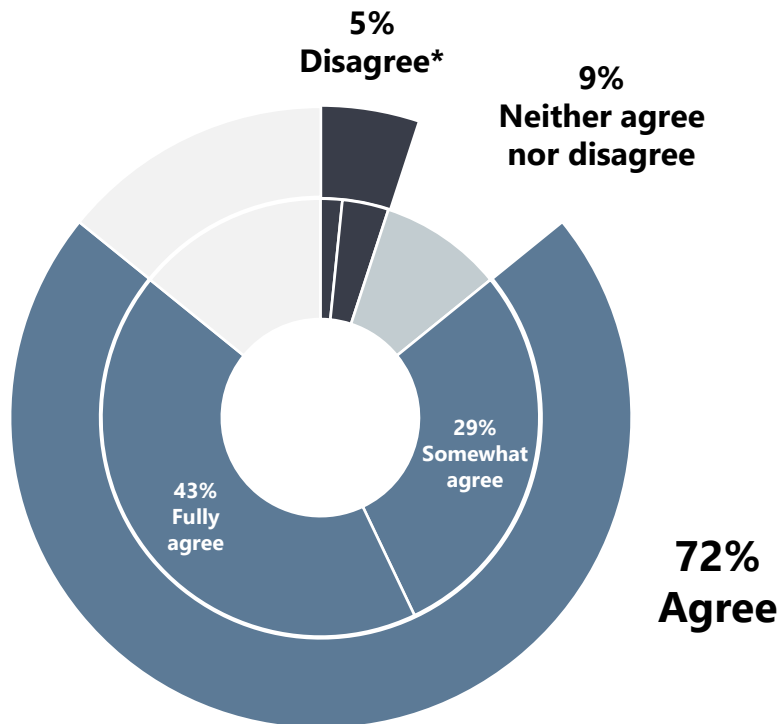
Business leaders at some of the DSPs worry that low-quality content could damage the user experience. *“There’s a lot of duplicated content, there’s a lot of content that is not even music... and at a certain point you get way too much content that is useless for the users. And it starts creating a bad user experience.”*

Deezer CEO Jeronimo Folgueira during an earnings call on 1 March 2023

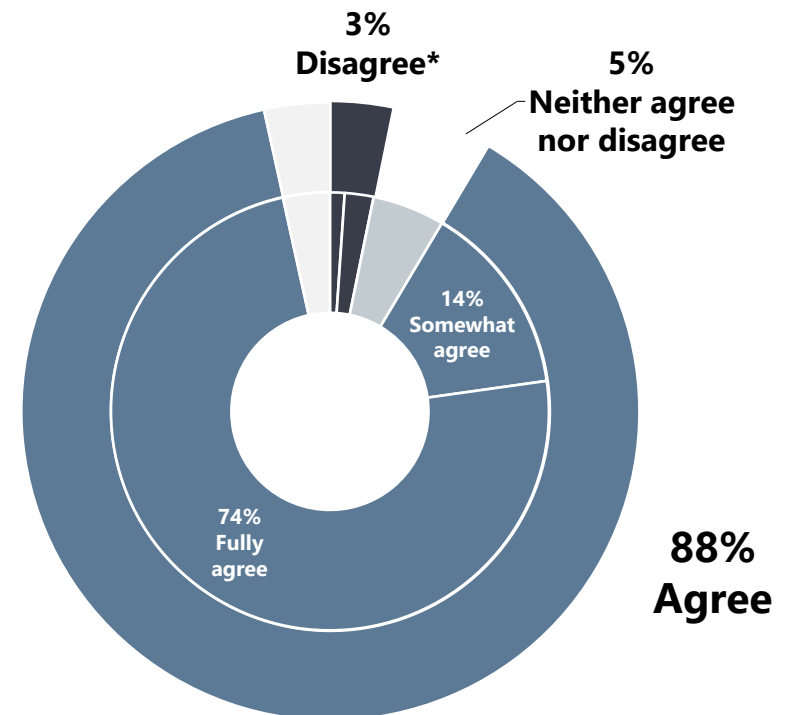
# VISIBILITY ISSUES AND PROMOTION OF HUMAN-MADE MUSIC

Of the questioned GEMA/SACEM members, 72% agree that due to the increase in AI-generated work, issues around visibility and discoverability of songs on streaming platforms are becoming increasingly important. In an era of millions of published AI songs, the support of human-made music on streaming platforms is also important to creators. 88% of respondents agree that music made by humans should be promoted on streaming platforms.

*"Due to the increase in AI-generated works, issues of visibility and discoverability of songs on streaming platforms are becoming increasingly important."*



*"Music made by humans should be promoted on streaming platforms."*







*“The AI is capable of indexing thousands of songs in a day. This enables the development of new recommendation systems and innovative music searches. Songs that may have gone undiscovered can now be found using different search parameters. This gives unknown songs and artists the chance to become visible in the abundance of songs. The potential of artificial intelligence is a great help in this context.”*

*Agnes Chung*

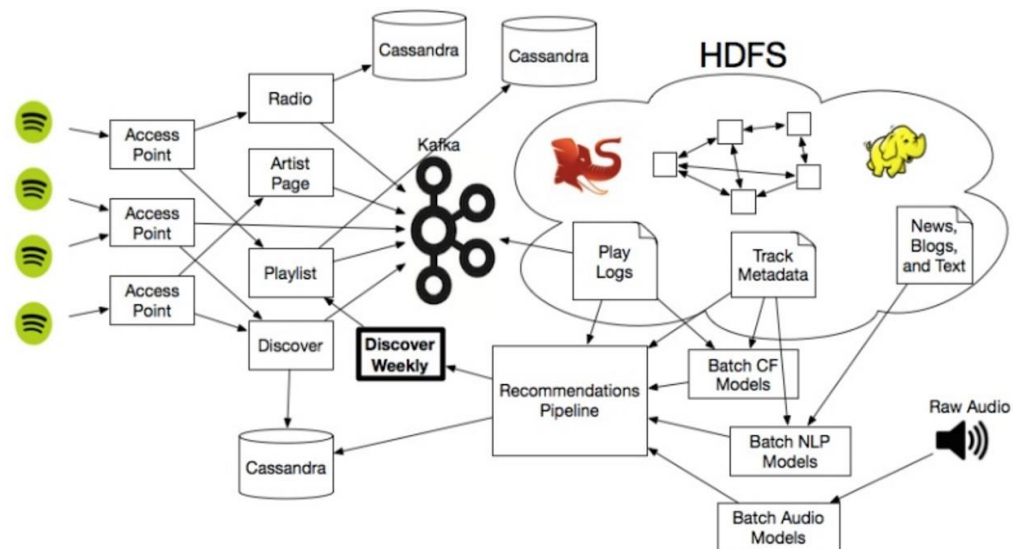
*Co-Founder of musicube*

# AI-DRIVEN RECOMMENDATION ENGINES

All major music streaming platforms have invested heavily in AI technologies to improve the user experience and secure competitive advantages.

One of the most important application areas are AI-supported analyses of the tastes and preferences of listeners and recommendation systems based on these. AI-driven recommendation engines have become an integral part of the music discovery process.

## DATA FLOW FOR THE PERSONALISED SPOTIFY "MIX OF THE WEEK"



Already back in 2017, Spotify bought the French AI start-up Niland and used it to develop the "Your Mix of the Week" playlist (Discover Weekly), among other services.

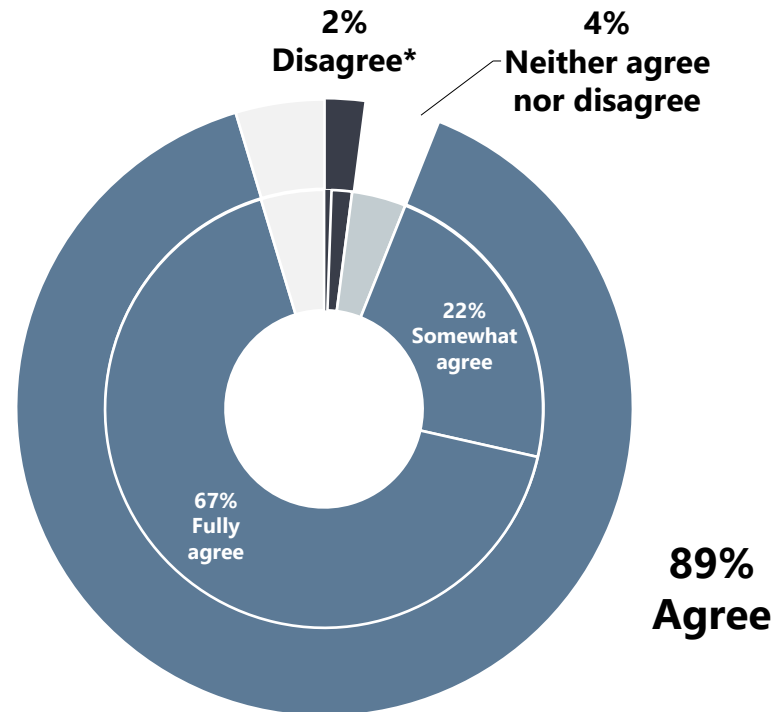
Three models are used for this:

- Collaborative filtering: An algorithm first analyses other playlists created by users that contain the same tracks that the listener in question plays. It then checks which other tracks other users have included in the same playlists.
- Natural Language Processing (NLP): Relevant text content (articles, blog posts, etc.) is scanned based on the metadata of a song. Artists and titles are then assigned keywords and weighted. Filtering and recommendations are therefore based on semantic information.
- Audio modelling: Convolutional Neural Networks (CNN): While NLP primarily recommends popular songs, audio models can also identify unknown songs that are similar to the songs already used in terms of sound. CNNs are based on parameters such as key, major/minor, beats per minute, volume and much more.

## DEMAND FOR TRANSPARENCY ON STREAMING PLATFORMS

Lack of transparency in streaming services' algorithms and in the distribution of music on streaming platforms poses a problem for many creators. Most of the questioned GEMA/SACEM members (89%) therefore agree that criteria for creating playlists as well as music recommendations based on AI/algorithms must become more transparent. Only about 2% disagree with this statement to some extent.

***"Criteria for creating playlists as well as music recommendations based on AI/algorithms must become more transparent."***

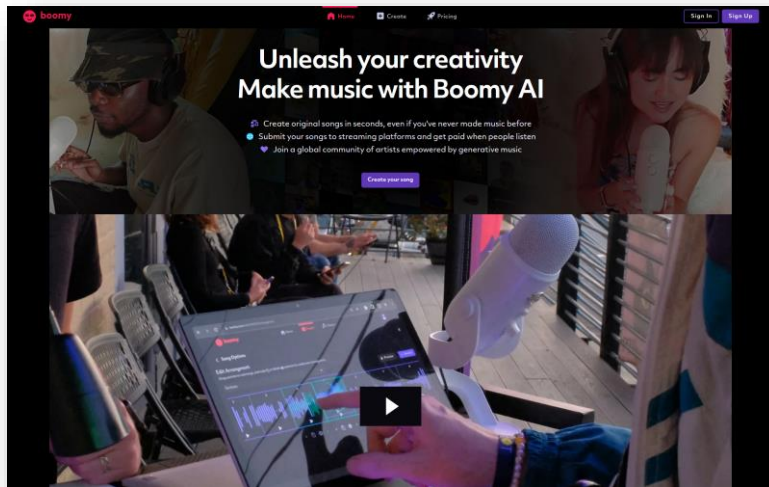


# AI-GENERATED MUSIC AND STREAMING FRAUD

BREAKING  
**Spotify Removes ‘Tens Of Thousands’ Of AI-Generated Songs: Here’s Why**



**This is how I made \$3,168 by uploading AI Music to Spotify!**  
Nova Academy  
9194 Aufrufe · vor 2 Monaten



Fake streams and streaming fraud are a problem that already existed before the rapid introduction of AI into the music sector. However, the problem has been significantly exacerbated by AI-generated tracks.

According to media reports, Spotify has already removed tens of thousands of AI-generated songs from its website. In May 2023, this amounted to around 7% of the songs created on the Boomy platform. With the help of Boomy AI, users can generate songs very quickly and easily and then publish them on music streaming services with the help of the company. Boomy receives a share of the royalties generated in this way. The reason for the removal of the songs was the accusation by Universal Music Group that Boomy was using bots to increase streaming figures.

There are different estimates for the number of fake streams. France’s Centre National de Musique (CNM) released the results of a study in January 2023 focusing on illegitimate streaming practices with the conclusion that at least 1-3% of music streams in France are fraudulent. That is, they are generated, often via paid-for stream farms, by those “bad actors” in a bid to siphon royalty money away from legitimate artists.<sup>1</sup> Beatdapp, a Canadian company that specialises in “finding missing royalties and identifying streaming fraud”, which has just announced a partnership with Boomy, has suggested that the total share of streams that are fraudulent is closer to 10%.<sup>2</sup>



*“Artificial Intelligence is about to revolutionise the music industry, particularly by perfecting the recommendation system with ever more sophisticated, personalised analyses, [...] and by the management of rights and the monetising – thanks to their capacity for very fine-grained recognition – the usage of protected source material.*

*In the meantime, for more than ten years we’ve been using systems for automatically classifying music, also when it comes to incorporating pieces of music in our database. These systems aren’t just about supplementing the metadata provided, they’re also generating new information. This enriched data is then used by other systems, such as those for recommending music and for detecting fraudulent use.*

*We’ve been concentrating our efforts for several months on recognising the use of generative models and voice cloning. The aim of this initiative is to uncover and continue working on infringements of copyright, to ensure the integrity and authenticity of our music portfolios and to be able to quantify how they’re used.”*

**Aurélien Hérault**

*Chief Innovation Officer at Deezer*



## **PART 3: CHALLENGES**

Copyright, Credit and Consent

Remuneration and Economic Implications

Personal Rights

AI and Music Streaming

**Outlook**

# THERE ARE NEW COLLABORATIONS COMING UP THAT MIGHT INFLUENCE MARKET CONSTELLATIONS



AI music platform Boomy strikes global distribution deal with Warner's distribution service ADA

YOUTUBE ANNOUNCES AI MUSIC PRINCIPLES AND LAUNCHES YOUTUBE MUSIC AI INCUBATOR WITH ARTISTS, SONGWRITERS AND PRODUCERS FROM UNIVERSAL MUSIC GROUP

## Warner Music Group & TikTok Announce First-of-its-Kind Expanded Agreement

*Global deal creates new revenue, marketing and insights opportunities for artists and songwriters*

Warner Music Group and TikTok today announced a wide-ranging, first-of-its-kind partnership that will benefit WMG's artists and songwriters, and TikTok's billion-plus users around the world. The multi-year, multi-product deal licenses the repertoire of Warner Recorded Music and Warner Chappell Music to TikTok, TikTok Music, CapCut, and TikTok's Commercial Music Library.

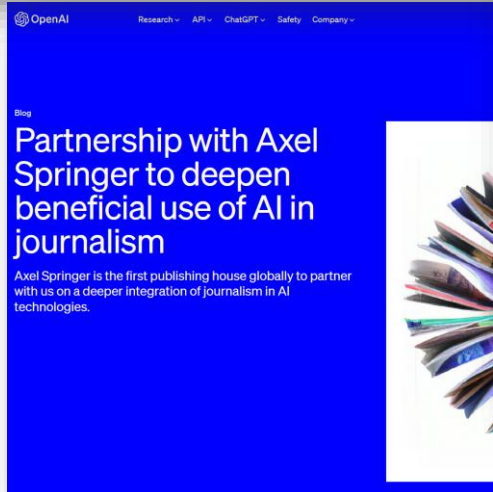
The deal will expand the level of partnership, collaboration, and innovation between the two companies. It will create new revenue, marketing, and insights opportunities for WMG's artists and songwriters, while deepening the engagement with TikTok's huge audience of passionate music fans.

As part of the deal, Warner Music Group and TikTok will find new ways to harness TikTok's revenue generation and promotional capabilities, as well as a wealth of insights. In addition, artists and songwriters will have access to new ways of working with TikTok's vibrant brand partners, as well as to new fandom development and monetization features, like merchandise, ticketing, and digital goods and services, among other opportunities. Further, the deal will see the joint development of additional and alternative economic models.

There are various new collaborations between music and other media companies (e.g. Axel Springer) and AI tech companies, that might influence market constellations.

In August 2023, YouTube Music launched a so called AI Incubator, initially kicking off with artists, songwriters and producers from Universal Music Group, including Anitta, Björn Ulvaeus, d4vd, Don Was, Juanes, Louis Bell, Max Richter, Rodney Jerkins, Rosanne Cash, Ryan Tedder, Yo Gotti, and the Estate of Frank Sinatra, amongst others and other partners from the music industry since then.

In this context, YouTube also publicized the platform's three "fundamental AI music principles [which] are rooted in its commitment to collaborate with the music industry alongside bold and responsible innovation in the space".<sup>1</sup>



# TECH COMPANIES ARE ALREADY WORKING ON MUSIC GENERATION FROM BRAIN ACTIVITY

The fact that tech companies such as Google are now even working on processing brain activity into generative AI models shows the speed at which development is progressing. This raises the question of whether regulation will even come close to keeping up with the rapid market development.



**Timo Denk** • 3.+  
Software Engineer at Google  
2 Monate • Bearbeitet •

+ Folgen

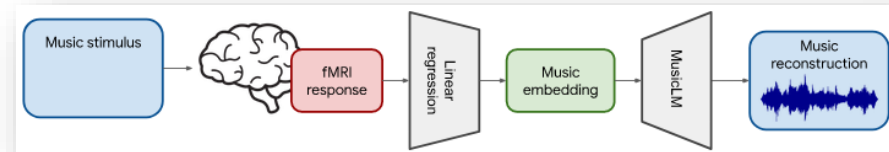
We've done research around reconstructing music from human brain activity (Brain2Music paper: <https://lnkd.in/ecGu6FXW>)

You know these big MRI machines, which are used to get scans of a knee, for example? They can also be used to assess blood flow (fMRI).

This is useful to measure brain activity because when neurons get excited, there is a slight increase in blood flow shortly thereafter. Normally, nothing metallic can go into the tube, but there are special MRI-compatible headphones that allow for music to be played back to people while their brain activity is being recorded.

Now, we use the recorded brain activity to reconstruct the original music with our music generation model, MusicLM. Here are examples of stimulus (what the test subjects heard) and music reconstruction side by side: <https://lnkd.in/eWBUpvXY>

The photos show the MRI scanner, monitoring of an fMRI scan, MRI-compatible headphones, and some paper writing.







*"Between the "doomers", who are worried about the (existential) risk embodied by AI, and the "techno-optimists", convinced of the absolute necessity to move forward, there is a way forward, that of reasonableness.*

*AI is an opportunity, a promise: let's seize it without denying our values, without giving up on what makes society. As is so often the case, virtue lies far from extremes."*

*Alexandra Bensamoun*

*Professor of Law, Paris-Saclay University*



# **FIELDS OF ACTION**



*"From an economic point of view, each technological advance has brought productivity gains and its share of social upheaval. What's exciting here is the speed with which the models can be transformed. For artists, it makes sense to adopt any new tool that enables them to stimulate their creativity and push back certain barriers.*

*More than ever, the creative industries need to get to grips with this issue quickly, both to seize the opportunities and to better anticipate the impacts and correct the most negative ones."*

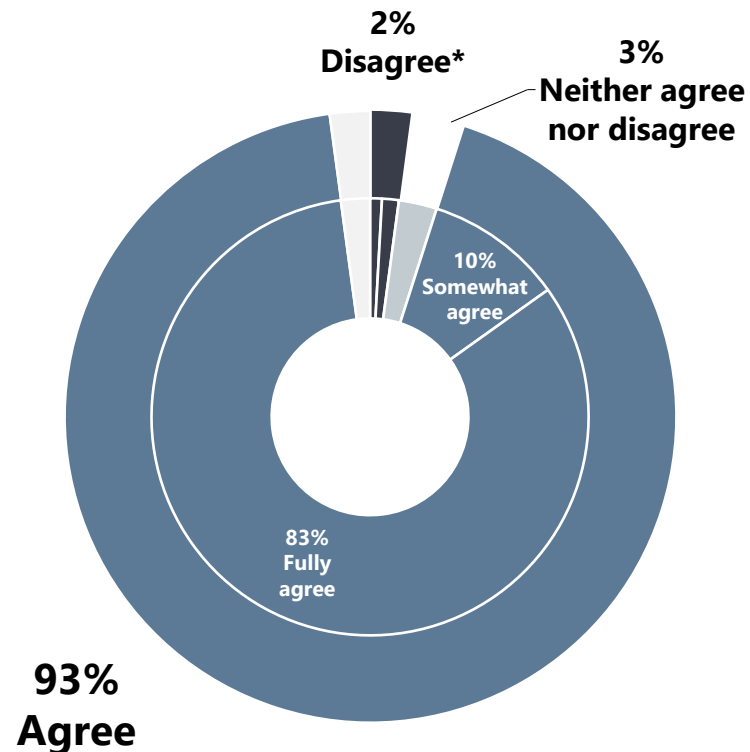
*Thomas Jamois*

*Publisher (Wise Music France / Velvetica Music), member of Sacem board and strategic advice on innovation Committee*

# POLITICAL IMPLICATIONS RELATED TO GEN AI

Of all surveyed music authors, **93% call for policymakers to pay more attention to the challenges related to AI and copyright!**

***"Policymakers should pay more attention to the challenges related to AI and copyright."***



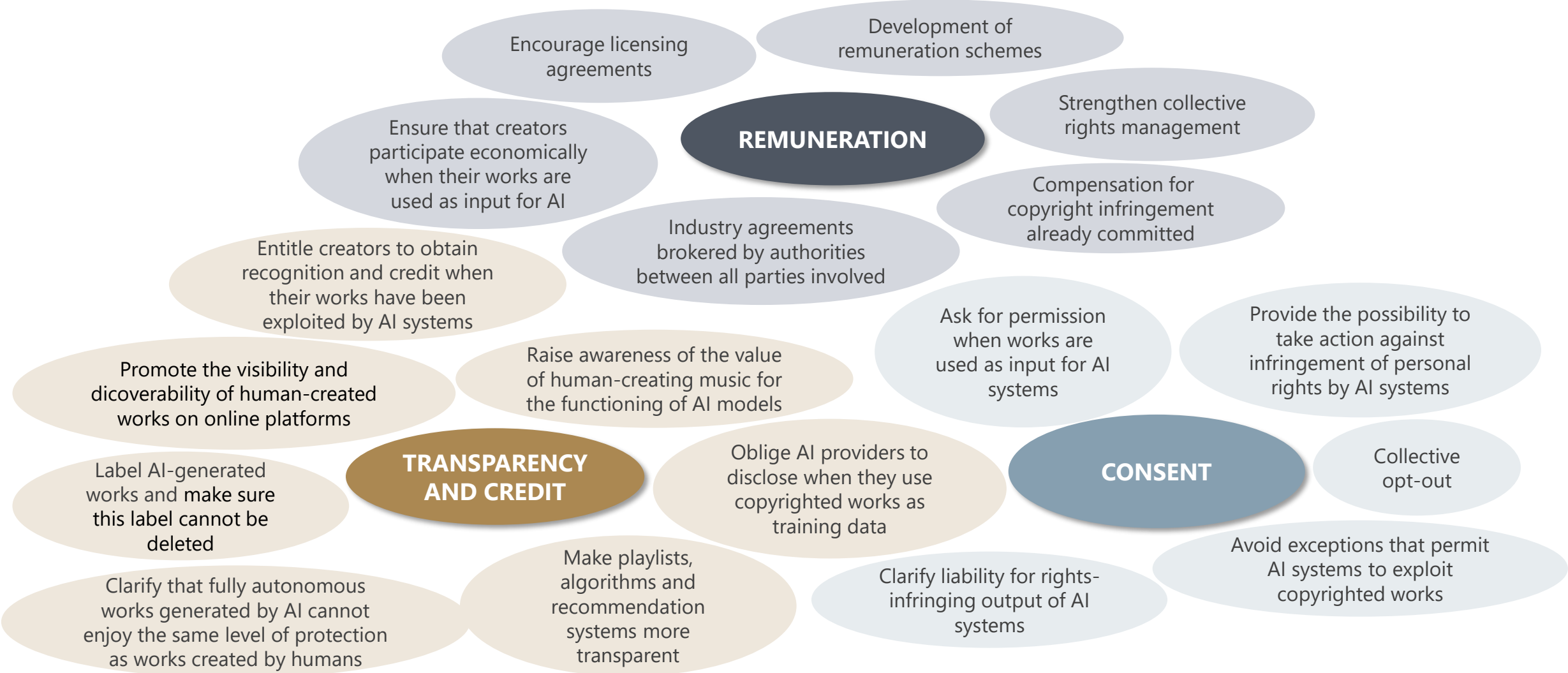
# SEVEN DEMANDS FROM MUSICIANS IN CONNECTION WITH AI

In July 2023, several international associations representing mainly authors, performers and collecting societies from the music sector,<sup>1</sup> published an open letter setting out seven principles that should guide legislators in the regulation of generative AI.



1. AI systems analyse, scrape and exploit vast amounts of data, typically without authorisation. **Creators' and performers' rights must be upheld and protected when exploited by AI systems.**
2. **Licensing solutions** should be available for all potential exploitation of copyright works, performances and data by AI system.
3. AI systems are enabled to exploit copyrighted works through legal exceptions, e.g. for text and data mining. **Exceptions for text and data mining which do not provide for effective opt-out by rights holders should be avoided.**
4. If the work of authors and performers has been exploited by AI systems, this should be **mentioned by name with appropriate credits.**
5. **Transparency obligations should apply** for the use of creative works and performances by AI systems to ensure fairer AI practices.
6. **AI companies should be held liable** for activities and results that infringe the rights of authors.
7. AI models are merely a tool. **Policymakers must clarify that fully autonomous works generated by AI cannot enjoy the same level of protection as works created by humans.**

# FIELDS OF ACTION FOR GENERATIVE AI IN MUSIC





*"Artificial Intelligence and its tools totally fascinate me and I know that I'm also very open to persuasion when it comes to the capabilities of these new technologies, for example in music production, and also to making use of these. But there have to be rules here, clear and definitive! It needs to be self-evident that AI shouldn't completely replace creative processes, but only assist or inspire them. Behind every piece of art, every song, every text there must always be a person and an artist, otherwise art loses its value.*

*Legal principles governing use, remuneration, protection rights relating to performance and the distribution of earnings from AI-generated artworks must now be standardised across the whole world – and artists whose work is used as training data for an AI must be compensated and reimbursed from profits."*

*Diane Weigmann*

*Singer-songwriter*



# APPENDIX

## Additional Survey Results

Dubbing/Subtitling: Additional Results  
List of Sources



# SURVEY RESPONSES

## POPULATION

- The population for this survey consists of about 290,000 GEMA and SACEM members. The total members are made up of:
  - ~200,000 SACEM members
  - ~90,000 GEMA members

## SAMPLE

- The final sample consists of 15,073 respondents. Out of the total respondents there were:
  - 9,377 SACEM members (62%)
  - 5,696 GEMA members (38%)

## RESPONSE RATE

- The overall response rate was 5.2%.
- For SACEM members the response rate was 4.7%.
- For GEMA members the response rate was 6.3%.

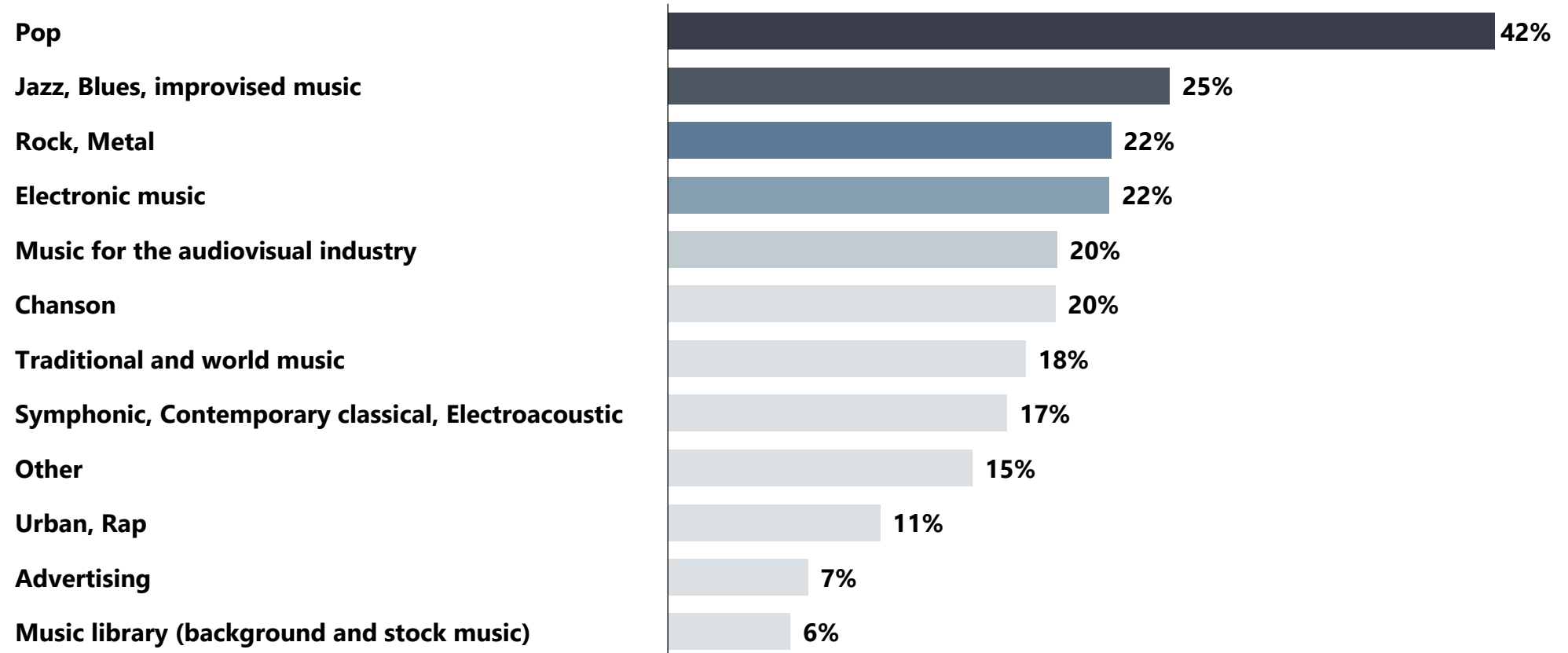
## DUBBING/SUBTITLING AUTHORS

- Out of the 9,377 SACEM respondents there were 255 dubbing/subtitling authors (2.7%).

# MUSIC GENRES

Most works in the repertoire of the questioned GEMA and SACEM members belong to the genre "Pop" with 42%. One fourth of the works (25%) belong to the genres "Jazz, Blues and improvised music". With 22% each, the genres of "Rock and Metal" and "Electronic music" follow in third place. The smallest number of works in repertoire can be found in the categories „Advertising" and „Music library".

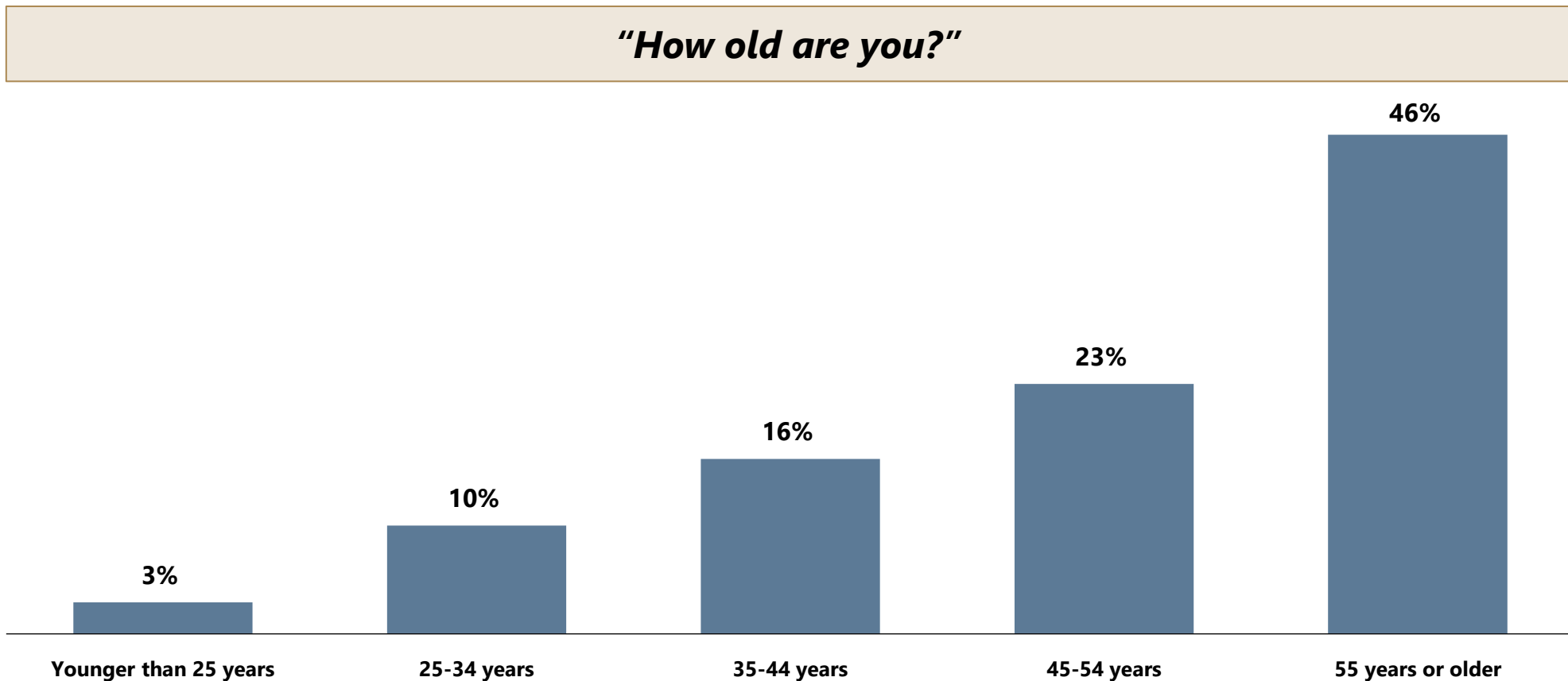
***"Which genre(s)/categories would you say the works in your repertoire (mainly) belong to?"***



# AGE DISTRIBUTION

With 46%, most of the survey's participants are older than 55 years. A further 23% are between 45 and 54 years old. This makes up a total majority of survey participants who are older than 45 years (69% in total).

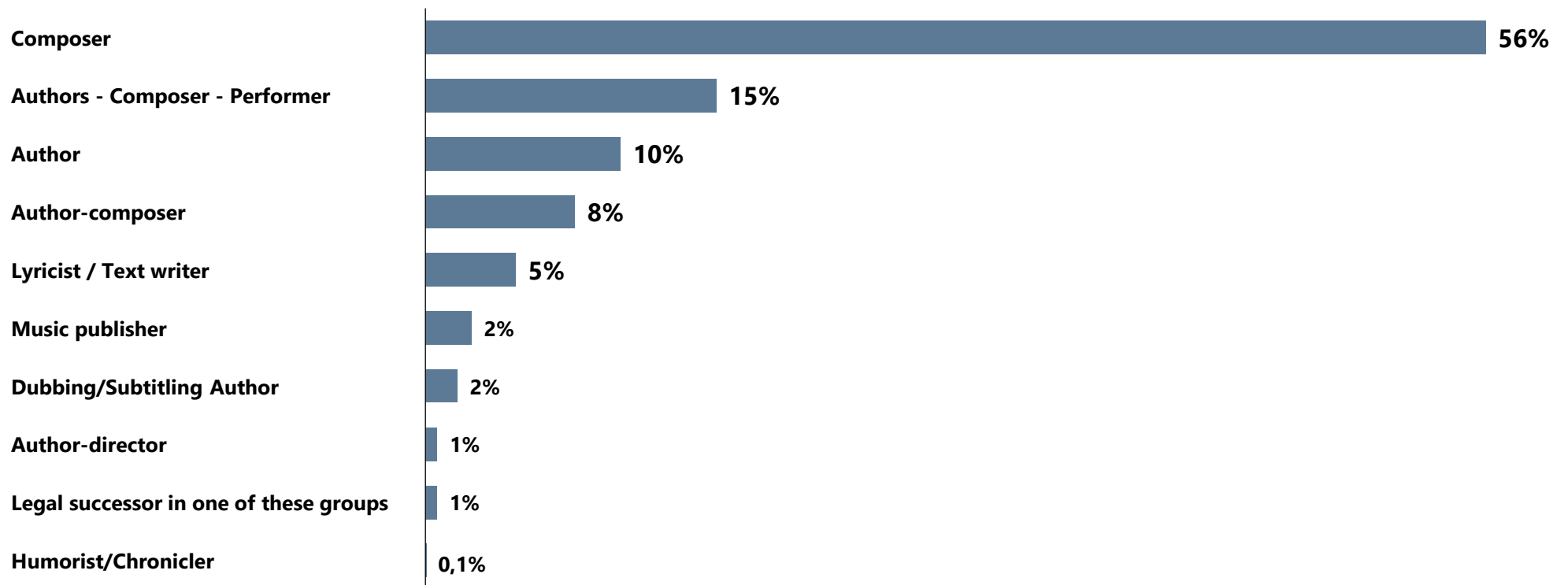
The age groups of members younger than 44 years comprise a total of 29% of survey participants, out of whom only 3% are younger than 25.



# MAIN FOCUS OF WORK

The majority of GEMA/SACEM members are mainly active as composers (56%). Another 15% engage in a multifaceted role as authors, composers, and performers. Authors, excluding composers, represent 10% of respondents, while those who combine authorship and composition make up 8%. A smaller proportion, 5%, identify specifically as lyricists or text writers. Music publishers, dubbing/subtitling authors, author-directors, and legal successors in these groups collectively make up the remaining percentages, with humorists/chroniclers representing 0.1%.

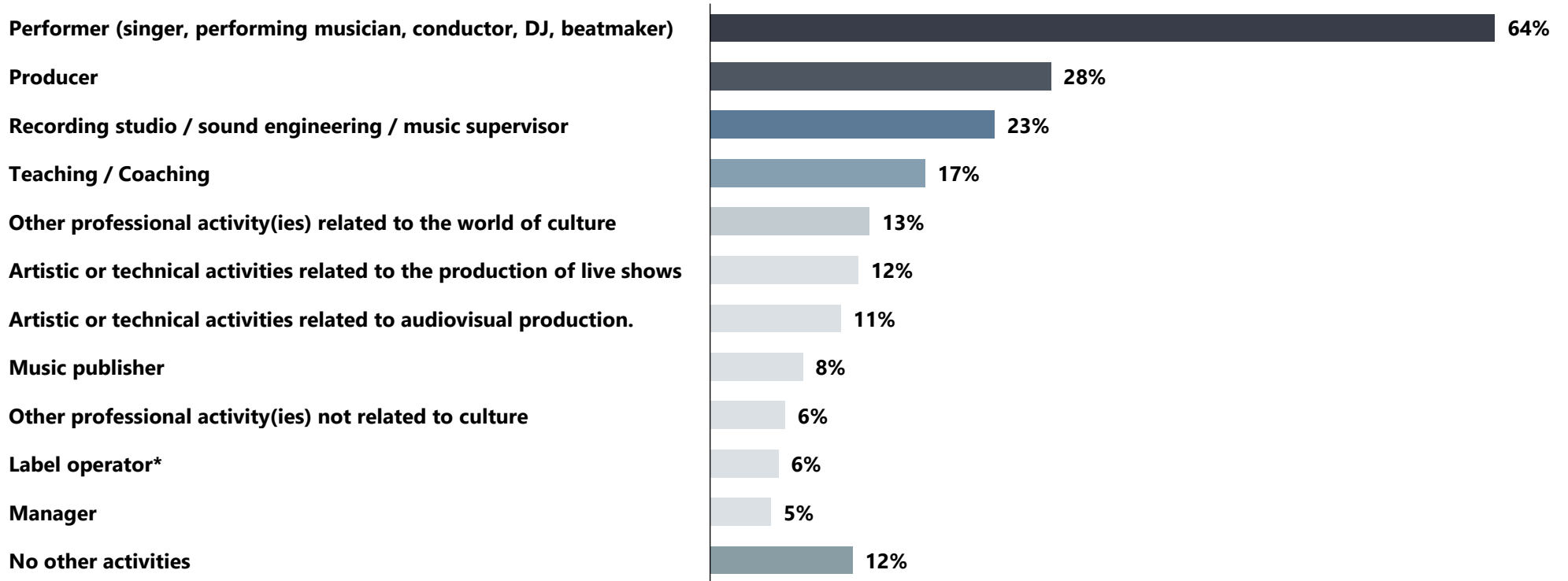
## *"In which area are you mainly active?"*



# OTHER ACTIVITIES

Alongside their main area of work GEMA/SACEM members were asked for additional activities in the creative industries/music sector. The most prevalent additional activity is performing, with 64% engaging as singers, performing musicians, conductors, DJs, or beatmakers. Production is the second most common, with 28% identifying as producers. Label operation and management roles are undertaken by 6% and 5% of respondents respectively. 12% report having no other activities beyond their primary role in the creative industries or music sector.

***“Do you carry out any other activities in the creative industries/music sector?”***

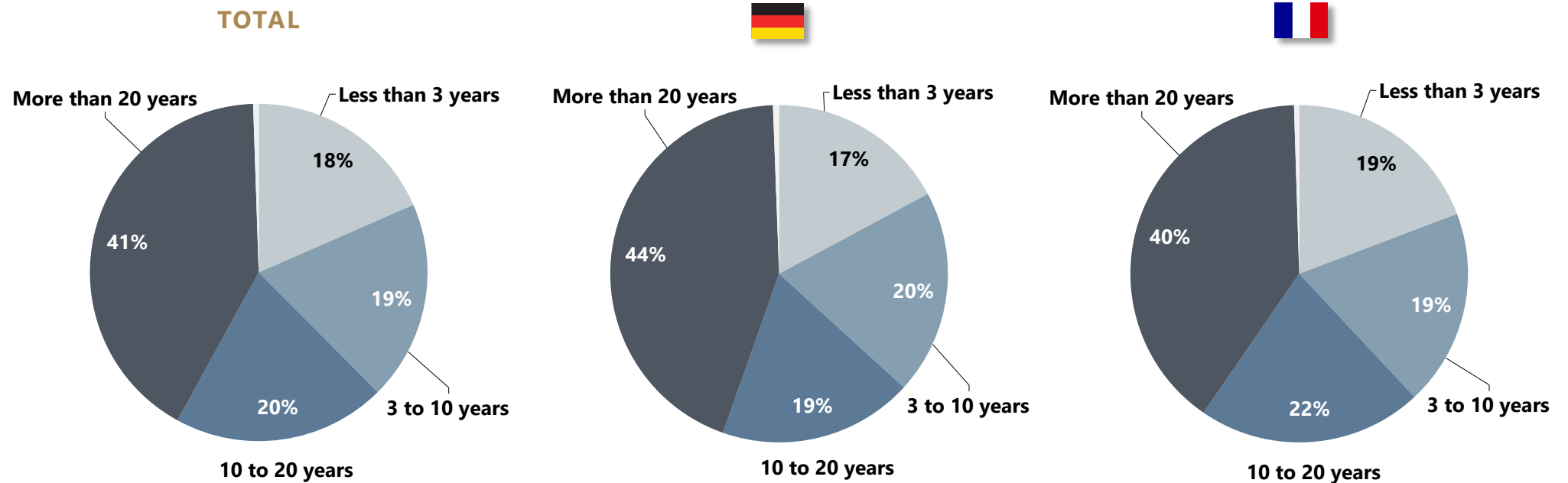


# GEMA/SACEM SENIORITY

42% of GEMA/SACEM members have been part of the collecting societies for more than 20 years. Seniority status of less than 3 years (19%), 3 to 10 years (19%) and 10 to 20 years (21%) make up about 20% of members each.

The comparison of total numbers when split between GEMA and SACEM members shows no significant differences.

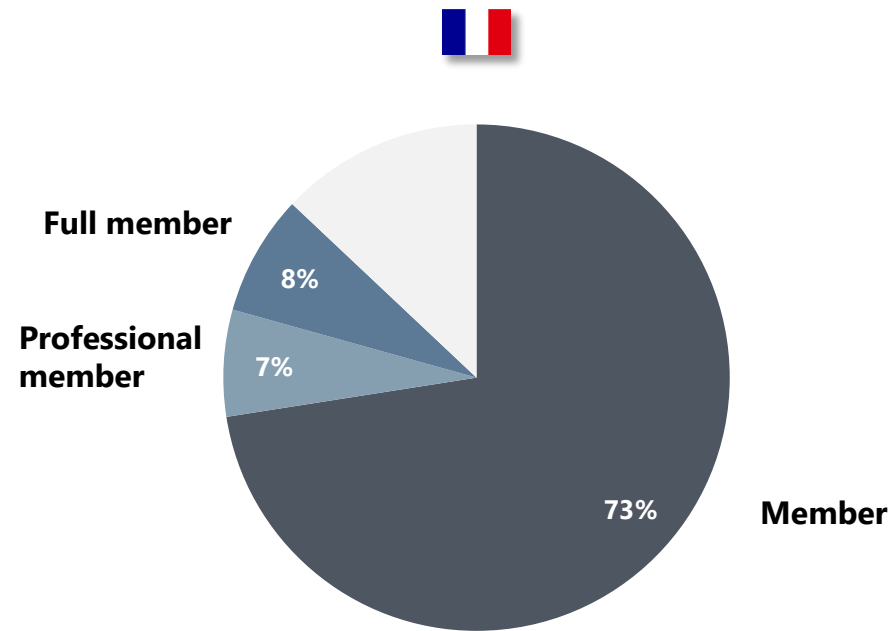
## “What is your seniority at GEMA/SACEM?”



# SACEM STATUS

The majority of SACEM's questioned members have the status "Member" (73%), while 8% are full members and a further 7% are professional members. The member status is quite evenly distributed throughout the age groups, with slightly more full members in the oldest age group.

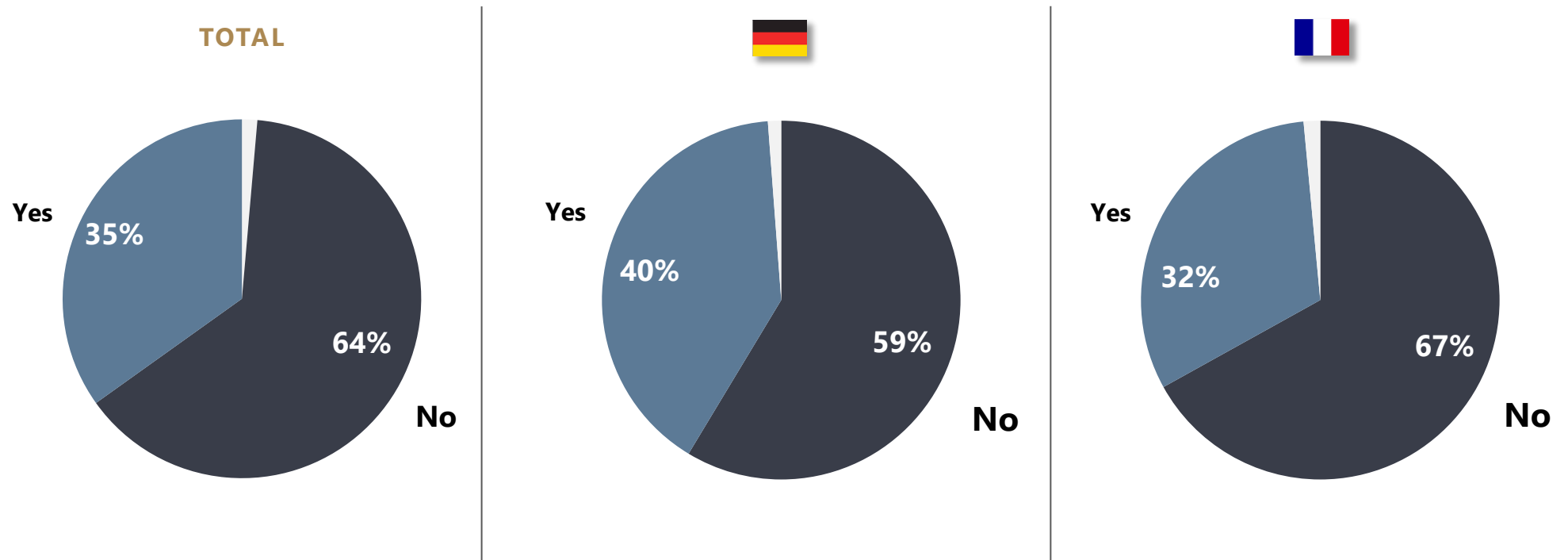
***"What is your SACEM status?"***



# USE OF AI

Of the questioned GEMA/SACEM members, 35% have used AI technologies in their work with music and creation in general, while the majority of members (64%) have not. Comparing GEMA and SACEM members, 40% of GEMA members and 32% of SACEM members have used AI in their work before.

***“Have you used AI technologies in your work with music and creation in general?”***

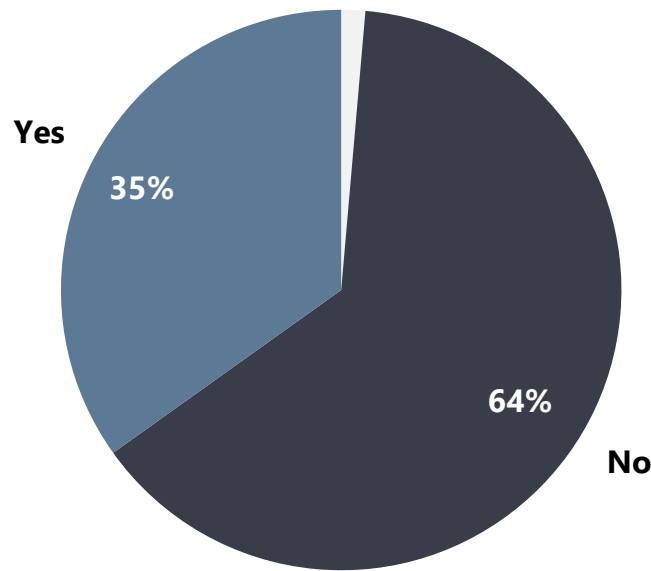




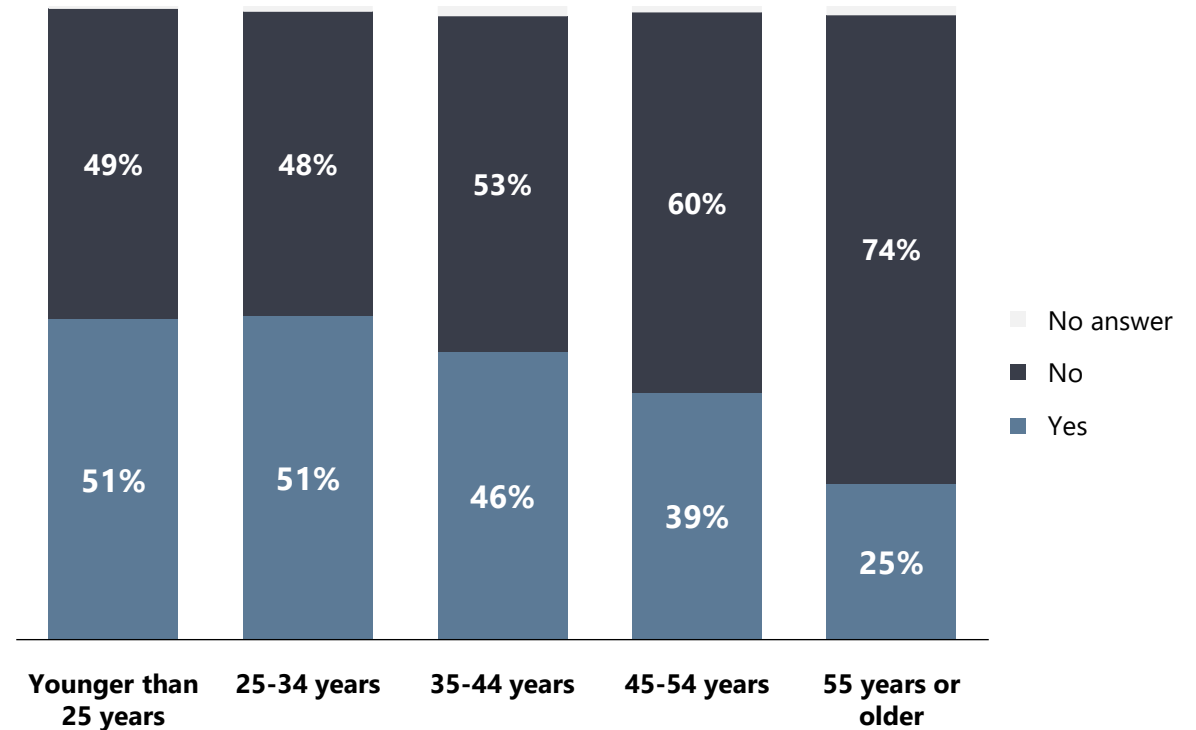
# USE OF AI TOTAL BY AGE GROUP

The use of AI is already a reality for many music authors and creators. Of the 15k questioned GEMA/SACEM members surveyed for this study, 35% have used AI technologies in their work with music and creation in general, while the majority of members (64%) have not. The younger the members are, the more likely they are to have used AI technologies in their work. Of the questioned members younger than 35, more than half (51%) have used AI, while in the age group of 55 years and older only 25% have used AI previously.

***"Have you used AI technologies in your work with music and creation in general?"***



Total

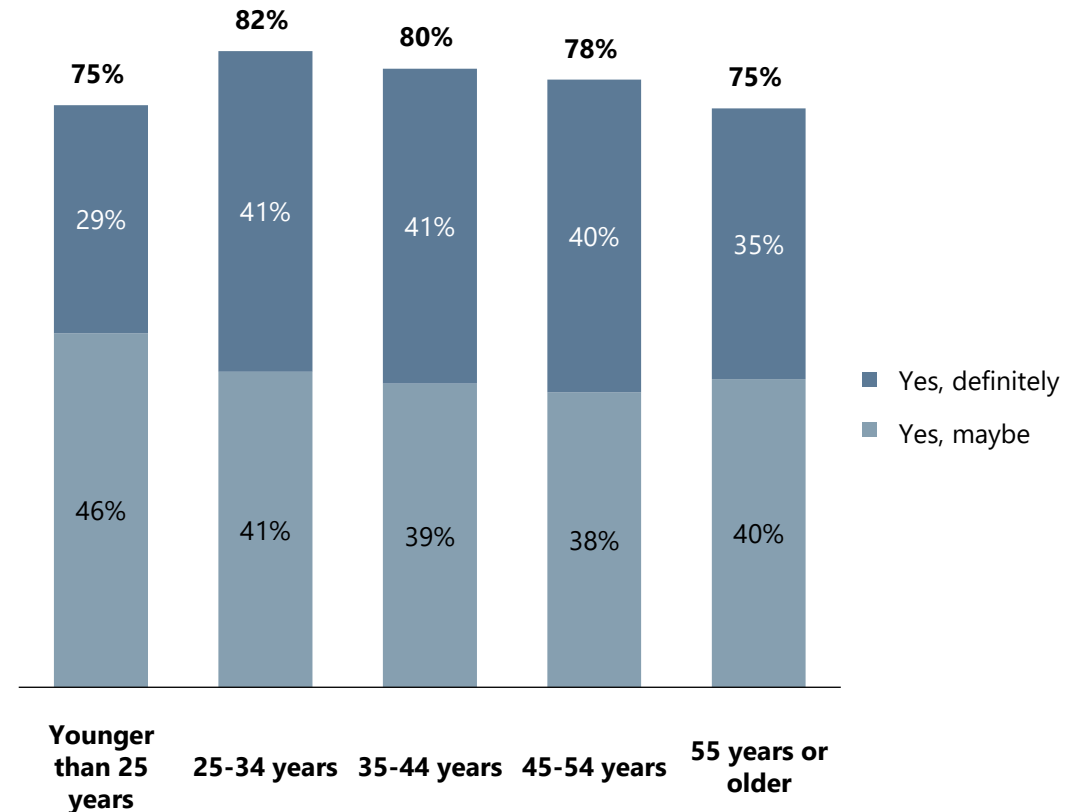
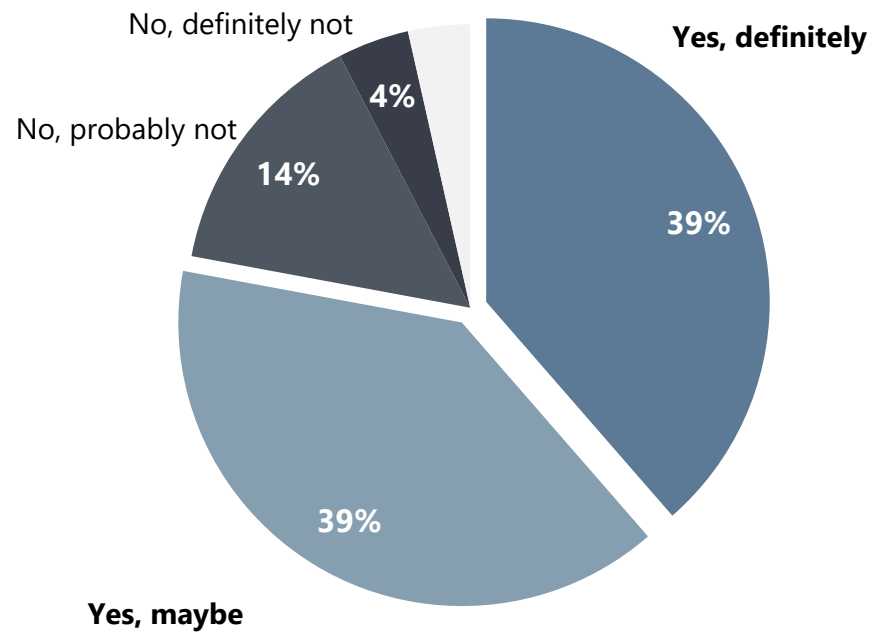


# FURTHER AI USE IN CREATIVE ACTIVITY

Those who have previously used AI in their creative activity with music were asked whether they plan to continue using AI in their activities. Most of them (78%) intend to keep on using AI in the future while about 18% do not.

The highest intention to use AI in the future comes from members of the age group 25 to 34 years with 82% in total.

***“Do you plan to continue using AI in your creative activity with music?”***



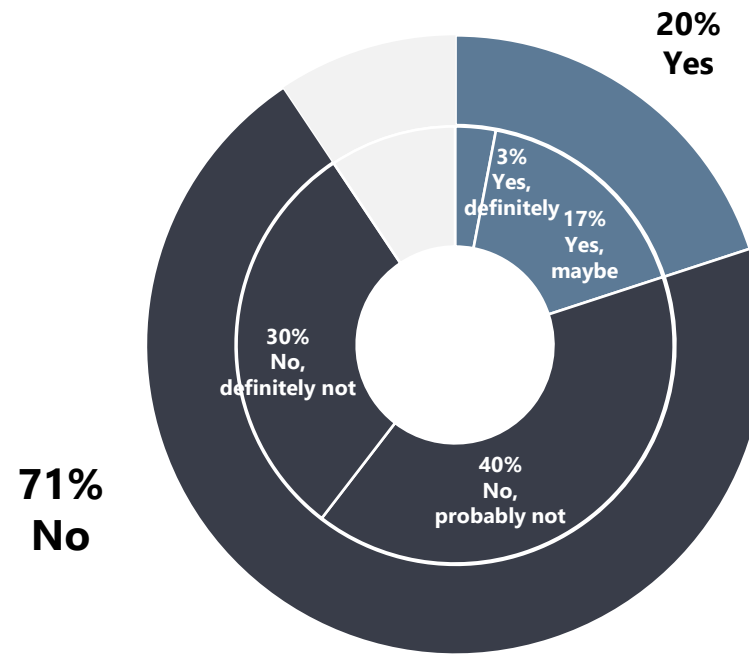
Source: Goldmedia survey on behalf of GEMA and SACEM 2023, n=1,671; Basis: GEMA and SACEM members. Rounding differences possible.

Difference to 100% = No answer (4%). A study conducted by Pirate (n=1,141) found that “among those who hadn't yet, 46% expressed their willingness to consider using AI music tools in the future”, see [Pirate \(2023\)](#).

## FUTURE AI USE OF NON-USERS

Of the roughly two-thirds of music authors surveyed who have not yet used AI, 20% said they might do so in the future. 71% do not expect to do so, with 30% ruling it out completely.

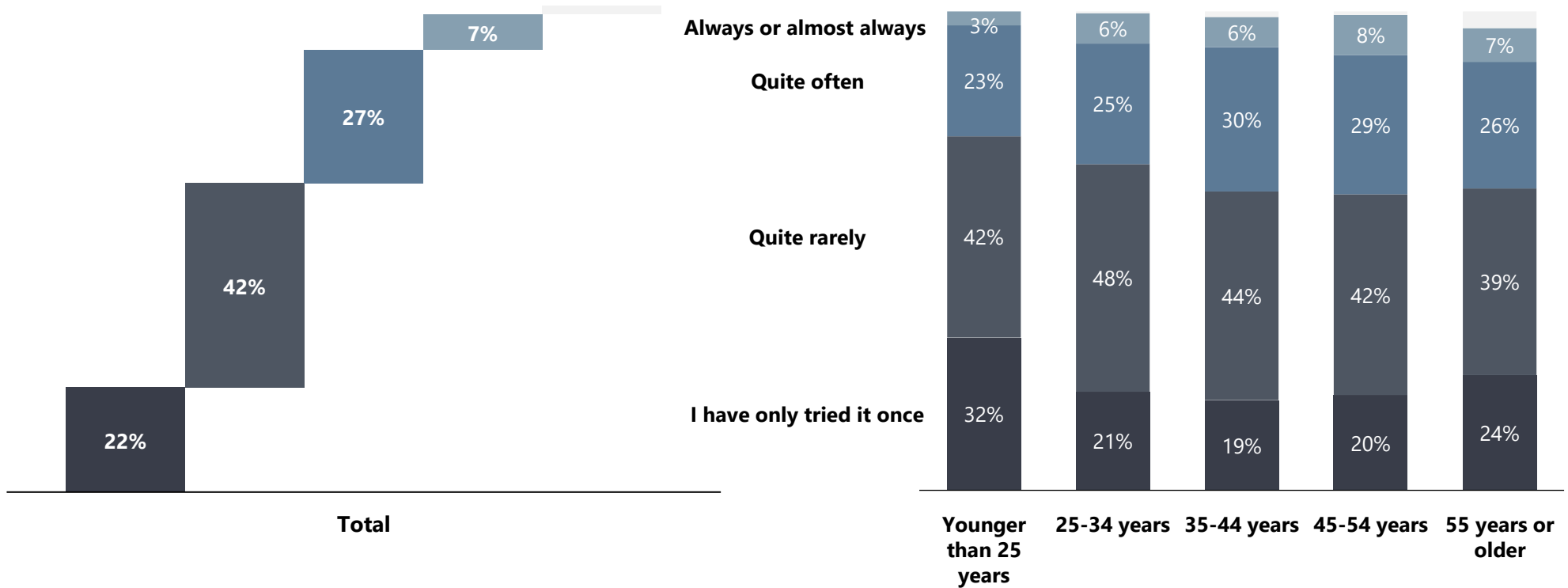
***“Can you imagine using AI for your work with music in the future?”***



# AI USE IN CREATIVE ACTIVITY

GEMA and SACEM members who have already used AI in their creative activity show varied use from a more occasional to regular integration of AI technologies: 22% of members have only tried AI use once, and a further 42% use it quite rarely. About 27% incorporate AI quite often, and 7% even use it always or almost always. Notably, those members younger than 25 years show lower frequent use of AI technologies, while the age groups from 45 years show the highest regular AI use.

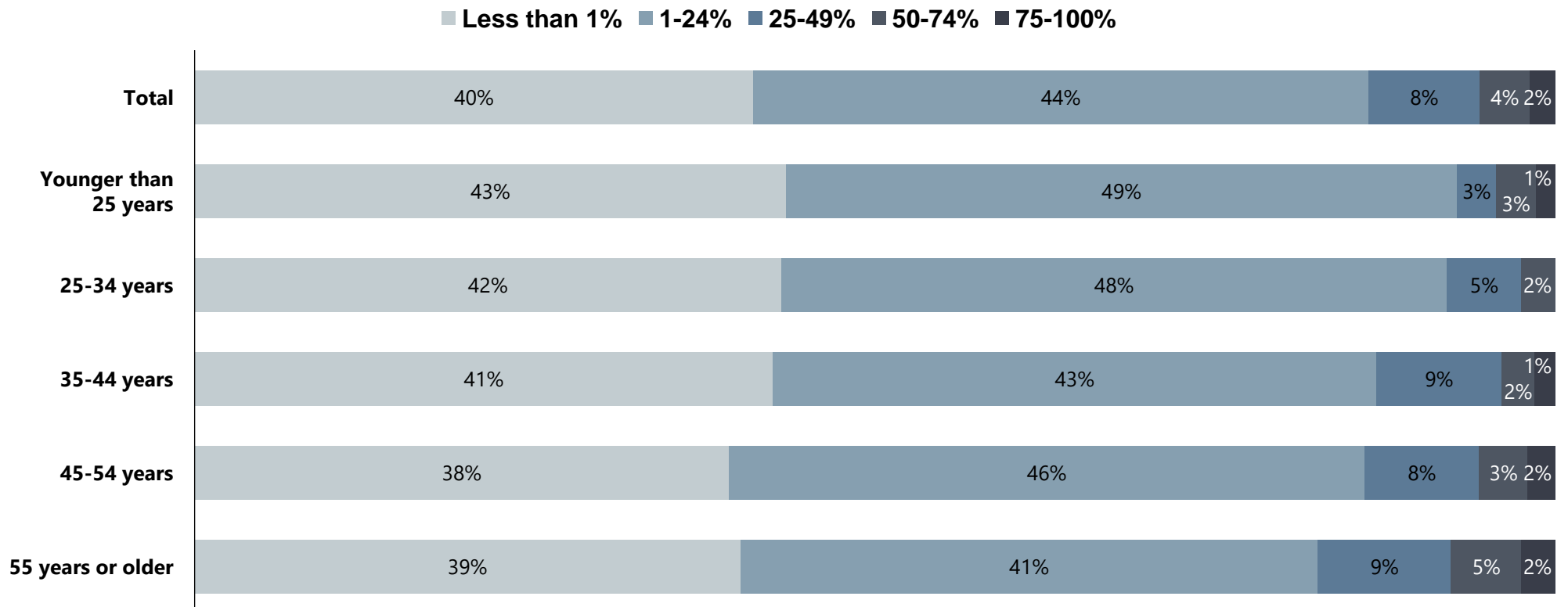
**"How often do you use AI technologies in your creative activity with music?"**



# CONTRIBUTION OF AI IN CREATIVE WORK

Those respondents, who have used AI in their creative work, were asked how much AI contributes on average to their work with music and creation in general. Throughout all age groups, most members estimate the contribution of AI to be less than 1% (40% of members in total) or a maximum of 24% (44% of members in total). In total about 2% of the members account 75 to 100% of their work with music or other type of creation as contributed by AI.

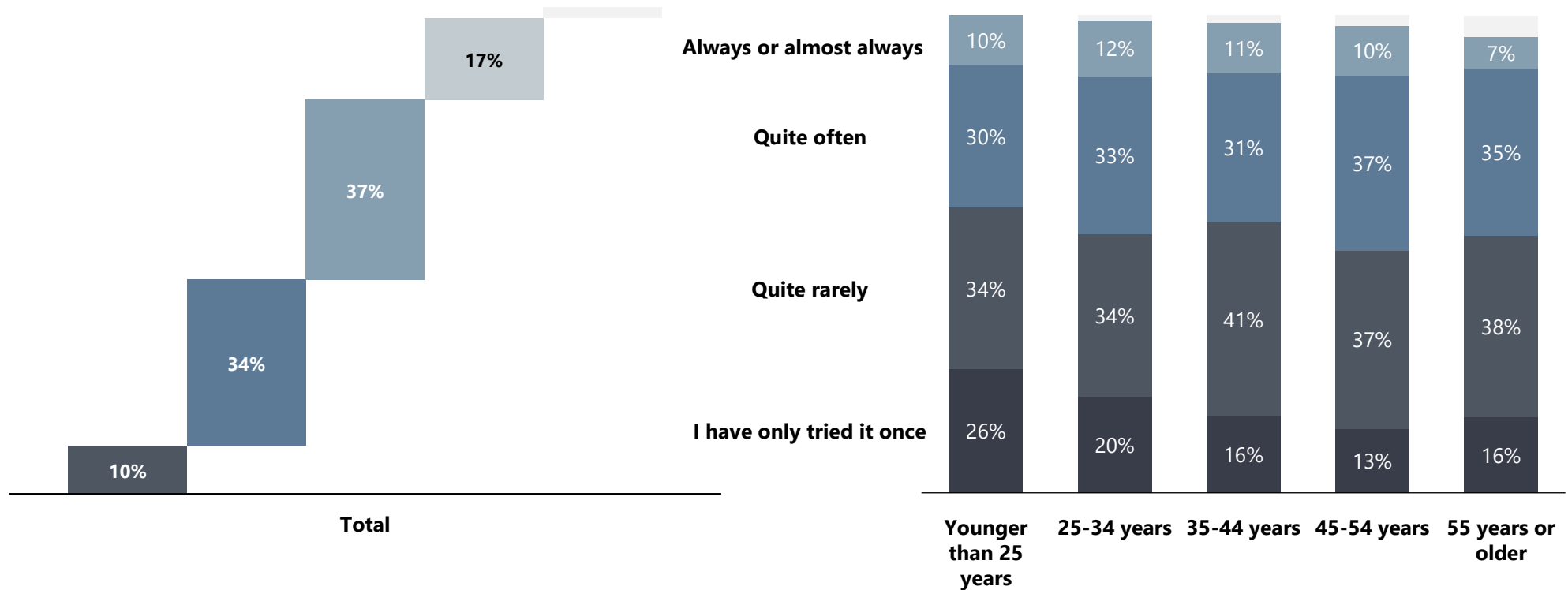
***“On average, what would you say the creative contribution of AI to your music or other type of creation amounts to?”***



# AI USE IN SUPPORTING ASPECTS

GEMA and SACEM members show varied use of AI technologies in supporting aspects of the music sector. 10% of members have only tried AI use once, whereas 34% use it quite rarely. About 37% incorporate AI quite often, and 17% even use it always or almost always. The age group of members 45 to 54 years old shows the highest regular AI use while the youngest members show the lowest rate of frequent AI technology use.

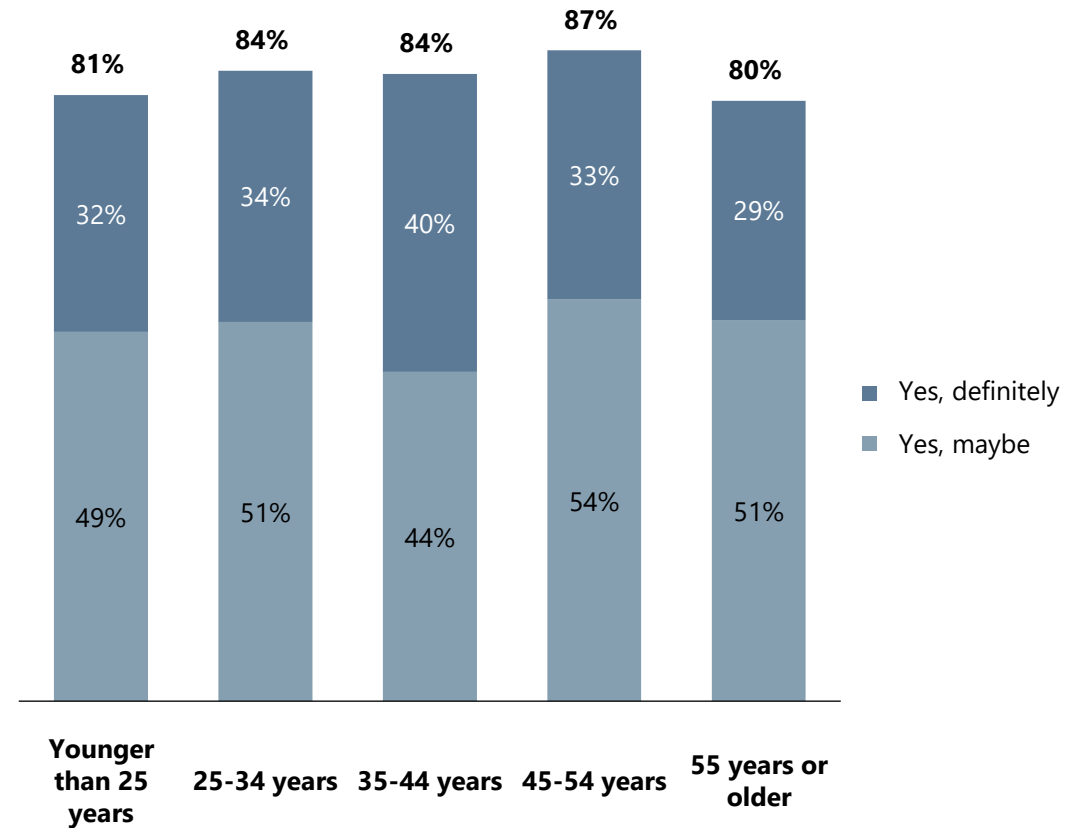
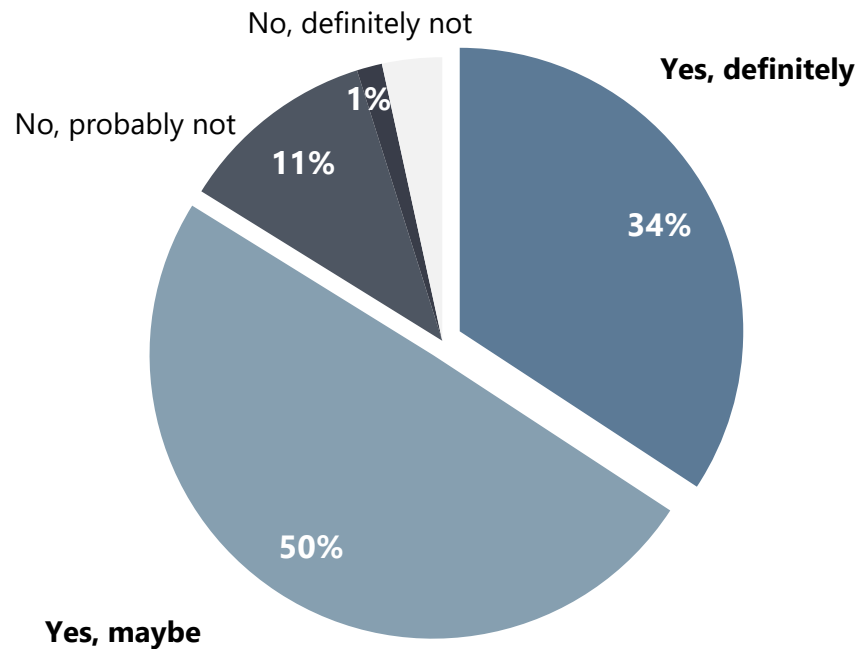
***"How often do you use AI technologies in supporting aspects of the music sector (marketing, promotion, art work, social media, administration etc.)?"***



# FURTHER AI USE IN SUPPORTING ASPECTS

Out of those who have used AI in supporting aspects before, 84% plan to continue using AI in those aspects while about 12% do not. The highest intention to use AI in the future comes from members of the age group 45 to 54 years with 87% in total.

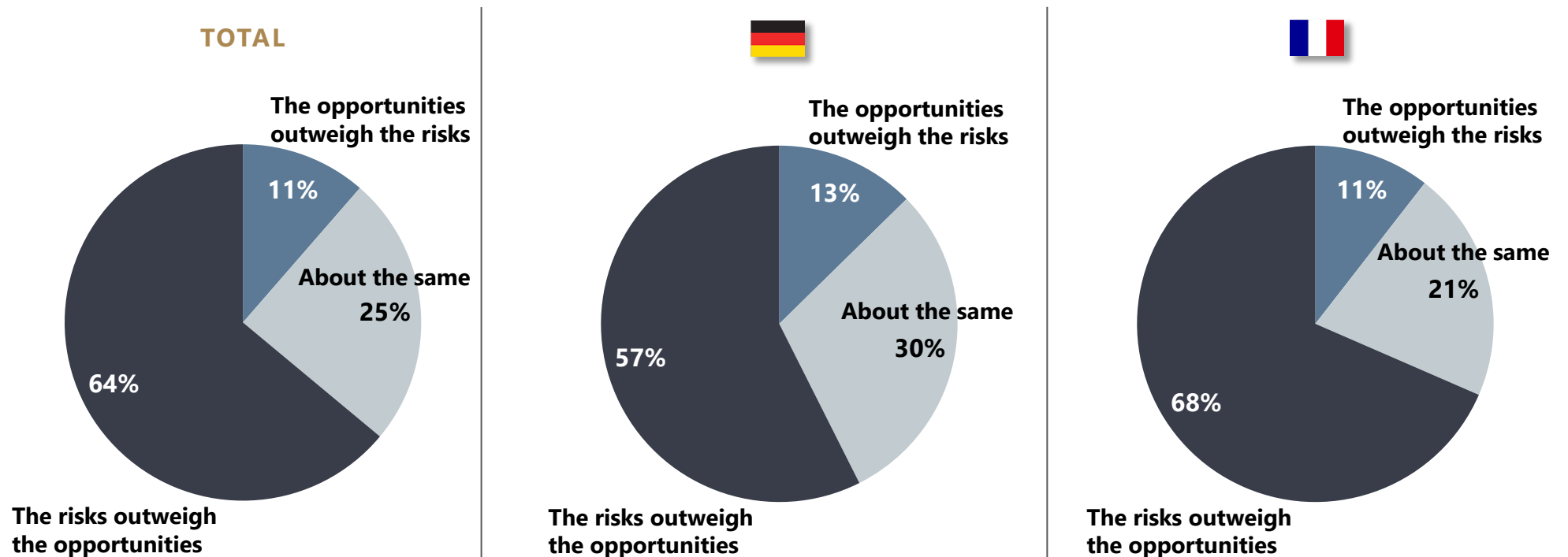
***“Do you plan to continue using AI in supporting aspects like marketing, promotion, art work, social media, administration etc.?”***



# OPPORTUNITIES AND RISKS OF AI

In total about 64% of the questioned GEMA/SACEM members think that the risk of AI use outweighs its possible opportunities. On the other hand, 11% believe that the opportunities outweigh the risks, while about a quarter of the surveyed members (25%) think the risks and opportunities of AI roughly balance out. Between GEMA and SACEM members, GEMA members seem slightly more optimistic when it comes to AI use, as 30% think that the risks and opportunities are generally balanced (21% for SACEM).

***"All in all, do you think the opportunities outweigh the risks when it comes to AI in music and creation in general or do the risks outweigh the opportunities?"***

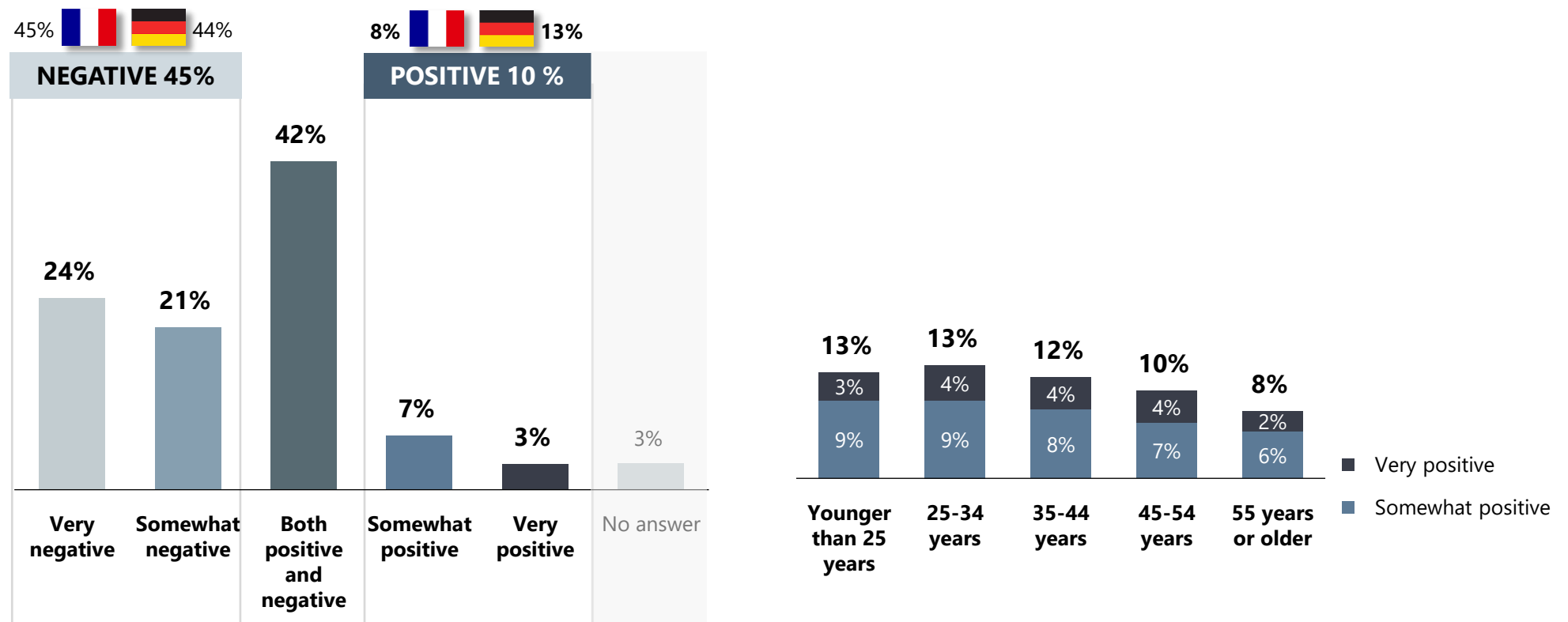




# ASSESSMENT OF AI USE

10% of the questioned GEMA/SACEM members assess the use of AI in the music sector and in creation in general to be positive, while 45% assess its use negatively. Almost as many members (42%) assess the use of AI to be both: positive and negative. Looking at the age groups, members up to 34 years assess the use of AI most positively, while members 55 years or older assess its use most negatively.

***"How would you assess the use of AI in the music sector and in creation in general?"***

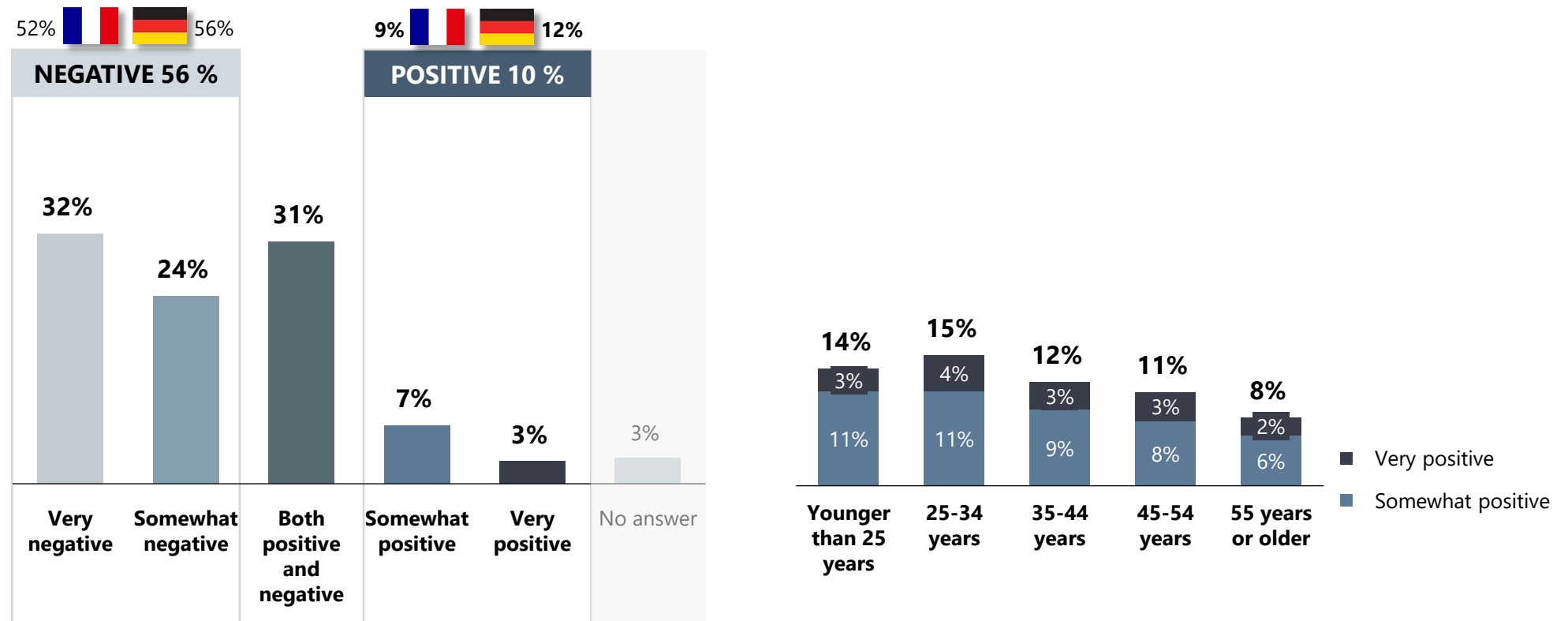


Source: Goldmedia survey on behalf of GEMA and SACEM 2023, n=14,771; Basis: GEMA and SACEM members. Rounding differences possible. A study conducted by TuneCore (n=1,558) found that 50% of the surveyed artists are "aware of and engaged in AI [and] have a positive perception of its benefits and opportunities", see TuneCore (2023), p. 5; A study conducted by TEOSTO (n=717) shows a somewhat positive assessment towards the use of AI in music in 43% of study participants.

# ASSESSMENT OF AI USE IN CREATIVE ASPECTS

In comparison to the use of AI in general, the use of AI in terms of the creative aspect is assessed more negatively. Out of the questioned GEMA/SACEM members 56% assess the use negatively while 10% assess the use of AI in creative aspects to be positive. 31% of the questioned members assess the use of AI for creative aspects positively as well as negatively. Again, members up to 34 years assess the use of AI most positively, while members 55 years or older assess its use most negatively.

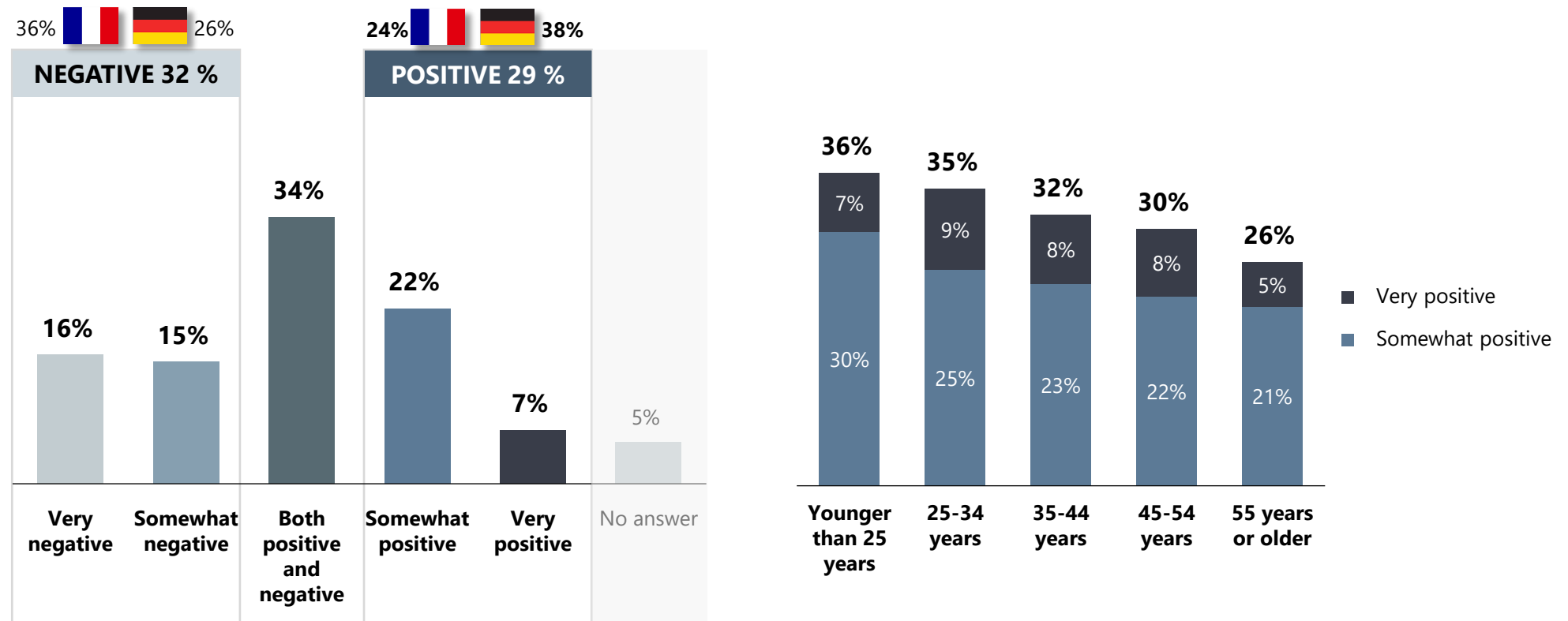
***"How would you assess the use of AI in the creative aspects of the music sector and in creation in general?"***



# ASSESSMENT OF AI USE IN RECORDING

The use of AI in the recording, editing, mixing and mastering of music is assessed positively by a total of 29% of the questioned GEMA/SACEM members. In the age groups of people younger than 25 and up to 34 years, the use is viewed positively by 36% or 35%. In total, about 32% of members assess AI in recording etc. negatively, with a further 34% of the members assessing its use to be both positive and negative.

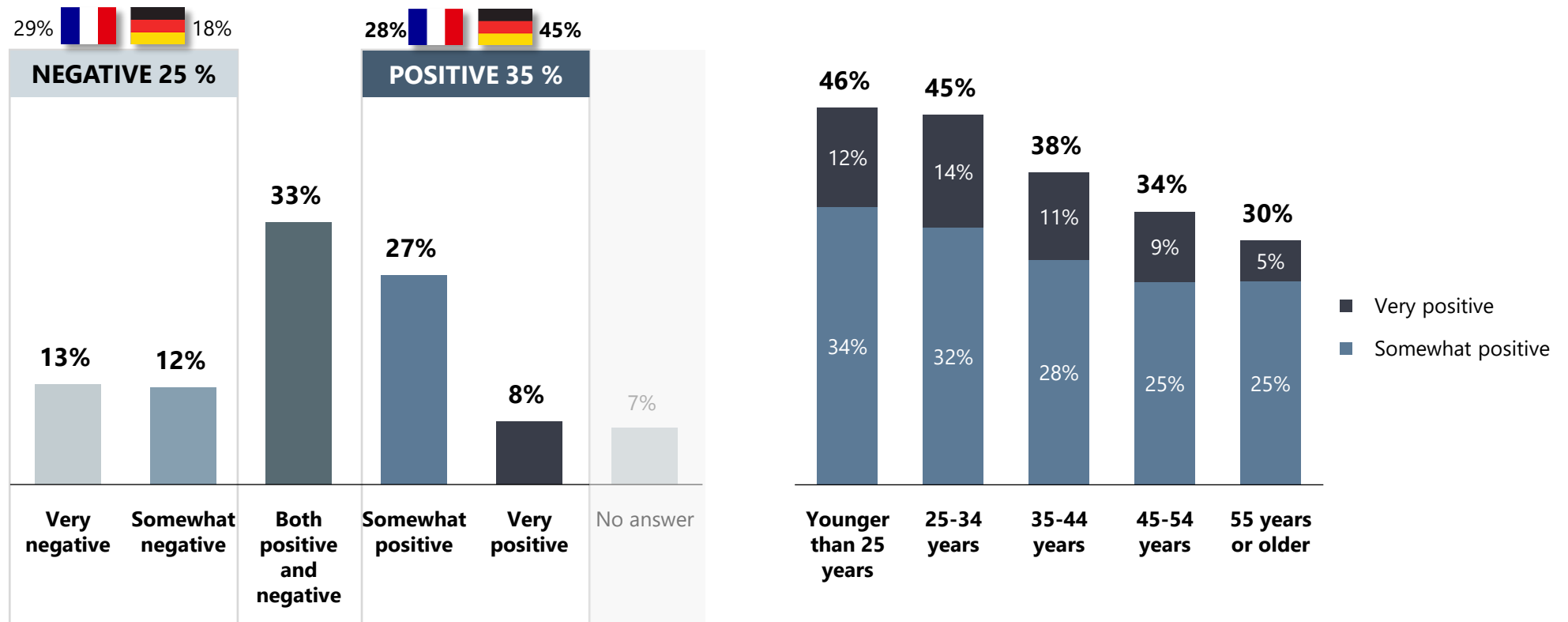
## "How would you assess the use of AI in recording/editing/mixing/mastering of music?"



# ASSESSMENT OF AI USE IN SUPPORTING ASPECTS

The use of AI in supporting aspects of the music sector (e.g. in marketing, promotion, artwork, distribution etc.) is assessed most positively of all AI uses. A total of 35% of the questioned GEMA/SACEM members rate AI use in this segment to be positive, while only 25% rate it negatively. A third of all members assess the use to have positive as well as negative aspects. In the age groups of people younger than 25 and up to 34 years, the use is viewed positively by almost half of the members (45/46%).

***"And how would you assess the use of AI in supporting aspects of the music sector (marketing, promotion, artwork, social media, distribution etc.)?"***

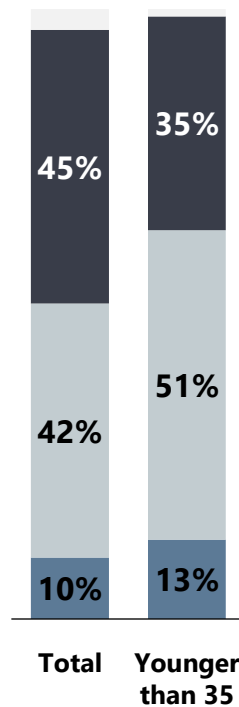


# ASSESSMENT OF AI USE BY AGE

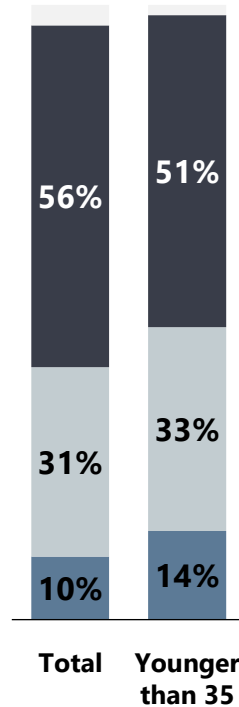
The younger the members of GEMA/SACEM are, the more likely they are to assess AI use in the music sector more positively. The comparison between the average (total) of survey participants and those participants younger than 35 shows the difference in assessment, where the younger members assess AI use more positively in every area of the music sector.

***"How would you assess the use of AI in the music sector and in creation..."***

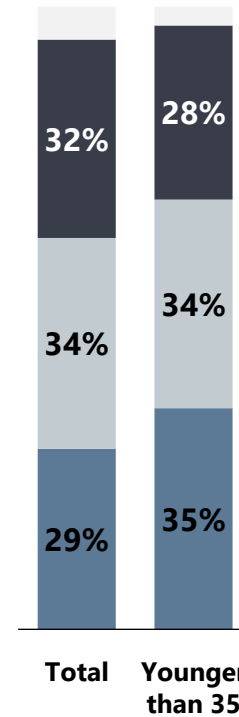
**...in general**



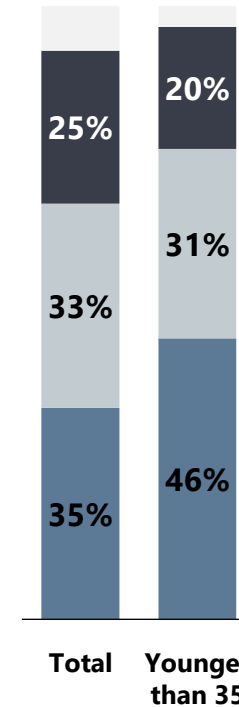
**...in creative aspects**



**...in recording/editing/mixing/mastering**



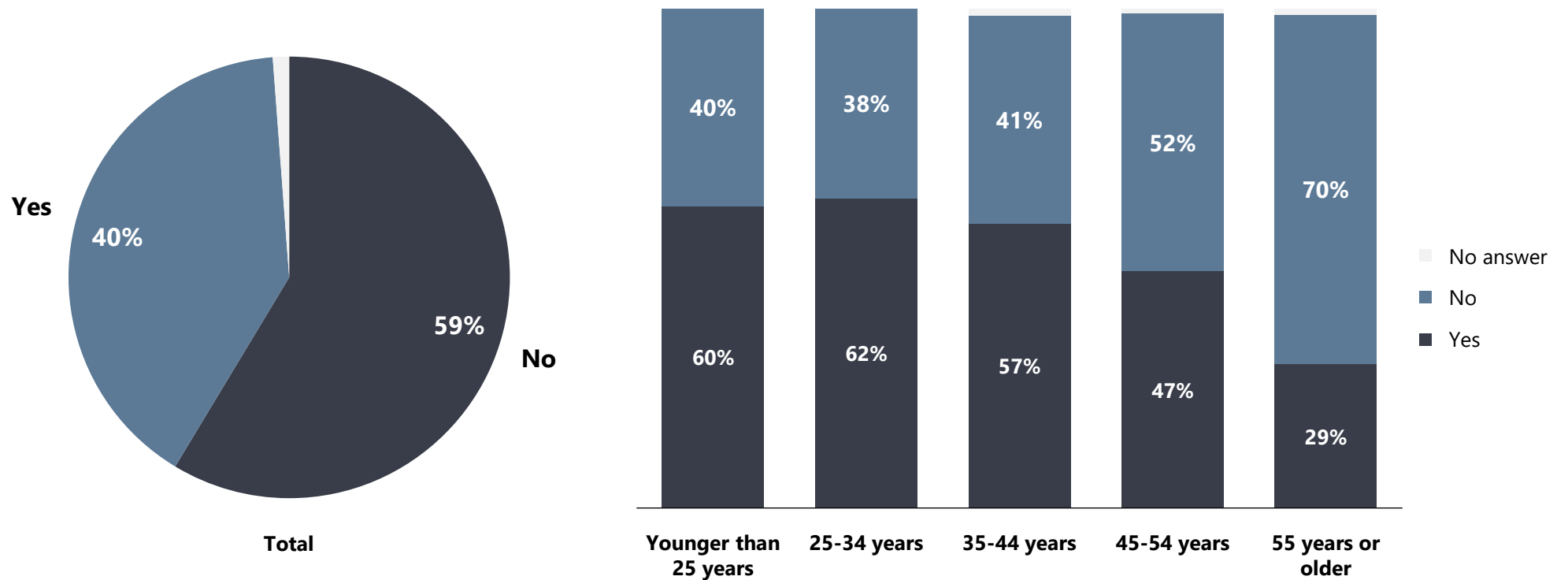
**...in supporting aspects\***



# USE OF AI: GEMA MEMBERS

40% of GEMA members have used AI technologies in their work with music and creation in general, while 59% have not. Out of the members, all age groups up to 44 years show high rates of AI use of about 57 to 62%. Of the members in the age group of 45 to 54 years almost half (47%) have used AI before. Those members aged 55 years or older show AI use of nearly one-third (29%).

***"Have you used AI technologies in your work with music and creation in general?"***

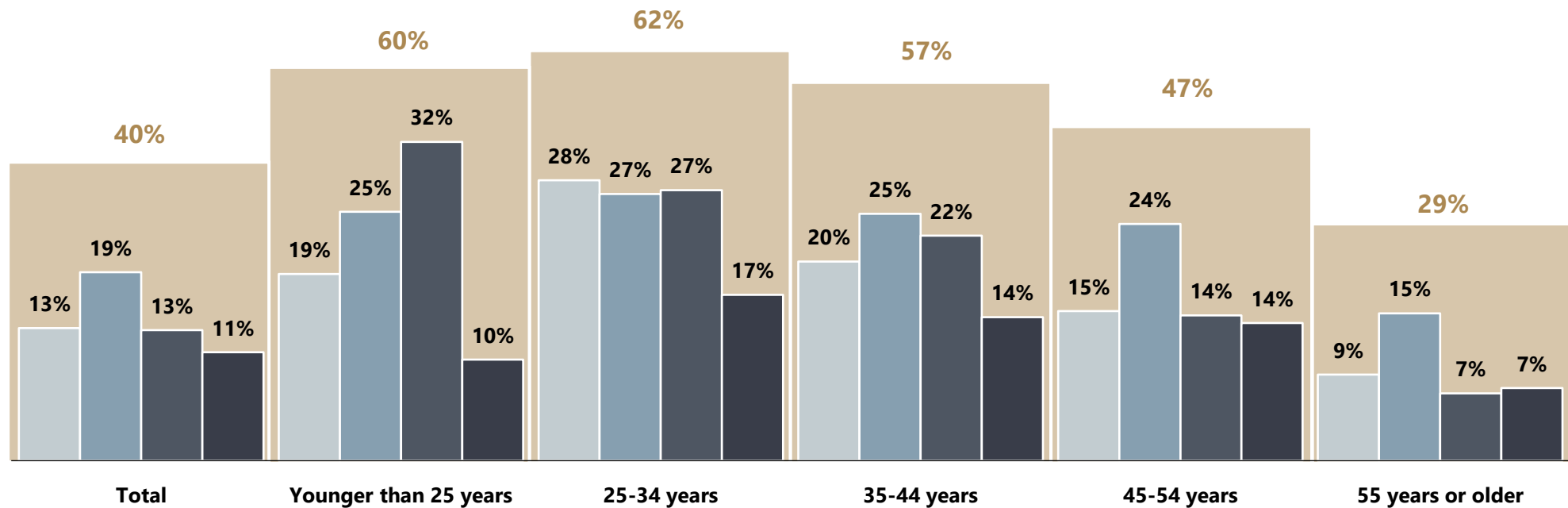


## USE OF AI: GEMA MEMBERS BY AGE

In total, those GEMA members who use or have used AI in their work with music or creation in general mostly use it in music production (editing/mixing/mastering; 19%). In the age group of members 25 years and younger, AI has mostly been used in supporting aspects like marketing, promotion and distribution (32%). AI as a contribution to their creative activity with music is mostly used by members of the age group 25 to 34 years (28%).

***"Have you used AI technologies in your work with music and creation in general?"***

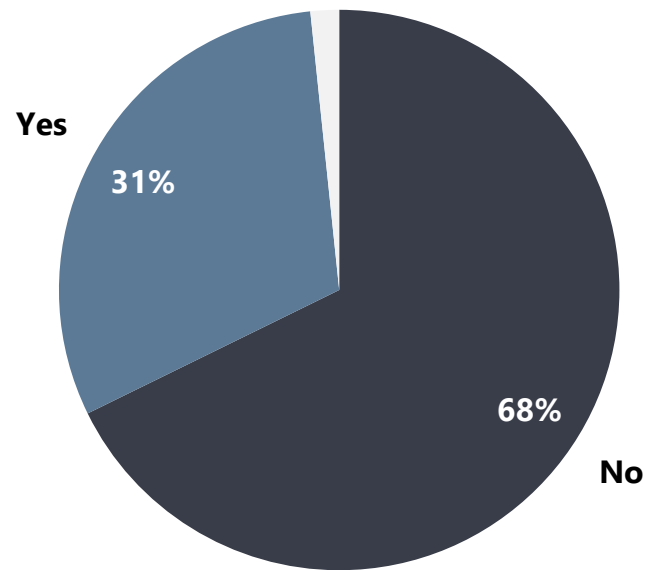
■ Yes, in my creative activity with music ■ Yes, in production ■ Yes, in supporting aspects (e.g. marketing) ■ Yes, in other aspects



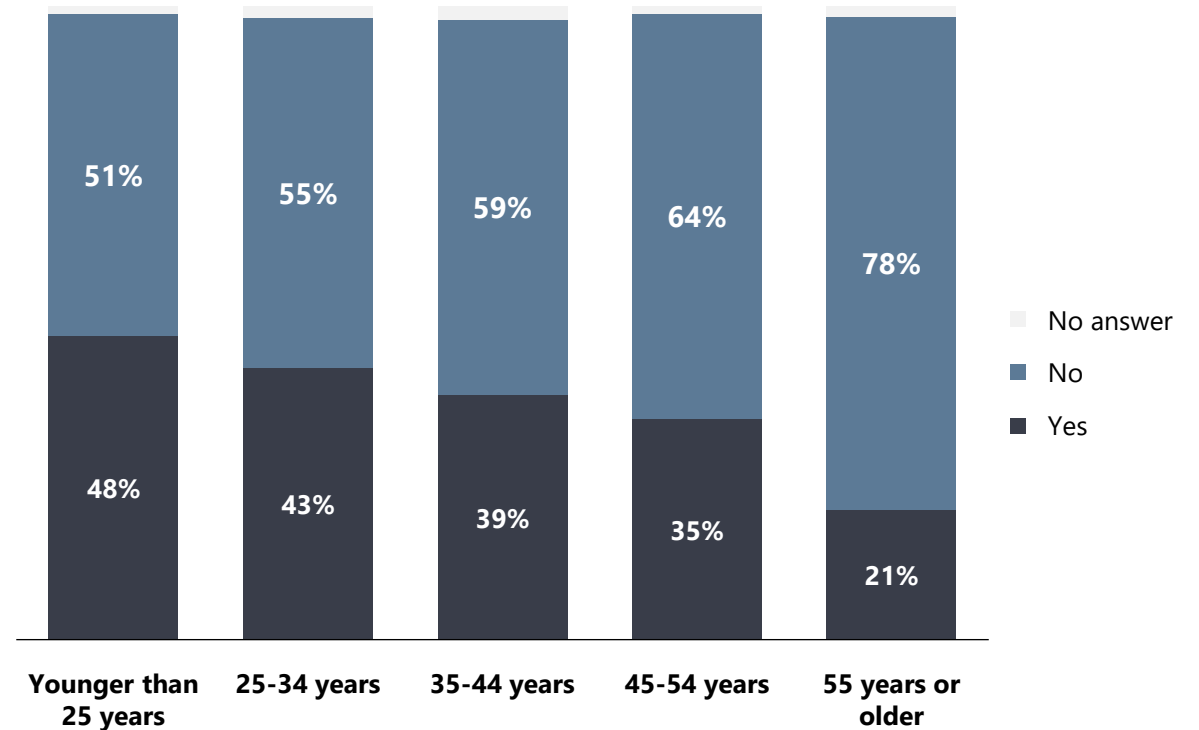
# USE OF AI: SACEM MEMBERS

31% of SACEM members have used AI technologies in their work with music and creation in general, while 68% have not. The members within the age group younger than 25 years show the highest AI usage rate of about 48%. With rising age, AI use of the questioned SACEM members declines markedly. Of those members aged 55 years or older, 21% have used AI before.

***"Have you used AI technologies in your work with music and creation in general?"***



Total



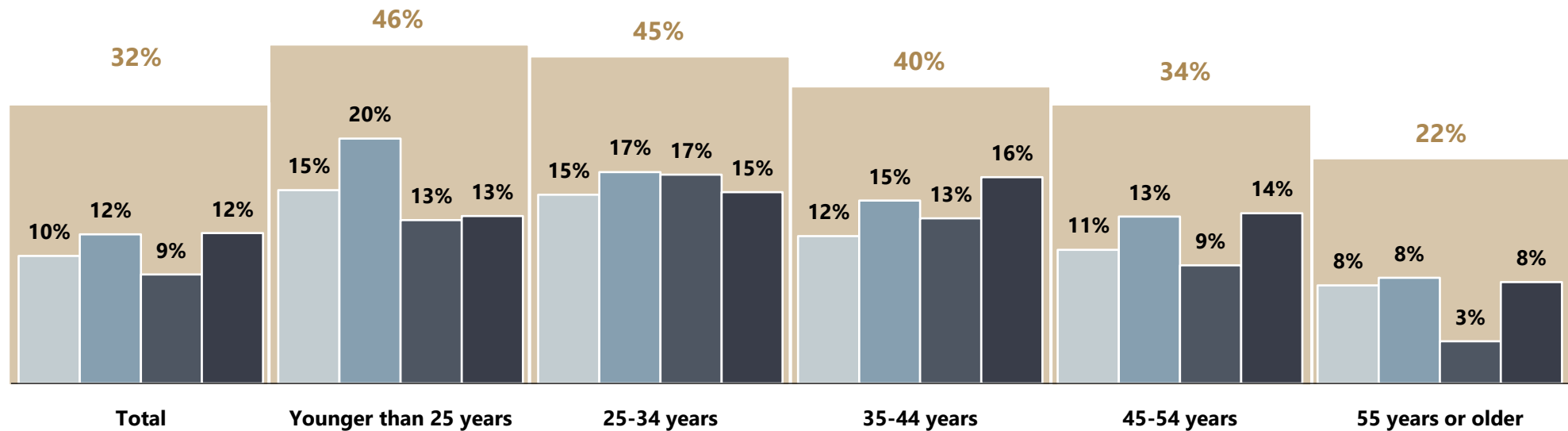


## USE OF AI: SACEM MEMBERS BY AGE

Throughout the age groups of the questioned SACEM members, AI technologies are mostly used in music production (editing/mixing/mastering). Only in the age group of members 35 to 44 years has AI mostly been used in other aspects of work with music or creation in general (20%). AI as a contribution to their creative activity with music is mostly used by members of the age group 25 years and younger as well as the age group of 25 to 34 years (15% each).

***"Have you used AI technologies in your work with music and creation in general?"***

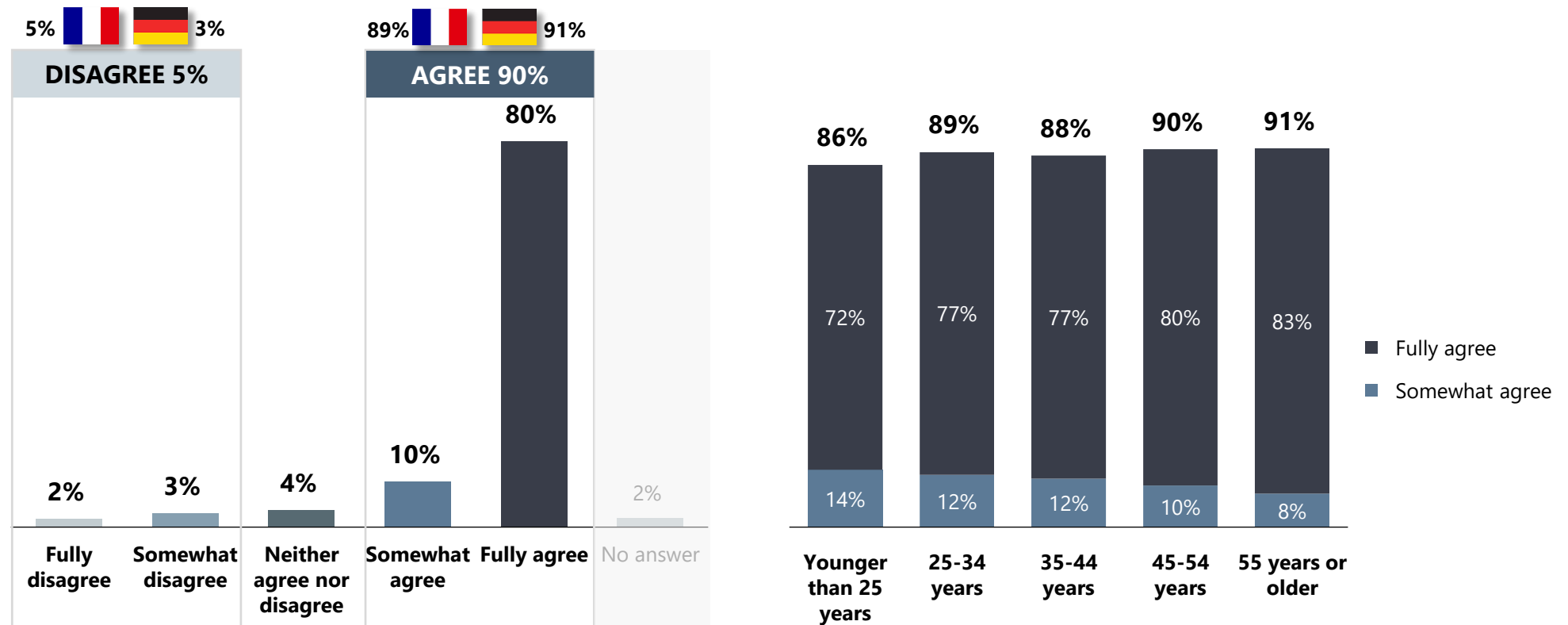
■ Yes, in my creative activity with music ■ Yes, in production ■ Yes, in supporting aspects (e.g. marketing) ■ Yes, in other aspects



# COPYRIGHT OF AI INPUT

The majority of the questioned GEMA/SACEM members (90%) agree that copyright holders must be asked for permission when their works are used as input for AI systems. On the other hand, only about 5% of the questioned members disagree to some extent. High agreement rates to the statement of about 86 to 91% are seen throughout all age groups.

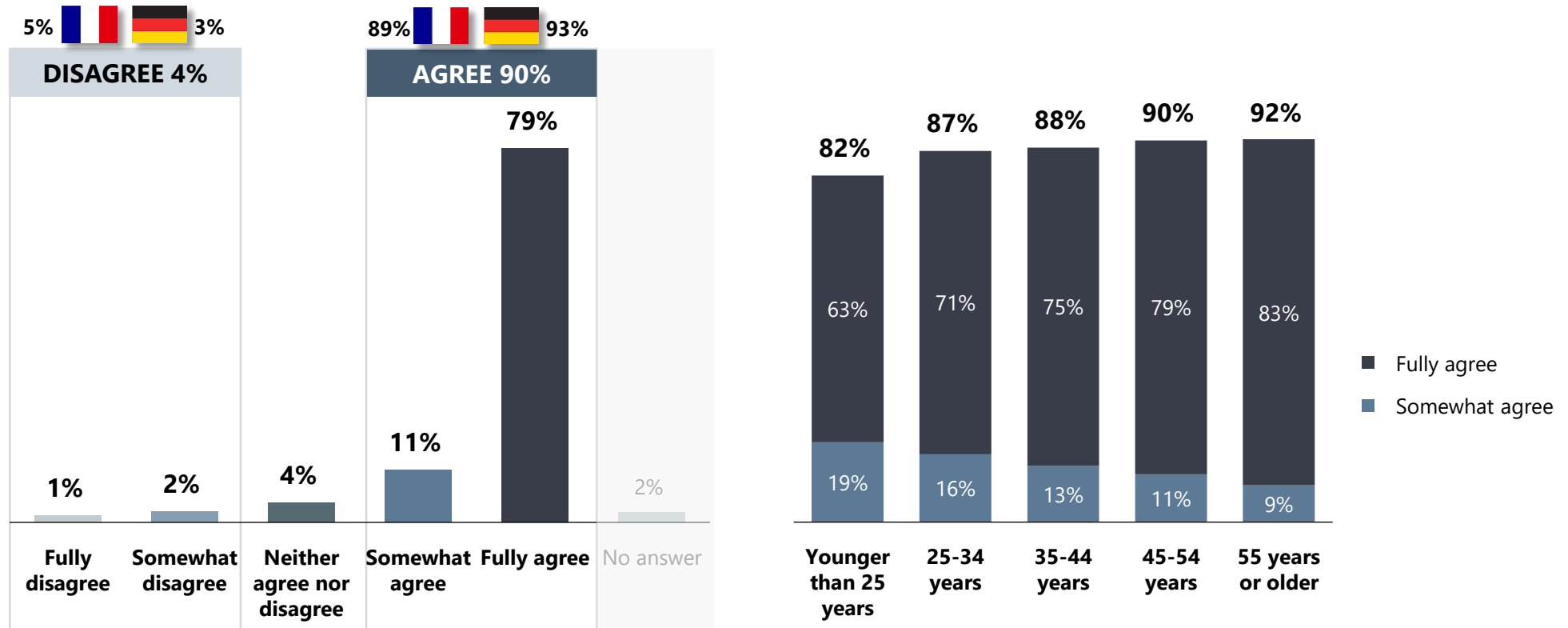
***"Copyright holders must be asked for permission when their works are used as input for AI systems."***



# COMMERCIAL INVOLVEMENT OF COPYRIGHT HOLDERS

90% of the questioned GEMA/SACEM members agree that copyright holders must be involved commercially when their works are used as input for AI systems, while in total only about 4% of the questioned members disagree to some extent. Throughout all age groups, there are high agreement rates of about 82 to 92%, while the youngest age group shows the lowest and the oldest age group the highest agreement rate.

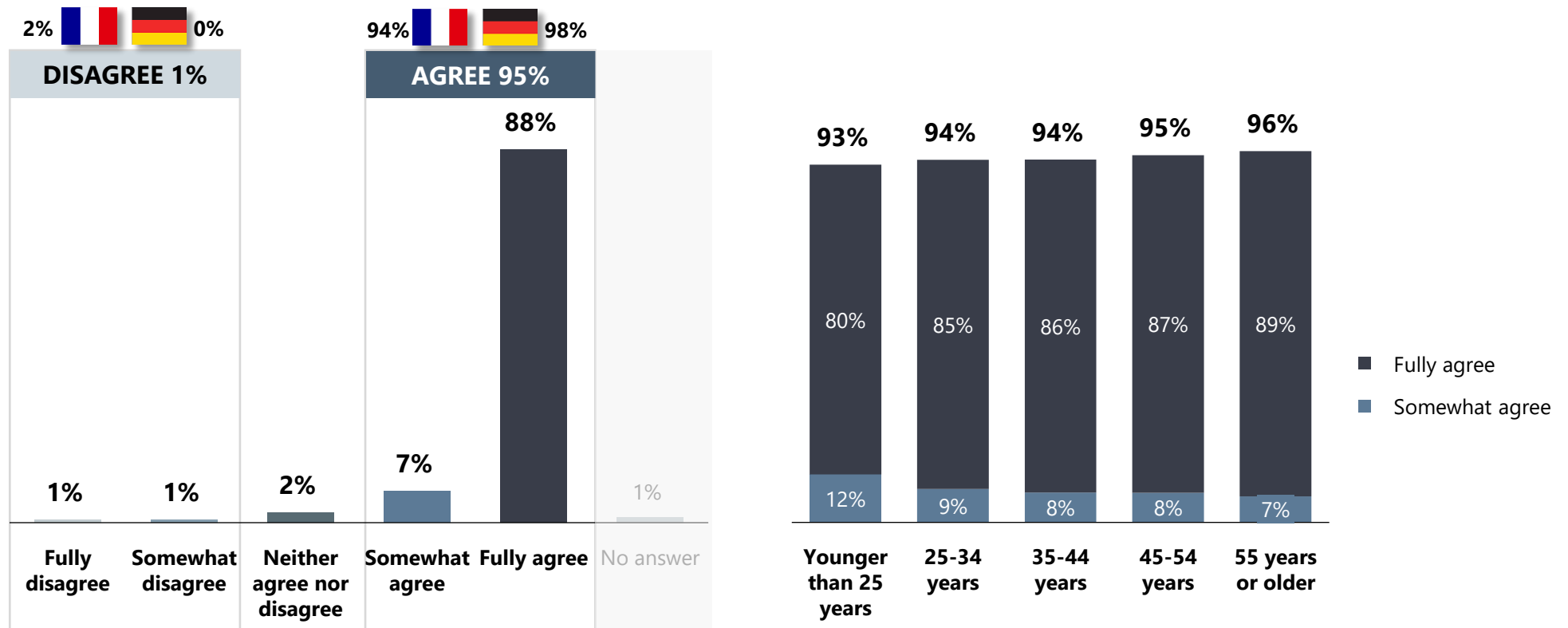
***"Copyright holders must be involved commercially when their works are used as input for AI systems."***



# PERSONAL RIGHTS OF COPYRIGHT HOLDERS

Almost all of the questioned GEMA/SACEM members (95%) agree that copyright holders must have the possibility to take action against infringement of their personal rights by AI systems (e.g. deepfakes or voice cloning). Only about 1% of the questioned members disagree to some extent. Throughout all age groups, there are high agreement rates of about 93 to 96%, while the youngest age group shows the lowest and the oldest age group the highest agreement rate.

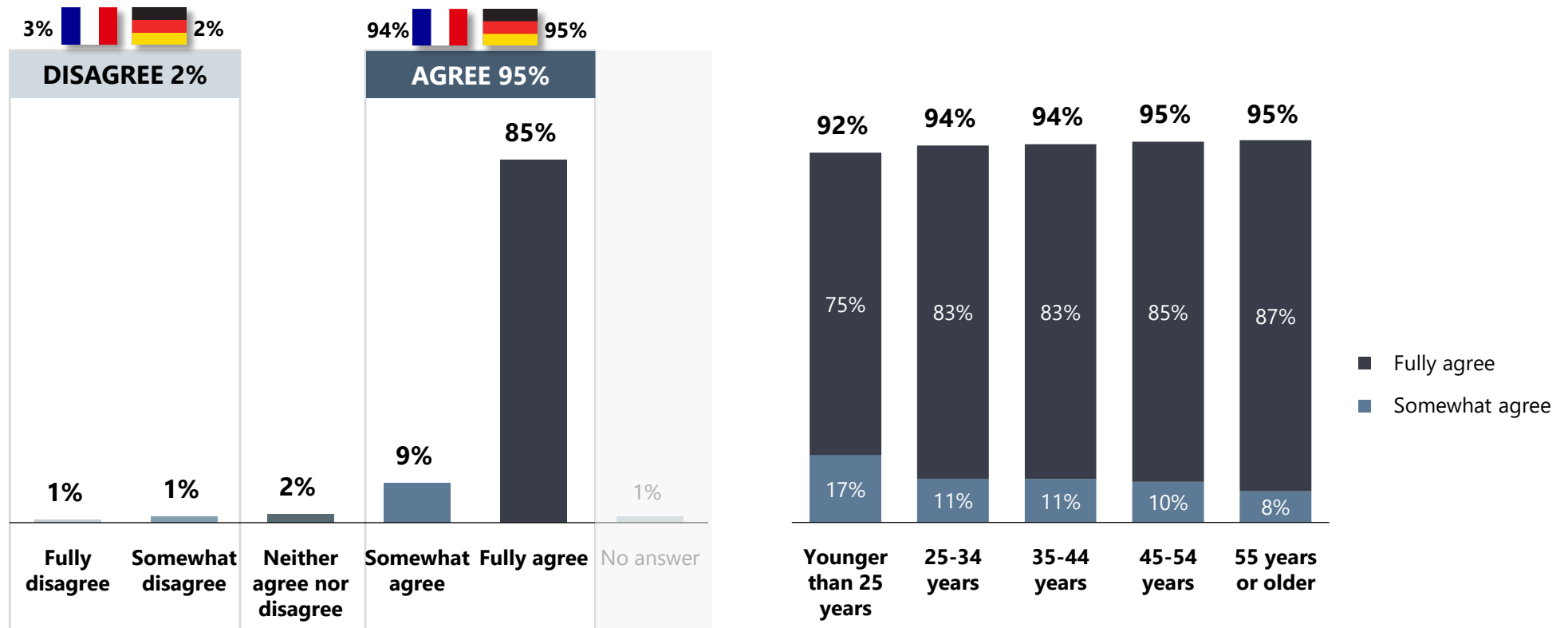
***"Copyright holders must have the possibility to take action against infringement of their personal rights by AI systems (e.g. deepfakes or voice cloning)."***



# HANDLING OF TRAINING DATA

95% of the questioned GEMA/SACEM members agree that AI providers should be obliged to disclose when they use copyrighted works as 'training data'. Only about 2% disagree with this statement. Throughout all age groups, there are high agreement rates of about 92 to 95%, while the youngest age group shows the lowest and the oldest age groups the highest agreement rates.

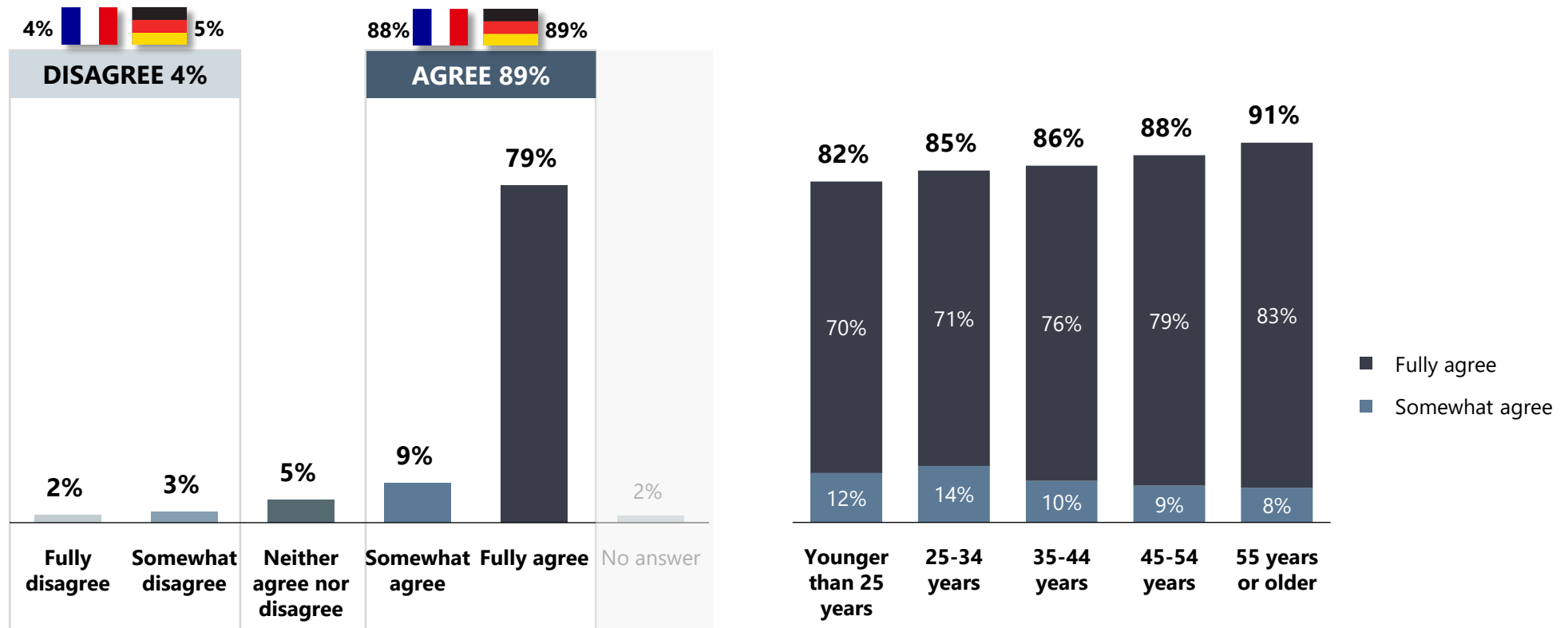
**"AI providers should be obliged to disclose when they use copyrighted works as 'training data'."**



# IDENTIFICATION OF AI WORK

Out of all questioned GEMA/SACEM members, 89% agree that AI-generated music tracks and other types of works should be identified as such, while 5% neither agree nor disagree and a further 4% disagree to some extent. Among the age groups, the youngest age group shows the lowest agreement rate of 82% and the oldest age group the highest agreement rate of 91%.

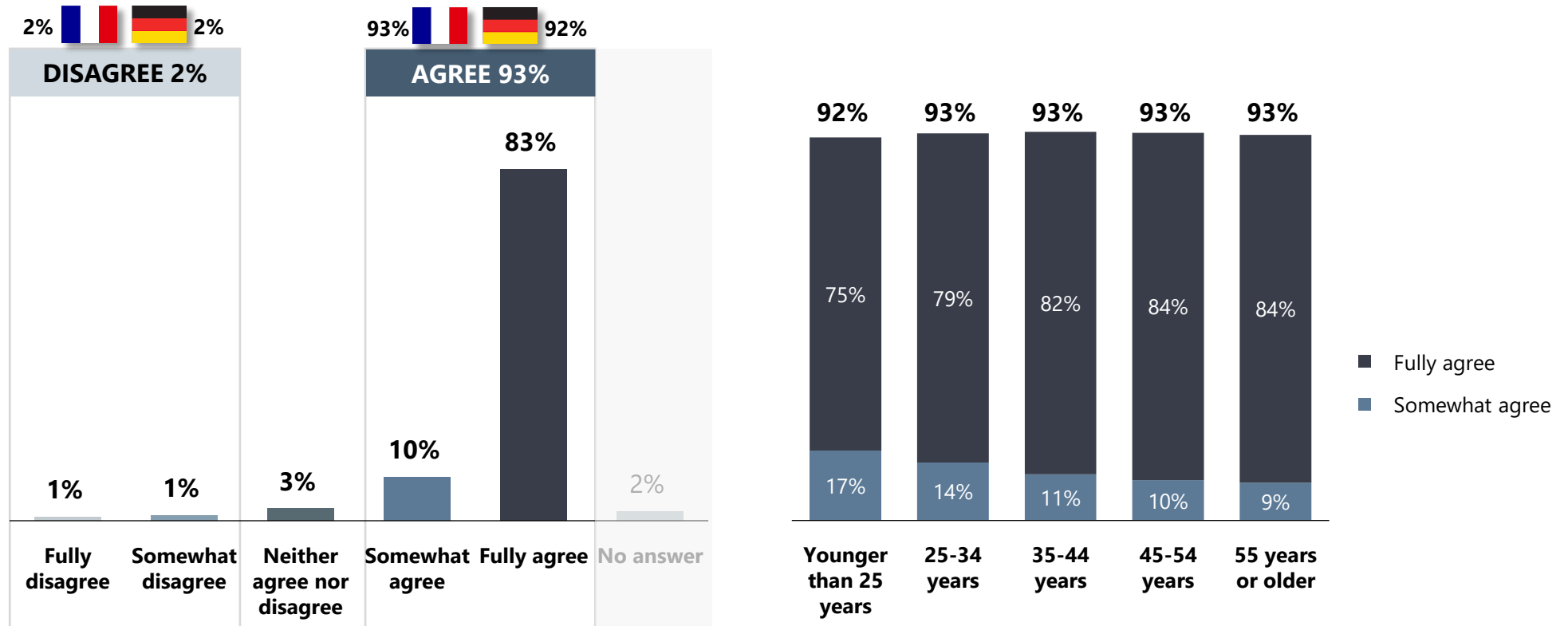
*"AI-generated music tracks and other types of works should be identified as such."*



# POLITICAL IMPLICATIONS

Of all questioned GEMA/SACEM members, 93% agree that policymakers should pay more attention to the challenges related to AI and copyright. On the other hand, only about 2% of the questioned members disagree to some extent, while 3% neither agree nor disagree. All age groups show agreement rates of 92 or 93%.

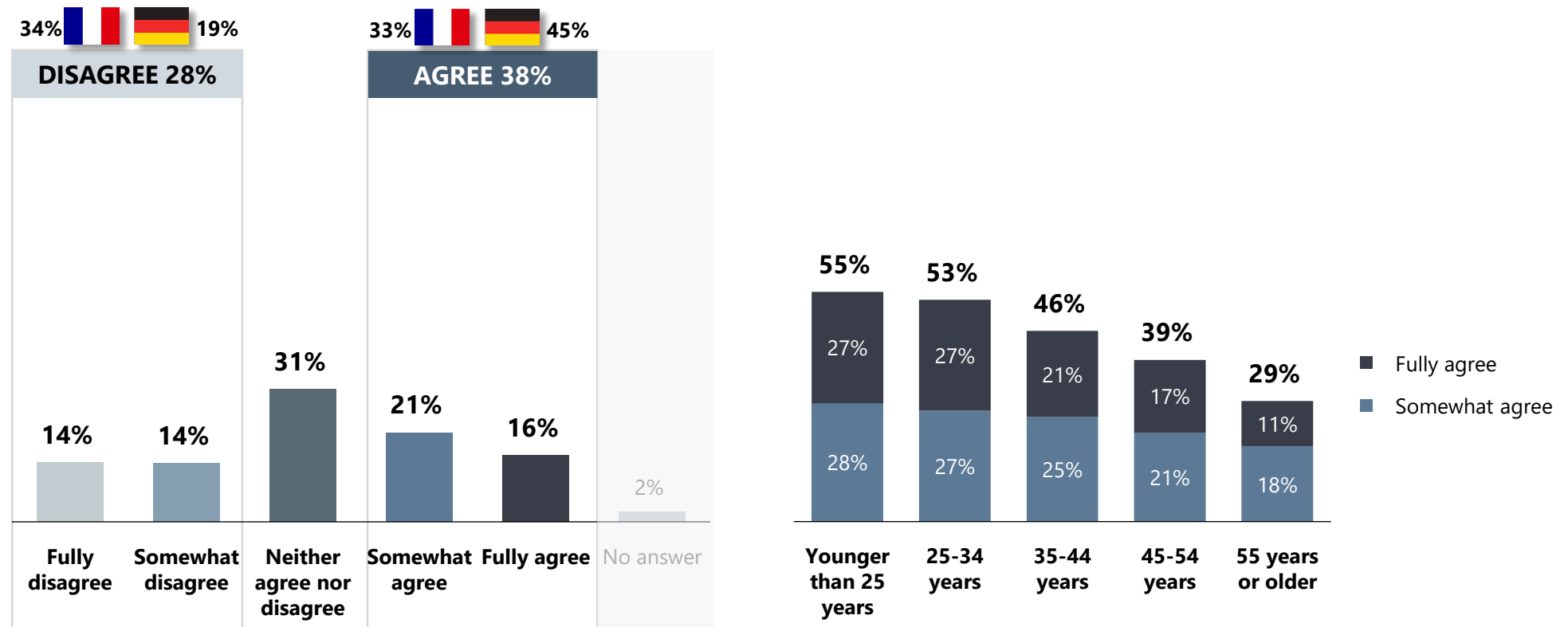
***“Policymakers should pay more attention to the challenges related to AI and copyright.”***



# AI SUPPORT IN CREATIVE PROCESSES

Asked whether AI technology can support the human creative process, the answers of the questioned GEMA and SACEM members are quite balanced. While 38% agree with this statement, almost as many (31%) neither agree nor disagree. A further 28% disagree with the statement that AI can support the human creative process. Looking at the age distribution, the youngest age groups agree proportionally highly with 55 and 53%, while the oldest age group only agrees with a share of 29%.

**"AI technology can support the human creative process"**

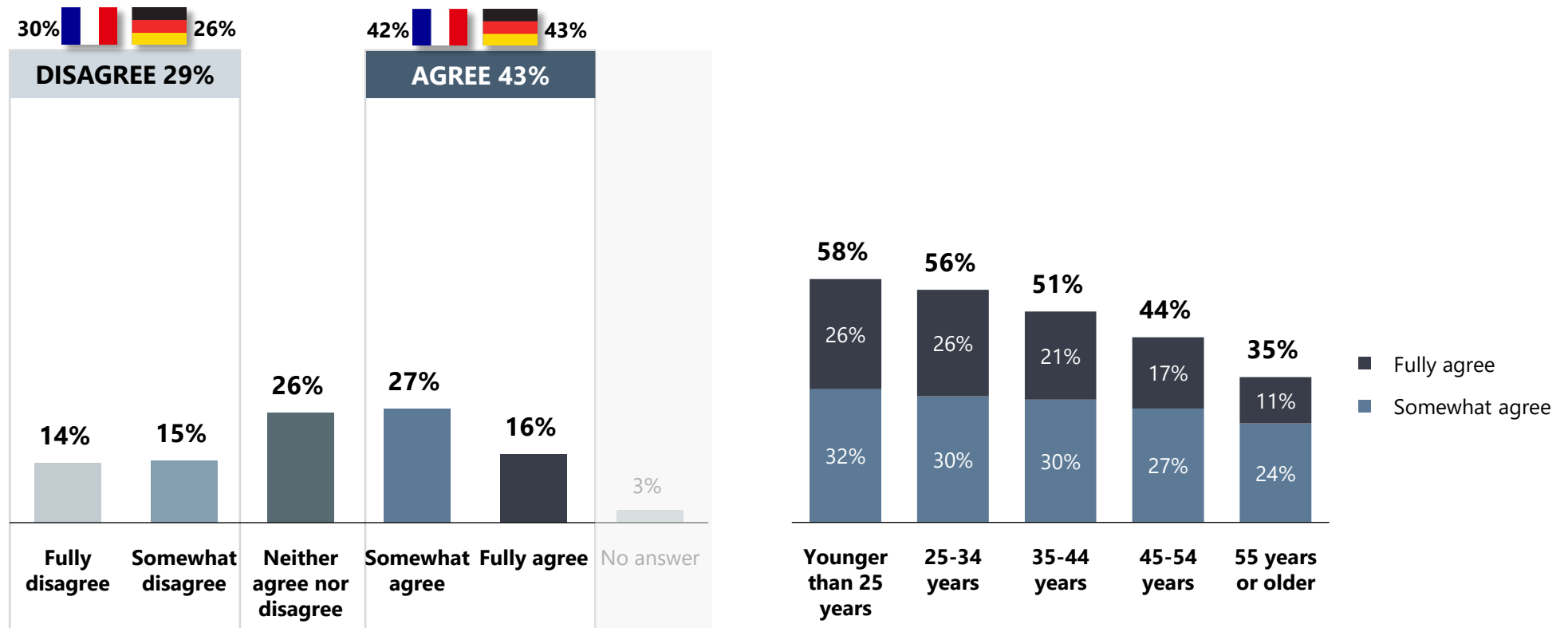




# NEW FORMS OF CREATIVITY THROUGH AI

The more generalised statement, that AI can open up new forms of creativity, gained slightly more agreement from GEMA/SACEM members than when asked about AI as providing support for human creativity. Here, 43% of questioned members agree, while 29% disagree. The age distribution again shows that the younger the members are, the more likely they are to agree with the statement.

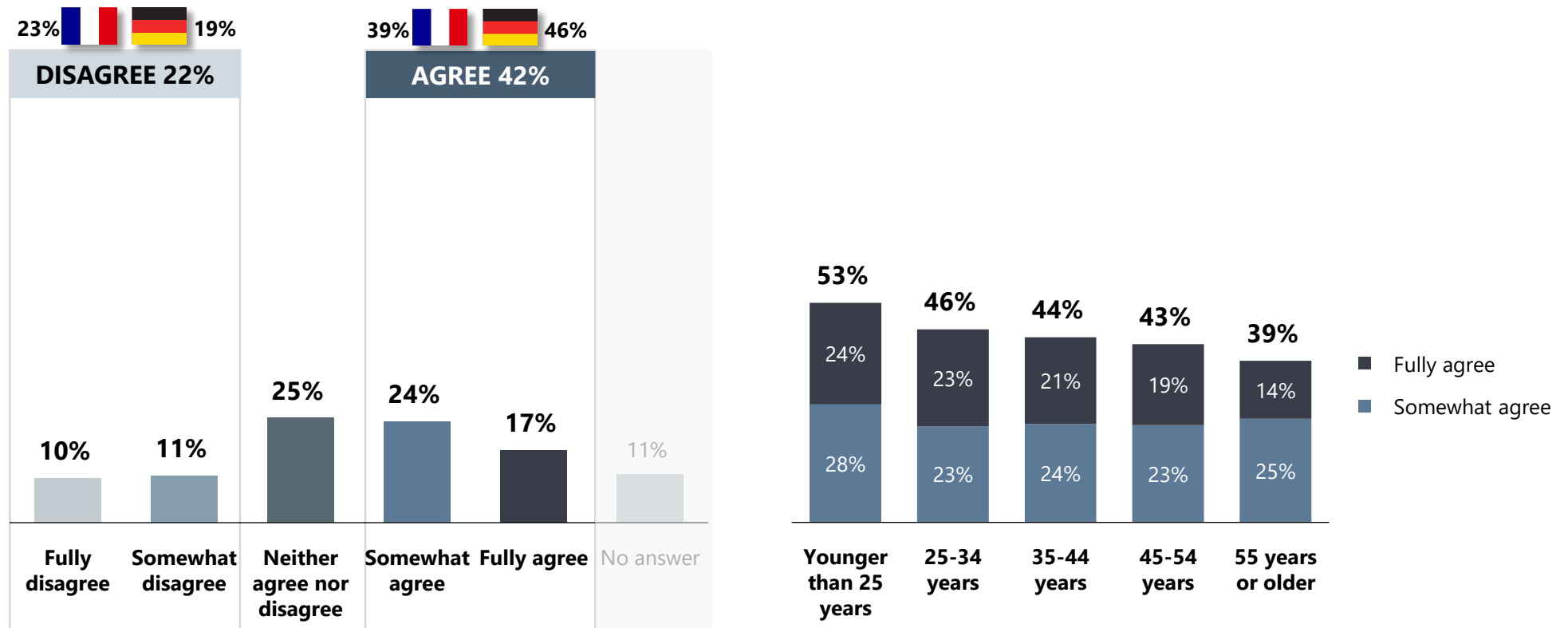
**"AI can open up new forms of creativity."**



# AI'S ECONOMIC POTENTIAL

42% of the questioned GEMA/SACEM members agree that AI technology in the music industry has great economic potential. About one fourth of the members neither agree nor disagree with this statement and a further 22% disagree to some extent. In the youngest age group, more than half (53%) think that AI has great economic potential, while 39% of the members aged 55 years and older agree.

*"In principle, AI technology in the music industry has great economic potential."*

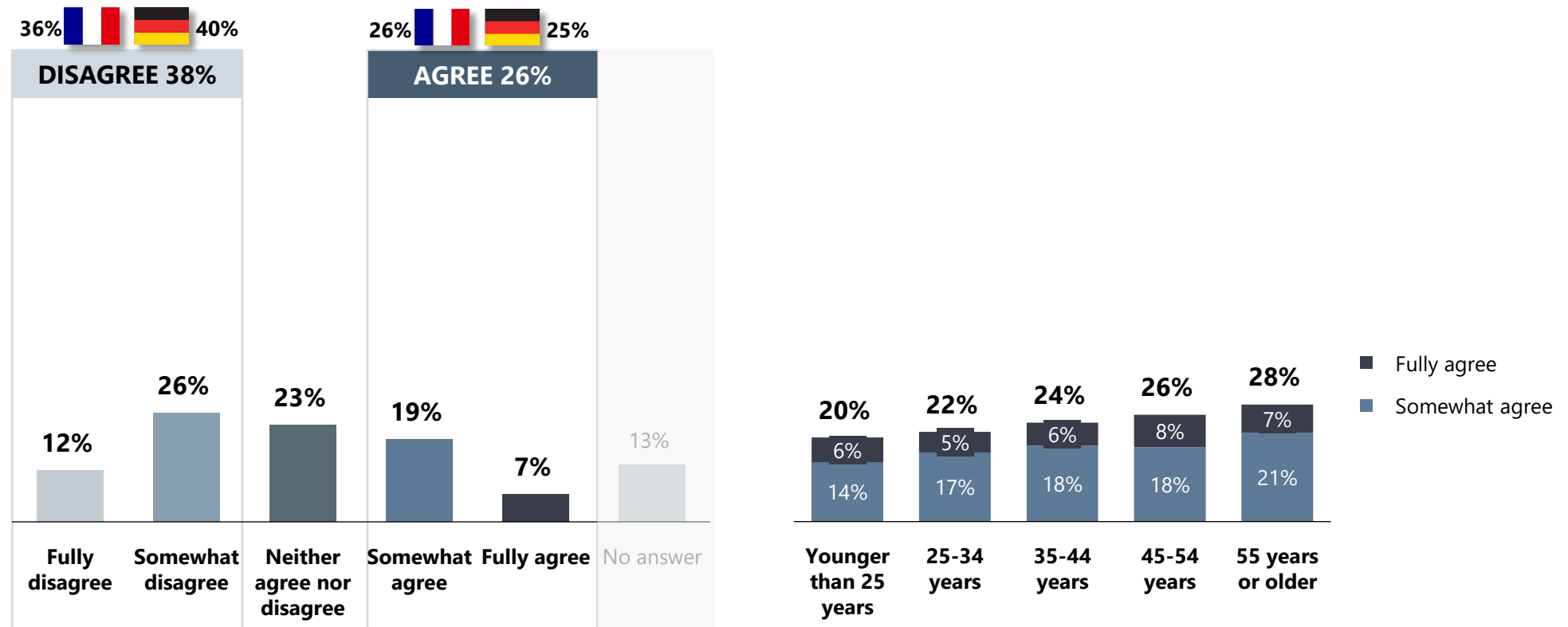


# AI MUSIC VS. HUMAN-MADE MUSIC

Only 26% of the questioned GEMA and SACEM members believe that music made by humans is increasingly being replaced by AI music, while the majority of 38% do not think that AI music will replace human-made music.

The younger the members are, the less likely they are to think that AI music will replace human-made music.

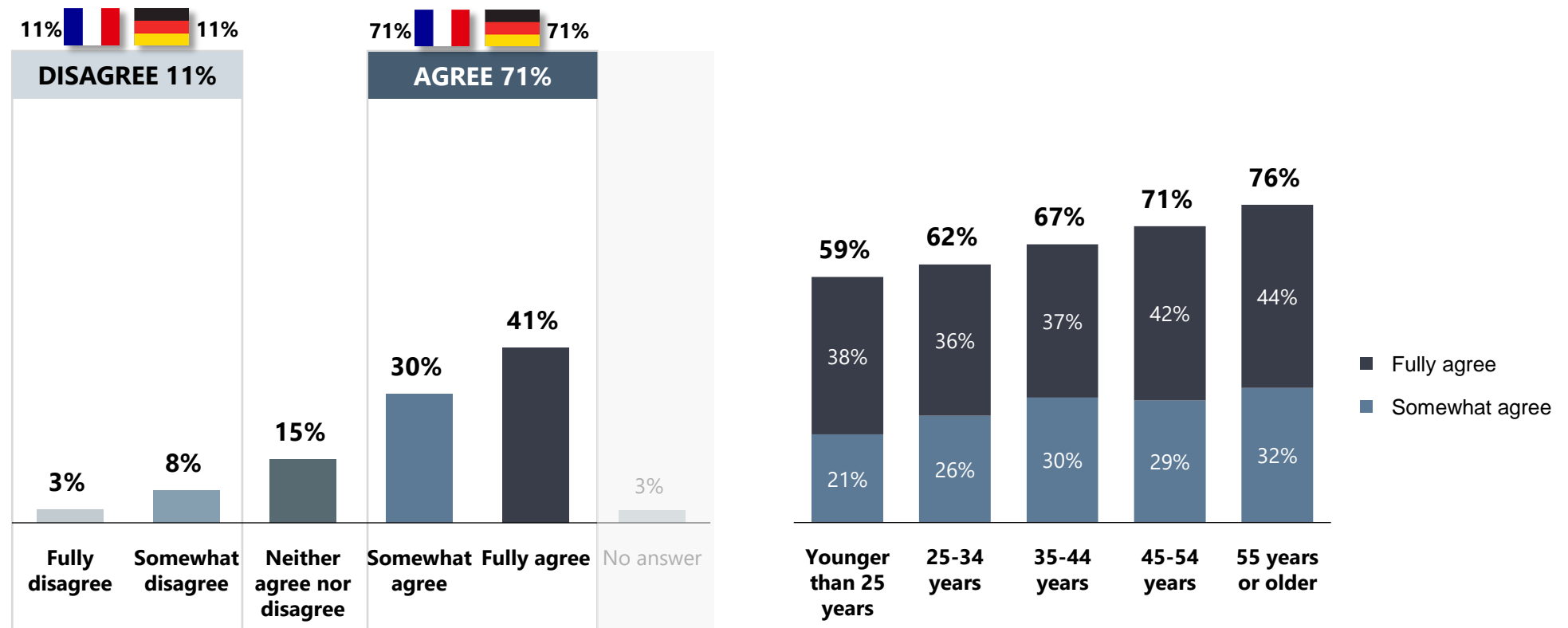
***"Music made by humans is increasingly being replaced by AI music."***



# AI MUSIC COMPETITION

Even though most of the questioned GEMA and SACEM members do not believe that music made by humans is increasingly being replaced by AI music, 71% of the members believe that the use of AI in music could lead to music creators no longer being able to make a living from their work. About 11% disagree and do not believe that AI music could lead to personal financial losses. The older the survey participants were, the more they believed that AI will threaten their financial situation.

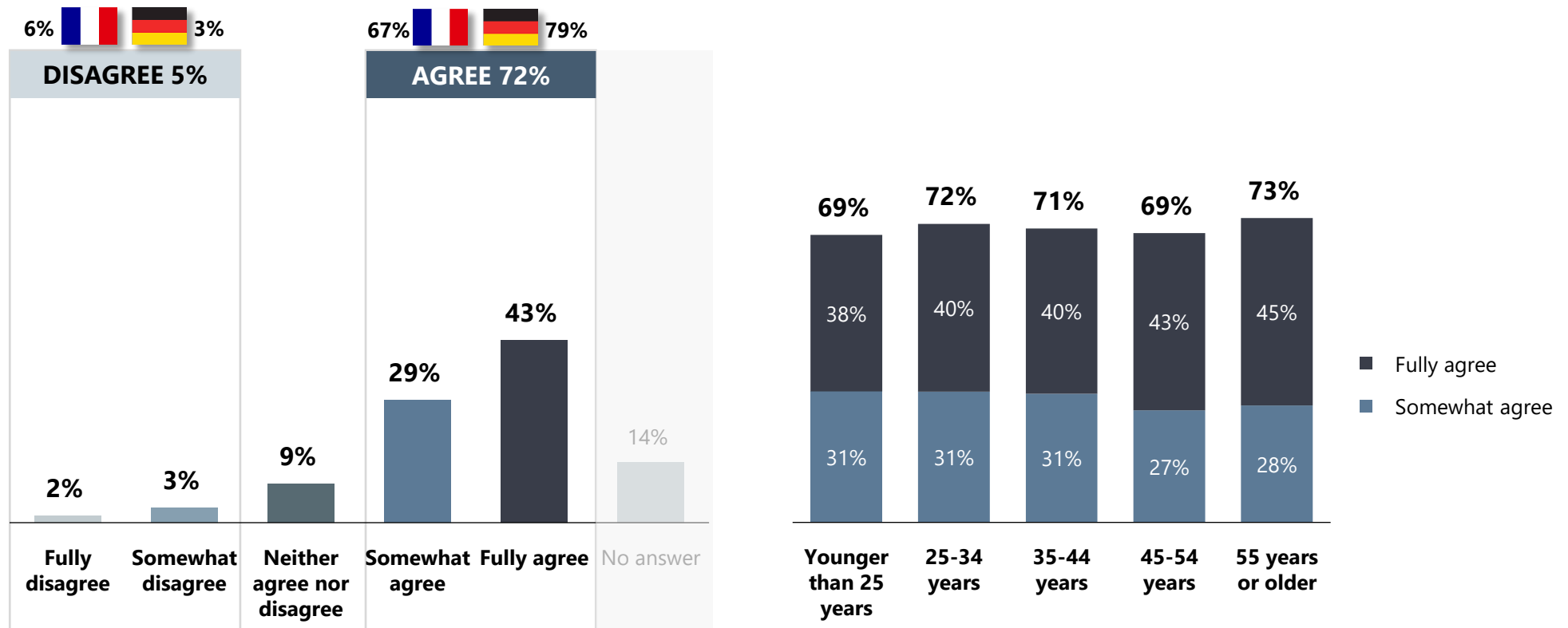
***"The use of AI in music could lead to music creators no longer being able to make a living from their work."***



# VISIBILITY ISSUES THROUGH AI

Of the questioned GEMA/SACEM members, 72% agree that policymakers should pay more attention to the challenges related to AI and copyright. On the other hand, only about 5% of the questioned members disagree to some extent, while 9% neither agree nor disagree. All age groups show similar agreement rates of 69 to 73%.

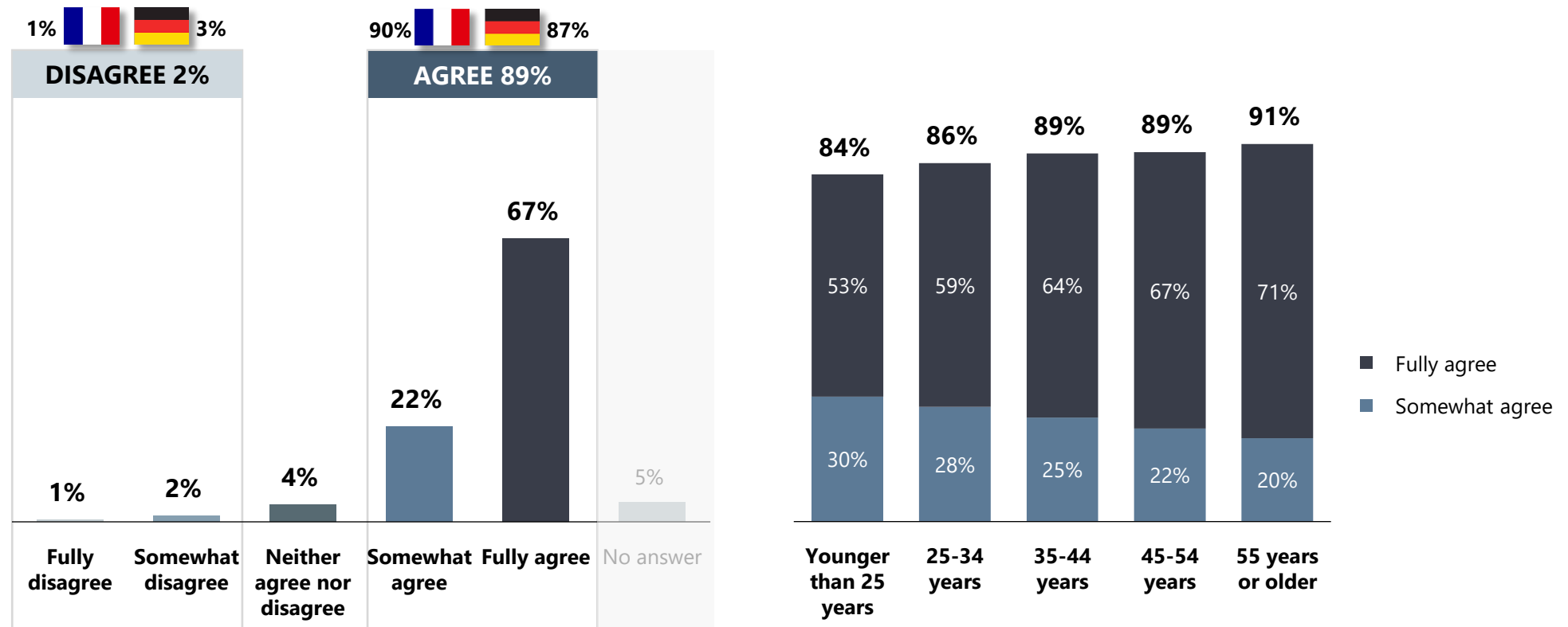
***"Due to the increase in AI-generated works, issues of visibility and discoverability of songs on streaming platforms are becoming increasingly important."***



# DEMAND FOR TRANSPARENCY

Most of the questioned GEMA/SACEM members (89%) agree that criteria for creating playlists as well as music recommendations based on AI/algorithms must become more transparent. Only about 2% disagree with this statement to some extent. High agreement rates to the statement of about 84 to 91% are seen throughout the age groups.

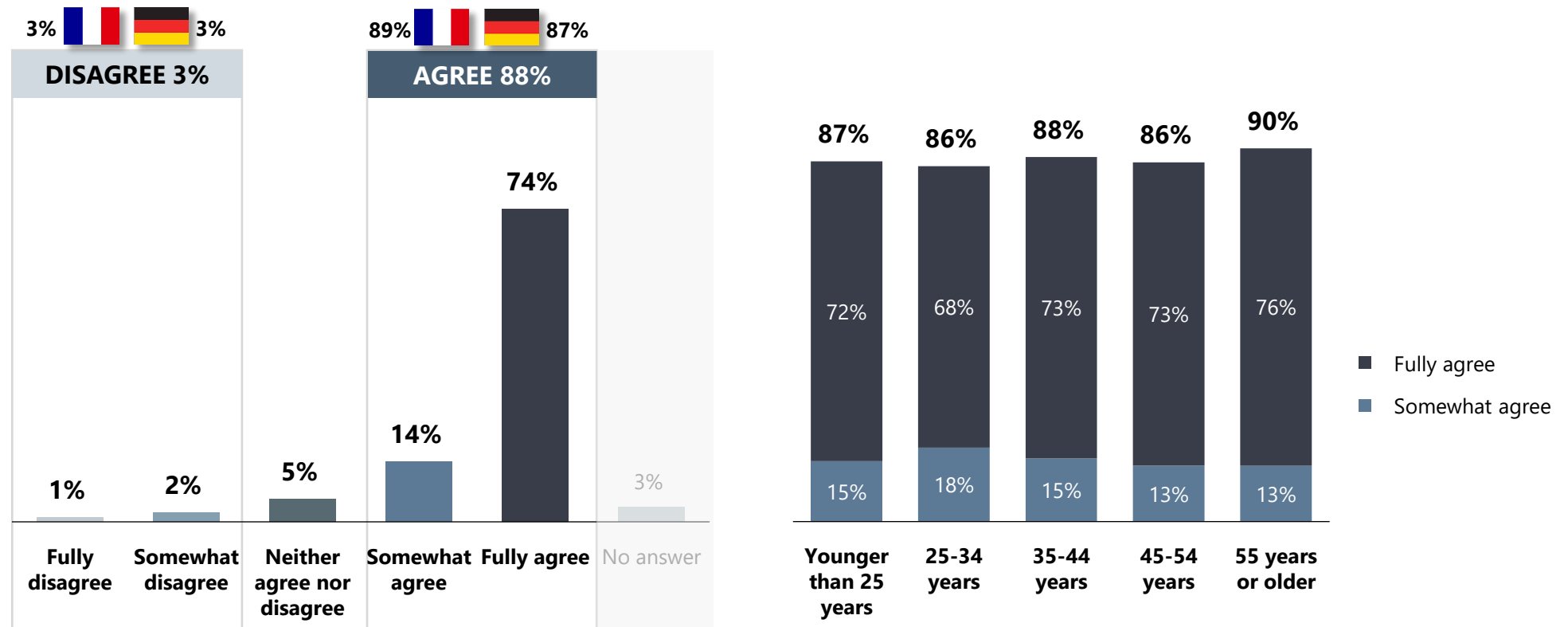
***"Criteria for creating playlists as well as music recommendations based on AI/algorithms must become more transparent."***



# PROMOTION OF HUMAN-MADE MUSIC

88% of the questioned GEMA/SACEM members agree that music made by humans should be promoted on streaming platforms. About 5% of the members neither agree nor disagree with this statement and a further 3% disagree to some extent. Throughout the age groups, similar rates of agreement from 86 to 90% can be found.

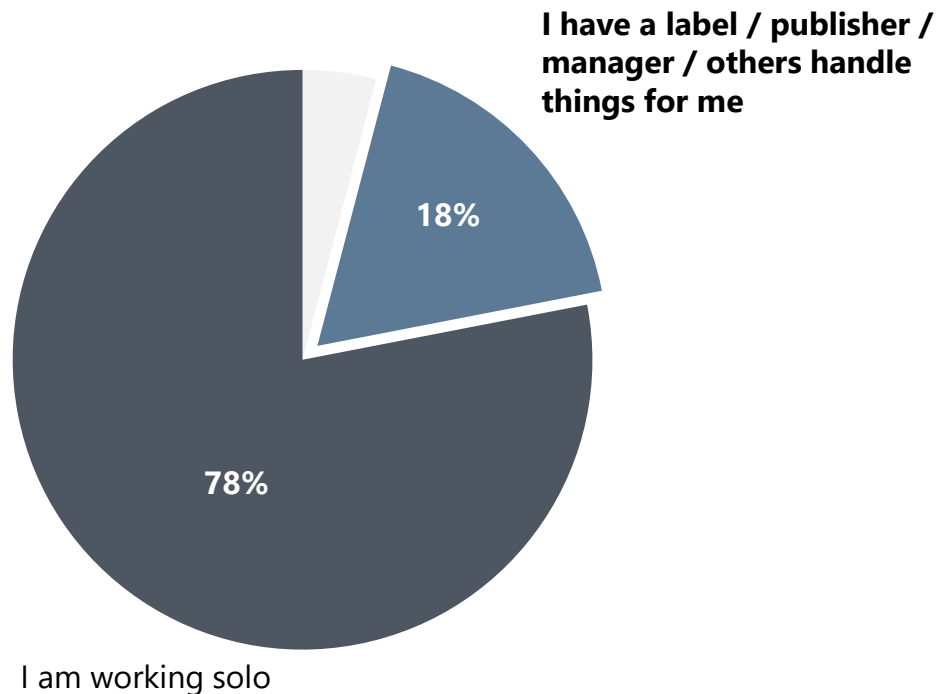
*"Music made by humans should be promoted on streaming platforms."*



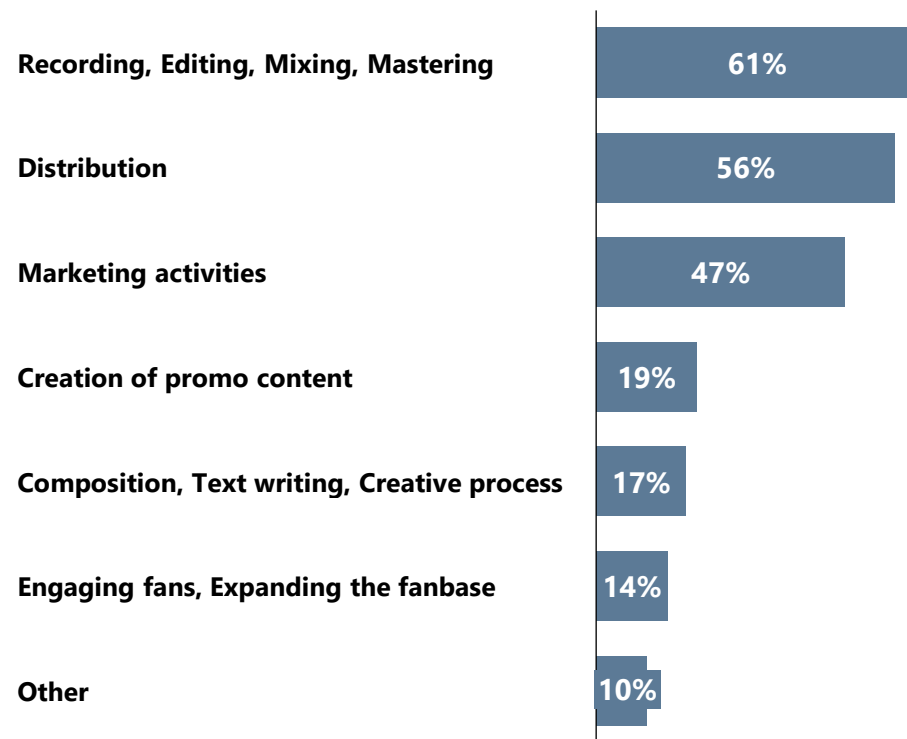
# SOLO OR SUPPORTED ACTIVITIES

18% of the questioned GEMA/SACEM members are working with the support of a label, publisher, manager or others, while the majority of 78% are working solo. Out of those 18% working with external partners, most of them are supported in the recording, editing, mixing and mastering process (61%), in distribution (56%) and in marketing activities (47%).

***"As a music creator, are you working solo (self producing) or with the support of a label, a publisher, a manager or others?"***



***"You said you are not working solo. In which areas do you have support from an external partner?"***

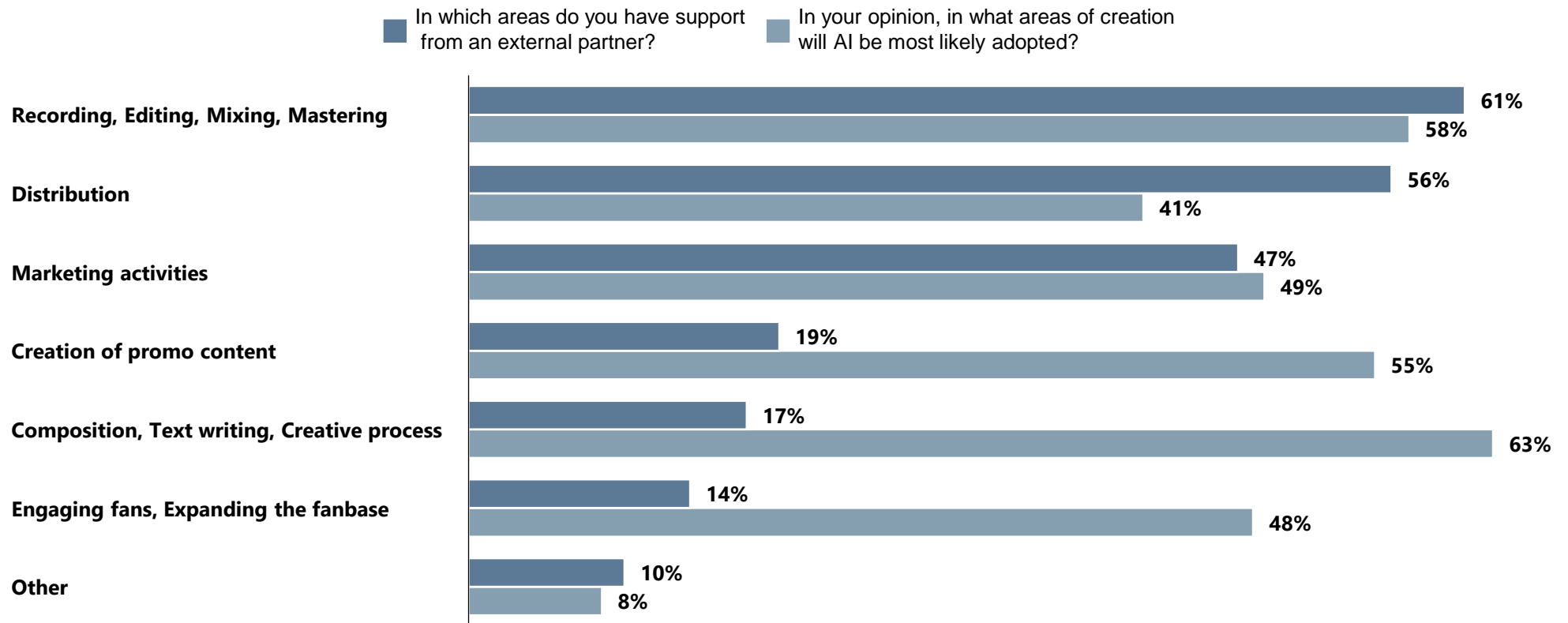




# SUPPORT AND ADOPTION OF AI

The graph shows the comparison between current external AI support and anticipated AI adoption in various creative areas. At the highest rate, 61% of GEMA/SACEM members currently receive external support in recording (etc.), while 58% expect AI adoption in this field. 56% of members have support in distribution and 41% expect further AI adoption there. Notably, for creating promo content, there is a gap between 19% current support versus 55% expected AI adoption. The trend is similar in composition (etc.) where there is 17% external support, with 63% expecting AI adoption.

***"In which areas do you have support by an external partner?  
And in your opinion, in what areas of creation will AI be most likely adopted?"***





# APPENDIX

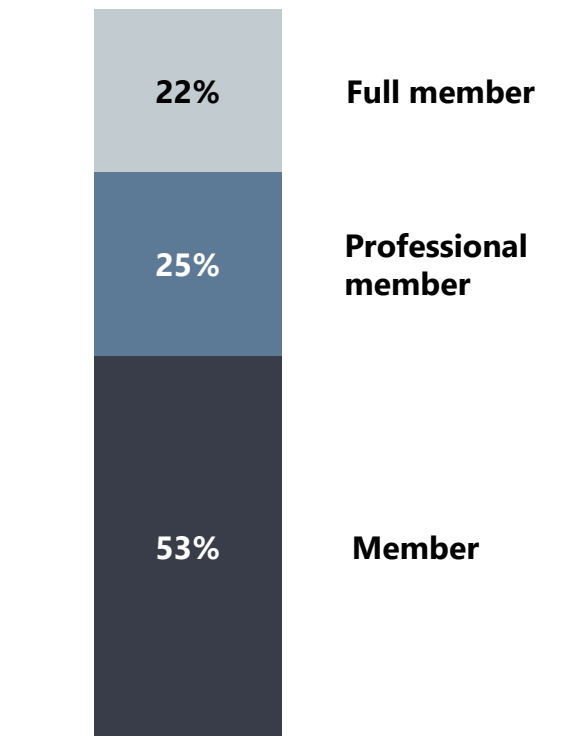
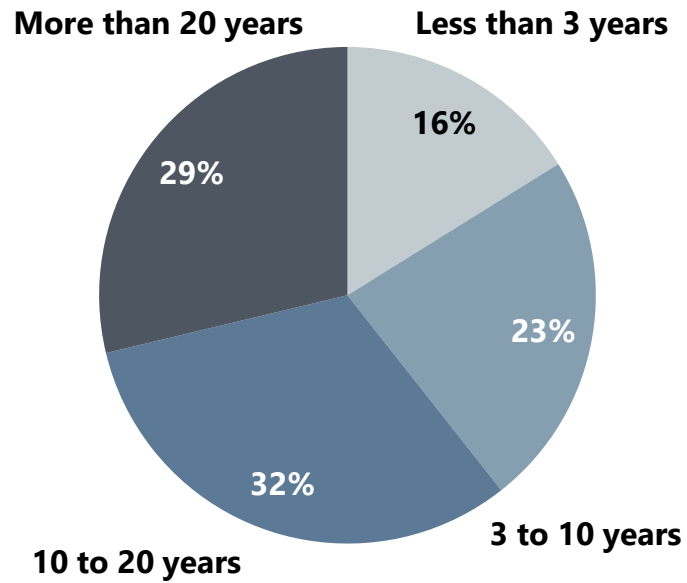
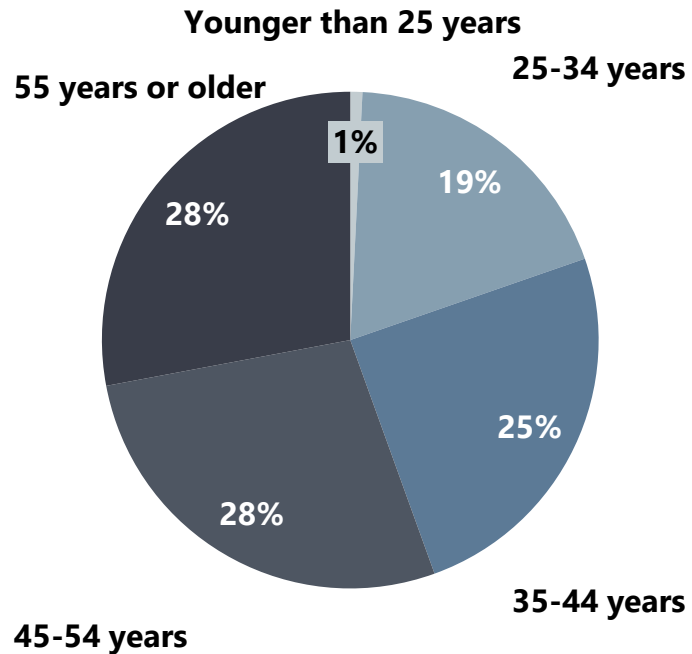
Additional Survey Results

**Dubbing/Subtitling:  
Additional Results**

List of Sources

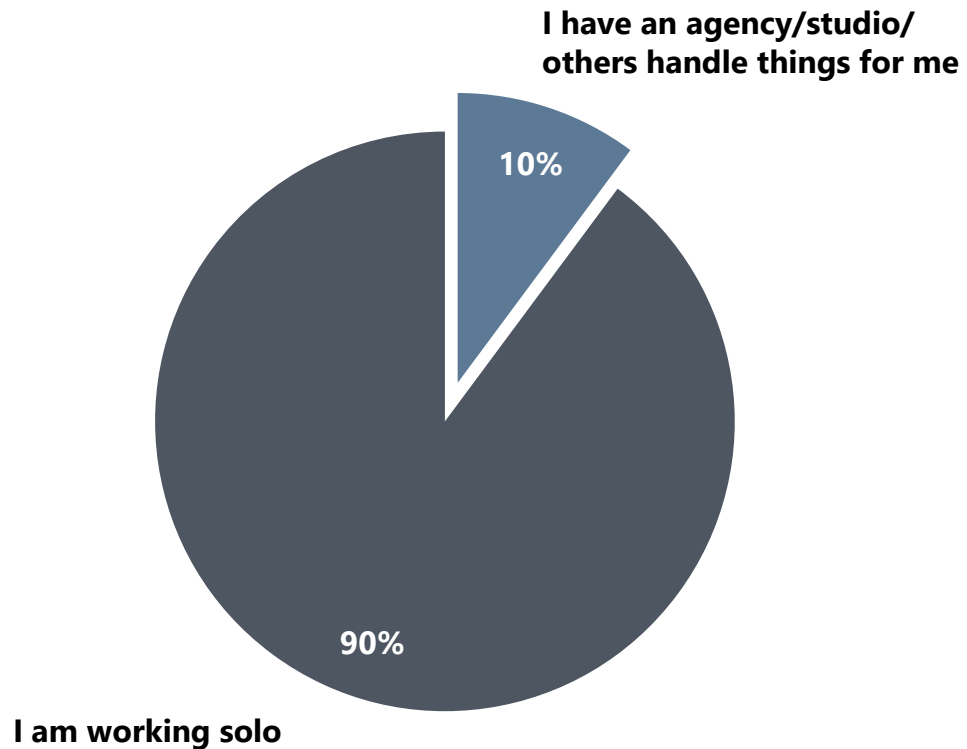
# SACEM SENIORITY AND STATUS

***“What is your age? What is your seniority at SACEM?  
And what is your SACEM status?”***

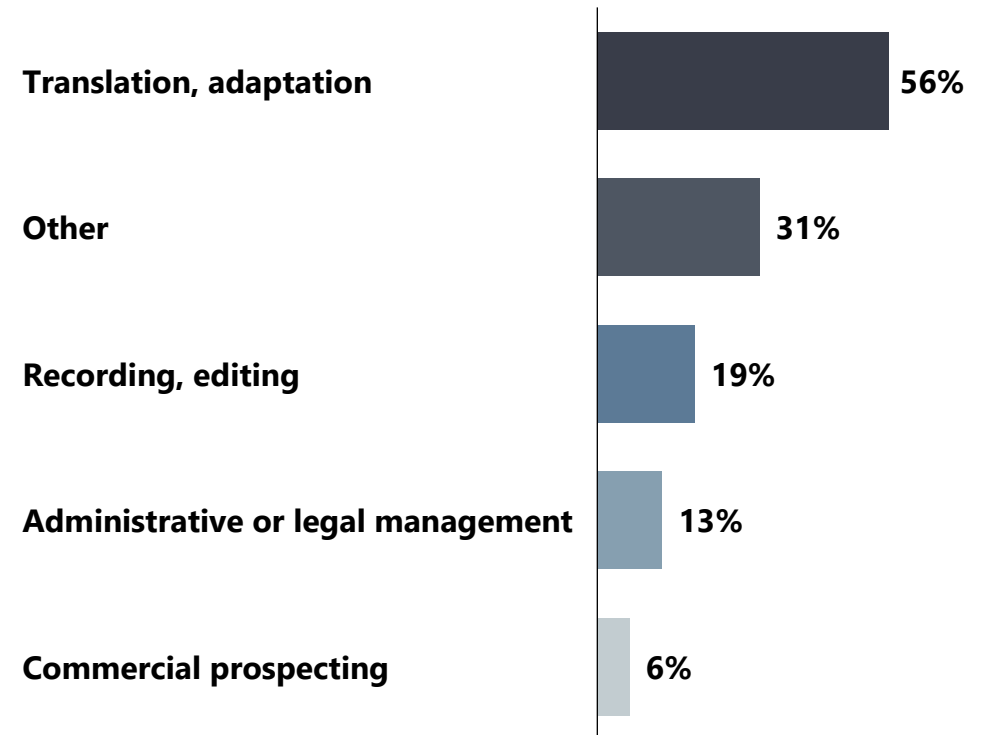


# SOLO OR SUPPORTED ACTIVITIES

*"As an author, are you working solo or with support from an agency, studio...?"*

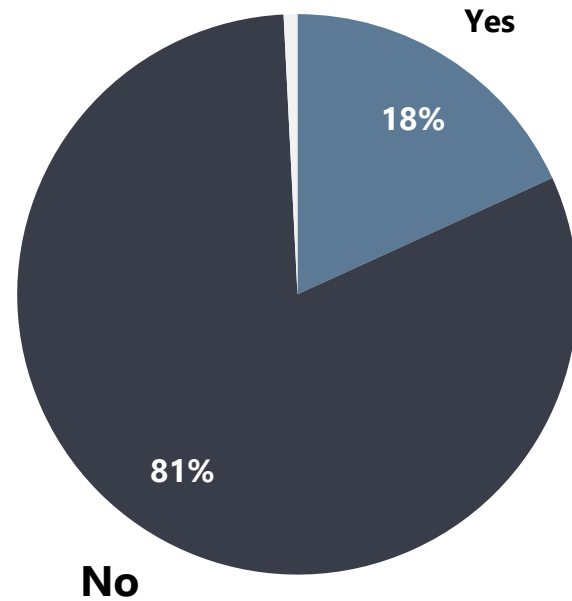


*"You said you are not working solo. In which areas do you have support from an external partner?"*



# USE OF AI

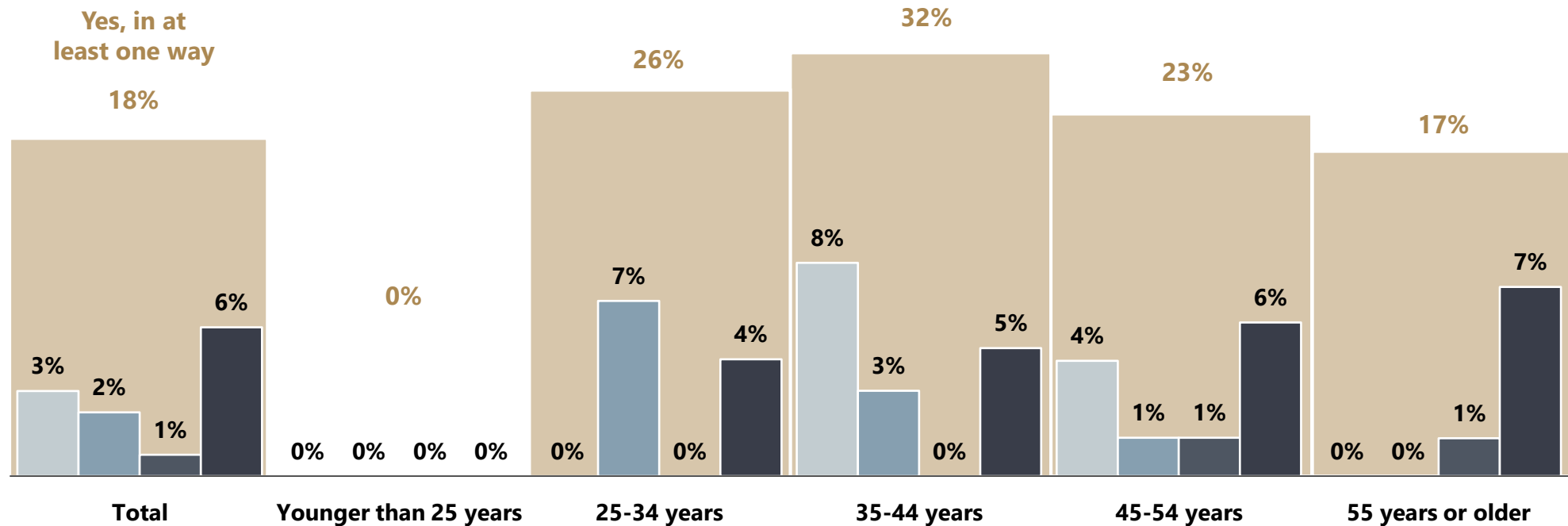
***"Have you used AI technologies in your work with dubbing and subtitling and creation in general?"***



# USE OF AI BY APPLICATION AREA

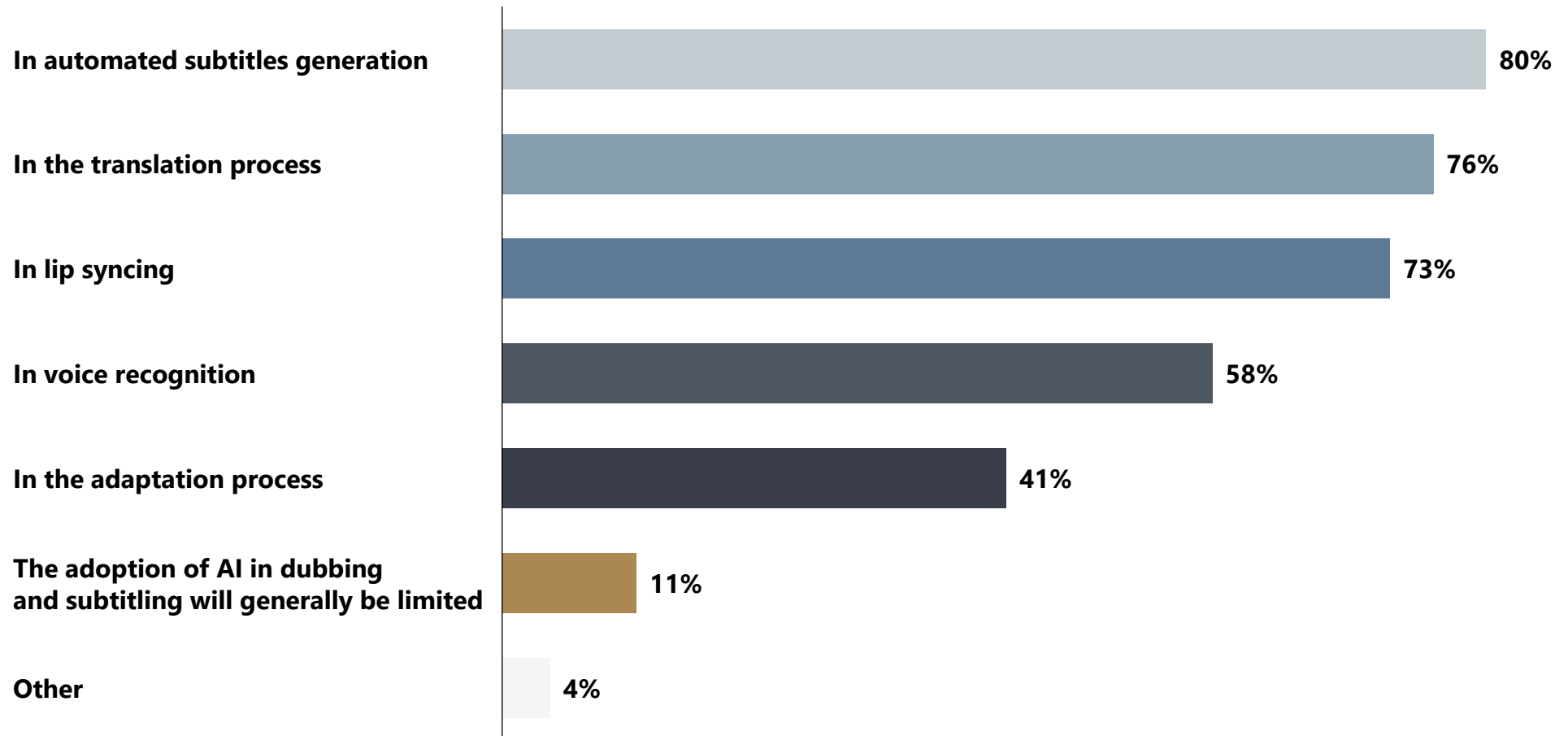
***“Have you used AI technologies in your work with music and creation in general?”***

- Yes, in voice recognition
- Yes, in automated subtitles generation
- Yes, in commercial prospection or administrative management
- Yes, in other aspects



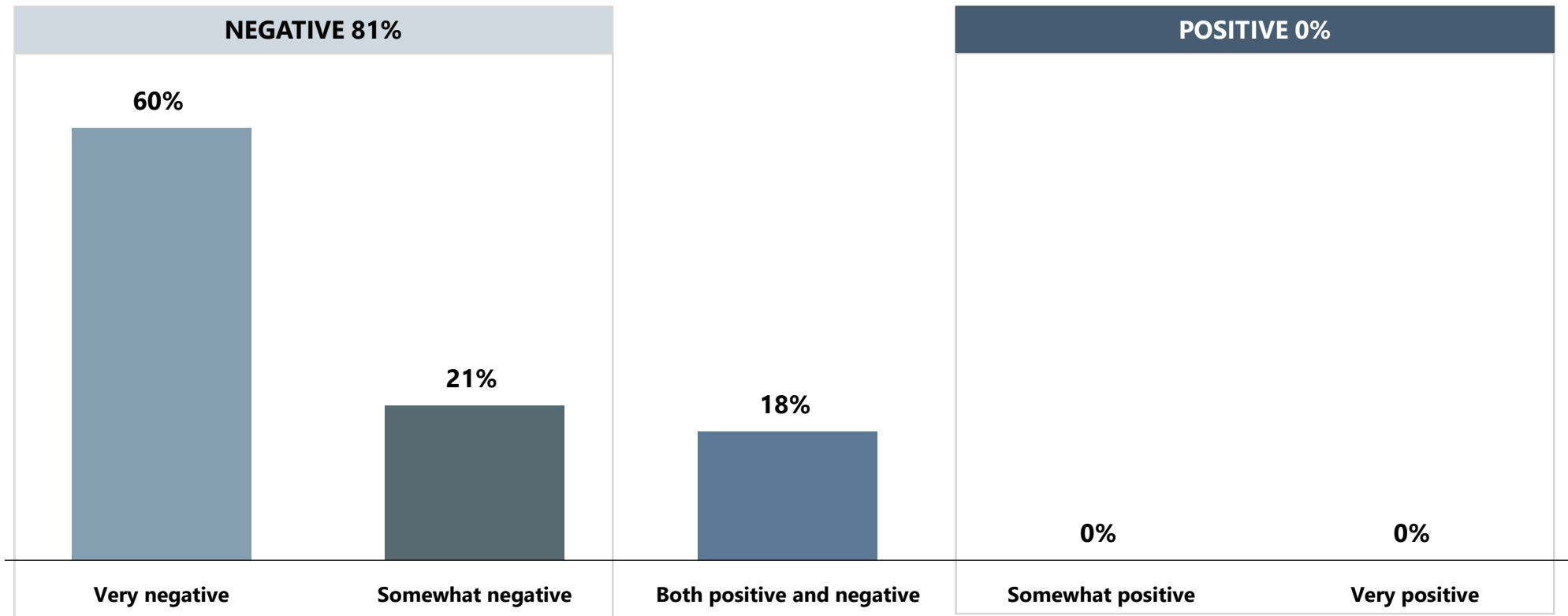
# ADOPTION OF AI

*"In your opinion, in what areas of creation will AI be most likely adopted?"*



# ASSESSMENT OF AI USE IN CREATION

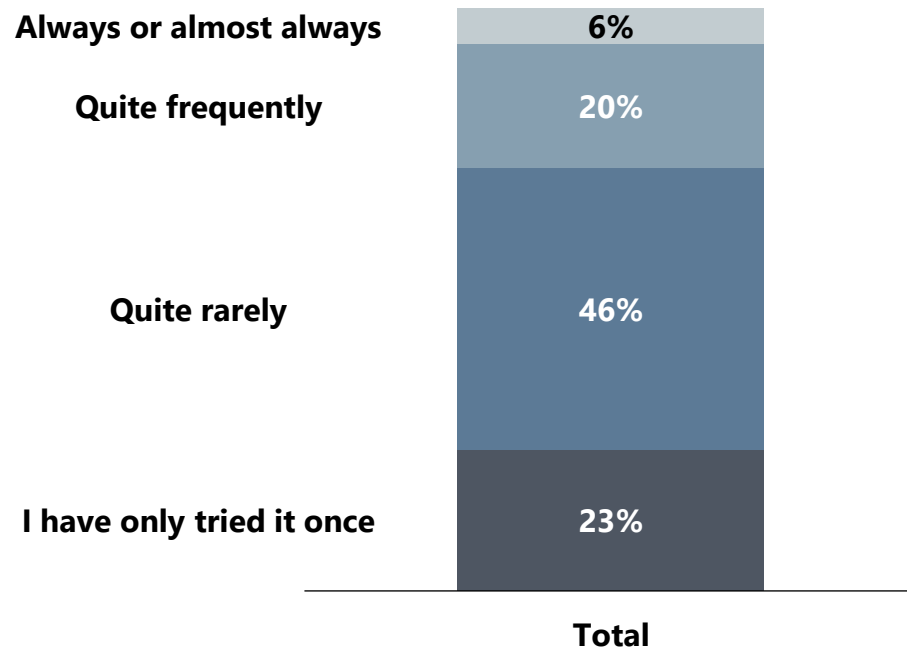
*"How would you assess the use of AI in the music sector and in creation in general?"*



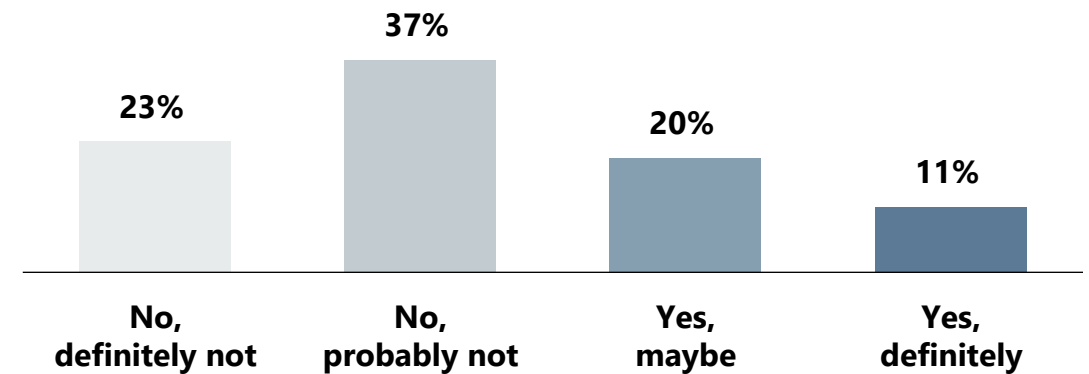


# FREQUENCY AND PLANNING OF AI USE IN DUBBING AND SUBTITLING

*"How often do you use AI technologies in your dubbing and subtitling process?"*

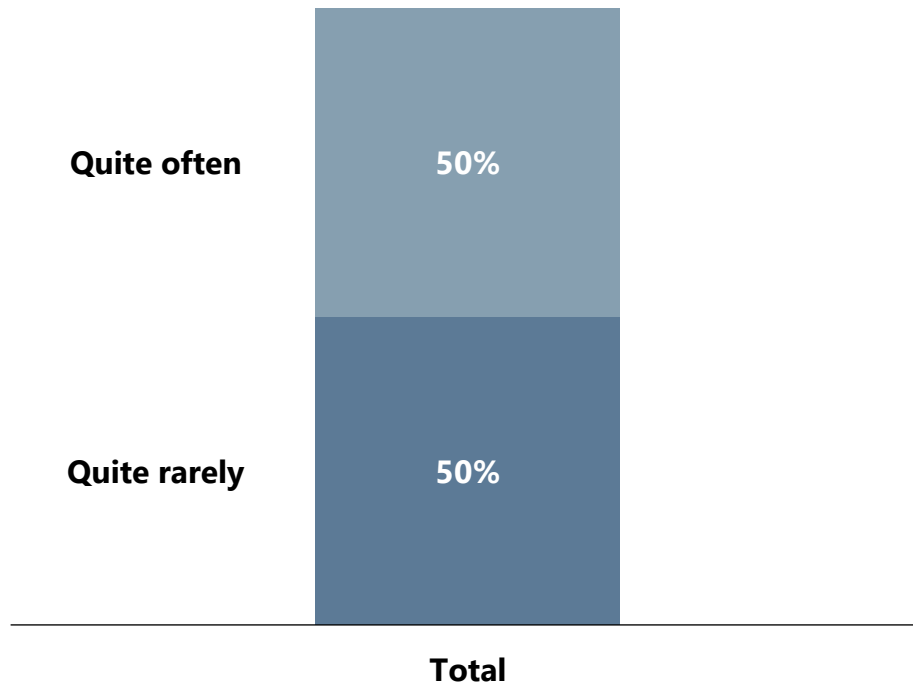


*"Do you plan to continue using AI in your dubbing and subtitling activity?"*

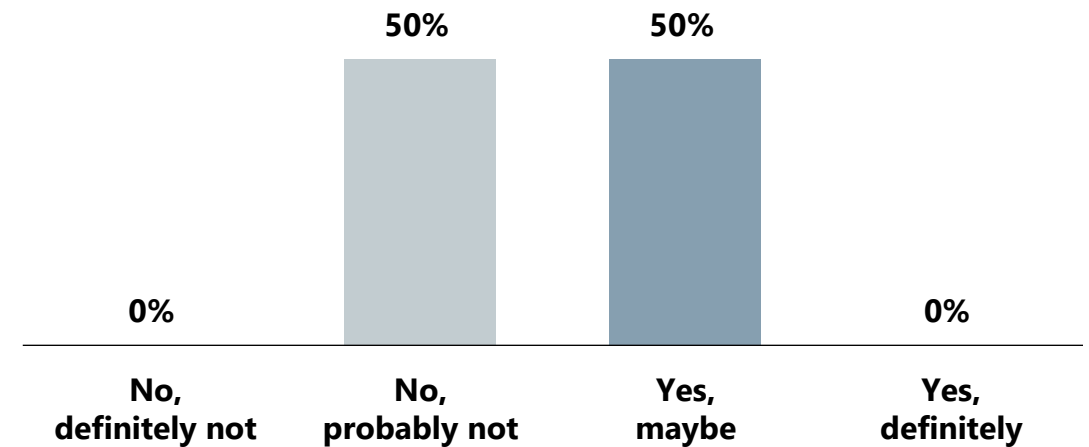


# FREQUENCY AND PLANNING OF AI USE IN SUPPORTING ACTIVITIES

*"How often do you use AI technologies in supporting aspects of your activity (commercial prospection, administration etc.)?"*

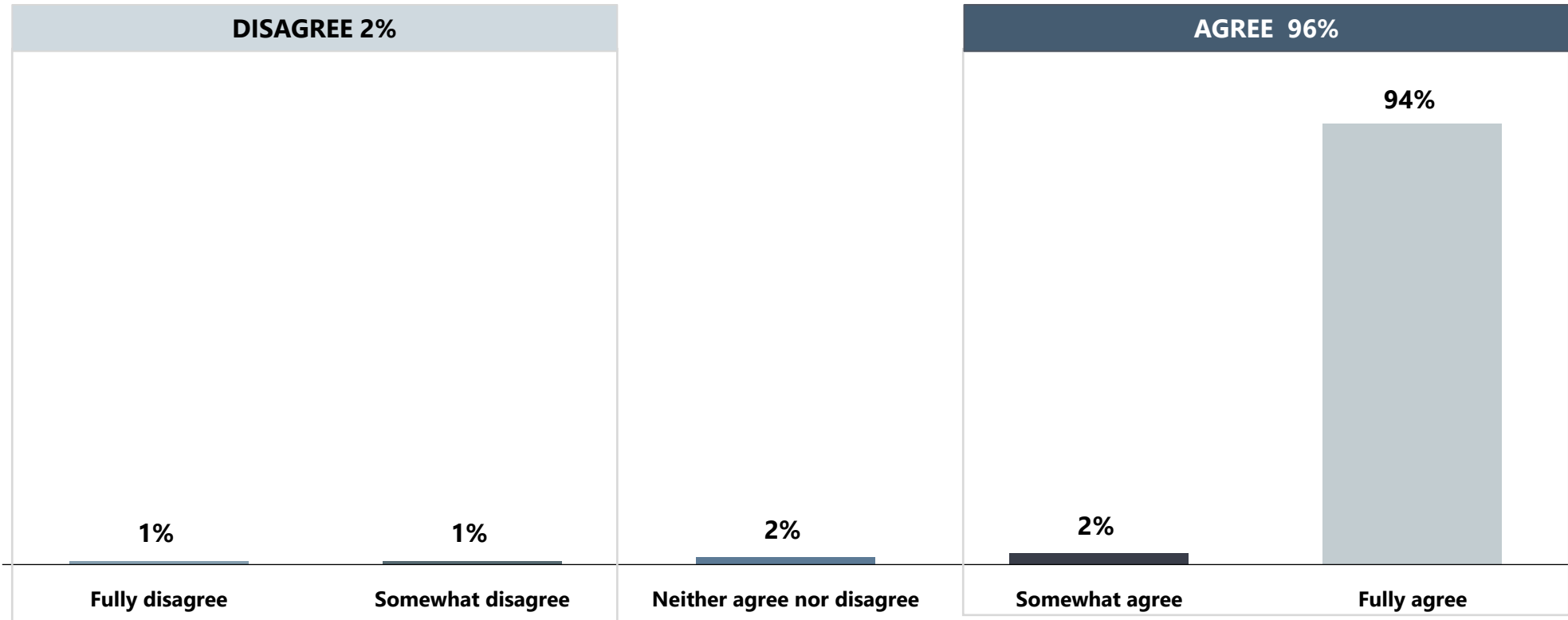


*"Do you plan to continue using AI in supporting aspects like marketing, promotion, art work, social media, administration etc.?"*



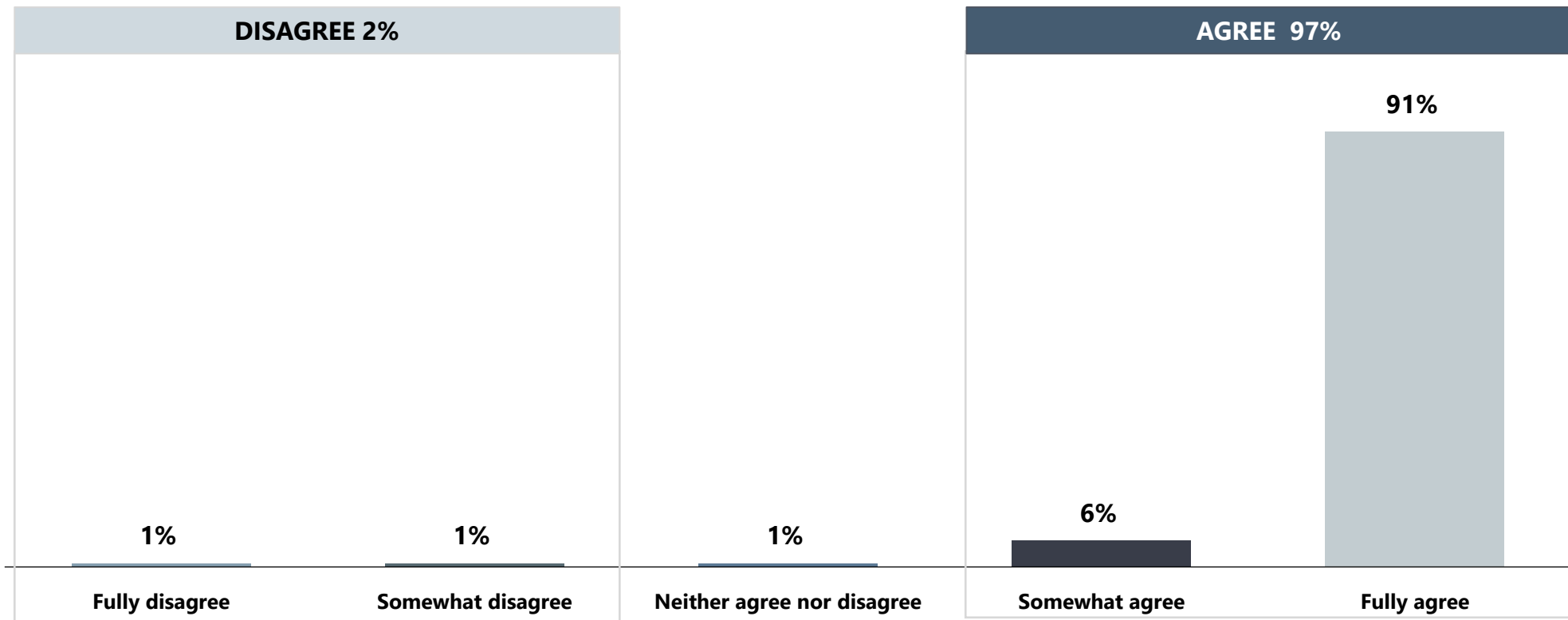
# COPYRIGHT HOLDERS' PERMISSION

***“Copyright holders must be asked for permission when their works are used as input for AI systems.”***



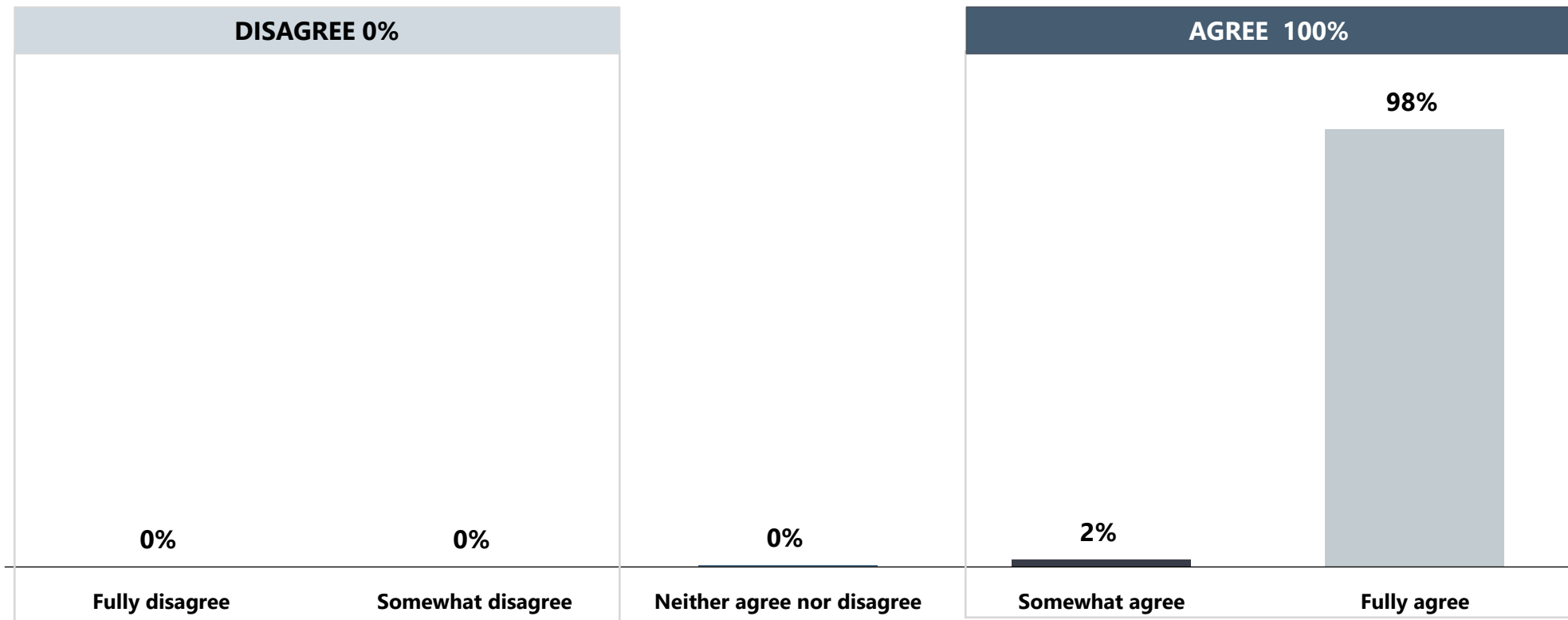
# COPYRIGHT HOLDERS' COMMERCIAL INVOLVEMENT

***"Copyright holders must benefit commercially when their works are used as input for AI systems."***



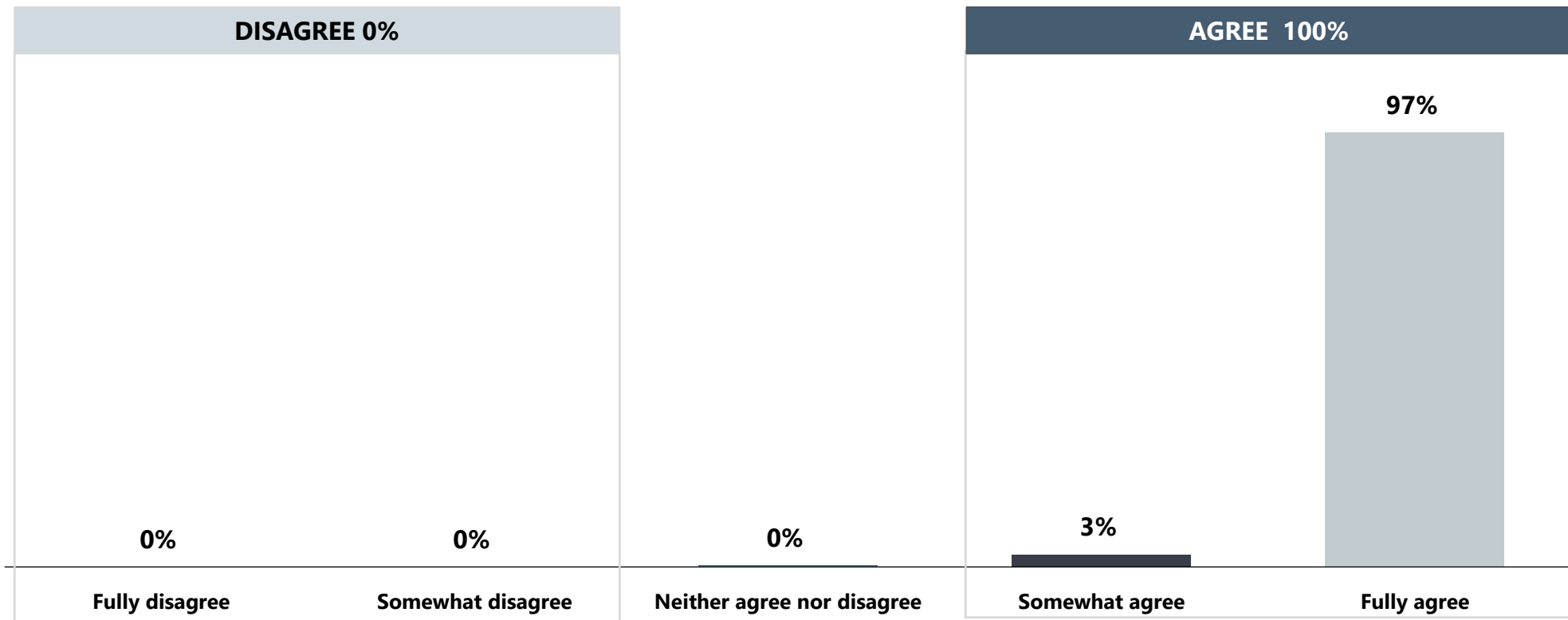
# COPYRIGHT INFRINGEMENT

***"Copyright holders must have the possibility to take action against infringement of their personal rights by AI systems (e.g. deepfakes or voice cloning)."***



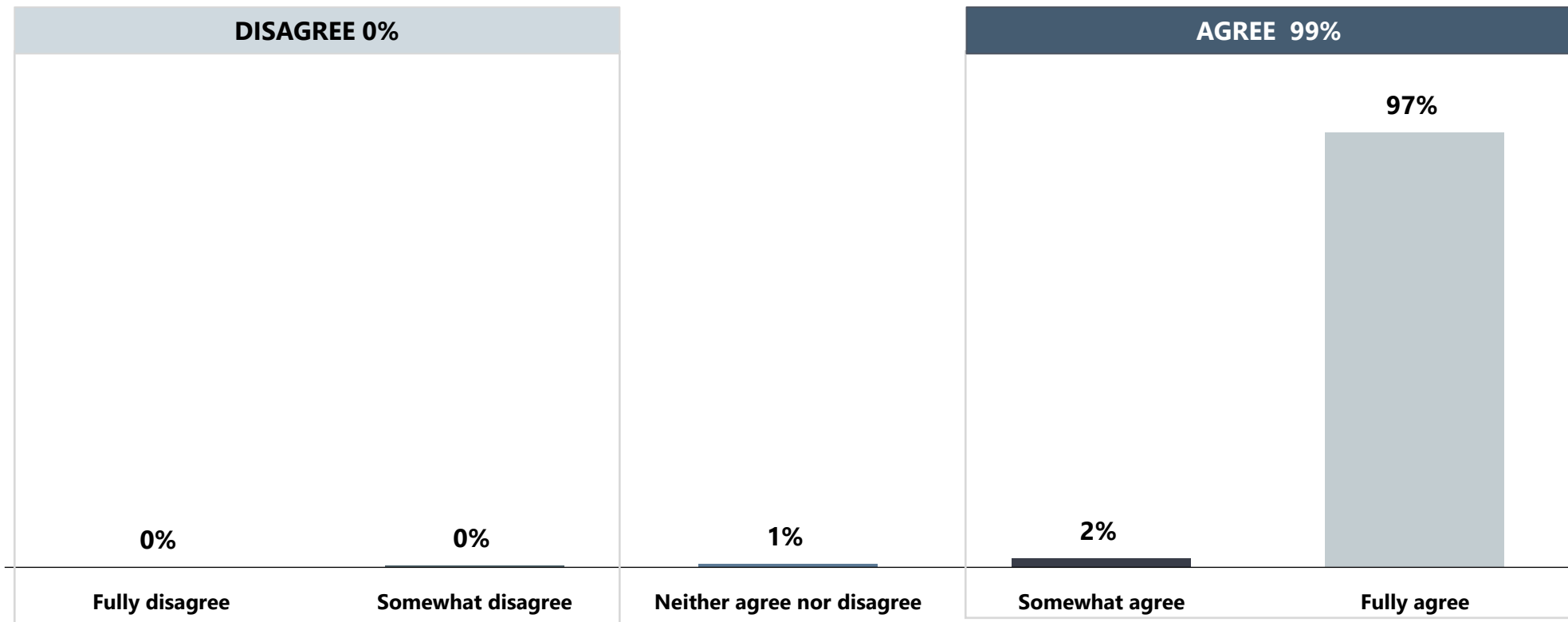
# TRANSPARENCY WITH TRAINING DATA

*"AI providers should be obliged to disclose when they use copyrighted works as 'training data'."*



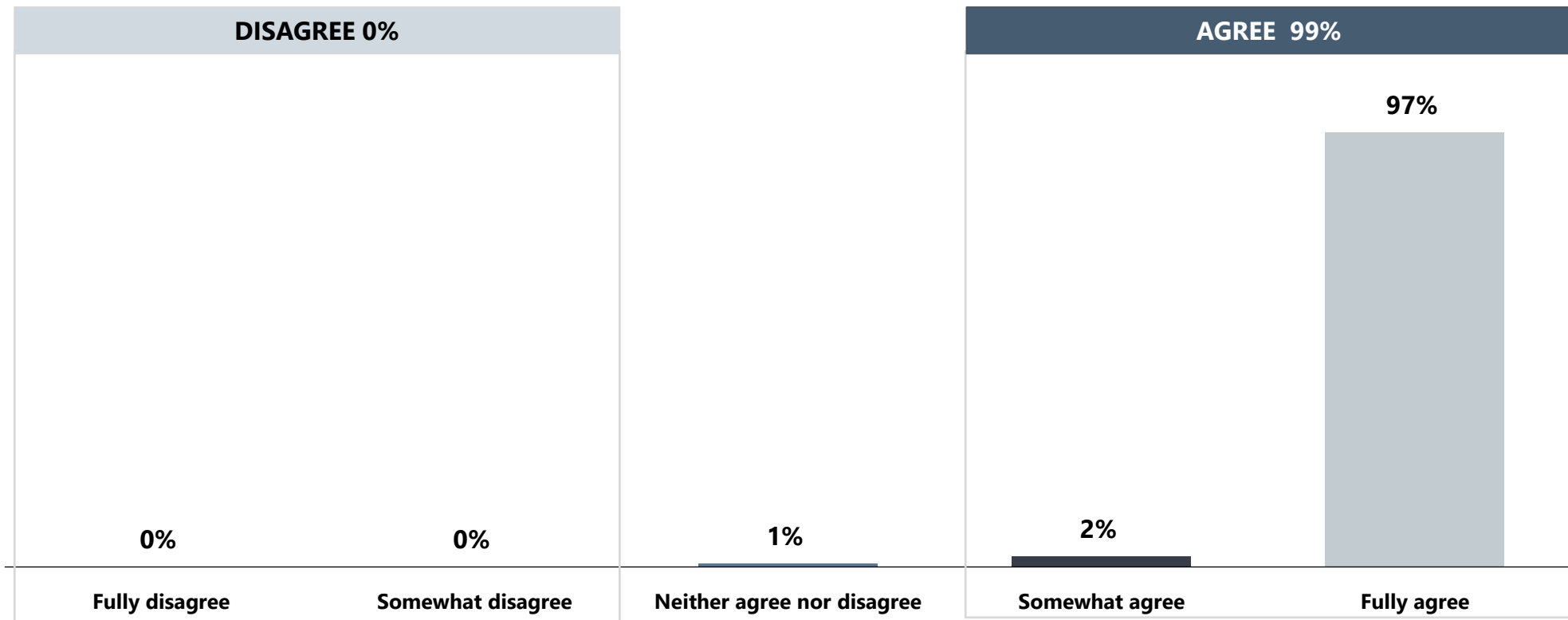
# IDENTIFICATION OF AI WORKS

*"AI-generated works should be identified as such."*



# POLICYMAKERS' OBLIGATION

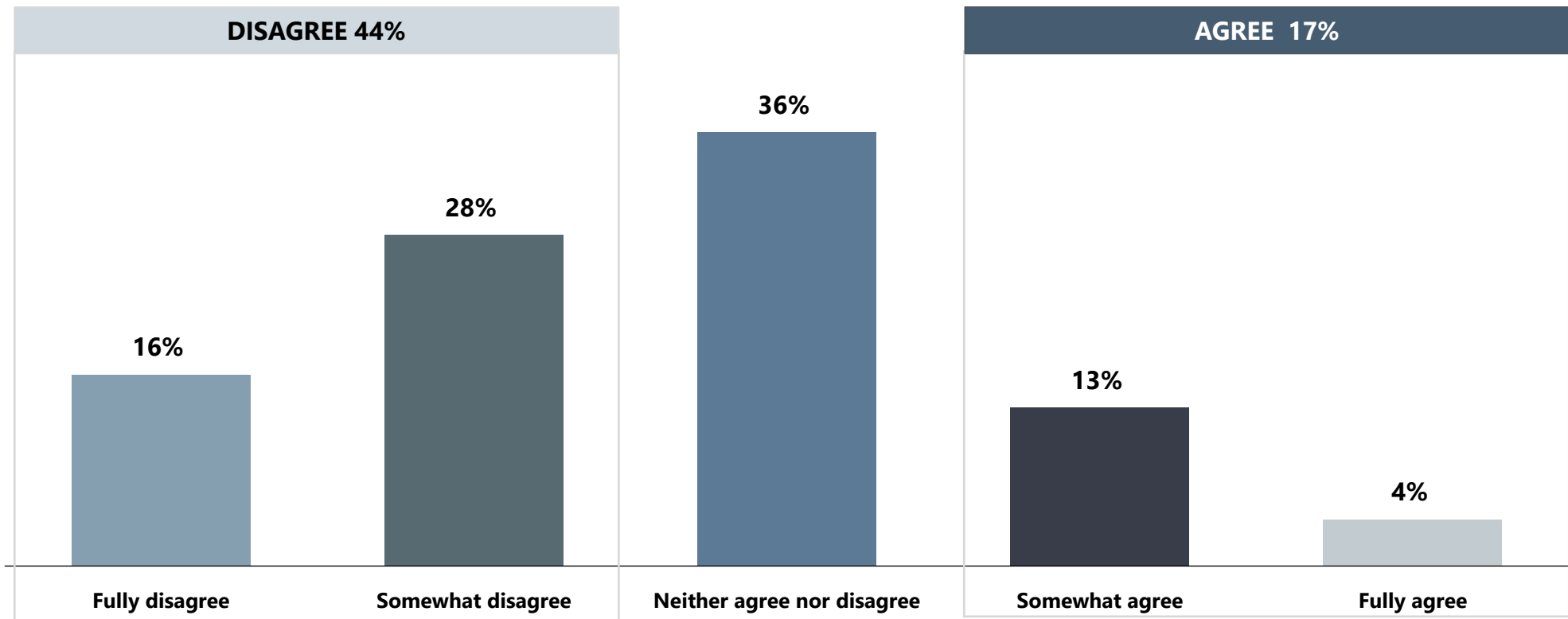
***"Policymakers should pay more attention to the challenges related to AI and copyright."***





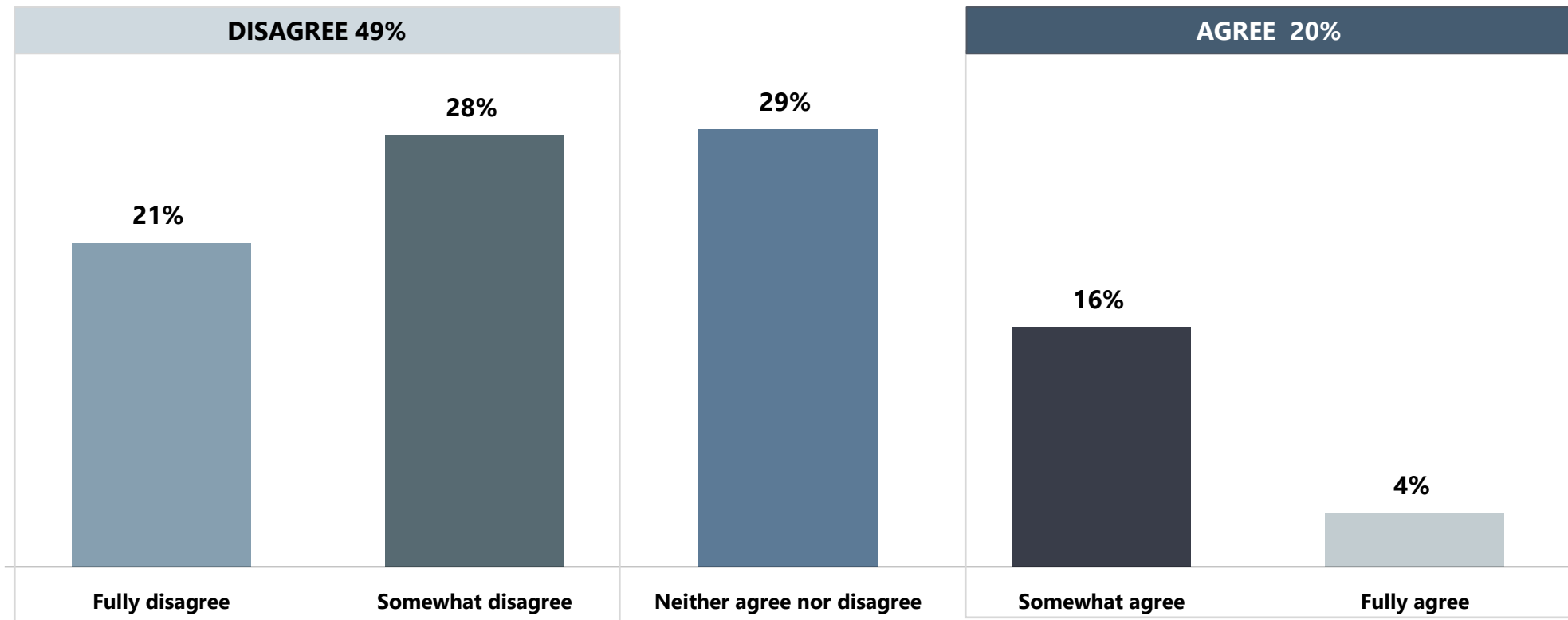
# AI SUPPORT IN CREATIVE PROCESSES

*"AI technology can support the human creative process."*



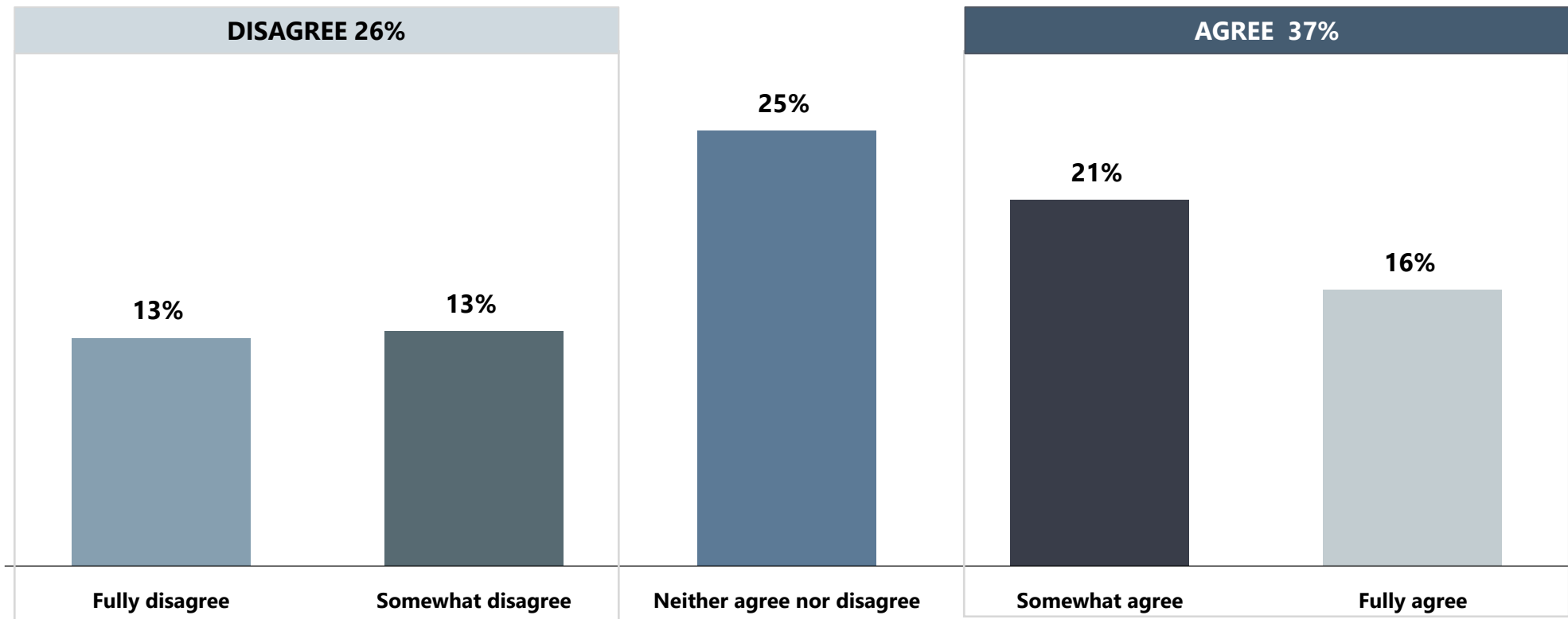
# AI FOR MORE CREATIVITY

*"AI can open up new forms of creativity."*



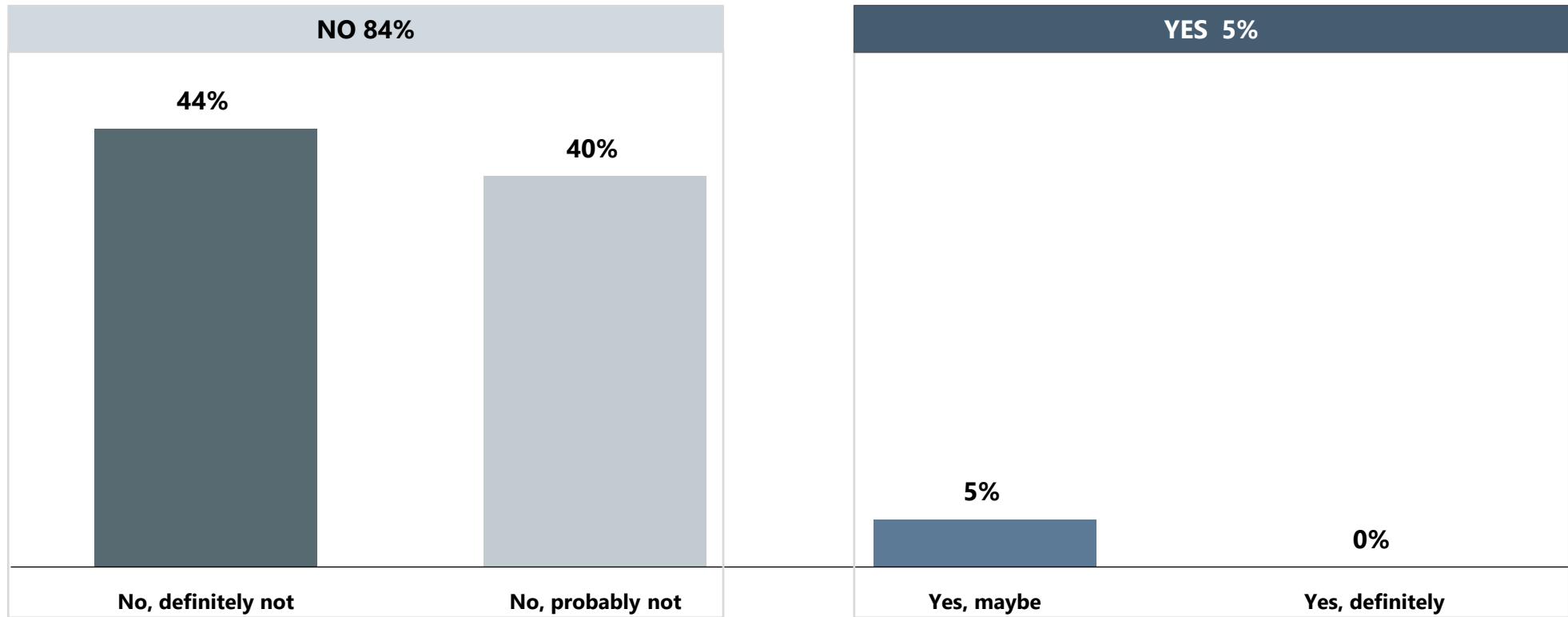
# AI SUPPORT IN CREATIVE PROCESSES

*"In principle, AI technology in the creative industry has great economic potential."*



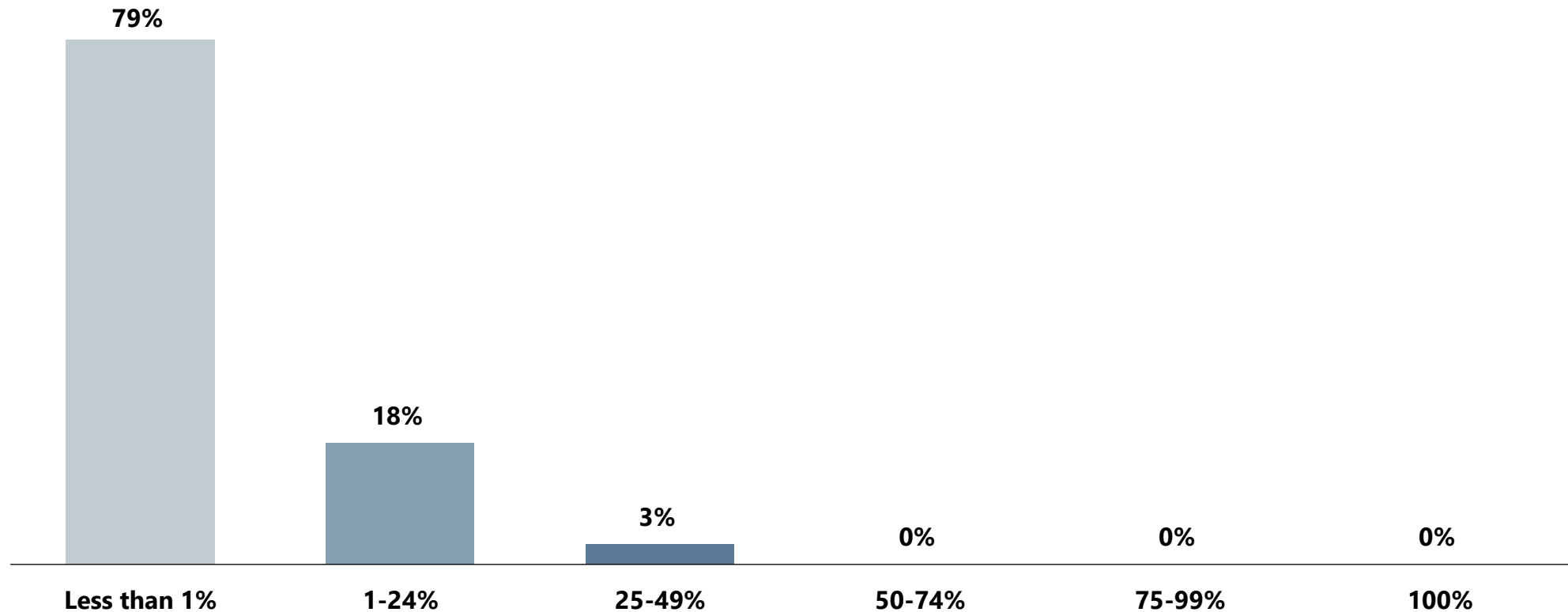
# POSSIBLE AI USE

***"Can you imagine using AI for your work with dubbing and subtitling in the future?"***



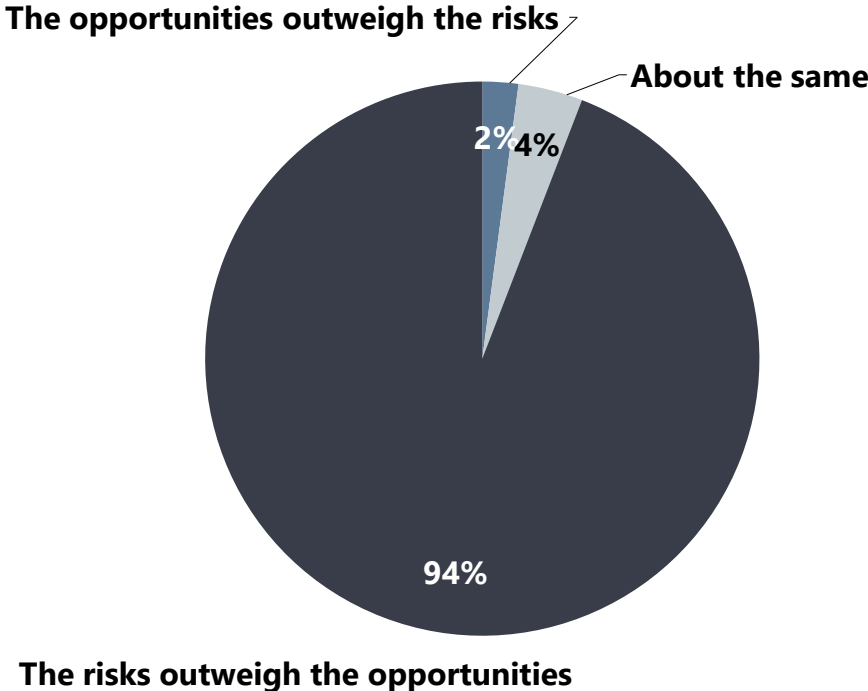
# CONTRIBUTION OF AI IN CREATIVE WORK

*“On average, what would you say the creative contribution of AI to your dubbing and subtitling amounts to?”*



# OPPORTUNITIES AND RISKS OF AI

*"All in all, do you think the opportunities outweigh the risks when it comes to AI in music and creation in general or do the risks outweigh the opportunities?"*





# APPENDIX

Additional Survey Results

Dubbing/Subtitling:  
Additional Results

**List of Sources**

## SOURCES

- Aguiar/Waldfoegel (2018): Platforms, Promotion, and Product Discovery: Evidence from Spotify Playlists, in JRC Working Papers on Digital Economy (04/2018), <https://econpapers.repec.org/paper/iptdecwpa/2018-04.htm>
- Abrams, C. (2023): AI Music, explained with Grimes and Spotify's CEO. Online: [https://www.youtube.com/watch?v=Ey75Xw\\_ikqs](https://www.youtube.com/watch?v=Ey75Xw_ikqs)
- AudioSparx: Pricing and Licensing Information. Online: <https://www.audiosparx.com/sa/client/options/pricing.cfm>
- Bay Area Times (2023): OpenAI revenue at \$1.3B ARR, from \$28M in 2022. Online: <https://www.bayareatimes.com/p/openai-revenue-13b-arr-28m-2022>
- Bensamoun, Alexandra (2023): To be or not to be...transparent - Pour un principe matriciel de transparence dans l'environnement numérique. Online: <https://www.dalloz-actualite.fr/node/ito-be-or-not-be-transparenti-pour-un-principe-matriciel-de-transparence-dans-l-environnement-n>
- Bloomberg (2023): Generative AI to Become a \$1.3 Trillion Market by 2032, Research Finds. Online: <https://www.bloomberg.com/company/press/generative-ai-to-become-a-1-3-trillion-market-by-2032-research-finds/>
- Bomke, L. (2023): Acht KI-Begriffe, die Ihnen auch im Alltag begegnen. Online: <https://www.handelsblatt.com/technik/ki/glossar-acht-ki-begriffe-die-ihnen-auch-im-alltag-begegnen/29431606.html>
- Brandt, K. (2023): TikTok, Leonardo da Vinci, and the AI-driven Future of Creativity. Online: <https://medium.com/source-and-buggy/tiktok-leonardo-da-vinci-and-the-ai-driven-future-of-creativity-2afc0e8c8213>
- Brunotts, K. (2023): Will AI Replace Musicians? Online: <https://blog.bpmmusic.io/news/will-ai-replace-musicians/>
- Center for Research on Foundation Models (CRFM) (2023): The Foundation Model Transparency Index. A comprehensive assessment of the transparency of foundation model developers. Online: <https://crfm.stanford.edu/fmti/>
- Centre national de la musique (CNM) (2021): Study: Stream manipulation. Online: [https://cnm.fr/wp-content/uploads/2023/01/2023\\_-CNM- Manipulation-des-streams\\_ENG.pdf](https://cnm.fr/wp-content/uploads/2023/01/2023_-CNM- Manipulation-des-streams_ENG.pdf)
- CISAC (2023): Global Creators and Performers Demand Creative Rights in AI Proliferation. Summary. An Open Letter to policy makers on Artificial Intelligence. <https://www.cisac.org/Newsroom/articles/global-creators-and-performers-demand-creative-rights-ai-proliferation>



# SOURCES

- Copet, J., Kreuk, F., Gat, I., Remez, T., Kant, D., Synnaeve, G., Adi, Y. & Défossez, A. (2023): Simple and Controllable Music Generation. Online: <https://arxiv.org/pdf/2306.05284.pdf>
- Court of Justice of the European Union (CJEU) (2019): Reports of Cases. C-683/17. Online: <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:62017CJ0683>
- Coscarelli, J. (2023): An A.I. Hit of Fake 'Drake' and 'The Weeknd' Rattles the Music World. Online: <https://www.nytimes.com/2023/04/19/arts/music/ai-drake-the-weeknd-fake.html>
- Deloitte. (2021): Sector Briefing | KI in der Musikindustrie – Eine Bestandsaufnahme. Online: <https://www2.deloitte.com/content/dam/Deloitte/de/Documents/about-deloitte/Sector-Briefing-KI-in-der-Musikindustrie.pdf>
- DeLucia, S.-A. (2023): Foundation Models: The Building Blocks of Next-Gen AI. Online: <https://arize.com/blog-course/foundation-models-ai/>
- Denk, T. I., Takagi, Y., Matsuyama, T., Agostinelli, A., Nakai, T., Frank, C. & Nishimoto, S. (2023): Brain2Music: Reconstructing Music from Human Brain Activity. Online: <https://google-research.github.io/seanet/brain2music/>
- DIFFUS (2023): Grimes veröffentlicht Statement zu AI-generierten Songs. Online: <https://diffusmag.de/p/grimes-veroeffentlicht-statement-zu-ai-generierten-songs/>
- Dredge, S. (2023): Google is now letting people play with its MusicLM AI tool. Online: <https://musically.com/2023/05/11/google-is-now-letting-people-play-with-its-musiclm-ai-tool/>
- Edwards, D. & McGlynn, D. (2023): Creative AI for artists: Track 80+ tools. Online: <https://www.waterandmusic.com/data/creative-ai-for-artists/>
- Efrati, A. (2023): OpenAI's Revenue Crossed \$1.3 Billion Annualized Rate, CEO Tells Staff. Online: <https://www.theinformation.com/articles/openai-revenue-crossed-1-3-billion-annualized-rate-ceo-tells-staff>
- European Parliament (2023): EU AI Act: first regulation on artificial intelligence. Online: <https://www.europarl.europa.eu/news/en/headlines/society/20230601STO93804/eu-ai-act-first-regulation-on-artificial-intelligence>

# SOURCES

- Frąckiewicz, M. (2023): AI in Music Distribution: Revolutionizing the Business of Sound. Online: <https://ts2.pl/en/ai-in-music-distribution-revolutionizing-the-business-of-sound/#gsc.tab=0>
- Future Market Insight (2023): Generative AI Market Outlook (2023 to 2033). Online: <https://www.futuremarketinsights.com/reports/generative-ai-market>
- GEMA: Privatkopie. ZUKUNFT DER PRIVATKOPIE. Online: <https://gema-politik.de/privatkopie/>
- Global Market Insights (2023): Generative AI Market Size. Online: <https://www.gminsights.com/industry-analysis/generative-ai-market>
- Goldmedia on behalf of GEMA (2022): Music streaming in Germany. Online: <https://www.gema.de/en/news/streaming>
- Google DeepMind (2023): Transforming the future of music creation. Online: <https://www.globenewswire.com/en/news-release/2023/4/3/2639706/0/en/Generative-AI-in-Music-Market-to-Reach-Valuation-of-USD-2-6-Bn-at-CAGR-of-28-6-by-2032.html>
- Grynbaum; M. M. & Mac, R. (2023): The Times Sues OpenAI and Microsoft Over A.I. Use of Copyrighted Work. Online: <https://www.nytimes.com/2023/12/27/business/media/new-york-times-open-ai-microsoft-lawsuit.html>
- Heumann, P. (2023): Wie eine KI die Arbeit von Synchronsprechern übernimmt. Online: <https://www.handelsblatt.com/technik/it-internet/deepdub-wie-eine-ki-die-arbeit-von-synchronsprechern-uebernimmt/29252038.html>
- Holland, M. (2023): Menschliche Beteiligung nötig: Kein US-Copyright für KI-generiertes Kunstwerk. Online: <https://www.heise.de/news/US-Gericht-Kein-Copyright-fuer-KI-generiertes-Kunstwerk-9268699.html>
- Hoover, A. (2023): AI-Generated Music Is About to Flood Streaming Platforms. Online: <https://www.wired.com/story/ai-generated-music-streaming-services-copyright/>
- Hovsepyan, T., Mosinyan, A. Kotolyan, A. (2021): How AI Is Transforming Music Streaming Services. Online: <https://plat.ai/blog/how-artificial-intelligence-is-transforming-music-streaming-services/>
- IBM (/): Was ist maschinelles lernen? Online: <https://www.ibm.com/de-de/topics/machine-learning>

# SOURCES

- IBM (/): What is artificial intelligence?. Online: <https://www.ibm.com/topics/artificial-intelligence>
- IFPI (2023): Global Music Report 2023. Online: [https://www.ifpi.org/wp-content/uploads/2020/03/Global\\_Music\\_Report\\_2023\\_State\\_of\\_the\\_Industry.pdf](https://www.ifpi.org/wp-content/uploads/2020/03/Global_Music_Report_2023_State_of_the_Industry.pdf)
- Imarc group (2023): Generative AI Market Report by Offering Type. Online: <https://www.imarcgroup.com/generative-ai-market>
- Initiative Urheberrecht (2023): Generative AI: Copyright status and recommendations for action. Online: [https://urheber.info/media/pages/diskurs/current-iu-position-paper-on-generative-ai/3c6ba578f8-1697140215/230919\\_iu\\_position\\_ai-act\\_september2023\\_en.pdf](https://urheber.info/media/pages/diskurs/current-iu-position-paper-on-generative-ai/3c6ba578f8-1697140215/230919_iu_position_ai-act_september2023_en.pdf)
- IOT Analytics (2023): The leading generative AI companies. Online: <https://iot-analytics.com/leading-generative-ai-companies/>
- ISCC - Content Codes (2022): A Proposal for a Modern and Open Content-Based Identifie. Online: <https://iscc.codes/#motivation>
- Johnson, A. (2023): Spotify Removes 'Tens Of Thousands' Of AI-Generated Songs: Here's Why. Online: <https://www.forbes.com/sites/ariannajohnson/2023/05/09/spotify-removes-tens-of-thousands-of-ai-generated-songs-heres-why/?sh=307787104f4a>
- Kersting, K. & Meyer, U. (2018): From Big Data to Big Artificial Intelligence? Algorithmic Challenges and Opportunities of Big Data. Online: <https://link.springer.com/article/10.1007/s13218-017-0523-7>
- Kleinman, Z. (2023): Spotify will not ban AI-made music, says boss. Online: <https://www.bbc.com/news/technology-66882414>
- Költzsch, T. (2023): KI-Gallagher beschert Oasis-Fans ein neues Album. Online: <https://www.golem.de/news/aisis-ki-gallagher-beschert-oasis-fans-ein-neues-album-2304-173809.html>
- Kreutzer, R. & Sirrenberg, M. (2019): Künstliche Intelligenz verstehen. Springer Verlag.
- LALAL.AI (2023): Top 10 AI Mixing and Mastering Tools for Musicians. Online: <https://www.lalal.ai/blog/best-ai-mixing-mastering-tools>
- LeJarde, A. L. (2023): 'Feel free to take advantage of my IP!': Grimes launches AI music software that generates her voice. Online: <https://de.ra.co/news/78932>
- Marconette, J. (2023): Breaking News: Luminate Releases 2023 Midyear Music Report. Online: <https://luminatedata.com/blog/breaking-news-luminate-releases-2023-midyear-music-report/>

## SOURCES

- Markets and Markets (2023): Generative AI Market by Offering. Online: <https://www.marketsandmarkets.com/Market-Reports/generative-ai-market-142870584.html>
- Market Research Future (2023): Generative AI Market. Online: <https://www.marketresearchfuture.com/reports/generative-ai-market-11879>
- Market.US & Globe Newswire (2023): Generative AI in Music Market to Reach Valuation of USD 2.6 Bn at CAGR of 28.6% by 2032. Online: <https://www.globenewswire.com/en/news-release/2023/4/3/2639706/0/en/Generative-AI-in-Music-Market-to-Reach-Valuation-of-USD-2-6-Bn-at-CAGR-of-28-6-by-2032.html>
- Marr, B. (2023): Generative AI Is Revolutionizing Music: The Vision For Democratizing Creation. Online: <https://www.forbes.com/sites/bernardmarr/2023/10/05/generative-ai-is-revolutionizing-music-loudlys-vision-for-democratizing-creation/?sh=765c9c1f775b>
- Meta (2023): Open sourcing AudioCraft: Generative AI for audio made simple and available to all. Online: <https://ai.meta.com/blog/audiocraft-musicgen-audiogen-encodec-generative-ai-audio/>
- Millman, E. (2023): Music Publishers Sue Amazon-backed AI Platform for Copyright Infringement. Online: <https://www.rollingstone.com/music/music-news/umg-concord-abkco-sue-anthropic-ai-company-copyright-infringement-1234856761/>
- Miquido (2023): AI In Music Industry: Key Takeaways From Innovation Waves Webinar. Online: <https://www.miquido.com/blog/ai-in-music-industry/>
- OECD.AI (2023): AI in Germany/France. Online: <https://oecd.ai/en/dashboards/countries/Germany> or <https://oecd.ai/en/dashboards/countries/France>
- OpenAI (2023): Partnership with Axel Springer to deepen beneficial use of AI in journalism. Online: <https://openai.com/blog/axel-springer-partnership>
- Pequeño IV, A. (2023): Grimes Helps Artists Distribute Songs Using Her AI Voice—If They Split Royalties. Here’s How It Works. <https://www.forbes.com/sites/antoniopequenoiv/2023/06/12/grimes-helps-artists-distribute-songs-using-her-ai-voice--if-they-pay-royalties-heres-how-it-works/?sh=5d6cdf0649ae>
- Pelley, R. (2023): ‘We got bored waiting for Oasis to re-form’: Alsis, the band fronted by an AI Liam Gallagher. Online: <https://www.theguardian.com/music/2023/apr/18/oasis-aisis-band-fronted-by-an-ai-liam-gallagher>

# SOURCES

- Pirate (2023): OVER HALF OF MUSICIANS WILL CONCEAL AI USE. Online: <https://pirate.com/en/blog/over-half-of-musicians-will-conceal-ai-use/>
- Precedence Research (2024): Generative AI Market Growth is Booming with 27.02%. Online: <https://www.precedenceresearch.com/insights/generative-ai-market>
- PR Newswire (2023): Deepdub becomes the first AI dubbing solution to receive content security accreditation from the MPA's Trusted Partner Network. <https://www.prnewswire.com/il/news-releases/deepdub-becomes-the-first-ai-dubbing-solution-to-receive-content-security-accreditation-from-the-mpas-trusted-partner-network-301821975.html>
- Research and Markets (2023): Stock Music Market - Global Outlook & Forecast 2023-2028. Online: <https://www.researchandmarkets.com/reports/5750171/stock-music-market-global-outlook-and-forecast>
- Robinson, K. (2023): Hollywood writers officially ratify new contract with studios that ended 5-month strike. Online: <https://eu.usatoday.com/story/entertainment/tv/2023/10/09/wga-strike-ends-writers-ratify-contract/71124196007/>
- Rolling Stone Culture Council & Dynamic Growth Powerful Networking (2023): Unveiling the Impacts and Disruption of AI on Music Industry Stakeholders. Online: <https://council.rollingstone.com/blog/the-impacts-and-disruption-of-ai-on-music-industry-stakeholders>
- Röttger, T. (2023): Künstliche Intelligenz und Urheberrecht. ChatGPT und Co. Schutz des geistigen Eigentums? Online: <https://ggr-law.com/urheberrecht/faq/kuenstliche-intelligenz-ki-urheberrecht/>
- Savage, M. (2023): Sir Paul McCartney says artificial intelligence has enabled a 'final' Beatles song. Online: <https://www.bbc.com/news/entertainment-arts-65881813>
- Scheufen, M. (2023): Generative KI und Autorenrechte. Online: <https://www.iwkoeln.de/studien/marc-scheufen-generative-ki-und-autorenrechte.html>
- Shead, S. (2023): Spotify CEO says AI music is 'tricky'. Online: <https://www.linkedin.com/news/story/spotify-ceo-says-ai-music-is-tricky-5780300/>
- Senftleben, M. (2023): Generative AI and Author Remuneration. Online: <https://link.springer.com/article/10.1007/s40319-023-01399-4>
- Snapes, L. (2023): AI song featuring fake Drake and Weeknd vocals pulled from streaming services. Online: <https://www.theguardian.com/music/2023/apr/18/ai-song-featuring-fake-drake-and-weeknd-vocals-pulled-from-streaming-services>

## SOURCES

- Sokolov, A. (2023): Large Language Models: US-Autoren verklagen OpenAI wegen Copyright-Verletzung. Online: <https://www.heise.de/news/Large-Language-Models-US-Autoren-verklagen-OpenAI-wegen-Copyright-Verletzung-9301736.html>
- S&P Global Market Intelligence/ Patience, N. & Johnston, A. (2023): Generative AI software market to exceed \$36bn in aggregate revenues by 2028, with 58% CAGR between 2023 and 2028. Online: <https://www.spglobal.com/marketintelligence/en/news-insights/research/generative-ai-software-market-to-exceed-36bn-in-aggregate-revenues-by-2028-with-58-cagr-between-2023-and-2028>
- Spotify (2023): SAY WHAT? Spotify Debuts a New AI DJ, Right in Your Pocket. Online: <https://newsroom.spotify.com/2023-02-22/spotify-debuts-a-new-ai-dj-right-in-your-pocket/>
- Stassen, M. (2020): CAN AI-DRIVEN A&R TRANSFORM THE MUSIC BUSINESS? Online: <https://www.musicbusinessworldwide.com/can-ai-driven-ar-transform-the-music-business/>
- Stassen, M. (2023): AI MUSIC STARTUP BOOMY PARTNERS WITH FRAUD DETECTION COMPANY BEATDAPP TO 'ENSURE THE INTEGRITY' OF ITS PLATFORM. Online: <https://www.musicbusinessworldwide.com/ai-music-startup-boomy-partners-with-fraud-detection-company-beatdapp-to-ensure-the-integrity-of-its-platform/>
- Statista Market Insights (2023): Generative AI – Worldwide Market Size. Online: <https://www.statista.com/outlook/tmo/artificial-intelligence/generative-ai/worldwide#market-size>
- Stieler, W. (2021): Künstliche Intelligenz darf Patente anmelden. Online: <https://www.heise.de/hintergrund/Kuenstliche-Intelligenz-darf-Patente-anmelden-6154296.html>
- Sunkel, C. (2023): SURVEY FINDS 73% OF MUSIC PRODUCERS BELIEVE ARTIFICIAL INTELLIGENCE WILL REPLACE THEM. Online: <https://edm.com/gear-tech/survey-music-producers-believe-ai-will-replace-them>
- Tencer, D. (2023): BELIEVE HAS DEVELOPED SOFTWARE THAT DETECTS AI-MADE MUSIC WITH 98% ACCURACY. WHAT MIGHT THIS MEAN FOR THE FUTURE? Online: <https://www.musicbusinessworldwide.com/believe-has-developed-its-own-ai-made-music-detector-with-98-accuracy-what-might-this-mean-for-the-future1/>
- Tencer, D. (2023): DEEZER IS 'SUPPORTIVE' OF HELPING LABELS BATTLE DELUGE OF AI MUSIC... WHILE ALSO MAKING ITS OWN AI MUSIC FOR ITS 'ZEN BY DEEZER' APP. Online: <https://www.musicbusinessworldwide.com/deezer-is-supportive-of-helping-labels-battle-deluge-of-ai-music-hitting-its-platform-while-also-making-its-own-ai-music-for-its-zen-by-deezer-app/>

# SOURCES

- TEOSTO (2023): Artificial intelligence in music. Survey report October 2023. Online: <https://www.teosto.fi/en/a-third-of-music-authors-are-already-using-ai/>
- THE ASSOCIATED PRESS (2023): What do striking Hollywood writers want? A look at demands. Online: <https://apnews.com/article/wga-writers-strike-demands-d403f5b4666f20e2ce3e379bcaef5f2a>
- The Beatles (YouTube Channel) (2023): Now And Then - The Last Beatles Song (Short Film). Online: <https://www.youtube.com/watch?v=APJAQoSCwuA&list=PLeoCcq2T10OL0IPHT-k8RNbmBKH3cRhX9>
- The Beatles (YouTube Channel) (2023): Now And Then (Official Music Video). Online: <https://www.youtube.com/watch?v=Opxhh9Oh3rg>
- TikTok (2023): Warner Music Group & TikTok Announce First-of-its-Kind Expanded Agreement. Online: <https://newsroom.tiktok.com/en-us/warner-music-group-tiktok-announce-first-of-its-kind-expanded-agreement>
- TuneCore (2023): AI in Music Report. Online: <https://www.tunecore.com/ai>
- UNITED STATES DISTRICT COURT (2023): Statement of claim "Chabon et al v OpenAI". Online: <https://www.heise.de/downloads/18/4/3/0/0/8/7/6/authors-v-openai.pdf>
- Universal music Group (2023): YOUTUBE ANNOUNCES AI MUSIC PRINCIPLES AND LAUNCHES YOUTUBE MUSIC AI INCUBATOR WITH ARTISTS, SONGWRITERS AND PRODUCERS FROM UNIVERSAL MUSIC GROUP. Online: <https://www.universalmusic.com/youtube-announces-ai-music-principles-and-launches-youtube-music-ai-incubator-with-artists-songwriters-and-producers-from-universal-music-group/>
- Weiß, E.-M. (2023): Meta veröffentlicht AudioCraft: Eine Art ChatGPT für Musiker. Online: <https://www.heise.de/news/Meta-veroeffentlicht-AudioCraft-Eine-Art-ChatGPT-fuer-Musiker-9233473.html>
- Wiehle, B. (2023): Beim Musikvideo von Nico Santos hat die KI Regie geführt. Online: <https://www.swr3.de/musik/nico-santos-number-1-musikvideo-ki-chatgpt-102.html>
- Zlatic, T. (2023): AI Music Survey: How 1,500 Music Producers Use AI For Music Production. Online: <https://bedroomproducersblog.com/2023/05/30/ai-music-survey/>



PICTURE: MIDJOURNEY

A REPORT COMMISSIONED BY



CONDUCTED BY

**GOLDMEDIA**

Prof. Dr. Klaus Goldhammer | Mathias Birkel  
Lena Mackuth | Daniel Komma

[www.Goldmedia.com](http://www.Goldmedia.com)